

City of Deltona

PLANNING & ZONING BOARD MEETING
WEDNESDAY, FEBRUARY 19, 2014
7:00 P.M.

Chairman
David McKnight

Vice-Chairman
Tom Burbank

Members:

Victor Ramos

Wendy Hickey

Noble Olasimbo

Adam Walosik

Herb Zischkau

Staff Liaison
Chris Bowley, AICP

CITY HALL COMMISSION CHAMBERS
2345 PROVIDENCE BOULEVARD
DELTONA, FLORIDA 32725

AGENDA

1. **CALL TO ORDER:**
2. **ROLL CALL:**
3. **APPROVAL OF MINUTES: January 15, 2014**
4. **PUBLIC COMMENTS:**
5. **OLD BUSINESS:**
6. **NEW BUSINESS:**
 - A. **RZ13-008, BPUD Rezoning for the Saxon-Sterling Silver (Ordinance No. 2-2014).**
 - B. **RZ13-009, Amendment to the Official Zoning Map (Ordinance No. 4-2014).**
7. **MEMBER COMMENTS:**
8. **ADJOURNMENT:**

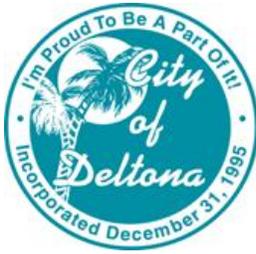
NOTE: If any person decides to appeal any decision made by the Planning & Zoning Board with respect to any matter considered at this meeting or hearing, he/she will need a record of the proceedings, and for such purpose he/she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based (F.S. 286.0105).

Individuals with disabilities needing assistance to participate in any of these proceedings should contact the City Clerk at least three (3) working days in advance of the meeting date and time at (386) 878-8100.

Deltona Municipal Complex, 2345 Providence Blvd., Deltona, FL 32725

(386) 878-8100; FAX: (386) 878-8501

City Webpage: www.deltonafl.gov



DRAFT

**CITY OF DELTONA, FLORIDA
PLANNING & ZONING BOARD MEETING
WEDNESDAY, JANUARY 15, 2014**

A Regular Meeting of the Deltona Planning and Zoning Board was held on Wednesday, January 15, 2014, in the City's Commission Chambers located at 2345 Providence Boulevard, Deltona, Florida.

1. CALL TO ORDER:

The meeting was called to order at 7:00 p.m. by Secretary Olasimbo.

2. ROLL CALL:

Chairman	David McKnight	Present
Vice-Chairman	Victor Ramos	Present
Member	Tom Burbank	Present
Member	Wendy Hickey	Absent-Excused
Member	Noble Olasimbo	Present
Member	Adam Walosik	Present
Member	Herb Zischkau	Absent-Unexcused

Also present: Planning & Development Director, Chris Bowley, AICP; Ron Paradise, Assistant Director of Planning and Development; City Attorney, Becky Vose; Administrative Assistant, Kathrine Kyp.

3. APPROVAL OF MINUTES:

A. Minutes:

1. Meeting – December 18, 2013.

Motion by Member Olasimbo, seconded by Member Burbank to adopt the minutes of the Planning & Zoning Board Meeting of December 18, 2013, as presented.

Motion carried unanimously.

4. PUBLIC COMMENTS:

Daniel Dudley, resident from 1089 Pearl Tree Rd., came before the Board to discuss the Saxon Sterling project. Chris Bowley stated, at the December 18, 2013, Planning and Zoning Board meeting, it was discussed that since the Saxon Sterling agenda item was deferred to date certain of February 19, 2014, the Board cannot have discussion on the matter until that time. Member Ramos asked Mr. Bowley if Mr. Dudley could speak on the issue now. Mr. Bowley referred to City Attorney Becky Vose, who stated the appropriate action would be to make a presentation to the Board on February 19, 2014 when the public hearing takes place. Ms. Vose directed Mr. Dudley to address any questions to Staff in private after the meeting, if so desired.

1 **5. OLD BUSINESS:** None

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3 **6. NEW BUSINESS:**

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5 **A. Election of Officers.**

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7 Secretary Olasimbo called for nominations for the position of Chairman. Member Ramos
8 nominated David McKnight. With no further nominations for the position of Chairman,
9 nominations were closed. The motion was seconded by Member Burbank and the motion carried
10 unanimously.

11
12 Chairman McKnight called for nominations for the position of Vice-Chairman. Member Walosik
13 nominated Tom Burbank. With no further nominations for the position of Vice-Chairman,
14 nominations were closed. The motion was seconded by Member Ramos and the motion carried
15 unanimously.

16
17 Chairman McKnight called for nominations for the position of Secretary. Member Walosik
18 nominated Noble Olasimbo. With no further nominations for the position of Secretary,
19 nominations were closed. The motion was seconded by Member Burbank and the motion carried
20 unanimously.

21
22 **B. Ordinance No. 03-2014, Amending Chapter 70, Section 30 “Definitions”,**
23 **repealing existing floodplain regulations of the Land Development Code (Chapter 90),**
24 **adopting new Chapter 90 regulations, and adopting new floodplain maps.**

25
26 Mr. Paradise provided a brief summary on Ordinance No. 03-2014.

27
28 **Motion by Member Burbank, seconded by Member Olasimbo, to recommend that the City**
29 **Commission adopt Ordinance No. 03-2014, Amending Chapter 70, Section 30 “Definitions”,**
30 **repealing existing floodplain regulations of the Land Development Code (Chapter 90),**
31 **adopting new Chapter 90 regulations, and adopting new floodplain maps as presented.**

32
33 **Motion carried unanimously.**

34
35 **7. DISCUSSION:**

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37 **A. By the Board:**

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39 Member Burbank asked that Staff bring the Board up to date on the status of the discussions to
40 allow chickens in resident’s back yards.

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42 Member McKnight asked if Member Zischkau had called or emailed Staff to notify of his absence
43 at tonight’s meeting. Ms. Kyp stated, the last known response from Member Zischkau, was that he
44 was to be in attendance of tonight’s meeting. Member McKnight stated that Member Zischkau has
45 missed several meetings and would like the Board to emphasize to him, and the Commissioner

1 that appointed him, the importance of Member Zischkau attending the meeting or at least notifying
2 Staff and the Board of his attendance.

3

4 **B. By the City Attorney:**

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6 Ms. Vose updated the Board on the discussions regarding chickens. She stated that two City
7 Commission meetings ago, they had voted not to move forward on it.

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9 **C. By Planning & Development Staff: None**

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11 **8. ADJOURNMENT:**

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13 There being no further business, the meeting adjourned at 7:17 p.m.

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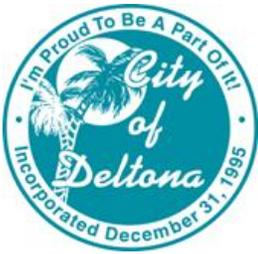
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21

ATTEST:

David McKnight, CHAIRMAN

Kathrine Kyp, RECORDING SECRETARY



AGENDA MEMO

TO: Planning and Zoning Board **AGENDA DATE:** February 19, 2014
FROM: Chris Bowley, AICP, Director **AGENDA ITEM:** 6A
Planning and Development Services
SUBJECT: RZ13-008, BPUD Rezoning for Saxon-Sterling Silver (Ordinance No. 02-2014)

LOCATION:

The subject property is located at the northwest and northeast corners of the intersection of Saxon Blvd. and Sterling Silver Blvd.

BACKGROUND:

The City of Deltona Planning and Development Services Department has received an application from Deltona Group Investors, LLC, to rezone the subject property from MPUD to BPUD.

The proposed property to be rezoned has an extensive history. In 2005, the subject property and adjacent land, which totaled over 20 acres, was rezoned to Mixed Use Planned Unit Development (MPUD) that contained four (4) lots. According to the approved MPUD Development Agreement (DA), each lot was earmarked for different uses. The uses included a residential component and commercial entitlements. The property was platted into four (4) lots and recorded into the public records as the *Retirement Community at Sterling Park MPUD*. In 2006, a final site plan was approved for lot 3 of the MPUD, which allowed for a 118-unit age-targeted assisted living facility. To date, the assisted living facility is the only use to be developed on the Retirement Community at Sterling Park MPUD property.

The applicant has now applied to rezone only lots 1, 2, and 4 and other residual land obtained from the vacation of road "B" from MPUD to BPUD. The rezoning application has been submitted with a new DA and a Master Development Plan (MDP) that features two (2) development scenarios (Options 1 and 2). Option 1 is commercial-retail oriented, featuring the ability to construct spaces for a myriad of uses, including and not limited to fast food restaurants, retail leasable area, a convenience store with fuel sales, and a medium-sized grocery store. Option 2 retains the grocery and convenience store formats on lots 2 and 4, as combined, and includes an office- medical office use on lot 1, in lieu of commercial-retail space at that location.

For more information concerning this proposal, including detailed graphics, public service analysis, etc., proposed Conditions of Approval, please see the attached staff report.

**ORIGINATING
DEPARTMENT:**

Department of Planning & Development Services

**PRESENTED BY
& STAFF**

RECOMMENDATION:

Presented by Chris Bowley, AICP, Planning & Development Services Director. Staff recommends that only with the inclusion of the following Conditions of Approval and the proposed changes by staff and GMB to the DA and TIA, respectively, approval of Project RZ13-008; Ordinance No. 02-2014.

1. Limit hours of operation on lots 2 and 4 for commercial uses from 7:00 AM to 10:00 PM for services, deliveries, trash collection, and general use;
2. Place service areas away from residential uses to the greatest extent possible and have those service areas screened from adjacent properties;
3. Limit a cap of 0.16 FAR on lots 2 and 4 (combined) that could allow for a ±44,000 SF facility, as listed on the MDP, and a ±5,000 SF commercial outparcel; following subdivision of the property, per Chapter 106 of the Land Development Code;
4. Scale, orient, mass, and locate any proposed commercial development as close to Saxon Blvd. as possible;
5. Limit permitted land uses on lot 1 to office uses and lots 2 and 4 to uses as listed in the C-1 zoning category, to exclude bars/nightclubs, gas stations, convenience stores, fast food restaurants, automobile service stations – type C, and other uses not allowed in the C-1 zoning category; and
6. Provide access management, as recommended in GMB’s review of the submitted TIA, to provide a signalized intersection, a deceleration lane along the frontage of lots 2 and 4, to maintain the existing 1-ft. non-vehicular ingress and egress easement along the frontage of lots 2 and 4, and comply with the Land Development Code for access management and other design standards.

**POTENTIAL
MOTION:**

“I hereby move to approve Project RZ13-008, Ordinance No. 02-2014, with the listed Conditions of Approval in the staff report and revisions to the Development Agreement and Transportation Impact Analysis, as presented.”

ATTACHMENTS:

RZ13-008 Staff Report
Ordinance No. 02-2014

Memorandum

To: Planning and Zoning Board

From: Chris Bowley, AICP

Date: December 7, 2013

Revised: February 4, 2014

Re: Project No. RZ13-008: Amendment to the Official Zoning Map for the property known as Saxon-Sterling Silver, located at the intersection of Sterling Silver and Saxon Boulevards.

I. SUMMARY OF APPLICATION:

APPLICANT: CPH, Inc.
Larry Wray, P.E.
500 W. Fulton Street
Sanford, FL 32771

Request: The City of Deltona has received an application from Deltona Group Investors, LLC, to rezone the subject property from MPUD to BPUD and amend the Master Development Plan (MDP) and Development Agreement (DA) (See Exhibit A).

A. SITE INFORMATION:

1. **Tax Parcel No.:** 8130-78-00-0020, 8130-78-00-0040
8130-78-00-000B, 8130-78-00-0001
8130-78-00-0010, 8130-78-00-0003
2. **Property Addresses:** 1001 Alabaster Way.
3. **Property Acreage:** ±11.78 acres.
4. **Property Location:** Located at the northwest and northeast corners of the intersection of Saxon Blvd. and Sterling Silver Blvd.

5. **Property Legal Description:** Lot 1, 2, and 4 tracts “B”, “C” and road “B”, of the retirement community at Sterling Park MPUD, according to the plat thereof as recorded in Map Book 53, Pages 59 and 60 of the public records of Volusia County, Florida.

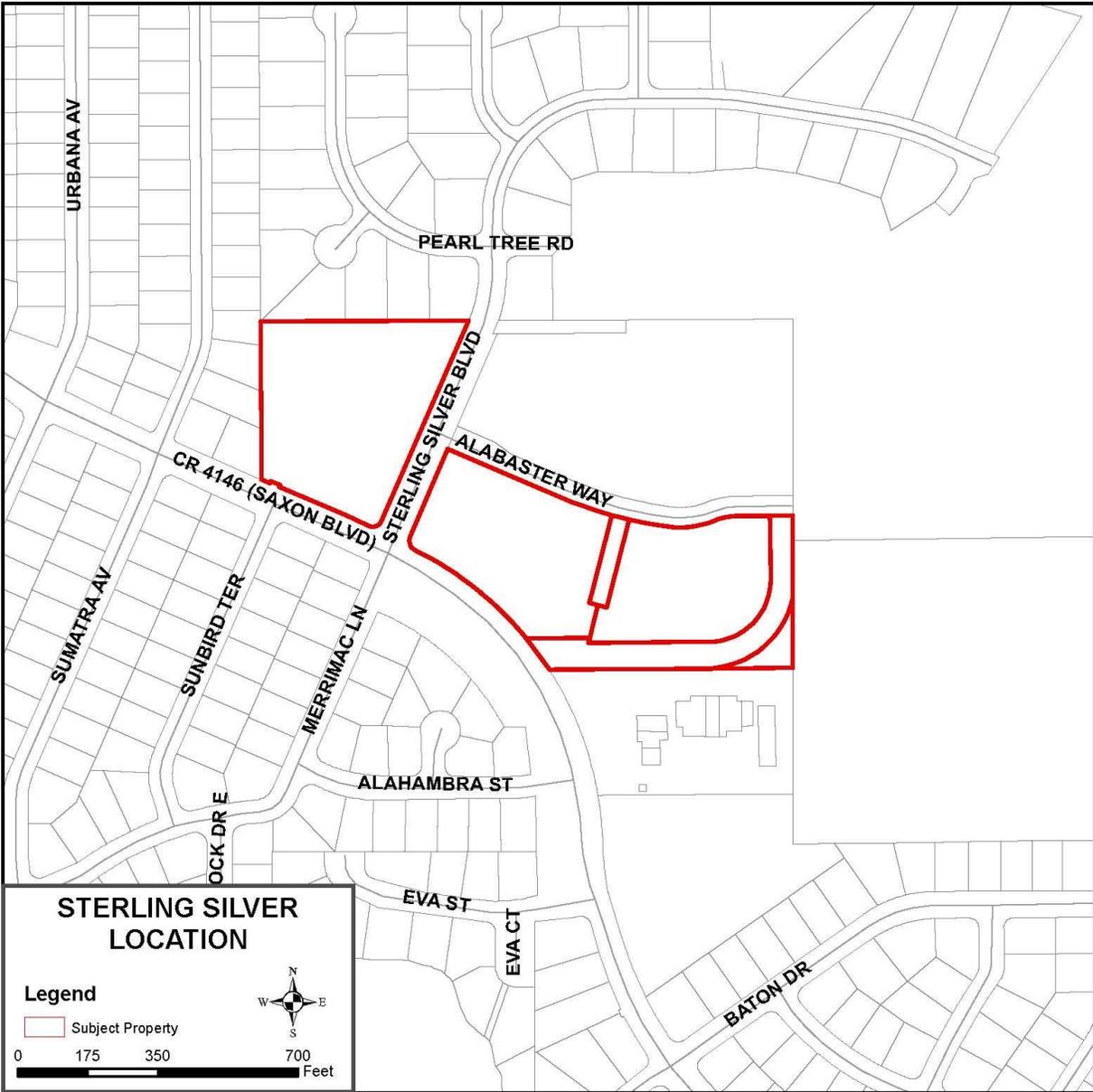


Figure 1: Location map



Figure 2: Aerial Photo

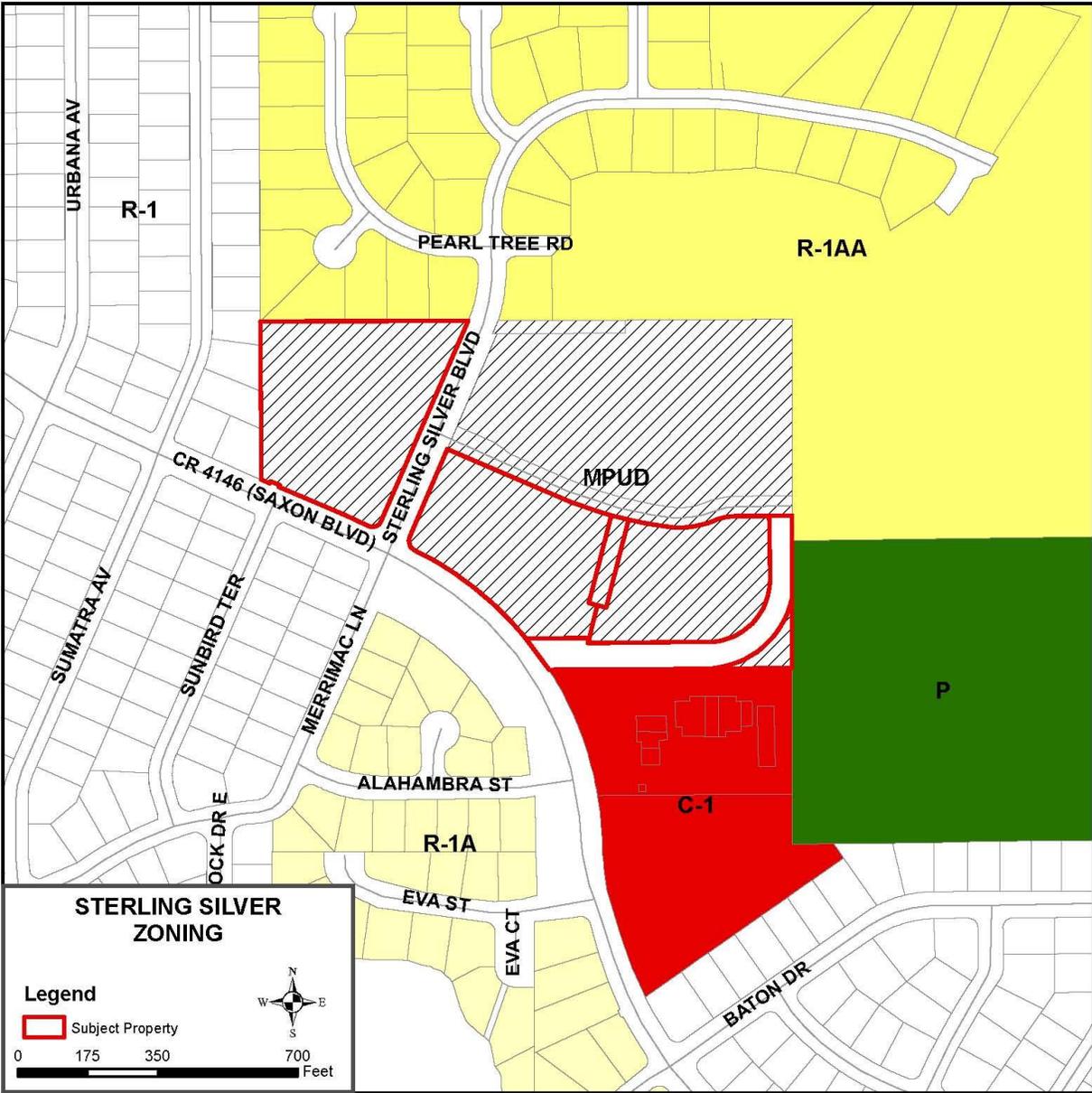


Figure 3: Existing Zoning

B. Existing Zoning:

1. **Subject Property:**
 Existing: MPUD
 Requested: BPUD

2. **Adjacent Properties**
 North: MPUD and R-1AA
 South: C-1, R-1, and R-1A

East: Public (School) and R-1
West: R-1

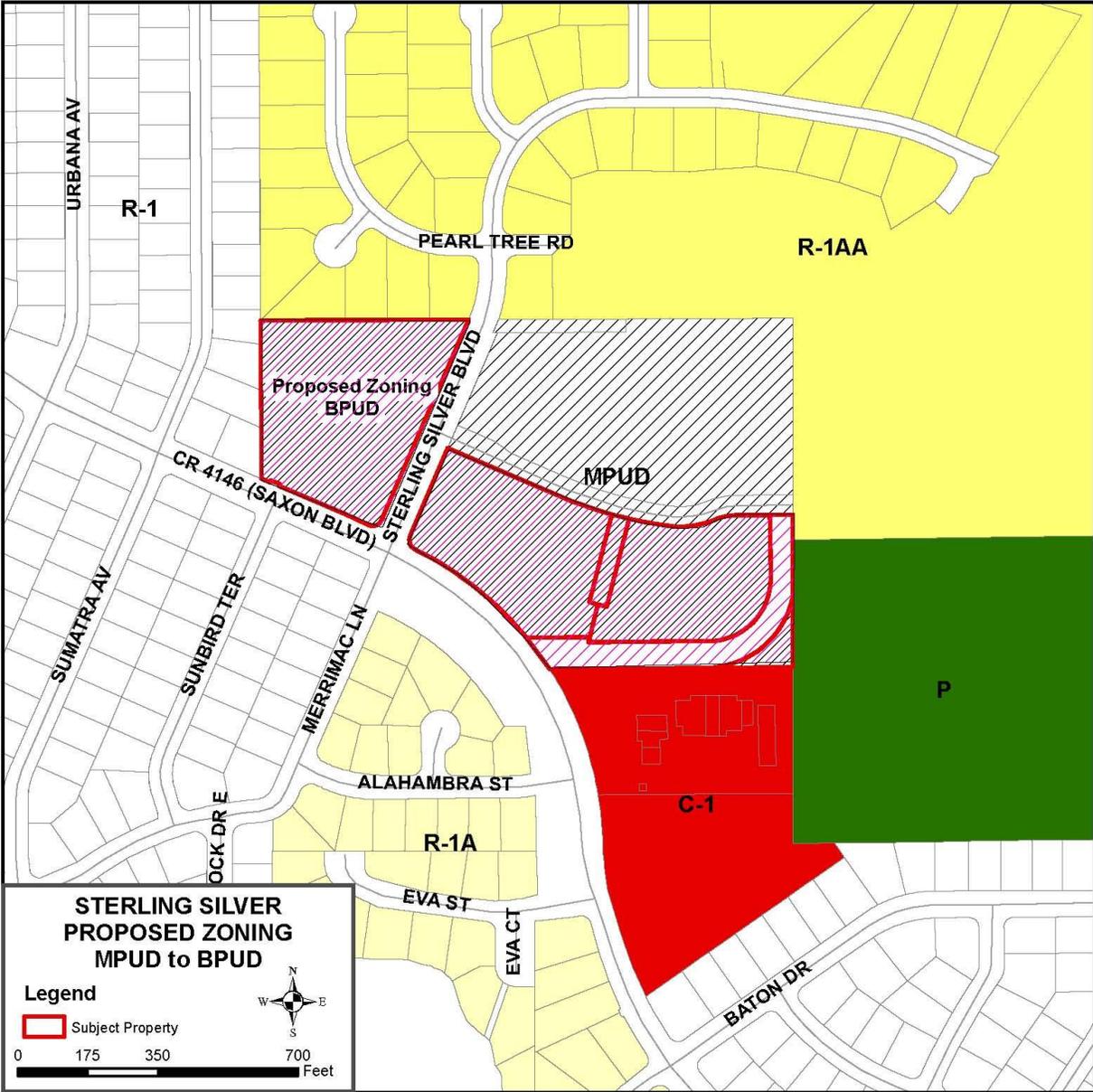


Figure 4: Proposed Zoning

for lot 3 of the MPUD, which allowed for a 118-unit age-targeted assisted living facility (multi-family residential). To date, the assisted living facility is the only use to be developed on the MPUD property.

A network of access easements and rights-of-way were required as part of the approval of the MPUD. The intent of the designed access was to provide safe ingress and egress for all of the proposed lots within the development with the least amount of impact to the critical City thoroughfare of Saxon Blvd. The access design was also to encourage cross-access to other developments in the area for interconnectivity, to facilitate internal trip capture, and to provide access to the adjacent school, office complex, and a City lift-station. The access network evolved and in 2008, the property owner abandoned a right-of-way listed on the plat as road "B", which at the time granted a full-access right along Saxon Blvd. As part of that abandonment, the City was deeded a public right-of-way depicted on the plat as tract "A" (now Alabaster Way). Since 2007, lots 1, 2, and 4 have remained vacant and undeveloped.

The applicant has now applied to rezone only lots 1, 2, and 4 and other residual land obtained from the vacation of road "B" from MPUD to BPUD. The rezoning application has been submitted with a new DA and a Master Development Plan (MDP) that features two (2) development scenarios (Options 1 and 2). Option 1 is commercial-retail oriented, featuring the ability to construct spaces for a myriad of uses, including and not limited to fast food restaurants, retail leasable area, a convenience store with fuel sales, and a medium-sized grocery store. Option 2 retains the grocery and convenience store formats on lots 2 and 4, as combined, and includes an office- medical office use on lot 1, in lieu of commercial-retail space at that location.

While commercial development can be constructed on lot 1 under the current entitlements today, these uses would be developed closest to existing residential homes to the north and west and be in close proximity to the multi-family development on lot 3. Option 1 continues that trend and also places the ability to construct commercial on lots 2 and 4. Option 2 moves commercial entitlements to lots 2 and 4 and restricts office development to lot 1 away from residential homes.

E. Support Information

Public Facilities

- a. Potable Water: Deltona Water
- b. Sanitary Sewer: Deltona Water
- c. Fire Protection: City Fire Station 65
- d. Law Enforcement: County Sheriff's Office (VCSO)
- e. Electricity: Duke Energy

F. **Matters for Consideration** – Section 110-1101, City Code of Ordinances, states that the City shall consider the following matters, when reviewing applications for amendments to the Official Zoning Map:

1. Whether it is consistent with all adopted elements of the Comprehensive Plan.

The City is underserved by commercial uses and there is a land-use imbalance between residential and non-residential land uses. To respond to this, the City's Comprehensive Plan contains policies that encourage a diversification of land uses within the City. The revised MDP is meant to simplify the MPUD, making it more viable and flexible towards the local real estate market. Therefore, the proposal to update the MDP is consistent with the Comprehensive Plan.

2. Its impact upon the environment or natural resources.

The property is largely undeveloped; primarily scrub and pine flat woods. The land is located on the DeLand Ridge geologic feature. The soil is predominately Astatula Fine Sand, with a portion of Paola Fine Sand. According to the September 2011 and soon to be updated 2014 FEMA flood zone maps; the subject property is not located within a 100 year floodplain.

The site is ±11.78 acres and may currently be used as habitat for small wildlife. Large animals likely do not use the site. Gopher tortoises may be associated with the site and the tortoises within the development will have to be relocated following state and federal permitting procedures.

3. Its impact upon the economy of any affected area.

The proposed impact upon the local economy will depend on the development pattern listed in Options 1 and 2. Both scenarios would create temporary construction jobs, but medical offices would ultimately create an employment center and, thus, higher paying professional jobs in Option 2, instead of service-oriented jobs in Option 1. If the property does develop with an office capacity under the proposed zoning, such development would help diversify the City's tax base.

4. Notwithstanding the provisions of Article XIV of the Land Development Code, Ordinance No. 92-25 [Chapter 86, Code of Ordinances], as it may be amended from time to time, its impact upon necessary governmental services such as schools, sewage disposal, potable water, drainage, fire and police protection, solid waste or transportation systems.

- a. **Schools:** The Volusia County School Board staff has indicated that this rezoning will not affect local schools.
- b. **Sewage Disposal:** The site will be served by City sewer and capacity will be available.
- c. **Potable Water:** Deltona Water will serve the site and sufficient potable water capacity is available.

- d. **Drainage:** All site related stormwater runoff will be managed on-site and all stormwater management facilities will be constructed in accordance with the necessary requirements of the City's Land Development Code and other permitting agencies.
- e. **Transportation Systems:** The applicant has submitted a Traffic Impact Analysis (TIA) as part of the application package. While the MDP contains two (2) development scenarios, the TIA only addresses Option 1 – retail ($\pm 14,000$ SF), fast food (two buildings each being $\pm 4,500$ SF), convenience store with gas pumps ($\pm 5,700$ SF) and a grocery store ($\pm 44,000$ SF). The Option 2 that features the medical office use was not included in the TIA, but would be less of a traffic generator than Option 1. Further, the TIA was formulated with a new access plan that is being proposed by the applicant. The new access plan can have an impact on traffic characteristics, both on-site and off-site.

According to the TIA, Option 1 would generate 15,676 gross daily trips. Factoring in pass-by rates, the net new trips would be reduced to 7,095 trips; or a 45% reduction. This type of pass-by reduction is not unusual for the type of uses proposed. The end result is that the project is of ample magnitude to generate a significant amount of traffic.

Traffic is not necessarily a negative attribute. A lot of traffic implies economic activity and vitality and certainly enhances land-use opportunities for property abutting major, well-traveled thoroughfares. High traffic volumes also represent a maximization of a significant public investment – roads. To manage traffic, the City has established level of service (LOS) standards for roads within the City. The LOS for Saxon Blvd. is “E”. LOS “E” can be described as a facility that is operating at the maximum capacity with traffic generally still flowing. Stoppages and some delays may be expected during peak hours.

As part of TIA investigation, numerous road segments were reviewed – especially Saxon Blvd. from Veterans Memorial Parkway (Orange City) to East Normandy Blvd. Based on the submitted TIA trip distribution, of which City staff contends is representative of the local traffic patterns, three (3) segments of Saxon Blvd. have been identified as being adversely impacted by the development proposal. The Saxon Blvd. segments are from the FDOT parking ride to I-4, I-4 to Finland Dr., and Finland Dr. to Normandy Blvd; of which the first segment is not within the City's jurisdiction and the other two (2) segments are within the City. The fact that the Saxon Blvd. corridor from I-4 to N. Normandy Blvd. has been identified by the TIA as problematic, validates existing conditions. Those Saxon Blvd. roadway segments are currently operating at a level of service “F” even without the development that is associated with this rezoning request (LOS “F” represents a failure of traffic movement and delays are common and lengthy.)

However, according to the submitted TIA, the impact on the segments of Saxon Blvd. from I-4 to Finland Dr. and Finland Dr. to Normandy Blvd. would be very small. The TIA quantifies the impact as 3.7%, but does not suggest any remedial actions to address this deficiency. The TIA also identified the signalized intersections at Saxon Blvd. at Finland Dr. and Saxon Blvd. and Normandy Blvd. as failing. The TIA suggests that the Saxon Blvd./Finland Dr. signal could be retimed to cycle five-seconds longer than the current timing; which would improve flow enough to make the intersection operate at an acceptable level of service. However, retiming the intersection signal would involve the logistically complex retiming of all of the Saxon Blvd. signals from Enterprise Rd. to Finland Dr. through the installation of a signal interconnect. The Saxon Blvd./Normandy Blvd. intersection is currently operating at an LOS of “F”. The TIA indicates that the delay at the intersection after development of the property to be rezoned will be measured at 4.6 seconds. Expressed in real world terms, it could mean more motorists sit through the first signal cycle before progressing through the intersection during the second cycle.

As a note, the submitted TIA did review Tivoli Dr. between Saxon Blvd. and Providence Blvd. Tivoli Dr., notwithstanding serving as a collector function, is classified as a local road and, according to the City’s Comprehensive Plan local roads are not to fall below a LOS of “D”. The TIA erroneously indicates that segment of Tivoli Dr. has a LOS of “E”. An analysis of traffic counts for the subject segment of Tivoli Dr. revealed that the roadway currently operates at a LOS of “C”. The trips generated by the project will impact Tivoli Dr., but it is unclear if the project will cause the Tivoli Drive segment to operate below the required threshold of an LOS of “D”.

An important component of this project, even from the first rezoning in 2005, is access management. The original MPUD DA was rife with language to ensure cross-access with a development to the south, provide internal connections between development nodes, and to limit access to Saxon Blvd.; especially through the creation of road “B”, if warranted. This coincided with intensity and land use limitations to mitigate traffic volumes.

To understand the intent of the access management, the geographic context of the property needs to be reviewed. The property fronts on Saxon Blvd. The segment of Saxon Blvd. where the property is located is a four (4) lane facility with a posted speed limit of 45 mph. The property is also located nearly at the apex of a curve as Saxon Blvd. transitions to a westerly direction. Limiting access to roadway thoroughfares is common planning practice and is something that has occurred in the City for many years to protect the capacity and function of the thoroughfare as designed. The intent is to restrict turning maneuvers and driveway cuts, which slow traffic flow and create the potential for traffic accidents. The latter reason is acute with the curvature of the road and design

speed of the segment of Saxon Blvd. associated with the project. Traffic should be directed to a safe ingress and egress, which would be the signalized intersection of Saxon Blvd. and Sterling Silver Blvd. However, to warrant a need for the aforementioned intersection to be signalized, traffic should be directed to this controlled access point for safety and functionality purposes. Finally, the need for access management is also supported by adopted roadway design standards.

The original MPUD limited access along Saxon Blvd. to three (3) strategic points. One point was located along the southern margin of the property where the property abuts an existing development known as the Saxon Medical Park. There was full access planned and platted at this point and the access was intended to be joint, or shared between the Saxon Medical Park site and the property proposed to be rezoned, as listed in the respective approved DAs for the projects.

The existing MPUD DA called for the common access point. In addition, a 2004 Developer's Agreement between the City and the owner of the Saxon Medical Park required cooperation to facilitate joint access with adjacent uses. This access was connected to an access feature referred to on the Retirement Community at Sterling Park MPUD plat as road "B". However, road "B" was vacated by the applicant in 2008, which removed the full access permitted on the subject site. The next access from Saxon Blvd. is a full access at the intersection of Sterling Silver Blvd. and Saxon Blvd. This access point exists today and is being used by a residential area and the aforementioned assisted living facility. The intersection of Sterling Silver Blvd. and Saxon Blvd. is approved to be signalized. According to the MPUD DA, the applicant is responsible for erecting a traffic signal at the Saxon Blvd./Sterling Silver Blvd. intersection associated with the development of lots 1, 2, and 4 of the MPUD site. Finally, for lot 1 located west of Sterling Silver Blvd., a right-in and right-out only access is provided onto Saxon Blvd. However, the intent is that a landscape island be built in the Saxon Blvd. median across from the subject access point to discourage illegal left turns that cross several lanes of traffic. Other access to the lots would come from Sterling Silver Blvd. and Alabaster Way, which includes existing driveway cuts into the lots 2 and 4.

A purpose of the existing MPUD access plan was to maximize the use of a central, signalized intersection. This would be safer, especially in light of the travel speeds and the curvature of Saxon Blvd. associated with the property. The access plan is also designed to protect the level of service of City roads and protecting level of service on City roads enables future development in the City to utilize the capacity savings derived from appropriate access management. The applicant is proposing changes to the access plan. The new proposal, as part of the BPUD rezoning application, abandons the cross-access requirement between the BPUD site and the Saxon Medical Park and proposes to create a new access point, located roughly equidistant along the frontage of lots 2 and 4. The

proposed access point is proposed to be limited to right-in and right-out turning movements and to be constructed with a turn lane.

This proposed access would be problematic, because the access point and related turn lane increases the potential for traffic conflicts. The proposed turn lane will commence immediately after the existing access to the Saxon Medical Park site to the south, as governed by roadway design standards. This would create a situation that, as cars are attempting to negotiate a right or left turn onto Saxon Blvd. from the Medical Park, cars would also be slowing and maneuvering to transition to the deceleration lane leading to the proposed driveway cut. This is compounded by the fact that the posted speed of 45 mph, in conjunction with the convex curve, makes traffic management in the area more difficult to navigate, is an unsafe design, and does not adhere to adopted roadway design standards. In addition, if the signal at the intersection of Saxon Blvd. and Sterling Silver Blvd. is activated, the proposed access point would create additional traffic friction. If traffic does not use the Saxon Blvd. and Sterling Silver Blvd. intersection, a signal for the intersection may not be warranted for the intersection. Without a signal, making left turns into and out of Sterling Silver Blvd. would be difficult and unsafe. Finally, the potential to introduce oversized vehicles into the proposed limited access point would further compound traffic safety and may limit the function and capacity of Saxon Blvd.

The applicant is responsible for signaling the intersection of Sterling Silver Blvd. and Saxon Blvd., per the original MPUD DA that governed this area. The change is that the applicant will construct a string-pole signal system instead of the mast arm design, as approved by City as part of the original MPUD DA. The TIA did include a signal warrant element. However, the background data for the signal warrant conclusions is inconsistent. For example, the 5-6 p.m. period shows a total of 339 trips on the Hourly Trip Generation determination. The Warrant 1 item shows a total of 286 trips and the Appendix D, p.m. peak period shows a total of 245 trips. Finally, Appendix E, Intersection Analysis, Future Total Analysis, shows a different 282 p.m. peak trips.

The applicant is proposing to eliminate the original DA requirement for median operations associated with the right-in and right-out access from lot 1 to Saxon Blvd. The requirement for the raised median was designed to enhance traffic safety and protect traffic capacity on Saxon Blvd to allow for non-residential intensive land uses at the subject site. Right turn islands, sometimes referred to as 'pork chops', are routinely violated by motorist who drive over the islands to make illegal left turns and the inclusion of 'bat wings' on those 'pork chops' will not suffice for safety. The raised median will more thoroughly discourage illegal left turns.

Based on the above, the following will be required for access management and mitigation for traffic safety:

1. Revise the submitted TIA to include those changes and corrections of inconsistencies listed in the GMB peer review letter to the City, dated January 21, 2014 (See Exhibit B).
2. The City Land Development Code includes detailed and technical requirements with regard to roadway design and access within Chapter 96. There will be over 15,000 trips turning in and out of the property every day. The site is located on a four (4) lane City thoroughfare that has a posted speed limit of 45 miles per hour. There is one existing access to the property to be rezoned – Sterling Silver Blvd. According to Section 96-37, there will need to be deceleration lanes for both left and right turning movements on to Sterling Silver Blvd. According to Section 96-37(a)(10)(c)(5)(i), a left turn lane with 200' of storage and 100' of transition will be a required improvement along Saxon Blvd. to facilitate turning movements onto Sterling Silver Blvd.
3. The City and/or County may require more storage, if warranted by the ultimate development program. As part of the applicant's TIA, a dual left turn lane from Saxon Blvd. to Sterling Silver Blvd. is recommended for traffic safety. The dual left turn lane would generate ample storage and ensure that more cars would be able to access the property that would be warranted by the proposed development program. The dual left turn lane would require that a lane be added to Sterling Silver Blvd. from Saxon Blvd. to Alabaster Way.
4. The City Land Development Code Section 96-37(a)(10)(c)(5)(ii) will require a right turn lane from Saxon Blvd. onto Sterling Silver Blvd. The required dimension of the right turn lane is a minimum of 150 feet of storage and 100 feet of transition. Scaling the 250 foot design of the right turn lane reveals that nearly all of the property frontage on Saxon Blvd., east of the Saxon Blvd./Sterling Silver Blvd. intersection should be devoted to a deceleration/right turn lane. The right turn lane would render the requested right-in and right-out access between lots 2 and 4 of the project in direct conflict and is also considered too close to the proposed signal at Sterling Silver Blvd. intersection. Thus, the full access point where road "B" was located along with the joint access to the Saxon Medical Park property provides a safer condition.

There are two off-site components within the TIA to be addressed. One is the traffic volumes and off-site impacts and the other is off-site mobility, safety and access management. There will be off-site impacts to road way segments and intersections. These congested areas are constrained points – Saxon Blvd. from I-4 to Normandy Blvd. and the intersections of Saxon Blvd and Finland Dr. and Saxon Blvd. and N. Normandy Blvd. The segments of Saxon Blvd. are constrained without the project and are currently operating below the allowable LOS of "E". According to the submitted TIA, the project will contribute another

3.7% impact to these segments. Typical methods to address this condition are to deny the project based on a lack of roadway capacity, scale back the project in intensity to minimize traffic impacts, mitigate for off-site impacts, or accept higher traffic volumes in certain areas with the understanding that general mobility and safety will be maintained. To encourage appropriate development and to reduce sprawl, the City allows backlogged roads to be degraded up to 20% from the adopted LOS. The flexibility to approve development, notwithstanding allowable LOS thresholds, is described in the following Comprehensive Plan policy:

Policy CIE1-1.4

The determination of concurrency for backlogged facilities, included in the Thoroughfare System segments shall be consistent with the revised Land Development Regulations and established in the following manner (9J-5.016(3)(c)(1,3,4&6):

a. Establish Benchmark Traffic Counts

The most recent twenty-four hour traffic counts taken prior to the adoption of this Comprehensive Plan shall be used as the benchmark counts for each backlogged road identified in the Transportation Element.

b. Set Percent Thresholds of Benchmark Traffic Counts

Each of these backlogged thoroughfare roads shall not be allowed to degrade its operational service standards on a peak hour basis (using the most recent sanction FDOT Highway Capacity Tables) by allowing no more than twenty (20) percent of the peak hour bench mark counts for such facilities in The City. Some backlogged thoroughfare roads will only be allowed to be degraded ten (10) or fifteen (15) percent from the adopted Level of Service.

c. Track Development - Trip Generation/Distribution

The City shall track all proposed new developments and based on generally accepted traffic modeling procedures identify the likely number of trips generated by such developments and their distribution specifically for this objective to the previously identified backlogged thoroughfare roads. Tracking shall start upon the Comprehensive Plan's effective date of the revised Land Development Regulations.

d. Tracking on a Cumulative Basis

This tracking of the additional trips to the twenty percent threshold of the benchmark counts and trips originating within the boundaries of the Future Transportation Map shall be done on a cumulative basis following the adoption of this plan.

e. Cumulative Thresholds Twenty, Fifteen and Ten Percent

The City shall not approve any additional final development orders, (excluding vested properties) including building permits, once the percent threshold for projects that would generate trips in excess of ten/fifteen/twenty percent on a peak hour-basis, unless a final development order is subject to the adoption and implementation of an Area-wide Traffic Action Mitigation Plan. An Area-wide Traffic Action Mitigation Plan shall include, but not be limited to, the following activities:

- *additional or modified turn lanes*

- *additional or modified signalization*
- *incentives for mass transit use where available*
- *incentives for van/carpooling programs*
- *promote staggered work hours*
- *operating lanes*

f. 100 percent mitigation of the impacts of a proposed development

It shall be the goal of each Area-wide Traffic Action Mitigation Plan to achieve 100 percent mitigation of the impacts of a proposed development. Such plans shall include, when applicable, participants in addition to the property owner or applicant in question such as but not limited to adjacent property owners and business establishments.

Providing flexibility with regard to traffic LOS standards is important for the City to achieve economic goals than the free flow of traffic during relatively short periods of time during any given day on just a few short segments of roadway. Overriding goals include promoting compact urban development patterns that also limits the need for annexations, diversify the tax base, address the jobs/housing imbalance that drives many of the traffic patterns within the City; provide more retail and service opportunity to support the existing population, as well as protect the mobility of the City.

Saxon Blvd. is a Volusia County road. Therefore, the County does have oversight in how Saxon Blvd. will be accessed through the Use Permit process. The County Code requirements for deceleration lanes and related storage dimensions are identical to those of the City. In addition, the County has the same basic transportation goals as the City to ensure safe and efficient mobility. While, the County may issue a Use Permit for access based on several parameters, the City is responsible for managing and approving the rezoning and related MDP that addresses access and traffic. Therefore, the City will uphold its Land Development Code requirements to ensure that safe access management that meets the City's and County's roadway design standards are met. The current access management approved under the existing MPUD is warranted to be adequate for the project. The newly proposed access management needs to be amended for staff to support this rezoning application. Finally, the City will uphold the existing one-foot non-vehicular ingress and egress easement on the existing plat along Saxon Blvd. to protect the capacity and function of that thoroughfare.

Any changes in circumstances or conditions affecting the area.

There has been no significant change affecting the area.

Any mistakes in the original classification.

No known mistakes in the MPUD original classification.

Its effect upon the public health, welfare, safety or morals.

As part of the rezoning application to BPUD, the applicant has submitted a new DA. Staff has reviewed the DA and has made comments in a Microsoft Word strike-through and underline format but did not attempt to rewrite the DA. The DA with staff comments is attached.

CONCLUSION/STAFF RECOMMENDATION

In 2005, the subject property was approved for commercial and office uses on lot 1, with a floor area ratio (FAR) cap of 0.25. Lots 2 and 4 were also approved for medical office use (0.12 FAR cap) and for general office use (0.25 FAR cap). The approved MPUD contemplated a mixture of land uses with the assisted living facility on lot 3 and commercial and office uses within the overall project. The master development program, with its limitation on land uses, intensities, and access management, was intended to provide a mixed-use program over the four lots, but more importantly, sought to control access management through a series of interconnected roadway facilities, easements, and a traffic signal designed to afford safe ingress and egress. These measures also attempted to facilitate some level of compatibility between more intensive non-residential uses and the less intensive adjacent residential homes by placing FAR caps on development in a limited and quantifiable manner.

The applicant is proposing a development program that would greatly increase the range of permitted uses, intensities, location, and access management from that previously approved. The MDP submittal and accompanying DA seeks approval for two (2) development scenarios on lot 1 that provides a development alternative at the rezoning level and also allows for commercial development on lots 2 and 4. While both scenarios contemplate commercial development on lots 2 and 4, Option 1 would also continue to allow for commercial development on lot 1; thus, permitting commercial development throughout the project. Option 2 affords a more balanced development program by interchanging the location of office and commercial uses as currently approved, from commercial use on lot 1 to office use and from office use on lots 2 and 4 to commercial use. Under this scenario, the more intensive commercial development would be located away from the existing single family residential homes and placed on a tract buffered by the existing Alabaster Way right-of-way.

Staff has reviewed the proposed development program submitted by the applicant with the accompanying DA and compared it to the previous approvals in 2005. The proposed development program was reviewed in relation to and upholding the City's goals, objectives, and policies in the Comprehensive Plan, and regulatory criteria in the Land Development Code that requires adjacency and compatibility between land uses. Part of that compatibility and function is associated with access management and the accommodation of existing and proposed capacity of the area roadway network for current conditions and following project build-out. Further, the applicant submitted a TIA and the City used a peer review traffic consultant (GMB) to ensure that the recommended roadway network improvements are functional, as designed. An important component of that is to ensure that public health, safety, and welfare is paramount.

Of the scenarios submitted by the applicant, Option 2 achieves the following:

1. Is within the 0.25 FAR cap for lot 1;

2. Generates fewer average daily trips than the more intensive commercial uses proposed in Option 1;
3. In design, is more compatible with adjacent land uses through separation between more intensive non-residential land uses and less intensive residential land uses, odors, noise, light, hours of operation, etc.;
4. Is less service oriented with the potential for fewer oversized vehicles to be present; and
5. Potentially can provide an employment center with less land use intensity.

When viewed holistically, Option 2 provides greater potential for land use compatibility and access management on the three lots within the BPUD. Option 2 is also favorable to the existing roadway network. This scenario would place commercial or office development along the frontage of Saxon Blvd., with a public right-of-way (Alabaster Way) as a separation from residential uses. This utilizes the frontage along Saxon Boulevard, to the greatest potential, and removes the potential for commercial development on lot 1. The ultimate goal is to provide more compatibility from adjacent land uses, site function, and to achieve a balance to allow for development. For further definition, see Exhibit B (attached BPUD DA) that has been revised in strike-through and underline format from the version proposed by the applicant.

To promote adjacency and compatibility in keeping with the City's Comprehensive Plan and Land Development Code, staff is proposing the following Conditions of Approval be included to be able to rezone the subject property to BPUD:

1. Limit hours of operation on lots 2 and 4 for commercial uses from 7:00 AM to 10:00 PM for services, deliveries, trash collection, and general use;
2. Place service areas away from residential uses to the greatest extent possible and have those service areas screened from adjacent properties;
3. Limit a cap of 0.16 FAR on lots 2 and 4 (combined) that could allow for a $\pm 44,000$ SF facility, as listed on the MDP, and a $\pm 5,000$ SF commercial outparcel; following subdivision of the property, per Chapter 106 of the Land Development Code;
4. Scale, orient, mass, and locate any proposed commercial development as close to Saxon Blvd. as possible;
5. Limit permitted land uses on lot 1 to office uses and lots 2 and 4 to uses as listed in the C-1 zoning category, to exclude bars/nightclubs, gas stations, convenience stores, fast food restaurants, automobile service stations – type C, and other uses not allowed in the C-1 zoning category; and
6. Provide access management, as recommended in GMB's review of the submitted TIA, to provide a signalized intersection, a deceleration lane along the frontage of lots 2 and 4, to maintain the existing 1-ft. non-vehicular ingress and egress easement along the frontage of lots 2 and 4, and comply with the Land Development Code for access management and other design standards.

Only with the inclusion of the above-listed Conditions of Approval and the proposed changes by staff and GMB to the DA and TIA, respectively, staff will support and recommend approval of Project RZ13-008.

MASTER DEVELOPMENT PLAN
OPTION 1
SAXON STERLING SILVER BUD
 DELTONA, FLORIDA

02-03-14 10:08:05 AM

Job No.: W9401.1
 Date: 6-12-13
 Scale: 1" = 50'
 Approved by: H.L.W.
 Checked by: H.L.W.
 Drawn by: R.N.C.
 Designed by: R.N.C.

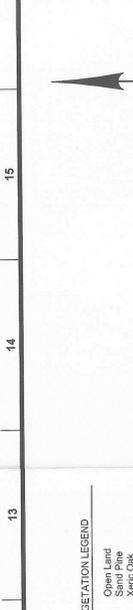
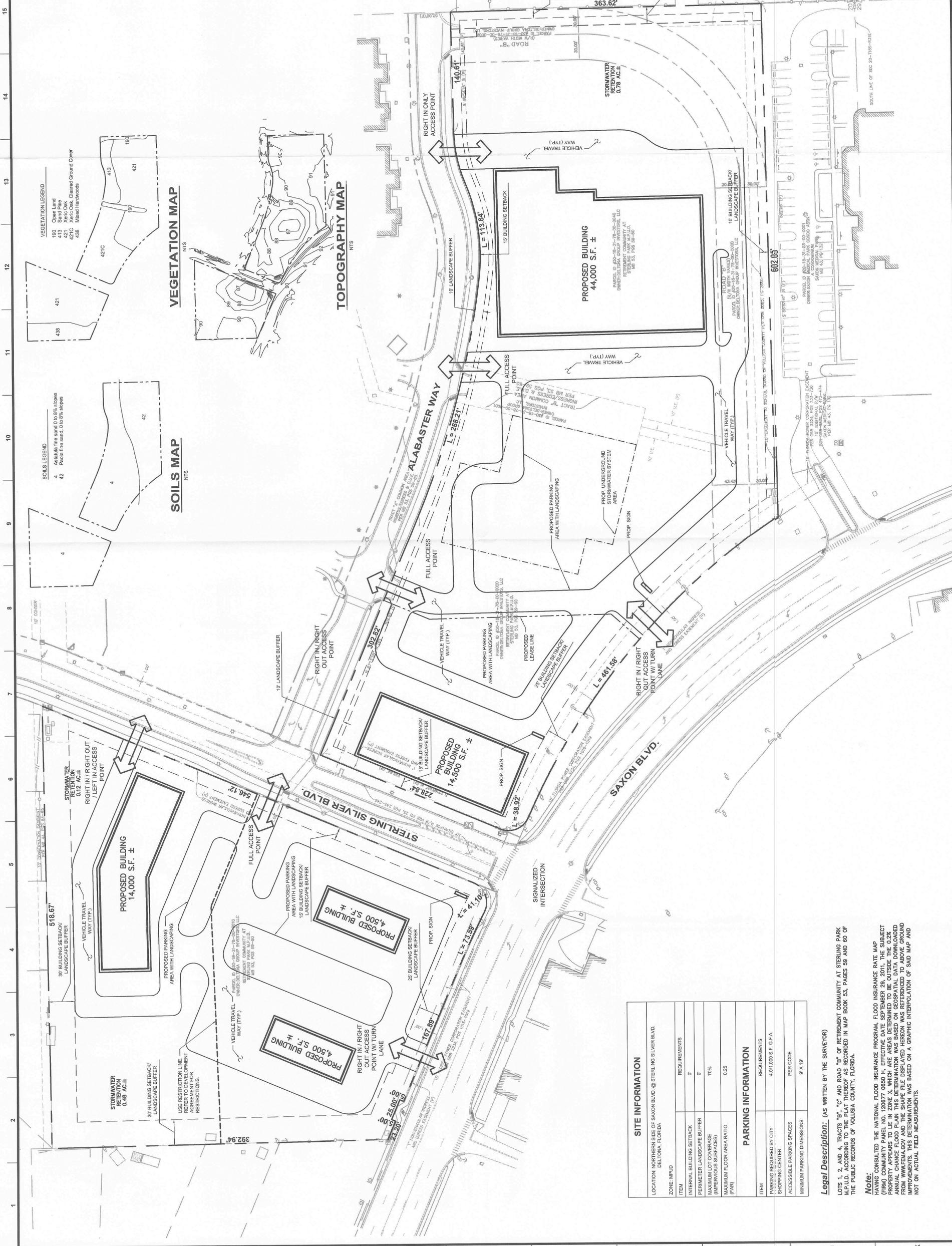
No.	Date	Revision
1	6/12/13	PER SITE PLAN REVISIONS

By	Revision
H.L.W.	

HOWARD L. WRAY, JR., P.E.
 F.L.P.E. NO. 55557

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 Traffic / Transportation



SITE INFORMATION	
LOCATION	NORTHERN SIDE OF SAXON BLVD. @ STERLING SILVER BLVD. DELTONA, FLORIDA
ZONE	MFUD
ITEM	REQUIREMENTS
INTERNAL BUILDING SETBACK	0'
PERIMETER LANDSCAPE BUFFER	0'
MAXIMUM LOT COVERAGE (IMPERVIOUS SURFACES)	70%
MAXIMUM FLOOR AREA RATIO (FAR)	0.25

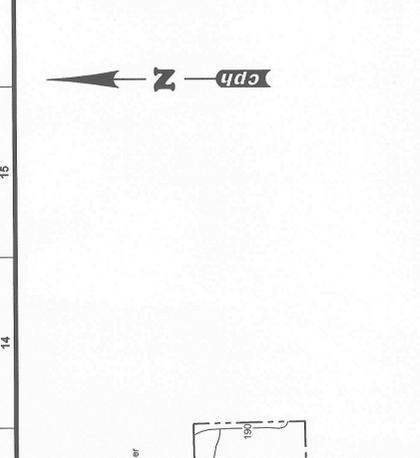
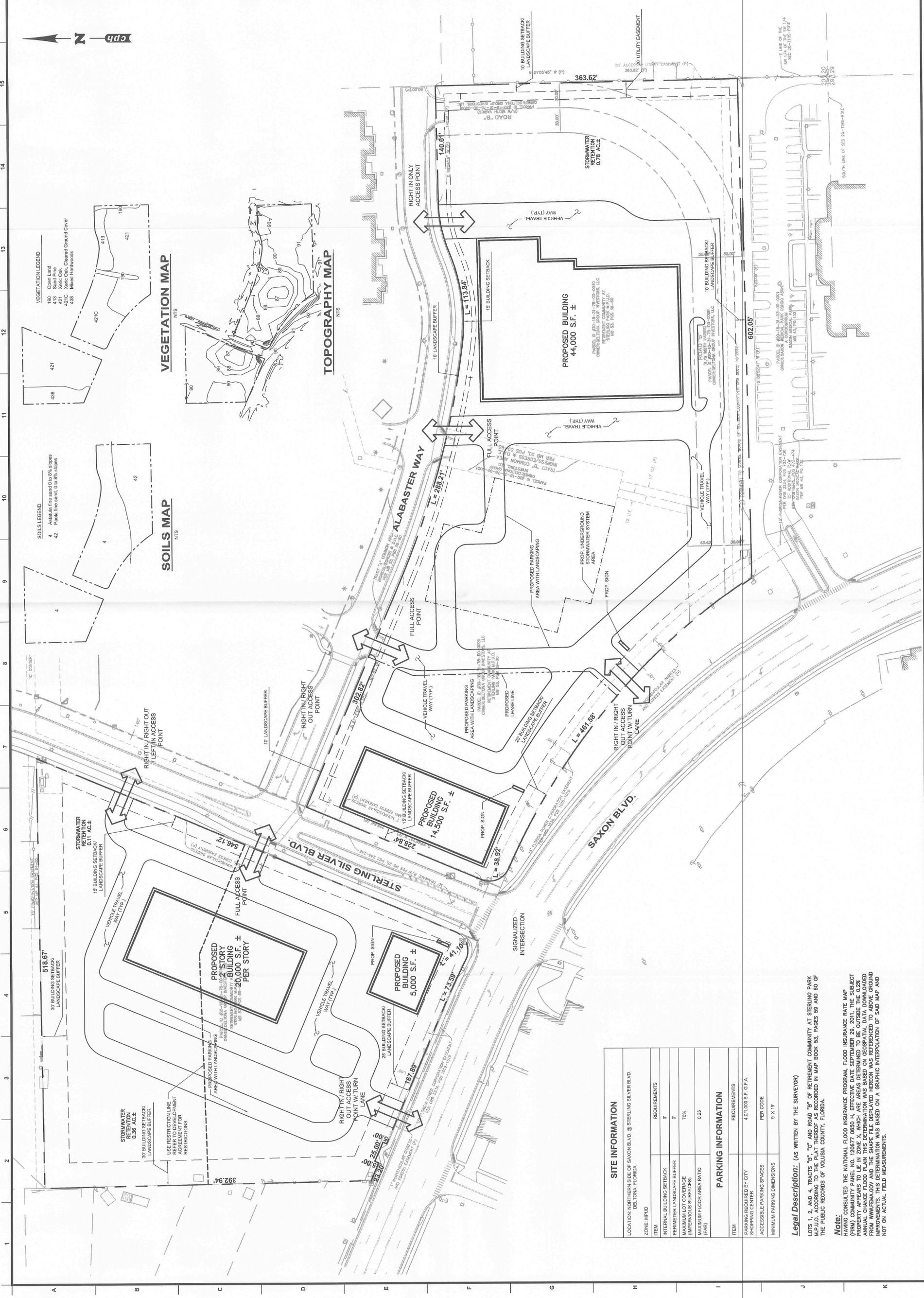
PARKING INFORMATION	
ITEM	REQUIREMENTS
PARKING REQUIRED BY CITY	4,071,000 S.F. G.F.A.
SHOPPING CENTER	
ACCESSIBLE PARKING SPACES	PER CODE
MINIMUM PARKING DIMENSIONS	8' X 19'

Legal Description: (AS WRITTEN BY THE SURVEYOR)

LOTS 1, 2, AND 4, TRACTS "B", "C", AND ROAD "B" OF RETIREMENT COMMUNITY AT STERLING PARK M.P.U.D., ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 53, PAGES 59 AND 60 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA.

Note:
 I HAVE CONSULTED THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 120877 0850 H, EFFECTIVE DATE SEPTEMBER 29, 2011. THE SUBJECT PROPERTY APPEARS TO LIE IN ZONE "X", WHICH ARE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN. THIS DETERMINATION WAS BASED ON GEOSPATIAL DATA DOWNLOADED FROM WWW.FEMA.GOV AND THE SHAPE FILE DISPLAYED HEREON WAS REFERENCED TO ABOVE GROUND IMPROVEMENTS. THIS DETERMINATION WAS BASED ON A GRAPHIC INTERPOLATION OF SAI MAP AND NOT ON ACTUAL FIELD MEASUREMENTS.

Job No.:	W9401.1
Date:	6-12-13
Scale:	1" = 50'
Approved by:	H.L.W.
Checked by:	H.L.W.
Drawn by:	R.M.C.
Designed by:	R.M.C.
Prepared by:	CPH, Inc.
500 West Fulton St. Sarasota, FL 34237 PH: 941.552.8811 FAX: 941.552.8811 Emp. C.O.A. No. 3215 Survey Lic. No. 7143 Professional Seal Landscape Lic. No. LC0000298	
Revision	By
1	H.L.W.
2	H.L.W.
3	H.L.W.
4	H.L.W.
5	H.L.W.
6	H.L.W.
7	H.L.W.
8	H.L.W.
9	H.L.W.
10	H.L.W.
11	H.L.W.
12	H.L.W.
13	H.L.W.
14	H.L.W.
15	H.L.W.



SITE INFORMATION	
LOCATION:	NORTHERN SIDE OF SAXON BLVD. @ STERLING SILVER BLVD. DELTONA, FLORIDA
ZONE:	MPUD
INTERNAL BUILDING SETBACK	0'
PERIMETER LANDSCAPE BUFFER	0'
MAXIMUM LOT COVERAGE (IMPERVIOUS SURFACES)	70%
MAXIMUM FLOOR AREA RATIO (FAR)	0.25

PARKING INFORMATION	
ITEM	REQUIREMENTS
PARKING REQUIRED BY CITY	4.01/1,000 S.F. G.F.A.
ACCESSIBLE PARKING SPACES	PER CODE
MINIMUM PARKING DIMENSIONS	9' X 19'

Legal Description: (AS WRITTEN BY THE SURVEYOR)
LOTS 1, 2, AND 4, TRACTS "B", "C" AND ROAD "B" OF RETIREMENT COMMUNITY AT STERLING PARK SHOPPING CENTER, ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 53, PAGES 58 AND 60 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA.

Note:
HAVING CONSULTED THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY PANEL NO. 120577 0550 H, EFFECTIVE DATE SEPTEMBER 29, 2011, THE SUBJECT PROPERTY APPEARS TO BE IN ZONE "X", WHICH ARE AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL FLOOD FLOOD PLAIN. HOWEVER, THE SURVEYOR HAS CONDUCTED VISUAL INSPECTIONS AND PHOTOGRAPHS OF THE SUBJECT PROPERTY AND HAS DETERMINED THAT THERE ARE NO SIGNIFICANT ELEVATION CHANGES OR IMPROVEMENTS THAT WOULD AFFECT THE FLOOD PLAIN. THIS DETERMINATION WAS BASED ON A GRAPHIC INTERPOLATION OF S.A.D. MAP AND NOT ON ACTUAL FIELD MEASUREMENTS.



GMB ENGINEERS & PLANNERS, INC.

TO: Mr. Ron Paradise
FROM: Jorge Tolosa, P.E.
DATE: January 27, 2014
RE: Saxon Sterling Silver BPUD
Transportation Impact Analysis
GMB Project No.: 13-162.01

The purpose of this memorandum is to provide a review of the Saxon Sterling Silver BPUD Transportation Impact Analysis (TIA) dated November 2013. Specific comments and findings are provided below.

Comment # 1 (General Comment):

The TIA only addresses scenario one which is comprised of retail (14,000 square feet), fast food (two buildings each being 4,500 square feet), convenience store with gas pumps (5,700 square feet), and a grocery store (44,000 square feet). The second scenario that features the medical office use was not included in the TIA. Please note that additional comments may be provided upon the submittal of a TIA addressing the second scenario.

Comment # 2 (Site Access):

As seen in the site plan included in page 6, a 1 foot non-vehicular easement prohibits the proposed Driveways 1 and 2. As such the traffic analysis should be revised based on access to the site being provided only at Sterling Silver Boulevard and Alabaster Way. In addition, Figure 2-2 (page 6) shows four (4) access points along Alabaster Way. However, the site access description in page 3 of the report only references three (3) access points to Alabaster Way. Please revise this discrepancy.

Comment # 3 (Table 3-1):

Please use the equations (instead of the rates) provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition to estimate the trip generation for the 44 KSF supermarket (ITE Code 850) during the p.m. peak hour and the 14 KSF shopping center (ITE Code 820) during the a.m. peak hour. Please revise Table 3-1 and all the associated analysis accordingly.

GMB Orlando
2602 E. Livingston St.
Orlando, FL 32803
Office: 407.898.5424
Fax: 407.898.5425

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Comment # 4 (Pass-By Capture):

The methodology document included in Appendix A states that “*the pass-by trips will be checked to be less than 14% of the adjacent street peak hour traffic*”. However, based on a review of the trip generation calculations included in Appendix B, the pass by trip capture is anticipated to be 373 trips (171 NE Corner and 202 NW Corner) during the a.m. peak hour and 456 trips (282 NE Corner and 174 NW Corner) during the p.m. peak hour. Furthermore, Appendix B also includes a pass-by capture check calculation which shows that Saxon Boulevard from Normandy Boulevard to Tivoli Drive has a year 2011 peak hour background traffic of 2,223 trips. As such, it is noted that the pass by trip capture reduction for the development during both, the a.m. peak hour and p.m. peak hour is higher than 14% of the adjacent street peak hour traffic (2,223 trips x 14% = 311 trips). Please ensure that the pass by capture trips from the **total** development does not exceed 14% of the adjacent street peak hour traffic. Please revise Table 3-2 and all the corresponding analysis accordingly.

Comment # 5 (LOS Standard):

Pursuant to Policy T1-4.3 of the City of Deltona Transportation Element, the adopted LOS standard for local roadways is D. As such, please revise the LOS standard for Tivoli Drive from Normandy Boulevard to Providence Boulevard from E to D in Tables 4-1 and 5-1.

Comment # 6 (Table 4-1):

Please revise Table 4-1 based on the following comments and recommendations:

- The number of lanes along Normandy Boulevard from Deltona Boulevard to Providence Boulevard should be revised from 3 lanes to 2 lanes.
- The number of lanes along Normandy Boulevard from Providence Boulevard to Saxon Boulevard should be revised from 2 lanes to 3 lanes. As such the peak hour two way capacity for this segment should be revised from 1,269 to 1,332 (1,410 service volumes at LOS E x 0.9 adjustment for non-state roadways x 1.05 adjustment for 2 lane divided roadways).



- Please revise the project trip calculations in this table. For example, the project traffic along Saxon Boulevard from Normandy Boulevard to Sterling Boulevard should be revised from 275 to 278 (524 p.m. peak hour net external trips x 53% distribution = 278 trips).

Comment # 7 (Project Traffic Distribution):

Please provide a model plot showing the distributions for Saxon Boulevard from Enterprise Road to I-4.

Comment # 8 (Table 5-1):

It is noted that Table 5-1 indicates that the development is anticipated to have an adverse impact on two (2) roadway segments along Saxon Boulevard (from I-4 to Finland Drive and from Finland Drive to Normandy Boulevard) during the future year 2016 conditions. It is recommended that the TIA provides remedial actions to address these deficiencies. In addition, please revise Table 5-1 based on the following comments and recommendations to ensure that no additional roadway segments are anticipated to be adversely impacted by the development:

- Please revise the number of lanes along Saxon Boulevard from Sterling Silver Boulevard to Tivoli Drive from 2 lanes to 4 lanes.
- The peak hour two way capacities, included in Table 5-1, for the roadway segments of Saxon Boulevard (from Sterling Silver Boulevard to Normandy Boulevard), Tivoli Drive (from Saxon Boulevard to Providence Boulevard), and Normandy Boulevard (from Saxon Boulevard to Deltona Boulevard) should be revised to be consistent with the capacities included in Table 4-1.
- Please ensure that there is consistency between Tables 4-1 and 5-1. For example, the project traffic along Saxon Boulevard from Normandy Boulevard to Sterling Boulevard is shown as 275 in Table 4-1 and 276 in Table 5-1.
- It is noted that the existing year 2013 traffic volumes were grown (by an annual growth rate of 2.5%) from the year 2012 volumes provided in the Volusia County 2012 Average Annual Daily Traffic & Historical Counts



spreadsheet. Please make sure to include the base year for the existing conditions in the table header to facilitate any further reviews. Likewise, please indicate the future analysis year in the table header.

- Please revise the existing year 2013 volumes for the roadway segments of Saxon Boulevard from Sterling Silver Boulevard to Tivoli Drive from 896 to 2,239.
- Please revise the existing year 2013 volumes for the roadway segments of Saxon Boulevard from Tivoli Drive to Providence Boulevard from 771 to 896.
- Please revise the existing year 2013 volumes for the roadway segments of Saxon Boulevard from Providence Boulevard to Normandy Boulevard from 509 to 771.
- Please provide an explanation of how the year 2013 volumes were derived for the roadway segment of Normandy Boulevard from Saxon Boulevard to Deltona Boulevard. Based on a review of Figure 1, it is noted that the two way p.m. peak hour volume along this roadway segment is currently 954 trips (439 NB and 515 SB) while Table 5-1 shows a p.m. peak two way traffic volume of 693 trips. Please explain this discrepancy and revise as necessary.

Comment # 9 (Appendix C):

Please provide the intersection traffic movement count for the intersection of Tivoli Drive and Providence Boulevard during the a.m. peak hour conditions.

Comment # 10 (Appendix D):

Please revise the intersection traffic volume derivations included in Appendix C (and all the associated intersection analyses) based on the following comments and recommendations:

- Please ensure that the a.m. peak and p.m. peak hour project traffic distributions along the movements of the study area intersections included in Figures 3A and 3B are consistent with the project trip distributions included in Figure 4-1. For example, the project traffic



distributions along the movements of the intersection of Saxon Boulevard and Normandy Boulevard should be revised as follows:

- Eastbound thru from 47% to 27%.
 - Northbound right from 2% to 13%
 - Southbound left from 4% to 13%.
 - Westbound left from 2% to 13%.
 - Westbound thru from 47% to 27%.
 - Westbound right from 4% to 13%.
- Please revise the calculations used in deriving the project traffic volumes included in Figure 5A for the a.m. peak and p.m. peak hour conditions. For example, under the assumption that the project traffic distribution percentages included in Figure 3A were correct, the project traffic volumes at the intersection of Saxon Boulevard and Tivoli Drive would have to be revised as follows:
 - Eastbound left from 8 to 14 ($21\% \times 67$ outbound trips = 14 trips).
 - Eastbound thru from 9 to 15 ($23\% \times 67$ outbound trips = 15 trips).
 - Eastbound right from 1 to 2 ($3\% \times 67$ outbound trips = 2 trips).
 - Southbound right from 24 to 18 ($21\% \times 85$ inbound trips = 18 trips).
 - Westbound thru from 12 to 20 ($23\% \times 85$ inbound trips = 20 trips).
 - Northbound left from 2 to 3 ($3\% \times 85$ inbound trips = 3 trips).
 - We were not able to figure out how the pass by trips were assigned at the intersection of Saxon Boulevard and Sterling Silver Boulevard and the project entrances. Please provide a stand-alone figure showing the pass by trips during the a.m. peak and the p.m. peak hours.
 - Please revise the a.m. peak and p.m. peak future total intersection traffic volumes derivation based on the above comments and revise the intersection analyses. Please ensure to include all the calculations used in deriving the future total intersection traffic volumes. For example, the Figure should show Future Background Traffic + NE Quadrant Project Traffic + NE Quadrant Pass By Traffic + NW Quadrant Project Traffic + NW Quadrant Pass By Traffic = Total Traffic.



Comment # 11 (Appendix E):

The traffic volumes shown in the HCS summary sheets included in Appendix E and the future total traffic volumes included in Figure 6 of Appendix C are not consistent for all of the analysis intersections. For example, the a.m. peak hour total traffic volumes at the intersection of Saxon Boulevard and Sterling Silver Boulevard in the eastbound approach should be revised from 171 to 120 for the left turn movement and 509 to 531 for the thru movement. Please ensure that the 2016 future total traffic volumes included in Appendix C are inputted correctly in HCS. In addition, please revise the analysis results as necessary.

Comment # 12 (Table 5-2):

Please revise Table 5-2 and all the associated analysis based on the following comments and recommendations:

- As mentioned on **Comment # 5**, the City adopted LOS standard for Tivoli Drive from Normandy Boulevard to Providence Boulevard is D. As such, please revise the LOS standard for the intersections of Saxon Boulevard and Tivoli Drive and Providence Boulevard to Tivoli Drive from E to D. In addition, since the intersection of Saxon Boulevard and Tivoli Drive is anticipated to operate at LOS E during the year 2016, please identify the improvements necessary to alleviate the anticipated adversities at this intersection.
- As noted in this table, the intersection of the Saxon Blvd and Finland Drive is anticipated to operate at LOS F during the 2016 future total a.m. peak hour conditions. The applicant states that by modifying the cycle length from 120 to 125 seconds during the a.m. peak hour, the intersection is expected to operate at an acceptable LOS. It is to be noted however, that in order to modify the cycle length at this intersection, all the signalized intersections along the Saxon Boulevard corridor would have to be retimed since this is part of a computerized signal system and there are traffic impacts to the interchange ramps.
- It is indicated in page 15 of the report that *“The intersection of Saxon Boulevard & Normandy Boulevard is operating at LOS F in existing and future*



background conditions. In future total conditions, with the addition of project traffic this intersection continues to operate at LOS F. However, the intersection delay is anticipated to increase by only 4.6 seconds, which is less than 5% of the future background conditions intersection delay.” Please provide analysis to identify the improvements that would be needed at this intersection to alleviate the expected adversities during the existing, future background traffic, and future total traffic conditions.

Comment # 13 (Table 5-3):

Please revise the LOS for the future p.m. peak hour conditions along the westbound approach of the unsignalized intersection of Sterling Silver Blvd and Alabaster Way from E to F. In addition, please provide analysis of this intersection for the total future conditions with the addition of the recommended northbound right turn lane and the northbound left turn lane (as indicated in the turn lane analysis) to ensure that all the intersection movements will operate at an acceptable LOS D (as mentioned in Comment # 5, the City of Deltona adopted LOS standard for local roadways is D).

Comment # 14 (Appendix H):

Please revise the signal warrant analysis based on the previous comments. In addition, the signal warrant analysis must be revised to account for the anticipated year 2016 conditions. As such, please grow the traffic volumes on the major and minor approach volumes by the agreed upon annual rate of 2.5%. Furthermore, please provide a table showing the derivation of traffic volumes along the minor approach. The minor approach should include future background conditions in addition to project traffic as identified in the “Shopping Center Hourly Trip Generation Determination Table” included in Appendix H. It is to be noted that the County will allow the signal at this intersection to be built and placed on flash mode until traffic volumes warrant.



Comment # 15 (Crash Data):

Please provide a figure showing the crash analysis at the intersection of Saxon Boulevard and Sterling Silver Boulevard. Please provide the crash data in an Appendix.

Comment # 16 (Turn Lane Analysis):

Please revise the Turn Lane Analysis Section based on the above comments and the following recommendations and observations:

- The traffic volumes included in the Turn Lane Analysis in Appendix F are consistent with the traffic volumes used in the HCS analysis (included in Appendix E). However, the traffic volumes are inconsistent with the traffic volumes included in Figure 6 of Appendix C. Please explain this discrepancy and update the analysis if necessary.
- The City of Deltona Land Development Code (LDC) Section 96-37(a)(10)(c)(5)(ii) indicates that a right-turn lane with a minimum of 150 feet of storage and 100 feet of transition shall be required at each driveway when the speed limit equals or exceeds 35 miles per hour or if the development will generate 100 or more right-turn movements during the peak hour. Since the westbound right turn movement of the intersection of Saxon Boulevard and Sterling Silver Boulevard is anticipated to have more than 100 trips during both the a.m. and p.m. peak hours, it is recommended that a right turn lane in the westbound approach of this intersection be provided. Furthermore, the northbound right turn movement at the intersection of Sterling Silver Boulevard and Alabaster Way (Driveway 3) is anticipated to service 242 trips during the year 2016 p.m. peak hour conditions. As such, it is recommended that Table 7-1 be revised to indicate that a minimum of 150 feet of storage and 100 feet of transition will be required at the northbound right turn lane of this intersection.



- Please determine if right turn lanes or left turn lanes are required at the project driveways along Alabaster Way based on the requirements included in the City of Deltona LDC Section 96-37(a)(10)(c)(5).

Comment # 17 (Driveway 1):

As mentioned in **Comment # 2** above, a 1 foot non-vehicular easement prohibits the proposed Driveway 1. Consistent with **Comment # 16**, a right turn lane with a minimum of 150 feet of storage and 100 feet of transition is required in the westbound approach of the intersection of Saxon Boulevard and Sterling Silver Boulevard. Furthermore, in accordance with the City of Deltona LDC Section 96-37(a)(10)(c)(5)(ii), a right turn lane of at least 250 feet (a minimum of 150 feet of storage and 100 feet transition) would be required at the proposed Driveway 1, since Saxon Boulevard in front of the development has a posted speed limit of 40 mph. Based on the requirements to provide a 250 feet right turn lane along the westbound approach of Saxon Boulevard at Sterling Silver Boulevard and a 250 feet right turn lane at the proposed Driveway 1, it is noted that nearly all the property frontage on Saxon Boulevard should be devoted to a deceleration/right turn lane.

As noted in the City of Deltona's Agenda Memorandum to the Planning and Zoning Board (dated December 18, 2013), the right turn lane for Driveway 1 will commence immediately after the existing access to the existing Saxon Medical Park site to the south. The construction of Driveway 1 would create additional traffic conflicts where cars attempting a right or left turn onto Saxon Boulevard from the Medical Park would have to negotiate with cars slowing and maneuvering to transition to the deceleration lane leading to the proposed Driveway 1. This is compounded by the fact that the posted speed of 40 mph, in conjunction with the convex curve, makes traffic management in the area more difficult to navigate and is an unsafe design.

In addition, Table 96-6B included in the City of Deltona LDC Section 96-37(a)(10)(c)(2)(iv) includes the driveway centerline spacing requirements for thoroughfares with a speed limit higher than 35 mph. According to Table 96-6B,



the minimum distance between centerlines of the intersection of Saxon Boulevard (a proposed signalized intersection) and the proposed Driveway 1 (an intermediate driveway with more than 50 vehicles but less than 150 vehicles) is 380 feet. Similarly, the minimum distance between the proposed Driveway 1 (an intermediate driveway) and the Saxon Medical Park driveway (assumed to be an intermediate driveway) is 360 feet. It is to be noted that the distance between the centerlines of the intersection of Saxon Boulevard at Sterling Silver Boulevard and the Saxon Medical Park driveway is approximately 570 feet which is less than the combined driveway spacing of 740 feet that would be required if Driveway 1 was constructed (380 feet between Saxon Boulevard at Sterling Silver Boulevard and Driveway 1 in addition to 360 feet between Driveway 1 and the Saxon Medical Park driveway).

Comment # 18 (Alternative Mode Analysis):

As noted in the Volusia County Comments (dated December 3, 2013), the TPO Guidelines section 4(d) specify a requirement to assess sidewalks, bikeways, and transit routes of users (including special needs). The site plan needs to address how walking, biking, and transit ridership will be encouraged. Please review this section of the guidelines, with particular focus on VOTRAN's Transit Development Guidelines. Specifically, the county will be looking for safe cross-Saxon access between the commercial properties and the nearby residences and also students. The Guidelines can be found on the Volusia TPO website: www.volusiatpo.org. Please specifically show how transit riders will be able to access the site.

Comment # 19 (General Comment):

It is recommended that the applicant provides a revised TIA addressing the above comments as they relate to site access, trip generation, project traffic distribution, project traffic assignment, existing LOS assessment, future LOS assessment, and alternative mode analysis. The revised TIA should identify if any additional roadway segments or intersections are anticipated to be adversely impacted by the development during the year 2016 conditions.



Conclusions:

In summary, based on the peer review relating to the TIA supporting the Saxon Silver BPUD, it is noted that the proposed development will have adverse impacts on the City of Deltona transportation network. Therefore, GMB recommends that the City of Deltona transmits these comments to the Applicant and that a revised TIA be provided addressing these comments. Should you have any questions on the above, please feel free to call me at (407) 898-5424 ext. 208 or email me at jtolosa@gmb.cc.



Transportation Impact Analysis (TIA)
For Submittal to the City of Deltona & Volusia County

Saxon Sterling Silver BPUD

Retail Center

**NE and NW Corners of Saxon Blvd. & Sterling Silver Blvd.
Deltona, FL**

Prepared for:



WRS, Inc.
550 Long Point Road
Mount Pleasant, SC 29464

November 2013



*Architects
Engineers
Environmental
Landscape Architects
M/E/P
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RAGHU K. VETURI, P.E.

68918

P.E. Number

Date

CERTIFICATION BY PROFESSIONAL ENGINEER

I hereby certify that I am a Professional Engineer in the State of Florida and have been trained in Traffic Engineering and that I was responsible for and in charge of the preparation of this Transportation Impact Analysis (TIA).

Raghu K. Veturi, P.E.

Florida PE Number: 68918

TRANSPORTATION IMPACT ANALYSIS SUBMISSION CHECKLIST

	DESCRIPTION	INFORMATION INCLUDED			
		YES	NO	N/A	Remarks ¹
TRANSPORTATION IMPACT ANALYSIS REPORT DATA	4 Printed TIA Copies Signed and Sealed by Professional Engineer	x			
	1 Electronic version of the TIA & all analysis computer files	x			
	Site Location relative to surrounding roadway network (map)	x			
	Description of proposed land uses	x			
	Proposed Build-out schedule	x			
	Study area boundaries including all Thoroughfare Road segments and intersections within appropriate radius (map)	x			
	Existing Traffic Volumes	x			
	Existing roadway segment analysis	x			
	Existing intersection analysis	x			
	List scheduled improvements within first three years of County, FDOT, and/or City Capital Improvement Programs	x			
	Proposed development trip generation/internal capture/pass by capture	x			
	Proposed development trip distribution and assignment (map)	x			
	Future Background Traffic Volume Estimates	x			
	Projected future roadway segment analysis	x			
	Future Total Peak-Hour(s) Traffic Volume Estimates (Background + Vested + Project Trips)	x			
	Projected future Peak-Hour(s) roadway intersection analysis including proposed turn lanes and signals	x			
	Projected Future Roadway Concurrency Analysis	x			
	Conclusions and Recommended Improvements	x			
	Site access recommendations	x			
	Concurrency mitigation strategy			x	
APPENDIX DATA	Methodology Documentation & Conceptual Site Plan	x			
	Traffic Count Data & Inventory of Existing Road Conditions	x			
	Confirmation of Scheduled Improvements (Copy of Appropriate CIE)	x			
	Existing Conditions Analysis Worksheets (HCS Printouts)	x			
	Background Traffic Growth Worksheets	x			
	Trip Generation, Internal Capture, Pass-By Capture Worksheets	x			
	Future Conditions Analysis Worksheets (HCS Printouts)	x			
	Turn Lanes Analysis Worksheets (Queue Length)	x			
	Signal Warrant Analysis	x			
	Multi Way STOP Warrant Analysis			x	

1 – Remarks: Justify “NO” and “N/A”

Submitted By: _____ Printed Name: Raghu K. Veturi, P.E.

Date: _____

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1.0 Executive Summary

The applicant proposes to develop a retail center in the northeast quadrant and northwest quadrant of the intersection of Saxon Boulevard and Sterling Silver Boulevard in City of Deltona, Volusia County, Florida. The Retail Center will consist of the following developments:

Northeast Corner of Saxon Boulevard and Sterling Silver Boulevard

- 44,000 square foot (sf) Supermarket; and
- 5,700 square foot (sf) Convenience Market with Gasoline Pumps.

Northwest Corner of Saxon Boulevard and Sterling Silver Boulevard

- 14,000 square foot (sf) Shopping Center;
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window; and
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window.

The two sites are currently vacant. The project is anticipated to be complete and operational in the year 2016. Access from the site to the roadway network is proposed through: two (2) right-in/right-out driveways on Saxon Boulevard, one (1) full access driveway on Sterling Silver Boulevard, one (1) right-in/right-out/left-in driveway on Sterling Silver Boulevard, two (2) full access driveways on Alabaster Way, and one (1) right-in driveway on Alabaster Way.

The study area roadways are expected to operate at acceptable levels of service with the exception of the following roadway segments:

- Saxon Boulevard from I-4 to Finland Drive; and
- Saxon Boulevard from Finland Drive to Normandy Boulevard.

These two roadway segments are classified as critical roadways and are deficient in existing conditions. The proposed project impact on these two roadways is 3.7%, which is not a significant impact.

The study area signalized intersections are expected to operate at acceptable LOS with the exception of the following for future conditions:

- Saxon Boulevard & Finland Drive in AM peak hour; and
- Saxon Boulevard & Normandy Boulevard in AM peak hour.

The intersection of Saxon Boulevard & Finland Drive is currently operating at a 120 seconds cycle length during the AM peak hour. By modifying the cycle length to 125 seconds this intersection is expected to operate at acceptable levels of service.

The intersection of Saxon Boulevard & Normandy Boulevard is operating at LOS F in existing and future background conditions. In future total conditions, with the addition of project traffic this intersection continues to operate at LOS F. However, the intersection delay is anticipated to increase by only 4.6 seconds, which is less than 5% of the future background conditions intersection delay.

The study area unsignalized intersections are expected to operate at acceptable LOS with the exception of Saxon Boulevard & Sterling Silver Boulevard.

The following improvements are recommended as a result of this analysis:

- for the intersection of Saxon Boulevard & Finland Drive, modify am peak hour cycle length from 120 seconds to 125 seconds;
- for the intersection of Saxon Boulevard & Sterling Silver Boulevard, add second southbound left-turn lane at Saxon Boulevard & Sterling Silver Boulevard and provide signalization;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 1;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 2;
- a 170' Northbound left-turn lane at Sterling Silver Boulevard & Alabaster Way; and
- a 145' Northbound right-turn lane at Sterling Silver Boulevard & Alabaster Way.

2.0 Introduction

The applicant proposes to develop a retail center in the northeast quadrant and northwest quadrant of the intersection of Saxon Boulevard and Sterling Silver Boulevard in City of Deltona, Volusia County, Florida. The proposed retail center will consist of the following land uses:

Northeast Corner of Saxon Boulevard and Sterling Silver Boulevard

- 44,000 square foot (sf) Supermarket; and
- 5,700 square foot (sf) Convenience Market with Gasoline Pumps.

Northwest Corner of Saxon Boulevard and Sterling Silver Boulevard

- 14,000 square foot (sf) Shopping Center;
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window; and
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window.

Please see Figures 2-1 and Figure 2-2 for site location map and site plan for reference. The two sites are currently vacant. The project is anticipated to be completed and operational in the year 2016. The report is being provided in accordance with City of Deltona and Volusia County requirements for transportation impact analysis (TIA). This report addresses the following:

1. traffic impacts of the project;
2. traffic concurrency requirements;
3. specific recommendations for safe and adequate access to and from the site; and
4. traffic signal warrant analysis at the intersection of Saxon Boulevard & Sterling Silver Boulevard based upon projected traffic volumes.

CPH has coordinated with the City of Deltona and Volusia County staff prior to commencing the study and submitted a TIA methodology.

2.1 Site Access

Access to the project site is proposed through the following driveways:

- two (2) right-in/right-out driveways on Saxon Boulevard (Driveway 1 and Driveway 2);
- one (1) full access driveway on Sterling Silver Boulevard (Driveway 3);
- one (1) right-in/right-out/left-in driveway on Sterling Silver Boulevard (Driveway 4);
- two (2) full access driveways on Alabaster Way; and
- one (1) right-in driveway on Alabaster Way.

Saxon Boulevard is a four-lane divided roadway with a posted speed limit of 40 miles per hour and is under the jurisdiction of Volusia County. Sterling Silver Boulevard is a two-lane divided roadway which is under the jurisdiction of City of Deltona. Alabaster Way is a two-lane undivided local road under the jurisdiction of City of Deltona.

2.2 Traffic Study Methodology

CPH has coordinated with the City of Deltona and Volusia County staff prior to commencing the analysis and submitted a TIA methodology. This analysis has been prepared to be consistent with Volusia County and City of Deltona TIA requirements and the agreed upon methodology. Please see the attached methodology correspondence in Appendix A for reference.

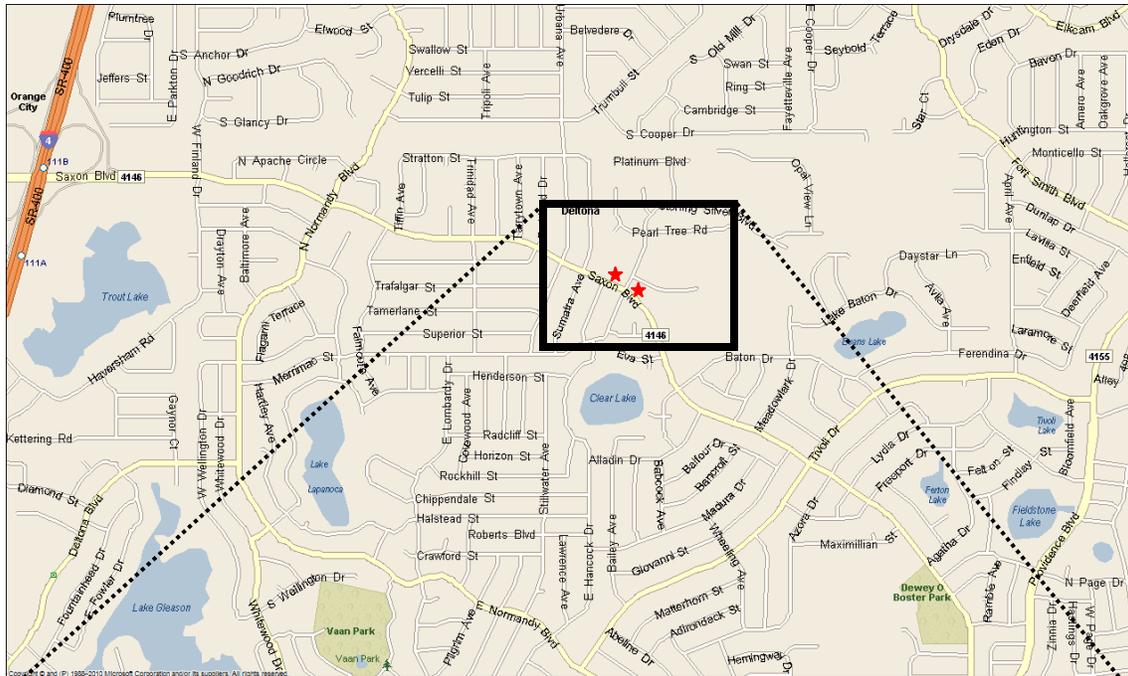


Figure 2-1 Site Location Map
Saxon Sterling Silver - BPUD
 NE and NW Corners of Saxon Blvd. & Sterling Silver Blvd.
 Deltona, Florida



Engineers
 Architects
 Planners
 Landscape Architects
 Transportation/Traffic
 Surveyors
 Environmental Scientists
 Construction Management

3.0 Trip Generation

The trip generation potential for the proposed project was determined based upon the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition*. Internal capture and pass-by rates were applied based upon *ITE Trip Generation Handbook*. Pass-by trips were checked to be less than 14% of the adjacent street peak hour traffic. Tables 3-1 and 3-2, shows a summary of ITE Trip Generation. Please see Appendix B for trip generation worksheets.

Table 3-1 ITE Trip Generation (Gross Trips)

Land Use		ITE Land Use Code	Size (ksf)	Gross Daily	AM Peak Hour	PM Peak Hour
NE Corner	Supermarket	850	44.0	4,499	150	417
	Convenience Market with Gasoline Pumps	853	5.7	4,820	233	290
	Sub-Total			9,318	383	707
NW Corner	Shopping Center	820	14.0	1,892	13	160
	Fast Food Restaurant with Drive-Through Window	934	4.5	2,233	204	147
	Fast Food Restaurant with Drive-Through Window	934	4.5	2,233	204	147
	Sub-Total			6,357	422	454
TOTAL				15,676	805	1,162

Note: ksf = thousand square feet.

Table 3-2 ITE Trip Generation (Net-New Trips)

Land Use		ITE Land Use Code	Size (ksf)	AM Peak Hour	PM Peak Hour
NE Corner	Supermarket	850	44.0	77	230
	Convenience Market with Gasoline Pumps	853	5.7	75	79
	Sub-Total			152	309
NW Corner	Shopping Center	820	14.0	7	85
	Fast Food Restaurant with Drive-Through Window	934	4.5	103	65
	Fast Food Restaurant with Drive-Through Window	934	4.5	103	65
	Sub-Total			213	215
TOTAL				365	524

Note: ksf = thousand square feet.

Based upon trip generation projection, it is anticipated that the proposed project will generate approximately 15,676 gross daily trips with 365 net-new trips during AM peak hour and 524 net-new trips during PM peak hour.

4.0 Trip Distribution and Assignment

Trip distribution for the proposed project was determined based upon *Florida Standard Urban Transportation Model Structure (FSUTMS)* using *Central Florida Regional Planning Model (CFRPM) version 5.2*. Please see Figure 4-1 for project traffic distribution. Distribution plot and detailed traffic distribution by movement at the study area intersections are shown in traffic volume figures attached in Appendix D.

4.1 Significance Test

The study area for the proposed project was determined based upon a link significance test per Volusia County TIA Requirements. Please see Table 4-1 for link significance test.

Table 4-1 Significance Test

Roadway	From	To	Number of Lanes	Area Type	Adopted LOS	Peak Hour Two-Way Capacity	Project Distribution (%)	Project Trips	% Significance
Saxon Boulevard	I-4	Finland Drive	4L	UA	E	3,222	23%	120	3.71%
	Finland Drive	Normandy Boulevard	4L	UA	E	3,222	23%	120	3.71%
	Normandy Boulevard	Sterling Silver Boulevard	4L	UA	E	3,222	53%	275	8.55%
	Sterling Silver Boulevard	Tivoli Drive	4L	UA	E	3,222	47%	244	7.58%
	Tivoli Drive	Providence Boulevard	2L	UA	E	1,015	21%	109	10.75%
	Providence Boulevard	Normandy Boulevard	2L	UA	E	1,015	14%	73	7.17%
	Normandy Boulevard	Doyle Road	2L	UA	E	1,152	9%	47	4.06%
Tivoli Drive	Normandy Boulevard	Saxon Boulevard	2L	UA	E	1,015	9%	47	4.61%
	Saxon Boulevard	Providence Boulevard	2L	UA	E	1,015	17%	88	8.70%
Normandy Boulevard	Elckam Boulevard	Saxon Boulevard	4L	UA	E	2,736	13%	68	2.47%
	Saxon Boulevard	Deltona Boulevard	2L	UA	E	1,015	13%	68	6.65%
	Deltona Boulevard	Tivoli Drive	3L	UA	E	1,015	1%	5	0.51%
	Tivoli Drive	Providence Boulevard	3L	UA	E	1,015	5%	26	2.56%
	Providence Boulevard	Saxon Boulevard	2L	UA	E	1,269	2%	10	0.82%
Deltona Boulevard	Normandy Boulevard	Cloverleaf Boulevard	4L	UA	E	2,736	11%	57	2.09%
Providence Boulevard	Fort Smith Boulevard	Tivoli Drive	4L	UA	E	2,736	16%	83	3.04%
	Tivoli Drive	Saxon Boulevard	2L	UA	E	1,269	3%	16	1.23%
	Saxon Boulevard	Normandy Boulevard	2L	UA	E	1,015	3%	16	1.54%

Peak Hour Two-Way Capacities were derived from FDOT LOS Tables 2012

4.2 Study Area

Based upon the link significance test and agreed upon methodology, the following roadway segments and intersections were included in the analysis:

Intersections

- Saxon Boulevard & Finland Drive;
- Saxon Boulevard & Normandy Boulevard;
- Saxon Boulevard & Sterling Silver Boulevard;
- Saxon Boulevard & Tivoli Drive;
- Providence Boulevard & Tivoli Drive; and
- All project entrances.

Roadway Segments

- Saxon Boulevard from Enterprise Road to Veterans Memorial Parkway;
- Saxon Boulevard from Veterans Memorial Parkway to FDOT Park & Ride;
- Saxon Boulevard from FDOT Park & Ride to I-4;
- Saxon Boulevard from I-4 to Finland Drive;
- Saxon Boulevard from Finland Drive to Normandy Boulevard;
- Saxon Boulevard from Normandy Boulevard to Sterling Silver Boulevard;
- Saxon Boulevard from Sterling Silver Boulevard to Tivoli Drive;
- Saxon Boulevard from Tivoli Drive to Providence Boulevard;
- Saxon Boulevard from Providence Boulevard to Normandy Boulevard;
- Tivoli Drive from Saxon Boulevard to Providence Boulevard; and
- Normandy Boulevard from Saxon Boulevard to Deltona Boulevard.

4.3 Traffic Data Collection

AM peak hour (7am to 9am) and PM peak hour (4pm to 6pm) turning movement count data were collected at the study area intersections. Raw turning movement count data for the study area intersections are attached in the Appendix C. Appropriate Peak Season Correction Factor (PSCF) was applied to the raw turning movement counts based upon PSCF factors published by FDOT for Volusia County. Please see the attached PSCF sheet in Appendix C.

In addition, 24 hour road tube counts were collected on Saxon Boulevard, east and west of Sterling Silver Boulevard and on Sterling Silver Boulevard, north of Saxon Boulevard. The 24 hour tube counts were collected for the signal warrant analysis at the intersection of Saxon Boulevard and Sterling Silver Boulevard. Please see the attached raw tube counts in Appendix H.

5.0 Analysis Scenarios

Existing Traffic Conditions

The year 2013 is considered the base year traffic conditions or existing conditions. Based upon discussions with staff, existing condition vehicle turning movements were collected. Appropriate peak season correction factors were applied to the raw turning movement counts to account for the seasonal variations in the traffic. The analysis for the existing conditions was performed for AM peak hour and PM peak hour. Please see traffic volume figures in Appendix D for reference. A copy of the peak season correction factor that was used in this analysis is attached in Appendix C.

Future Background Traffic Conditions

The proposed project is anticipated to be completed for construction and operational in the year 2016. Future background traffic conditions, also referred to as future non-project traffic conditions, are those present in the study area in the year 2016, prior to the construction and operation of the proposed project. Future background volumes were determined based upon a growth rate of 2.5% per year. Future background traffic volumes were calculated by applying a 2.5% background growth per year to the existing AM peak hour and PM peak hour, peak season traffic volumes. Please see traffic volume figures in Appendix D for reference.

Future Total Traffic Conditions

The AM peak hour and PM peak hour future total traffic volumes were calculated by adding the future background traffic volumes and project traffic volumes. Please see traffic volume figures in Appendix D for reference.

5.1 Scheduled/Planned/Funded/Improvements

Based upon review of FDOT five-year work program and *Volusia County Capital Improvement Element (CIE)*, the following improvements were identified. Please see Appendix G for pages from *Volusia County CIP*.

- Widening of Saxon Boulevard from Enterprise Road to I-4 from 4-lanes to 6-lanes. This project is currently under construction.

5.2 Roadway Analysis

Peak hour roadway segment capacity analysis was conducted for the study area roadway segments based upon traffic information available from Volusia County 2012 Annual Average Daily Traffic. Please see Table 5-1, for Peak Hour Two-Way Roadway Analysis.

Table 5-1 PM Peak Hour Two-Way Roadway Analysis

Roadway	Number of Lanes	LOS Standard	LOS Standard Service Volume	Existing		Future Background		Project Trips		Future Total		Critical/Near Critical Road
				Volume	Deficient (Yes/No)?	Volume	Deficient (Yes/No)?	Distribution (%)	Trips	Volume	Deficient (Yes/No)?	
Saxon Blvd from Enterprise Road to Veterans Memorial Parkway	6LD	E	4,851	2,887	No	3,109	No	2%	10	3,119	No	-
Saxon Boulevard from Veterans Memorial Parkway to FDOT Park & Ride	6LD	E	4,851	3,796	No	4,088	No	8%	42	4,130	No	Near Critical
Saxon Boulevard from FDOT Park & Ride to I-4	6LD	E	4,851	4,028	No	4,337	No	8%	42	4,379	No	Critical
Saxon Boulevard from I-4 to Finland Drive	4LD	E	3,222	3,843	Yes	4,138	Yes	23%	120	4,258	Yes	Critical
Saxon Boulevard from Finland Drive to Normandy Boulevard	4LD	E	3,222	3,357	Yes	3,615	Yes	23%	120	3,735	Yes	Critical
Saxon Boulevard from Normandy Boulevard to Sterling Silver Boulevard	4LD	E	3,222	2,239	No	2,411	No	53%	276	2,686	No	-
Saxon Boulevard from Sterling Silver Boulevard to Tivoli Drive	2LN	E	1,269	896	No	965	No	47%	244	1,210	No	-
Saxon Boulevard from Tivoli Drive to Providence Boulevard	2LN	E	1,269	771	No	831	No	21%	109	940	No	-
Saxon Boulevard from Providence Boulevard to Normandy Boulevard	2LN	E	1,269	509	No	548	No	14%	73	621	No	-
Tivoli Drive from Saxon Boulevard to Providence Boulevard	2LN	E	1,269	979	No	1,054	No	17%	88	1,143	No	-
Normandy Boulevard from Saxon Boulevard to Deltona Boulevard	2LN	E	1,269	693	No	746	No	13%	68	814	No	-

Existing Volumes were obtained from Volusia County 2012 Average Annual Daily Traffic (K-Factor = 0.091)

For roadways where traffic data is not available, roadway data was obtained from turning movement counts

LOS Standard Service Volumes from FDOT 2012 LOS Tables

Based upon the roadway segment capacity analysis, the study area roadways are expected to operate at acceptable levels of service with the exception of the following roadway segments:

- Saxon Boulevard from I-4 to Finland Drive; and
- Saxon Boulevard from Finland Drive to Normandy Boulevard.

These two roadway segments are classified as critical roadways and are deficient in existing conditions. The proposed project impact on these two roadways is 3.7%, which is not a significant impact.

5.3 Intersection Analysis

The intersections were analyzed for each traffic condition based upon methodologies published in the *Highway Capacity Manual (HCM), 2010* using Highway Capacity Software (HCS 2010) version 6.5. The signalized intersection level of service and delay for each traffic condition is shown in Table 5-2 for AM/PM Peak Hour. The intersection analysis worksheets are attached in Appendix E.

Table 5-2 AM/PM Peak Hour Signalized Intersection LOS and Delay

Intersection	LOS Standard	Existing		Future Background		Future Total	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Saxon Boulevard & Finland Drive	E	D/D	48.0/35.8	E/D	75.0/51.2	F/E	85.6/65.6
Saxon Boulevard & Normandy Boulevard	E	F/C	86.8 /31.9	F/D	95.2/35.5	F/D	99.8/40.8
Saxon Boulevard & Tivoli Drive	E	D/B	42.6 /18.9	E/C	55.9/24.6	E/D	79.2/47.5
Providence Boulevard & Tivoli Drive	E	B/C	14.9 /24.0	B/C	15.6/28.8	B/C	17.0/34.7
Saxon Boulevard & Sterling Silver Boulevard*	E	-	-	-	-	C/C	26.7/20.8

*LOS and Delay with proposed signalization improvements
F/C = AM LOS/PM LOS; 86.8/31.9 = AM Delay/PM Delay

Based upon the above analysis, the study area signalized intersections are expected to operate at acceptable LOS with the exception of the following:

- Saxon Boulevard & Finland Drive in AM peak hour; and
- Saxon Boulevard & Normandy Boulevard in AM peak hour.

The intersection of Saxon Boulevard & Finland Drive is currently operating at a 120 seconds cycle length during the AM peak hour. By modifying the cycle length to 125 seconds this intersection is expected to operate at acceptable levels of service.

The intersection of Saxon Boulevard & Normandy Boulevard is operating at LOS F in existing and future background conditions. In future total conditions, with the addition of project traffic this intersection continues to operate at LOS F. However, the intersection delay is anticipated to increase by only 4.6 seconds, which is less than 5% of the future background conditions intersection delay.

Table 5-3 below shows the unsignalized intersections approach levels of service for AM and PM peak hours. The intersection analysis worksheets are attached in Appendix E for reference.

Table 5-3 AM/PM Peak Hour Unsignalized Intersection Approach Levels of Service

Intersection	Existing				Future Background				Future Total			
	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB	NB	SB
Saxon Boulevard & Sterling Silver Boulevard	-	-	D/E	E/C	-	-	D/F	F/D	-	-	F/F	F/F
Sterling Silver Boulevard & Alabaster Way (Driveway 3)	-	A/A	-	-	-	A/A	-	-	A/A	E/E	-	-
Saxon Boulevard & Driveway 1	-	-	-	-	-	-	-	-	-	-	-	C/B
Saxon Boulevard & Driveway 2	-	-	-	-	-	-	-	-	-	-	-	C/B
Sterling Silver Boulevard & Driveway 4	-	-	-	-	-	-	-	-	A/A	-	-	-

-Indicates no approach or free-flow approach; D/E = AM LOS/PM LOS

Based upon the above analysis, the study area unsignalized intersections are expected to operate at acceptable LOS with the exception of Saxon Boulevard & Sterling Silver Boulevard. Therefore, a signal warrant analysis was performed at the intersection of Saxon Boulevard & Sterling Silver Boulevard. Please see Section 6.0 for traffic signal warrant analysis.

6.0 Traffic Signal Warrant Analyses

6.1 Field Observations and Data Collection

- 24-hour tube counts were collected at Saxon Boulevard & Sterling Silver Boulevard on September 11, 2013 (traffic counts attached in Appendix H);
- the posted speed on the Saxon Boulevard (major street) is 40 miles per hour (mph) ;
- the lane geometry on each of the major approaches is 2 lanes or more (2 lanes) ;
- the posted speed limit on Sterling Silver Boulevard (minor street) is 25 mph; and
- the lane geometry on the highest minor street (south leg) approach is 1 lane.

6.2 Signal Warrant Analysis

24 hour machine (tube) counts were collected at the location of the proposed signalized intersection of Saxon Boulevard (major street) and Sterling Silver Boulevard (minor street). The data was collected on September 11, 2013 for a 24 hour period in one-hour intervals. The data collected was then processed and a determination was made to identify the eight highest hourly volumes at the proposed intersections. In addition, the projected traffic data from Sterling Silver Boulevard were split into hourly volumes using daily Shopping Center (ITE Land Use Code: 820) traffic distribution (See Appendix H) data to determine the approach volumes from Sterling Silver Boulevard to be used as minor street approach input.

The eight highest hourly volumes from minor street approaches, Sterling Silver Boulevard were determined, and used as input for the analysis, along with the traffic counts for the same eight highest hours on the major street approaches (processed tube counts). The traffic projected from the proposed retail center was added to the minor street volumes.

The total approach volumes of the minor streets were considered as input for signal warrant analysis given the magnitude of left and right turn traffic volumes. The eight highest hours determined were between 7:00 am to 8:00 am and 12:00 pm to 7:00 pm. The raw machine counts (tube counts) are included in Appendix H. Per the MUTCD criteria for traffic signal warrant analysis the minor street approach volumes may be considered to be sum of traffic on the approach (left, thru and right) or a combination of select movements based on engineering judgment.

The traffic signal warrant analysis was conducted for the intersection of Saxon Boulevard & Sterling Silver Boulevard based upon the procedures in *MUTCD*. Table 6-1, below shows a summary of the results.

Table 6-1 Traffic Signal Warrant Analysis Results

Warrants and Conditions	Are Warrant and Condition Criteria Met?			Is the Warrant Met?	
Warrant 1	Eight-Hour Vehicular Volume			No	
	100%	80%	70%		
	Condition A	No	N/A*		N/A^
	Condition B	No	N/A*		N/A^
Combination A& B	N/A**	N/A*	N/A**		
Warrant 2	Four-Hour Vehicular Volume		No		
	100%	70%			
	MUTCD Graphs 4C-1 and 4C-2	No		N/A^	

* Does not apply;

^Does not apply as the posted speed limit on major street is 40 mph;

** Combination A& B of Warrant 1 applies only to 80 % case.

6.3 Crash Analysis

The crash analysis consists of analyzing the traffic collision history within three hundred feet of the intersection for the crash data obtained from 2009 to 2011 (approximately three years). Crash history for the intersection of Saxon Boulevard & Sterling Silver Boulevard was obtained from Volusia County Traffic Engineering Department. The overall crash analysis for this intersection indicated that there were a total 7 crashes occurred during the three year period. None of these 7 crashes are signal correctible.

6.4 Results

Based upon the results of traffic signal warrant analysis, for the intersection of Saxon Boulevard & Sterling Silver Boulevard:

- Warrant 1 was not met for 100% criteria; and
- Warrant 2 was not met for 100% criteria.

The warrant criteria for warrant 1 were not met for one hour. For the remaining seven hours the criteria was met. The minor street volumes were significantly more than the *MUTCD* threshold. Similarly, the warrant criteria for warrant 2 were not met for one hour. For the remaining three hours the criteria was met. The minor street volumes were significantly more than the *MUTCD* threshold. Therefore, a traffic signal is recommended for installation at this intersection.

Please see the attached warrant analysis worksheets in Appendix H for reference.

7.0 Turn Lane Analysis

Turn lane warrant analysis was conducted at the project driveways based upon the requirements published in *Volusia County Land Development Code* and *FDOT Design Standards, Index 301*. Please see the turn lane warrant analysis worksheets for reference in Appendix F. Based upon the turn lane warrant analysis at the project driveways, the following turn lanes were warranted:

- westbound right-turn lane at Saxon Boulevard & Driveway 1;
- westbound right-turn at Saxon Boulevard & Driveway 2;
- northbound right-turn at Sterling Silver Boulevard & Alabaster Way (Driveway 3); and
- northbound left-turn at Sterling Silver Boulevard & Alabaster Way (Driveway 3).

Table 7-1 below shows the peak hour turn lane length data.

Table 7-1 Peak Hour Turn Lane Length Data

Intersection	Movement	Number of Lanes	Turning Volume (vph)	Posted Speed (mph)	Design Speed (mph)	Deceleration Length (feet)	95th Percentile BOQ (vehicle-lengths)	Queue Length (Feet)	Total Length (feet)
Saxon Boulevard & Driveway 1	WBR	1	64	40	45	185	-	-	185
Saxon Boulevard & Driveway 2	WBR	1	46	40	45	185	-	-	185
Sterling Silver Boulevard & Alabaster Way (Driveway 3)	NBL	1	136	25	30	145	0.36	25	170
	NBR	1	242	25	30	145	-	-	145
Saxon Boulevard & Sterling Silver Boulevard	EBL	1	326	40	45	185	6.1	153	338
	SBL	2	282	25	30	145	6.1	153	298

-indicates no queue storage for free-flow right turning movement.

8.0 Recommendations

Based upon the above analysis the following improvements are recommended:

- for the intersection of Saxon Boulevard & Finland Drive, modify am peak hour cycle length from 120 seconds to 125 seconds;
- for the intersection of Saxon Boulevard & Sterling Silver Boulevard, add second southbound left-turn lane at Saxon Boulevard & Sterling Silver Boulevard and provide signalization;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 1;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 2;
- a 170' Northbound left-turn lane at Sterling Silver Boulevard & Alabaster Way; and
- a 145' Northbound right-turn lane at Sterling Silver Boulevard & Alabaster Way.

9.0 Conclusions

The applicant proposes to develop a retail center in the northeast quadrant and northwest quadrant of the intersection of Saxon Boulevard and Sterling Silver Boulevard in City of Deltona, Volusia County, Florida. The Retail Center will consist of the following developments:

Northeast Corner of Saxon Boulevard and Sterling Silver Boulevard

- 44,000 square foot (sf) Supermarket; and
- 5,700 square foot (sf) Convenience Market with Gasoline Pumps.

Northwest Corner of Saxon Boulevard and Sterling Silver Boulevard

- 14,000 square foot (sf) Shopping Center;
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window; and
- 4,500 square foot (sf) Fast Food Restaurant with Drive-Through Window.

The two sites are currently vacant. The project is anticipated to be complete and operational in the year 2016. Access from the site to the roadway network is proposed through:

- two (2) right-in/right-out driveways on Saxon Boulevard;
- one (1) full access driveway on Sterling Silver Boulevard;
- one (1) right-in/right-out/left-in driveway on Sterling Silver Boulevard;
- two (2) full access driveways on Alabaster Way; and
- one (1) right-in driveway on Alabaster Way.

The study area roadways are expected to operate at acceptable levels of service with the exception of the following roadway segments:

- Saxon Boulevard from I-4 to Finland Drive; and
- Saxon Boulevard from Finland Drive to Normandy Boulevard.

These two roadway segments are classified as critical roadways and are deficient in existing conditions. The proposed project impact on these two roadways is 3.7%, which is not a significant impact.

The study area signalized intersections are expected to operate at acceptable LOS with the exception of the following:

- Saxon Boulevard & Finland Drive in AM peak hour; and
- Saxon Boulevard & Normandy Boulevard in AM peak hour.

The intersection of Saxon Boulevard & Finland Drive is currently operating at a 120 seconds cycle length during the AM peak hour. By modifying the cycle length to 125 seconds this intersection is expected to operate at acceptable levels of service.

The intersection of Saxon Boulevard & Normandy Boulevard is operating at LOS F in existing and future background conditions. In future total conditions, with the addition of project traffic this intersection continues to operate at LOS F. However, the intersection delay is anticipated to increase by only 4.6 seconds, which is less than 5% of the future background conditions intersection delay.

The study area unsignalized intersections are expected to operate at acceptable LOS with the exception of Saxon Boulevard & Sterling Silver Boulevard.

The following improvements are recommended as a result of the above analysis:

- for the intersection of Saxon Boulevard & Finland Drive, modify am peak hour cycle length from 120 seconds to 125 seconds;
- for the intersection of Saxon Boulevard & Sterling Silver Boulevard, add second southbound left-turn lane at Saxon Boulevard & Sterling Silver Boulevard and provide signalization;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 1;
- a 185' Westbound right-turn lane at Saxon Boulevard & Driveway 2;
- a 170' Northbound left-turn lane at Sterling Silver Boulevard & Alabaster Way; and
- a 145' Northbound right-turn lane at Sterling Silver Boulevard & Alabaster Way.

APPENDIX A

METHODOLOGY CORRESPONDENCE

Veturi, Raghu P.E.

From: Melissa Winsett [mwinsett@volusia.org]
Sent: Friday, October 11, 2013 4:37 PM
To: Veturi, Raghu P.E.
Cc: Wray, H. Larry (P.E.); CBowley@deltonafl.gov; Ron Paradise
Subject: RE: Sterling Silver BPUD Revised Methodology

Raghu,

We have reviewed the revised methodology and find it acceptable.

Melissa K. Winsett
Traffic Engineering Supervisor
Transportation Planning, Engineering Studies, Development Review

Volusia County Traffic Engineering
123 W. Indiana Ave., Room 400
DeLand, FL 32720-4262

mwinsett@volusia.org
386-736-5968 x12322 (DeLand Area)
386-257-6000 x12322 (Daytona Area)
386-423-3300 x12322 (New Smyrna Area)

Fax 386-740-5242

>>> "Veturi, Raghu P.E." <rveturi@cphcorp.com> 10/4/2013 3:16 PM >>>

Chris, Ron, and Melissa,

Per our telephone coordination, attached is the revised methodology letter per recent square footage changes. Please review and let me know if you have any comments or questions.

Thank you,

Raghu K. Veturi, P.E., PTOE

Sr. Traffic Engineer

CPH, Inc.

Phone: (813) 288-0233 x2406

From: Melissa Winsett [mailto:mwinsett@volusia.org]
Sent: Tuesday, August 20, 2013 8:55 AM
To: Veturi, Raghu P.E.
Cc: CBowley@deltonafl.gov; Ron Paradise
Subject: Sterling Silver BPUD Revised Methodology

Raghu,

10/14/2013

We have reviewed your revised methodology and find it acceptable. Good luck with the TIA, and please feel free to call me if you have any questions. ~Melissa

Melissa K. Winsett
Traffic Engineering Supervisor
Transportation Planning, Engineering Studies, Development Review

Volusia County Traffic Engineering
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Fax 386-740-5242



5601 Mariner Street
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Tampa, FL 33609
Phone: 813.288.0233
Fax: 813.288.0433

October 3, 2013

Chris Bowley, AICP
Director
Department of Planning & Development Services
2345 Providence Boulevard
Deltona, Florida 32725

**RE: Retail Center – Saxon Sterling Silver BPUD
Northeast and Northwest Corners of Saxon Boulevard & Sterling Silver Boulevard
City of Deltona, Florida
CPH Project Number: W9401.1
Transportation Impact Analysis (TIA) Methodology Letter- 2nd Revision**

Dear Mr. Bowley:

Provided here for your review and comment is a Transportation Impact Analysis (TIA) methodology for the above referenced project. The methodology has been prepared to be consistent with the *City of Deltona and Volusia County Transportation Impact Analysis (TIA) guidelines* and our discussions with you regarding this project.

Introduction

The following methodology outlines the procedures and data that will be used to evaluate the projected transportation impacts of a proposed retail center located in the northeast and northwest quadrants of the intersection of Saxon Boulevard & Sterling Silver Boulevard in the City of Deltona, Florida. The following methodology describes the procedures and assumptions that will be used to prepare a transportation impact analysis. Please see the attached site location map for reference. The proposed site consists of the following uses:

Northeast Corner of Saxon Boulevard Sterling Silver Boulevard

- 44,000 sf Supermarket
- 5,700 sf Convenience Market with Gasoline Pumps

Northwest Corner of Saxon Boulevard Sterling Silver Boulevard

- 14,000 sf Shopping Center
- Two (2) 4,500 sf Fast Food Restaurants with Drive-Through Windows

Site Access

Access to the site is proposed through the following driveways:

- two (2) right-in/right-out driveways on Saxon Boulevard;
- a full-access driveway on Sterling Silver Boulevard;
- a right-in/right-out/left-in driveway on Sterling Silver Boulevard;
- two (2) full access driveway on Alabaster Way; and
- a right-in driveway on Alabaster Way.

The build-out year for the proposed project is 2016.



Trip Generation

The trip generation potential for the proposed project will be determined based upon the *Institute of Transportation Engineers (ITE) Trip Generation, 9th Edition*. Internal capture and pass-by rates will be applied based upon *ITE Trip Generation Handbook*. Pass-by trips will be checked to be less than 14% of the adjacent street peak hour traffic.

Based upon preliminary trip generation projection, it is anticipated that the proposed project will generate 15,676 daily trips, 365 net-new am peak hour trips, and 524 net-new pm peak hour trips. Please see the attached trip generation worksheets for reference.

Project Trip Distribution

Trip distribution for the proposed project will be determined based upon *Florida Standard Urban Transportation Model Structure (FSUTMS)* using Central Florida Regional Planning Model (CFRPM). Model files will be obtained from *Florida Department of Transportation (FDOT)*. Please see the attached trip distribution plot and trip distribution figure for reference.

Study Area

Based upon Volusia County TIA guidelines for significance test, the study area includes the following intersections and roadway segments. Please see the attached significance test.

Intersections

- Saxon Boulevard & Finland Drive;
- Saxon Boulevard & Sterling Silver Boulevard;
- Saxon Boulevard & Normandy Boulevard;
- Saxon Boulevard & Tivoli Drive
- Providence Boulevard & Tivoli Drive; and
- All project entrances.

Roadway Segments

- Saxon Boulevard from Enterprise Road to Veterans Memorial Parkway;
- Saxon Boulevard from Veterans Memorial Parkway to FDOT Park & Ride;
- Saxon Boulevard from FDOT Park & Ride to I-4;
- Saxon Boulevard from I-4 to Finland Drive;
- Saxon Boulevard from Finland Drive to Normandy Boulevard;
- Saxon Boulevard from Normandy Boulevard to Sterling Silver Boulevard;
- Saxon Boulevard from Sterling Silver Boulevard to Tivoli Drive;
- Saxon Boulevard from Tivoli Drive to Providence Boulevard;
- Saxon Boulevard from Providence Boulevard to Normandy Boulevard;
- Tivoli Drive from Saxon Boulevard to Providence Boulevard; and
- Normandy Boulevard from Saxon Boulevard to Deltona Boulevard.

The critical/near-critical roadway segments per County's five-mile radius map within the study area will be included in the future conditions analysis. Please see the attached five-mile radius map for reference.

Analysis Scenarios

The future analysis year will be 2016, given the anticipated date for completion of construction of the proposed project. Analysis will be conducted for the existing, future background and future total traffic conditions.

Background (Vested) Traffic

Background traffic volumes will be calculated based upon historical traffic data available on Saxon Boulevard from I-4 to Tivoli Drive. Background growth rate calculations yielded a growth rate of less than 1%. Per coordination with the City staff, a growth rate of 2.5% per year will be used for analysis purposes. Please see the attached traffic trends sheets for reference.



Traffic Count Data

AM peak hour (7am to 9am) and PM peak hour (4pm to 6pm) manual traffic counts will be conducted at study area intersections. Traffic volumes (counts) will be adjusted to peak-season conditions using Florida Department of Transportation (FDOT) peak season correction factors (PSCF) for Volusia County. Traffic data will be collected during the school season.

Scheduled/Planned/Funded Improvements

Planned/scheduled/funded roadway improvements information available from FDOT/Volusia County/City of Deltona will be included in the analysis.

Traffic Analysis

Intersection capacity analysis for the study area intersections will be conducted using Highway Capacity Software (HCS) or Synchro software for existing, future background, and future total traffic conditions for AM and PM peak hour conditions. Traffic signal timing data for study area signalized intersections will be obtained from Volusia County Traffic Engineering.

Roadway segment capacity analysis will be conducted for study area roadways at a generalized level using traffic data available from Volusia County 2011 Average Annual Daily Traffic & Historical Counts and FDOT LOS tables. For roadways found to be deficient detailed arterial analysis will be conducted using ARTPLAN or HCS or Synchro software. All electronic files of all intersection and arterial analysis will be included in the TIA.

In addition a traffic signal warrant analysis will be conducted at the intersection of Sterling Silver Boulevard based upon projected traffic volumes.

Turn Lane Analysis

A review of the turn lane requirements at project driveways, and design as applicable, will be performed based upon the requirements published in Volusia County Land Development Code.

Report

A signed and sealed report which details the procedures, data, and results of the traffic analysis outlined above will be provided to the City and County staff for review and comment. Two (2) hard copies of the TIA with revised methodology and electronic file (in pdf format) will be provided.

Please feel free to contact me at (813) 288-0233 if you have any questions or comments regarding this proposed methodology or require additional information.

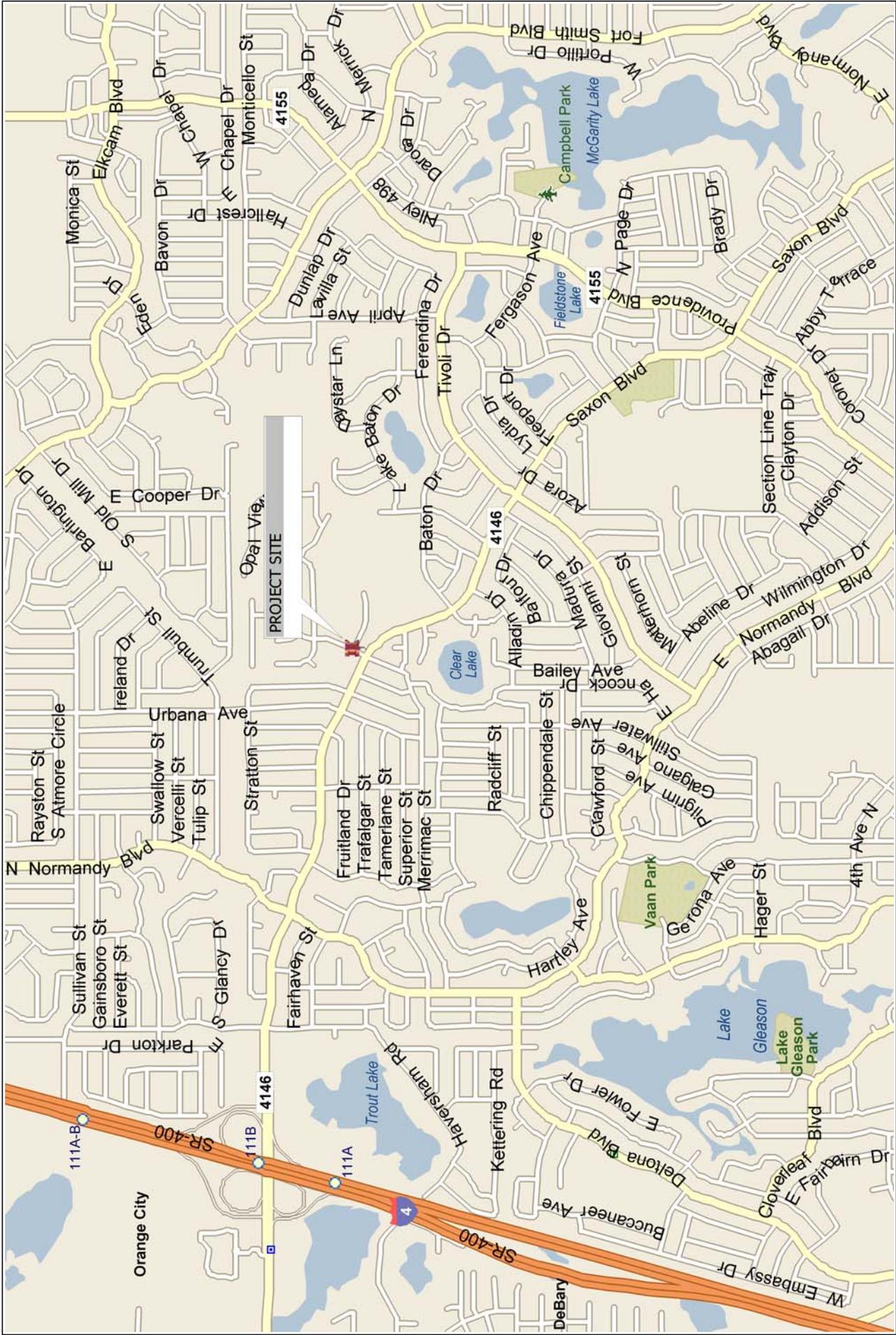
Sincerely,
CPH, Inc.

A handwritten signature in blue ink, appearing to read 'Rveturi', is positioned above the typed name.

Raghu K. Veturi, P.E.
Sr. Traffic Engineer

cc:
Melissa Winsett, Volusia County
Thomas Pauls, AICP, City of Deltona
Ron Paradise, City of Deltona
Larry Wray, P.E., CPH, Inc.

Site Location Map



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ITE TRIP GENERATION

DAILY

Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Daily			
				Enter	Exit	Enter	Exit	Total	
NE Corner	Supermarket	850	44.0	102.24	50%	50%	2,249	2,249	4,499
	Convenience Market with Gasoline Pumps	853	5.7	845.60	50%	50%	2,410	2,410	4,820
	Sub-Total						4,659	4,659	9,318
NW Corner	Shopping Center	820	14.0	$\text{Ln}(T)=0.65 \text{LN}(X)+5.83$	50%	50%	946	946	1,892
	Fast Food Restaurant with Drive-Through Window	934	4.5	496.12	50%	50%	1,116	1,116	2,233
	Fast Food Restaurant with Drive-Through Window	934	4.5	496.12	50%	50%	1,116	1,116	2,233
	Sub-Total						3,179	3,179	6,357
TOTAL						7,838	7,838	15,676	

AM PEAK

Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Peak Hour			Internal Capture		External Trips			Pass-By		Net-New Trips			
				Enter	Exit	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	
NE Corner	Supermarket	850	44.0	3.40	62%	38%	93	57	150	20.00%	30	74	45	120	36%	43	47	29	77
	Convenience Market with Gasoline Pumps	853	5.7	40.92	50%	50%	117	117	233	13.00%	30	101	101	203	63%	128	38	38	75
	Sub-Total						209	173	383	15.74%	60	176	147	323	53%	171	85	67	152
NW Corner	Shopping Center	820	14.0	0.96	62%	38%	8	5	13	23.00%	3	6	4	10	34%	4	4	3	7
	Fast Food Restaurant with Drive-Through Window	934	4.5	45.42	51%	49%	104	100	204	1.00%	2	103	99	202	49%	99	53	51	103
	Fast Food Restaurant with Drive-Through Window	934	4.5	45.42	51%	49%	104	100	204	1.00%	2	103	99	202	49%	99	53	51	103
	Sub-Total						217	205	422	1.70%	7	213	202	415	49%	202	109	104	213
TOTAL						426	379	805		67	388	349	738		373	195	170	365	

PM PEAK

Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Peak Hour			Internal Capture		External Trips			Pass-By		Net-New Trips			
				Enter	Exit	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	
NE Corner	Supermarket	850	44.0	9.48	51%	49%	213	204	417	14.00%	58	183	176	359	36%	129	117	112	230
	Convenience Market with Gasoline Pumps	853	5.7	50.92	50%	50%	145	145	290	20.00%	58	116	116	232	66%	153	39	39	79
	Sub-Total						358	350	707	16.46%	116	299	292	591	48%	282	157	152	309
NW Corner	Shopping Center	820	14.0	$\text{Ln}(T)=0.67 \text{LN}(X)+3.31$	48%	52%	77	83	160	20.00%	32	62	67	128	34%	44	41	44	85
	Fast Food Restaurant with Drive-Through Window	934	4.5	32.65	52%	48%	76	71	147	11.00%	16	68	63	131	50%	65	34	31	65
	Fast Food Restaurant with Drive-Through Window	934	4.5	32.65	52%	48%	76	71	147	11.00%	16	68	63	131	50%	65	34	31	65
	Sub-Total						230	224	454	14.18%	64	198	192	390	45%	174	109	107	215
TOTAL						588	574	1,162		181	497	484	981		457	265	259	524	

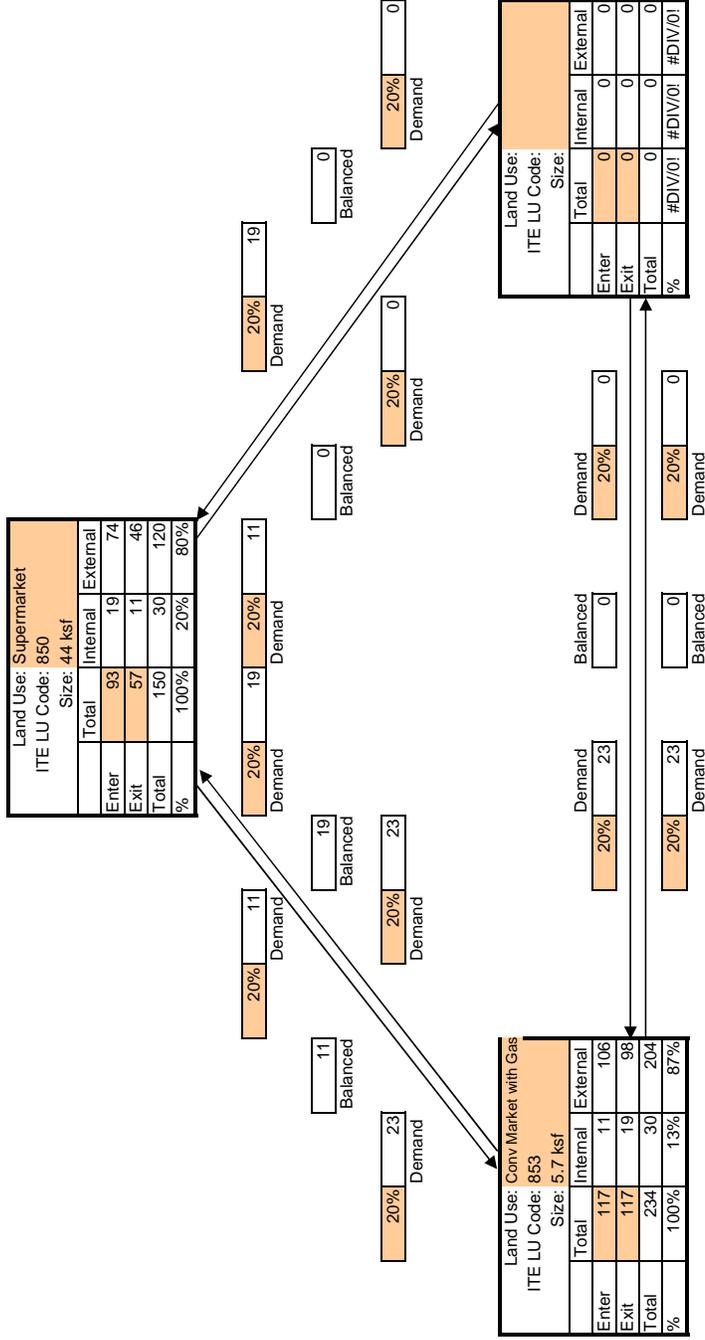
Pass-By Check

Adjacent Roadway	Saxon Boulevard from Normandy Boulevard to Tivoli Drive
2011 AADT	24,160
K-Factor	0.0920
2011 PHT	2,223
14% of PHT	311

Internal Capture Summary [NE Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: AM

inputs



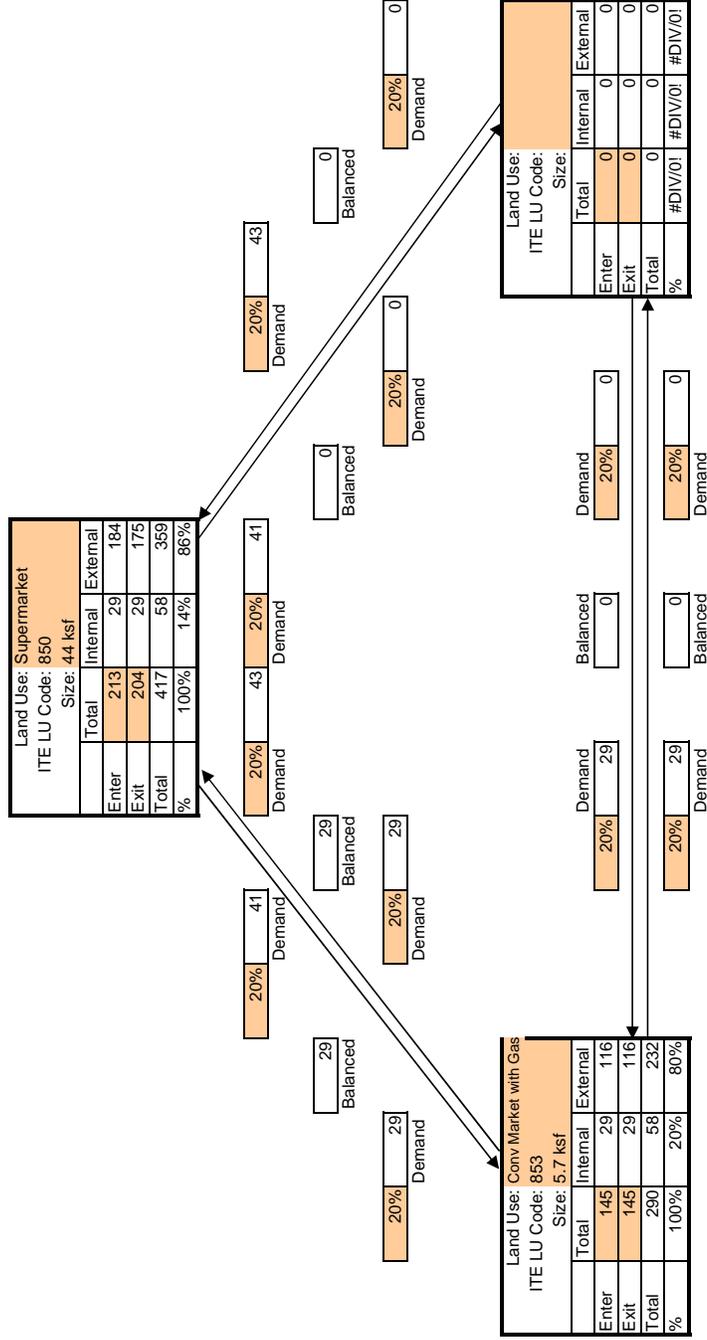
Net External Trips for Multi-Use Development

	Conv Market with Gas	Supermarket	Total
Enter	74	106	180
Exit	46	98	144
Total	120	204	324
Single-Use Trip Gen. Est.	150	234	384
			15.6%

Internal Capture Summary [NE Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: PM

inputs



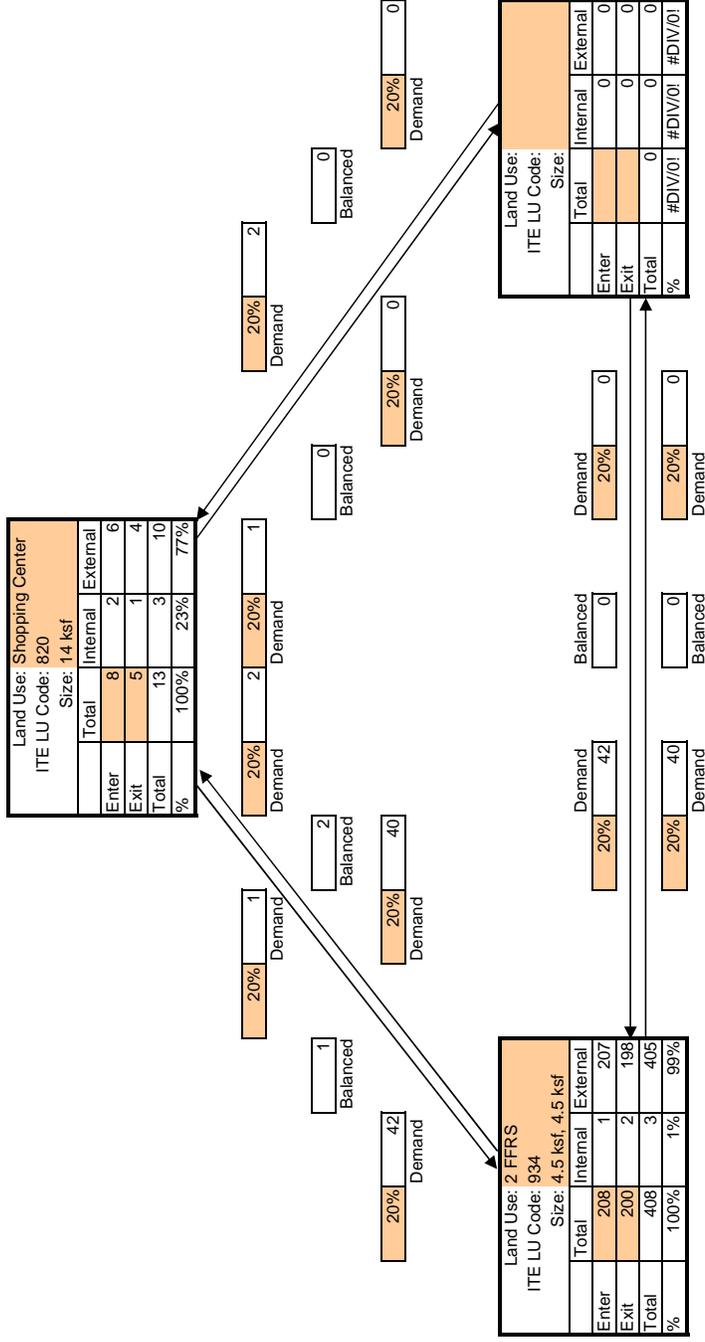
Net External Trips for Multi-Use Development

	Conv Market with Gas	0	Total
Enter	184	0	300
Exit	175	0	291
Total	359	0	591
Single-Use Trip Gen. Est.	417	0	707
			16.4%

Internal Capture Summary [NW Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: AM

inputs



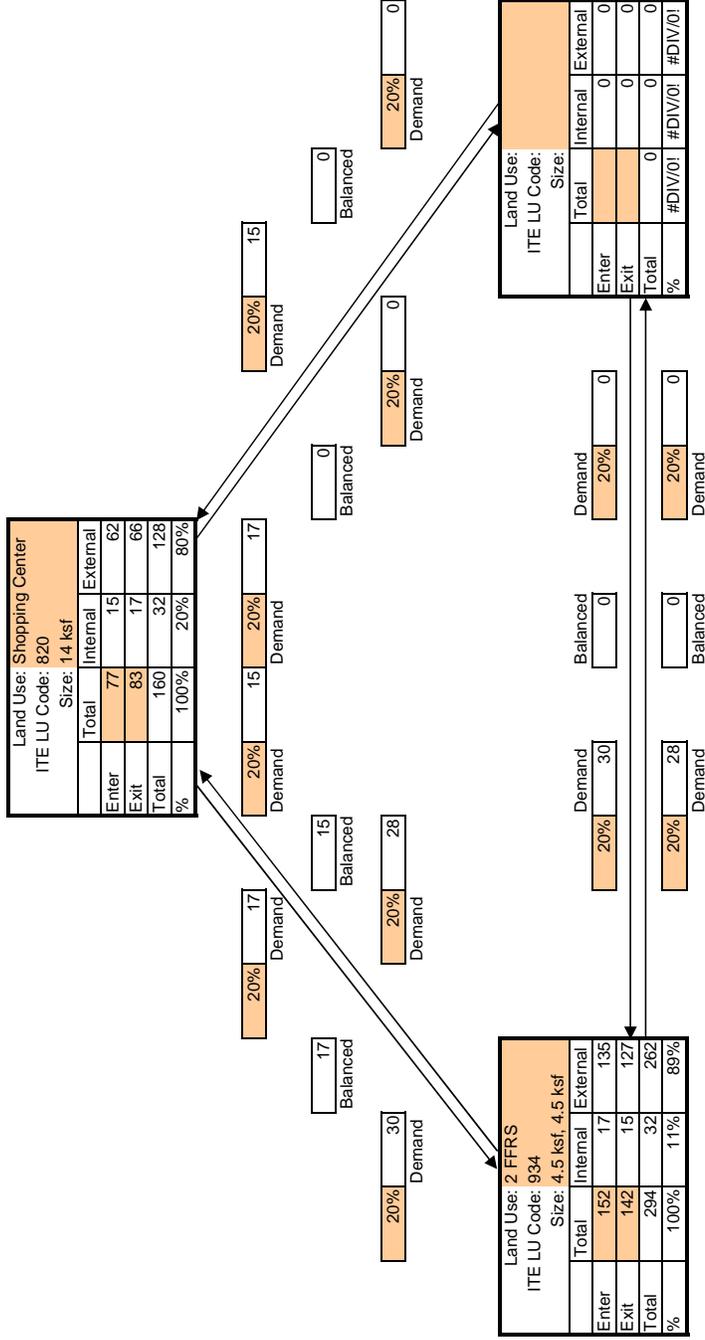
Net External Trips for Multi-Use Development

	Shopping Center	2 FFRS	0	Total
Enter	6	207	0	213
Exit	4	198	0	202
Total	10	405	0	415
Single-Use Trip Gen. Est.	13	408	0	421
				1.4%

Internal Capture Summary [NW Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: PM

inputs



Net External Trips for Multi-Use Development

Shopping Center	2 FFRS	0	Total
Enter	62	135	0
Exit	66	127	0
Total	128	262	0
Single-Use Trip Gen. Est.	160	294	0
			14.1%

PM PEAK HOUR SIGNIFICANCE TEST

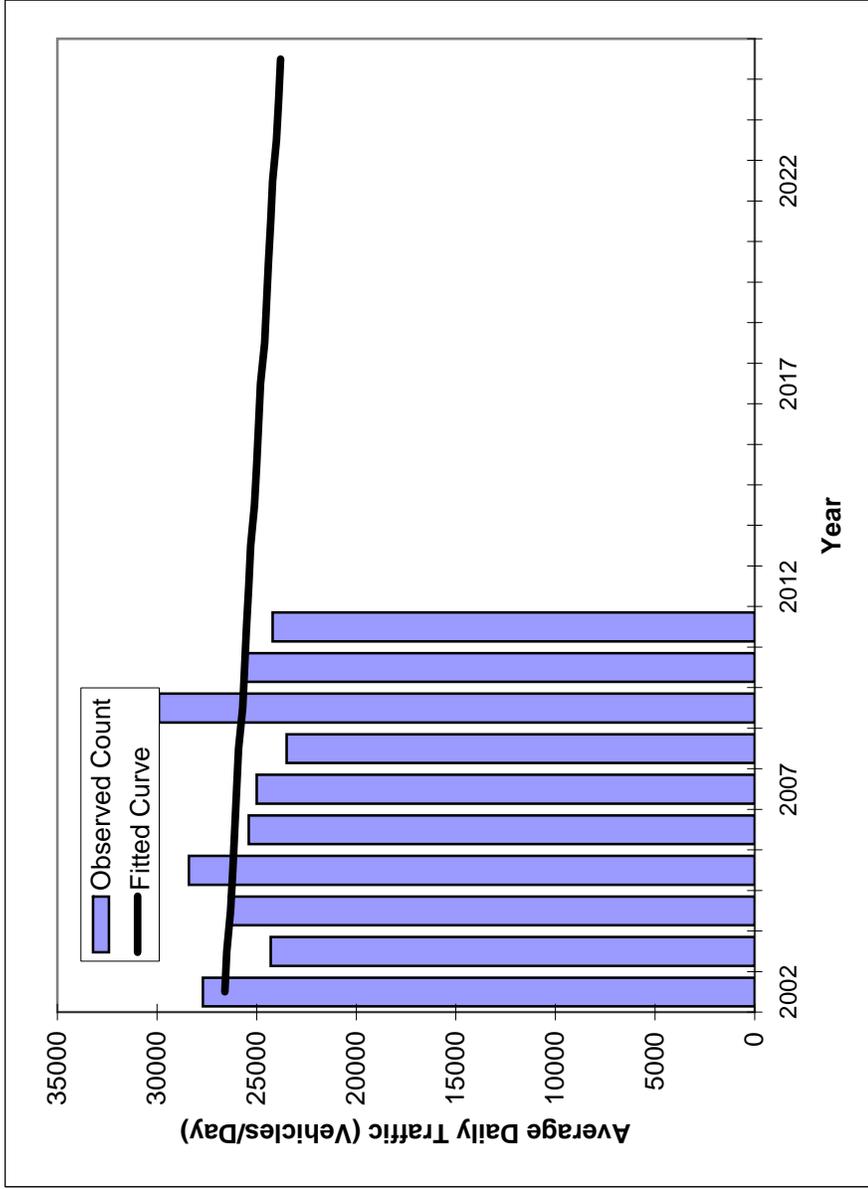
Roadway	From	To	Number of Lanes	Area Type	Adopted LOS	Peak Hour Two-Way Capacity	Project Distribution (%)	Project Trips	% Significance
Saxon Boulevard	I-4	Finland Drive	4L	UA	E	3,222	23%	121	3.74%
	Finland Drive	Normandy Boulevard	4L	UA	E	3,222	23%	121	3.74%
	Normandy Boulevard	Sterling Silver Boulevard	4L	UA	E	3,222	53%	278	8.62%
	Sterling Silver Boulevard	Tivoli Drive	4L	UA	E	3,222	47%	246	7.65%
	Tivoli Drive	Providence Boulevard	2L	UA	E	1,015	21%	110	10.84%
	Providence Boulevard	Normandy Boulevard	2L	UA	E	1,015	14%	73	7.23%
	Normandy Boulevard	Doyle Road	2L	UA	E	1,152	9%	47	4.10%
Tivoli Drive	Normandy Boulevard	Saxon Boulevard	2L	UA	E	1,015	9%	47	4.65%
	Saxon Boulevard	Providence Boulevard	2L	UA	E	1,015	17%	89	8.78%
Normandy Boulevard	Elckam Boulevard	Saxon Boulevard	4L	UA	E	2,736	13%	68	2.49%
	Saxon Boulevard	Deltona Boulevard	2L	UA	E	1,015	13%	68	6.71%
	Deltona Boulevard	Tivoli Drive	3L	UA	E	1,015	1%	5	0.52%
	Tivoli Drive	Providence Boulevard	3L	UA	E	1,015	5%	26	2.58%
	Providence Boulevard	Saxon Boulevard	2L	UA	E	1,269	2%	10	0.83%
Deltona Boulevard	Normandy Boulevard	Cloverleaf Boulevard	4L	UA	E	2,736	11%	58	2.11%
Providence Boulevard	Fort Smith Boulevard	Tivoli Drive	4L	UA	E	2,736	16%	84	3.07%
	Tivoli Drive	Saxon Boulevard	2L	UA	E	1,269	3%	16	1.24%
	Saxon Boulevard	Normandy Boulevard	2L	UA	E	1,015	3%	16	1.55%

Peak Hour Two-Way Capacities derived from FDOT LOS Tables 2012

TRAFFIC TRENDS

Saxon Blvd. -- Normandy Blvd. to Tivoli Drive

County:	Volusia
Station #:	1677
Highway:	Saxon Blvd.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	27700	26600
2003	24300	26500
2004	26400	26300
2005	28400	26200
2006	25400	26100
2007	25000	26000
2008	23500	25900
2009	29900	25700
2010	25600	25600
2011	24200	25500
2015 Opening Year Trend		
2015	N/A	25000
2016 Mid-Year Trend		
2016	N/A	24900
2020 Design Year Trend		
2020	N/A	24400
TRANPLAN Forecasts/Trends		

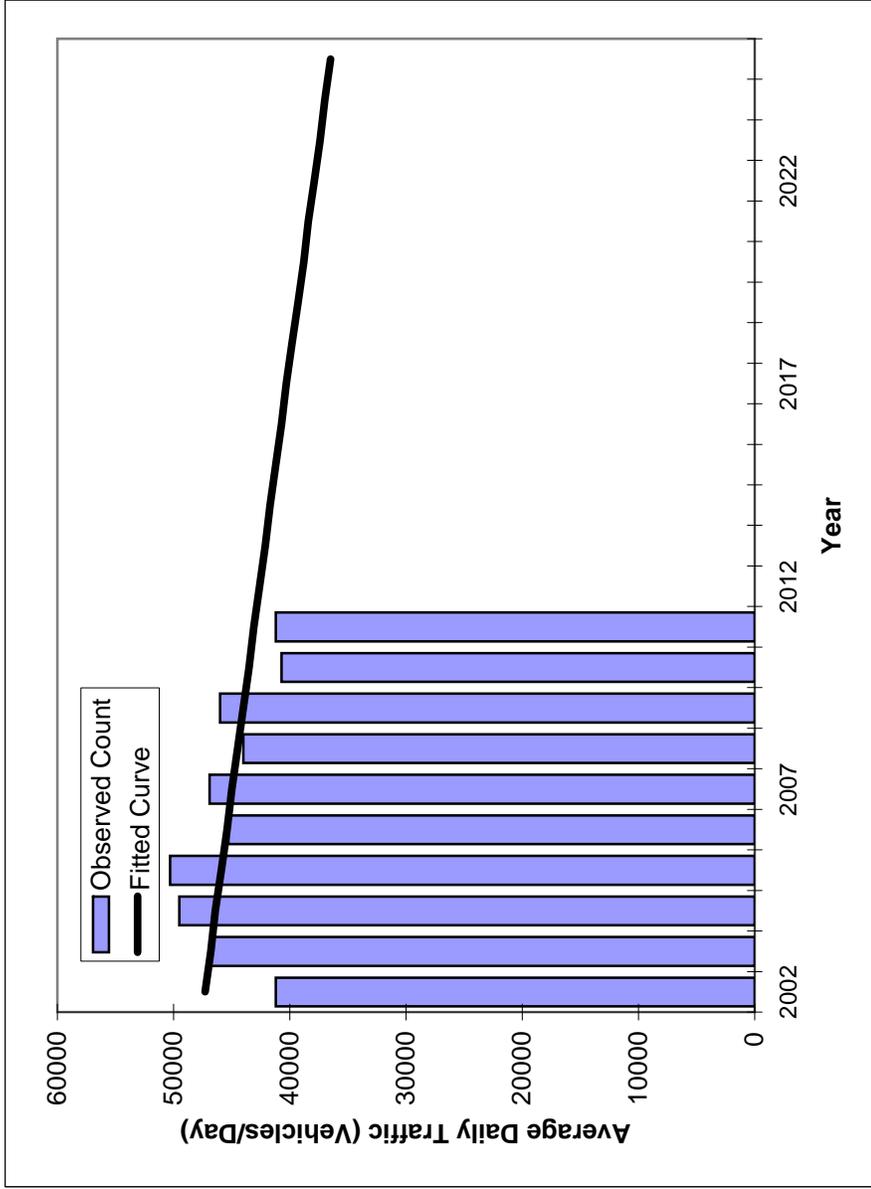
** Annual Trend Increase:	-121
Trend R-squared:	3.2%
Trend Annual Historic Growth Rate:	-0.46%
Trend Growth Rate (2011 to Design Year):	-0.48%
Printed:	23-Jul-13
Straight Line Growth Option	

*Axle-Adjusted

TRAFFIC TRENDS

Saxon Blvd. -- I-4 to Finland

County: Volusia
 Station #: 1675
 Highway: Saxon Blvd.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	41200	47300
2003	46800	46800
2004	49500	46400
2005	50300	45900
2006	45300	45400
2007	46900	45000
2008	44000	44500
2009	46000	44000
2010	40700	43500
2011	41200	43100
2015 Opening Year Trend		
2015	N/A	41200
2016 Mid-Year Trend		
2016	N/A	40700
2020 Design Year Trend		
2020	N/A	38800
TRANPLAN Forecasts/Trends		

** Annual Trend Increase: -470
 Trend R-squared: 17.5%
 Trend Annual Historic Growth Rate: -0.99%
 Trend Growth Rate (2011 to Design Year): -1.11%
 Printed: 5-Aug-13

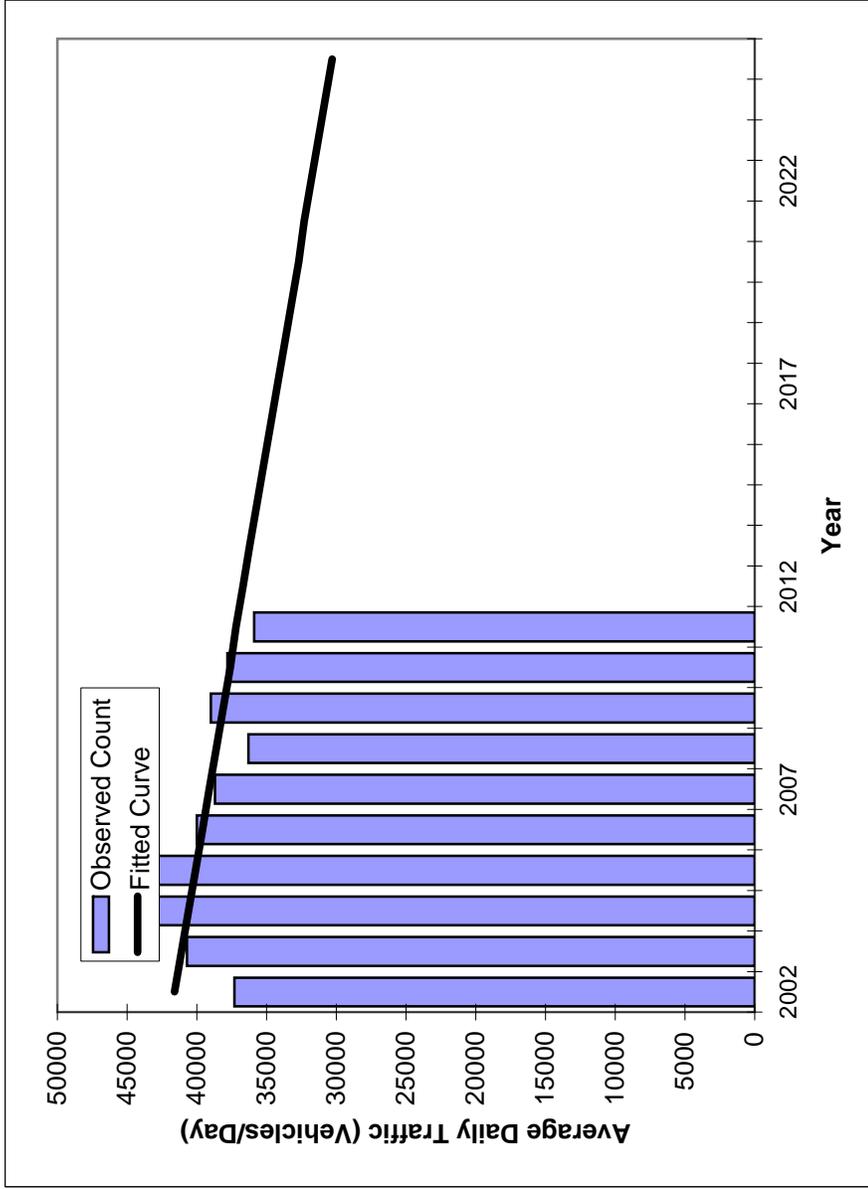
Straight Line Growth Option

*Axle-Adjusted

TRAFFIC TRENDS

Saxon Blvd. -- Finland to Normandy

County:	Volusia
Station #:	1676
Highway:	Saxon Blvd.

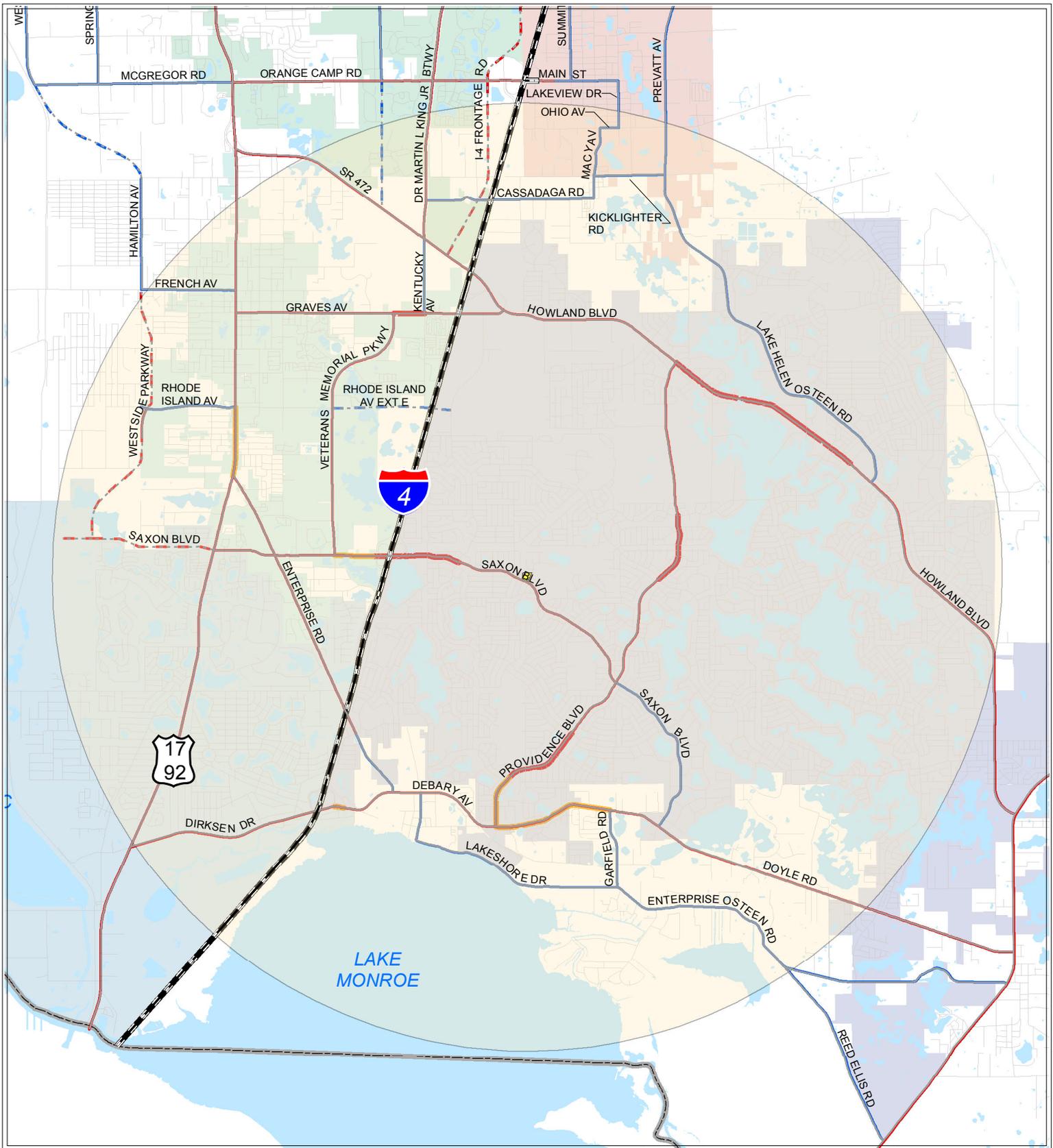


Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	37300	41600
2003	40700	41100
2004	43400	40600
2005	44500	40100
2006	40000	39600
2007	38700	39100
2008	36300	38600
2009	39000	38100
2010	37800	37600
2011	35900	37200
2015 Opening Year Trend		
2015	N/A	35200
2016 Mid-Year Trend		
2016	N/A	34700
2020 Design Year Trend		
2020	N/A	32700
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-490
Trend R-squared:	26.9%
Trend Annual Historic Growth Rate:	-1.18%
Trend Growth Rate (2011 to Design Year):	-1.34%
Printed:	5-Aug-13

Straight Line Growth Option

*Axle-Adjusted

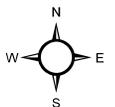


Legend

- buffer
- 8130-78-00-0010
- Hydrology
- LOS2011_NearCritical
- LOS2011_Critical

Impact Area - 5 mile radius

8130-78-00-0010



APPENDIX B
ITE TRIP GENERATION

ITE TRIP GENERATION

DAILY

	Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Daily		
					Enter	Exit	Enter	Exit	Total
NE Corner	Supermarket	850	44.0	102.24	50%	50%	2,249	2,249	4,499
	Convenience Market with Gasoline Pumps	853	5.7	845.60	50%	50%	2,410	2,410	4,820
	Sub-Total							4,659	4,659
NW Corner	Shopping Center	820	14.0	$\text{Ln}(T)=0.65 \text{LN}(X)+5.83$	50%	50%	946	946	1,892
	Fast Food Restaurant with Drive-Through Window	934	4.5	496.12	50%	50%	1,116	1,116	2,233
	Fast Food Restaurant with Drive-Through Window	934	4.5	496.12	50%	50%	1,116	1,116	2,233
	Sub-Total							3,179	3,179
TOTAL							7,838	7,838	15,676

AM PEAK

	Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Peak Hour			Internal Capture		External Trips			Pass-By		Net-New Trips		
					Enter	Exit	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total
NE Corner	Supermarket	850	44.0	3.40	62%	38%	93	57	150	20.00%	30	74	45	120	36%	43	47	29	77
	Convenience Market with Gasoline Pumps	853	5.7	40.92	50%	50%	117	117	233	13.00%	30	101	101	203	63%	128	38	38	75
	Sub-Total							209	173	383	15.74%	60	176	147	323	53%	171	85	67
NW Corner	Shopping Center	820	14.0	0.96	62%	38%	8	5	13	23.00%	3	6	4	10	34%	4	4	3	7
	Fast Food Restaurant with Drive-Through Window	934	4.5	45.42	51%	49%	104	100	204	1.00%	2	103	99	202	49%	99	53	51	103
	Fast Food Restaurant with Drive-Through Window	934	4.5	45.42	51%	49%	104	100	204	1.00%	2	103	99	202	49%	99	53	51	103
	Sub-Total							217	205	422	1.70%	7	213	202	415	49%	202	109	104
TOTAL							426	379	805		67	388	349	738		373	195	170	365

PM PEAK

	Land Use	ITE Land Use Code	Size (ksf)	Rate	Directional Distribution		Gross Peak Hour			Internal Capture		External Trips			Pass-By		Net-New Trips		
					Enter	Exit	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total	Rate	Trips	Enter	Exit	Total
NE Corner	Supermarket	850	44.0	9.48	51%	49%	213	204	417	14.00%	58	183	176	359	36%	129	117	112	230
	Convenience Market with Gasoline Pumps	853	5.7	50.92	50%	50%	145	145	290	20.00%	58	116	116	232	66%	153	39	39	79
	Sub-Total							358	350	707	16.46%	116	299	292	591	48%	282	157	152
NW Corner	Shopping Center	820	14.0	$\text{Ln}(T)=0.67 \text{LN}(X)+3.31$	48%	52%	77	83	160	20.00%	32	62	67	128	34%	44	41	44	85
	Fast Food Restaurant with Drive-Through Window	934	4.5	32.65	52%	48%	76	71	147	11.00%	16	68	63	131	50%	65	34	31	65
	Fast Food Restaurant with Drive-Through Window	934	4.5	32.65	52%	48%	76	71	147	11.00%	16	68	63	131	50%	65	34	31	65
	Sub-Total							230	224	454	14.18%	64	198	192	390	45%	174	109	107
TOTAL							588	574	1,162		181	497	484	981		457	265	259	524

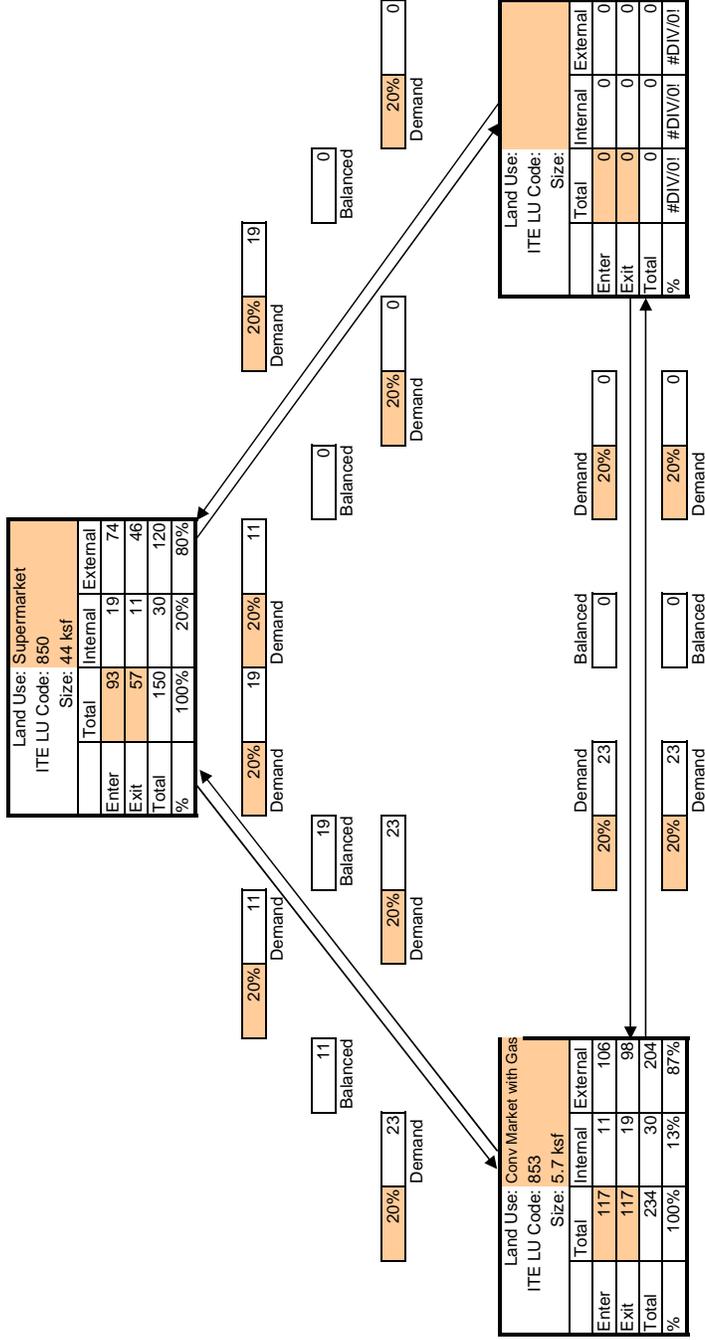
Pass-By Check

Adjacent Roadway	Saxon Boulevard from Normandy Boulevard to Tivoli Drive
2011 AADT	24,160
K-Factor	0.0920
2011 PHT	2,223
14% of PHT	311

Internal Capture Summary [NE Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: AM

inputs



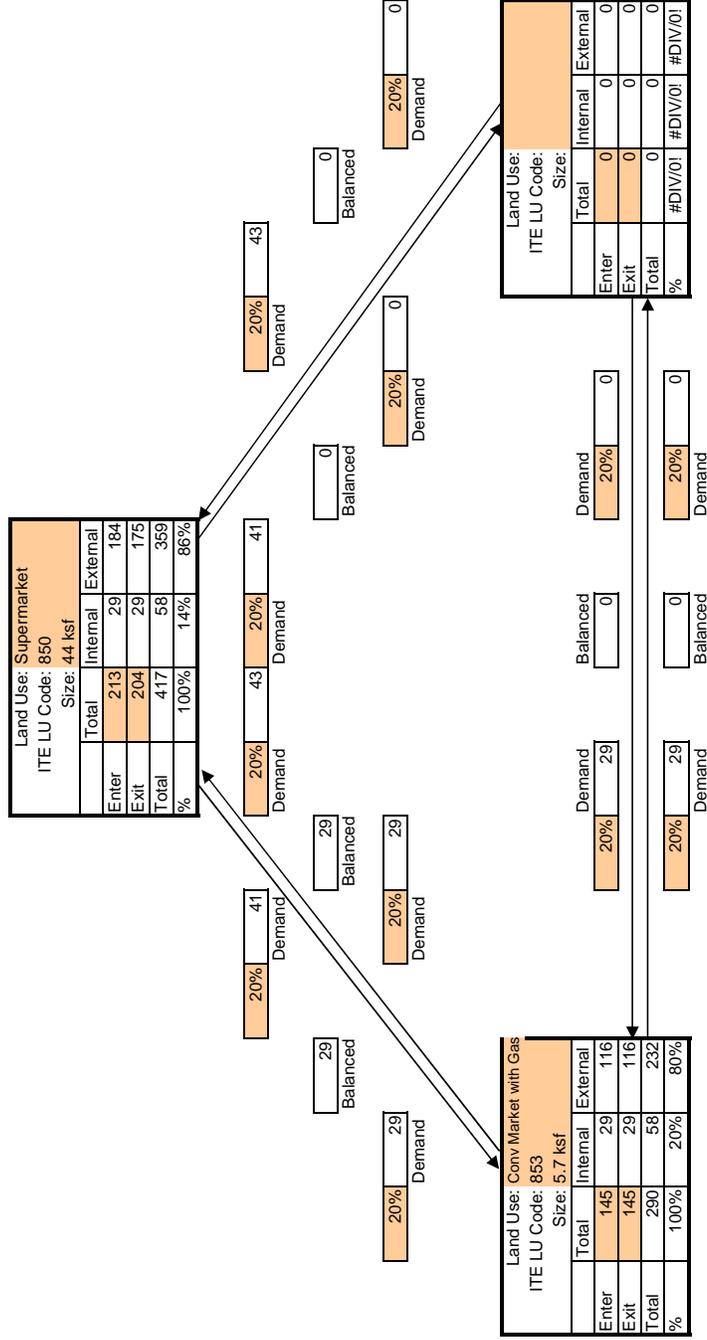
Net External Trips for Multi-Use Development

	Conv Market with Gas	Supermarket	Total
Enter	74	106	180
Exit	46	98	144
Total	120	204	324
Single-Use Trip Gen. Est.	150	234	384
			15.6%

Internal Capture Summary [NE Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: PM

inputs



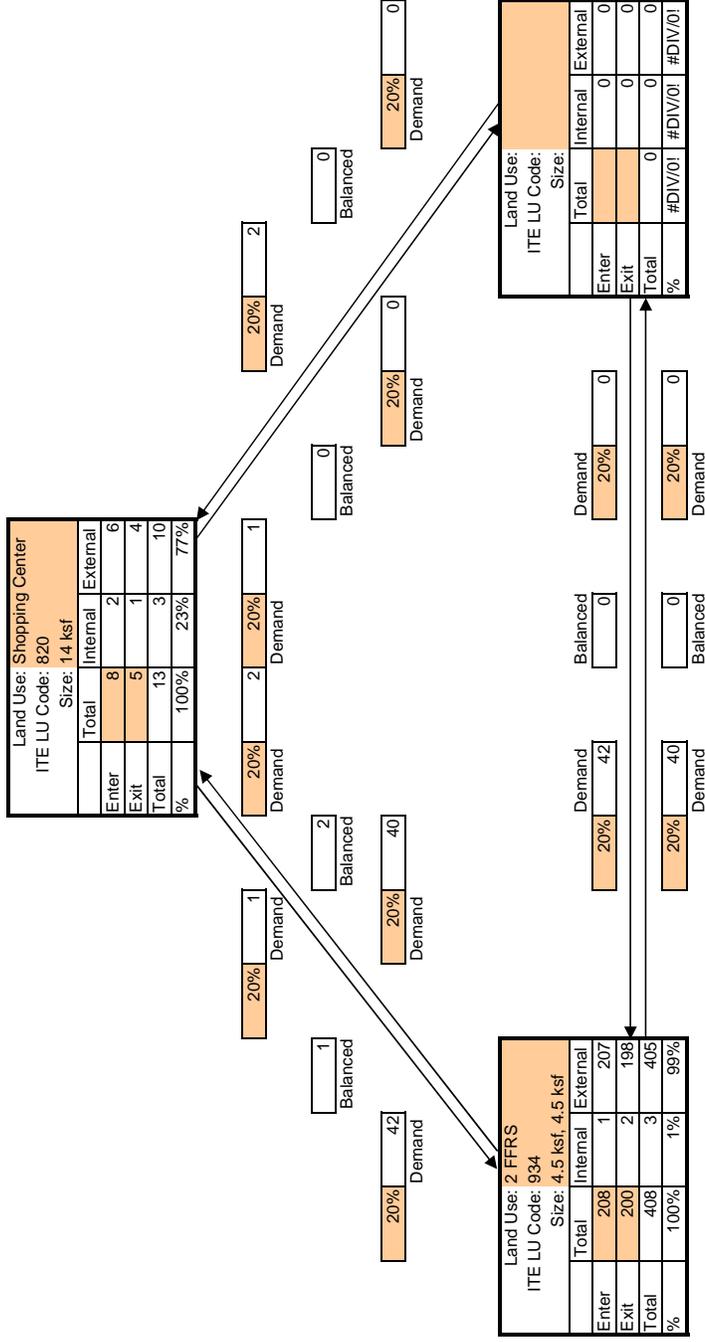
Net External Trips for Multi-Use Development

	Conv Market with Gas	Supermarket	Total
Enter	116	184	300
Exit	116	175	291
Total	232	359	591
Single-Use Trip Gen. Est.	290	417	707
Internal Capture	0	0	0
%	33%	16.4%	16.4%

Internal Capture Summary [NW Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: AM

inputs



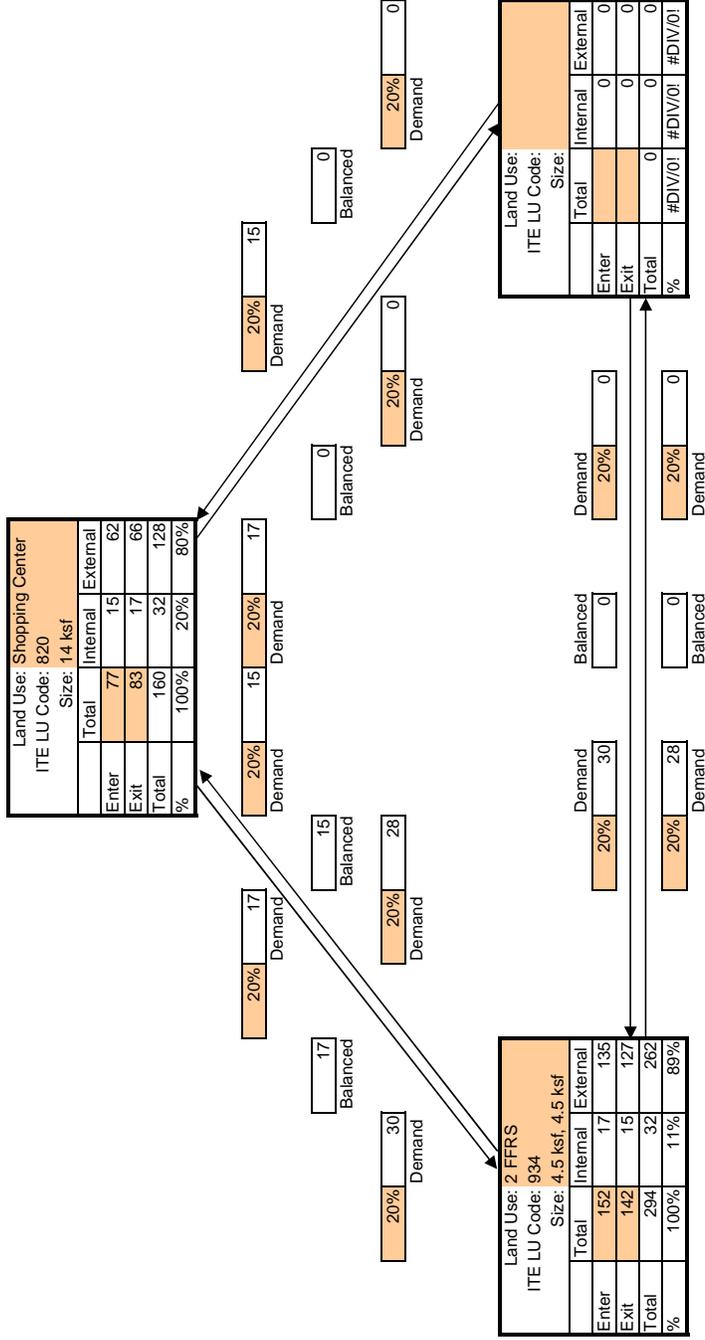
Net External Trips for Multi-Use Development

	Shopping Center	2 FFRS	0	Total
Enter	6	207	0	213
Exit	4	198	0	202
Total	10	405	0	415
Single-Use Trip Gen. Est.	13	408	0	421
				1.4%

Internal Capture Summary [NW Corner]

Date: 10/03/13
 Development Name: Retail Center Deltona
 Time: PM

inputs



Net External Trips for Multi-Use Development

Shopping Center	2 FFRS	0	Total	
Enter	62	135	0	197
Exit	66	127	0	193
Total	128	262	0	390
Single-Use Trip Gen. Est.	160	294	0	454
				14.1%

APPENDIX C
TRAFFIC DATA COLLECTION

2012 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 7900 VOLUSIA COUNTYWIDE

WEEK	DATES	SF	MOCF: 0.95 PSCF
1	01/01/2012 - 01/07/2012	1.01	1.07
2	01/08/2012 - 01/14/2012	1.00	1.06
3	01/15/2012 - 01/21/2012	1.00	1.06
4	01/22/2012 - 01/28/2012	0.98	1.04
* 5	01/29/2012 - 02/04/2012	0.97	1.03
* 6	02/05/2012 - 02/11/2012	0.95	1.00
* 7	02/12/2012 - 02/18/2012	0.94	0.99
* 8	02/19/2012 - 02/25/2012	0.93	0.98
* 9	02/26/2012 - 03/03/2012	0.93	0.98
*10	03/04/2012 - 03/10/2012	0.93	0.98
*11	03/11/2012 - 03/17/2012	0.92	0.97
*12	03/18/2012 - 03/24/2012	0.93	0.98
*13	03/25/2012 - 03/31/2012	0.94	0.99
*14	04/01/2012 - 04/07/2012	0.95	1.00
*15	04/08/2012 - 04/14/2012	0.96	1.01
*16	04/15/2012 - 04/21/2012	0.97	1.03
*17	04/22/2012 - 04/28/2012	0.98	1.04
18	04/29/2012 - 05/05/2012	0.99	1.05
19	05/06/2012 - 05/12/2012	1.00	1.06
20	05/13/2012 - 05/19/2012	1.01	1.07
21	05/20/2012 - 05/26/2012	1.02	1.08
22	05/27/2012 - 06/02/2012	1.02	1.08
23	06/03/2012 - 06/09/2012	1.02	1.08
24	06/10/2012 - 06/16/2012	1.03	1.09
25	06/17/2012 - 06/23/2012	1.03	1.09
26	06/24/2012 - 06/30/2012	1.04	1.10
27	07/01/2012 - 07/07/2012	1.04	1.10
28	07/08/2012 - 07/14/2012	1.04	1.10
29	07/15/2012 - 07/21/2012	1.05	1.11
30	07/22/2012 - 07/28/2012	1.05	1.11
31	07/29/2012 - 08/04/2012	1.05	1.11
32	08/05/2012 - 08/11/2012	1.05	1.11
33	08/12/2012 - 08/18/2012	1.05	1.11
34	08/19/2012 - 08/25/2012	1.05	1.11
35	08/26/2012 - 09/01/2012	1.04	1.10
36	09/02/2012 - 09/08/2012	1.04	1.10
37	09/09/2012 - 09/15/2012	1.04	1.10
38	09/16/2012 - 09/22/2012	1.03	1.09
39	09/23/2012 - 09/29/2012	1.02	1.08
40	09/30/2012 - 10/06/2012	1.01	1.07
41	10/07/2012 - 10/13/2012	1.00	1.06
42	10/14/2012 - 10/20/2012	0.99	1.05
43	10/21/2012 - 10/27/2012	1.00	1.06
44	10/28/2012 - 11/03/2012	1.00	1.06
45	11/04/2012 - 11/10/2012	1.00	1.06
46	11/11/2012 - 11/17/2012	1.00	1.06
47	11/18/2012 - 11/24/2012	1.01	1.07
48	11/25/2012 - 12/01/2012	1.01	1.07
49	12/02/2012 - 12/08/2012	1.01	1.07
50	12/09/2012 - 12/15/2012	1.01	1.07
51	12/16/2012 - 12/22/2012	1.01	1.07
52	12/23/2012 - 12/29/2012	1.00	1.06
53	12/30/2012 - 12/31/2012	1.00	1.06

* PEAK SEASON

08-FEB-2013 12:30:05

830UPD [1,0,0,1]

5_7900_PKSEASON.TXT



Quality Counts
TRANSPORTATION DATA
COLLECTION SERVICES

Site Code: 11213801 + 02

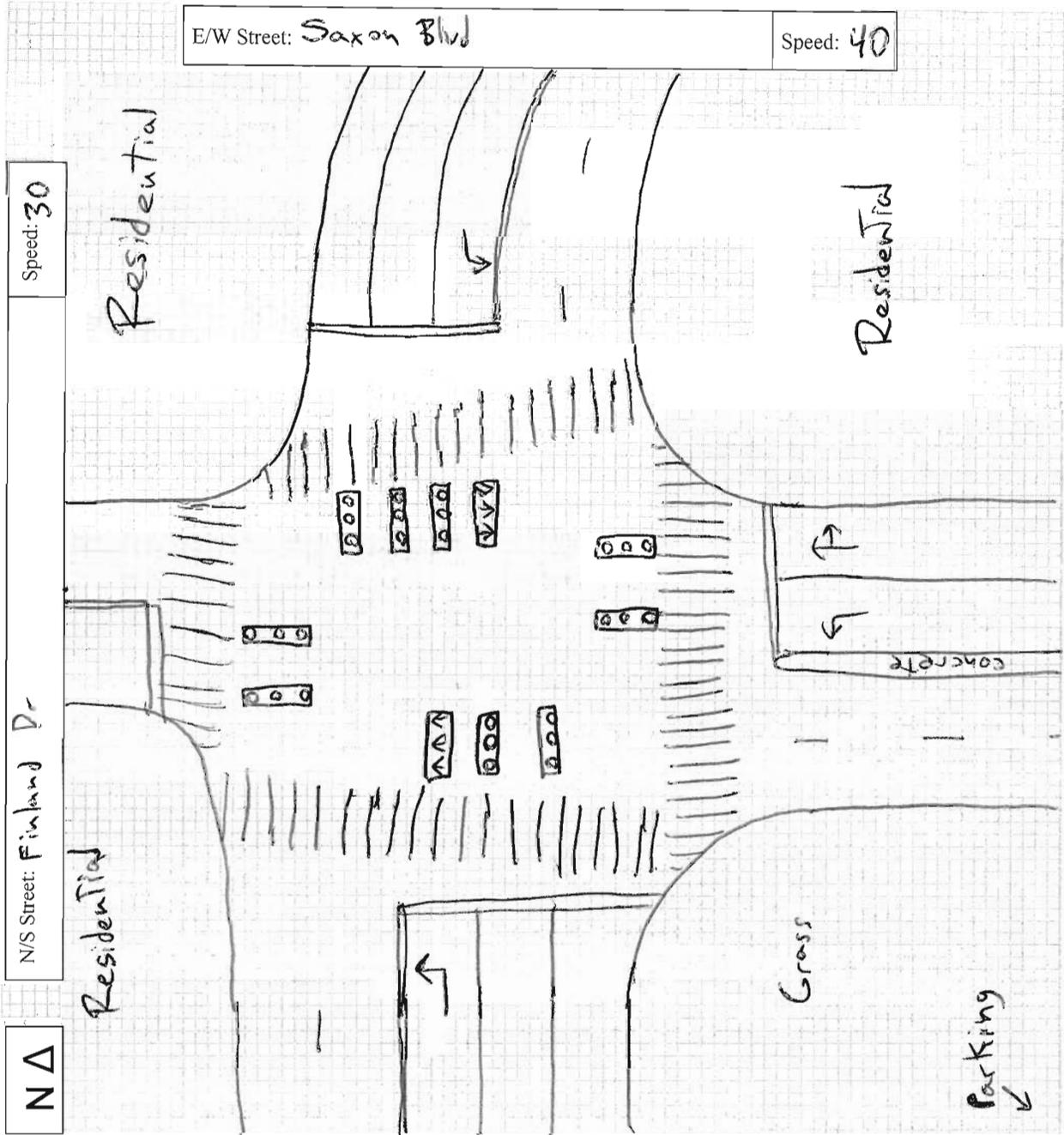
Date: 9-11-13

Weather: Clear

City: Deltona

County: Volusia

Count Times: 7:00AM - 9:00AM
4:00PM - 6:00PM



		AM			PM			
A	B	C	1	2	3	1	2	3
↖			:13	✗	✗	:14	:14	:18
↗	↖		A :07	✗	A :22	A :10	A :11	A :08
↘			:19	:23	:00	:21	:12	:16
↙			:33	:34	:30	:30	:23	:38
Total			2:12	1:57	1:52	2:15	2:00	2:20

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Saxon Boulevard & Finland Drive
Deltona **ISOLATED:** **DATE:** 5/2/2013
SIGNAL #: 321 **CO-ORD:** **Design By:** M. Rodriguez
System #: 18

Controller Timing Chart

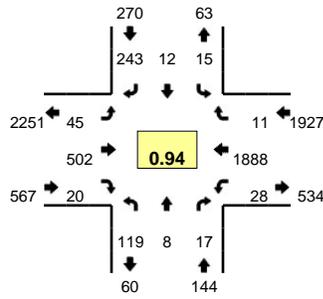
PHASE	1	2	3	4	5	6	7	8	
DIRECTION	WBL	EB		SB	EBL	WB		NB	
TURN TYPE	PROT	-		-	PROT	-		-	
MIN GREEN	5	11		6	5	11		6	
EXTENSION	3	4		4	3	4		4	
CLEARANCE	4.5	4.5		4.0	4.5	4.5		4.0	
ALL RED	2.0	2.0		2.5	2.0	2.0		2.5	
WALK	-	7		7	-	7		7	
FDW	-	22		24	-	22		24	
MAX 1	20	60		25	20	60		25	
MAX 2									
MAX 3	-	85		-	-	85		-	
ADJUST	-	10		-	-	10		-	
RECALL	-	MIN		-	-	MIN		-	
DETECTOR	NON-LOCK	LOCK		NON-LOCK	NON-LOCK	LOCK		NON-LOCK	
FLASH	RED	YELLOW		RED	RED	YELLOW		RED	
SET	-	2		-	-	2		-	
CLEAR	-	2		-	-	2		-	
BASE DAY	1	2	3	4	5	6	7		
MON #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00			Crosswalk Length	
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE			P2	
TUES#1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00			75 Feet	
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE			P4	
WED #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00			81 Feet	
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE			P6	
THU #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00			64 Feet	
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE			P8	
FRI #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00			74 Feet	
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE			SIGNAL OWNER	
SAT #2	TIME 00:01-00:00							County	
	PLAN FREE							LED YES	
SUN #3	TIME 00:01-00:00							10.77.8.38	
	PLAN FREE							8216A 3.7.3	
CONTROLLER TYPE		CONDITION OF OVERHEAD		OK		PROM NUMBER			
3000E		OVERHEAD STREET NAMES		NO					
PHASES: 8Φ		ILLUMINATED STREET NAMES		YES					
CABINET TYPE V		PRE-EMPTION		NO		IP ADDRESS			
CABINET DATE 06/1994		PRE-EMPTION TYPE		N/A					

REMARKS:

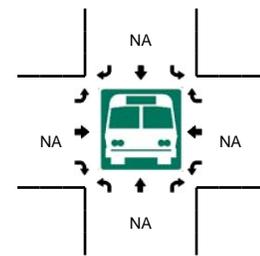
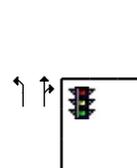
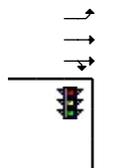
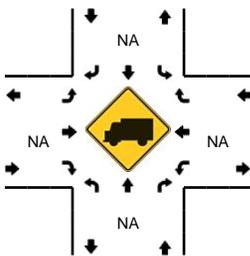
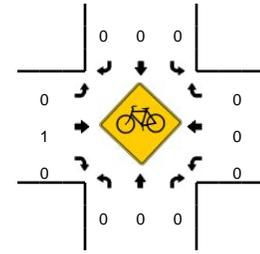
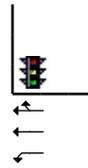
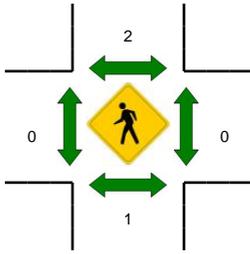
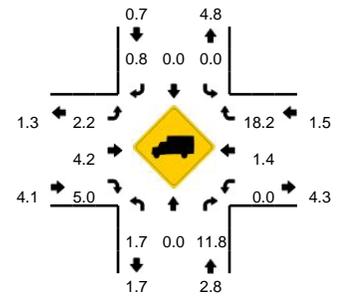


LOCATION: Finland Dr -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213801
DATE: Wed, Sep 11 2013



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



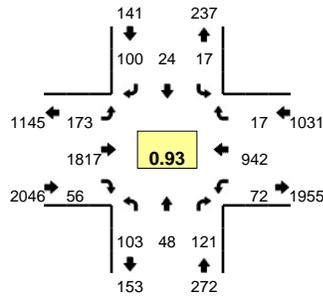
R* = RTOR

15-Min Count Period Beginning At	Finland Dr (Northbound)					Finland Dr (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	21	0	0	0	2	4	4	37	0	18	11	119	2	0	0	3	377	4	0	0	602	
7:15 AM	30	0	1	0	1	4	1	36	0	14	6	139	6	0	0	6	441	1	0	0	686	
7:30 AM	41	3	3	0	3	7	4	50	0	11	12	127	1	0	0	4	504	1	0	0	771	
7:45 AM	23	3	3	0	4	2	1	62	0	9	15	115	4	0	0	11	492	6	0	0	750	2809
8:00 AM	25	2	1	0	1	2	6	54	0	7	11	121	8	1	1	7	451	3	0	0	701	2908
8:15 AM	25	2	2	0	4	3	1	31	0	23	9	116	4	0	1	3	367	2	0	0	593	2815
8:30 AM	16	1	0	0	3	6	1	22	0	27	11	153	7	1	2	2	324	1	0	1	578	2622
8:45 AM	12	2	1	0	3	5	5	22	0	10	14	154	4	0	0	2	328	4	0	0	566	2438
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	164	12	12	0	12	28	16	200	0	44	48	508	4	0	0	16	2016	4	0	0	3084	
Heavy Trucks	0	0	0			0	0	8			0	4	0			0	24	0			36	
Pedestrians	0	0	0			0	0	0			0	0	0			0	0	0			0	
Bicycles	0	0	0			0	0	0			0	1	0			0	0	0			1	
Railroad																						
Stopped Buses																						

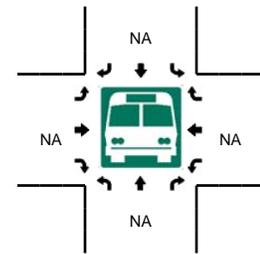
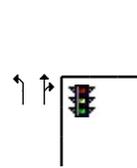
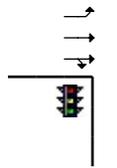
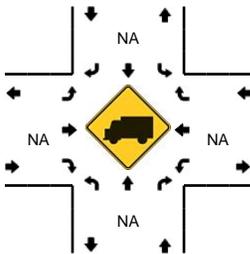
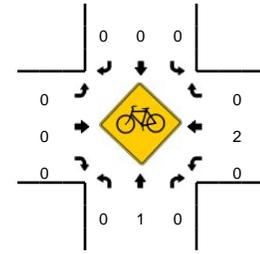
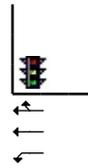
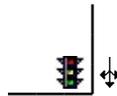
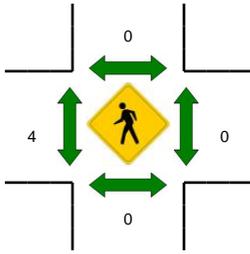
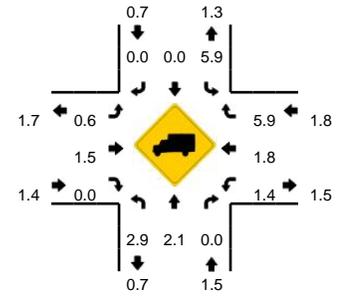
Comments:

LOCATION: Finland Dr -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213802
DATE: Wed, Sep 11 2013



Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



R* = RTOR

15-Min Count Period Beginning At	Finland Dr (Northbound)					Finland Dr (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	15	12	20	0	12	3	7	12	0	5	33	363	14	0	1	19	192	6	0	0	714	
4:15 PM	21	9	14	0	9	2	2	11	0	11	29	378	7	0	0	16	214	6	0	0	729	
4:30 PM	26	13	26	0	10	0	6	14	0	11	39	396	13	0	2	11	249	1	0	0	817	
4:45 PM	21	12	16	1	4	4	9	14	0	13	39	460	9	0	0	12	243	2	0	0	859	3119
5:00 PM	24	15	25	0	6	4	1	2	0	17	42	444	9	1	1	21	239	2	0	0	853	3258
5:15 PM	31	10	26	0	6	5	8	9	0	18	52	486	18	0	2	17	245	8	0	0	941	3470
5:30 PM	26	11	32	0	6	4	6	10	0	17	39	427	17	0	0	22	215	5	0	0	837	3490
5:45 PM	18	13	26	0	4	6	4	7	0	21	35	435	8	0	1	21	221	3	0	0	823	3454
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
All Vehicles	124	40	104	0	24	20	32	36	0	72	208	1944	72	0	8	68	980	32	0	0		3764
Heavy Trucks	4	0	0			4	0	0			0	32	0			0	20	0			60	
Pedestrians	0					0					0					0					0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																					0	
Stopped Buses																					0	

Comments:



Site Code: 11213803 + 04

Date: 9-11-13

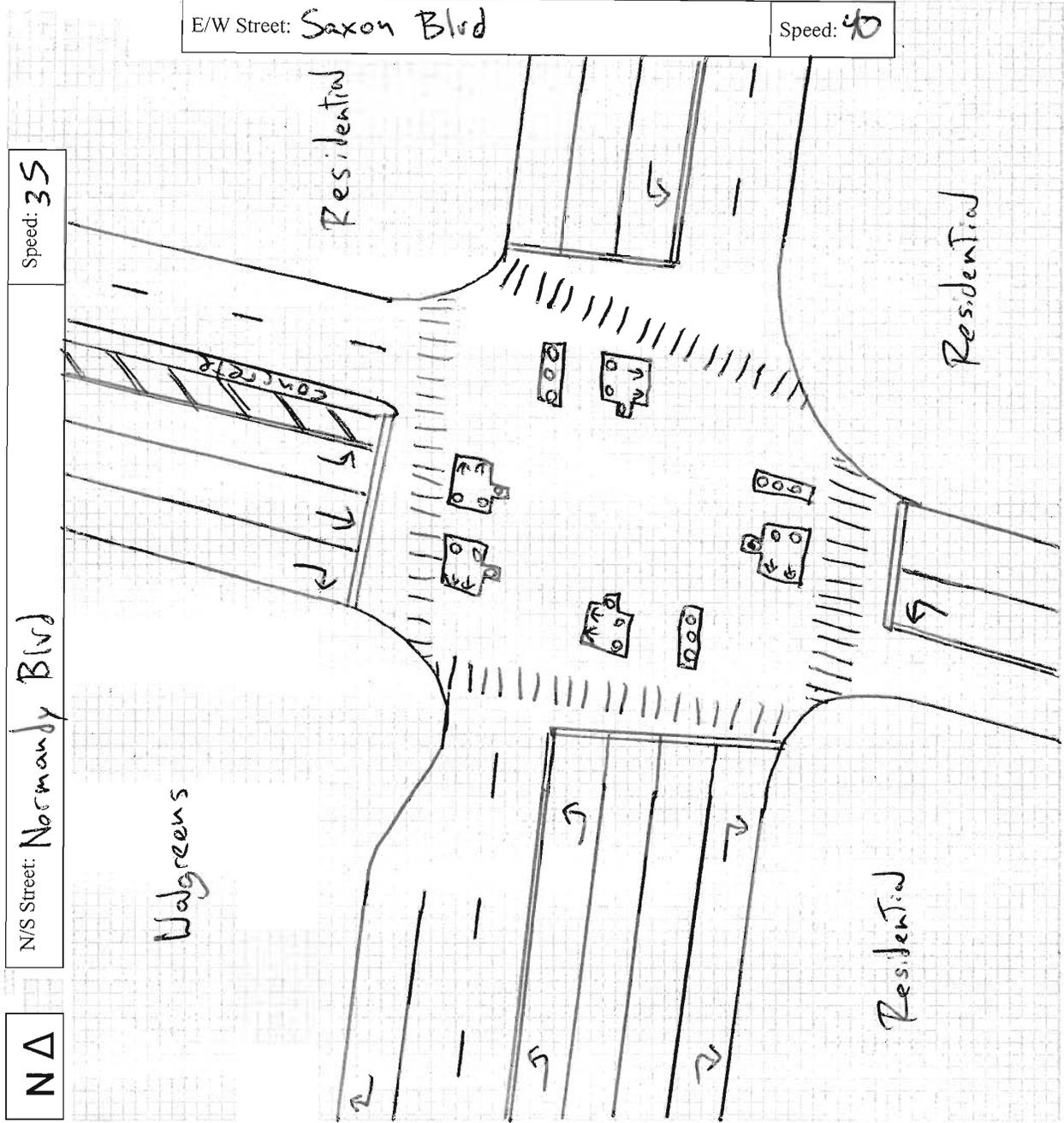
Weather: Clear

City: Peltona

County: Volusia

Count Times: 7:00AM - 9:00AM
4:00PM - 6:00PM

		AM			PM		
A	B	1	2	3	1	2	3
↗	↖	:17	X	X	:19	X	X
↘	↙	:05	:16	:16	:22	:24	:16
↗	↖	:46	:54	:54	:40	:56	:10
↘	↙	X	X	:18	:15	:16	:18
↗	↖	:24	:24	:05	:07	:08	:05
↘	↙	:22	:21	:22	:22	:22	:23
Total		:54	:55	:55	:2:05	:2:06	:17



N/S Street: Normandy Blvd
Speed: 35

E/W Street: Saxon Blvd
Speed: 40

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Saxon Blvd & N. Normandy Blvd
Deltona **ISOLATED:** **DATE:** 5/2/2013
SIGNAL #: 157 **CO-ORD:** **Design By:** M. Rodriguez
System #: 18

Controller Timing Chart

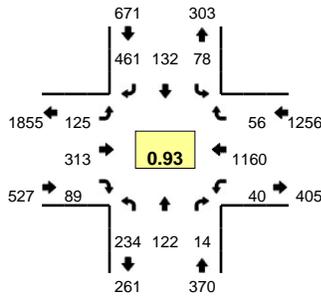
PHASE	1	2	3	4	5	6	7	8	
DIRECTION	EBL	WB	SBL	NB	WBL	EB	NBL	SB	
TURN TYPE	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	PERM/PROT	-	
MIN GREEN	5	11	5	6	5	11	5	6	
EXTENSION	3	4	3	4	3	4	3	4	
CLEARANCE	4.5	4.5	4.0	4.0	4.5	4.5	4.0	4.0	
ALL RED	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
WALK	-	7	-	7	-	7	-	7	
FDW	-	29	-	23	-	18	-	23	
MAX 1	20	45	20	40	20	45	20	40	
MAX 2	-	-	-	-	-	-	-	-	
MAX 3	40	60	-	-	-	60	-	-	
ADJUST	5	5	-	-	-	5	-	-	
RECALL	-	MIN	-	-	-	MIN	-	-	
DETECTOR	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	NON-LOCK	LOCK	NON-LOCK	NON-LOCK	
FLASH	-	YELLOW	-	RED	-	YELLOW	-	RED	
SET	2	2	-	-	-	2	-	-	
CLEAR	2	2	-	-	-	2	-	-	
BASE DAY	1	2	3	4	5	6	7		
MON #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00				Crosswalk Length
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE				
TUES#1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00				P2
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE				100 Feet
WED #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00				P4
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE				75 Feet
THU #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00				P6
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE				60 Feet
FRI #1	TIME 00:01-06:30	06:30-09:30	09:30-15:30	15:30-20:00	20:00-00:00				P8
	PLAN FREE	C1O1S1	FREE	C2O1S1	FREE				80 Feet
SAT #2	TIME 00:01-00:00								P8
	PLAN FREE								80 Feet
SUN #3	TIME 00:01-00:00								P8
	PLAN FREE								80 Feet
CONTROLLER TYPE		CONDITION OF OVERHEAD			Ok		PROM NUMBER		
3000E		OVERHEAD STREET NAMES			NO				80 Feet
PHASES:	8Φ	ILLUMINATED STREET NAMES			NO		8216A 3.7.3		SIGNAL OWNER
CABINET TYPE	V	PRE-EMPTION			NO		IP ADDRESS		County
CABINET DATE	06/1992	PRE-EMPTION TYPE			N/A		10.77.8.37		LED YES

REMARKS:

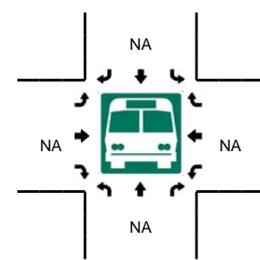
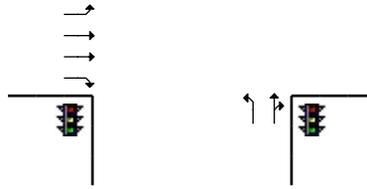
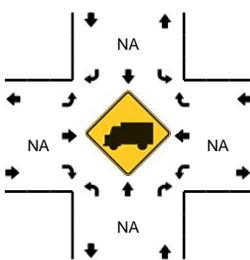
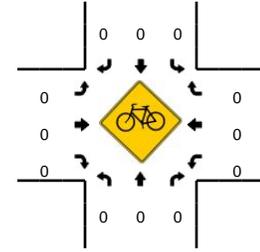
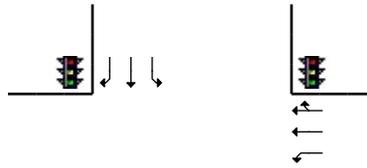
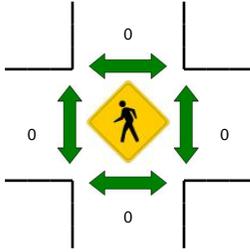
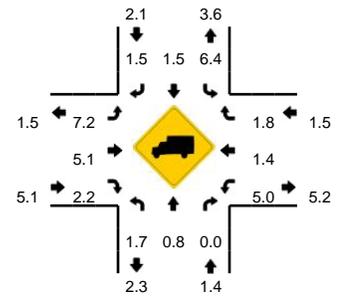
1	2	3	4
5	6	7	8

LOCATION: Normandy Blvd -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213803
DATE: Wed, Sep 11 2013



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



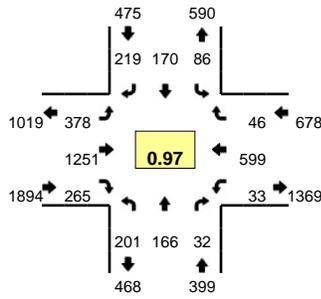
R* = RTOR

15-Min Count Period Beginning At	Normandy Blvd (Northbound)					Normandy Blvd (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	49	19	4	0	3	5	16	67	0	24	25	47	4	0	6	7	261	18	0	0	555	
7:15 AM	62	41	0	0	0	25	24	84	0	22	27	80	13	0	13	7	256	14	0	0	668	
7:30 AM	55	27	4	0	4	31	28	109	0	15	40	81	12	0	11	10	314	14	0	1	756	
7:45 AM	72	32	3	0	0	17	35	103	0	13	34	67	8	0	14	12	300	14	0	0	724	2703
8:00 AM	45	22	3	0	0	5	45	98	0	17	24	85	4	0	14	11	290	12	0	1	676	2824
8:15 AM	68	30	4	0	1	11	39	63	0	26	22	72	19	0	5	17	191	6	0	1	575	2731
8:30 AM	43	37	3	0	2	9	11	51	0	25	26	85	22	0	15	7	210	20	0	0	566	2541
8:45 AM	46	31	6	0	1	17	44	54	0	14	36	92	9	0	14	14	178	6	0	1	563	2380
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	220	108	16	0	16	124	112	436	0	60	160	324	48	0	44	40	1256	56	0	4	3024	
Heavy Trucks	0	0	0			4	0	4			0	0	0			0	20	0			28	
Pedestrians	0	0	0			0	0	0			0	0	0			0	0	0			0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																						
Stopped Buses																						

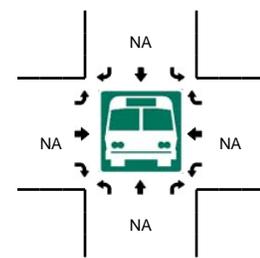
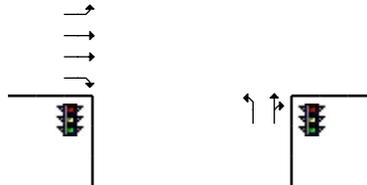
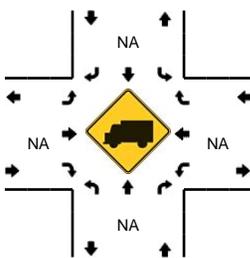
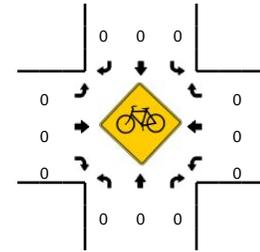
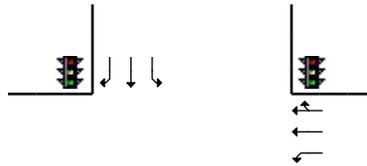
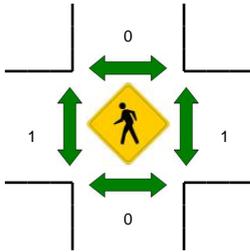
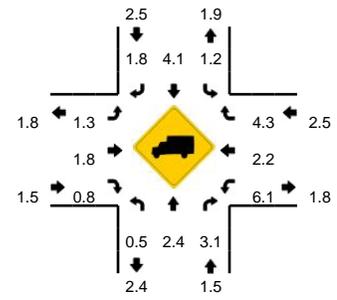
Comments:

LOCATION: Normandy Blvd -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213804
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:15 PM -- 5:30 PM



R* = RTOR

15-Min Count Period Beginning At	Normandy Blvd (Northbound)					Normandy Blvd (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	40	28	5	0	2	13	33	23	0	11	77	261	48	0	9	8	141	8	0	0	707	
4:15 PM	43	32	3	0	1	12	33	48	0	13	91	237	54	0	13	4	123	9	0	0	716	
4:30 PM	52	39	6	0	1	11	31	35	0	20	80	272	47	0	14	7	148	9	0	0	772	
4:45 PM	40	35	10	0	3	23	35	36	0	18	98	293	48	0	22	6	150	5	0	2	824	3019
5:00 PM	47	47	5	0	0	19	35	33	0	12	93	297	40	0	22	7	181	11	0	1	850	3162
5:15 PM	56	37	7	0	1	22	52	51	0	16	93	315	50	0	18	11	146	12	0	0	887	3333
5:30 PM	50	44	10	0	1	21	35	41	0	12	89	320	54	0	17	7	142	10	0	2	855	3416
5:45 PM	48	38	8	0	0	24	48	36	0	18	103	319	48	0	16	8	130	8	0	2	854	3446

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	224	148	28	0	4	88	208	204	0	64	372	1260	200	0	72	44	584	48	0	0	3548
Heavy Trucks	0	0	0			0	0	8			8	36	0			4	12	4			72
Pedestrians																	4				4
Bicycles																					0
Railroad																					0
Stopped Buses																					0

Comments:



Site Code: 11213805 + 06

Date: 9-11-13

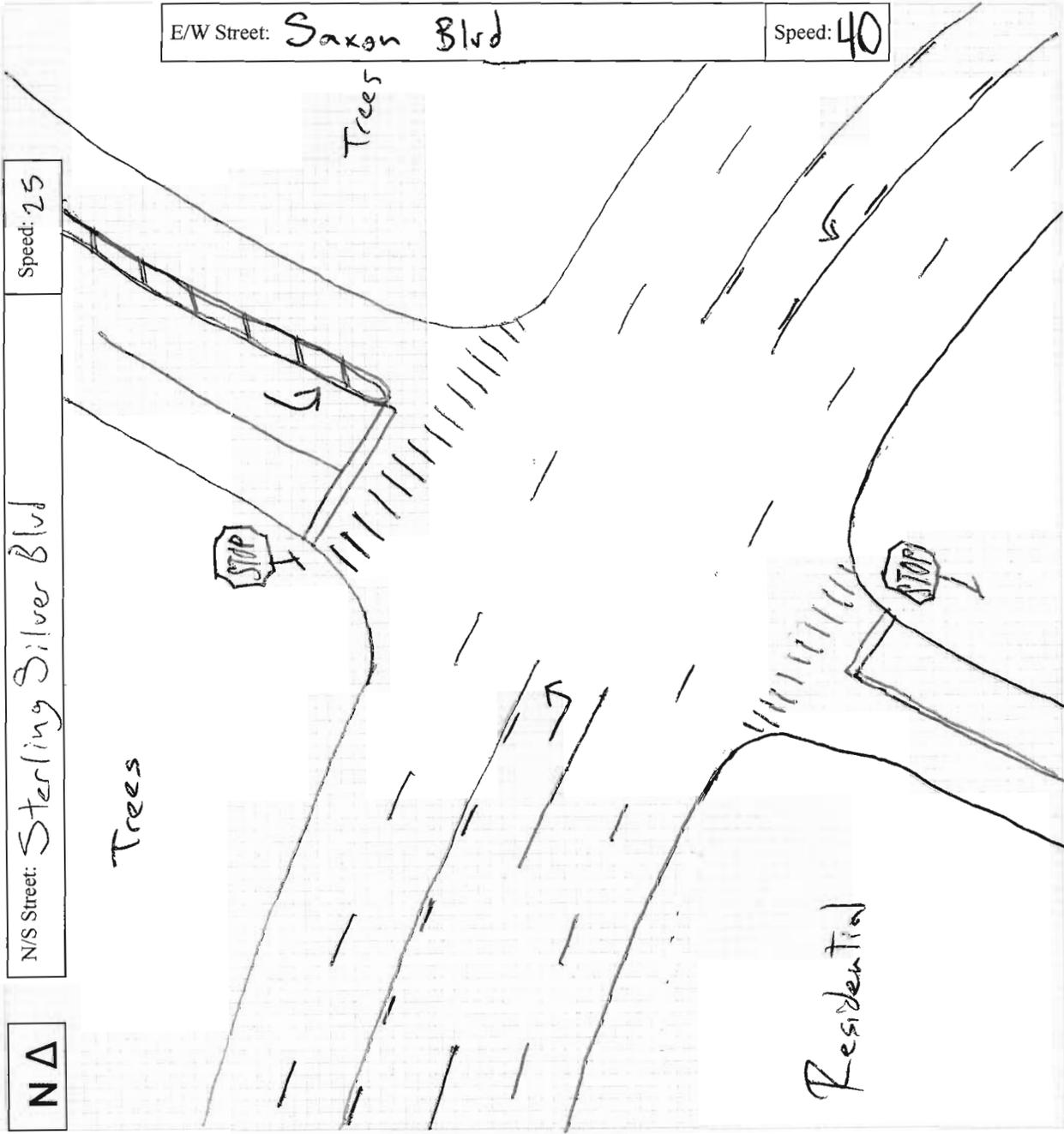
Weather: Clear

City: Deltona

County: Volusia

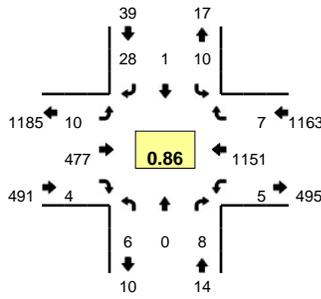
Count Times: 7:00AM - 9:00AM

4:00PM - 6:00PM

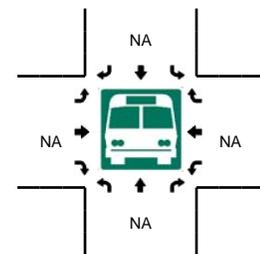
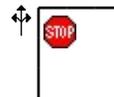
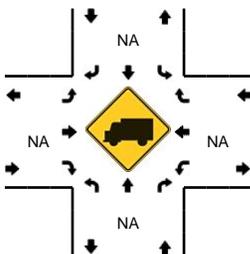
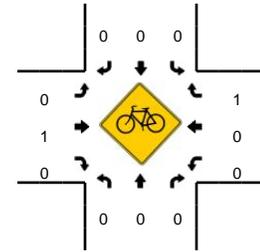
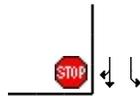
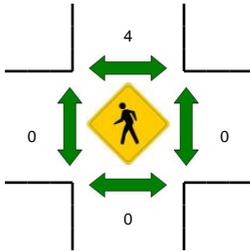
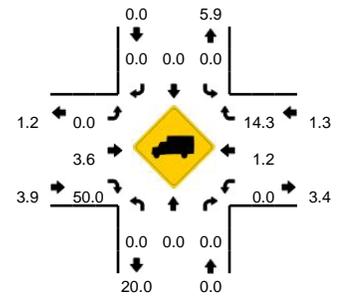


LOCATION: Sterling Silver Blvd -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213805
DATE: Wed, Sep 11 2013



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



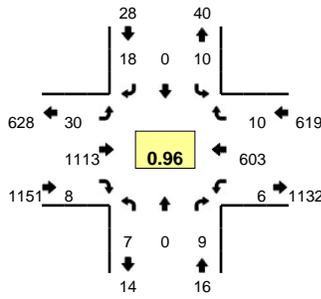
R* = RTOR

15-Min Count Period Beginning At	Sterling Silver Blvd (Northbound)					Sterling Silver Blvd (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	1	0	0	1	0	6	0	0	1	79	0	0	0	0	231	3	0	0	322	
7:15 AM	1	0	2	0	0	2	0	10	0	0	0	135	2	0	0	1	248	0	0	0	401	
7:30 AM	3	0	3	0	0	2	0	2	0	0	3	164	0	0	0	1	314	3	0	0	495	
7:45 AM	1	0	2	0	0	4	0	9	0	0	7	101	1	0	0	0	318	3	0	0	446	1664
8:00 AM	1	0	1	0	0	2	1	7	0	0	0	77	1	0	0	3	271	1	0	0	365	1707
8:15 AM	2	0	0	0	0	0	0	7	0	0	1	95	1	0	0	1	199	4	0	0	310	1616
8:30 AM	2	1	4	0	0	0	0	5	0	0	1	78	1	0	0	1	198	0	0	0	291	1412
8:45 AM	2	0	0	0	0	1	0	4	0	0	6	111	1	0	0	1	179	2	0	0	307	1273
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
All Vehicles	12	0	12	0	0	8	0	8	0	0	12	656	0	0	0	4	1256	12	0	0	1980	
Heavy Trucks	0	0	0			0	0	0			0	12	0			0	16	0			28	
Pedestrians	0					4					0					0					4	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																						
Stopped Buses																						

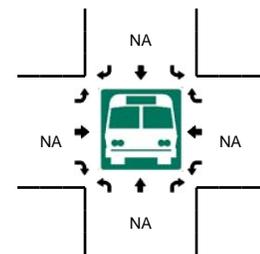
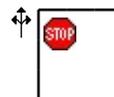
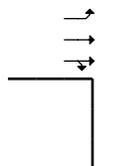
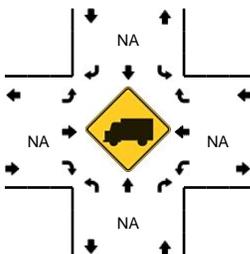
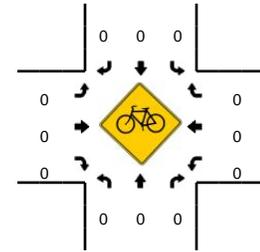
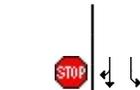
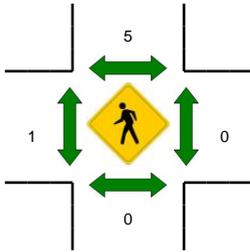
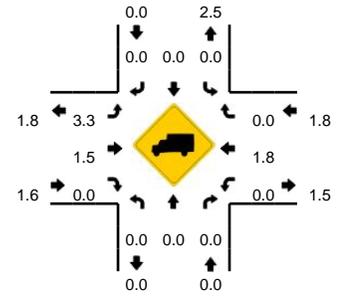
Comments:

LOCATION: Sterling Silver Blvd -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213806
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



R* = RTOR

15-Min Count Period Beginning At	Sterling Silver Blvd (Northbound)					Sterling Silver Blvd (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	1	1	1	0	0	2	0	7	0	0	4	225	3	0	0	1	126	1	0	0	372	
4:15 PM	0	0	2	0	0	2	0	3	0	0	2	223	3	0	0	3	132	2	1	0	373	
4:30 PM	5	0	1	0	0	2	0	6	0	0	3	237	3	0	0	0	158	1	0	0	416	
4:45 PM	1	0	2	0	0	0	0	2	0	0	8	257	4	0	0	1	155	3	0	0	433	1594
5:00 PM	2	0	2	0	0	3	0	7	0	0	7	272	2	0	0	6	168	4	0	0	473	1695
5:15 PM	1	0	2	0	0	1	0	3	0	0	8	273	0	0	0	0	155	2	0	0	445	1767
5:30 PM	1	0	2	0	0	3	0	2	0	0	8	288	2	0	0	0	151	1	0	0	458	1809
5:45 PM	3	0	3	0	0	3	0	6	0	0	7	280	4	0	0	0	129	3	0	0	438	1814

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	0	8	0	0	12	0	28	0	0	28	1088	8	0	0	24	672	16	0	0	1892
Heavy Trucks	0	0	0			0	0	0			0	24	0			0	0	0			24
Pedestrians	0					8					0					0					8
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Railroad																					
Stopped Buses																					

Comments:



Quality Counts

TRANSPORTATION DATA COLLECTION SERVICES

Site Code: 1213807 + 08

Date: 9-11-13

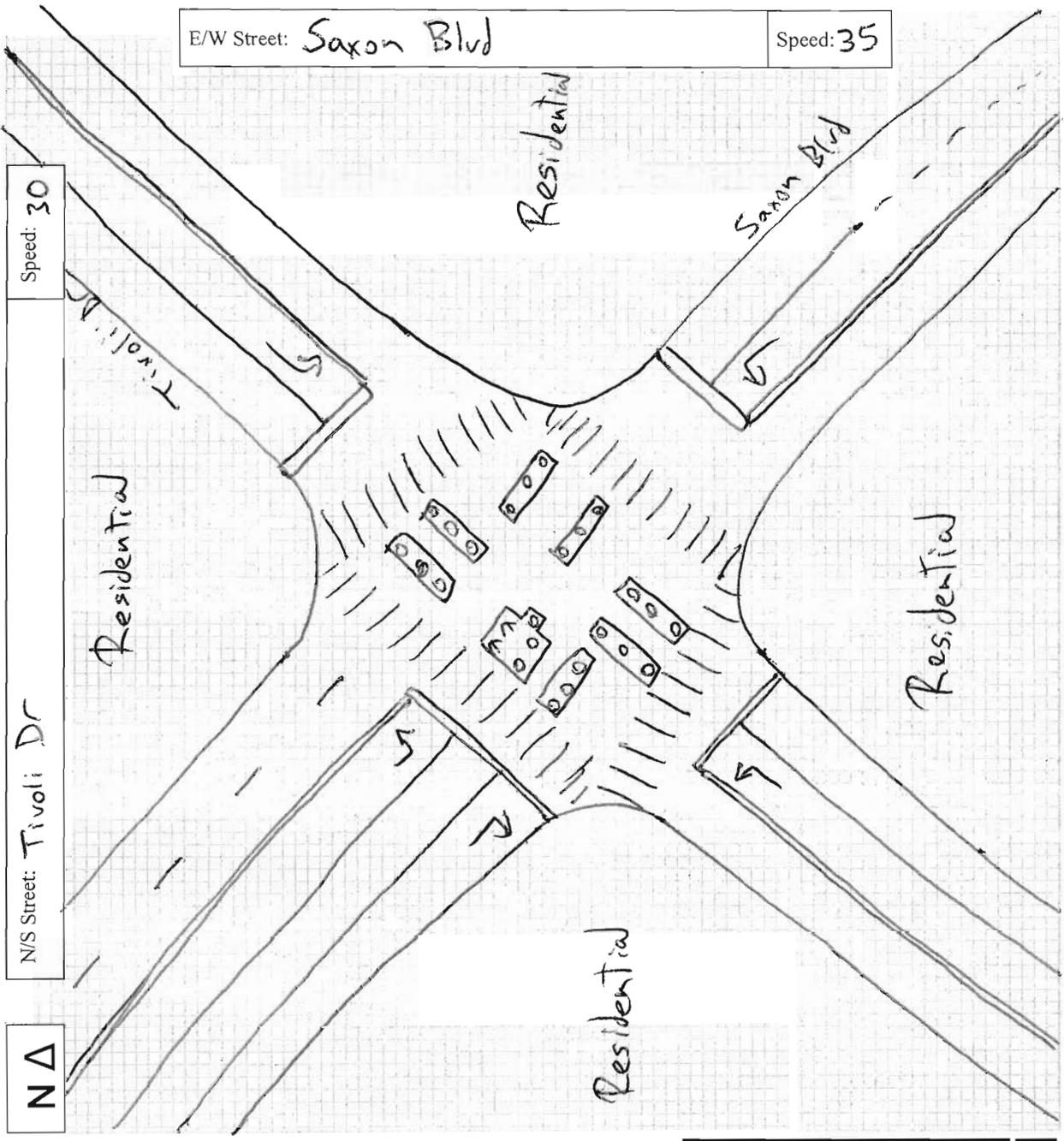
Weather: Clear

City: Daytona

County: Volusia

Count Times: 7:00 AM - 9:00 AM
 4:00 PM - 6:00 PM

	AM			PM		
	1	2	3	1	2	3
A						
B						
C						
	:12 :19	:22 :25	:22	:31 :29	:25	:23
	:34	:15 :15	:16	:18	:26	
Total	1:08	:59	:37	1:08	:09	1:14



E/W Street: Saxon Blvd Speed: 35

Speed: 30

N/S Street: Tivoli Dr

N Δ

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Saxon Blvd & Tivoli Drive
Deltona

ISOLATED:

DATE: 5/23/2012

SIGNAL #: 232

CO-ORD:

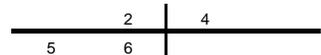
Design By: M. Rodriguez

System #: -

Controller Timing Chart

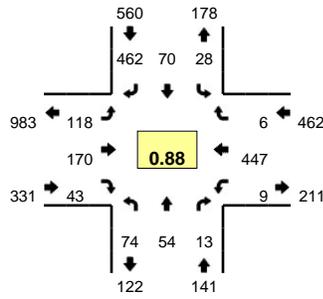
PHASE	1	2	3	4	5	6	7	8
DIRECTION		EB		NB/SB	EBL	WB		
TURN TYPE		-		-	PERM/PROT	-		
MIN GREEN		11		5	5	11		
EXTENSION		4		3	3	4		
CLEARANCE		4.0		4.0	4.0	4.0		
ALL RED		2.0		2.5	2.0	2.0		
WALK		7		7	-	7		
FDW		16		20	-	16		
MAX 1		30		30	15	30		
MAX 2		-		-	-	-		
MAX 3		-		40	30	-		
ADJUST		-		5	5	-		
RECALL		MIN		-	-	MIN		
DETECTOR		LOCK		NON-LOCK	NON-LOCK	LOCK		
FLASH		YELLOW		RED	-	YELLOW		
SET		-		2	2	-		
CLEAR		-		2	2	-		
BASE DAY	1	2	3	4	5	6	7	
MON #1	TIME	00:01-00:00						Crosswalk Length
	PLAN	FREE						
TUES#1	TIME	00:01-00:00						P2
	PLAN	FREE						
WED #1	TIME	00:01-00:00						55 Feet
	PLAN	FREE						
THU #1	TIME	00:01-00:00						P4
	PLAN	FREE						
FRI #1	TIME	00:01-00:00						52 Feet
	PLAN	FREE						
SAT #2	TIME	00:01-00:00						P6
	PLAN	FREE						
SUN #3	TIME	00:01-00:00						53 Feet
	PLAN	FREE						
CONTROLLER TYPE		CONDITION OF OVERHEAD			OK		PROM NUMBER	
1880 EL		OVERHEAD STREET NAMES			NO			
PHASES:	8Φ	ILLUMINATED STREET NAMES			YES		92R09	
CABINET TYPE	V	PRE-EMPTION			NO		IP ADDRESS	
CABINET DATE	10/2003	PRE-EMPTION TYPE			N/A		-	
							LED	-

REMARKS:

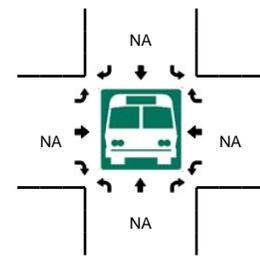
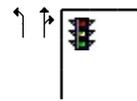
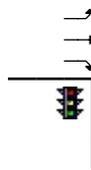
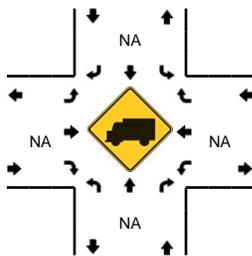
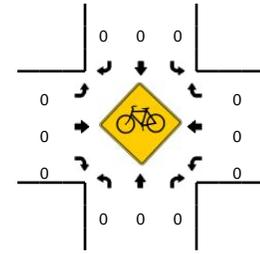
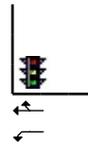
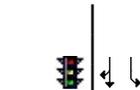
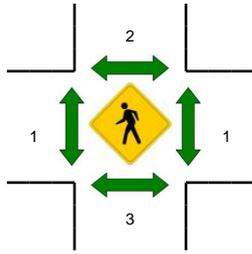
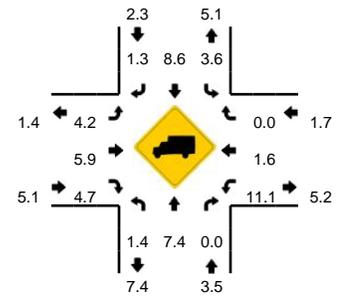


LOCATION: Tivoli Dr -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213807
DATE: Wed, Sep 11 2013



Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM



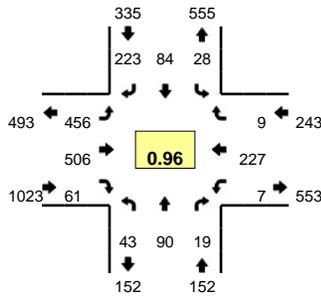
R* = RTOR

15-Min Count Period Beginning At	Tivoli Dr (Northbound)					Tivoli Dr (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	15	7	1	0	0	0	9	76	0	20	28	27	0	0	2	0	100	0	0	0	285	
7:15 AM	17	15	1	0	1	3	12	81	0	28	30	41	4	0	7	1	111	2	0	1	355	
7:30 AM	23	19	2	0	2	8	21	114	0	16	27	53	8	0	7	2	123	0	0	0	425	
7:45 AM	20	9	3	0	0	10	14	100	0	23	26	32	5	0	3	2	110	2	0	1	360	1425
8:00 AM	14	11	2	0	2	7	23	81	0	19	35	44	7	0	2	4	103	0	0	0	354	1494
8:15 AM	12	10	2	0	0	4	17	63	0	20	36	31	7	0	1	1	86	1	0	0	291	1430
8:30 AM	22	21	0	0	1	2	18	54	0	23	34	30	4	0	2	2	100	5	0	0	318	1323
8:45 AM	10	15	0	0	0	0	18	49	0	26	42	44	2	0	1	1	88	4	0	1	301	1264
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	92	76	8	0	8	32	84	456	0	64	108	212	32	0	28	8	492	0	0	0	1700	
Heavy Trucks	0	8	0			0	8	8			8	4	0			0	8	0			44	
Pedestrians		8					8					0					0				16	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																						
Stopped Buses																						

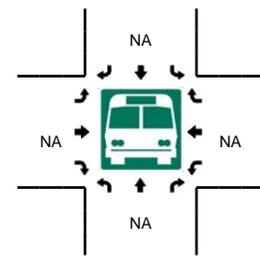
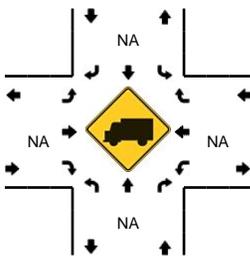
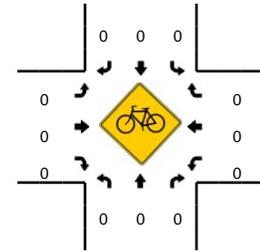
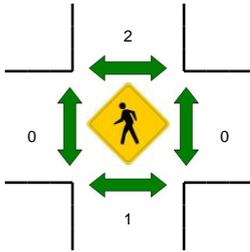
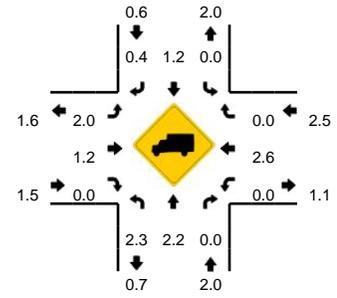
Comments:

LOCATION: Tivoli Dr -- Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213808
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



R* = RTOR

15-Min Count Period Beginning At	Tivoli Dr (Northbound)					Tivoli Dr (Southbound)					Saxon Blvd (Eastbound)					Saxon Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	3	23	1	0	1	2	16	22	0	18	114	84	5	0	4	2	73	1	0	0	369	
4:15 PM	8	25	1	0	0	3	18	26	0	26	106	98	10	0	3	2	62	0	0	0	388	
4:30 PM	10	24	1	0	0	7	15	45	0	15	97	108	9	0	4	1	69	1	0	0	406	
4:45 PM	11	16	0	0	0	2	21	38	0	25	101	102	8	0	7	4	68	1	0	0	404	1567
5:00 PM	7	24	0	0	3	3	28	40	0	19	116	117	8	0	6	1	67	3	0	0	442	1640
5:15 PM	12	17	1	0	1	1	10	15	0	33	123	118	9	0	2	2	63	2	0	0	409	1661
5:30 PM	12	22	8	0	0	10	23	37	0	22	126	128	6	0	5	3	49	4	0	0	455	1710
5:45 PM	12	27	4	0	2	14	23	39	0	18	91	143	16	0	9	1	48	0	0	0	447	1753

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	48	88	32	0	0	40	92	148	0	88	504	512	24	0	20	12	196	16	0	0	1820
Heavy Trucks	0	4	0			0	0	0			8	12	0			0	8	0			32
Pedestrians	4					0					0					0					4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Railroad																					0
Stopped Buses																					0

Comments:

COUNTY OF VOLUSIA TRAFFIC SIGNAL TIMING SHEET

LOCATION: Providence Blvd & Tivoli Drive
Deltona

ISOLATED: **DATE:** 5/25/2012

SIGNAL #: 310

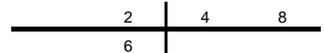
CO-ORD: **Design By:** M. Rodriguez

System #: 28

Controller Timing Chart

PHASE	1	2	3	4	5	6	7	8	
DIRECTION		NB		EB		SB		WB	
TURN TYPE		-		SPLIT LEAD		-		SPLIT LEAD	
MIN GREEN		7		7		7		7	
EXTENSION		3		3		3		3	
CLEARANCE		4.0		4.0		4.0		4.0	
ALL RED		2.0		2.5		2.0		2.5	
WALK		7		7		7		7	
FDW		16		20		16		20	
MAX 1		35		35		35		35	
MAX 2		-		-		-		-	
MAX 3		-		-		-		-	
ADJUST		-		-		-		-	
RECALL		MIN		-		MIN		-	
DETECTOR		LOCK		NON-LOCK		LOCK		NON-LOCK	
FLASH		YELLOW		RED		YELLOW		RED	
SET		-		-		-		-	
CLEAR		-		-		-		-	
BASE DAY	1	2	3	4	5	6	7		
									Crosswalk Length
MON #1	TIME	00:01-00:00							P2
	PLAN	FREE							
TUES#1	TIME	00:01-00:00							47 Feet
	PLAN	FREE							
WED #1	TIME	00:01-00:00							P4
	PLAN	FREE							
THU #1	TIME	00:01-00:00							63 Feet
	PLAN	FREE							
FRI #1	TIME	00:01-00:00							P6
	PLAN	FREE							
SAT #2	TIME	00:01-00:00							54 Feet
	PLAN	FREE							
SUN #3	TIME	00:01-00:00							P8
	PLAN	FREE							
CONTROLLER TYPE		CONDITION OF OVERHEAD			Good		PROM NUMBER		67 Feet
3000E		OVERHEAD STREET NAMES			NO				
PHASES:	8Φ	ILLUMINATED STREET NAMES			YES		8216A 3.7.3		SIGNAL OWNER
CABINET TYPE	V	PRE-EMPTION			NO		IP ADDRESS		County
CABINET DATE	05/1991	PRE-EMPTION TYPE			N/A		10.86.30.128		LED YES

REMARKS:





Quality Counts

TRANSPORTATION DATA
COLLECTION SERVICES

Site Code: 11213809 + 10

Date: 9-11-13

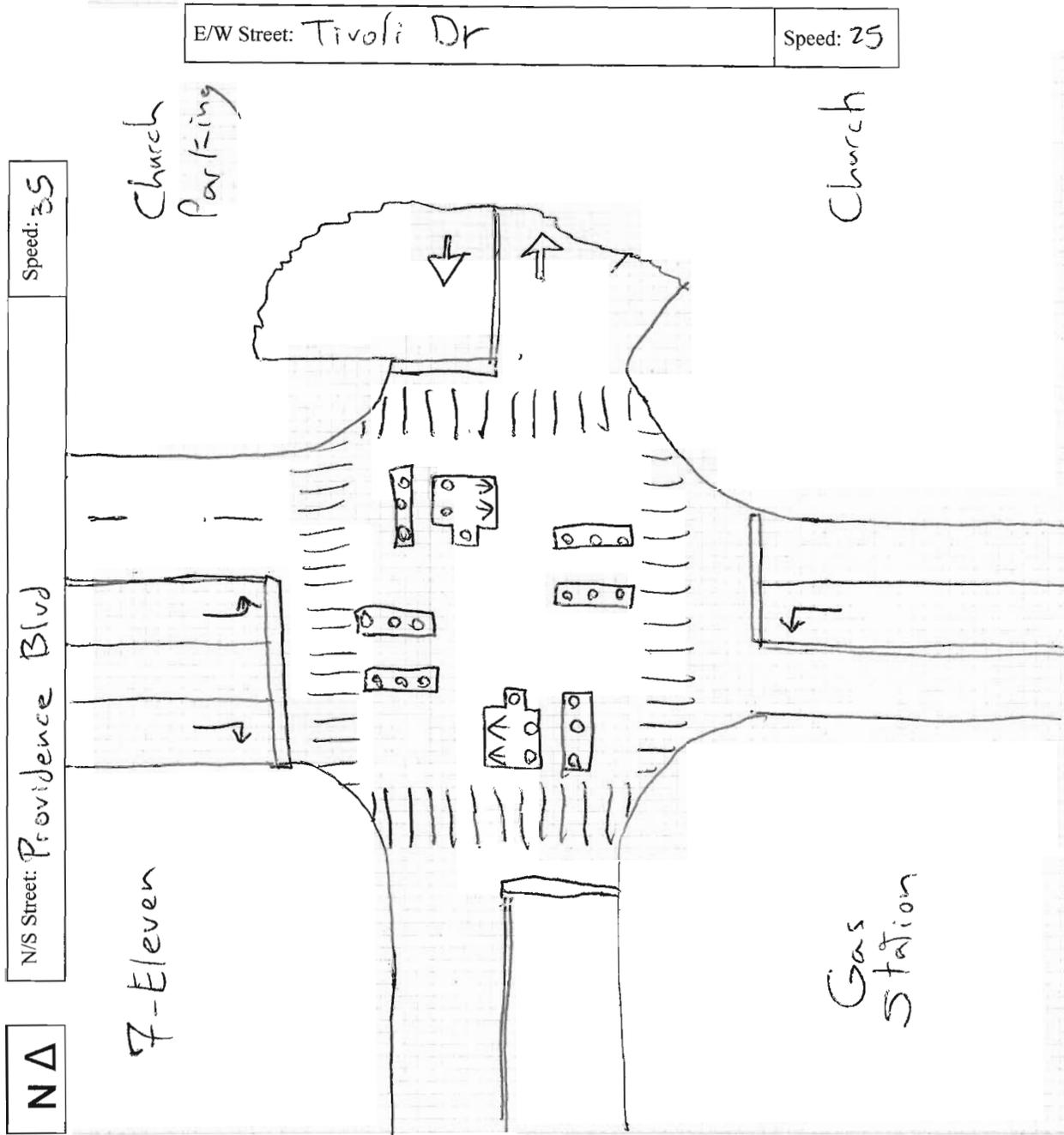
Weather: Clear

City: Deltona

County: Volusia

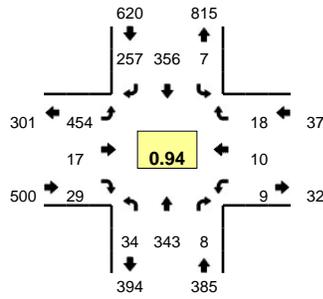
Count Times: 7:00AM-9:00AM
+
4:00PM-6:00PM

	AM			PM		
	1	2	3	1	2	3
A						
B						
C						
↓	1:00	:43	:21	:42	:42	:49
↑	:15	:15	:18	:25	:28	:32
↔	X	X	X	:21	X	:17
Total	1:15	58	:39	1:28	1:10	1:38

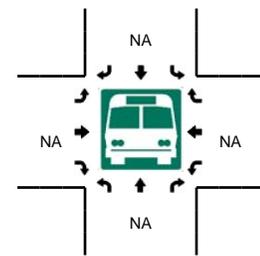
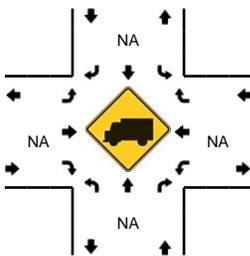
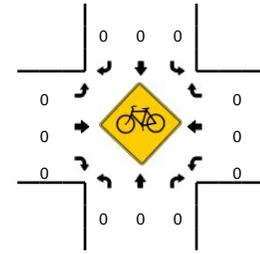
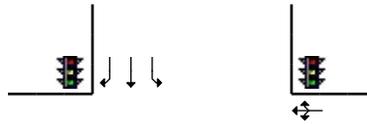
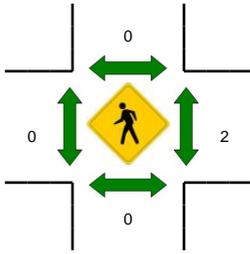
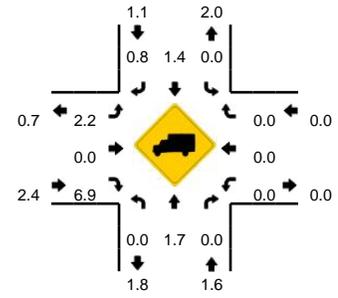


LOCATION: Providence Blvd -- Tivoli Dr
CITY/STATE: Deltona, FL

QC JOB #: 11213810
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



R* = RTOR

15-Min Count Period Beginning At	Providence Blvd (Northbound)					Providence Blvd (Southbound)					Tivoli Dr (Eastbound)					Tivoli Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	9	54	1	0	0	3	60	23	0	26	119	3	3	0	1	2	1	3	0	0	308	
4:15 PM	5	56	1	0	0	1	77	31	0	22	116	2	4	0	1	2	0	2	0	1	321	
4:30 PM	3	53	1	0	0	0	69	31	0	22	92	3	9	0	1	2	1	2	0	0	289	
4:45 PM	6	98	3	0	1	5	59	43	0	26	97	5	4	0	1	1	2	2	0	3	356	1274
5:00 PM	5	77	6	0	0	2	73	30	0	33	102	4	13	0	0	6	3	3	0	2	359	1325
5:15 PM	8	75	1	0	0	2	85	22	0	28	133	5	4	0	0	1	4	4	0	3	375	1379
5:30 PM	11	92	0	0	0	1	101	31	0	38	122	5	5	0	1	1	0	2	0	1	411	1501
5:45 PM	10	99	1	0	0	2	97	40	0	35	97	3	6	0	0	1	3	2	0	1	397	1542

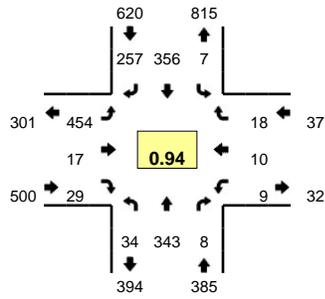
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Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	44	368	0	0	0	4	404	124	0	152	488	20	20	0	4	4	0	8	0	4	1644
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0	12
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

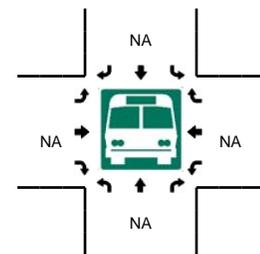
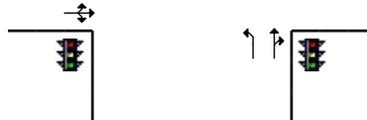
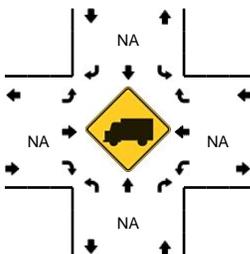
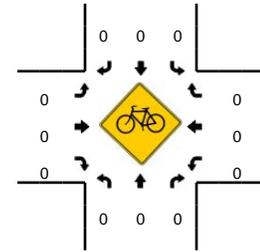
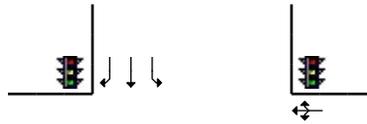
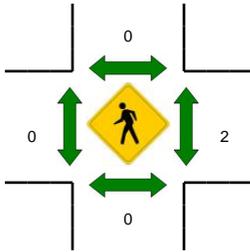
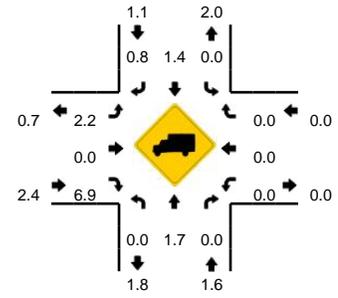
Comments:

LOCATION: Providence Blvd -- Tivoli Dr
CITY/STATE: Deltona, FL

QC JOB #: 11213810
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:30 PM -- 5:45 PM



R* = RTOR

15-Min Count Period Beginning At	Providence Blvd (Northbound)					Providence Blvd (Southbound)					Tivoli Dr (Eastbound)					Tivoli Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	9	54	1	0	0	3	60	23	0	26	119	3	3	0	1	2	1	3	0	0	308	
4:15 PM	5	56	1	0	0	1	77	31	0	22	116	2	4	0	1	2	0	2	0	1	321	
4:30 PM	3	53	1	0	0	0	69	31	0	22	92	3	9	0	1	2	1	2	0	0	289	
4:45 PM	6	98	3	0	1	5	59	43	0	26	97	5	4	0	1	1	2	2	0	3	356	1274
5:00 PM	5	77	6	0	0	2	73	30	0	33	102	4	13	0	0	6	3	3	0	2	359	1325
5:15 PM	8	75	1	0	0	2	85	22	0	28	133	5	4	0	0	1	4	4	0	3	375	1379
5:30 PM	11	92	0	0	0	1	101	31	0	38	122	5	5	0	1	1	0	2	0	1	411	1501
5:45 PM	10	99	1	0	0	2	97	40	0	35	97	3	6	0	0	1	3	2	0	1	397	1542

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Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	44	368	0	0	0	4	404	124	0	152	488	20	20	0	4	4	0	8	0	4	1644
Heavy Trucks	0	0	0	0	0	0	4	0	0	0	8	0	0	0	0	0	0	0	0	0	12
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:



Site Code: 11213811 #12

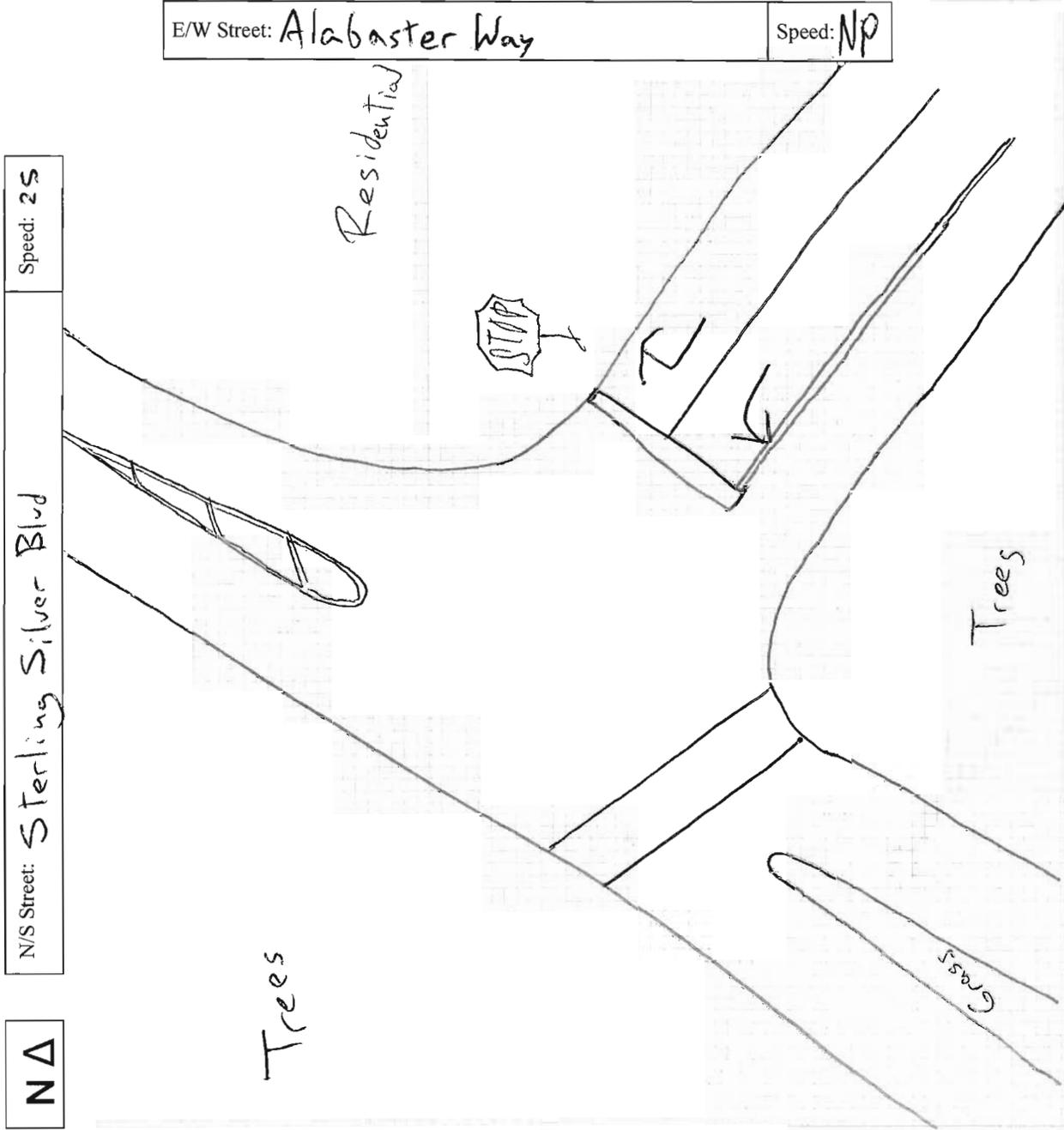
Date: 9-11-13

Weather: Clear

City: Daytona

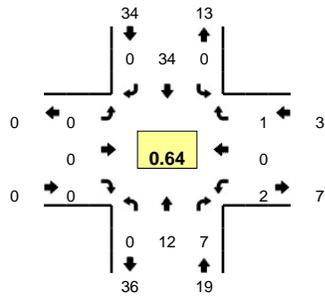
County: Volusia

Count Times: 7:00AM - 9:00AM
+
4:00PM - 6:00PM

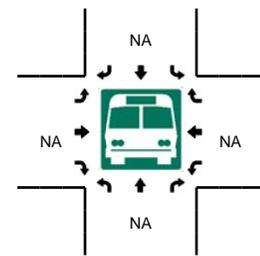
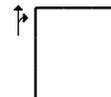
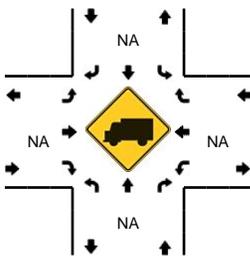
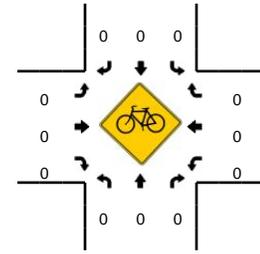
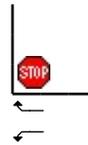
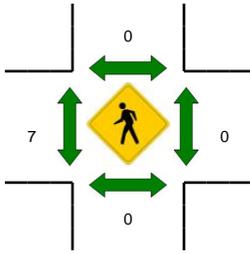
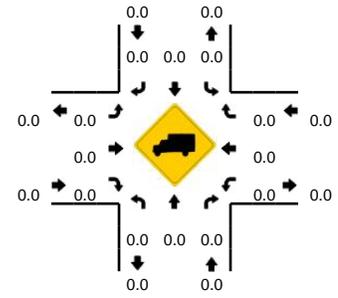


LOCATION: Sterling Silver Blvd -- Alabaster Way
CITY/STATE: Deltona, FL

QC JOB #: 11213811
DATE: Wed, Sep 11 2013



Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM



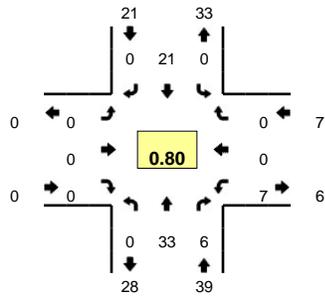
R* = RTOR

15-Min Count Period Beginning At	Sterling Silver Blvd (Northbound)					Sterling Silver Blvd (Southbound)					Alabaster Way (Eastbound)					Alabaster Way (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	4	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
7:15 AM	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
7:30 AM	0	3	2	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	11	
7:45 AM	0	5	5	0	0	0	9	0	0	0	0	0	0	0	0	2	0	1	0	0	22	56
8:00 AM	0	1	0	0	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	11	56
8:15 AM	0	3	2	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	12	56
8:30 AM	0	1	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	7	52
8:45 AM	0	3	4	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	12	42
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
All Vehicles	0	20	20	0	0	0	36	0	0	0	0	0	0	0	0	8	0	4	0	0		88
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0	
Pedestrians	0					0					8					0					8	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																						
Stopped Buses																						

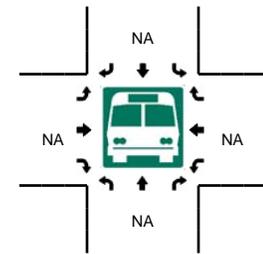
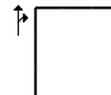
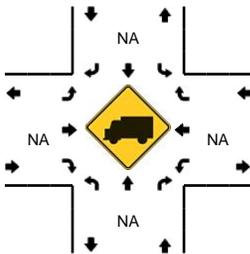
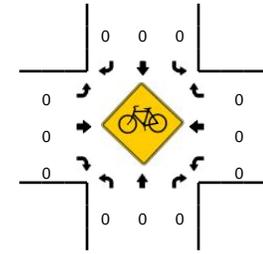
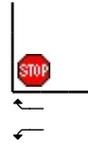
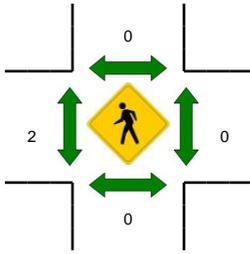
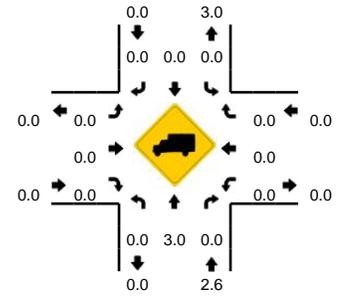
Comments:

LOCATION: Sterling Silver Blvd -- Alabaster Way
CITY/STATE: Deltona, FL

QC JOB #: 11213812
DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



R* = RTOR

15-Min Count Period Beginning At	Sterling Silver Blvd (Northbound)					Sterling Silver Blvd (Southbound)					Alabaster Way (Eastbound)					Alabaster Way (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	4	3	0	0	0	2	0	0	0	0	0	0	0	0	8	0	0	0	0	17	
4:15 PM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	9	
4:30 PM	0	2	2	0	0	0	4	0	0	0	0	0	0	0	0	4	0	0	0	0	12	
4:45 PM	0	11	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	14	52
5:00 PM	0	8	3	0	0	0	8	0	0	0	0	0	0	0	0	2	0	0	0	0	21	56
5:15 PM	0	7	3	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	14	61
5:30 PM	0	8	0	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	13	62
5:45 PM	0	10	0	0	0	0	5	0	0	0	0	0	0	0	0	4	0	0	0	0	19	67

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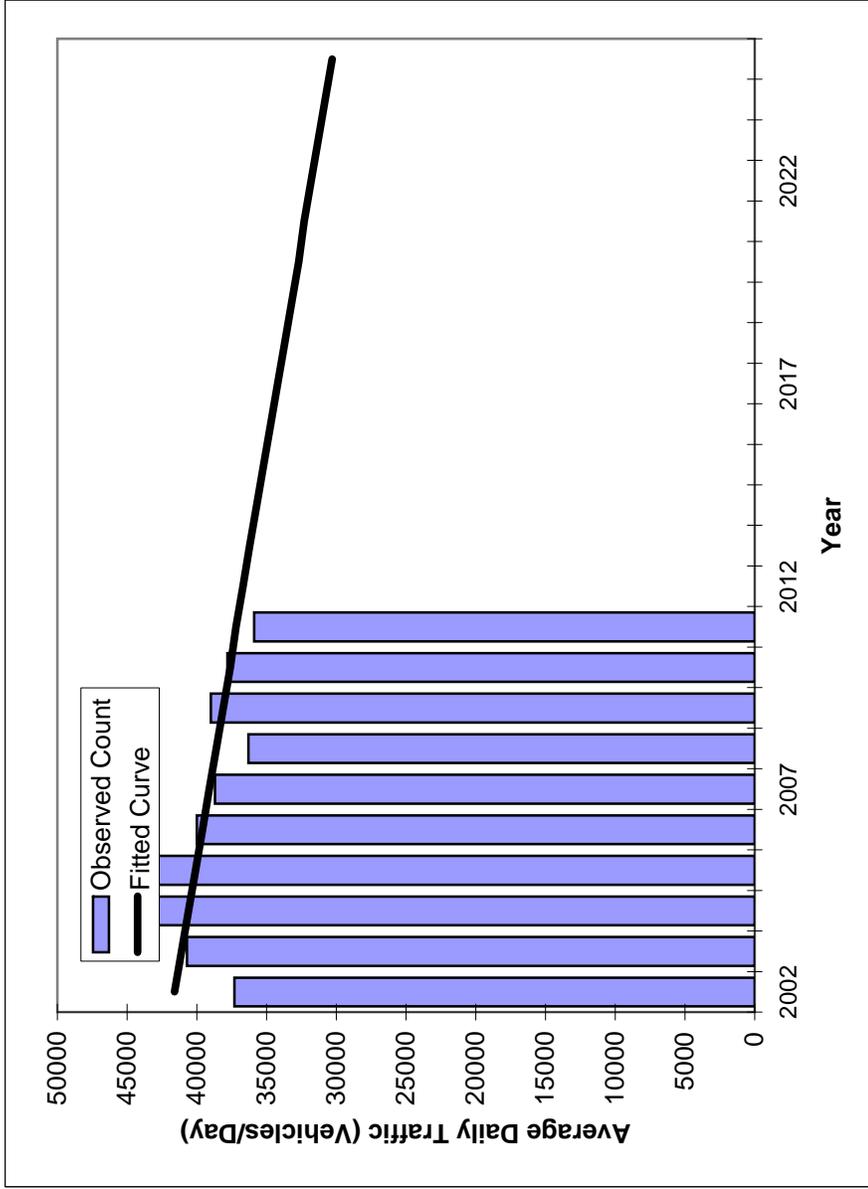
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	32	12	0	0	0	32	0	0	0	0	0	0	0	0	8	0	0	0	0	84
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Comments:

TRAFFIC TRENDS

Saxon Blvd. -- Finland to Normandy

County:	Volusia
Station #:	1676
Highway:	Saxon Blvd.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	37300	41600
2003	40700	41100
2004	43400	40600
2005	44500	40100
2006	40000	39600
2007	38700	39100
2008	36300	38600
2009	39000	38100
2010	37800	37600
2011	35900	37200
2015 Opening Year Trend		
2015	N/A	35200
2016 Mid-Year Trend		
2016	N/A	34700
2020 Design Year Trend		
2020	N/A	32700
TRANPLAN Forecasts/Trends		

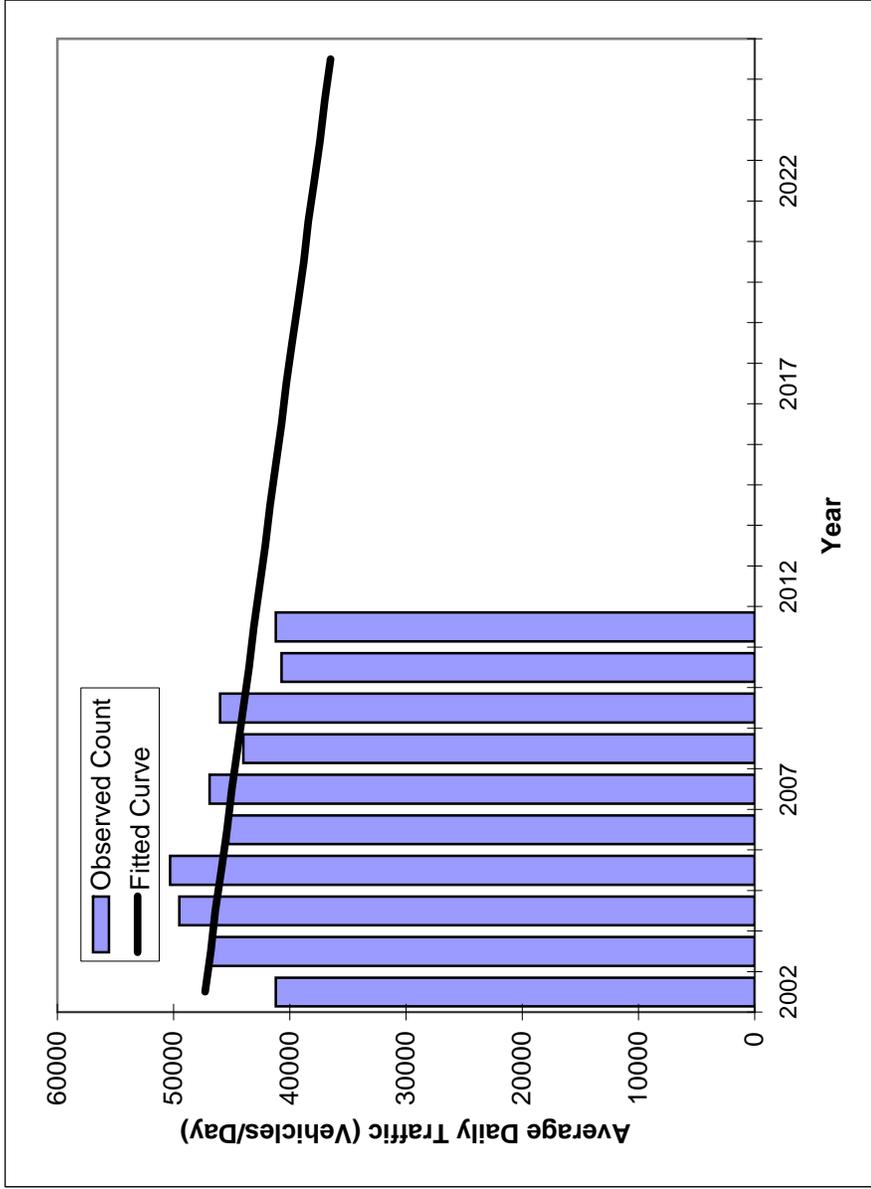
** Annual Trend Increase:	-490
Trend R-squared:	26.9%
Trend Annual Historic Growth Rate:	-1.18%
Trend Growth Rate (2011 to Design Year):	-1.34%
Printed:	5-Aug-13
Straight Line Growth Option	

*Axle-Adjusted

TRAFFIC TRENDS

Saxon Blvd. -- I-4 to Finland

County: Volusia
 Station #: 1675
 Highway: Saxon Blvd.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	41200	47300
2003	46800	46800
2004	49500	46400
2005	50300	45900
2006	45300	45400
2007	46900	45000
2008	44000	44500
2009	46000	44000
2010	40700	43500
2011	41200	43100
2015 Opening Year Trend		
2015	N/A	41200
2016 Mid-Year Trend		
2016	N/A	40700
2020 Design Year Trend		
2020	N/A	38800
TRANPLAN Forecasts/Trends		

** Annual Trend Increase: -470
 Trend R-squared: 17.5%
 Trend Annual Historic Growth Rate: -0.99%
 Trend Growth Rate (2011 to Design Year): -1.11%
 Printed: 5-Aug-13

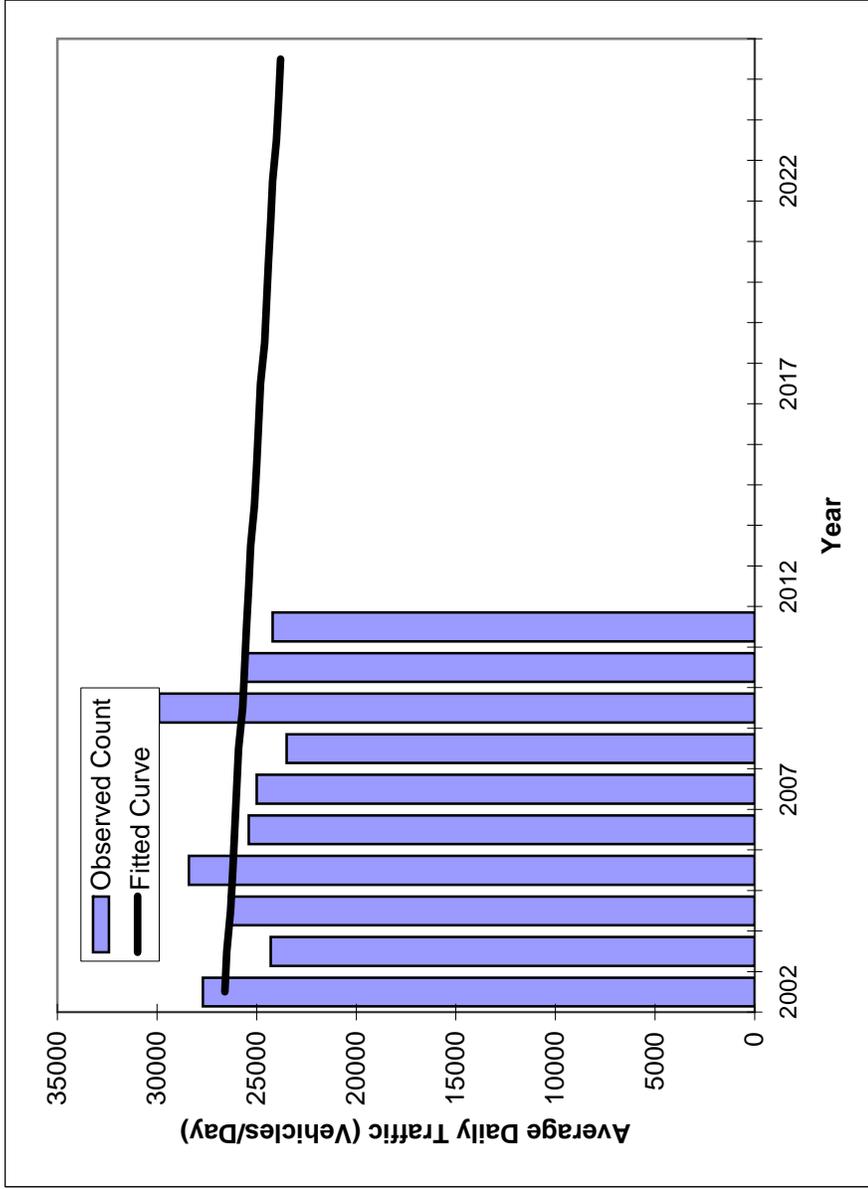
Straight Line Growth Option

*Axle-Adjusted

TRAFFIC TRENDS

Saxon Blvd. -- Normandy Blvd. to Tivoli Drive

County:	Volusia
Station #:	1677
Highway:	Saxon Blvd.



Year	Traffic (ADT/AADT)	
	Count*	Trend**
2002	27700	26600
2003	24300	26500
2004	26400	26300
2005	28400	26200
2006	25400	26100
2007	25000	26000
2008	23500	25900
2009	29900	25700
2010	25600	25600
2011	24200	25500
2015 Opening Year Trend		
2015	N/A	25000
2016 Mid-Year Trend		
2016	N/A	24900
2020 Design Year Trend		
2020	N/A	24400
TRANPLAN Forecasts/Trends		

** Annual Trend Increase:	-121
Trend R-squared:	3.2%
Trend Annual Historic Growth Rate:	-0.46%
Trend Growth Rate (2011 to Design Year):	-0.48%
Printed:	23-Jul-13
Straight Line Growth Option	

*Axle-Adjusted

APPENDIX D

TRAFFIC VOLUME FIGURES

AM PEAK HOUR

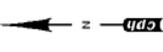
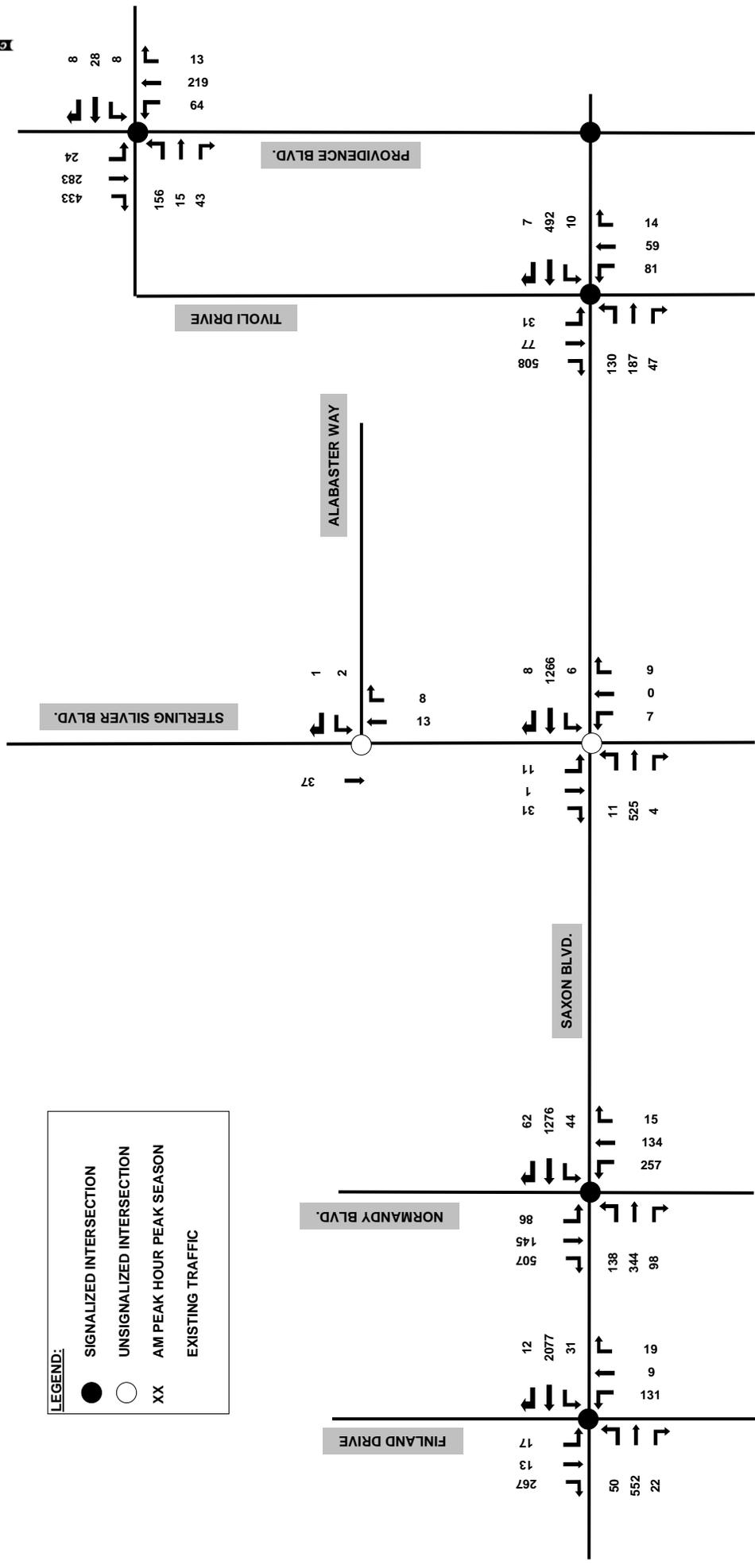


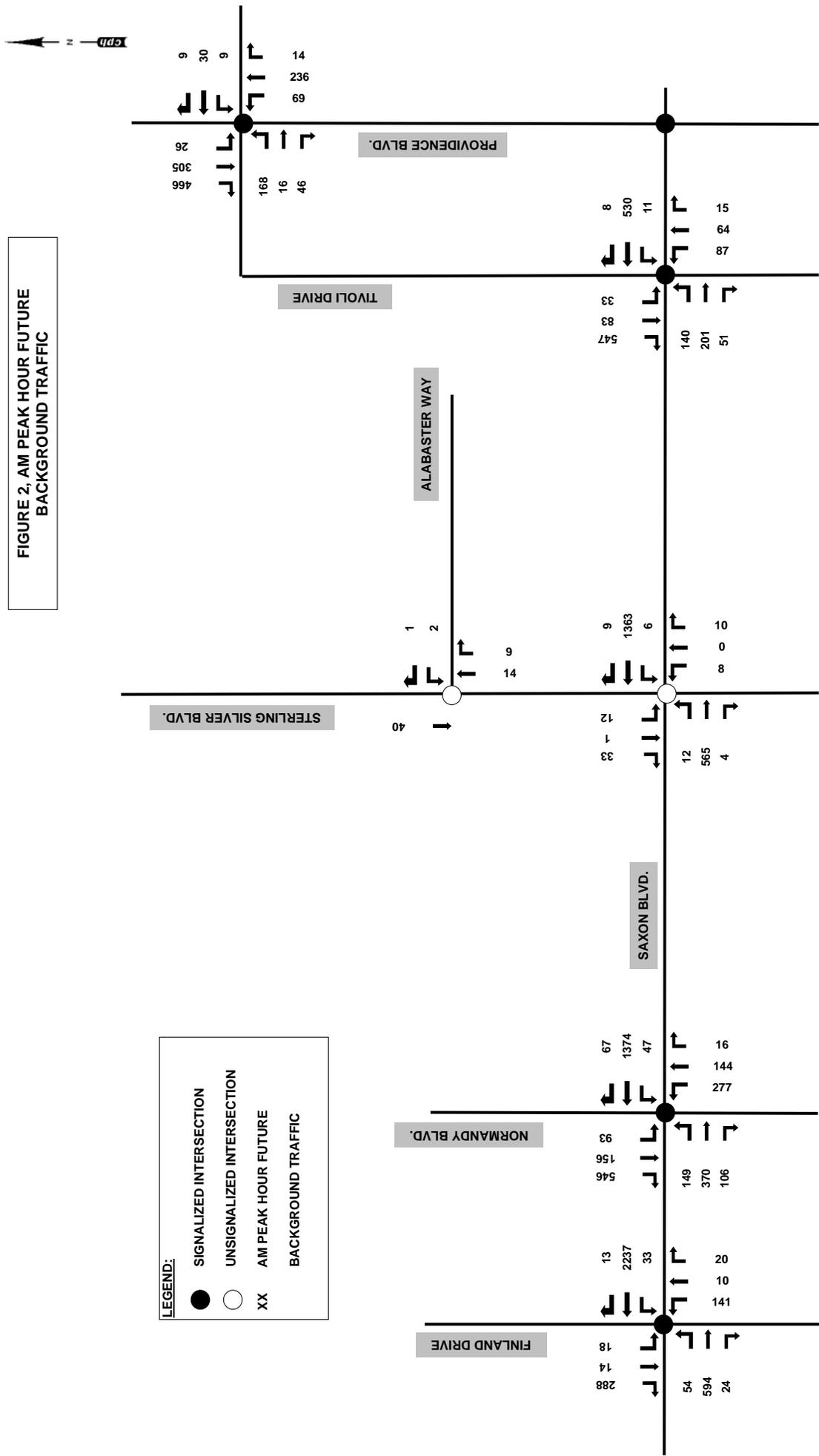
FIGURE 1, AM PEAK HOUR PEAK SESON
EXISTING TRAFFIC



LEGEND:

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- XX AM PEAK HOUR PEAK SESON EXISTING TRAFFIC

FIGURE 2, AM PEAK HOUR FUTURE
BACKGROUND TRAFFIC



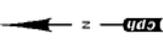
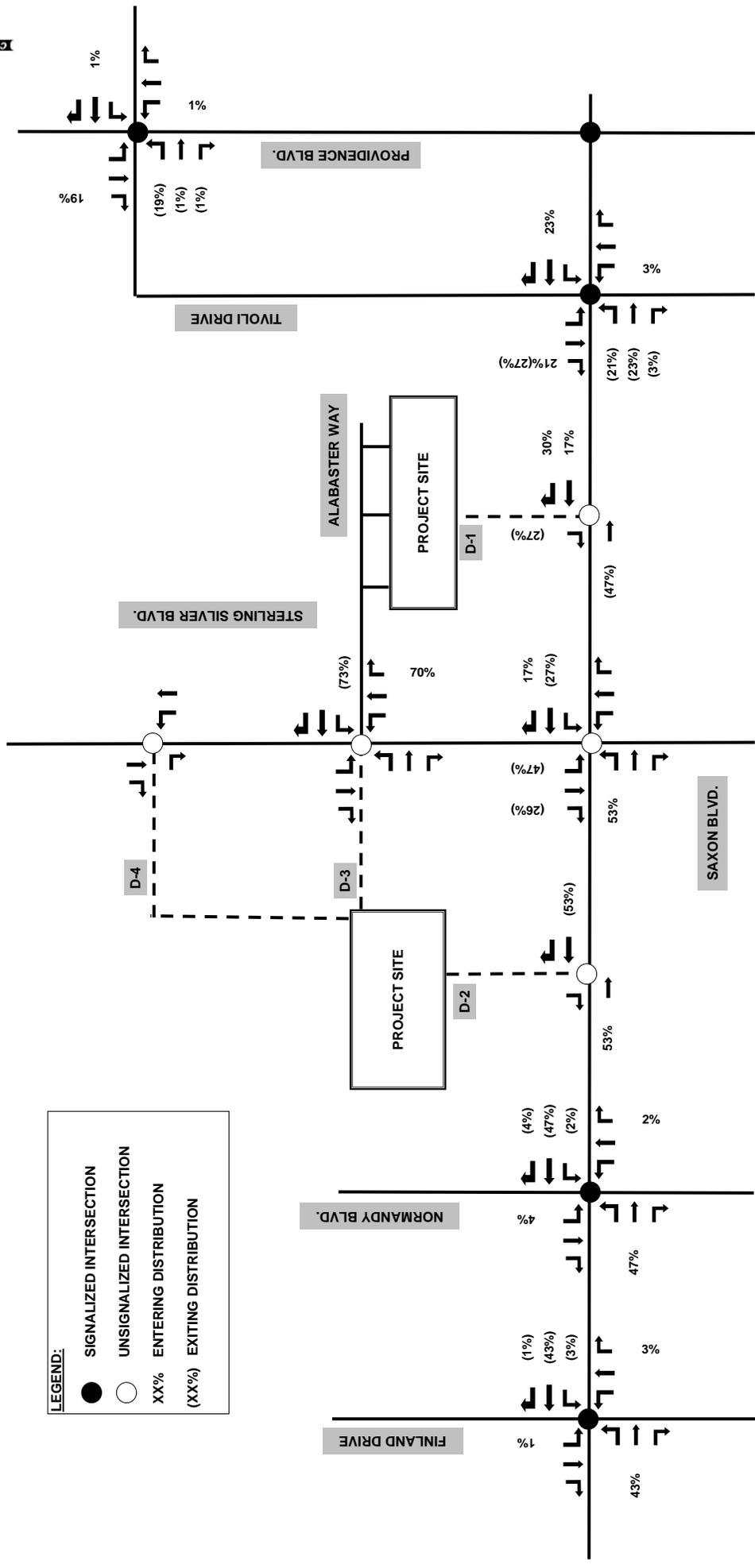


FIGURE 3A, AM PEAK HOUR NET-NEW DISTRIBUTION (NE CORNER)



LEGEND:

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- XX% ENTERING DISTRIBUTION
- (XX%) EXITING DISTRIBUTION

FIGURE 4A, AM PEAK HOUR PASS-BY TRAFFIC DISTRIBUTION (NE CORNER)

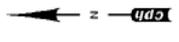
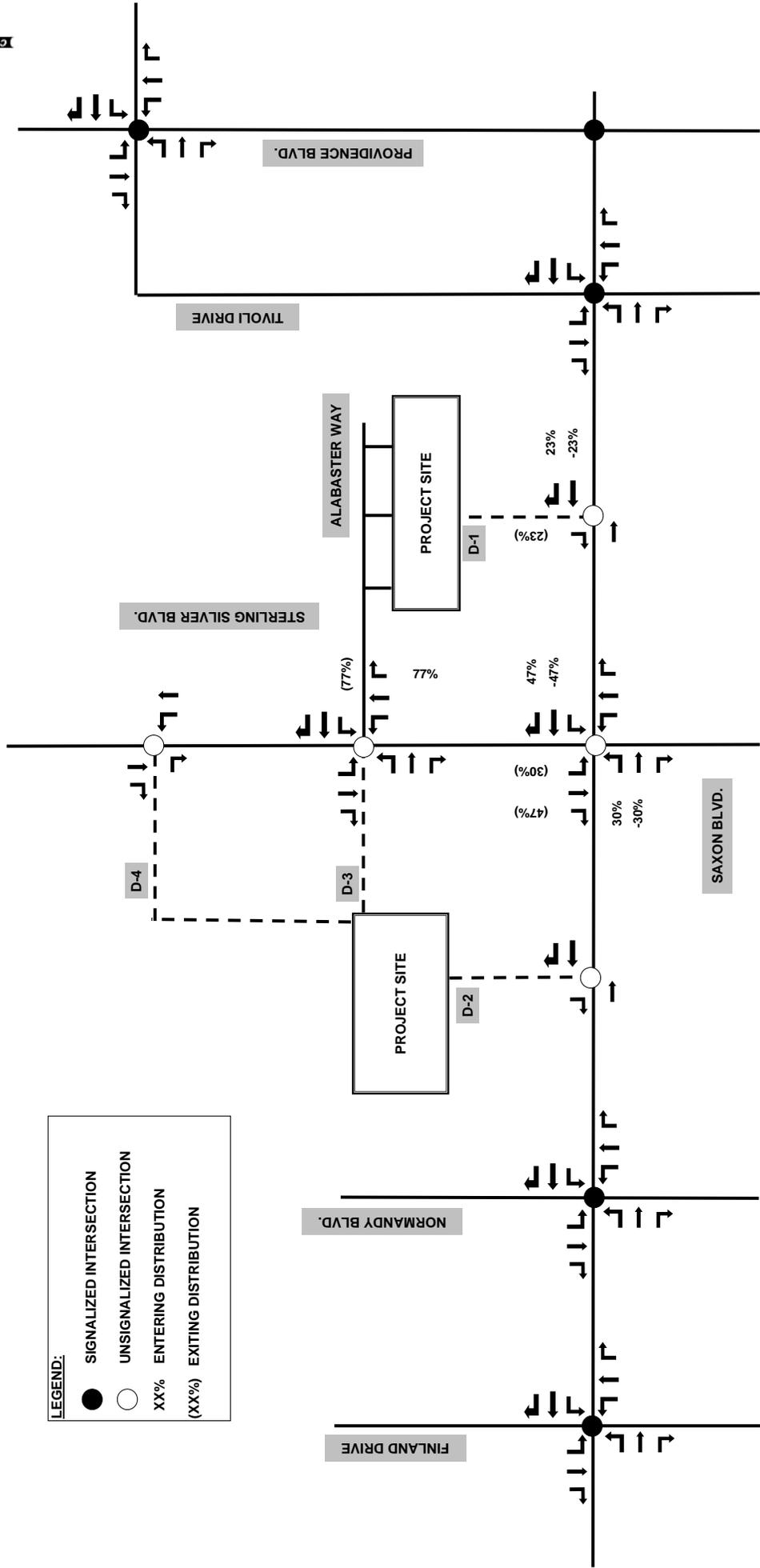


FIGURE 5A, AM PEAK HOUR PROJECT TRAFFIC
(NE CORNER)

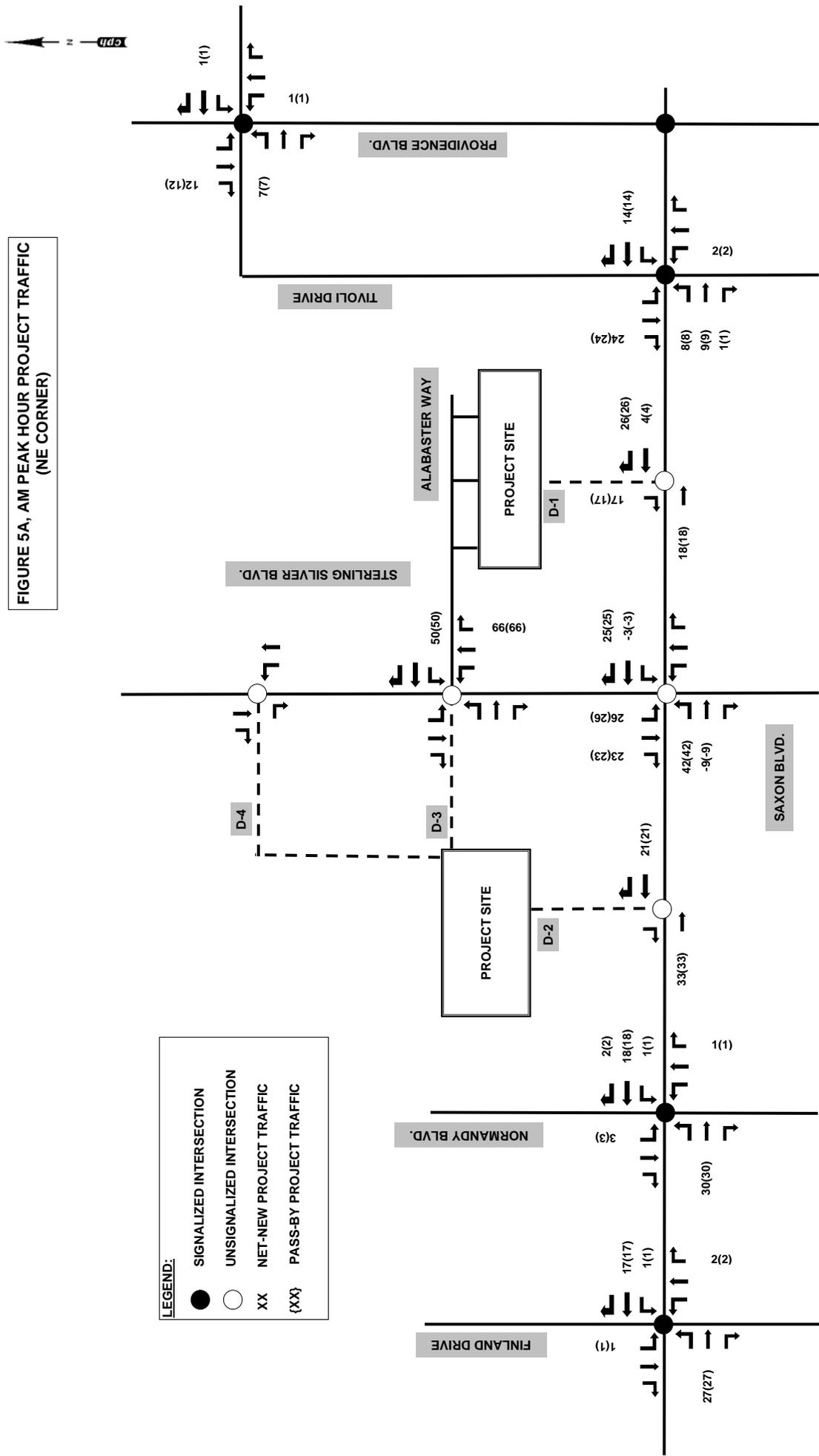
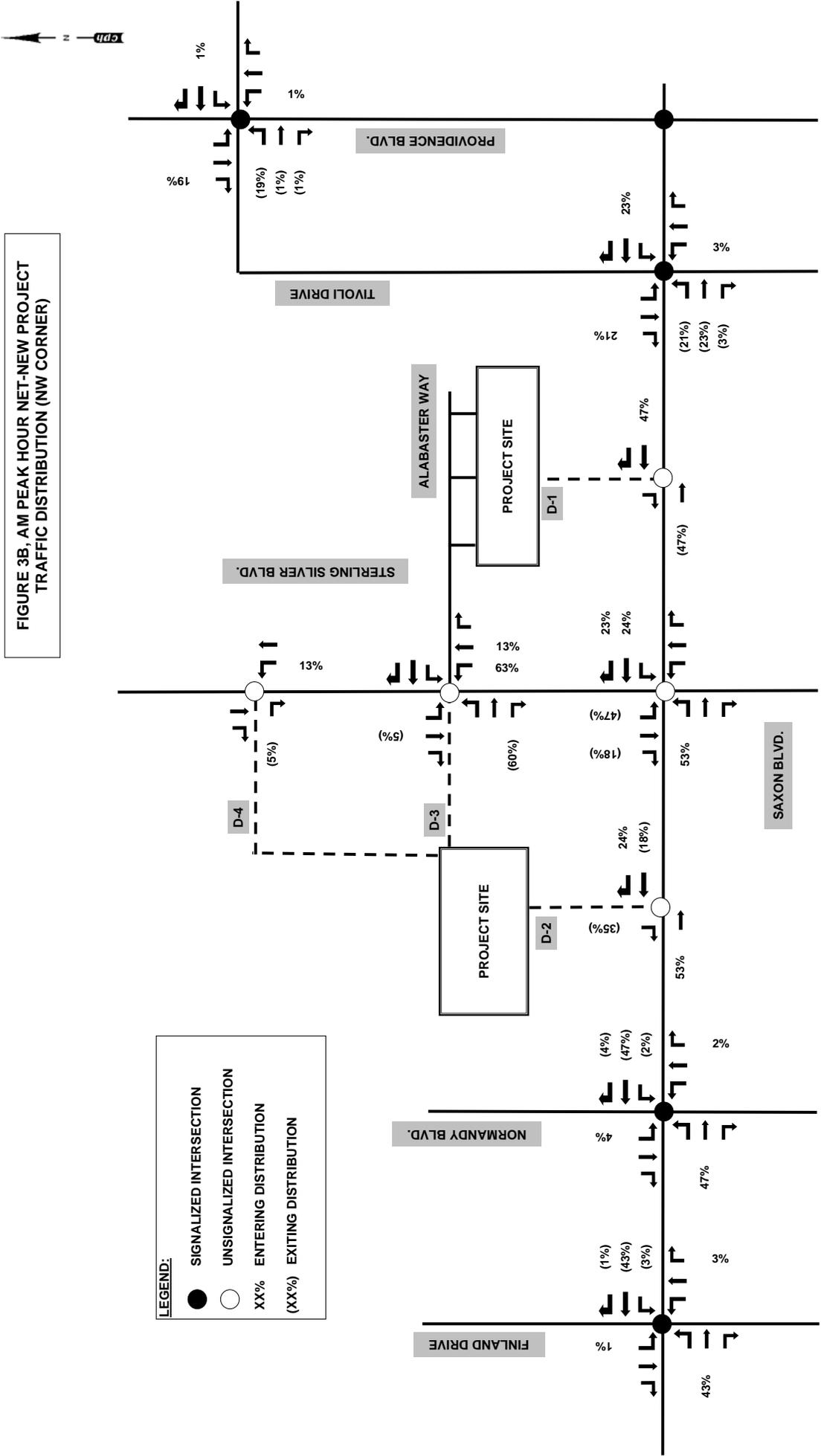


FIGURE 3B. AM PEAK HOUR NET-NEW PROJECT TRAFFIC DISTRIBUTION (NW CORNER)



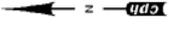


FIGURE 4B. AM PEAK HOUR PASS-BY PROJECT TRAFFIC DISTRIBUTION (NW CORNER)

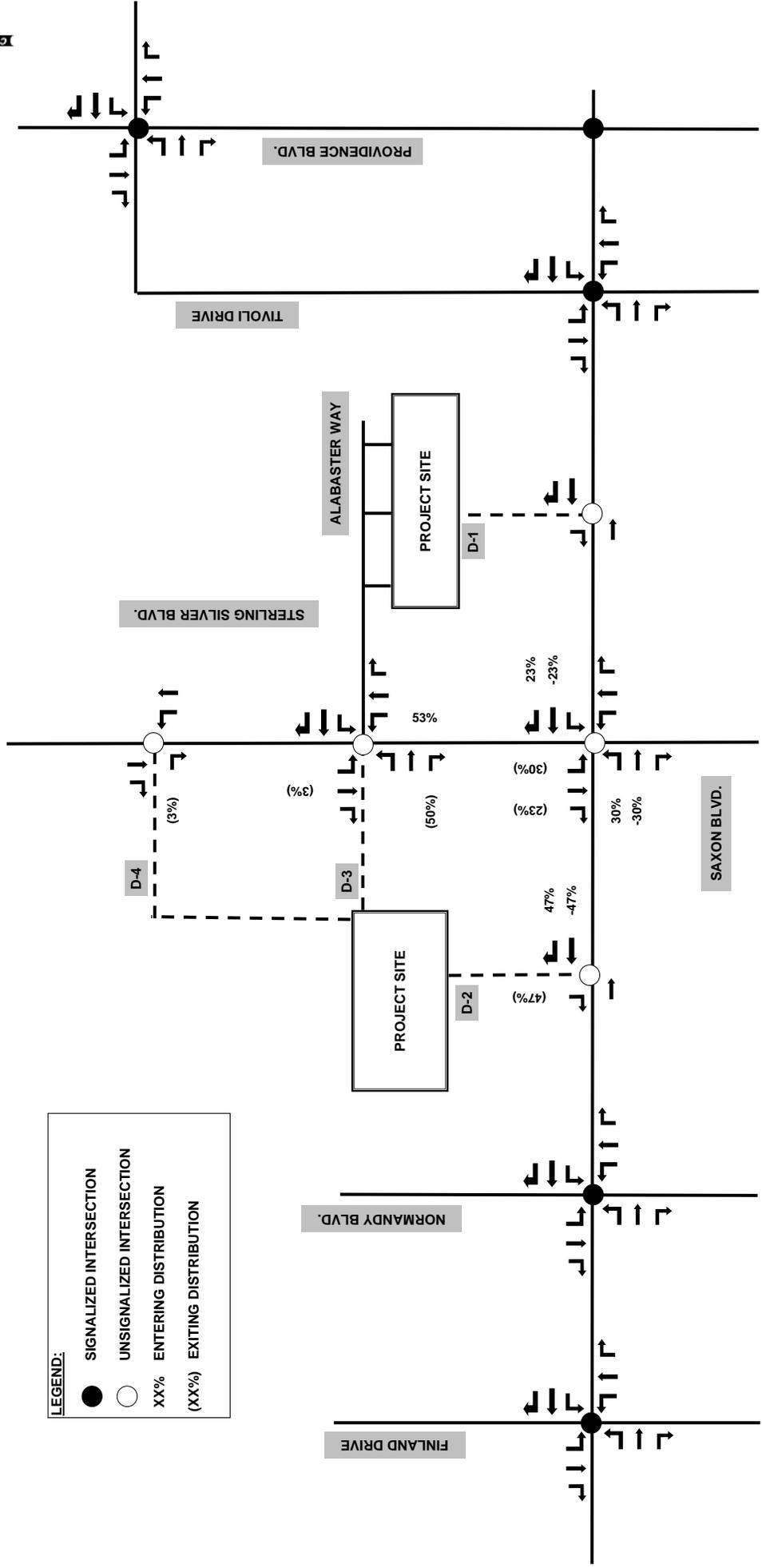


FIGURE 5B, AM PEAK HOUR PROJECT TRAFFIC
(NW CORNER)

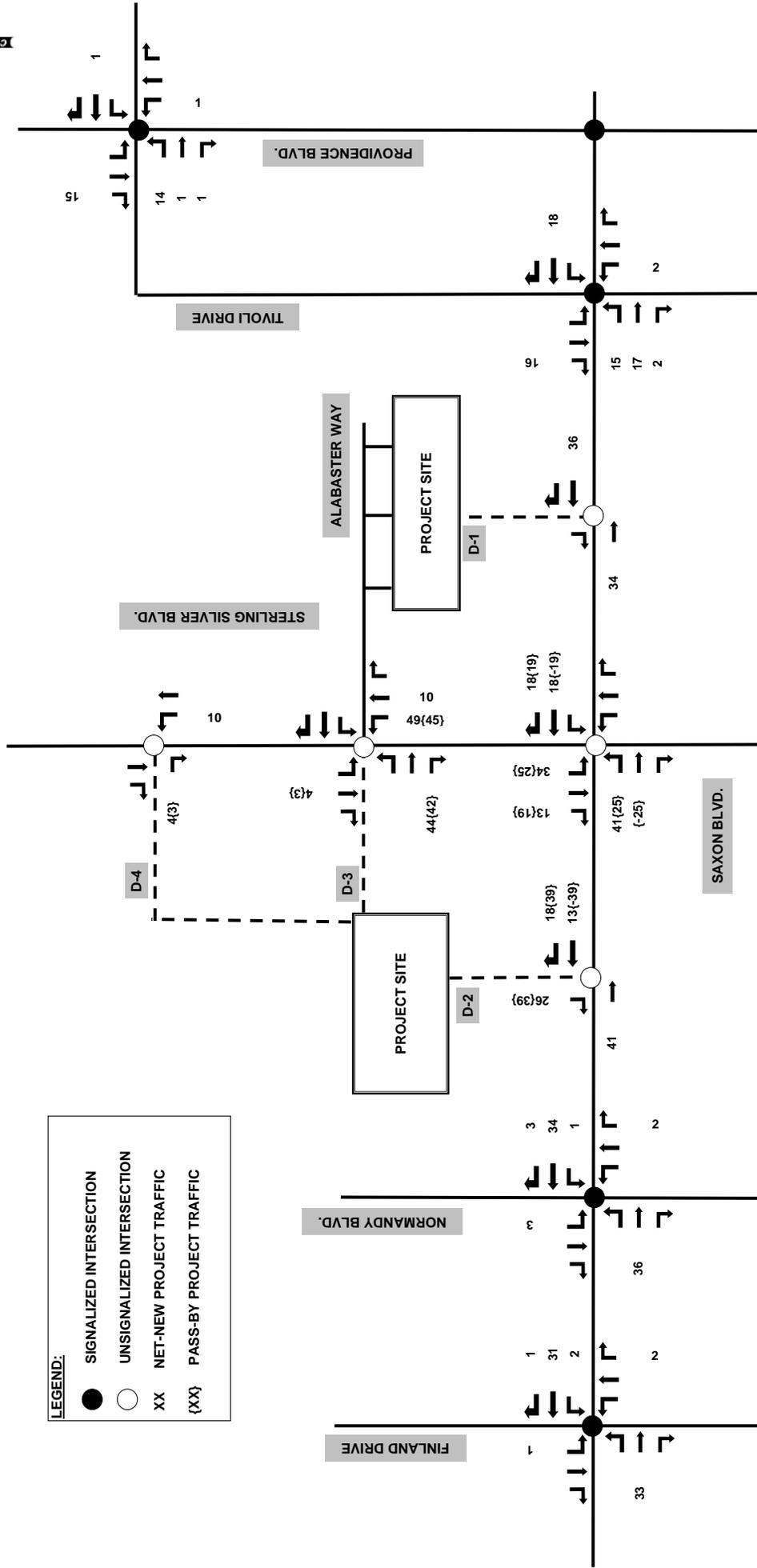
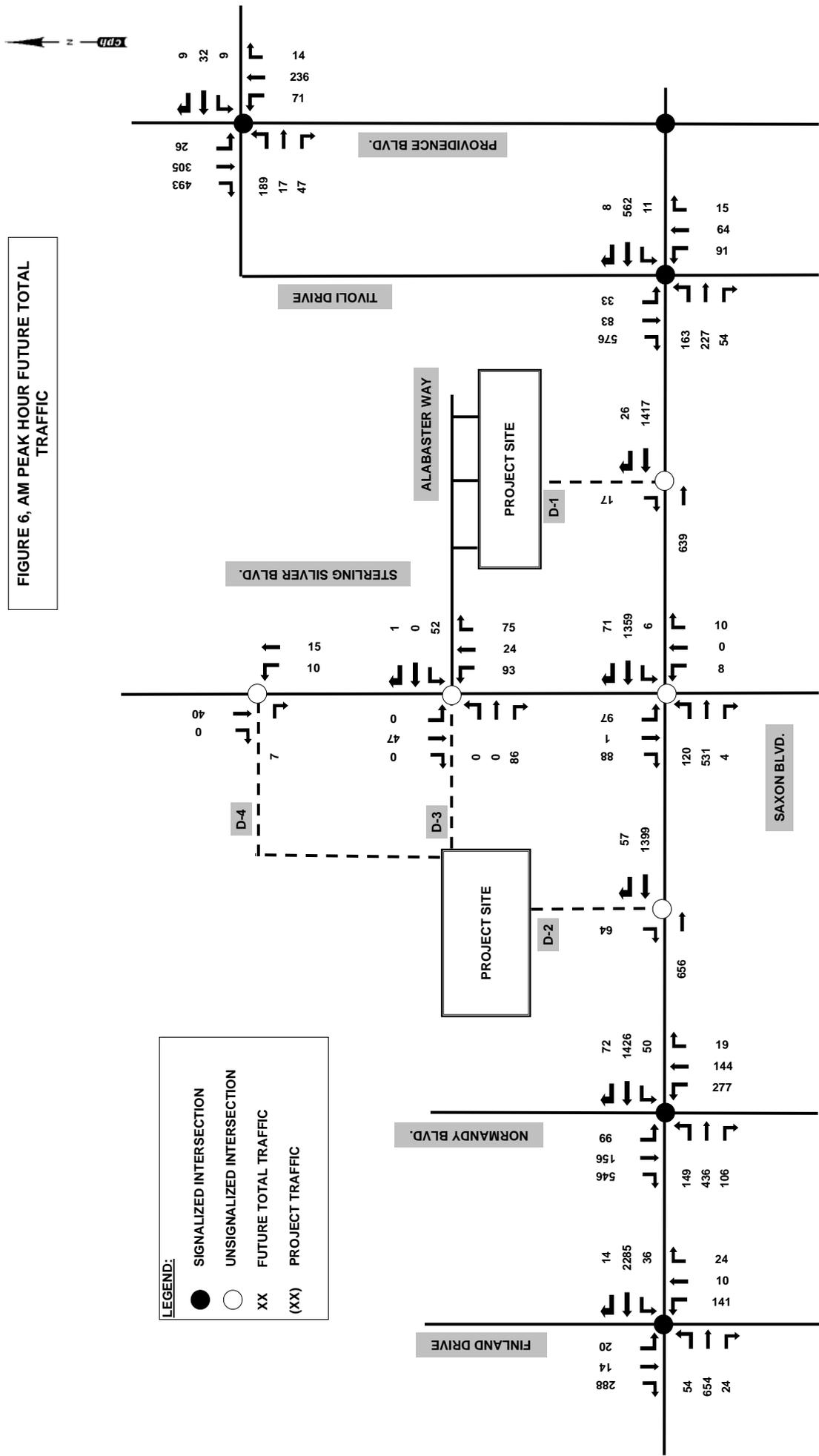


FIGURE 6, AM PEAK HOUR FUTURE TOTAL TRAFFIC



PM PEAK HOUR

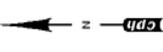


FIGURE 1, PM PEAK HOUR PEAK SESON EXISTING TRAFFIC

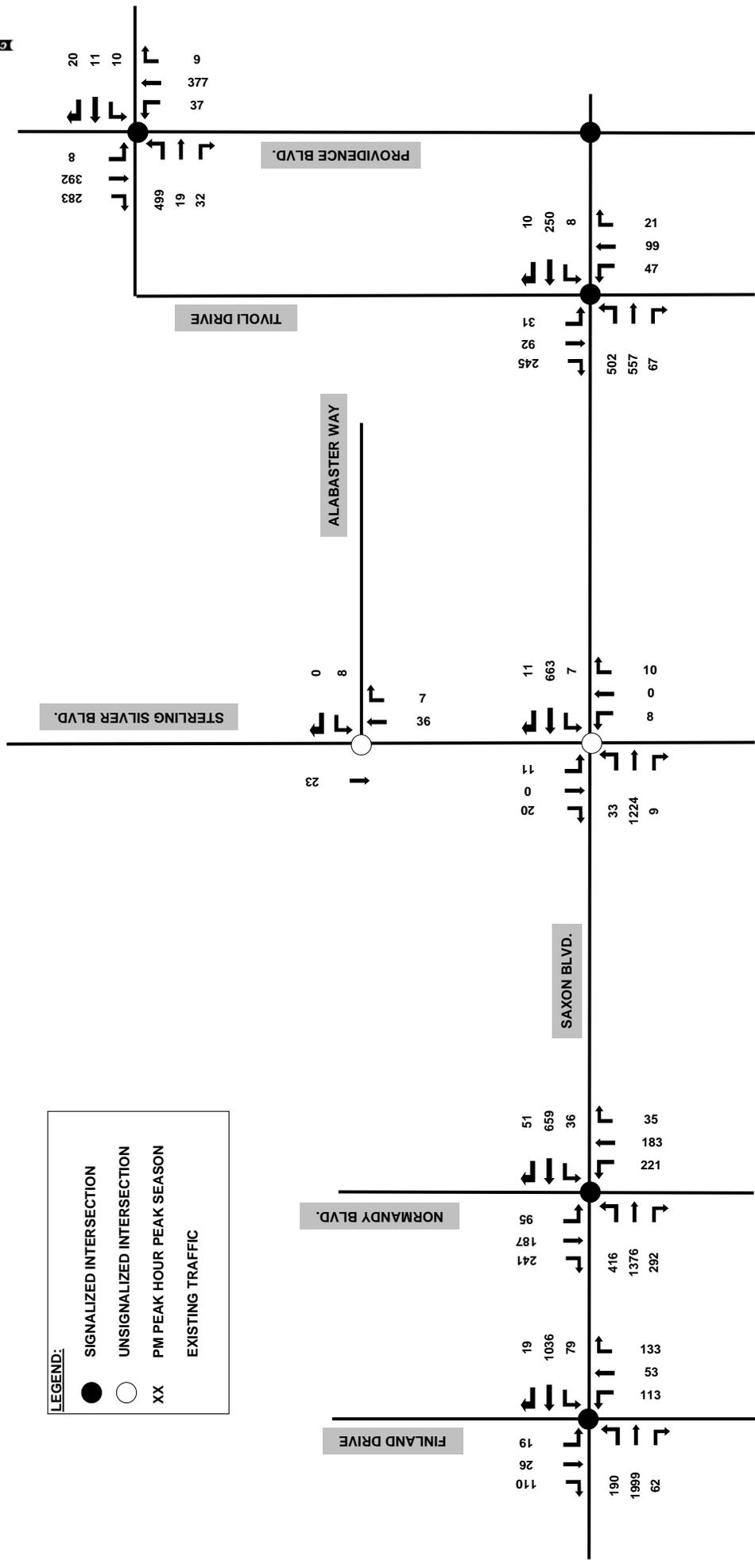


FIGURE 3A, PM PEAK HOUR NET-NEW DISTRIBUTION (NE CORNER)

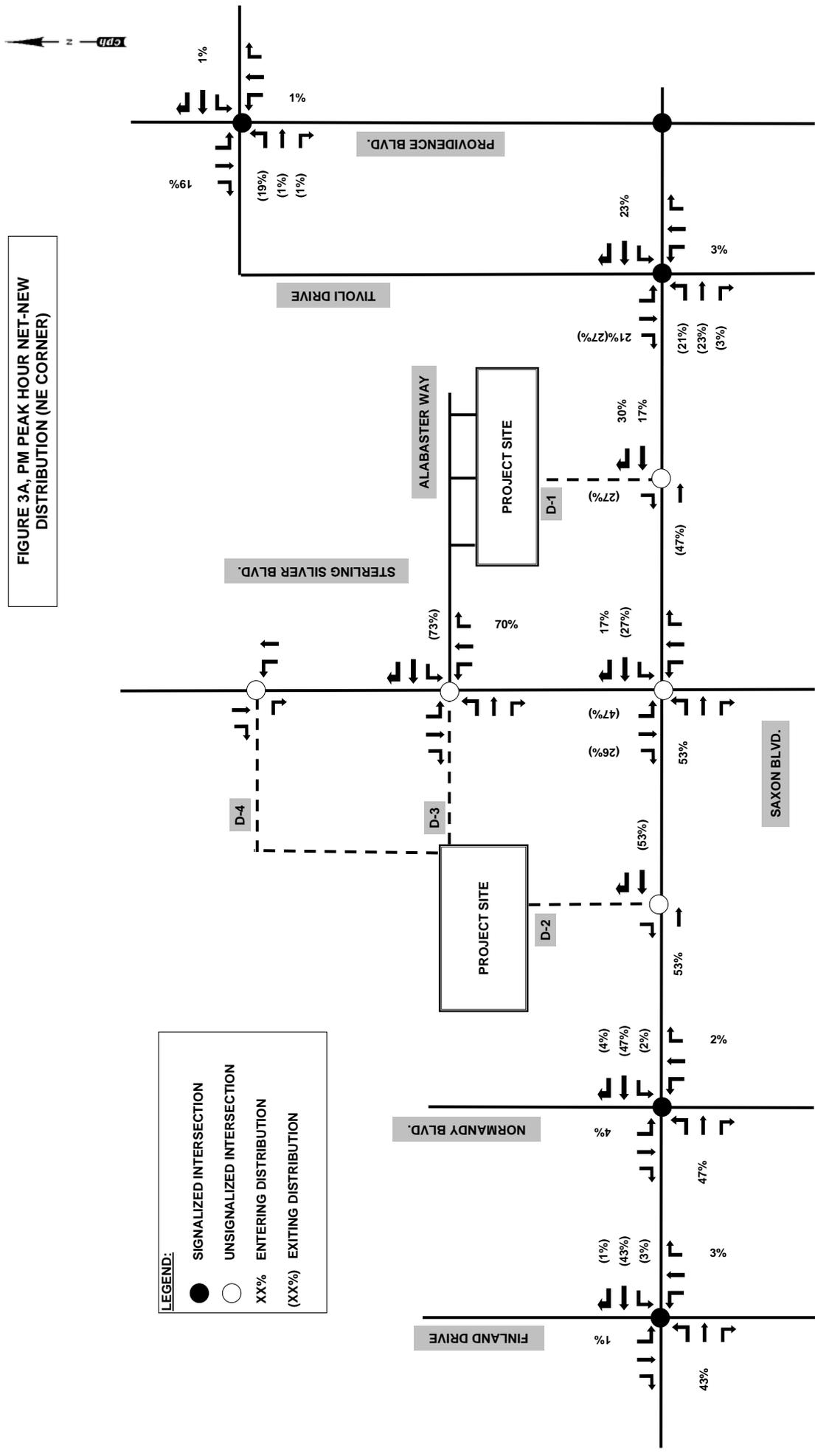


FIGURE 3B, PM PEAK HOUR NET-NEW PROJECT TRAFFIC DISTRIBUTION (NW CORNER)

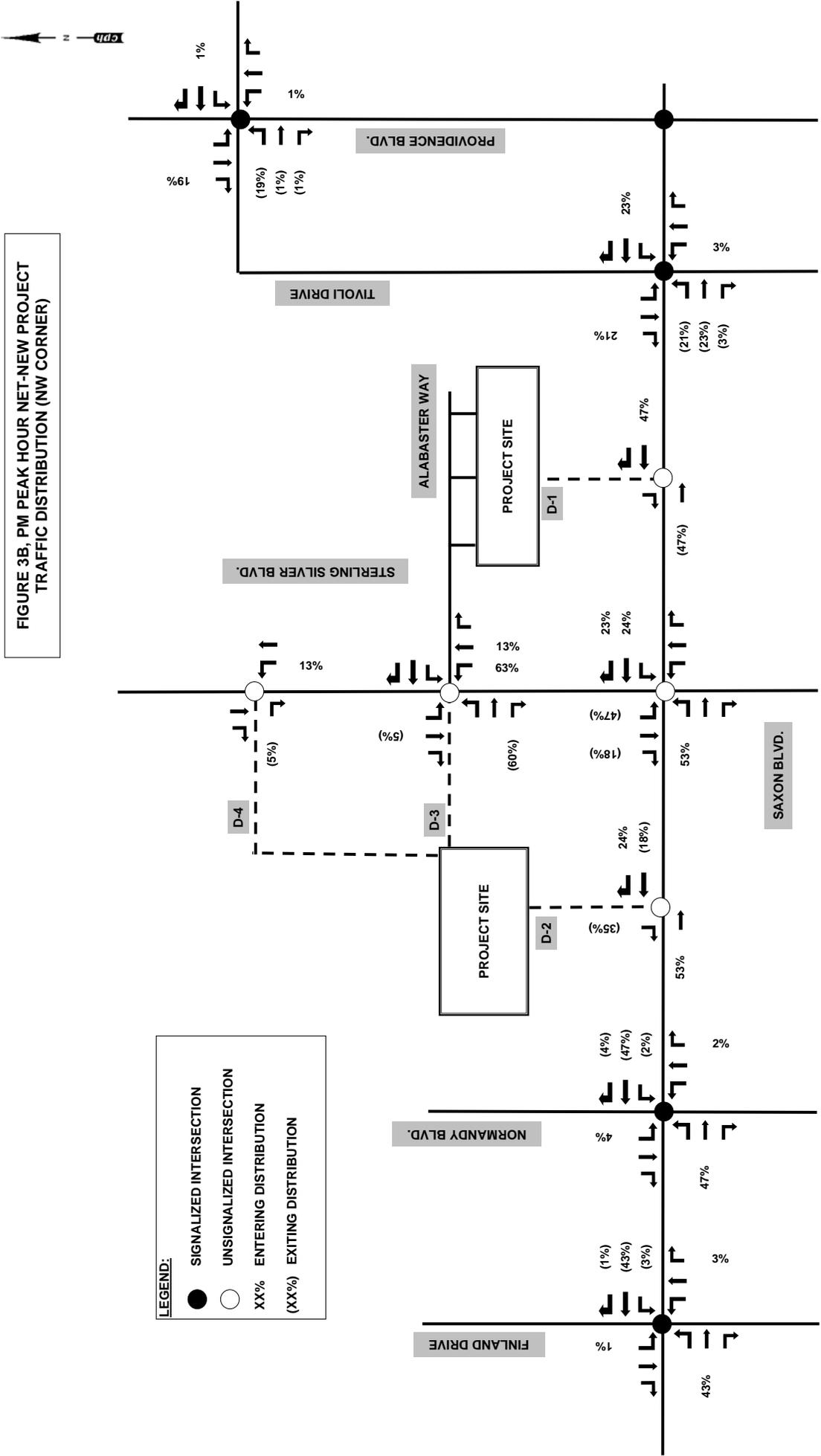
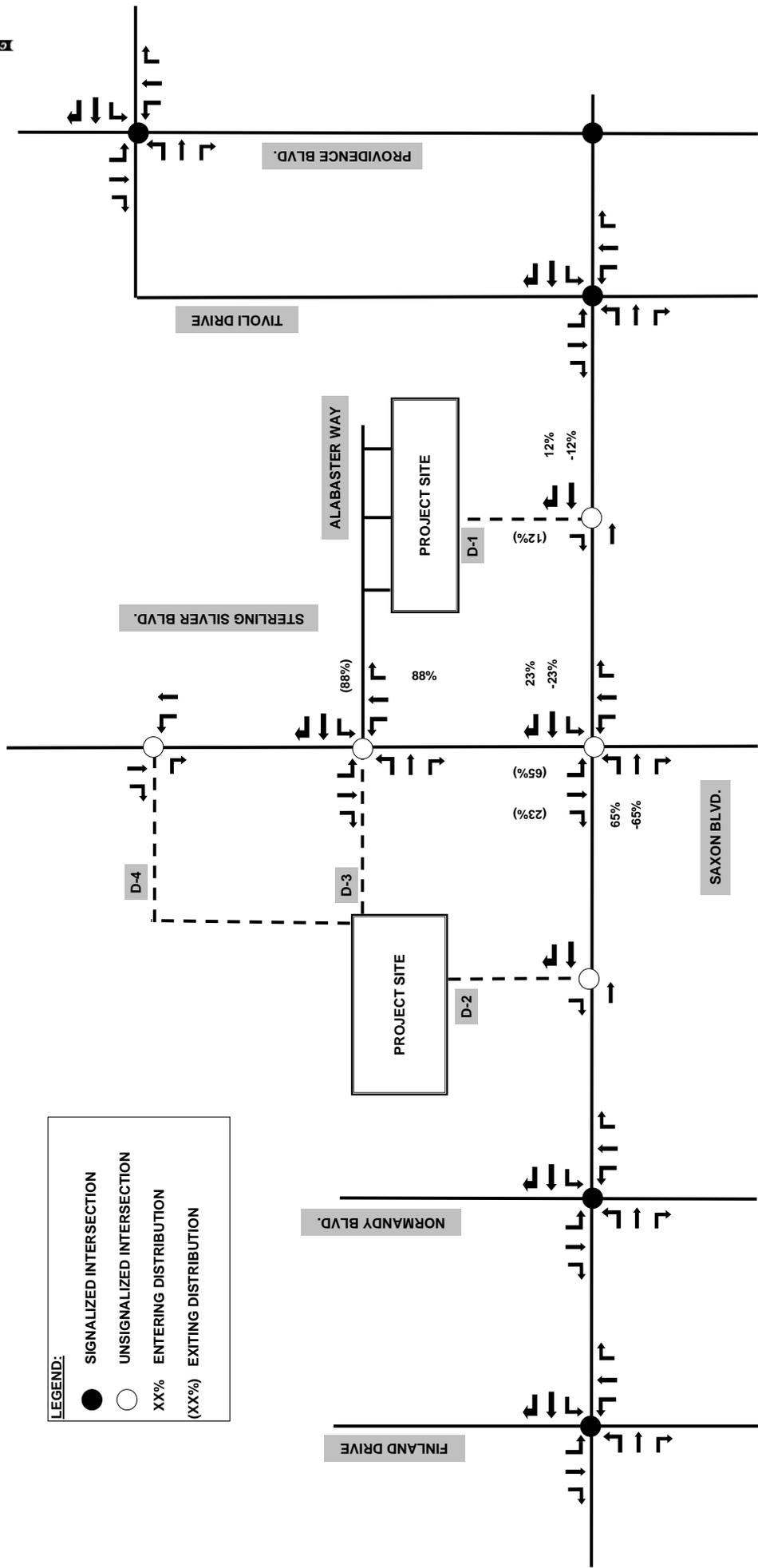
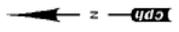


FIGURE 4A, PM PEAK HOUR PASS-BY TRAFFIC DISTRIBUTION (NE CORNER)



LEGEND:

- SIGNALIZED INTERSECTION
- UNSIGNALIZED INTERSECTION
- XX% ENTERING DISTRIBUTION
- (XX%) EXITING DISTRIBUTION



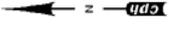


FIGURE 4B. PM PEAK HOUR PASS-BY PROJECT TRAFFIC DISTRIBUTION (NW CORNER)

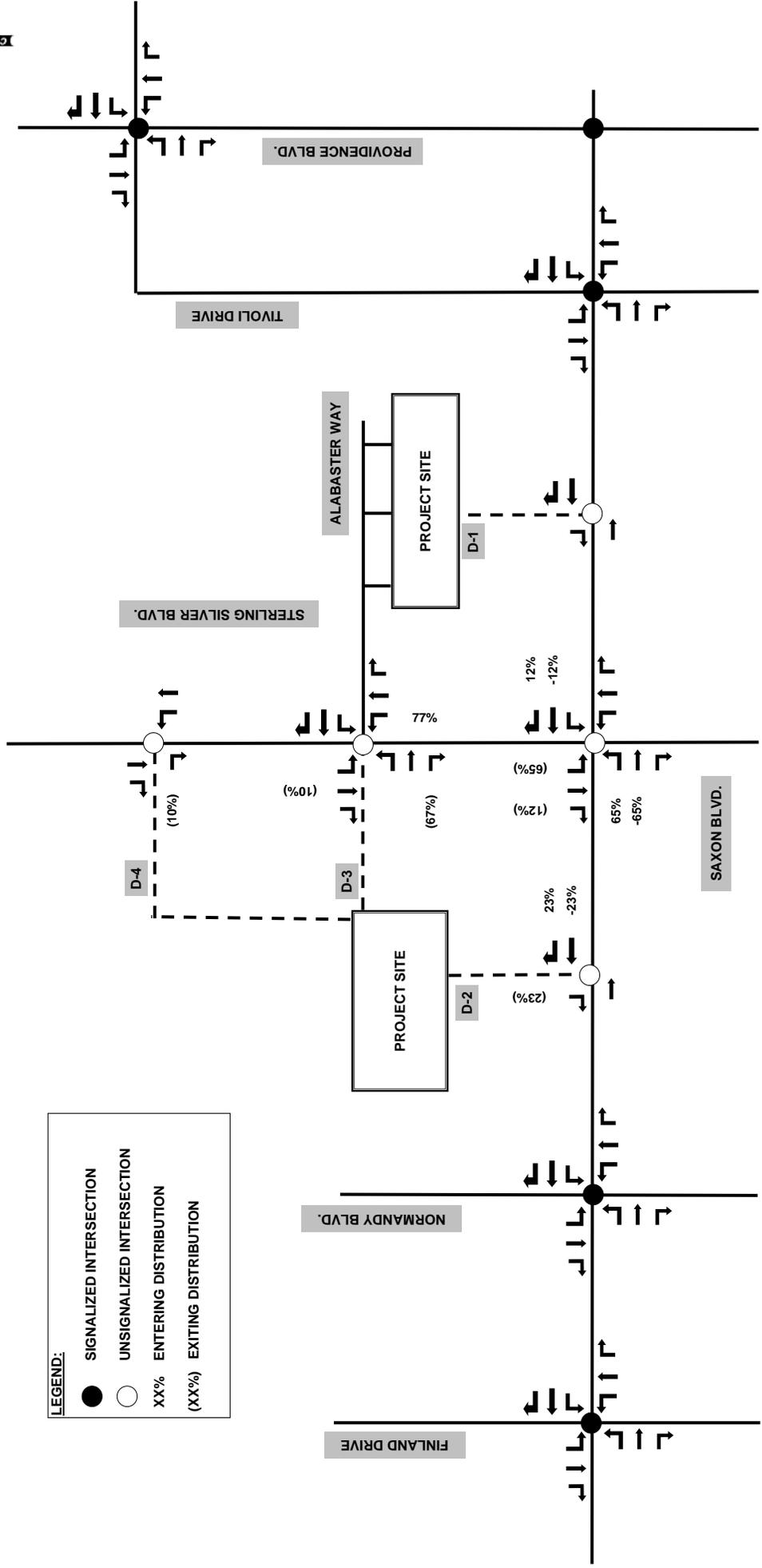
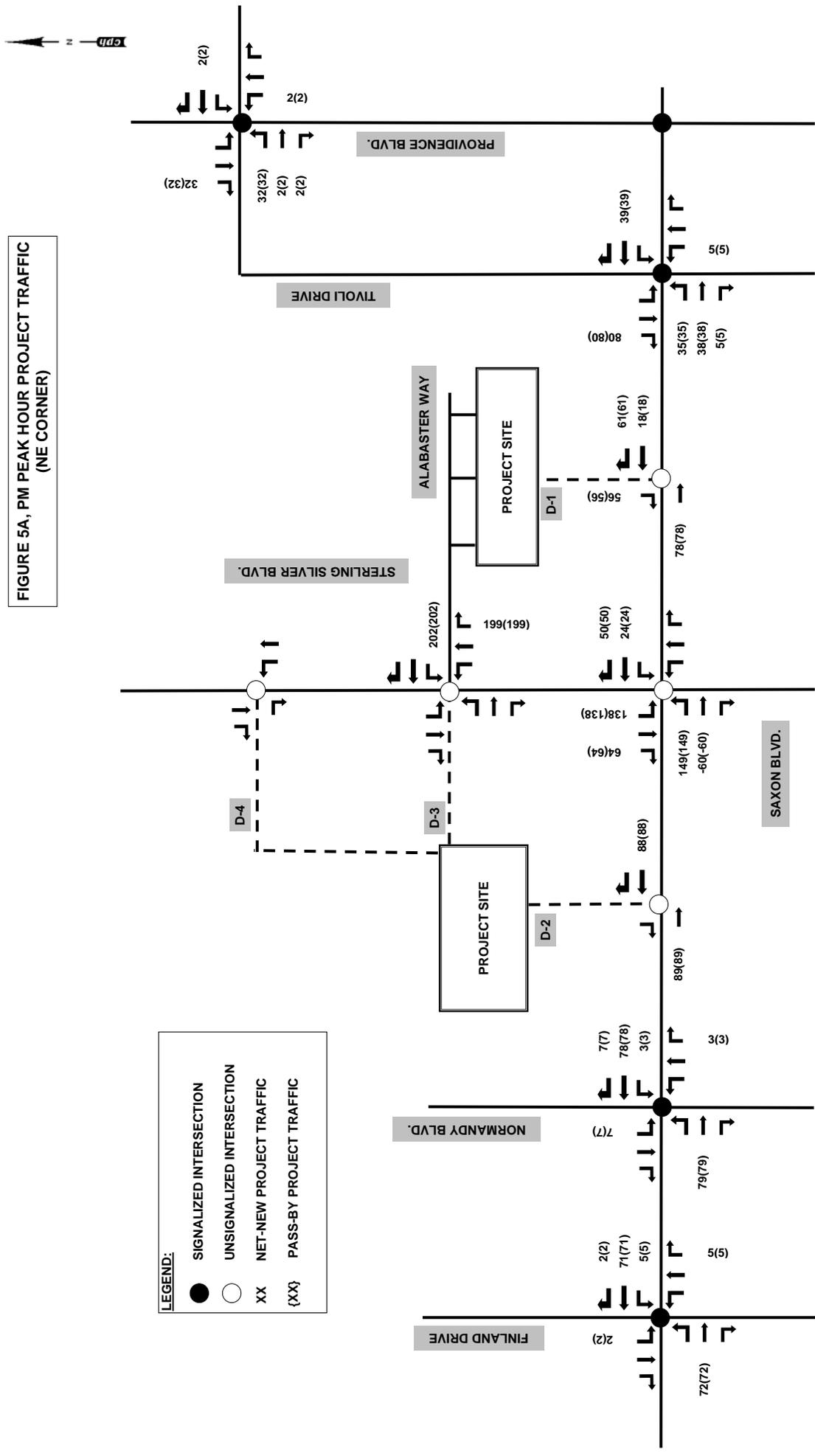


FIGURE 5A, PM PEAK HOUR PROJECT TRAFFIC
(NE CORNER)



**FIGURE 5B, PM PEAK HOUR PROJECT TRAFFIC
(NW CORNER)**

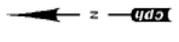
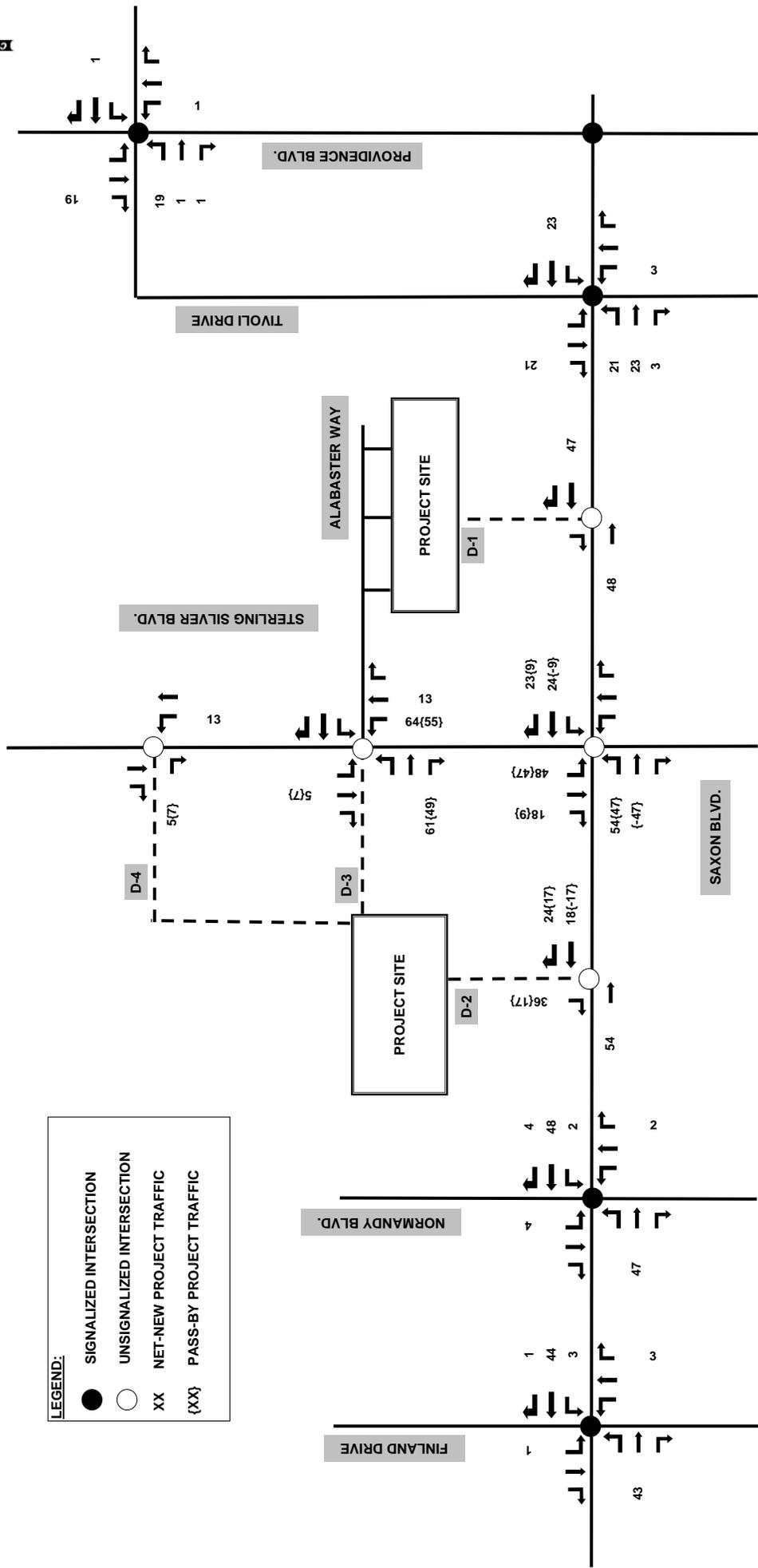
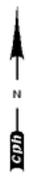
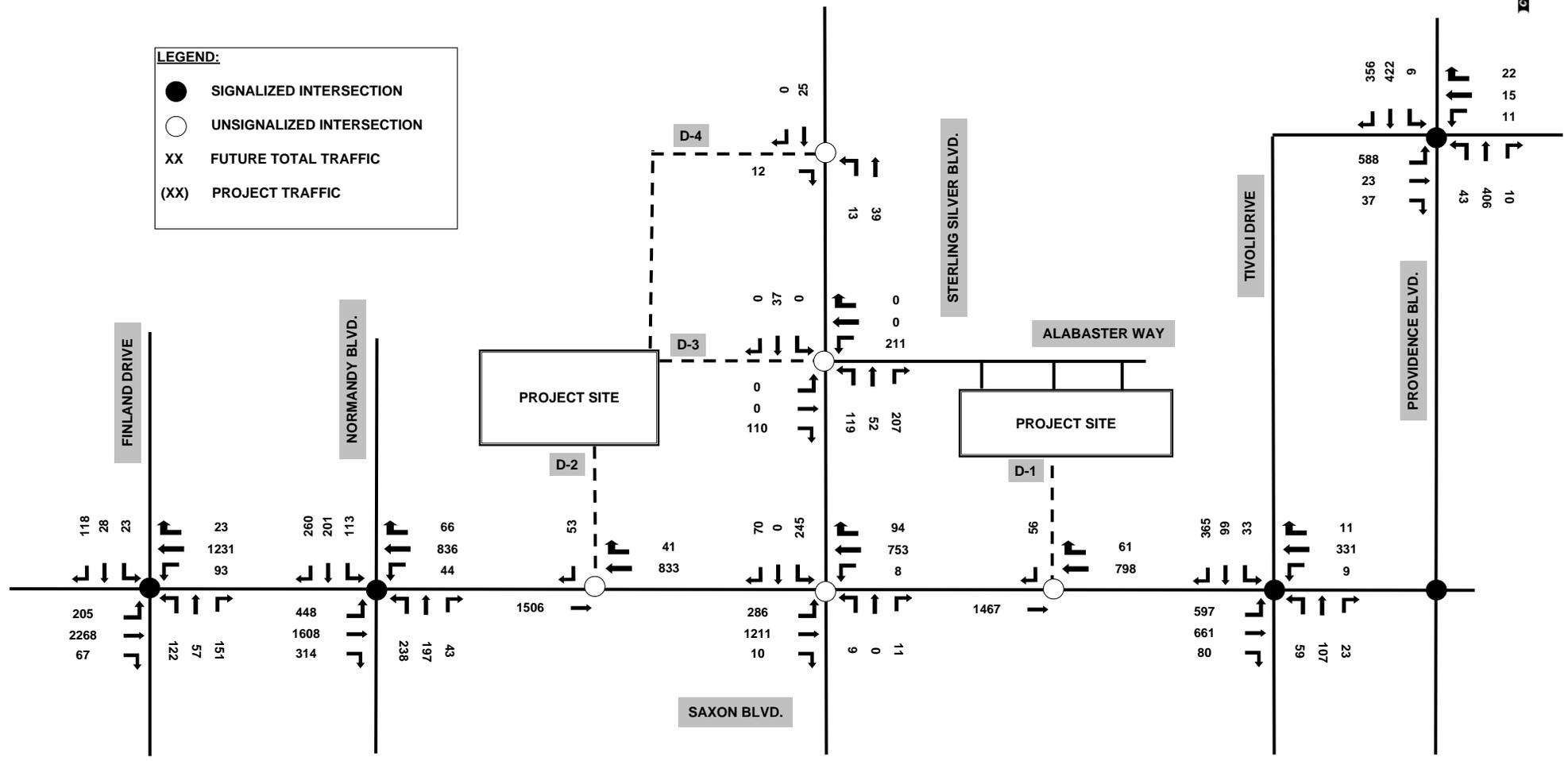


FIGURE 6, PM PEAK HOUR FUTURE TOTAL TRAFFIC



LEGEND:
 ● SIGNALIZED INTERSECTION
 ○ UNSIGNALIZED INTERSECTION
 XX FUTURE TOTAL TRAFFIC
 (XX) PROJECT TRAFFIC

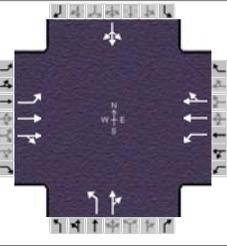
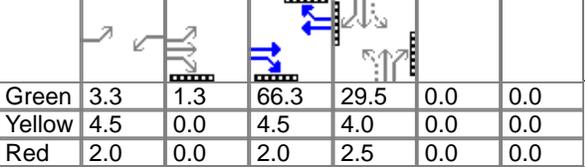
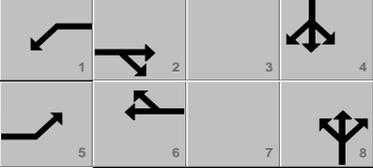


APPENDIX E

INTERSECTION ANALYSIS WORKSHEETS

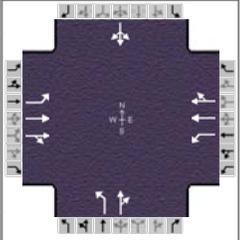
**EXISTING CONDITIONS
(AM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information											
Agency	CPH				Duration, h	0.25										
Analyst	GR		Analysis Date	9/17/2013		Area Type	Other									
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.94									
Intersection	Saxon & Finland		Analysis Year	Existing		Analysis Period	1 > 7:00									
File Name	Saxon Blvd & Finland Dr.xus															
Project Description	W9401.1-Retail Deltona															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	552	22	31	2077	12	131	9	19	17	13	267
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green					3.3	1.3	66.3	29.5	0.0	0.0						
Yellow					4.5	0.0	4.5	4.0	0.0	0.0						
Red					2.0	0.0	2.0	2.5	0.0	0.0						
Traffic Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					50	552	22	31	2077	12	131	9	19	17	13	267
Initial Queue (Q _b), veh/h					0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h					1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h					None			None			None			None		
Heavy Vehicles (P _{HV}), %					2	2		2	2		2	2		2		
Ped / Bike / RTOR, /h					0	0	1	0	0	0	0	0	10	0	0	45
Buses (N _b), buses/h					0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)					3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)					1.00	1.00	1.00	1.00	0.20	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft					12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft					350	0		105	0		350	0			0	
Grade (P _g), %					0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h					40	40	40	40	40	40	30	30	30	30	30	30
Phase Information					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Maximum Green (G _{max}) or Phase Split, s					20.0	64.0	20.0	64.0		36.0		36.0				
Yellow Change Interval (Y), s					4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0				
Red Clearance Interval (R _c), s					2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5				
Minimum Green (G _{min}), s					5	11	5	11	5	6	5	6				
Start-Up Lost Time (I _t), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green (e), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Passage (PT), s					3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0				
Recall Mode					Off	Min	Off	Min	Off	Off	Off	Off				
Dual Entry					No	Yes	No	Yes	No	Yes	No	Yes				
Walk (Walk), s					0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0				
Pedestrian Clearance Time (PC), s					0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0				
Multimodal Information					EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius					0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft					9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb					0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft					12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking					No	0.50	No	0.50	No	0.50	No	0.50	No	0.50		

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94
Intersection	Saxon & Finland	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	50	552	22	31	2077	12	131	9	19	17	13	267

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	3.3	1.3	66.3	29.5	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					

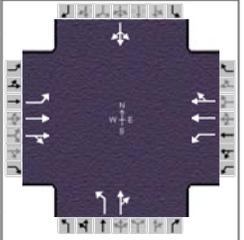
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	11.2	74.2	9.8	72.8		36.0		36.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.5		5.5
Queue Clearance Time (g _s), s	5.6		4.2			31.5		20.2
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0		0.0		1.8
Phase Call Probability	0.83		0.67			1.00		1.00
Max Out Probability	0.01		0.00			1.00		0.36

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	53	307	303	33	1111	1111	139	19				268
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1838	1774	1863	1859	1125	1709				1591
Queue Service Time (g _s), s	3.6	6.3	6.6	2.2	66.3	66.3	11.3	1.0				4.4
Cycle Queue Clearance Time (g _c), s	3.6	6.3	6.6	2.2	66.3	66.3	29.5	1.0				18.2
Green Ratio (g/C)	0.04	0.56	0.56	0.03	0.55	0.55	0.25	0.25				0.25
Capacity (c), veh/h	69	1050	1037	49	1030	1028	166	420				423
Volume-to-Capacity Ratio (X)	0.771	0.292	0.292	0.669	1.079	1.081	0.840	0.046				0.634
Available Capacity (c _a), veh/h	200	1050	1037	200	1030	1028	166	420				423
Back of Queue (Q), veh/ln (50th percentile)	1.9	2.4	2.5	1.0	28.3	28.7	5.7	0.4				7.6
Queue Storage Ratio (RQ) (50th percentile)	0.14	0.00	0.00	0.25	0.00	0.00	0.41	0.00				0.00
Uniform Delay (d ₁), s/veh	57.1	7.3	7.7	57.8	15.8	15.9	55.7	34.5				41.0
Incremental Delay (d ₂), s/veh	16.4	0.7	0.7	3.1	39.9	40.8	31.1	0.1				3.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				0.0
Control Delay (d), s/veh	73.5	8.0	8.4	60.9	55.6	56.7	86.8	34.6				44.5
Level of Service (LOS)	E	A	A	E	F	F	F	C				D
Approach Delay, s/veh / LOS	13.5		B	56.2		E	80.5		F	44.5		D
Intersection Delay, s/veh / LOS	48.0						D					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.3 / B	2.2 / B	2.8 / C	2.8 / C
Bicycle LOS Score / LOS	1.0 / A	2.3 / B	0.7 / A	0.9 / A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94		
Intersection	Saxon & Finland	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	50	552	22	31	2077	12	131	9	19	17	13	267

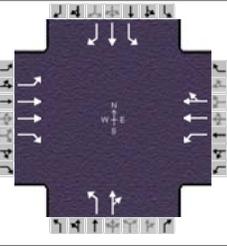
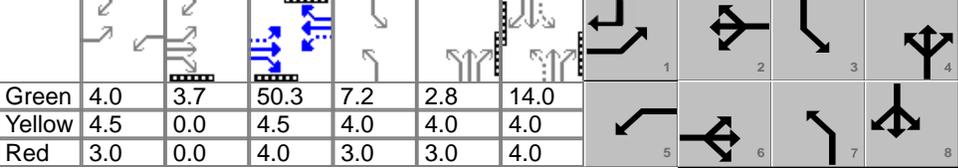
Signal Information														
Cycle, s	120.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	1.3	66.3	29.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0				
				Red	2.0	0.0	2.0	2.5	0.0	0.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.854	
Right-Turn Adjustment Factor (f_{RT})		0.987			0.998			0.917			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3566		1774	3700			854			81	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.39	0.15			0.25	

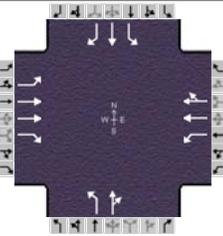
Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.04	0.56	0.03	0.55		0.25		0.25
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1125		1415
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		29.5		29.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		11.3		28.5
Permitted Queue Service Time (g_{ps}), s						11.3		4.4
Time to First Blockage (g), s	0.0	0.0	0.0	0.0		0.0		13.8
Queue Service Time Before Blockage (g_{ts}), s								13.8
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.389	0.06	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.098	0.000	0.100	0.000	0.142	0.000	0.142
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1127.75	11.41	1105.59	12.00	491.67	34.13	491.67	34.13
Bicycle F_w / F_v	-3.64	0.55	-3.64	1.86	-3.64	0.26	-3.64	0.44

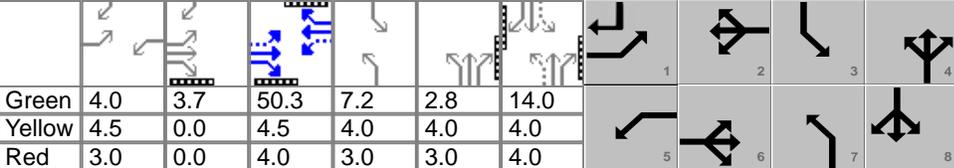
HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information											
Agency	CPH				Duration, h	0.25										
Analyst	GR		Analysis Date	9/17/2013		Area Type	Other									
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.93									
Intersection	Saxon & Normandy		Analysis Year	Existing		Analysis Period	1 > 7:00									
File Name	Saxon Blvd & Normandy Blvd.xus															
Project Description	W9401.1 Retail Deltona															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					138	344	98	44	1276	62	257	134	15	86	145	507
Signal Information																
Cycle, s	120.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	4.0	3.7	50.3	7.2	2.8	14.0										
Yellow	4.5	0.0	4.5	4.0	4.0	4.0										
Red	3.0	0.0	4.0	3.0	3.0	4.0										
Traffic Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					138	344	98	44	1276	62	257	134	15	86	145	507
Initial Queue (Q _b), veh/h					0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h					1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h					None			None			None			None		
Heavy Vehicles (P _{HV}), %					2	2	2	2	2		2	2		2	2	0
Ped / Bike / RTOR, /h					0	0	57	0	0	2	0	0	4	0	0	74
Buses (N _b), buses/h					0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)					3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)					1.00	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft					12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft					540	0	265	200	0		290	0		295	0	380
Grade (P _g), %					0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h					40	40	40	40	40	40	35	35	35	35	35	35
Phase Information					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Maximum Green (G _{max}) or Phase Split, s					18.0	56.0	18.0	56.0	24.0	28.0	18.0	22.0				
Yellow Change Interval (Y), s					4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0				
Red Clearance Interval (R _c), s					3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0				
Minimum Green (G _{min}), s					5	11	5	11	5	6	5	6				
Start-Up Lost Time (I _t), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Extension of Effective Green (e), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
Passage (PT), s					3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0				
Recall Mode					Off	Min	Off	Min	Off	Off	Off	Off				
Dual Entry					No	Yes	No	Yes	No	Yes	No	Yes				
Walk (Walk), s					0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0				
Pedestrian Clearance Time (PC), s					0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0				
Multimodal Information					EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius					0	No	25	0	No	25	0	No	25	0	No	25
Walkway / Crosswalk Width / Length, ft					9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb					0	0	No	0	0	No	0	0	No	0	0	No
Width Outside / Bike Lane / Shoulder, ft					12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking					No	0.50	No	0.50	No	0.50	No	0.50	No	0.50		

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	CPH			Duration, h	0.25	
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other	
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93	
Intersection	Saxon & Normandy	Analysis Year	Existing	Analysis Period	1 > 7:00	
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	138	344	98	44	1276	62	257	134	15	86	145	507

Signal Information																							
Cycle, s	120.0	Reference Phase	2	Green	4.0	3.7	50.3	7.2	2.8	14.0	Yellow	4.5	0.0	4.5	4.0	4.0	Red	3.0	0.0	4.0	3.0	3.0	4.0
Offset, s	0	Reference Point	End																				
Uncoordinated	No	Simult. Gap E/W	On																				
Force Mode	Fixed	Simult. Gap N/S	On																				

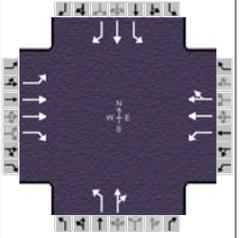
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	15.2	62.5	11.5	58.8	24.0	31.8	14.2	22.0
Change Period, (Y+R _c), s	7.5	8.5	7.5	8.5	7.0	8.0	7.0	8.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	7.7		3.8		18.1	10.9	7.4	16.0
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0	0.0	4.0	0.1	0.0
Phase Call Probability	0.99		0.79		1.00	1.00	0.95	1.00
Max Out Probability	1.00		0.04		1.00	0.30	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	148	370	44	47	723	714	276	156		92	156	466
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1833	1774	1838		1774	1863	1610
Queue Service Time (g _s), s	5.7	5.8	1.9	1.8	44.2	44.5	16.1	8.9		5.4	9.7	14.0
Cycle Queue Clearance Time (g _c), s	5.7	5.8	1.9	1.8	44.2	44.5	16.1	8.9		5.4	9.7	14.0
Green Ratio (g/C)	0.48	0.45	0.45	0.45	0.42	0.42	0.28	0.20		0.18	0.12	0.18
Capacity (c), veh/h	192	1597	711	507	781	768	355	365		298	217	291
Volume-to-Capacity Ratio (X)	0.773	0.232	0.062	0.093	0.926	0.929	0.778	0.427		0.310	0.717	1.598
Available Capacity (c _a), veh/h	233	1597	711	604	781	768	355	365		355	217	291
Back of Queue (Q), veh/ln (50th percentile)	2.9	2.3	0.7	0.7	22.9	22.9	7.9	4.1		2.4	5.2	31.6
Queue Storage Ratio (RQ) (50th percentile)	0.14	0.00	0.07	0.09	0.00	0.00	0.69	0.00		0.21	0.00	2.08
Uniform Delay (d ₁), s/veh	27.7	14.3	18.7	18.4	33.1	33.2	38.1	42.1		43.0	51.1	49.1
Incremental Delay (d ₂), s/veh	11.9	0.3	0.2	0.1	18.5	19.2	10.4	1.1		0.6	11.7	284.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	39.6	14.7	18.8	18.4	51.6	52.4	48.5	43.2		43.5	62.8	333.9
Level of Service (LOS)	D	B	B	B	D	D	D	D		D	E	F
Approach Delay, s/veh / LOS	21.6		C	50.9		D	46.6		D	237.1		F
Intersection Delay, s/veh / LOS	86.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	1.0	A	1.7	A	1.2	A	1.7	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93
Intersection	Saxon & Normandy	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Normandy Blvd.xus				
Project Description	W9401.1 Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	138	344	98	44	1276	62	257	134	15	86	145	507

Signal Information				Signal Phases											
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.0	3.7	50.3	7.2	2.8	14.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	0.0	4.5	4.0	4.0	4.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	4.0	3.0	3.0	4.0					

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.984			0.987			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3531		1774	1698		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.21	0.50	0.50	0.11	0.50	0.50	0.33	0.15		0.11	0.30	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	8.5	7.5	8.5	7.0	8.0	7.0	8.0
Green Ratio (g/C)	0.48	0.45	0.45	0.42	0.28	0.20	0.18	0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	370	0	1008	0	1226	0	1226	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	50.3	0.0	50.3	0.0	16.0	0.0	14.0	0.0
Permitted Service Time (g_u), s	5.8	0.0	46.2	0.0	4.3	0.0	12.9	0.0
Permitted Queue Service Time (g_{ps}), s	5.8		0.2		3.4		0.1	
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1610
Protected Right Effective Green Time (g_R), s		0.0						7.7

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.710	0.11	2.107	0.00	2.224	0.08
Pedestrian F_s / F_{delay}	0.000	0.116	0.000	0.121	0.000	0.146	0.000	0.154
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	900.55	18.13	838.14	20.25	397.38	38.53	233.33	46.82
Bicycle F_w / F_v	-3.64	0.46	-3.64	1.22	-3.64	0.71	-3.64	1.18

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Existing
Analysis Time Period	AM Peak		
Project Description <i>W9401.1-Retail Deltona</i>			
East/West Street: <i>Saxon Boulevard</i>		North/South Street: <i>Sterling Silver Boulevard</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

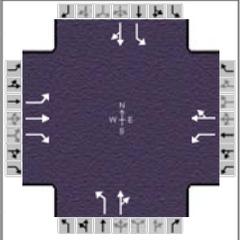
Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	11	525	4	6	1266	8
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	12	610	4	6	1472	9
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	7	0	9	11	1	31
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	8	0	10	12	1	36
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		LTR		L		TR

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			L		TR
v (veh/h)	12	6		18		12		37
C (m) (veh/h)	450	961		175		47		343
v/c	0.03	0.01		0.10		0.26		0.11
95% queue length	0.08	0.02		0.34		0.86		0.36
Control Delay (s/veh)	13.2	8.8		27.9		106.1		16.8
LOS	B	A		D		F		C
Approach Delay (s/veh)	--	--	27.9			38.6		
Approach LOS	--	--	D			E		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88		
Intersection	Saxon & Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	130	187	47	10	492	7	81	59	14	31	77	508

Signal Information												
Cycle, s	82.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.3	27.2	30.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.0	2.5	0.0	0.0	0.0		

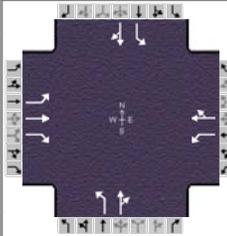
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	130	187	47	10	492	7	81	59	14	31	77	508
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	
Ped / Bike / RTOR, /h	0	0	21	0	0	2	0	0	5	0	0	95
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	315	0	205	120	0		270	0		80	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	35	35	35	30	30	30	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	15.0	30.0		30.0		30.0		30.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	5	5	5
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88
Intersection	Saxon & Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	130	187	47	10	492	7	81	59	14	31	77	508

Signal Information													
Cycle, s	82.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.3	27.2	30.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

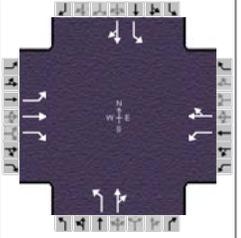
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	12.3	45.5		33.2		36.5		36.5
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		5.5		5.5
Queue Clearance Time (g _s), s	6.2	7.5		25.9		32.0		32.0
Green Extension Time (g _e), s	0.3	5.1		1.3		0.0		0.0
Phase Call Probability	0.97	1.00		1.00		1.00		1.00
Max Out Probability	0.02	0.06		1.00		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	148	213	30	11	565		92	77		35	557	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1164	1859		849	1819		1316	1617	
Queue Service Time (g _s), s	4.2	5.5	0.8	0.5	23.9		0.0	2.3		1.5	27.3	
Cycle Queue Clearance Time (g _c), s	4.2	5.5	0.8	0.5	23.9		30.0	2.3		3.8	27.3	
Green Ratio (g/C)	0.43	0.48	0.48	0.33	0.33		0.37	0.37		0.37	0.37	
Capacity (c), veh/h	258	897	760	474	617		88	666		532	592	
Volume-to-Capacity Ratio (X)	0.573	0.237	0.039	0.024	0.915		1.048	0.116		0.066	0.941	
Available Capacity (c _a), veh/h	447	897	760	514	680		88	666		532	592	
Back of Queue (Q), veh/ln (50th percentile)	1.7	2.1	0.3	0.1	12.7		4.4	1.0		0.4	13.5	
Queue Storage Ratio (RQ) (50th percentile)	0.14	0.00	0.03	0.03	0.00		0.42	0.00		0.14	0.00	
Uniform Delay (d ₁), s/veh	19.2	12.4	11.2	18.5	26.3		41.0	17.2		18.5	25.1	
Incremental Delay (d ₂), s/veh	2.0	0.2	0.0	0.0	16.7		109.7	0.1		0.1	23.6	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	21.2	12.6	11.3	18.5	43.0		150.7	17.3		18.5	48.7	
Level of Service (LOS)	C	B	B	B	D		F	B		B	D	
Approach Delay, s/veh / LOS	15.8		B	42.5		D	89.9		F	46.9		D
Intersection Delay, s/veh / LOS	42.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.4	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.1	A	1.4	A	0.8	A	1.5	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.88		
Intersection	Saxon & Tivoli		Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus							
Project Description	W9501.1-Retail, Deltona							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	130	187	47	10	492	7	81	59	14	31	77	508

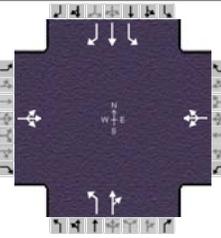
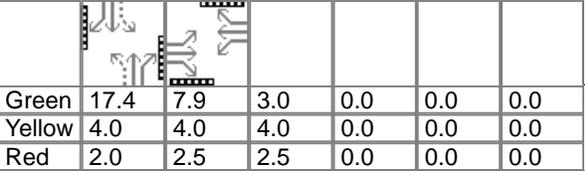
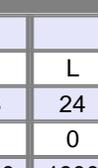
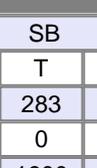
Signal Information				Signal Timing									
Cycle, s	82.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	6.3	27.2	30.0	0.0	0.0	0.0			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.5	0.0	0.0	0.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.995			0.998			0.977			0.868	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1841			1579			254	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.15	0.15	0.15	0.38		0.50	0.15		0.15	0.46	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.43	0.48		0.33		0.37		0.37
Permitted Saturation Flow Rate (s_p), veh/h/ln	842	842		1164		849		1316
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	29.2	30.0		27.2		30.0		30.0
Permitted Service Time (g_u), s	3.3	0.0		27.2		0.0		27.7
Permitted Queue Service Time (g_{ps}), s	3.3			0.5		0.0		1.5
Time to First Blockage (g_t), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

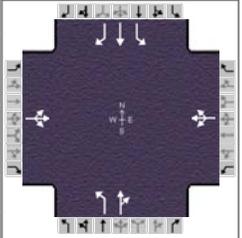
Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.01		1.557	0.14		1.557	0.00		1.710	0.03	
Pedestrian F_s / F_{delay}	0.000	0.096		0.000	0.117		0.000	0.112		0.000	0.112	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	963.21	11.02		664.03	18.29		731.84	16.48		731.84	16.48	
Bicycle F_w / F_v	-3.64	0.64		-3.64	0.95		-3.64	0.28		-3.64	0.98	

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information												
Agency	CPH				Duration, h	0.25											
Analyst	GR		Analysis Date	9/18/2013		Area Type	Other										
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.95										
Intersection	Providence Blvd. & Tivoli Dr		Analysis Year	Existing		Analysis Period	1 > 7:00										
File Name	Providence Blvd & Tivoli Dr.xus																
Project Description	W9401.1-Retail, Deltona																
Demand Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					156	15	43	8	28	8	64	219	13	24	283	433	
Signal Information																	
Cycle, s	47.3	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	Yes	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
Green					17.4	7.9	3.0	0.0	0.0	0.0	0.0						
Yellow					4.0	4.0	4.0	0.0	0.0	0.0	0.0						
Red					2.0	2.5	2.5	0.0	0.0	0.0	0.0						
Traffic Information					EB			WB			NB			SB			
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h					156	15	43	8	28	8	64	219	13	24	283	433	
Initial Queue (Q _b), veh/h					0	0	0	0	0	0	0	0	0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h					1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Parking (N _m), man/h					None			None			None			None			
Heavy Vehicles (P _{HV}), %					2			2			2			2			
Ped / Bike / RTOR, /h					0	0	9	0	0	3	0	0	0	0	0	0	31
Buses (N _b), buses/h					0	0	0	0	0	0	0	0	0	0	0	0	
Arrival Type (AT)					3	3	3	3	3	3	3	3	3	3	3	3	
Upstream Filtering (I)					1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Lane Width (W), ft					12.0			12.0			12.0			12.0			
Turn Bay Length, ft					0			0			65			330			
Grade (P _g), %					0	0	0	0	0	0	0	0	0	0	0	0	
Speed Limit, mi/h					30	30	30	30	30	30	35	35	35	35	35	35	
Phase Information					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Maximum Green (G _{max}) or Phase Split, s					35.0		35.0		35.0		35.0						
Yellow Change Interval (Y), s					4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Red Clearance Interval (R _c), s					1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0					
Minimum Green (G _{min}), s					5	7	5	7	5	7	5	7					
Start-Up Lost Time (I _t), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Extension of Effective Green (e), s					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Passage (PT), s					2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0					
Recall Mode					Min	Off	Min	Off	Off	Min	Off	Min					
Dual Entry					No	No	No	No	No	Yes	No	Yes					
Walk (Walk), s					0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0					
Pedestrian Clearance Time (PC), s					0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0					
Multimodal Information					EB			WB			NB			SB			
85th % Speed / Rest in Walk / Corner Radius					0	No	25	0	No	25	0	No	25	0	No	25	
Walkway / Crosswalk Width / Length, ft					9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0	
Street Width / Island / Curb					0	0	No	0	0	No	0	0	No	0	0	No	
Width Outside / Bike Lane / Shoulder, ft					12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	
Pedestrian Signal / Occupied Parking					No	0.50	No	0.50	No	0.50	No	0.50	No	0.50			

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95		
Intersection	Providence Blvd. & Tivoli D	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	156	15	43	8	28	8	64	219	13	24	283	433

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	47.3	Reference Phase	2	Green	17.4	7.9	3.0	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On												

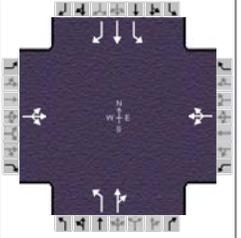
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		14.4		9.5		23.4		23.4
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		4.2		4.1		4.2		4.2
Queue Clearance Time (g _s), s		7.6		3.1		10.0		13.0
Green Extension Time (g _e), s		0.8		0.1		4.5		4.4
Phase Call Probability		0.94		0.43		1.00		1.00
Max Out Probability		0.00		0.00		0.03		0.05

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		216			43		67	244		25	298	423
Adjusted Saturation Flow Rate (s), veh/h/ln		1744			1805		1077	1844		1131	1863	1579
Queue Service Time (g _s), s		5.6			1.1		2.4	4.6		0.8	5.7	11.0
Cycle Queue Clearance Time (g _c), s		5.6			1.1		8.0	4.6		5.3	5.7	11.0
Green Ratio (g/C)		0.17			0.06		0.37	0.37		0.37	0.37	0.37
Capacity (c), veh/h		291			116		420	678		461	685	581
Volume-to-Capacity Ratio (X)		0.741			0.371		0.160	0.360		0.055	0.435	0.729
Available Capacity (c _a), veh/h		1287			1333		819	1361		879	1375	1165
Back of Queue (Q), veh/ln (50th percentile)		2.3			0.5		0.5	1.5		0.2	1.9	3.3
Queue Storage Ratio (RQ) (50th percentile)		0.00			0.00		0.20	0.00		0.01	0.00	0.00
Uniform Delay (d ₁), s/veh		18.8			21.3		14.3	10.9		12.8	11.3	12.9
Incremental Delay (d ₂), s/veh		3.7			2.0		0.2	0.3		0.0	0.4	1.8
Initial Queue Delay (d ₃), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh		22.5			23.2		14.4	11.2		12.9	11.7	14.7
Level of Service (LOS)		C			C		B	B		B	B	B
Approach Delay, s/veh / LOS	22.5	C		23.2	C		11.9	B		13.5	B	
Intersection Delay, s/veh / LOS			14.9						B			

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.8	A	0.6	A	1.0	A	1.7	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.95		
Intersection	Providence Blvd. & Tivoli D		Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus							
Project Description	W9401.1-Retail, Deltona							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	156	15	43	8	28	8	64	219	13	24	283	433

Signal Information													
Cycle, s	47.3	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	17.4	7.9	3.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.5	2.5	0.0	0.0	0.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.936			0.969			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.990			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		128			1233			1741			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.11			0.11			0.11	0.11		0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.17		0.06		0.37		0.37
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		1077		1131
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		17.4		17.4
Permitted Service Time (g_u), s		0.0		0.0		11.8		12.9
Permitted Queue Service Time (g_{ps}), s						2.4		0.8
Time to First Blockage (g_t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.710	0.04	1.389	0.00	1.389	0.01				
Pedestrian F_s / F_{delay}	0.000	0.122	0.000	0.139	0.000	0.090	0.000	0.090				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	128.74	20.72	-316.85	31.76	735.07	9.47	735.07	9.47				
Bicycle F_w / F_v	-3.64	0.36	-3.64	0.07	-3.64	0.51	-3.64	1.23				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	<i>Sterling Silver and Alabaster</i>
Agency/Co.	CPH	Jurisdiction	<i>Volusia County</i>
Date Performed	9/20/2013	Analysis Year	<i>Existing</i>
Analysis Time Period	AM Peak		
Project Description <i>W9401.1-Retail Deltona</i>			
East/West Street: <i>Alabaster Way</i>		North/South Street: <i>Sterling Silver Boulevard</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		13	8	0	37	
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	0	20	12	0	57	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0		0	2		1
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	0	0	0	3	0	1
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration		<i>LR</i>		<i>L</i>		<i>R</i>

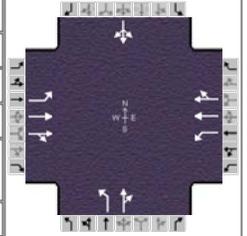
Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>	<i>L</i>		<i>R</i>		<i>LR</i>	
v (veh/h)		0	3		1		0	
C (m) (veh/h)		1580	904		1056			
v/c		0.00	0.00		0.00			
95% queue length		0.00	0.01		0.00			
Control Delay (s/veh)		7.3	9.0		8.4			
LOS		A	A		A			
Approach Delay (s/veh)	--	--	8.8					
Approach LOS	--	--	A					

**FUTURE BACKGROUND CONDITIONS
(AM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information				
Agency	CPH				Duration, h	0.25			
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other			
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.94		
Intersection	Saxon & Finland		Analysis Year	Future Background		Analysis Period	1> 7:00		
File Name	Saxon Blvd & Finland Dr.xus								
Project Description	W9401.1-Retail Deltona								



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	594	24	33	2237	13	141	10	20	18	14	288

Signal Information																						
Cycle, s	120.0	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On	Green	3.4	1.6	66.0	29.5	0.0	0.0	1			2			3			4		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5			6			7			8		
				Red	2.0	0.0	2.0	2.5	0.0	0.0												

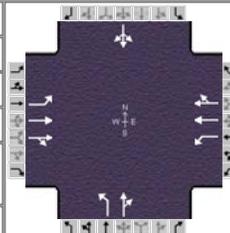
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	594	24	33	2237	13	141	10	20	18	14	288
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	1	0	0	0	0	0	11	0	0	49
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	20.0	64.0	20.0	64.0		36.0		36.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information					Intersection Information				
Agency	CPH				Duration, h	0.25			
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other			
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.94		
Intersection	Saxon & Finland		Analysis Year	Future Background		Analysis Period	1> 7:00		
File Name	Saxon Blvd & Finland Dr.xus								
Project Description	W9401.1-Retail Deltona								



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	594	24	33	2237	13	141	10	20	18	14	288

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	120.0	Reference Phase	2	Green	3.4	1.6	66.0	29.5	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

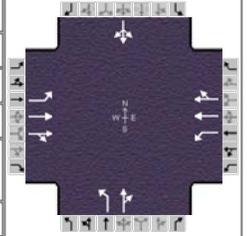
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	11.5	74.1	9.9	72.5		36.0		36.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.5		5.5
Queue Clearance Time (g _s), s	5.8		4.4			31.5		21.9
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0		0.0		1.8
Phase Call Probability	0.85		0.69			1.00		1.00
Max Out Probability	0.01		0.00			1.00		0.60

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	57	330	326	35	1197	1197	150	20			288	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1838	1774	1863	1859	1106	1716			1591	
Queue Service Time (g _s), s	3.8	6.9	7.3	2.4	66.0	66.0	9.6	1.1			6.5	
Cycle Queue Clearance Time (g _c), s	3.8	6.9	7.3	2.4	66.0	66.0	29.5	1.1			19.9	
Green Ratio (g/C)	0.04	0.56	0.56	0.03	0.55	0.55	0.25	0.25			0.25	
Capacity (c), veh/h	74	1049	1035	51	1024	1022	148	422			423	
Volume-to-Capacity Ratio (X)	0.772	0.315	0.315	0.688	1.169	1.171	1.012	0.048			0.682	
Available Capacity (c _a), veh/h	200	1049	1035	200	1024	1022	148	422			423	
Back of Queue (Q), veh/ln (50th percentile)	2.0	2.6	2.7	1.1	39.0	39.4	7.7	0.5			8.4	
Queue Storage Ratio (RQ) (50th percentile)	0.15	0.00	0.00	0.26	0.00	0.00	0.56	0.00			0.00	
Uniform Delay (d ₁), s/veh	56.9	7.4	7.9	57.7	16.0	16.2	57.2	34.5			41.6	
Incremental Delay (d ₂), s/veh	15.4	0.8	0.8	1.5	77.0	78.1	77.2	0.1			4.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	72.3	8.2	8.7	59.2	93.1	94.3	134.4	34.6			46.5	
Level of Service (LOS)	E	A	A	E	F	F	F	C			D	
Approach Delay, s/veh / LOS	13.6		B	93.2		F	122.5		F	46.5		D
Intersection Delay, s/veh / LOS	75.0						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.2	B	2.8	C	2.8	C
Bicycle LOS Score / LOS	1.1	A	2.5	B	0.8	A	1.0	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.94		
Intersection	Saxon & Finland		Analysis Year	Future Background	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus							
Project Description	W9401.1-Retail Deltona							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	594	24	33	2237	13	141	10	20	18	14	288

Signal Information				Signal Timing (s)								Signal Phases					
Cycle, s	120.0	Reference Phase	2	Green	3.4	1.6	66.0	29.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On														

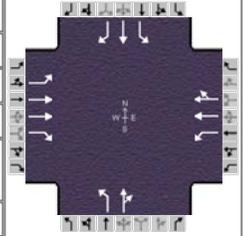
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.854	
Right-Turn Adjustment Factor (f_{RT})		0.987			0.998			0.921			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3564		1774	3700			903			81	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.15			0.28	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.04	0.56	0.03	0.55		0.25		0.25
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1106		1414
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		29.5		29.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		9.6		28.4
Permitted Queue Service Time (g_{ps}), s						9.6		6.5
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0		0.0		13.4
Queue Service Time Before Blockage (g_{fs}), s								13.4
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.02	1.389	0.07	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.098	0.000	0.100	0.000	0.142	0.000	0.142
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1125.85	11.46	1099.41	12.17	491.67	34.13	491.67	34.13
Bicycle F_w / F_v	-3.64	0.59	-3.64	2.00	-3.64	0.28	-3.64	0.48

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.93		
Intersection	Saxon and Normandy		Analysis Year	Future Background	Analysis Period	1> 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus							
Project Description	W9401.1 Retail Deltona							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	370	106	47	1374	67	277	144	16	93	156	546

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	4.1	4.6	50.4	7.6	2.4	15.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	4.0	4.0		
				Red	3.0	0.0	3.0	3.0	3.0	3.0		

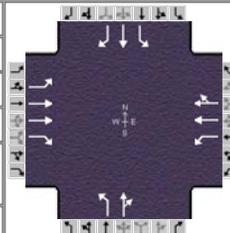
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	370	106	47	1374	67	277	144	16	93	156	546
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	2
Ped / Bike / RTOR, /h	0	0	62	0	0	2	0	0	5	0	0	79
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	540	0	265	200	0		290	0		295	0	380
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	18.0	56.0	18.0	56.0	24.0	28.0	18.0	22.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93		
Intersection	Saxon and Normandy	Analysis Year	Future Background	Analysis Period	1> 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	370	106	47	1374	67	277	144	16	93	156	546

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	4.1	4.6	50.4	7.6	2.4	15.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	4.0	4.0		
				Red	3.0	0.0	3.0	3.0	3.0	3.0		

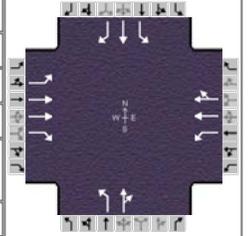
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	16.1	62.4	11.6	57.9	24.0	31.4	14.6	22.0
Change Period, (Y+R _c), s	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	8.6		3.9		19.0	11.5	7.8	17.0
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0	0.0	4.3	0.1	0.0
Phase Call Probability	1.00		0.81		1.00	1.00	0.96	1.00
Max Out Probability	1.00		0.04		1.00	0.33	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	160	398	47	51	778	770	298	167		100	168	502
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1833	1774	1839		1774	1863	1579
Queue Service Time (g _s), s	6.6	6.2	2.0	1.9	49.9	50.4	17.0	9.5		5.8	10.4	15.0
Cycle Queue Clearance Time (g _c), s	6.6	6.2	2.0	1.9	49.9	50.4	17.0	9.5		5.8	10.4	15.0
Green Ratio (g/C)	0.49	0.46	0.46	0.45	0.42	0.42	0.28	0.20		0.19	0.12	0.20
Capacity (c), veh/h	188	1623	723	503	782	769	358	374		303	233	311
Volume-to-Capacity Ratio (X)	0.854	0.245	0.065	0.100	0.995	1.000	0.832	0.446		0.330	0.720	1.615
Available Capacity (c _a), veh/h	215	1623	723	598	782	769	358	374		353	233	311
Back of Queue (Q), veh/ln (50th percentile)	3.9	2.4	0.8	0.8	28.1	28.2	8.9	4.4		2.6	5.5	34.3
Queue Storage Ratio (RQ) (50th percentile)	0.18	0.00	0.07	0.10	0.00	0.00	0.78	0.00		0.22	0.00	2.29
Uniform Delay (d ₁), s/veh	30.7	13.9	18.2	18.3	34.7	34.8	38.1	41.9		41.9	50.5	48.2
Incremental Delay (d ₂), s/veh	23.3	0.3	0.2	0.1	31.0	32.6	15.3	1.2		0.6	11.2	291.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	53.9	14.2	18.4	18.4	65.7	67.4	53.4	43.1		42.5	61.7	339.4
Level of Service (LOS)	D	B	B	B	E	F	D	D		D	E	F
Approach Delay, s/veh / LOS	25.1	C		65.0	E		49.7	D		240.3	F	
Intersection Delay, s/veh / LOS	95.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	1.0	A	1.8	A	1.3	A	1.8	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	CPH				Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.93
Intersection	Saxon and Normandy		Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	149	370	106	47	1374	67	277	144	16	93	156	546

Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.1	4.6	50.4	7.6	2.4	15.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	4.0	4.0			
				Red	3.0	0.0	3.0	3.0	3.0	3.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.984			0.987			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3530		1774	1709		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.30	0.50	0.50	0.11	0.50	0.50	0.37	0.15		0.11	0.31	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Green Ratio (g/C)	0.49	0.46	0.45	0.42	0.28	0.20	0.19	0.13
Permitted Saturation Flow Rate (s_p), veh/h/ln	333	0	983	0	1213	0	1214	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	50.4	0.0	50.4	0.0	17.0	0.0	15.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	46.8	0.0	4.6	0.0	12.9	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.2		4.6		0.2	
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1579
Protected Right Effective Green Time (g_R), s		0.0						8.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.710	0.11	2.107	0.00	2.224	0.09
Pedestrian F_s / F_{delay}	0.000	0.115	0.000	0.121	0.000	0.146	0.000	0.153
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	915.46	17.64	839.39	20.21	406.61	38.08	250.00	45.94
Bicycle F_w / F_v	-3.64	0.50	-3.64	1.32	-3.64	0.77	-3.64	1.27

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Background
Analysis Time Period	AM Peak		

Project Description <i>W9401.1-Retail Deltona</i>	
East/West Street: <i>Saxon Boulevard</i>	North/South Street: <i>Sterling Silver Boulevard</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	12	565	4	6	1363	9
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	13	656	4	6	1584	10
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	<i>L</i>	<i>T</i>	<i>TR</i>	<i>L</i>	<i>T</i>	<i>TR</i>
Upstream Signal		0			0	

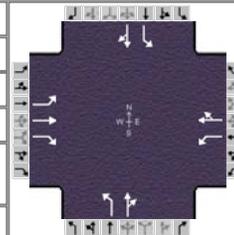
Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	8	0	10	12	1	33
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	9	0	11	13	1	38
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>Y</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		<i>LTR</i>		<i>L</i>		<i>TR</i>

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>L</i>	<i>L</i>	<i>LTR</i>			<i>L</i>		<i>TR</i>
v (veh/h)	13	6		20		13		39
C (m) (veh/h)	407	924		146		36		312
v/c	0.03	0.01		0.14		0.36		0.13
95% queue length	0.10	0.02		0.46		1.20		0.42
Control Delay (s/veh)	14.1	8.9		33.5		153.4		18.2
LOS	<i>B</i>	<i>A</i>		<i>D</i>		<i>F</i>		<i>C</i>
Approach Delay (s/veh)	--	--	33.5			52.0		
Approach LOS	--	--	<i>D</i>			<i>F</i>		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88		
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	140	201	51	11	530	8	87	64	15	33	83	547

Signal Information													
Cycle, s	84.5	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.7	29.3	30.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

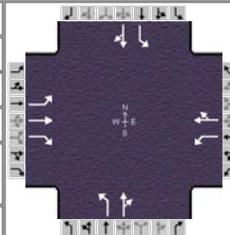
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	140	201	51	11	530	8	87	64	15	33	83	547
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	
Ped / Bike / RTOR, /h	0	0	23	0	0	3	0	0	6	0	0	102
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	315	0	205	120	0		270	0		80	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	35	35	35	30	30	30	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	15.0	30.0		30.0		30.0		30.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	5	5	5
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	140	201	51	11	530	8	87	64	15	33	83	547

Signal Information													
Cycle, s	84.5	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.7	29.3	30.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

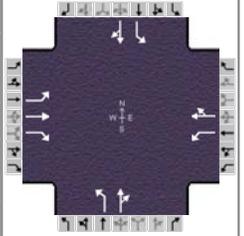
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	12.7	48.0		35.3		36.5		36.5
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		4.5		4.5
Queue Clearance Time (g _s), s	6.6	7.9		28.8		32.0		32.0
Green Extension Time (g _e), s	0.3	5.5		0.5		0.0		0.0
Phase Call Probability	0.98	1.00		1.00		1.00		1.00
Max Out Probability	0.03	0.09		1.00		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	159	228	32	13	608		99	83		38	600	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1148	1860		815	1822		1310	1617	
Queue Service Time (g _s), s	4.6	5.9	0.9	0.6	26.8		0.0	2.6		1.7	30.0	
Cycle Queue Clearance Time (g _c), s	4.6	5.9	0.9	0.6	26.8		30.0	2.6		4.3	30.0	
Green Ratio (g/C)	0.45	0.50	0.50	0.35	0.35		0.36	0.36		0.36	0.36	
Capacity (c), veh/h	250	926	785	483	645		85	647		510	574	
Volume-to-Capacity Ratio (X)	0.637	0.247	0.041	0.026	0.943		1.160	0.128		0.074	1.045	
Available Capacity (c _a), veh/h	424	926	785	493	660		85	647		510	574	
Back of Queue (Q), veh/ln (50th percentile)	1.9	2.3	0.3	0.2	15.0		5.2	1.1		0.5	18.6	
Queue Storage Ratio (RQ) (50th percentile)	0.15	0.00	0.03	0.03	0.00		0.49	0.00		0.16	0.00	
Uniform Delay (d ₁), s/veh	19.7	12.2	10.9	18.2	26.8		42.2	18.4		19.9	27.2	
Incremental Delay (d ₂), s/veh	2.7	0.2	0.0	0.0	22.1		147.1	0.1		0.1	49.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	22.4	12.4	10.9	18.3	48.9		189.3	18.5		19.9	77.0	
Level of Service (LOS)	C	B	B	B	D		F	B		B	F	
Approach Delay, s/veh / LOS	16.1	B		48.3	D		111.4	F		73.6	E	
Intersection Delay, s/veh / LOS	55.9						E					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3	B		2.4	B		2.3	B		2.5	B	
Bicycle LOS Score / LOS	1.2	A		1.5	A		0.8	A		1.5	A	

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1> 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	140	201	51	11	530	8	87	64	15	33	83	547

Signal Information													
Cycle, s	84.5	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.7	29.3	30.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

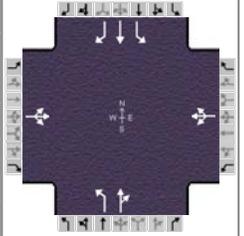
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.998			0.978			0.868	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1842			1598			254	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.15	0.15	0.15	0.45			0.50	0.11		0.11	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.45	0.50		0.35		0.36		0.36
Permitted Saturation Flow Rate (s_p), veh/h/ln	809	0		1148		815		1310
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	31.3	0.0		29.3		30.0		30.0
Permitted Service Time (g_u), s	2.5	0.0		29.3		0.0		27.4
Permitted Queue Service Time (g_{ps}), s	2.5			0.6		0.0		1.7
Time to First Blockage (g_i), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.557	0.15	1.557	0.00	1.710	0.03
Pedestrian F_s / F_{delay}	0.000	0.095	0.000	0.116	0.000	0.115	0.000	0.115
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	993.92	10.69	693.24	18.03	710.16	17.57	710.16	17.57
Bicycle F_w / F_v	-3.64	0.69	-3.64	1.02	-3.64	0.30	-3.64	1.05

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	168	16	46	9	30	9	69	236	14	26	305	466

Signal Information				Signal Timing (s)								Signal Phases												
Cycle, s	50.9	Reference Phase	2	Green	19.5	9.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On																					

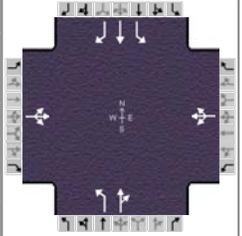
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	168	16	46	9	30	9	69	236	14	26	305	466
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2			2			2			2		
Ped / Bike / RTOR, /h	0	0	9	0	0	4	0	0	1	0	0	33
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			65			330		
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	30	30	30	30	30	30	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0		35.0		35.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0
Minimum Green (G _{min}), s	5	7	5	7	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Recall Mode	Min	Off	Min	Off	Off	Min	Off	Min
Dual Entry	No	No	No	No	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1> 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	168	16	46	9	30	9	69	236	14	26	305	466

Signal Information														
Cycle, s	50.9	Reference Phase	2	Green	19.5	9.0	3.4	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.5	2.5	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

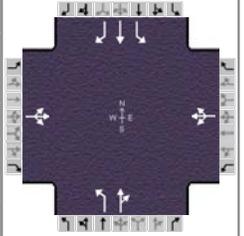
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		15.5		9.9		25.5		25.5
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		4.2		4.1		4.2		4.2
Queue Clearance Time (g _s), s		8.5		3.3		11.3		14.7
Green Extension Time (g _e), s		0.8		0.1		4.9		4.7
Phase Call Probability		0.96		0.48		1.00		1.00
Max Out Probability		0.00		0.00		0.05		0.08

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	233			46			73	262		27	321	
Adjusted Saturation Flow Rate (s), veh/h/ln	1744			1807			1054	1845		1113	1863	
Queue Service Time (g _s), s	6.5			1.3			2.8	5.2		0.9	6.5	
Cycle Queue Clearance Time (g _c), s	6.5			1.3			9.3	5.2		6.0	6.5	
Green Ratio (g/C)	0.18			0.07			0.38	0.38		0.38	0.38	
Capacity (c), veh/h	308			120			412	708		457	606	
Volume-to-Capacity Ratio (X)	0.754			0.385			0.176	0.370		0.060	0.449	
Available Capacity (c _a), veh/h	1198			1241			732	1267		794	1084	
Back of Queue (Q), veh/ln (50th percentile)	2.7			0.6			0.6	1.8		0.2	2.3	
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.23	0.00		0.02	0.00	
Uniform Delay (d ₁), s/veh	19.9			22.8			15.1	11.3		13.4	11.7	
Incremental Delay (d ₂), s/veh	3.7			2.0			0.2	0.3		0.1	0.4	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	23.7			24.8			15.3	11.6		13.5	12.1	
Level of Service (LOS)	C			C			B	B		B	B	
Approach Delay, s/veh / LOS	23.7	C		24.8	C		12.4	B		14.1	B	
Intersection Delay, s/veh / LOS	15.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	1.0	A	1.8	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	168	16	46	9	30	9	69	236	14	26	305	466

Signal Information				Signal Timing										
Cycle, s	50.9	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On											
		Green	19.5	9.0	3.4	0.0	0.0	0.0						
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
		Red	2.0	2.5	2.5	0.0	0.0	0.0						

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.936			0.970			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.991			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		126			1232			1749			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.11			0.11			0.11	0.11		0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.18		0.07		0.38		0.38
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		1054		1113
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		19.6		19.6
Permitted Service Time (g_u), s		0.0		0.0		13.1		14.4
Permitted Queue Service Time (g_{ps}), s						2.8		0.9
Time to First Blockage (g_i), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00		1.710	0.05		1.389	0.01		1.389	0.01	
Pedestrian F_s / F_{delay}	0.000	0.124		0.000	0.141		0.000	0.091		0.000	0.091	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	132.82	22.17		-294.86	33.49		767.00	9.67		767.00	9.67	
Bicycle F_w / F_v	-3.64	0.38		-3.64	0.08		-3.64	0.55		-3.64	1.33	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	<i>Sterling Silver and Alabaster</i>
Agency/Co.	CPH	Jurisdiction	<i>Volusia County</i>
Date Performed	9/20/2013	Analysis Year	<i>Future Background</i>
Analysis Time Period	AM Peak		

Project Description <i>W9401.1-Retail Deltona</i>	
East/West Street: <i>Alabaster Way</i>	North/South Street: <i>Sterling Silver Boulevard</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		14	9	0	40	
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	0	21	14	0	62	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0		0	2		1
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	0	0	0	3	0	1
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration		<i>LR</i>		<i>L</i>		<i>R</i>

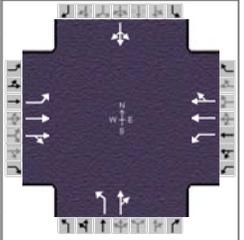
Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>	<i>L</i>		<i>R</i>		<i>LR</i>	
v (veh/h)		0	3		1		0	
C (m) (veh/h)		1576	895		1053			
v/c		0.00	0.00		0.00			
95% queue length		0.00	0.01		0.00			
Control Delay (s/veh)		7.3	9.0		8.4			
LOS		A	A		A			
Approach Delay (s/veh)	--	--	8.9					
Approach LOS	--	--	A					

**FUTURE TOTAL CONDITIONS
(AM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94		
Intersection	Saxon & Finland	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	3.7	1.3	66.0	29.5	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					

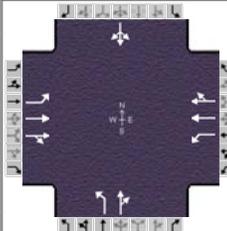
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	1	0	0	0	0	0	14	0	0	49
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	20.0	64.0	20.0	64.0		36.0		36.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94
Intersection	Saxon & Finland	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	1.3	66.0	29.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0					
				Red	2.0	0.0	2.0	2.5	0.0	0.0					

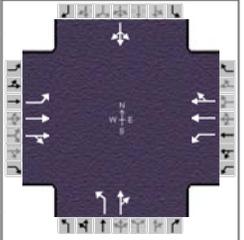
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	11.5	73.8	10.2	72.5		36.0		36.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.5		5.5
Queue Clearance Time (g _s), s	5.8		4.7			31.5		22.1
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0		0.0		1.7
Phase Call Probability	0.85		0.74			1.00		1.00
Max Out Probability	0.01		0.00			1.00		0.63

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	57	375	371	40	1237	1237	150	23			290	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1841	1774	1863	1858	1106	1696			1590	
Queue Service Time (g _s), s	3.8	8.3	8.7	2.7	66.0	66.0	9.4	1.3			7.4	
Cycle Queue Clearance Time (g _c), s	3.8	8.3	8.7	2.7	66.0	66.0	29.5	1.3			20.1	
Green Ratio (g/C)	0.04	0.56	0.56	0.03	0.55	0.55	0.25	0.25			0.25	
Capacity (c), veh/h	74	1045	1032	55	1024	1022	146	417			423	
Volume-to-Capacity Ratio (X)	0.772	0.359	0.359	0.739	1.208	1.211	1.025	0.056			0.687	
Available Capacity (c _a), veh/h	200	1045	1032	200	1024	1022	146	417			423	
Back of Queue (Q), veh/ln (50th percentile)	2.0	3.0	3.2	1.2	44.0	44.5	7.7	0.5			8.5	
Queue Storage Ratio (RQ) (50th percentile)	0.15	0.00	0.00	0.30	0.00	0.00	0.56	0.00			0.00	
Uniform Delay (d ₁), s/veh	56.9	7.7	8.1	57.7	16.0	16.2	57.2	34.6			41.7	
Incremental Delay (d ₂), s/veh	15.4	1.0	1.0	1.8	94.6	95.9	81.1	0.1			5.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	72.3	8.7	9.1	59.5	110.7	112.1	138.3	34.7			46.8	
Level of Service (LOS)	E	A	A	E	F	F	F	C			D	
Approach Delay, s/veh / LOS	13.4		B	110.5		F	124.3		F	46.8		D
Intersection Delay, s/veh / LOS	85.6						F					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.3 / B	2.2 / B	2.8 / C	2.8 / C
Bicycle LOS Score / LOS	1.2 / A	2.6 / B	0.8 / A	1.0 / A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94		
Intersection	Saxon & Finland	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Signal Timing						Signal Phases				
Cycle, s	120.0	Reference Phase	2	Green	3.7	1.3	66.0	29.5	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

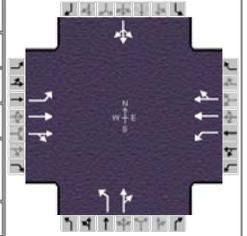
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.853	
Right-Turn Adjustment Factor (f_{RT})		0.988			0.998			0.911			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3583		1774	3697			771			81	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.15			0.28	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.04	0.56	0.03	0.55		0.25		0.25
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1106		1410
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		29.5		29.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		9.4		28.2
Permitted Queue Service Time (g_{ps}), s						9.4		7.4
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0		0.0		12.8
Queue Service Time Before Blockage (g_{ts}), s								12.8
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.02	1.389	0.07	2.107	0.00	2.107	0.00
Pedestrian F_s / F_{delay}	0.000	0.098	0.000	0.100	0.000	0.142	0.000	0.142
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1121.65	11.57	1099.41	12.17	491.67	34.13	491.67	34.13
Bicycle F_w / F_v	-3.64	0.66	-3.64	2.07	-3.64	0.29	-3.64	0.48

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information				
Agency	CPH				Duration, h	0.25			
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other			
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.94		
Intersection	Saxon & Finland		Analysis Year	Future Total Improved		Analysis Period	1> 7:00		
File Name	Saxon Blvd & Finland Dr Improved.xus								
Project Description	W9401.1-Retail Deltona								



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Timing Diagram									
Cycle, s	125.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	3.8	1.5	70.8	29.5	0.0	0.0					
		Yellow	4.5	0.0	4.5	4.0	0.0	0.0					
		Red	2.0	0.0	2.0	2.5	0.0	0.0					

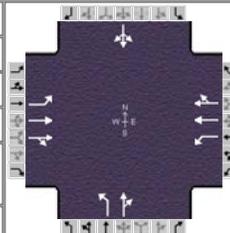
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	1	0	0	0	0	0	14	0	0	49
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	20.0	69.0	20.0	69.0		36.0		36.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94
Intersection	Saxon & Finland	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr Improved.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	125.0	Reference Phase	2	Green	3.8	1.5	70.8	29.5	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

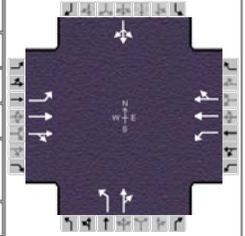
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	11.7	78.7	10.3	77.3		36.0		36.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.5		5.5
Queue Clearance Time (g _s), s	6.0		4.8			31.5		23.3
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0		0.0		1.5
Phase Call Probability	0.86		0.75			1.00		1.00
Max Out Probability	0.02		0.00			1.00		0.84

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	57	375	371	40	1237	1237	150	23			290	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1841	1774	1863	1858	1106	1696			1589	
Queue Service Time (g _s), s	4.0	7.9	8.3	2.8	70.8	70.8	8.2	1.3			8.8	
Cycle Queue Clearance Time (g _c), s	4.0	7.9	8.3	2.8	70.8	70.8	29.5	1.3			21.3	
Green Ratio (g/C)	0.04	0.58	0.58	0.03	0.57	0.57	0.24	0.24			0.24	
Capacity (c), veh/h	74	1076	1064	54	1054	1052	130	400			406	
Volume-to-Capacity Ratio (X)	0.772	0.348	0.349	0.755	1.173	1.176	1.150	0.058			0.715	
Available Capacity (c _a), veh/h	192	1076	1064	192	1054	1052	130	400			406	
Back of Queue (Q), veh/ln (50th percentile)	2.1	2.9	3.0	1.3	40.7	41.1	8.7	0.6			9.1	
Queue Storage Ratio (RQ) (50th percentile)	0.15	0.00	0.00	0.31	0.00	0.00	0.63	0.00			0.00	
Uniform Delay (d ₁), s/veh	59.3	7.0	7.4	60.2	15.3	15.5	60.2	37.0			44.6	
Incremental Delay (d ₂), s/veh	15.4	0.9	0.9	2.0	79.0	80.2	124.7	0.1			6.4	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	74.7	7.9	8.3	62.1	94.4	95.7	184.9	37.1			51.0	
Level of Service (LOS)	E	A	A	E	F	F	F	D			D	
Approach Delay, s/veh / LOS	12.8		B	94.5		F	164.9		F	51.0		D
Intersection Delay, s/veh / LOS	77.0						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.2	A	2.6	B	0.8	A	1.0	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.94
Intersection	Saxon & Finland	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr Improved.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	678	24	38	2311	15	141	10	26	20	14	288

Signal Information				Timing (s)						Phase Diagram				
Cycle, s	125.0	Reference Phase	2	Green	3.8	1.5	70.8	29.5	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

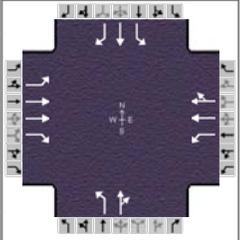
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.853	
Right-Turn Adjustment Factor (f_{RT})		0.988			0.998			0.911			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3583		1774	3697			771			81	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.50	0.50	0.11	0.50	0.50	0.50	0.15			0.30	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.04	0.58	0.03	0.57		0.24		0.24
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1106		1410
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		29.5		29.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		8.2		28.2
Permitted Queue Service Time (g_{ps}), s						8.2		8.8
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0		0.0		12.5
Queue Service Time Before Blockage (g_{fs}), s								12.5
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.02		1.389	0.07		2.107	0.00		2.107	0.00	
Pedestrian F_s / F_{delay}	0.000	0.097		0.000	0.099		0.000	0.144		0.000	0.144	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1155.65	11.14		1132.16	11.77		472.00	36.48		472.00	36.48	
Bicycle F_w / F_v	-3.64	0.66		-3.64	2.07		-3.64	0.29		-3.64	0.48	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Normandy Blvd.xus				
Project Description	W9401.1 Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	461	106	50	1454	74	277	144	20	100	156	546

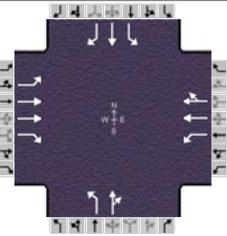
Signal Information													
Cycle, s	120.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
				Green	4.2	4.5	50.4	8.1	1.9	15.0			
				Yellow	4.5	0.0	4.5	4.0	4.0	4.0			
				Red	3.0	0.0	3.0	3.0	3.0	3.0			

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	461	106	50	1454	74	277	144	20	100	156	546
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	2
Ped / Bike / RTOR, /h	0	0	62	0	0	3	0	0	6	0	0	79
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	540	0	265	200	0		290	0		295	0	380
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	35	35	35	35	35	35

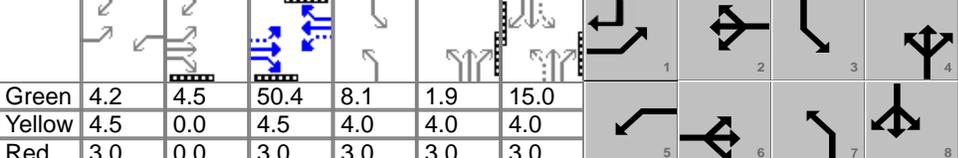
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	18.0	56.0	18.0	56.0	24.0	28.0	18.0	22.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	CPH			Duration, h	0.25	
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other	
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93	
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00	
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	149	461	106	50	1454	74	277	144	20	100	156	546

Signal Information																	
Cycle, s	120.0	Reference Phase	2	Green	4.2	4.5	50.4	8.1	1.9	15.0	Yellow	4.5	0.0	4.5	4.0	4.0	4.0
Offset, s	0	Reference Point	End	Red	3.0	0.0	3.0	3.0	3.0	3.0	Force Mode	Fixed	Simult. Gap N/S	On			

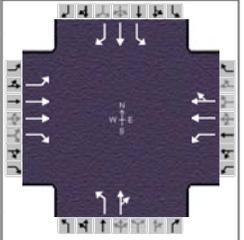
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	16.1	62.3	11.7	57.9	24.0	30.9	15.1	22.0
Change Period, (Y+R _c), s	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	8.6		4.0		19.0	11.8	8.3	17.0
Green Extension Time (g _e), s	0.1	0.0	0.0	0.0	0.0	4.2	0.1	0.0
Phase Call Probability	1.00		0.83		1.00	1.00	0.97	1.00
Max Out Probability	1.00		0.05		1.00	0.37	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	160	496	47	54	824	816	298	170		108	168	502
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1832	1774	1834		1774	1863	1579
Queue Service Time (g _s), s	6.6	8.1	2.0	2.0	50.4	50.4	17.0	9.8		6.3	10.4	15.0
Cycle Queue Clearance Time (g _c), s	6.6	8.1	2.0	2.0	50.4	50.4	17.0	9.8		6.3	10.4	15.0
Green Ratio (g/C)	0.49	0.46	0.46	0.45	0.42	0.42	0.28	0.20		0.19	0.12	0.20
Capacity (c), veh/h	188	1621	721	457	782	769	358	365		302	233	311
Volume-to-Capacity Ratio (X)	0.854	0.306	0.066	0.118	1.053	1.062	0.832	0.465		0.357	0.720	1.615
Available Capacity (c _a), veh/h	215	1621	721	550	782	769	358	365		345	233	311
Back of Queue (Q), veh/ln (50th percentile)	3.9	3.0	0.8	0.8	31.8	31.9	8.9	4.5		2.8	5.5	34.3
Queue Storage Ratio (RQ) (50th percentile)	0.18	0.00	0.07	0.10	0.00	0.00	0.78	0.00		0.24	0.00	2.29
Uniform Delay (d ₁), s/veh	30.7	14.3	18.2	18.3	34.8	34.8	38.1	42.4		41.7	50.5	48.2
Incremental Delay (d ₂), s/veh	23.3	0.5	0.2	0.1	47.2	50.1	15.3	1.3		0.7	11.2	291.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	53.9	14.8	18.4	18.4	82.0	84.9	53.4	43.7		42.4	61.7	339.4
Level of Service (LOS)	D	B	B	B	F	F	D	D		D	E	F
Approach Delay, s/veh / LOS	23.9		C	81.4		F	49.9		D	238.4		F
Intersection Delay, s/veh / LOS	99.8						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	1.1	A	1.9	A	1.3	A	1.8	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.93
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Normandy Blvd.xus				
Project Description	W9401.1 Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	149	461	106	50	1454	74	277	144	20	100	156	546

Signal Information				Signal Phases											
Cycle, s	120.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.2	4.5	50.4	8.1	1.9	15.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	0.0	4.5	4.0	4.0	4.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	3.0	0.0	3.0	3.0	3.0	3.0					

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.983			0.984			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3524		1774	1671		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.30	0.50	0.50	0.11	0.50	0.50	0.37	0.15		0.11	0.31	0.50

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Green Ratio (g/C)	0.49	0.46	0.45	0.42	0.28	0.20	0.19	0.13
Permitted Saturation Flow Rate (s_p), veh/h/ln	305	0	898	0	1213	0	1210	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	50.4	0.0	50.4	0.0	17.0	0.0	15.0	0.0
Permitted Service Time (g_u), s	0.0	0.0	44.8	0.0	4.6	0.0	12.1	0.0
Permitted Queue Service Time (g_{ps}), s	0.0		0.4		4.6		0.3	
Time to First Blockage (g), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1579
Protected Right Effective Green Time (g_R), s		0.0						8.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.710	0.11	2.107	0.00	2.224	0.09
Pedestrian F_s / F_{delay}	0.000	0.115	0.000	0.121	0.000	0.146	0.000	0.153
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	913.88	17.69	839.39	20.21	398.54	38.47	250.00	45.94
Bicycle F_w / F_v	-3.64	0.58	-3.64	1.40	-3.64	0.77	-3.64	1.28

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Driveway 2
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	AM Peak		
Project Description <i>W9401.1-Retail, Deltona</i>			
East/West Street: <i>Saxon Blvd.</i>		North/South Street: <i>Diveway 2</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		685			1412	73
Peak-Hour Factor, PHF	1.00	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	721	0	0	1486	76
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration		T			T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						83
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	87
Percent Heavy Vehicles	0	0	0	0	0	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								R
v (veh/h)								87
C (m) (veh/h)								393
v/c								0.22
95% queue length								0.83
Control Delay (s/veh)								16.7
LOS								C
Approach Delay (s/veh)	--	--				16.7		
Approach LOS	--	--				C		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Total
Analysis Time Period	AM Peak		

Project Description <i>W9401.1-Retail Deltona</i>	
East/West Street: <i>Saxon Boulevard</i>	North/South Street: <i>Sterling Silver Boulevard</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	171	509	4	6	1344	111
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	198	591	4	6	1562	129
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	8	0	10	148	1	132
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86
Hourly Flow Rate, HFR (veh/h)	9	0	11	172	1	153
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			Y	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		LTR		L		TR

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			L		TR
v (veh/h)	198	6		20		172		154
C (m) (veh/h)	374	977		35		11		299
v/c	0.53	0.01		0.57		15.64		0.52
95% queue length	2.97	0.02		1.96		22.94		2.76
Control Delay (s/veh)	25.0	8.7		200.5		7251		29.2
LOS	C	A		F		F		D
Approach Delay (s/veh)	--	--	200.5			3840		
Approach LOS	--	--	F			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Driveway 1
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	AM Peak		
Project Description <i>W9401.1-Retail, Deltona</i>			
East/West Street: <i>Saxon Blvd.</i>		North/South Street: <i>Driveway 1</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		667			1422	46
Peak-Hour Factor, PHF	1.00	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	702	0	0	1496	48
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration		T			T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						38
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	40
Percent Heavy Vehicles	0	0	0	0	0	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

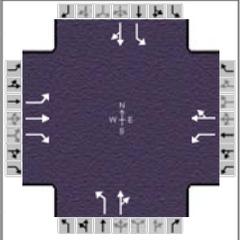
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								R
v (veh/h)								40
C (m) (veh/h)								398
v/c								0.10
95% queue length								0.33
Control Delay (s/veh)								15.1
LOS								C
Approach Delay (s/veh)	--	--				15.1		
Approach LOS	--	--				C		

HCS 2010 Signalized Intersection Input Data

General Information						Intersection Information												
Agency	CPH					Duration, h	0.25											
Analyst	GR		Analysis Date	9/17/2013		Area Type	Other											
Jurisdiction	Volusia County		Time Period	AM Peak		PHF	0.88											
Intersection	Saxon and Tivoli		Analysis Year	Future Total		Analysis Period	1 > 7:00											
File Name	Saxon Blvd & Tivoli Dr.xus																	
Project Description	W9501.1-Retail, Deltona																	
Demand Information						EB			WB			NB			SB			
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h						176	240	56	11	575	8	93	64	15	33	83	606	
Signal Information																		
Cycle, s	86.7	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	Yes	Simult. Gap E/W	On															
Force Mode	Fixed	Simult. Gap N/S	On															
						Green	8.2	30.0	30.0	0.0	0.0	0.0						
						Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
						Red	2.0	2.0	2.5	0.0	0.0	0.0						
Traffic Information						EB			WB			NB			SB			
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h						176	240	56	11	575	8	93	64	15	33	83	606	
Initial Queue (Q _b), veh/h						0	0	0	0	0	0	0	0	0	0	0	0	
Base Saturation Flow Rate (s ₀), veh/h						1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Parking (N _m), man/h						None			None			None			None			
Heavy Vehicles (P _{HV}), %						2	2	2	2	2		2	2		2	2		
Ped / Bike / RTOR, /h						0	0	25	0	0	3	0	0	6	0	0	113	
Buses (N _b), buses/h						0	0	0	0	0	0	0	0	0	0	0	0	
Arrival Type (AT)						3	3	3	3	3	3	3	3	3	3	3		
Upstream Filtering (I)						1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Lane Width (W), ft						12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0		
Turn Bay Length, ft						315	0	205	120	0		270	0		80	0		
Grade (P _g), %						0	0	0	0	0	0	0	0	0	0	0		
Speed Limit, mi/h						40	40	40	35	35	35	30	30	30	35	35		
Phase Information						EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Maximum Green (G _{max}) or Phase Split, s						15.0	30.0		30.0		30.0		30.0					
Yellow Change Interval (Y), s						4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0					
Red Clearance Interval (R _c), s						2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5					
Minimum Green (G _{min}), s						5	11	5	11	5	5	5	5					
Start-Up Lost Time (I _t), s						2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Extension of Effective Green (e), s						2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0					
Passage (PT), s						3.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0					
Recall Mode						Off	Min	Off	Min	Off	Off	Off	Off					
Dual Entry						No	Yes	No	Yes	No	Yes	No	Yes					
Walk (Walk), s						0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0					
Pedestrian Clearance Time (PC), s						0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0					
Multimodal Information						EB			WB			NB			SB			
85th % Speed / Rest in Walk / Corner Radius						0	No	25	0	No	25	0	No	25	0	No	25	
Walkway / Crosswalk Width / Length, ft						9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0	
Street Width / Island / Curb						0	0	No	0	0	No	0	0	No	0	0	No	
Width Outside / Bike Lane / Shoulder, ft						12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	
Pedestrian Signal / Occupied Parking						No	0.50	No	0.50	No	0.50	No	0.50					

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.88
Intersection	Saxon and Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	176	240	56	11	575	8	93	64	15	33	83	606

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	86.7	Reference Phase	2	Green	8.2	30.0	30.0	0.0	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8	
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.0	2.5	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

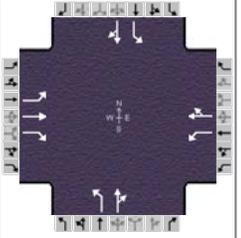
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	14.2	50.2		36.0		36.5		36.5
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		4.5		4.5
Queue Clearance Time (g _s), s	7.9	9.3		32.0		32.0		32.0
Green Extension Time (g _e), s	0.3	6.2		0.0		0.0		0.0
Phase Call Probability	0.99	1.00		1.00		1.00		1.00
Max Out Probability	0.12	0.15		1.00		1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	200	273	35	13	659		106	83		38	655	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1102	1860		775	1822		1310	1614	
Queue Service Time (g _s), s	5.9	7.3	1.0	0.7	30.0		0.0	2.7		1.8	30.0	
Cycle Queue Clearance Time (g _c), s	5.9	7.3	1.0	0.7	30.0		30.0	2.7		4.5	30.0	
Green Ratio (g/C)	0.46	0.51	0.51	0.35	0.35		0.35	0.35		0.35	0.35	
Capacity (c), veh/h	251	950	805	464	644		83	631		495	559	
Volume-to-Capacity Ratio (X)	0.798	0.287	0.044	0.027	1.024		1.272	0.132		0.076	1.172	
Available Capacity (c _a), veh/h	390	950	805	464	644		83	631		495	559	
Back of Queue (Q), veh/ln (50th percentile)	2.6	2.8	0.3	0.2	19.9		6.1	1.1		0.5	25.6	
Queue Storage Ratio (RQ) (50th percentile)	0.21	0.00	0.04	0.03	0.00		0.57	0.00		0.17	0.00	
Uniform Delay (d ₁), s/veh	20.0	12.2	10.7	18.8	28.3		43.3	19.4		20.9	28.3	
Incremental Delay (d ₂), s/veh	6.3	0.2	0.0	0.0	41.7		188.5	0.1		0.1	95.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	26.2	12.4	10.7	18.8	70.1		231.8	19.5		21.0	123.5	
Level of Service (LOS)	C	B	B	B	F		F	B		C	F	
Approach Delay, s/veh / LOS	17.7		B	69.1		E	138.4		F	118.0		F
Intersection Delay, s/veh / LOS	79.2						E					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	2.3		B	2.4		B	2.3		B	2.5		B
Bicycle LOS Score / LOS	1.3		A	1.6		A	0.8		A	1.6		A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.88		
Intersection	Saxon and Tivoli		Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus							
Project Description	W9501.1-Retail, Deltona							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	176	240	56	11	575	8	93	64	15	33	83	606

Signal Information													
Cycle, s	86.7	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	8.2	30.0	30.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

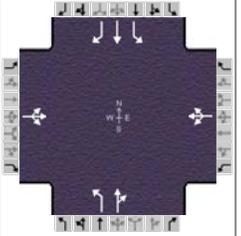
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.998			0.978			0.867	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1844			1598			233	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.12	0.15	0.15	0.15	0.50		0.50	0.11		0.11	0.50	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.46	0.51		0.35		0.35		0.35
Permitted Saturation Flow Rate (s_p), veh/h/ln	772	0		1102		775		1310
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	32.0	0.0		30.0		30.0		30.0
Permitted Service Time (g_u), s	0.0	0.0		30.0		0.0		27.3
Permitted Queue Service Time (g_{ps}), s	0.0			0.7		0.0		1.8
Time to First Blockage (g_t), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.01		1.557	0.16		1.557	0.00		1.710	0.04	
Pedestrian F_s / F_{delay}	0.000	0.094		0.000	0.117		0.000	0.117		0.000	0.117	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1019.49	10.42		692.11	18.54		692.11	18.54		692.11	18.54	
Bicycle F_w / F_v	-3.64	0.84		-3.64	1.11		-3.64	0.31		-3.64	1.14	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95		
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	201	18	48	9	32	9	71	236	14	26	305	503

Signal Information				Phase Diagram									
Cycle, s	56.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
				Green	22.1	11.1	3.8	0.0	0.0	0.0			
				Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.5	2.5	0.0	0.0	0.0			

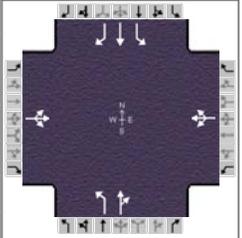
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	201	18	48	9	32	9	71	236	14	26	305	503
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2			2			2			2		
Ped / Bike / RTOR, /h	0	0	10	0	0	3	0	0	1	0	0	36
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			65			330		
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	30	30	30	30	30	30	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0		35.0		35.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0
Minimum Green (G _{min}), s	5	7	5	7	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0
Recall Mode	Min	Off	Min	Off	Off	Min	Off	Min
Dual Entry	No	No	No	No	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	201	18	48	9	32	9	71	236	14	26	305	503

Signal Information				Signal Timing								Signal Phases			
Cycle, s	56.0	Reference Phase	2	Green	22.1	11.1	3.8	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On												

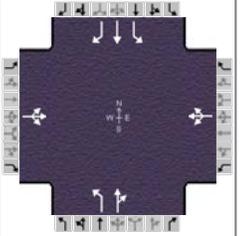
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		17.6		10.3		28.1		28.1
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		4.2		4.1		4.2		4.2
Queue Clearance Time (g _s), s		10.2		3.5		12.1		17.3
Green Extension Time (g _e), s		1.0		0.1		5.1		4.7
Phase Call Probability		0.99		0.54		1.00		1.00
Max Out Probability		0.00		0.00		0.06		0.14

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h		271			49		75	262		27	321	492
Adjusted Saturation Flow Rate (s), veh/h/ln		1748			1804		1054	1845		1113	1863	1579
Queue Service Time (g _s), s		8.2			1.5		3.1	5.6		1.0	7.1	15.3
Cycle Queue Clearance Time (g _c), s		8.2			1.5		10.1	5.6		6.5	7.1	15.3
Green Ratio (g/C)		0.20			0.07		0.40	0.40		0.40	0.40	0.40
Capacity (c), veh/h		347			122		414	730		459	737	624
Volume-to-Capacity Ratio (X)		0.780			0.406		0.181	0.359		0.060	0.436	0.788
Available Capacity (c _a), veh/h		1091			1126		655	1152		713	1162	985
Back of Queue (Q), veh/ln (50th percentile)		3.4			0.7		0.7	2.0		0.2	2.5	4.9
Queue Storage Ratio (RQ) (50th percentile)		0.00			0.00		0.27	0.00		0.02	0.00	0.00
Uniform Delay (d ₁), s/veh		21.3			25.1		16.0	11.9		14.2	12.4	14.9
Incremental Delay (d ₂), s/veh		3.8			2.2		0.2	0.3		0.1	0.4	2.3
Initial Queue Delay (d ₃), s/veh		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh		25.2			27.2		16.3	12.2		14.3	12.8	17.1
Level of Service (LOS)		C			C		B	B		B	B	B
Approach Delay, s/veh / LOS	25.2	C		27.2	C		13.1	B		15.4	B	
Intersection Delay, s/veh / LOS	17.0						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	1.0	A	1.9	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.95		
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	201	18	48	9	32	9	71	236	14	26	305	503

Signal Information													
Cycle, s	56.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	22.1	11.1	3.8	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.5	2.5	0.0	0.0	0.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.938			0.968			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.991			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		122			1228			1749			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.11			0.11			0.11	0.11		0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.20		0.07		0.40		0.40
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		1054		1113
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		22.2		22.2
Permitted Service Time (g_u), s		0.0		0.0		15.2		16.7
Permitted Queue Service Time (g_{ps}), s						3.1		1.0
Time to First Blockage (g_t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.710	0.05	1.389	0.00	1.389	0.01				
Pedestrian F_s / F_{delay}	0.000	0.128	0.000	0.144	0.000	0.093	0.000	0.093				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	134.80	24.35	-267.89	36.00	790.38	10.24	790.38	10.24				
Bicycle F_w / F_v	-3.64	0.45	-3.64	0.08	-3.64	0.56	-3.64	1.39				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver and Alabaster
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Total
Analysis Time Period	AM Peak		
Project Description W9401.1-Retail Deltona			
East/West Street: Alabaster Way		North/South Street: Sterling Silver Boulevard	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	123	28	135	0	48	0
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	192	43	210	0	75	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	113	116	0	1
Peak-Hour Factor, PHF	0.64	0.64	0.64	0.64	0.64	0.64
Hourly Flow Rate, HFR (veh/h)	0	0	176	181	0	1
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		LTR		L		TR

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR	L		TR		LTR	
v (veh/h)	192	0	181		1		176	
C (m) (veh/h)	1524	1312	260		904		992	
v/c	0.13	0.00	0.70		0.00		0.18	
95% queue length	0.43	0.00	4.67		0.00		0.64	
Control Delay (s/veh)	7.7	7.7	45.4		9.0		9.4	
LOS	A	A	E		A		A	
Approach Delay (s/veh)	--	--	45.2			9.4		
Approach LOS	--	--	E			A		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver and Driveway 4
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	AM Peak		

Project Description <i>W9401.1-Retail, Deltona</i>	
East/West Street: <i>Saxon Blvd.</i>	North/South Street: <i>Driveway 4</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	14	15			40	0
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	14	15	0	0	42	0
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LT</i>					<i>TR</i>
Upstream Signal		0			0	

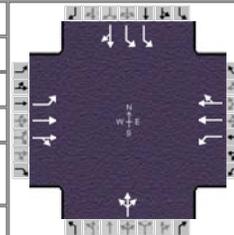
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)			8			
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	8	0	0	0
Percent Heavy Vehicles	2	2	2	2	0	2
Percent Grade (%)		0			0	
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	1	0	0	0
Configuration			<i>R</i>			

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>							<i>R</i>
v (veh/h)	14							8
C (m) (veh/h)	1567							1029
v/c	0.01							0.01
95% queue length	0.03							0.02
Control Delay (s/veh)	7.3							8.5
LOS	<i>A</i>							<i>A</i>
Approach Delay (s/veh)	--	--				8.5		
Approach LOS	--	--				<i>A</i>		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	11/1/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.86		
Intersection	Saxon & Sterling Silver	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	171	509	4	6	1344	111	8	0	10	148	1	132

Signal Information												
Cycle, s	114.1	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.4	0.2	62.8	13.9	3.4	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0		
				Red	2.0	2.0	2.0	2.3	2.6	0.0		

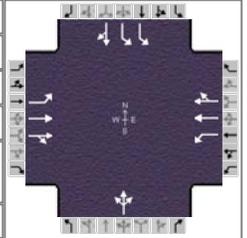
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	171	509	4	6	1344	111	8	0	10	148	1	132
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2		2	2			2		2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0			12.0		12.0	12.0	
Turn Bay Length, ft	290	0		295	0			0		157	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	25.0	60.0	10.0	75.0		10.0		25.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.6	1.0	2.3
Minimum Green (G _{min}), s	7	20	7	20	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	11/1/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	AM Peak	PHF	0.86
Intersection	Saxon & Sterling Silver	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	171	509	4	6	1344	111	8	0	10	148	1	132

Signal Information				Signal Timing (s)										
Cycle, s	114.1	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.4	0.2	62.8	13.9	3.4	0.0	Diagram 1		Diagram 2	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0	Diagram 3		Diagram 4	
				Red	2.0	2.0	2.0	2.3	2.6	0.0	Diagram 5		Diagram 6	

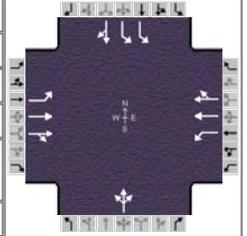
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		12.0		10.0
Phase Duration, s	14.6	76.0	7.9	69.3		10.0		20.2
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.6		6.3
Max Allow Headway (MAH), s	4.1	5.0	3.1	5.0		4.3		4.3
Queue Clearance Time (g _s), s	7.5	10.5	2.2	46.5		3.4		12.9
Green Extension Time (g _e), s	0.6	26.5	0.0	16.3		0.0		1.0
Phase Call Probability	1.00	1.00	0.20	1.00		0.49		1.00
Max Out Probability	0.00	0.42	0.00	0.63		0.03		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	199	299	298	7	851	841		21		172	155	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1858	1774	1863	1813		1660		1723	1580	
Queue Service Time (g _s), s	5.5	8.5	8.5	0.2	43.3	44.5		1.4		5.3	10.9	
Cycle Queue Clearance Time (g _c), s	5.5	8.5	8.5	0.2	43.3	44.5		1.4		5.3	10.9	
Green Ratio (g/C)	0.64	0.61	0.61	0.56	0.55	0.55		0.03		0.12	0.12	
Capacity (c), veh/h	235	1134	1131	509	1025	997		50		421	193	
Volume-to-Capacity Ratio (X)	0.845	0.263	0.263	0.014	0.831	0.843		0.423		0.408	0.800	
Available Capacity (c _a), veh/h	497	1134	1131	642	1223	1190		145		754	346	
Back of Queue (Q), veh/ln (95th percentile)	6.2	5.9	5.9	0.1	25.6	25.7		1.2		4.1	8.2	
Queue Storage Ratio (RQ) (95th percentile)	0.54	0.00	0.00	0.01	0.00	0.00		0.00		0.67	0.00	
Uniform Delay (d ₁), s/veh	25.6	10.4	10.4	11.0	21.3	21.6		54.5		46.3	48.8	
Incremental Delay (d ₂), s/veh	8.1	0.2	0.2	0.0	4.7	5.4		5.6		0.6	7.4	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Control Delay (d), s/veh	33.6	10.6	10.6	11.1	26.0	26.9		60.1		47.0	56.2	
Level of Service (LOS)	C	B	B	B	C	C		E		D	E	
Approach Delay, s/veh / LOS	16.3	B		26.4	C		60.1	E		51.4	D	
Intersection Delay, s/veh / LOS	26.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.4	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.1	A	1.9	A	0.5	A	1.0	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	CPH				Duration, h	0.25
Analyst	GR	Analysis Date	11/1/2013		Area Type	Other
Jurisdiction	Volusia County		Time Period	AM Peak	PHF	0.86
Intersection	Saxon & Sterling Silver		Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus					
Project Description	W9401.1-Retail Deltona					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	171	509	4	6	1344	111	8	0	10	148	1	132

Signal Information														
Cycle, s	114.1	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.4	0.2	62.8	13.9	3.4	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0				
				Red	2.0	2.0	2.0	2.3	2.6	0.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.891			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997			0.973			0.000			0.848	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3691		1774	3399			0			12	
Platoon Ratio (R_p)	1.00	1.00		1.00	1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.15	0.15	0.04	0.29	0.30		0.11			0.11	0.11

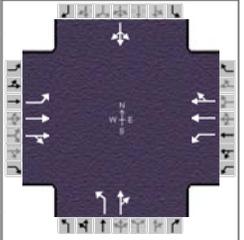
Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.3		5.0
Green Ratio (g/C)	0.64	0.61	0.56	0.55		0.03		0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	290	0	818	0		0		1774
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	64.9	0.0	62.9	0.0		0.0		0.0
Permitted Service Time (g_u), s	18.2	0.0	59.2	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	18.2		0.0					
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.389	0.00		1.710	0.00		2.107	0.00		2.107	0.00	
Pedestrian F_s / F_{delay}	0.000	0.087		0.000	0.098		0.000	0.167		0.000	0.160	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1217.67	8.73		1100.50	11.54			64.92		64.90	53.43	
Bicycle F_w / F_v	-3.64	0.66		-3.64	1.40		-3.64	0.03		-3.64	0.54	

**EXISTING CONDITIONS
(PM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93		
Intersection	Saxon & Finland	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	190	1999	62	79	1036	19	113	53	133	19	26	110

Signal Information												
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	7.9	0.1	72.5	23.5	0.0	0.0				
		Yellow	4.5	4.5	4.5	4.0	0.0	0.0				
		Red	2.0	2.0	2.0	2.5	0.0	0.0				

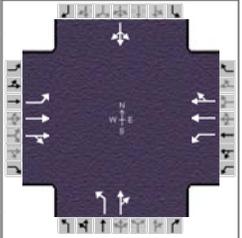
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	190	1999	62	79	1036	19	113	53	133	19	26	110
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	3	0	0	0	0	0	24	0	0	72
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.52	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	21.0	75.0	25.0	79.0		30.0		30.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93		
Intersection	Saxon & Finland	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	190	1999	62	79	1036	19	113	53	133	19	26	110

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	130.0	Reference Phase	2	Green	7.9	0.1	72.5	23.5	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	4.5	4.5	4.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	2.0	2.0	2.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

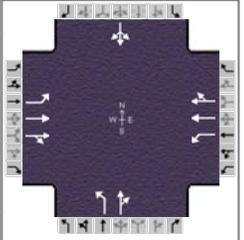
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	21.0	85.6	14.4	79.0		30.0		30.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.3		5.3
Queue Clearance Time (g _s), s	16.5		8.1			25.5		14.8
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		0.0		1.4
Phase Call Probability	1.00		0.95			1.00		1.00
Max Out Probability	1.00		0.00			1.00		0.35

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	204	1106	1106	85	569	565	122	174			89	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1844	1774	1863	1851	1327	1662			1194	
Queue Service Time (g _s), s	14.5	70.0	73.9	6.1	17.2	17.5	10.6	12.5			0.4	
Cycle Queue Clearance Time (g _c), s	14.5	70.0	73.9	6.1	17.2	17.5	23.5	12.5			12.8	
Green Ratio (g/C)	0.11	0.61	0.61	0.06	0.56	0.56	0.18	0.18			0.18	
Capacity (c), veh/h	198	1134	1122	108	1039	1032	164	300			250	
Volume-to-Capacity Ratio (X)	1.032	0.976	0.986	0.789	0.548	0.548	0.741	0.580			0.357	
Available Capacity (c _a), veh/h	198	1134	1122	252	1039	1032	164	300			250	
Back of Queue (Q), veh/ln (50th percentile)	10.4	19.4	22.3	2.9	5.4	5.5	4.8	5.5			2.6	
Queue Storage Ratio (RQ) (50th percentile)	0.75	0.00	0.00	0.71	0.00	0.00	0.35	0.00			0.00	
Uniform Delay (d ₁), s/veh	57.7	11.4	12.5	60.2	9.6	9.9	60.3	48.7			46.2	
Incremental Delay (d ₂), s/veh	72.6	21.6	23.7	6.6	1.1	1.1	17.6	3.4			1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	130.3	33.0	36.2	66.8	10.7	11.0	77.8	52.1			47.4	
Level of Service (LOS)	F	C	D	E	B	B	E	D			D	
Approach Delay, s/veh / LOS	42.7		D	14.7		B	62.7		E	47.4		D
Intersection Delay, s/veh / LOS	35.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	2.5	B	1.5	A	1.0	A	0.6	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93		
Intersection	Saxon & Finland	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus						
Project Description	W9401.1-Retail Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	190	1999	62	79	1036	19	113	53	133	19	26	110

Signal Information														
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	7.9	0.1	72.5	23.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	0.0	0.0				
				Red	2.0	2.0	2.0	2.5	0.0	0.0				

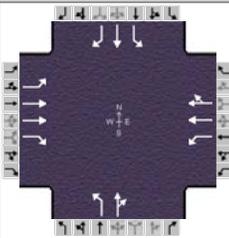
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.641	
Right-Turn Adjustment Factor (f_{RT})		0.990			0.994			0.892			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3601		1774	3647			544			483	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.50	0.50	0.50	0.11	0.50	0.50	0.32	0.21			0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.11	0.61	0.06	0.56		0.18		0.18
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1327		1230
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		23.5		23.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		10.6		11.0
Permitted Queue Service Time (g_{ps}), s						10.6		0.4
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0		0.0		6.4
Queue Service Time Before Blockage (g_{ts}), s								2.4
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.03	1.389	0.10	2.107	0.00	2.107	0.00				
Pedestrian F_s / F_{delay}	0.000	0.092	0.000	0.102	0.000	0.151	0.000	0.151				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1217.08	9.96	1115.33	12.72	361.53	43.62	361.53	43.62				
Bicycle F_w / F_v	-3.64	1.99	-3.64	1.01	-3.64	0.49	-3.64	0.15				

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy		Analysis Year	Existing	Analysis Period		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	416	1376	292	36	659	51	221	183	35	95	187	241

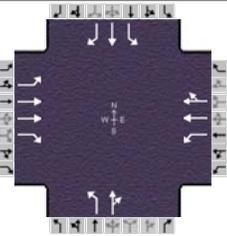
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	11.4	46.7	8.1	0.9	15.7			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	4.0			
				Red	3.0	3.0	3.0	3.0	3.0	3.0			

Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	416	1376	292	36	659	51	221	183	35	95	187	241
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	0
Ped / Bike / RTOR, /h	0	0	80	0	0	6	0	0	2	0	0	64
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	540	0	265	200	0		290	0		295	0	380
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	35	35	35	35	35	35

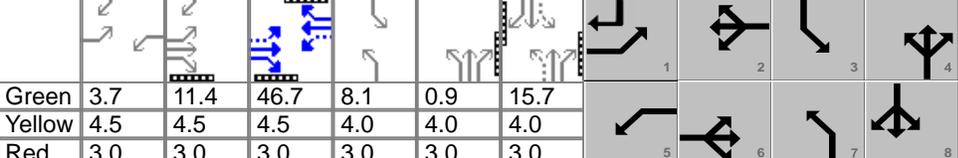
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	42.0	64.0	20.0	42.0	23.0	30.0	16.0	23.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	CPH			Duration, h	0.25	
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other	
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95	
Intersection	Saxon and Normandy	Analysis Year	Existing	Analysis Period	1 > 7:00	
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	416	1376	292	36	659	51	221	183	35	95	187	241

Signal Information																								
Cycle, s	130.0	Reference Phase	2	Green	3.7	11.4	46.7	8.1	0.9	15.7	Yellow	4.5	4.5	4.5	4.0	4.0	4.0	Red	3.0	3.0	3.0	3.0	3.0	3.0
Offset, s	0	Reference Point	End	Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On													

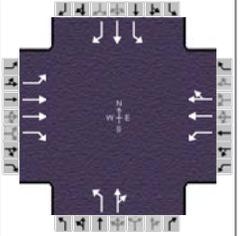
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	30.1	73.1	11.2	54.2	23.0	30.6	15.1	22.7
Change Period, (Y+R _c), s	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	21.2		3.7		16.5	17.3	8.3	15.5
Green Extension Time (g _e), s	1.4	0.0	0.0	0.0	0.0	1.9	0.0	0.2
Phase Call Probability	1.00		0.75		1.00	1.00	0.97	1.00
Max Out Probability	0.02		0.00		1.00	0.72	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	438	1448	223	38	375	367	233	227		100	197	186
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1820	1774	1813		1774	1863	1610
Queue Service Time (g _s), s	19.2	38.2	10.6	1.7	21.0	21.0	14.5	15.3		6.3	13.5	12.0
Cycle Queue Clearance Time (g _c), s	19.2	38.2	10.6	1.7	21.0	21.0	14.5	15.3		6.3	13.5	12.0
Green Ratio (g/C)	0.55	0.50	0.50	0.39	0.36	0.36	0.26	0.18		0.18	0.12	0.29
Capacity (c), veh/h	505	1789	796	178	669	654	294	329		222	225	475
Volume-to-Capacity Ratio (X)	0.867	0.810	0.280	0.213	0.560	0.561	0.792	0.692		0.450	0.875	0.393
Available Capacity (c _a), veh/h	672	1789	796	302	669	654	294	333		234	229	478
Back of Queue (Q), veh/ln (50th percentile)	7.6	11.8	3.8	0.7	9.9	9.7	7.4	7.5		2.9	8.2	4.8
Queue Storage Ratio (RQ) (50th percentile)	0.36	0.00	0.36	0.09	0.00	0.00	0.65	0.00		0.25	0.00	0.32
Uniform Delay (d ₁), s/veh	22.6	16.8	18.6	26.6	33.4	33.4	42.2	49.8		46.3	56.2	36.6
Incremental Delay (d ₂), s/veh	0.9	0.4	0.1	0.6	3.4	3.5	13.7	6.6		1.4	29.5	0.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	23.5	17.2	18.7	27.2	36.8	36.9	55.9	56.4		47.7	85.7	37.3
Level of Service (LOS)	C	B	B	C	D	D	E	E		D	F	D
Approach Delay, s/veh / LOS	18.7		B	36.4		D	56.1		E	59.2		E
Intersection Delay, s/veh / LOS	31.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	2.2	B	1.1	A	1.2	A	1.3	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	416	1376	292	36	659	51	221	183	35	95	187	241

Signal Information				Signal Phases											
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Fixed	Simult. Gap N/S	On												
		Green		3.7	11.4	46.7	8.1	0.9	15.7						
		Yellow		4.5	4.5	4.5	4.0	4.0	4.0						
		Red		3.0	3.0	3.0	3.0	3.0	3.0						

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.977			0.973			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3451		1774	1536		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.23	0.50	0.50	0.11	0.50	0.50	0.34	0.28		0.11	0.40	0.15

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Green Ratio (g/C)	0.55	0.50	0.39	0.36	0.26	0.18	0.18	0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	715	0	366	0	1181	0	1149	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	48.7	0.0	46.7	0.0	17.7	0.0	15.7	0.0
Permitted Service Time (g_u), s	25.7	0.0	25.4	0.0	2.2	0.0	6.3	0.0
Permitted Queue Service Time (g_{ps}), s	25.7		2.4		2.2		0.9	
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1610
Protected Right Effective Green Time (g_R), s		0.0						22.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.710	0.09	2.107	0.01	2.224	0.11
Pedestrian F_s / F_{delay}	0.000	0.111	0.000	0.132	0.000	0.151	0.000	0.157
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1008.82	15.96	718.12	26.70	362.58	43.57	241.52	50.25
Bicycle F_w / F_v	-3.64	1.74	-3.64	0.64	-3.64	0.76	-3.64	0.80

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Existing
Analysis Time Period	PM Peak		
Project Description <i>W9401.1-Retail Deltona</i>			
East/West Street: <i>Saxon Boulevard</i>		North/South Street: <i>Sterling Silver Boulevard</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

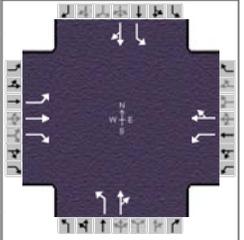
Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	33	1224	9	7	663	11
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	34	1288	9	7	697	11
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	<i>L</i>	<i>T</i>	<i>TR</i>	<i>L</i>	<i>T</i>	<i>TR</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	8	0	10	11	0	20
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	8	0	10	11	0	21
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		<i>LTR</i>		<i>L</i>		<i>TR</i>

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>L</i>	<i>L</i>	<i>LTR</i>			<i>L</i>		<i>TR</i>
v (veh/h)	34	7		18		11		21
C (m) (veh/h)	887	530		104		89		688
v/c	0.04	0.01		0.17		0.12		0.03
95% queue length	0.12	0.04		0.59		0.41		0.09
Control Delay (s/veh)	9.2	11.9		46.7		51.1		10.4
LOS	<i>A</i>	<i>B</i>		<i>E</i>		<i>F</i>		<i>B</i>
Approach Delay (s/veh)	--	--	46.7			24.4		
Approach LOS	--	--	<i>E</i>			<i>C</i>		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	502	557	67	8	250	10	47	99	21	31	92	245

Signal Information				Signal Timing (s)									Signal Phases			
Cycle, s	60.4	Reference Phase	2													
Offset, s	0	Reference Point	End	Green	15.0	12.0	14.9	0.0	0.0	0.0						
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.5	0.0	0.0	0.0						

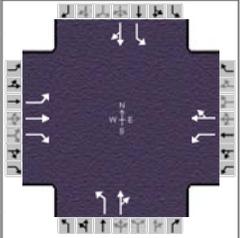
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	502	557	67	8	250	10	47	99	21	31	92	245
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	
Ped / Bike / RTOR, /h	0	0	24	0	0	0	0	0	7	0	0	99
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	315	0	205	120	0		270	0		80	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	35	35	35	30	30	30	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	15.0	30.0		30.0		30.0		30.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	5	5	5
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	502	557	67	8	250	10	47	99	21	31	92	245

Signal Information				Phase Diagram								
Cycle, s	60.4	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	15.0	12.0	14.9	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	2.0	2.0	2.5	0.0	0.0	0.0						

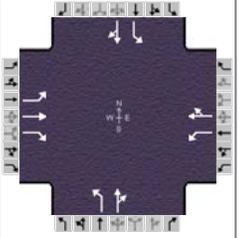
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	21.0	39.0		18.0		21.4		21.4
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		5.3		5.3
Queue Clearance Time (g _s), s	15.3	14.6		10.4		12.4		10.0
Green Extension Time (g _e), s	0.0	4.9		1.6		2.5		2.6
Phase Call Probability	1.00	1.00		1.00		1.00		1.00
Max Out Probability	1.00	0.24		0.14		0.03		0.02

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	528	586	45	8	274		49	119		33	251	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	826	1850		1125	1822		1268	1678	
Queue Service Time (g _s), s	13.3	12.6	0.8	0.5	8.4		2.5	3.2		1.3	8.0	
Cycle Queue Clearance Time (g _c), s	13.3	12.6	0.8	0.5	8.4		10.4	3.2		4.5	8.0	
Green Ratio (g/C)	0.48	0.55	0.55	0.20	0.20		0.25	0.25		0.25	0.25	
Capacity (c), veh/h	625	1017	862	283	368		249	450		366	415	
Volume-to-Capacity Ratio (X)	0.846	0.576	0.053	0.030	0.744		0.199	0.264		0.089	0.604	
Available Capacity (c _a), veh/h	625	1017	862	529	918		529	904		682	832	
Back of Queue (Q), veh/ln (50th percentile)	5.8	4.0	0.2	0.1	3.8		0.7	1.3		0.4	3.0	
Queue Storage Ratio (RQ) (50th percentile)	0.47	0.00	0.03	0.02	0.00		0.06	0.00		0.12	0.00	
Uniform Delay (d ₁), s/veh	13.0	9.1	6.4	19.6	22.8		24.8	18.3		20.1	20.1	
Incremental Delay (d ₂), s/veh	10.4	1.0	0.0	0.1	4.2		0.6	0.4		0.1	2.0	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	23.5	10.1	6.4	19.7	27.0		25.3	18.8		20.3	22.2	
Level of Service (LOS)	C	B	A	B	C		C	B		C	C	
Approach Delay, s/veh / LOS	16.0	B		26.8	C		20.7	C		21.9	C	
Intersection Delay, s/veh / LOS	18.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	2.4	B	1.0	A	0.8	A	1.0	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	502	557	67	8	250	10	47	99	21	31	92	245

Signal Information				Signal Phases										
Cycle, s	60.4	Reference Phase	2	Green	15.0	12.0	14.9	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.0	2.5	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

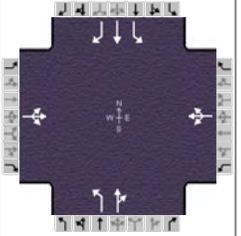
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.993			0.978			0.901	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1779			1596			648	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.38	0.21	0.15	0.15	0.15		0.15	0.15		0.15	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.48	0.55		0.20		0.25		0.25
Permitted Saturation Flow Rate (s_p), veh/h/ln	1101	0		826		1125		1268
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	14.0	0.0		12.0		14.9		14.9
Permitted Service Time (g_u), s	3.6	0.0		12.0		7.0		11.8
Permitted Queue Service Time (g_{ps}), s	3.6			0.5		2.5		1.3
Time to First Blockage (g_t), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.01		1.557	0.14		1.557	0.00		1.710	0.03	
Pedestrian F_s / F_{delay}	0.000	0.073		0.000	0.119		0.000	0.114		0.000	0.114	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1092.49	6.22		397.59	19.40		493.85	17.14		493.85	17.14	
Bicycle F_w / F_v	-3.64	1.91		-3.64	0.47		-3.64	0.28		-3.64	0.47	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94		
Intersection	Providence & Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	499	19	32	10	11	20	37	377	9	8	392	283

Signal Information													
Cycle, s	66.7	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	20.1	24.3	3.4	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.5	2.5	0.0	0.0	0.0			

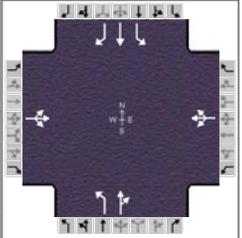
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	499	19	32	10	11	20	37	377	9	8	392	283
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2			2			2			2		
Ped / Bike / RTOR, /h	0	0	1	0	0	8	0	0	0	0	0	148
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			65			330		
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	30	30	30	30	30	30	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0		35.0		35.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0
Minimum Green (G _{min}), s	5	7	5	7	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	No	No	No	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94
Intersection	Providence & Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	499	19	32	10	11	20	37	377	9	8	392	283

Signal Information				Phase Diagram									
Cycle, s	66.7	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	20.1	24.3	3.4	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0				
		Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0				

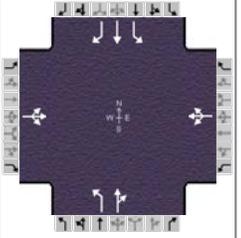
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		30.8		9.9		26.1		26.1
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		3.2		3.2		3.1		3.1
Queue Clearance Time (g _s), s		23.0		3.3		18.0		15.8
Green Extension Time (g _e), s		1.1		0.0		2.0		2.0
Phase Call Probability		1.00		0.48		1.00		1.00
Max Out Probability		0.01		0.00		0.01		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	584			35			39	411		9	417	
Adjusted Saturation Flow Rate (s), veh/h/ln	1765			1724			965	1855		971	1863	
Queue Service Time (g _s), s	21.0			1.3			2.6	13.3		0.5	13.5	
Cycle Queue Clearance Time (g _c), s	21.0			1.3			16.0	13.3		13.8	13.5	
Green Ratio (g/C)	0.36			0.05			0.30	0.30		0.30	0.30	
Capacity (c), veh/h	643			87			204	558		208	475	
Volume-to-Capacity Ratio (X)	0.909			0.403			0.193	0.736		0.041	0.744	
Available Capacity (c _a), veh/h	924			902			419	971		424	826	
Back of Queue (Q), veh/ln (50th percentile)	9.2			0.6			0.6	5.3		0.1	5.4	
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.22	0.00		0.01	0.00	
Uniform Delay (d ₁), s/veh	20.2			30.8			28.2	21.0		27.1	21.0	
Incremental Delay (d ₂), s/veh	7.6			1.1			0.2	0.7		0.0	0.7	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	27.8			31.9			28.4	21.7		27.2	21.8	
Level of Service (LOS)	C			C			C	C		C	B	
Approach Delay, s/veh / LOS	27.8	C		31.9	C		22.3	C		20.9	C	
Intersection Delay, s/veh / LOS	24.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.7	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	1.5	A	0.5	A	1.2	A	1.4	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94		
Intersection	Providence & Tivoli	Analysis Year	Existing	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	499	19	32	10	11	20	37	377	9	8	392	283

Signal Information													
Cycle, s	66.7	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	20.1	24.3	3.4	0.0	0.0	0.0	0.0				
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0				
		Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.947			0.925			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.996			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		61			575			1812			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.16			0.04			0.04	0.04		0.04	0.04

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.36		0.05		0.30		0.30
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		965		971
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		20.1		20.1
Permitted Service Time (g_u), s		0.0		0.0		6.7		6.9
Permitted Queue Service Time (g_{ps}), s						2.6		0.5
Time to First Blockage (g_l), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.710	0.21	1.389	0.01	1.389	0.00				
Pedestrian F_s / F_{delay}	0.000	0.136	0.000	0.149	0.000	0.112	0.000	0.112				
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	101.00	30.06	-224.93	41.27	601.61	16.30	601.61	16.30				
Bicycle F_w / F_v	-3.64	0.96	-3.64	0.06	-3.64	0.74	-3.64	0.94				

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver and Alabaster
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Existing
Analysis Time Period	PM Peak		
Project Description W9401.1-Retail Deltona			
East/West Street: Alabaster Way		North/South Street: Sterling Silver Boulevard	
Intersection Orientation: North-South		Study Period (hrs): 0.25	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		36	7	0	23	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	0	44	8	0	28	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			TR	LT		
Upstream Signal		0			0	

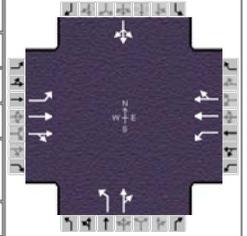
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0		0	8		0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	9	0	0
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration		LR		L		R

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R		LR	
v (veh/h)		0	9		0		0	
C (m) (veh/h)		1554	914		1027			
v/c		0.00	0.01		0.00			
95% queue length		0.00	0.03		0.00			
Control Delay (s/veh)		7.3	9.0		8.5			
LOS		A	A		A			
Approach Delay (s/veh)	--	--	9.0					
Approach LOS	--	--	A					

**FUTURE BACKGROUND CONDITIONS
(PM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak		PHF	0.93		
Intersection	Saxon & Finland	Analysis Year	Future Background		Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus							
Project Description	W9401.1-Retail Deltona							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	205	2153	67	85	1116	20	122	57	143	20	28	118

Signal Information				Timing Diagram						Phase Diagram				
Cycle, s	130.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On											
		Green	8.4	6.1	72.5	23.5	0.0	0.0						
		Yellow	4.5	0.0	4.5	4.0	0.0	0.0						
		Red	2.0	0.0	2.0	2.5	0.0	0.0						

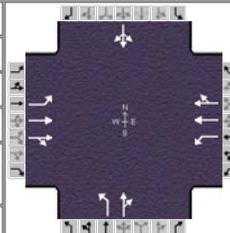
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	205	2153	67	85	1116	20	122	57	143	20	28	118
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	3	0	0	0	0	0	26	0	0	77
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.52	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	21.0	75.0	25.0	79.0		30.0		30.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93
Intersection	Saxon & Finland	Analysis Year	Future Background	Analysis Period	1> 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	205	2153	67	85	1116	20	122	57	143	20	28	118

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	130.0	Reference Phase	2	Green	8.4	6.1	72.5	23.5	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

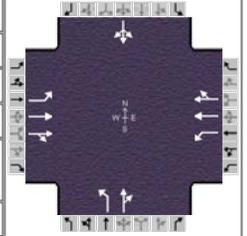
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	21.0	85.1	14.9	79.0		30.0		30.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.3		5.3
Queue Clearance Time (g _s), s	16.5		8.6			25.5		16.0
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		0.0		1.4
Phase Call Probability	1.00		0.96			1.00		1.00
Max Out Probability	1.00		0.00			1.00		0.52

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14	
Adjusted Flow Rate (v), veh/h	220	1192	1192	91	613	609	131	187			96		
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1844	1774	1863	1851	1320	1662			1134		
Queue Service Time (g _s), s	14.5	78.6	78.6	6.6	19.5	19.9	9.5	13.5			0.5		
Cycle Queue Clearance Time (g _c), s	14.5	78.6	78.6	6.6	19.5	19.9	23.5	13.5			14.0		
Green Ratio (g/C)	0.11	0.60	0.60	0.06	0.56	0.56	0.18	0.18			0.18		
Capacity (c), veh/h	198	1126	1114	115	1039	1032	152	300			239		
Volume-to-Capacity Ratio (X)	1.114	1.059	1.070	0.795	0.590	0.590	0.863	0.623			0.401		
Available Capacity (c _a), veh/h	198	1126	1114	252	1039	1032	152	300			239		
Back of Queue (Q), veh/ln (50th percentile)	11.8	28.6	31.3	3.1	5.9	6.1	5.9	6.0			2.8		
Queue Storage Ratio (RQ) (50th percentile)	0.85	0.00	0.00	0.76	0.00	0.00	0.43	0.00			0.00		
Uniform Delay (d ₁), s/veh	57.7	12.6	13.4	59.9	9.9	10.2	61.5	49.2			46.4		
Incremental Delay (d ₂), s/veh	97.8	43.8	47.7	6.4	1.3	1.3	37.5	4.6			1.5		
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0		
Control Delay (d), s/veh	155.6	56.4	61.0	66.3	11.2	11.5	99.0	53.8			47.9		
Level of Service (LOS)	F	F	F	E	B	B	F	D			D		
Approach Delay, s/veh / LOS	66.9		E	15.1		B	72.4		E		47.9		D
Intersection Delay, s/veh / LOS	51.2						D						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.2	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	2.6	B	1.6	A	1.0	A	0.6	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93
Intersection	Saxon & Finland	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	205	2153	67	85	1116	20	122	57	143	20	28	118

Signal Information				Signal Timing (s)									
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		8.4	6.1	72.5	23.5	0.0	0.0				
		Yellow		4.5	0.0	4.5	4.0	0.0	0.0				
		Red		2.0	0.0	2.0	2.5	0.0	0.0				

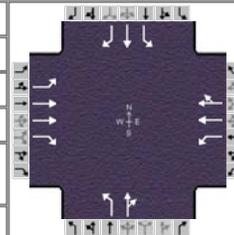
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.609	
Right-Turn Adjustment Factor (f_{RT})		0.990			0.994			0.892			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3600		1774	3649			544			485	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.50	0.50	0.50	0.11	0.50	0.50	0.41	0.24			0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.11	0.60	0.06	0.56		0.18		0.18
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1320		1215
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		23.5		23.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		9.5		10.0
Permitted Queue Service Time (g_{ps}), s						9.5		0.5
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0		0.0		6.6
Queue Service Time Before Blockage (g_{fs}), s								2.6
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.04		1.389	0.11		2.107	0.00		2.107	0.00	
Pedestrian F_s / F_{delay}	0.000	0.093		0.000	0.102		0.000	0.151		0.000	0.151	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1208.84	10.17		1115.36	12.72		361.54	43.62		361.54	43.62	
Bicycle F_w / F_v	-3.64	2.15		-3.64	1.08		-3.64	0.53		-3.64	0.16	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy	Analysis Year	Future Background	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	448	1482	314	39	710	55	238	197	38	102	201	260

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	130.0	Reference Phase	2	Green	3.9	14.2	43.4	8.6	0.4	16.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	4.5	4.5	4.0	4.0	4.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	3.0	3.0	3.0	3.0	3.0	3.0					
Force Mode	Fixed	Simult. Gap N/S	On												

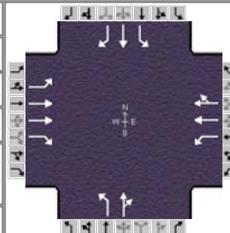
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	448	1482	314	39	710	55	238	197	38	102	201	260
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	0
Ped / Bike / RTOR, /h	0	0	89	0	0	6	0	0	2	0	0	69
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	540	0	265	200	0		290	0		295	0	380
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	42.0	64.0	20.0	42.0	23.0	30.0	16.0	23.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy		Analysis Year	Future Background	Analysis Period	1> 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus							
Project Description	W9401.1 Retail Deltona							



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	448	1482	314	39	710	55	238	197	38	102	201	260

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	130.0	Reference Phase	2	Green	3.9	14.2	43.4	8.6	0.4	16.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.5	4.5	4.5	4.0	4.0	4.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	3.0	3.0	3.0	3.0	3.0	3.0					
Force Mode	Fixed	Simult. Gap N/S	On												

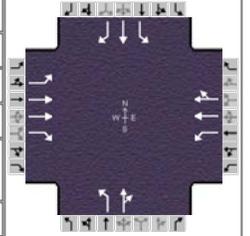
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	33.1	72.6	11.4	50.9	23.0	30.4	15.6	23.0
Change Period, (Y+R _c), s	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	24.2		4.0		17.8	18.7	8.8	16.6
Green Extension Time (g _e), s	1.3	0.0	0.0	0.0	0.0	1.6	0.0	0.0
Phase Call Probability	1.00		0.77		1.00	1.00	0.98	1.00
Max Out Probability	0.08		0.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	472	1560	237	41	404	395	251	245		107	212	201
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1820	1774	1812		1774	1863	1610
Queue Service Time (g _s), s	22.2	45.9	11.4	2.0	24.0	24.0	15.8	16.7		6.8	14.6	12.6
Cycle Queue Clearance Time (g _c), s	22.2	45.9	11.4	2.0	24.0	24.0	15.8	16.7		6.8	14.6	12.6
Green Ratio (g/C)	0.55	0.50	0.50	0.36	0.33	0.33	0.26	0.18		0.19	0.12	0.32
Capacity (c), veh/h	506	1777	791	152	622	607	286	326		214	229	515
Volume-to-Capacity Ratio (X)	0.933	0.878	0.299	0.271	0.650	0.650	0.875	0.752		0.502	0.923	0.390
Available Capacity (c _a), veh/h	627	1777	791	270	622	607	286	326		219	229	515
Back of Queue (Q), veh/ln (50th percentile)	9.2	14.4	4.1	0.9	11.6	11.4	8.8	8.4		3.1	9.3	5.0
Queue Storage Ratio (RQ) (50th percentile)	0.43	0.00	0.39	0.11	0.00	0.00	0.77	0.00		0.27	0.00	0.33
Uniform Delay (d ₁), s/veh	25.6	18.4	19.0	29.7	36.8	36.8	42.5	50.6		46.0	56.4	34.3
Incremental Delay (d ₂), s/veh	2.5	0.6	0.1	0.9	5.2	5.3	24.7	10.1		1.8	39.3	0.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	28.1	19.0	19.1	30.6	42.0	42.2	67.2	60.7		47.8	95.7	35.0
Level of Service (LOS)	C	B	B	C	D	D	E	E		D	F	D
Approach Delay, s/veh / LOS	20.9	C		41.5	D		63.9	E		62.4	E	
Intersection Delay, s/veh / LOS	35.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	2.4	B	1.2	A	1.3	A	1.3	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information	
Agency	CPH				Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other
Jurisdiction	Volusia County		Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Normandy		Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	448	1482	314	39	710	55	238	197	38	102	201	260

Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.9	14.2	43.4	8.6	0.4	16.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	4.0			
				Red	3.0	3.0	3.0	3.0	3.0	3.0			

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.977			0.973			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3448		1774	1532		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.31	0.50	0.50	0.11	0.50	0.50	0.40	0.33		0.11	0.45	0.15

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Green Ratio (g/C)	0.55	0.50	0.36	0.33	0.26	0.18	0.19	0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	678	0	329	0	1165	0	1130	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	45.4	0.0	43.4	0.0	18.0	0.0	16.0	0.0
Permitted Service Time (g_u), s	19.3	0.0	17.2	0.0	1.4	0.0	4.7	0.0
Permitted Queue Service Time (g_{ps}), s	19.3		3.7		1.4		1.2	
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1610
Protected Right Effective Green Time (g_R), s		0.0						25.6

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.710	0.10	2.107	0.01	2.224	0.13
Pedestrian F_s / F_{delay}	0.000	0.112	0.000	0.135	0.000	0.151	0.000	0.157
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	1002.08	16.18	667.88	28.84	359.81	43.72	246.15	49.98
Bicycle F_w / F_v	-3.64	1.87	-3.64	0.69	-3.64	0.82	-3.64	0.86

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Background
Analysis Time Period	PM Peak		
Project Description W9401.1-Retail Deltona			
East/West Street: Saxon Boulevard		North/South Street: Sterling Silver Boulevard	
Intersection Orientation: East-West		Study Period (hrs): 0.25	

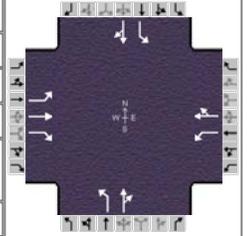
Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	36	1318	10	8	714	12
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	37	1387	10	8	751	12
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	9	0	11	12	0	22
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	9	0	11	12	0	23
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		LTR		L		TR

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			L		TR
v (veh/h)	37	8		20		12		23
C (m) (veh/h)	845	485		82		74		664
v/c	0.04	0.02		0.24		0.16		0.03
95% queue length	0.14	0.05		0.87		0.54		0.11
Control Delay (s/veh)	9.5	12.5		62.5		62.8		10.6
LOS	A	B		F		F		B
Approach Delay (s/veh)	--	--	62.5			28.5		
Approach LOS	--	--	F			D		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	541	600	72	9	269	11	51	107	23	33	99	264

Signal Information				Phase Diagram								
Cycle, s	63.5	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	15.0	13.2	16.7	0.0	0.0	0.0				
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
		Red	2.0	2.0	2.5	0.0	0.0	0.0				

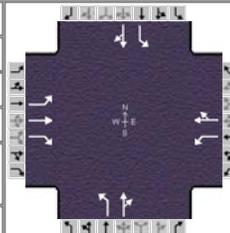
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	541	600	72	9	269	11	51	107	23	33	99	264
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	
Ped / Bike / RTOR, /h	0	0	26	0	0	0	0	0	7	0	0	101
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	315	0	205	120	0		270	0		80	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	35	35	35	30	30	30	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	15.0	30.0		30.0		30.0		30.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	5	5	5
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	541	600	72	9	269	11	51	107	23	33	99	264

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	63.5	Reference Phase	2	Green	15.0	13.2	16.7	0.0	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8	
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.0	2.5	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

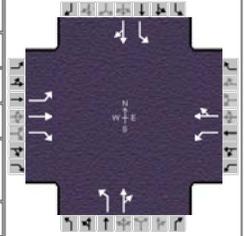
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	21.0	40.2		19.2		23.2		23.2
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		5.3		5.3
Queue Clearance Time (g _s), s	17.0	17.0		11.5		14.1		11.2
Green Extension Time (g _e), s	0.0	4.9		1.7		2.6		2.8
Phase Call Probability	1.00	1.00		1.00		1.00		1.00
Max Out Probability	1.00	0.38		0.19		0.06		0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	569	632	48	9	295		54	129		35	276	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	792	1850		1099	1820		1256	1675	
Queue Service Time (g _s), s	15.0	15.0	0.9	0.6	9.5		2.9	3.6		1.4	9.2	
Cycle Queue Clearance Time (g _c), s	15.0	15.0	0.9	0.6	9.5		12.1	3.6		5.0	9.2	
Green Ratio (g/C)	0.48	0.54	0.54	0.21	0.21		0.26	0.26		0.26	0.26	
Capacity (c), veh/h	596	1005	851	278	386		244	480		374	442	
Volume-to-Capacity Ratio (X)	0.956	0.629	0.057	0.034	0.764		0.220	0.270		0.093	0.624	
Available Capacity (c _a), veh/h	596	1005	851	488	874		473	860		636	792	
Back of Queue (Q), veh/ln (50th percentile)	9.3	5.0	0.2	0.1	4.3		0.8	1.5		0.4	3.5	
Queue Storage Ratio (RQ) (50th percentile)	0.75	0.00	0.03	0.02	0.00		0.07	0.00		0.13	0.00	
Uniform Delay (d ₁), s/veh	14.8	10.2	6.9	20.1	23.7		25.9	18.5		20.5	20.6	
Incremental Delay (d ₂), s/veh	26.3	1.5	0.0	0.1	4.5		0.6	0.4		0.2	2.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	41.1	11.7	7.0	20.2	28.1		26.6	18.9		20.7	22.7	
Level of Service (LOS)	D	B	A	C	C		C	B		C	C	
Approach Delay, s/veh / LOS	24.9	C		27.9	C		21.2	C		22.4	C	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	2.5	B	1.0	A	0.8	A	1.0	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	541	600	72	9	269	11	51	107	23	33	99	264

Signal Information															
Cycle, s	63.5	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	15.0	13.2	16.7	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0					
				Red	2.0	2.0	2.5	0.0	0.0	0.0					

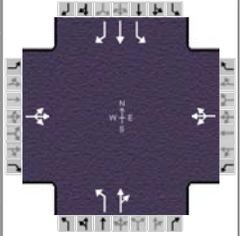
	EB			WB			NB			SB		
Saturation Flow / Delay	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.993			0.977			0.899	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1777			1583			633	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.47	0.24	0.15	0.15	0.15		0.15	0.15		0.15	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.48	0.54		0.21		0.26		0.26
Permitted Saturation Flow Rate (s_p), veh/h/ln	1080	0		792		1099		1256
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	15.2	0.0		13.2		16.7		16.7
Permitted Service Time (g_u), s	3.7	0.0		13.2		7.5		13.2
Permitted Queue Service Time (g_{ps}), s	3.7			0.6		2.9		1.4
Time to First Blockage (g_i), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.01	1.557	0.14	1.557	0.00	1.710	0.04
Pedestrian F_s / F_{delay}	0.000	0.076	0.000	0.120	0.000	0.114	0.000	0.114
Pedestrian $M_{corner} / M_{c/w}$								
Bicycle c_b / d_b	1078.88	6.73	417.12	19.88	527.18	17.21	527.18	17.21
Bicycle F_w / F_v	-3.64	2.06	-3.64	0.50	-3.64	0.30	-3.64	0.51

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	537	20	34	11	12	22	40	406	10	9	422	305

Signal Information												
Cycle, s	75.7	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On	Green	23.9	29.0	3.9	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0		
				Red	2.0	2.5	2.5	0.0	0.0	0.0		

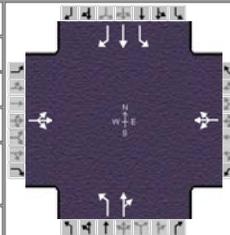
Traffic Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	537	20	34	11	12	22	40	406	10	9	422	305
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2			2			2			2		
Ped / Bike / RTOR, /h	0	0	1	0	0	9	0	0	0	0	0	159
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			65			330		
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	30	30	30	30	30	30	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0		35.0		35.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0
Minimum Green (G _{min}), s	5	7	5	7	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	No	No	No	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1> 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	537	20	34	11	12	22	40	406	10	9	422	305

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	75.7	Reference Phase	2	Green	23.9	29.0	3.9	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On												

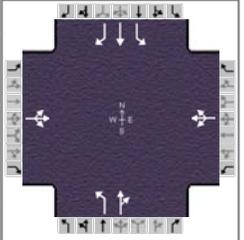
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		35.5		10.4		29.9		29.9
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		3.2		3.2		3.1		3.1
Queue Clearance Time (g _s), s		27.9		3.6		21.7		19.0
Green Extension Time (g _e), s		1.0		0.1		2.1		2.2
Phase Call Probability		1.00		0.55		1.00		1.00
Max Out Probability		0.16		0.00		0.05		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	628			38			43	443		10	449	
Adjusted Saturation Flow Rate (s), veh/h/ln	1765			1724			938	1855		943	1863	
Queue Service Time (g _s), s	25.9			1.6			3.3	16.3		0.7	16.5	
Cycle Queue Clearance Time (g _c), s	25.9			1.6			19.7	16.3		17.0	16.5	
Green Ratio (g/C)	0.38			0.05			0.32	0.32		0.32	0.32	
Capacity (c), veh/h	675			89			187	585		190	588	
Volume-to-Capacity Ratio (X)	0.929			0.432			0.227	0.756		0.050	0.764	
Available Capacity (c _a), veh/h	814			795			324	855		328	728	
Back of Queue (Q), veh/ln (50th percentile)	12.5			0.7			0.7	6.7		0.2	6.9	
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.28	0.00		0.01	0.00	
Uniform Delay (d ₁), s/veh	22.4			34.9			32.3	23.4		31.0	23.4	
Incremental Delay (d ₂), s/veh	14.1			1.2			0.2	1.1		0.0	1.2	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	36.5			36.2			32.5	24.4		31.0	24.6	
Level of Service (LOS)	D			D			C	C		C	B	
Approach Delay, s/veh / LOS	36.5	D		36.2	D		25.1	C		23.5	C	
Intersection Delay, s/veh / LOS	28.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.7	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	1.5	A	0.6	A	1.3	A	1.5	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94
Intersection	Providence & Tivoli	Analysis Year	Future Background	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	537	20	34	11	12	22	40	406	10	9	422	305

Signal Information												
Cycle, s	75.7	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	Yes	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	23.9	29.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Yellow	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		Red	2.0	2.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.947			0.926			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.996			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		60			575			1810			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.29			0.04		0.04	0.06		0.04	0.06	0.04

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.38		0.05		0.32		0.32
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		938		943
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		23.9		23.9
Permitted Service Time (g_u), s		0.0		0.0		7.5		7.7
Permitted Queue Service Time (g_{ps}), s						3.3		0.7
Time to First Blockage (g_i), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00		1.710	0.23		1.389	0.01		1.389	0.00	
Pedestrian F_s / F_{delay}	0.000	0.141		0.000	0.153		0.000	0.115		0.000	0.115	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	102.76	34.07			45.73		630.60	17.75		630.60	17.75	
Bicycle F_w / F_v	-3.64	1.04		-3.64	0.06		-3.64	0.80		-3.64	1.01	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver and Alabaster
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Background
Analysis Time Period	PM Peak		
Project Description <i>W9401.1-Retail Deltona</i>			
East/West Street: <i>Alabaster Way</i>		North/South Street: <i>Sterling Silver Boulevard</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		39	8	0	25	
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	0	48	9	0	31	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration			<i>TR</i>	<i>LT</i>		
Upstream Signal		0			0	

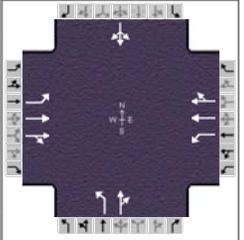
Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0		0	9		0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	0	11	0	0
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	1
Configuration		<i>LR</i>		<i>L</i>		<i>R</i>

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		<i>LT</i>	<i>L</i>		<i>R</i>		<i>LR</i>	
v (veh/h)		0	11		0		0	
C (m) (veh/h)		1547	904		1021			
v/c		0.00	0.01		0.00			
95% queue length		0.00	0.04		0.00			
Control Delay (s/veh)		7.3	9.0		8.5			
LOS		A	A		A			
Approach Delay (s/veh)	--	--	9.0					
Approach LOS	--	--	A					

**FUTURE TOTAL CONDITIONS
(PM PEAK HOUR)**

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93
Intersection	Saxon & Finland	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	205	2268	67	93	1227	23	122	57	151	23	28	118

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	130.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	9.1	5.4	72.5	23.5	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	0.0	4.5	4.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	0.0	2.0	2.5	0.0	0.0					

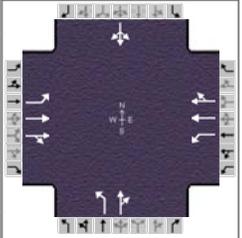
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	205	2268	67	93	1227	23	122	57	151	23	28	118
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2		2	2		2	2			2	
Ped / Bike / RTOR, /h	0	0	3	0	0	0	0	0	26	0	0	41
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	3	4	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	0.52	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0		12.0	12.0			12.0	
Turn Bay Length, ft	350	0		105	0		350	0			0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	21.0	75.0	25.0	79.0		30.0		30.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	22.0	0.0	22.0	0.0	24.0	0.0	24.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.93
Intersection	Saxon & Finland	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Finland Dr.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	205	2268	67	93	1227	23	122	57	151	23	28	118

Signal Information				Signal Phases								
Cycle, s	130.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	9.1	5.4	72.5	23.5	0.0	0.0						
Yellow	4.5	0.0	4.5	4.0	0.0	0.0						
Red	2.0	0.0	2.0	2.5	0.0	0.0						

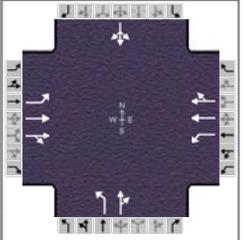
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	21.0	84.4	15.6	79.0		30.0		30.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0		5.4		5.4
Queue Clearance Time (g _s), s	16.5		9.2			25.5		18.2
Green Extension Time (g _e), s	0.0	0.0	0.2	0.0		0.0		1.3
Phase Call Probability	1.00		0.97			1.00		1.00
Max Out Probability	1.00		0.01			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	220	1254	1254	100	674	670	131	196			138	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1845	1774	1863	1850	1275	1658			1194	
Queue Service Time (g _s), s	14.5	77.9	77.9	7.2	23.3	23.8	7.3	14.3			2.0	
Cycle Queue Clearance Time (g _c), s	14.5	77.9	77.9	7.2	23.3	23.8	23.5	14.3			16.2	
Green Ratio (g/C)	0.11	0.60	0.60	0.07	0.56	0.56	0.18	0.18			0.18	
Capacity (c), veh/h	198	1116	1105	125	1039	1032	127	300			249	
Volume-to-Capacity Ratio (X)	1.114	1.124	1.135	0.803	0.649	0.649	1.036	0.653			0.554	
Available Capacity (c _a), veh/h	198	1116	1105	252	1039	1032	127	300			249	
Back of Queue (Q), veh/ln (50th percentile)	11.8	36.6	39.2	3.4	6.7	7.0	7.4	6.4			4.5	
Queue Storage Ratio (RQ) (50th percentile)	0.85	0.00	0.00	0.83	0.00	0.00	0.53	0.00			0.00	
Uniform Delay (d ₁), s/veh	57.8	13.1	13.8	59.6	10.4	10.7	63.0	49.5			48.4	
Incremental Delay (d ₂), s/veh	97.9	67.7	72.1	6.2	1.6	1.7	89.9	5.7			3.4	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	155.6	80.7	85.9	65.7	12.0	12.4	152.8	55.1			51.8	
Level of Service (LOS)	F	F	F	E	B	B	F	E			D	
Approach Delay, s/veh / LOS	89.2		F	15.9		B	94.3		F	51.8		D
Intersection Delay, s/veh / LOS	65.6						E					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.1	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	2.7	B	1.7	A	1.0	A	0.7	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information			
Agency	CPH				Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013		Area Type	Other		
Jurisdiction	Volusia County		Time Period	PM Peak	PHF	0.93		
Intersection	Saxon & Finland		Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Finland Dr.xus							
Project Description	W9401.1-Retail Deltona							



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	205	2268	67	93	1227	23	122	57	151	23	28	118

Signal Information				Signal Timing						Signal Phases				
Cycle, s	130.0	Reference Phase	2	Green	9.1	5.4	72.5	23.5	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	4.5	0.0	4.5	4.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	2.0	0.0	2.0	2.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

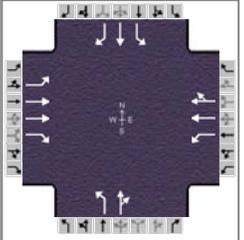
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.000			0.641	
Right-Turn Adjustment Factor (f_{RT})		0.990			0.993			0.890			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3606		1774	3645			519			336	
Platoon Ratio (R_p)	1.00	1.33		1.00	1.33			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.50	0.50	0.50	0.11	0.50	0.50	0.50	0.26			0.19	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.5		6.5
Green Ratio (g/C)	0.11	0.60	0.07	0.56		0.18		0.18
Permitted Saturation Flow Rate (s_p), veh/h/ln	0	0	0	0		1275		1206
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								0
Permitted Effective Green Time (g_p), s	0.0	0.0	0.0	0.0		23.5		23.5
Permitted Service Time (g_u), s	0.0	0.0	0.0	0.0		7.3		9.2
Permitted Queue Service Time (g_{ps}), s						7.3		2.0
Time to First Blockage (g_t), s	0.0	0.0	0.0	0.0		0.0		8.2
Queue Service Time Before Blockage (g_{ts}), s								8.2
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.04		1.389	0.06		2.107	0.00		2.107	0.00	
Pedestrian F_s / F_{delay}	0.000	0.094		0.000	0.102		0.000	0.151		0.000	0.151	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1198.09	10.45		1115.38	12.72		361.54	43.62		361.54	43.62	
Bicycle F_w / F_v	-3.64	2.25		-3.64	1.19		-3.64	0.54		-3.64	0.23	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	448	1607	314	44	831	65	238	197	43	112	201	260

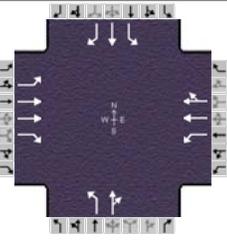
Signal Information													
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
				Green	4.1	18.4	39.1	9.0	0.0	16.0			
				Yellow	4.5	4.5	4.5	4.0	4.0	4.0			
				Red	3.0	3.0	3.0	3.0	3.0	3.0			

Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	448	1607	314	44	831	65	238	197	43	112	201	260
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	0
Ped / Bike / RTOR, /h	0	0	89	0	0	7	0	0	3	0	0	69
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	4	3	4	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	0.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	12.0
Turn Bay Length, ft	540	0	265	200	0		290	0		295	0	380
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	35	35	35	35	35	35

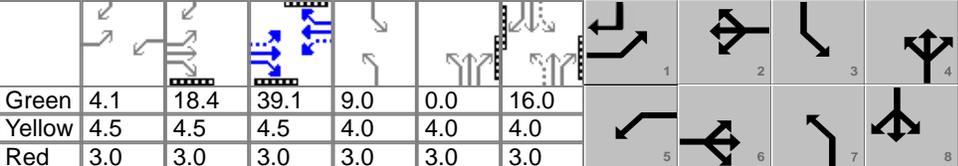
Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	42.0	64.0	20.0	42.0	23.0	30.0	16.0	23.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Minimum Green (G _{min}), s	5	11	5	11	5	6	5	6
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	18.0	0.0	29.0	0.0	23.0	0.0	23.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	CPH			Duration, h	0.25	
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other	
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95	
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00	
File Name	Saxon Blvd & Normandy Blvd.xus					
Project Description	W9401.1 Retail Deltona					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	448	1607	314	44	831	65	238	197	43	112	201	260

Signal Information																	
Cycle, s	130.0	Reference Phase	2	Green	4.1	18.4	39.1	9.0	0.0	16.0	Yellow	4.5	4.5	4.5	4.0	4.0	4.0
Offset, s	0	Reference Point	End	Red	3.0	3.0	3.0	3.0	3.0	3.0	Force Mode	Fixed	Simult. Gap N/S	On			

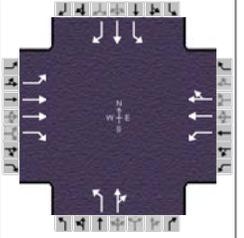
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	1.1	3.0	1.1	4.0	1.1	4.0	1.1	3.0
Phase Duration, s	37.4	72.4	11.6	46.6	23.0	30.0	16.0	23.0
Change Period, (Y+R _c), s	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Max Allow Headway (MAH), s	4.1	0.0	4.1	0.0	4.1	5.2	4.1	5.2
Queue Clearance Time (g _s), s	29.0		4.3		17.8	19.1	9.5	16.6
Green Extension Time (g _e), s	0.9	0.0	0.0	0.0	0.0	1.4	0.0	0.0
Phase Call Probability	1.00		0.81		1.00	1.00	0.99	1.00
Max Out Probability	0.56		0.01		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	472	1692	237	46	473	462	251	249		118	212	201
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1773	1579	1774	1863	1820	1774	1808		1774	1863	1610
Queue Service Time (g _s), s	27.0	56.9	11.5	2.3	31.0	31.0	15.8	17.1		7.5	14.6	12.0
Cycle Queue Clearance Time (g _c), s	27.0	56.9	11.5	2.3	31.0	31.0	15.8	17.1		7.5	14.6	12.0
Green Ratio (g/C)	0.55	0.50	0.50	0.33	0.30	0.30	0.26	0.18		0.19	0.12	0.35
Capacity (c), veh/h	501	1772	789	124	560	547	286	320		212	229	569
Volume-to-Capacity Ratio (X)	0.942	0.955	0.300	0.373	0.845	0.845	0.875	0.780		0.557	0.923	0.354
Available Capacity (c _a), veh/h	563	1772	789	239	560	547	286	320		212	229	569
Back of Queue (Q), veh/ln (50th percentile)	15.0	18.1	4.1	1.0	16.2	15.9	8.8	8.8		3.5	9.3	4.7
Queue Storage Ratio (RQ) (50th percentile)	0.70	0.00	0.40	0.13	0.00	0.00	0.77	0.00		0.30	0.00	0.31
Uniform Delay (d ₁), s/veh	34.4	20.4	19.2	34.4	42.6	42.6	42.5	51.1		46.1	56.4	31.1
Incremental Delay (d ₂), s/veh	3.4	1.8	0.1	1.8	14.5	14.8	24.7	12.3		3.2	39.3	0.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	37.8	22.1	19.2	36.2	57.1	57.4	67.2	63.4		49.3	95.7	31.6
Level of Service (LOS)	D	C	B	D	E	E	E	E		D	F	C
Approach Delay, s/veh / LOS	24.9		C	56.3		E	65.3		E	61.1		E
Intersection Delay, s/veh / LOS	40.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.5	B	2.9	C	3.1	C
Bicycle LOS Score / LOS	2.5	B	1.3	A	1.3	A	1.4	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Normandy	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Normandy Blvd.xus						
Project Description	W9401.1 Retail Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	448	1607	314	44	831	65	238	197	43	112	201	260

Signal Information				Signal Phases									
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		4.1	18.4	39.1	9.0	0.0	16.0				
		Yellow		4.5	4.5	4.5	4.0	4.0	4.0				
		Red		3.0	3.0	3.0	3.0	3.0	3.0				

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	0.952	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000		0.952	0.000		0.952	0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.977			0.971			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3547		1774	3445		1774	1503		1774	1863	
Platoon Ratio (R_p)	1.00	1.33		1.33	1.00		1.00	1.00		1.00	1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.37	0.50	0.50	0.11	0.50	0.50	0.40	0.35		0.15	0.45	0.15

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0
Green Ratio (g/C)	0.55	0.50	0.33	0.30	0.26	0.18	0.19	0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	596	0	290	0	1165	0	1126	0
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	41.1	0.0	39.1	0.0	18.0	0.0	16.0	0.0
Permitted Service Time (g_u), s	8.1	0.0	6.0	0.0	1.4	0.0	3.9	0.0
Permitted Queue Service Time (g_{ps}), s	8.1		6.0		1.4		1.4	
Time to First Blockage (g), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						1610
Protected Right Effective Green Time (g_R), s		0.0						29.9

Multimodal	EB		WB		NB		SB	
Pedestrian F_w / F_v	1.557	0.00	1.710	0.10	2.107	0.01	2.224	0.13
Pedestrian F_s / F_{delay}	0.000	0.112	0.000	0.139	0.000	0.152	0.000	0.157
Pedestrian M_{corner} / M_{cw}								
Bicycle c_b / d_b	999.06	16.28	601.26	31.79	353.85	44.03	246.15	49.98
Bicycle F_w / F_v	-3.64	1.98	-3.64	0.81	-3.64	0.83	-3.64	0.88

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon & Driveway 2
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	PM Peak		

Project Description <i>W9401.1-Retail, Deltona</i>	
East/West Street: <i>Saxon Blvd.</i>	North/South Street: <i>Driveway 2</i>
Intersection Orientation: <i>East-West</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1504			824	46
Peak-Hour Factor, PHF	1.00	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	1583	0	0	867	48
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration		T			T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						57
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	60
Percent Heavy Vehicles	0	0	0	0	0	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service

Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								R
v (veh/h)								60
C (m) (veh/h)								601
v/c								0.10
95% queue length								0.33
Control Delay (s/veh)								11.7
LOS								B
Approach Delay (s/veh)	--	--				11.7		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Sterling Silver
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Total
Analysis Time Period	PM Peak		
Project Description <i>W9401.1-Retail Deltona</i>			
East/West Street: <i>Saxon Boulevard</i>		North/South Street: <i>Sterling Silver Boulevard</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	326	1169	10	8	739	106
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	343	1230	10	8	777	111
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	1	2	0	1	2	0
Configuration	L	T	TR	L	T	TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	9	0	11	282	0	123
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	9	0	11	296	0	129
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		LTR		L		TR

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L	L	LTR			L		TR
v (veh/h)	343	8		20		296		129
C (m) (veh/h)	758	557		22		17		612
v/c	0.45	0.01		0.91		17.41		0.21
95% queue length	2.37	0.04		2.62		37.81		0.79
Control Delay (s/veh)	13.6	11.6		407.7		7820		12.4
LOS	B	B		F		F		B
Approach Delay (s/veh)	--	--	407.7			5450		
Approach LOS	--	--	F			F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Saxon and Driveway 1
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	PM Peak		
Project Description <i>W9401.1-Retail, Deltona</i>			
East/West Street: <i>Saxon Blvd.</i>		North/South Street: <i>Driveway 1</i>	
Intersection Orientation: <i>East-West</i>		Study Period (hrs): <i>0.25</i>	

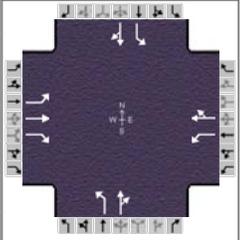
Vehicle Volumes and Adjustments						
Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		1462			794	64
Peak-Hour Factor, PHF	1.00	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	1538	0	0	835	67
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	2	0	0	2	0
Configuration		<i>T</i>			<i>T</i>	<i>TR</i>
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						58
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	61
Percent Heavy Vehicles	0	0	0	0	0	2
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						<i>R</i>

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								<i>R</i>
v (veh/h)								61
C (m) (veh/h)								607
v/c								0.10
95% queue length								0.33
Control Delay (s/veh)								11.6
LOS								<i>B</i>
Approach Delay (s/veh)	--	--				11.6		
Approach LOS	--	--				<i>B</i>		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	595	660	80	9	330	11	59	107	23	33	99	361

Signal Information				Signal Timing (s)									Signal Phases			
Cycle, s	71.5	Reference Phase	2	Green	15.0	17.0	20.9	0.0	0.0	0.0	1	2	3	4		
Offset, s	0	Reference Point	End	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5	6	7	8		
Uncoordinated	Yes	Simult. Gap E/W	On	Red	2.0	2.0	2.5	0.0	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On													

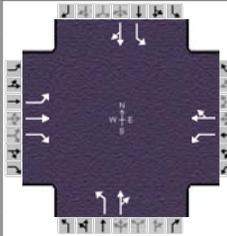
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	595	660	80	9	330	11	59	107	23	33	99	361
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2	2	2	2		2	2		2	2	
Ped / Bike / RTOR, /h	0	0	29	0	0	0	0	0	7	0	0	150
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0	12.0	12.0	12.0		12.0	12.0		12.0	12.0	
Turn Bay Length, ft	315	0	205	120	0		270	0		80	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	35	35	35	30	30	30	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	15.0	30.0		30.0		30.0		30.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	1.0	2.0	1.0	2.5	1.0	2.5
Minimum Green (G _{min}), s	5	11	5	11	5	5	5	5
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	4.0	2.0	4.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	16.0	0.0	16.0	0.0	20.0	0.0	20.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon and Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Tivoli Dr.xus				
Project Description	W9501.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	595	660	80	9	330	11	59	107	23	33	99	361

Signal Information													
Cycle, s	71.5	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	15.0	17.0	20.9	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.0	2.5	0.0	0.0	0.0			

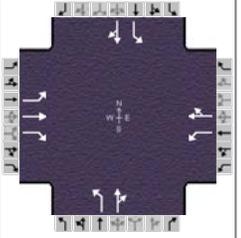
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2		6		4		8
Case Number	1.0	3.0		6.3		6.0		6.0
Phase Duration, s	21.0	44.0		23.0		27.4		27.4
Change Period, (Y+R _c), s	6.0	6.0		6.0		6.5		6.5
Max Allow Headway (MAH), s	4.1	5.0		5.0		5.3		5.3
Queue Clearance Time (g _s), s	17.0	21.9		15.1		18.3		14.4
Green Extension Time (g _e), s	0.0	4.2		1.9		2.6		3.0
Phase Call Probability	1.00	1.00		1.00		1.00		1.00
Max Out Probability	1.00	0.74		0.37		0.23		0.10

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	626	695	54	9	359		62	129		35	326	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	747	1852		1049	1820		1256	1659	
Queue Service Time (g _s), s	15.0	19.9	1.2	0.7	13.1		4.0	3.9		1.5	12.4	
Cycle Queue Clearance Time (g _c), s	15.0	19.9	1.2	0.7	13.1		16.3	3.9		5.4	12.4	
Green Ratio (g/C)	0.48	0.53	0.53	0.24	0.24		0.29	0.29		0.29	0.29	
Capacity (c), veh/h	529	991	840	278	441		227	534		401	487	
Volume-to-Capacity Ratio (X)	1.184	0.701	0.064	0.034	0.814		0.274	0.243		0.087	0.671	
Available Capacity (c _a), veh/h	529	991	840	414	778		360	764		560	697	
Back of Queue (Q), veh/ln (50th percentile)	20.1	7.3	0.3	0.1	6.0		1.0	1.6		0.4	4.8	
Queue Storage Ratio (RQ) (50th percentile)	1.62	0.00	0.04	0.03	0.00		0.10	0.00		0.14	0.00	
Uniform Delay (d ₁), s/veh	16.9	12.5	8.1	21.0	25.7		29.4	19.2		21.3	22.2	
Incremental Delay (d ₂), s/veh	100.9	2.5	0.0	0.1	5.2		0.9	0.3		0.1	2.3	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	117.7	14.9	8.2	21.1	30.9		30.3	19.5		21.4	24.5	
Level of Service (LOS)	F	B	A	C	C		C	B		C	C	
Approach Delay, s/veh / LOS	61.5		E	30.7		C	23.0		C	24.2		C
Intersection Delay, s/veh / LOS	47.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.5	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	2.8	C	1.1	A	0.8	A	1.1	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/17/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95		
Intersection	Saxon and Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Saxon Blvd & Tivoli Dr.xus						
Project Description	W9501.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	595	660	80	9	330	11	59	107	23	33	99	361

Signal Information															
Cycle, s	71.5	Reference Phase	2	Green			Yellow			Red			Signal Diagrams		
Offset, s	0	Reference Point	End	15.0	17.0	20.9	0.0	0.0	0.0	1			2		
Uncoordinated	Yes	Simult. Gap E/W	On	4.0	4.0	4.0	0.0	0.0	0.0	5			6		
Force Mode	Fixed	Simult. Gap N/S	On	2.0	2.0	2.5	0.0	0.0	0.0	7			8		

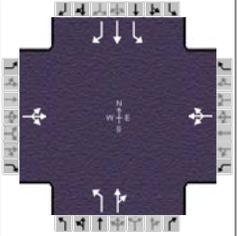
Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	0.980	0.980	0.980	1.000	0.980	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000			0.000			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.994			0.977			0.891	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	1863			1792			1583			530	
Platoon Ratio (R_p)	1.00	1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.50	0.29	0.15	0.15	0.15		0.15	0.15		0.15	0.15	

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.0	6.0		6.0		6.5		6.5
Green Ratio (g/C)	0.48	0.53		0.24		0.29		0.29
Permitted Saturation Flow Rate (s_p), veh/h/ln	1018	0		747		1049		1256
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	19.0	0.0		17.0		21.0		21.0
Permitted Service Time (g_u), s	3.9	0.0		17.0		8.6		17.1
Permitted Queue Service Time (g_{ps}), s	3.9			0.7		4.0		1.5
Time to First Blockage (g_t), s	0.0	0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln		0						
Protected Right Effective Green Time (g_R), s		0.0						

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.01		1.557	0.21		1.557	0.00		1.710	0.04	
Pedestrian F_s / F_{delay}	0.000	0.083		0.000	0.122		0.000	0.116		0.000	0.116	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1063.73	7.83		475.96	20.75		586.37	17.85		586.37	17.85	
Bicycle F_w / F_v	-3.64	2.27		-3.64	0.61		-3.64	0.32		-3.64	0.60	

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94		
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	586	23	37	11	15	22	43	406	10	9	422	356

Signal Information																						
Cycle, s	83.4	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	Yes	Simult. Gap E/W	On	Green	26.1	33.9	4.3	0.0	0.0	0.0	1			2			3			4		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0	5			6			7			8		
				Red	2.0	2.5	2.5	0.0	0.0	0.0												

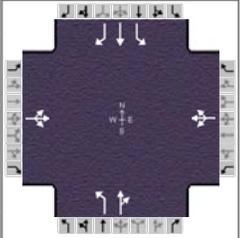
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	586	23	37	11	15	22	43	406	10	9	422	356
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h	None			None			None			None		
Heavy Vehicles (P _{HV}), %	2			2			2			2		
Ped / Bike / RTOR, /h	0	0	1	0	0	9	0	0	0	0	0	186
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0			12.0			12.0			12.0		
Turn Bay Length, ft	0			0			65			330		
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	30	30	30	30	30	30	35	35	35	35	35	35

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s		35.0		35.0		35.0		35.0
Yellow Change Interval (Y), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	1.0	2.5	1.0	2.5	1.0	2.0	1.0	2.0
Minimum Green (G _{min}), s	5	7	5	7	5	7	5	7
Start-Up Lost Time (l _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	Off	Off	Off	Off	Off	Min	Off	Min
Dual Entry	No	No	No	No	No	Yes	No	Yes
Walk (Walk), s	0.0	7.0	0.0	7.0	0.0	7.0	0.0	7.0
Pedestrian Clearance Time (PC), s	0.0	20.0	0.0	20.0	0.0	16.0	0.0	16.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00
File Name	Providence Blvd & Tivoli Dr.xus				
Project Description	W9401.1-Retail, Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	586	23	37	11	15	22	43	406	10	9	422	356

Signal Information													
Cycle, s	83.4	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	26.1	33.9	4.3	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0			
				Red	2.0	2.5	2.5	0.0	0.0	0.0			

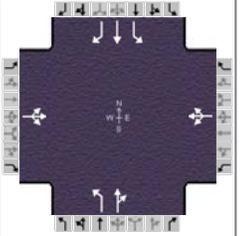
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		12.0		12.0		6.0		5.0
Phase Duration, s		40.4		10.8		32.1		32.1
Change Period, (Y+R _c), s		6.5		6.5		6.0		6.0
Max Allow Headway (MAH), s		3.2		3.2		3.1		3.1
Queue Clearance Time (g _s), s		33.5		3.9		24.0		20.7
Green Extension Time (g _e), s		0.4		0.1		2.0		2.2
Phase Call Probability		1.00		0.62		1.00		1.00
Max Out Probability		1.00		0.00		0.10		0.04

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	686			41			46	443		10	449	181
Adjusted Saturation Flow Rate (s), veh/h/ln	1765			1734			938	1855		943	1863	1579
Queue Service Time (g _s), s	31.5			1.9			3.9	18.0		0.8	18.2	7.4
Cycle Queue Clearance Time (g _c), s	31.5			1.9			22.0	18.0		18.7	18.2	7.4
Green Ratio (g/C)	0.41			0.05			0.31	0.31		0.31	0.31	0.31
Capacity (c), veh/h	718			90			176	581		179	584	495
Volume-to-Capacity Ratio (X)	0.956			0.460			0.260	0.761		0.053	0.769	0.365
Available Capacity (c _a), veh/h	740			727			275	778		279	781	662
Back of Queue (Q), veh/ln (50th percentile)	16.6			0.8			0.9	7.8		0.2	7.9	2.6
Queue Storage Ratio (RQ) (50th percentile)	0.00			0.00			0.34	0.00		0.01	0.00	0.00
Uniform Delay (d ₁), s/veh	24.0			38.4			35.9	25.8		34.2	25.9	22.2
Incremental Delay (d ₂), s/veh	22.2			1.4			0.3	2.0		0.0	2.2	0.2
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	46.2			39.8			36.2	27.8		34.3	28.1	22.4
Level of Service (LOS)	D			D			D	C		C	C	C
Approach Delay, s/veh / LOS	46.2		D	39.8		D	28.6		C	26.6		C
Intersection Delay, s/veh / LOS	34.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	2.7	B	2.1	B	2.1	B
Bicycle LOS Score / LOS	1.6	A	0.6	A	1.3	A	1.5	A

HCS 2010 Signalized Intersection Intermediate Values

General Information				Intersection Information			
Agency	CPH			Duration, h	0.25		
Analyst	GR	Analysis Date	9/18/2013	Area Type	Other		
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.94		
Intersection	Providence & Tivoli	Analysis Year	Future Total	Analysis Period	1 > 7:00		
File Name	Providence Blvd & Tivoli Dr.xus						
Project Description	W9401.1-Retail, Deltona						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	586	23	37	11	15	22	43	406	10	9	422	356

Signal Information														
Cycle, s	83.4	Reference Phase	2							1	2	3	4	
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	26.1	33.9	4.3	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.0	4.0	4.0	0.0	0.0	0.0				
				Red	2.0	2.5	2.5	0.0	0.0	0.0	5	6	7	8

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000	0.980	0.980	0.980
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})		0.947			0.931			0.000			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.000			0.000			0.996			0.000	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h		63			667			1810			1863	
Platoon Ratio (R_p)		1.00			1.00			1.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)		0.43			0.04			0.04	0.10		0.04	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)		5.0		6.5		6.0		6.0
Green Ratio (g/C)		0.41		0.05		0.31		0.31
Permitted Saturation Flow Rate (s_p), veh/h/ln		0		0		938		943
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s		0.0		0.0		26.2		26.2
Permitted Service Time (g_u), s		0.0		0.0		8.0		8.2
Permitted Queue Service Time (g_{ps}), s						3.9		0.8
Time to First Blockage (g_t), s		0.0		0.0		0.0		0.0
Queue Service Time Before Blockage (g_{ts}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								0
Protected Right Effective Green Time (g_R), s								0.0

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.557	0.00	1.710	0.26	1.389	0.01	1.389	0.00	1.389	0.00		
Pedestrian F_s / F_{delay}	0.000	0.145	0.000	0.156	0.000	0.119	0.000	0.119	0.000	0.119		
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	103.92	37.46		49.51	626.81	19.65	626.81	19.65	626.81	19.65		
Bicycle F_w / F_v	-3.64	1.13	-3.64	0.07	-3.64	0.81	-3.64	0.81	-3.64	1.05		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver and Alabaster
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/20/2013	Analysis Year	Future Total
Analysis Time Period	PM Peak		

Project Description <i>W9401.1-Retail Deltona</i>	
East/West Street: <i>Alabaster Way</i>	North/South Street: <i>Sterling Silver Boulevard</i>
Intersection Orientation: <i>North-South</i>	Study Period (hrs): <i>0.25</i>

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	136	53	242	0	39	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	169	66	302	0	48	0
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LTR</i>			<i>LTR</i>		
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	122	244	0	0
Peak-Hour Factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80
Hourly Flow Rate, HFR (veh/h)	0	0	152	304	0	0
Percent Heavy Vehicles	2	0	0	2	0	0
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	1	0
Configuration		<i>LTR</i>		<i>L</i>		<i>TR</i>

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LTR</i>	<i>LTR</i>	<i>L</i>		<i>TR</i>		<i>LTR</i>	
v (veh/h)	169	0	304		0		152	
C (m) (veh/h)	1559	1191	279				1027	
v/c	0.11	0.00	1.09				0.15	
95% queue length	0.36	0.00	12.35				0.52	
Control Delay (s/veh)	7.6	8.0	120.1				9.1	
LOS	<i>A</i>	<i>A</i>	<i>F</i>				<i>A</i>	
Approach Delay (s/veh)	--	--					9.1	
Approach LOS	--	--					<i>A</i>	

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	GR	Intersection	Sterling Silver & Driveway 4
Agency/Co.	CPH	Jurisdiction	Volusia County
Date Performed	9/23/2013	Analysis Year	Future Total
Analysis Time Period	PM Peak		
Project Description <i>W9401.1-Retail, Deltona</i>			
East/West Street: <i>Saxon Blvd.</i>		North/South Street: <i>Driveway 4</i>	
Intersection Orientation: <i>North-South</i>		Study Period (hrs): <i>0.25</i>	

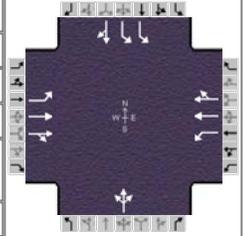
Vehicle Volumes and Adjustments						
Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	14	39			25	0
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	14	41	0	0	26	0
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type	<i>Undivided</i>					
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	<i>LT</i>					<i>TR</i>
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)			14			
Peak-Hour Factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Hourly Flow Rate, HFR (veh/h)	0	0	14	0	0	0
Percent Heavy Vehicles	2	2	2	2	0	2
Percent Grade (%)	0			0		
Flared Approach		<i>N</i>			<i>N</i>	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	1	0	0	0
Configuration			<i>R</i>			

Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	<i>LT</i>							<i>R</i>
v (veh/h)	14							14
C (m) (veh/h)	1588							1050
v/c	0.01							0.01
95% queue length	0.03							0.04
Control Delay (s/veh)	7.3							8.5
LOS	<i>A</i>							<i>A</i>
Approach Delay (s/veh)	--	--				8.5		
Approach LOS	--	--				<i>A</i>		

HCS 2010 Signalized Intersection Input Data

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	11/1/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon & Sterling Silver	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	326	1169	10	8	739	106	9	0	11	282	0	123

Signal Information													
Cycle, s	94.2	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.4	4.3	41.7	11.4	3.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0			
				Red	2.0	2.0	2.0	2.3	2.6	0.0			

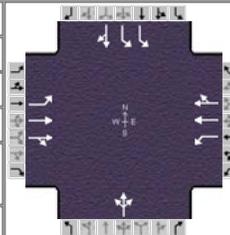
Traffic Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	326	1169	10	8	739	106	9	0	11	282	0	123
Initial Queue (Q _b), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Base Saturation Flow Rate (s ₀), veh/h	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Parking (N _m), man/h		None			None			None			None	
Heavy Vehicles (P _{HV}), %	2	2		2	2			2		2	2	
Ped / Bike / RTOR, /h	0	0	0	0	0	0	0	0	0	0	0	0
Buses (N _b), buses/h	0	0	0	0	0	0	0	0	0	0	0	0
Arrival Type (AT)	3	3	3	3	3	3	3	3	3	3	3	3
Upstream Filtering (I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lane Width (W), ft	12.0	12.0		12.0	12.0			12.0		12.0	12.0	
Turn Bay Length, ft	290	0		295	0			0		157	0	
Grade (P _g), %	0	0	0	0	0	0	0	0	0	0	0	0
Speed Limit, mi/h	40	40	40	40	40	40	30	30	30	30	30	30

Phase Information	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Maximum Green (G _{max}) or Phase Split, s	25.0	60.0	10.0	75.0		10.0		25.0
Yellow Change Interval (Y), s	4.5	4.5	4.5	4.5	4.0	4.0	4.0	4.0
Red Clearance Interval (R _c), s	2.0	2.0	2.0	2.0	1.0	2.6	1.0	2.3
Minimum Green (G _{min}), s	7	20	7	20	5	7	5	7
Start-Up Lost Time (I _t), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Extension of Effective Green (e), s	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Passage (PT), s	3.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Recall Mode	Off	Min	Off	Min	Off	Off	Off	Off
Dual Entry	No	Yes	No	Yes	No	Yes	No	Yes
Walk (Walk), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Clearance Time (PC), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Multimodal Information	EB			WB			NB			SB		
85th % Speed / Rest in Walk / Corner Radius	0	No	25									
Walkway / Crosswalk Width / Length, ft	9.0	12	0	9.0	12	0	9.0	12	0	9.0	12	0
Street Width / Island / Curb	0	0	No									
Width Outside / Bike Lane / Shoulder, ft	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0	12	5.0	2.0
Pedestrian Signal / Occupied Parking	No	0.50										

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	CPH			Duration, h	0.25
Analyst	GR	Analysis Date	11/1/2013	Area Type	Other
Jurisdiction	Volusia County	Time Period	PM Peak	PHF	0.95
Intersection	Saxon & Sterling Silver	Analysis Year	Future Total Improved	Analysis Period	1 > 7:00
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus				
Project Description	W9401.1-Retail Deltona				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	326	1169	10	8	739	106	9	0	11	282	0	123

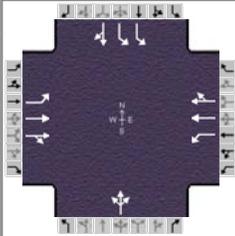
Signal Information														
Cycle, s	94.2	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.4	4.3	41.7	11.4	3.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0				
				Red	2.0	2.0	2.0	2.3	2.6	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		12.0		10.0
Phase Duration, s	18.7	59.0	7.9	48.2		9.6		17.7
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.6		6.3
Max Allow Headway (MAH), s	4.1	5.0	3.1	5.0		4.3		4.3
Queue Clearance Time (g _s), s	11.2	22.9	2.2	19.0		3.2		9.8
Green Extension Time (g _e), s	1.0	19.2	0.0	22.7		0.0		1.6
Phase Call Probability	1.00	1.00	0.20	1.00		0.42		1.00
Max Out Probability	0.01	0.41	0.00	0.25		0.02		0.01

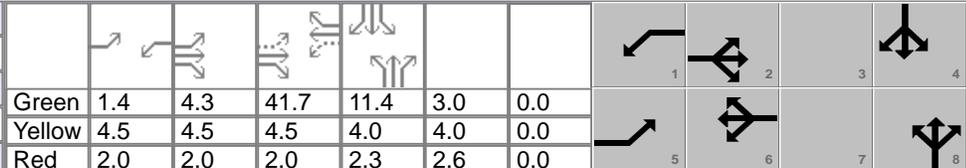
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	343	621	620	8	455	435		21		297	129	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1857	1774	1863	1780		1661		1723	1579	
Queue Service Time (g _s), s	9.2	20.9	20.9	0.2	17.0	17.0		1.2		7.8	7.4	
Cycle Queue Clearance Time (g _c), s	9.2	20.9	20.9	0.2	17.0	17.0		1.2		7.8	7.4	
Green Ratio (g/C)	0.59	0.56	0.56	0.46	0.44	0.44		0.03		0.12	0.12	
Capacity (c), veh/h	470	1039	1036	243	825	788		52		417	191	
Volume-to-Capacity Ratio (X)	0.730	0.598	0.598	0.035	0.551	0.552		0.402		0.711	0.677	
Available Capacity (c _a), veh/h	711	1186	1182	405	1483	1417		176		914	419	
Back of Queue (Q), veh/ln (95th percentile)	6.1	12.5	12.5	0.2	11.3	10.9		1.0		6.1	5.5	
Queue Storage Ratio (RQ) (95th percentile)	0.53	0.00	0.00	0.01	0.00	0.00		0.00		0.99	0.00	
Uniform Delay (d ₁), s/veh	13.9	13.8	13.8	14.7	19.4	19.4		44.8		39.8	39.6	
Incremental Delay (d ₂), s/veh	2.2	0.9	0.9	0.0	0.8	0.9		4.9		2.3	4.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0	
Control Delay (d), s/veh	16.1	14.7	14.7	14.7	20.2	20.2		49.6		42.1	43.8	
Level of Service (LOS)	B	B	B	B	C	C		D		D	D	
Approach Delay, s/veh / LOS	15.0	B		20.2	C		49.6	D		42.6	D	
Intersection Delay, s/veh / LOS	20.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.1	B	2.4	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	1.8	A	1.2	A	0.5	A	1.2	A

HCS 2010 Signalized Intersection Intermediate Values

General Information					Intersection Information		
Agency	CPH				Duration, h	0.25	
Analyst	GR	Analysis Date	11/1/2013		Area Type	Other	
Jurisdiction	Volusia County		Time Period	PM Peak	PHF	0.95	
Intersection	Saxon & Sterling Silver		Analysis Year	Future Total Improved	Analysis Period	1 > 7:00	
File Name	Saxon Blvd & Sterling Silver Blvd Improved.xus						
Project Description	W9401.1-Retail Deltona						

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	326	1169	10	8	739	106	9	0	11	282	0	123

Signal Information															
Cycle, s	94.2	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	1.4	4.3	41.7	11.4	3.0	0.0					
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.5	4.5	4.5	4.0	4.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.3	2.6	0.0					

Saturation Flow / Delay	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Lane Width Adjustment Factor (f_w)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heavy Vehicle Adjustment Factor (f_{HV})	0.980	0.980	1.000	0.980	0.980	1.000	1.000	0.980	1.000	0.980	0.980	1.000
Approach Grade Adjustment Factor (f_g)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Parking Activity Adjustment Factor (f_p)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Bus Blockage Adjustment Factor (f_{bb})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Area Type Adjustment Factor (f_a)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Lane Utilization Adjustment Factor (f_{LU})	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	0.971	1.000	1.000
Left-Turn Adjustment Factor (f_{LT})	0.952	0.000		0.952	0.000			0.892			0.000	
Right-Turn Adjustment Factor (f_{RT})		0.997			0.956			0.000			0.847	
Left-Turn Pedestrian Adjustment Factor (f_{LPB})	1.000			1.000			1.000			1.000		
Right-Turn Ped-Bike Adjustment Factor (f_{RPB})			1.000			1.000			1.000			1.000
Movement Saturation Flow Rate (s), veh/h	1774	3688		1774	3198			0			0	
Platoon Ratio (R_p)	1.00	1.00		1.00	1.00			0.00			1.00	
Proportion of Vehicles Arriving on Green (P)												
Incremental Delay Factor (k)	0.11	0.17	0.17	0.04	0.15	0.15		0.11			0.11	0.11

Signal Timing / Movement Groups	EBL	EBT/R	WBL	WBT/R	NBL	NBT/R	SBL	SBT/R
Lost Time (t_L)	6.5	6.5	6.5	6.5		6.3		5.0
Green Ratio (g/C)	0.59	0.56	0.46	0.44		0.03		0.12
Permitted Saturation Flow Rate (s_p), veh/h/ln	623	0	447	0		0		1774
Shared Saturation Flow Rate (s_{sh}), veh/h/ln								
Permitted Effective Green Time (g_p), s	43.7	0.0	41.7	0.0		0.0		0.0
Permitted Service Time (g_u), s	24.8	0.0	29.7	0.0		0.0		0.0
Permitted Queue Service Time (g_{ps}), s	23.3		0.2					
Time to First Blockage (g_i), s	0.0	0.0	0.0	0.0		0.0		0.0
Queue Service Time Before Blockage (g_{fs}), s								
Protected Right Saturation Flow (s_R), veh/h/ln								
Protected Right Effective Green Time (g_R), s								

Multimodal	EB			WB			NB			SB		
Pedestrian F_w / F_v	1.389	0.00		1.710	0.00		2.107	0.00		2.107	0.00	
Pedestrian F_s / F_{delay}	0.000	0.089		0.000	0.108		0.000	0.161		0.000	0.152	
Pedestrian M_{corner} / M_{cw}												
Bicycle c_b / d_b	1115.33	9.21		885.31	14.63			55.00		69.44	43.88	
Bicycle F_w / F_v	-3.64	1.31		-3.64	0.74		-3.64	0.03		-3.64	0.70	

APPENDIX F

TURN LANE DATA REFERENCES

AM Peak Left-Turn Warrant Analysis

Left-Turn Lane Warrant Requirements adjacent to the development		Intersection					
		Sterling Silver Blvd and Alabaster Way NBLT		Sterling Silver Blvd and Alabaster Way SBLT		Sterling Silver Blvd and Driveway 4 NBLT	
		Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?
AM Peak Hour Inbound Left-Turn Volume	>= 25 veh	123*	Yes	0	No	14	No
Average Daily Trip Ends of the driveway	>= 1,000 veh	2003	Yes	0	No	413	No

* - Exceeds 75 veh in the peak hour - may be required to provide additional storage

AM Peak Right-Turn Warrant Analysis

Right-Turn Lane Warrant Requirements adjacent to the development		Intersection									
		Saxon Blvd and Driveway 1 WBRT		Saxon Blvd and Driveway 2 WBRT		Sterling Silver Blvd and Alabaster Way (Driveway 3) NBRT		Sterling Silver Blvd and Alabaster Way (Driveway 3) SBRT		Sterling Silver Blvd and Driveway 4 SBRT	
		Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?
Speed Limit	>= 35 mph	40 mph	Yes	40 mph	Yes	25 mph	No	25 mph	No	25 mph	No
AM Peak Hour Right-Turn Volume	>= 100 veh	46	No	73	No	135**	Yes	0	No	0	No

** - Exceeds 150 veh in the peak hour-may be required to provide additional storage

PM Peak Left-Turn Warrant Analysis

Left-Turn Lane Warrant Requirements adjacent to the development		Intersection					
		Sterling Silver Blvd and Alabaster Way NBLT		Sterling Silver Blvd and Alabaster Way SBLT		Sterling Silver Blvd and Driveway 4 NBLT	
		Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?
PM Peak Hour Inbound Left-Turn Volume	>= 25 veh	136*	Yes	0	No	14	No
Average Daily Trip Ends of the driveway	>= 1,000 veh	2003	Yes	0	No	413	No

* - Exceeds 75 veh in the peak hour - may be required to provide additional storage

PM Peak Right-Turn Warrant Analysis

Right-Turn Lane Warrant Requirements adjacent to the development		Intersection									
		Saxon Blvd and Driveway 1 WBRT		Saxon Blvd and Driveway 2 WBRT		Sterling Silver Blvd and Alabaster Way (Driveway 3) NBRT		Sterling Silver Blvd and Alabaster Way (Driveway 3) SBRT		Sterling Silver Blvd and Driveway 4 SBRT	
		Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?	Actual	Warrant Met?
Speed Limit	>= 35 mph	40 mph	Yes	40 mph	Yes	25 mph	No	25 mph	No	25 mph	No
PM Peak Hour Right-Turn Volume	>= 100 veh	64	No	46	No	242**	Yes	0	No	0	No

** - Exceeds 150 veh in the peak hour-may be required to provide additional storage

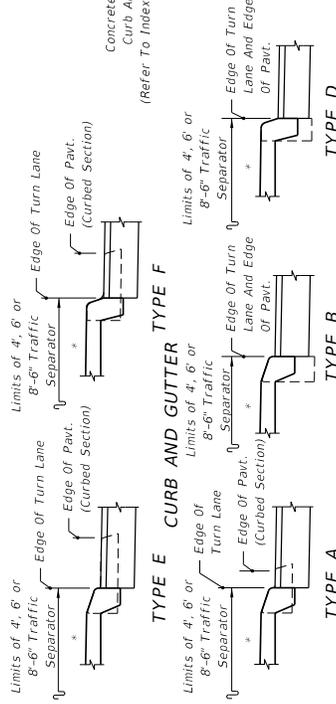
TURN LANES • CURBED AND UNCURBED MEDIANS				
Design Speed (mph)	URBAN CONDITIONS		RURAL CONDITIONS	
	Clearance Distance L_1	Brake To Stop Distance L_2	Total Decel. Distance L	Clearance Distance L_1
35	70'	75'	145'	110'
40	80'	75'	155'	120'
45	85'	100'	185'	135'
50	40/44	105'	240'	160'
55	48	125'	—	195'
60	52	145'	—	230'
65	55	170'	—	270'

DESIGN NOTES

- Basis for turn lane configurations:
 - Informed Driver.
 - Stop condition (With Or Without Stop Control).
 - Wet Pavement.
 - Reaction preceding entry point.
 - Minimum braking distance for urban conditions.
 - 75 min. for L_2 .
 - Comfortable deceleration rates for rural conditions (ASHRO 2001 threshold rate of 11.2 ft./s).

GENERAL NOTES

- The plan views shown are for turn lane taper shapes and dimensional purposes only, they do not prescribe the use of curb, curb and gutter, shoulders nor separators specifically to either rural or urban conditions.
- Total deceleration distances must not be reduced except where lesser values are imposed by unrelocatable control points.
- Right turn lane tapers and distances identical to left turn lanes under stop control conditions. Right turn lane tapers and/or distances are site specific under Free Flow or yield conditions.
- These left turn configurations apply to continuous left turn lanes only where specifically called for in the plans.
- For pavement markings see Index No. 17346.



For Curb And Gutter Types, See Index No. 300
 * Option I Separators Shown (Refer To Index No. 302)

MEDIAN CURB AND TRAFFIC SEPARATOR JUNCTURE DETAILS

DESCRIPTION:

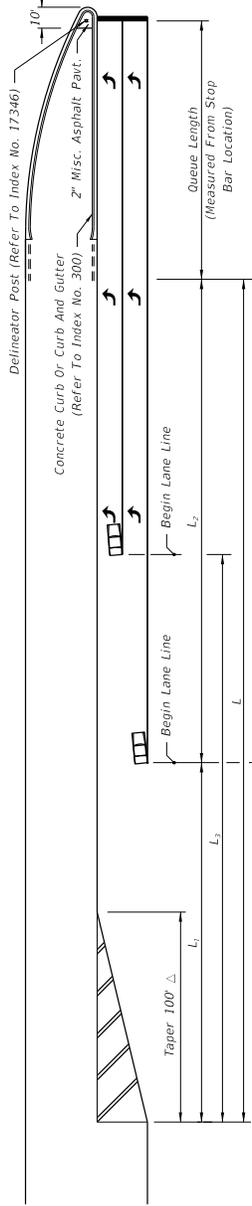
LAST REVISION	07/01/05
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FDOT DESIGN STANDARDS
2013

TURN LANES

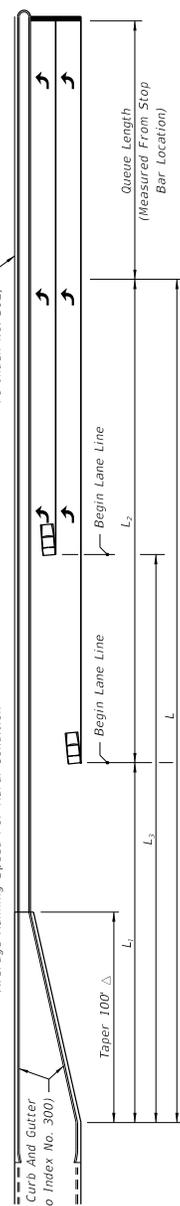
INDEX NO. 301

SHEET NO. 7



FLUSH AND/OR CURBED SEPARATION

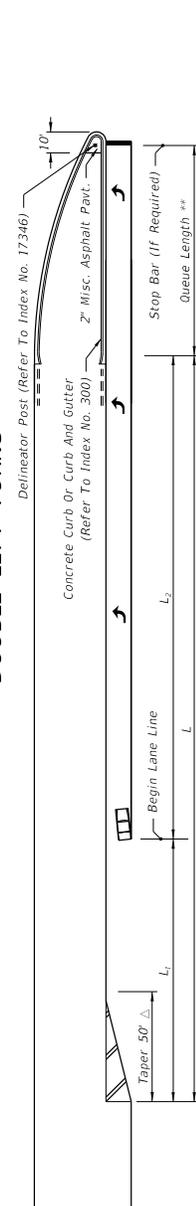
Brakes Applied After Turning Vehicle Clears Through Lane; Entry Speed: 10 mph Below Design Speed For Urban Condition Average Running Speed For Rural Condition



RAISED SEPARATION

Brakes Applied After Turning Vehicle Clears Through Lane; Entry Speed: 10 mph Below Design Speed For Urban Condition Average Running Speed For Rural Condition

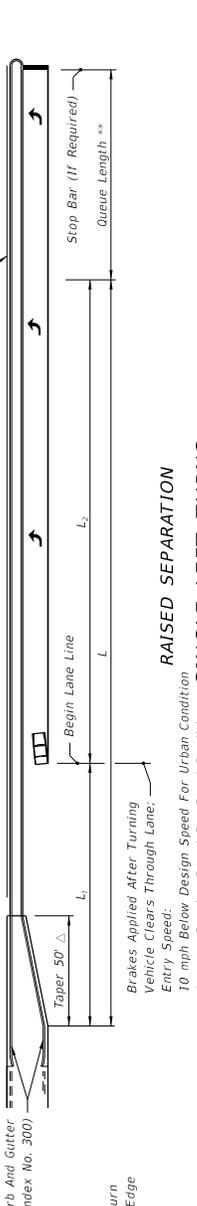
DOUBLE LEFT TURNS



Brakes Applied After Turning Vehicle Clears Through Lane; Entry Speed: 10 mph Below Design Speed For Urban Condition Average Running Speed For Rural Condition

FLUSH AND/OR CURBED SEPARATION

Brakes Applied After Turning Vehicle Clears Through Lane; Entry Speed: 10 mph Below Design Speed For Urban Condition Average Running Speed For Rural Condition



RAISED SEPARATION

Brakes Applied After Turning Vehicle Clears Through Lane; Entry Speed: 10 mph Below Design Speed For Urban Condition Average Running Speed For Rural Condition

SINGLE LEFT TURNS

- The length of taper may be increased to L_1 for single left turns and L_2 for double left turns when:
 - Left turn queue vehicles are adequately provided for within the design queue length.
 - Through vehicle queues will not block access to left turn lane.
 - Approved by District Design Engineer.

Turn lanes requirements.

- a. *Turn lane requirements immediately adjacent to the development.*
 - 1. A left-turn lane of 12 feet in width, conforming to Table VI, shall be provided at each driveway when the average daily trip ends of the driveway is 1,000 vehicles or more and/or the average peak hour inbound left-turn volume is 25 vehicles or more. Increased queue lengths (waiting vehicle storage) may be required by the CTE to provide for additional storage, based upon a peak hour entering volume greater than 75 vehicles in the peak hour. No queue length is required if the peak hour entering volume is 75 vehicles in the peak hour or less.
 - 2. A right-turn lane of 12 feet in width, conforming to Table VI shall be provided at each driveway when the speed limit equals or exceeds 35 miles per hour or if the development will generate 100 or more right-turn movements during the peak hour. Increased storage and transition queue lengths (waiting vehicle storage) may be required by the CTE to provide for additional storage, based upon a peak hour entering volume greater than 150 vehicles in the peak hour. No queue length is required if the peak hour entering volume is 150 vehicles in the peak hour or less.
- b. *Additional improvements immediately adjacent to the development.* At intersections, with a thoroughfare which abut the development, the following improvements shall be provided:
 - 1. A right-turn lane of 12 feet in width, conforming to subsection (e)(5) and Table VI, shall be provided if the development will generate 100 or more right turns during the peak hour.
 - 2. A left-turn lane of 12 feet in width conforming to subsection (e)(5) and Table VI, shall be provided if the street's speed limit is 35 miles per hour or greater and if the development will generate 25 or more left turns during the peak hour.
- c. *Through lane pavement transition tapers.* A through lane pavement transition taper shall be provided on all streets and roadways where the through lane is offset to provide for right turn lanes, left turn lanes, lane width changes and an increase or reduction in the number of through lanes. The through lane pavement transition taper length shall be based upon FDOT Standard Index #526 and 17346, and calculated using the following formulas:
 For design speeds less than or equal to 40 m.p.h. use:

$$L = \frac{WS^2}{60}$$

For design speeds greater than or equal to 45 m.p.h. use:

L	=	WS
L	=	the pavement transition taper length in feet.
W	=	the width

	of the through lane lateral transition in feet (offset).
S	= the design speed (must be at least five m.p.h. greater than the posted speed limit.)

TABLE VI. TURN LANE DIMENSIONAL REQUIREMENTS

Speed Limit (mph)	Urban Section Deceleration Length (feet)*	Rural Section Deceleration Length (feet)*
30	145	145
<u>35</u>	155	155
40	185	185
45	240	320
50	N/A**	385
55	N/A**	455

* ;sz=8.5q;Includes minimum 50 feet bay taper in accordance with FDOT Standard Index #301 and 526.

** ;sz=8.5q;Curbing is not permitted for these speed limits, use rural section.

d. *Modifications.* Required storage and transition lengths may be modified where conditions warrant and such modifications are acceptable to the DRC.

APPENDIX G
REFERENCES



Volusia County Road Program

5 Year Road Program

IMPACT FEE ZONE 1 - Northeast Volusia

Project	Section	Scope	PRIOR YEAR			FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17		
			ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON
LPGA Blvd Widening		LOGT 4 LN		750		1750														
"		BOND																		
"		TRIP																		
"		CIGP																		
Orange Av - Reconstruct/Resurface		LOGT Resurfacing																		
"		ONE Repairs																		
"		CITY Repairs																		
Utility Repairs		BOND 4 LN		400	0	550														
Tymer Creek Rd Widening		LOGT 4 LN			0															
"		CITY																		
"		UTILITIES																		
Veterans Memorial Bridge (Orange Av) over Halifax River		LAP Replace Bridge				3100														
Williamson Blvd Extension		LOGT 4 LN				738														
Debt Service for Bonds		IMPACT			600															
Debt Service for Bonds		LOGT			1455															
Loan Repayment for S.		LOGT 4 LN		0		738														
Williamson Blvd Extension		LOGT																		

BOND - Bond Funding CBIR - Community Budget Issue Request (State Funding) CIGP - County Incentive Grant Program (State Grant) CITY - Cost sharing with City DEV - Developer Funding FED.GRANT - Federal Grant
 IMPACT - Road Impact Fee Funding LAP - Local Agency Program (Federal Grant) LOGT - Local Option Gas Tax Funding ONE - One Cent Gas Tax Funding TRIP - Transportation Regional Incentive Program (State Grant)

IMPACT FEE ZONE 2 - Southeast Volusia

Project	Section	Fund	Scope	PRIOR YEAR			FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17		
				ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON
Pioneer Trail at Turnbull Bay Rd Intersection		LAP	Intersection		300																
"		LOGT	"		47	0															
Tenth St Widening		BOND 4 LN	Myrtle Av to US 1		80	150	0														
"		CBIR	"				0														
Turnbull Bay Rd Bridge Replacement over Turnbull Creek		LOGT	Replace Bridge		50																
"		LAP	"		576																
Debt Service for Bonds		IMPACT					538														
Debt Service for Bonds		LOGT																			

BOND - Bond Funding CBIR - Community Budget Issue Request (State Funding) CIGP - County Incentive Grant Program (State Grant) CITY - Cost sharing with City DEV - Developer Funding FED.GRANT - Federal Grant
 IMPACT - Road Impact Fee Funding LAP - Local Agency Program (Federal Grant) LOGT - Local Option Gas Tax Funding ONE - One Cent Gas Tax Funding TRIP - Transportation Regional Incentive Program (State Grant)



Volusia County Road Program

5 Year Road Program

IMPACT FEE ZONE 3 - Southwest Volusia

Project	Section	Fund	Scope	PRIOR YEAR			FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17			
				ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	
Howland Blvd Widening	Courtland Blvd to N of SR415	BOND	4 LN	50			100			4870												
"	"	TRIP	"							5130												
"	3 Lining of Ft Smith east & west of Howland	CITY	"							540												
Saxon Blvd Medians/6 Lanes	Enterprise Rd to I-4	BOND	6 LN/Median							2750												
"	"	CIGP	"							1427												
"	"	TRIP	"							16												
Debt Service for Bonds		IMPACT								300											300	
Debt Service for Bonds		LOGT								1608												1608

BOND - Bond Funding CBIR - Community Budget Issue Request (State Funding) CIGP - County Incentive Grant Program (State Grant) CITY - Cost sharing with City DEV - Developer Funding FED GRANT - Federal Grant
 IMPACT - Road Impact Fee Funding LAP - Local Agency Program (Federal Grant) LOGT - Local Option Gas Tax Funding ONE - One Cent Gas Tax Funding TRIP - Transportation Regional Incentive Program (State Grant)

IMPACT FEE ZONE 4 - Northwest Volusia

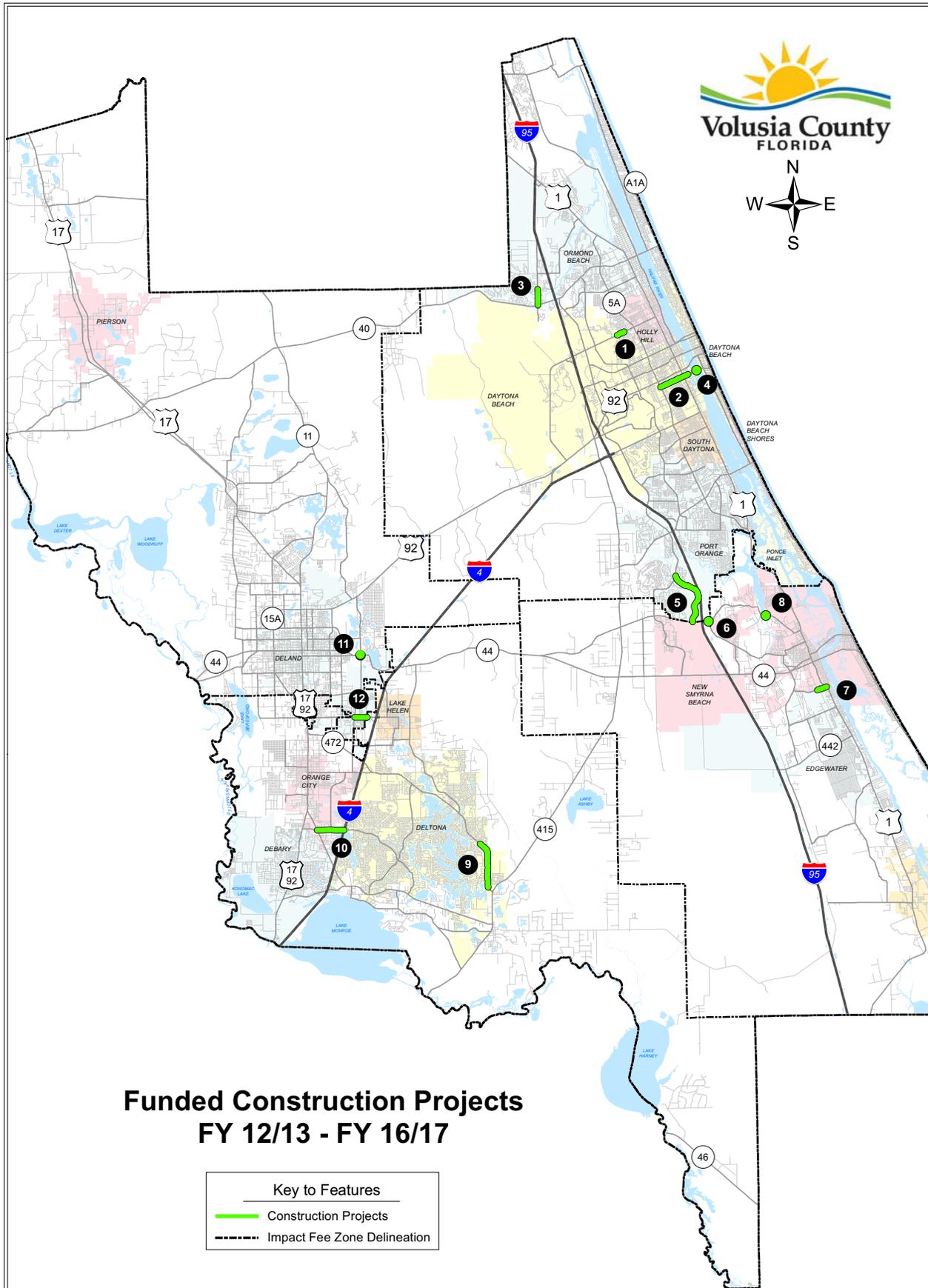
Project	Section	Fund	Scope	PRIOR YEAR			FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17			
				ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	
Kepler Rd at SR44	Kepler N 1000/SR44 E to Lk Winnemissett	IMPACT	Intersection				500	2000				2979										
"	"	CIGP	"									821										
Orange Camp Rd Widening	MILK Blvd to W of I-4 incl frontage rd stubout	IMPACT	4 LN							0			440									
"	"	BOND	"				185	774		0		0	4060									
Debt Service for Bonds		IMPACT								392												392

BOND - Bond Funding CBIR - Community Budget Issue Request (State Funding) CIGP - County Incentive Grant Program (State Grant) CITY - Cost sharing with City DEV - Developer Funding FED GRANT - Federal Grant
 IMPACT - Road Impact Fee Funding LAP - Local Agency Program (Federal Grant) LOGT - Local Option Gas Tax Funding ONE - One Cent Gas Tax Funding TRIP - Transportation Regional Incentive Program (State Grant)

MISCELLANEOUS

Project	Section	Fund	Scope	PRIOR YEAR			FY 12/13			FY 13/14			FY 14/15			FY 15/16			FY 16/17		
				ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON	ENG	R/W	CON
Advanced Engineering & Permitting		LOGT					500					500									500
"		IMPACT ZONE 1																			
"		IMPACT ZONE 2																			
"		IMPACT ZONE 3																			
"		IMPACT ZONE 4																			
Advanced Right-of-Way Acquisition		LOGT								500		500									500
"		IMPACT ZONE 1																			
"		IMPACT ZONE 2																			
"		IMPACT ZONE 3																			
"		IMPACT ZONE 4																			
Major Bridge Repairs		LOGT		68			685	125		325		200	50		200	50					200
Countywide Sidewalks (to be determined)		ONE					250			250		250			250						250
Resurfacing (annual contract)		ONE					4294			1850		1900	1950		2000	2000					2050
"		LOGT					850			200		850	850		850	850					850
Railroad Crossings		LOGT					100			100		100	100		100	100					100
Safety Projects, county wide (to be determined)		LOGT					1000			1000		1000	1000		1000	1000					1000

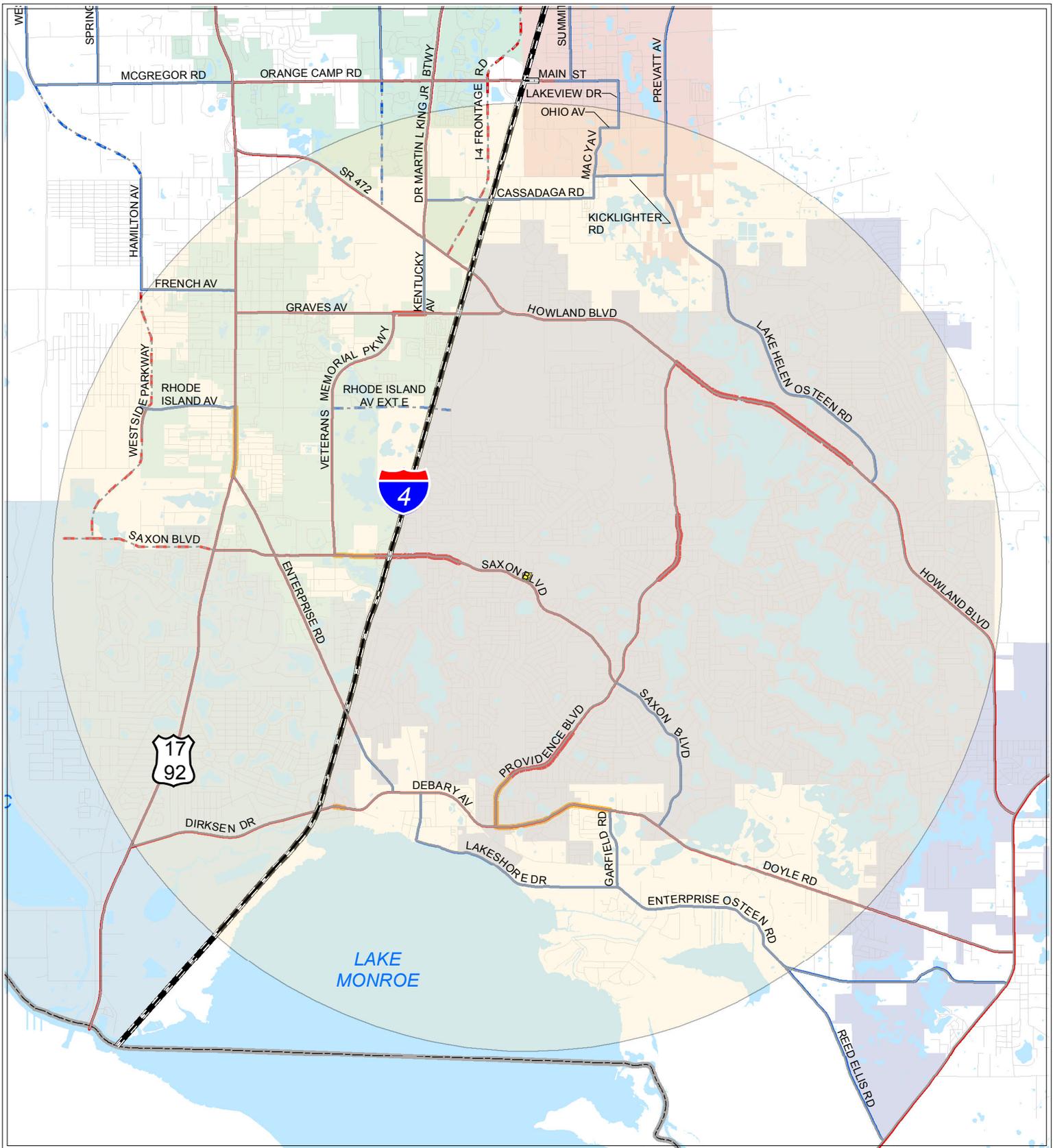
BOND - Bond Funding CBIR - Community Budget Issue Request (State Funding) CIGP - County Incentive Grant Program (State Grant) CITY - Cost sharing with City DEV - Developer Funding FED GRANT - Federal Grant
 IMPACT - Road Impact Fee Funding LAP - Local Agency Program (Federal Grant) LOGT - Local Option Gas Tax Funding ONE - One Cent Gas Tax Funding TRIP - Transportation Regional Incentive Program (State Grant)



Funded Construction Projects FY 12/13 - FY 16/17

Key to Features	
	Construction Projects
	Impact Fee Zone Delineation

Road Name	Limits	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
1 LPGA Blvd Widening	Jimmy Ann Dr to E of Derbyshire Rd	\$ 2,001,000				
2 Orange Av Reconstruction	Nova Rd to Beach St	\$ 1,000,000				
3 Tymber Creek Rd Widening	SR 40 to Peruvian Ln	\$ 6,133,000				
4 Veterans Mem Bridge Replacement over Halifax River				\$47,950,000		
5 Williamson Blvd Extension	Airport Rd to Pioneer Trl		\$ 9,062,000			
6 Pioneer Trl at Turnbull Bay Rd	Intersection	\$ 1,585,000				
7 Tenth St Widening	Myrtle Av to US 1	\$ 7,275,000				
8 Turnbull Bay Bridge Replacement over Turnbull Creek			\$ 3,016,000			
9 Howland Blvd Widening	Courtland Blvd to N of SR 415	\$10,000,000				
10 Saxon Blvd Medians	Enterprise Rd to I-4	\$ 4,193,000				
11 Kepler Rd at SR 44	Intersection		\$ 3,800,000			
12 Orange Camp Rd Widening	MLK Blvd to W of I-4, incl. frontage road stubout	\$ 4,500,000				

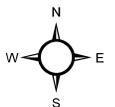


Legend

- buffer
- 8130-78-00-0010
- Hydrology
- LOS2011_NearCritical
- LOS2011_Critical

Impact Area - 5 mile radius

8130-78-00-0010



COUNTY OF VOLUSIA

Road Program

CAPITAL IMPROVEMENT EXPENDITURE

Project Title	Prior Years	FY 2012-13 Year 1	FY 2013-14 Year 2	FY 2014-15 Year 3	FY 2015-16 Year 4	FY 2016-17 Year 5	Total Amount
Advanced Permits & Engineering	0	500,000	500,000	500,000	500,000	500,000	2,500,000
Advanced R/W Acquisition	0	500,000	500,000	500,000	500,000	500,000	2,500,000
Bridge Repair Program	0	450,000	250,000	250,000	250,000	250,000	1,450,000
Countywide Safety Projects	0	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000
Howland Bl-Courtland-Sr415	1,644,038	10,640,000	0	0	0	0	12,284,038
Kepler-Sr44	322	2,500,000	3,800,000	0	0	0	6,300,322
LPGA Bl-Jimmy Ann-Nova 5 Lane	5,103,675	3,893,000	0	0	0	0	8,996,675
Orange Camp Rd - MLK to I-4 incl frontage Rd stubout	65,111	959,000	4,500,000	0	0	0	5,524,111
Pioneer Trail/Turnbull Bay Rd	344,764	1,585,000	0	0	0	0	1,929,764
Plymouth Av-15A-Us1792 4 Ln	0	0	950,000	1,500,000	0	0	2,450,000
Saxon Blvd 6 LN Median	150,414	4,193,726	0	0	0	0	4,344,140
Signal Upgrade	500,000	250,000	250,000	250,000	250,000	250,000	1,750,000
Tenth St Phase 2 - Myrtle Ave to US 1	2,327,792	7,275,000	0	0	0	0	9,602,792
Tymber Ck Rd-Sr40-Airport Rd	5,049,030	7,210,000	0	0	0	0	12,259,030
Williamson Blvd Ext	0	738,000	1,100,000	1,100,000	1,100,000	1,100,000	5,138,000
TOTAL EXPEDITURES	15,185,146	41,693,726	12,850,000	5,100,000	3,600,000	3,600,000	82,028,872

REVENUE SOURCE

Budget Object Name	Prior Years	FY 2012-13 Year 1	FY 2013-14 Year 2	FY 2014-15 Year 3	FY 2015-16 Year 4	FY 2016-17 Year 5	Total Amount
Bond Funded Road Program	35,360,140	0	0	0	0	0	35,360,140
City of Deltona	0	540,000	0	0	0	0	540,000
City of Ormond Beach	0	277,000	0	0	0	0	277,000
Federal Funds	61,057	185,000	0	0	0	0	246,057
Gas Tax-Local Option	5,889,557	6,289,000	3,600,000	3,600,000	3,600,000	3,600,000	26,578,557
Road Impact Fees Z4/NW	11,392	2,500,000	4,369,000	1,500,000	0	0	8,380,392
State Funds	0	9,825,726	821,000	0	0	0	10,646,726
TOTAL REVENUES	41,322,146	19,616,726	8,790,000	5,100,000	3,600,000	3,600,000	82,028,872

COUNTY OF VOLUSIA

Saxon Blvd 6 LN Median

Project No.: 5585
 CIP Category: Road Program
 Sub Category/Class: Roads / New Construction - 6 Lane
 Project Request Code: 3347108632

CIP Class: A - Concurrency
 Impact Fee Zone/Quad: 3
 Location: Orange City
 Account Number: 334-710-8632

Description/Justification for Capital and Operating

Saxon Boulevard from Enterprise Road to I-4, 6 laning and median. This project includes \$1,427,000 in County Incentive Grant Program (CIGP) Funds and \$16,000 in Transportation Regional Incentive Program (TRIP) Funds from a FDOT grant. A Local Match of 50% is also included. The project length is 1.3 miles.

Relationship To Other Projects/Plans:

Consistent with the Volusia County Five Year Road Program.

CAPITAL IMPROVEMENT EXPENDITURE:

Budget Object Name	Prior Years	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	Total Years 1-5	Total Amount
Construction Projects	150,414	4,193,726	0	0	0	0	4,193,726	4,344,140
Total Expenses	150,414	4,193,726	0	0	0	0	4,193,726	4,344,140

REVENUE SOURCE:

Budget Object Name	Prior Years	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	Total Years 1-5	Total Amount
Bond Funded Road Program	2,900,414	0	0	0	0	0	0	2,900,414
State Funds	0	1,443,726	0	0	0	0	1,443,726	1,443,726
Total Revenues	2,900,414	1,443,726	0	0	0	0	1,443,726	4,344,140

APPENDIX H

TRAFFIC SIGNAL WARRANT ANALYSIS

LOCATION: Saxon Blvd west of Sterling Silver Blvd
SPECIFIC LOCATION: 200 ft from Sterling Silver Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213813
DIRECTION: EB
DATE: Sep 11 2013 - Sep 11 2013

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday	Sat	Sun	Average Week	Average Week Profile
			11-Sep-13			Hourly Traffic			Hourly Traffic	
12:00 AM			95			95			95	
1:00 AM			52			52			52	
2:00 AM			34			34			34	
3:00 AM			21			21			21	
4:00 AM			26			26			26	
5:00 AM			55			55			55	
6:00 AM			146			146			146	
7:00 AM			488			488			488	
8:00 AM			379			379			379	
9:00 AM			377			377			377	
10:00 AM			483			483			483	
11:00 AM			500			500			500	
12:00 PM			671			671			671	
1:00 PM			644			644			644	
2:00 PM			683			683			683	
3:00 PM			819			819			819	
4:00 PM			955			955			955	
5:00 PM			1142			1142			1142	
6:00 PM			860			860			860	
7:00 PM			704			704			704	
8:00 PM			611			611			611	
9:00 PM			470			470			470	
10:00 PM			253			253			253	
11:00 PM			176			176			176	
Day Total			10644			10644			10644	
% Weekday Average			100.0%							
% Week Average			100.0%			100.0%				
AM Peak			11:00 AM			11:00 AM			11:00 AM	
Volume			500			500			500	
PM Peak			5:00 PM			5:00 PM			5:00 PM	
Volume			1142			1142			1142	
<i>Comments:</i>										

		QC JOB #: 11213813 DIRECTION: WB DATE: Sep 11 2013 - Sep 11 2013									
LOCATION: Saxon Blvd west of Sterling Silver Blvd SPECIFIC LOCATION: 200 ft from Sterling Silver Blvd CITY/STATE: Deltona, FL		Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
Start Time	11-Sep-13										
12:00 AM	42	42	42	42	42	42	42			42	
1:00 AM	27	27	27	27	27	27	27			27	
2:00 AM	21	21	21	21	21	21	21			21	
3:00 AM	38	38	38	38	38	38	38			38	
4:00 AM	107	107	107	107	107	107	107			107	
5:00 AM	331	331	331	331	331	331	331			331	
6:00 AM	751	751	751	751	751	751	751			751	
7:00 AM	1093	1093	1093	1093	1093	1093	1093			1093	
8:00 AM	846	846	846	846	846	846	846			846	
9:00 AM	659	659	659	659	659	659	659			659	
10:00 AM	569	569	569	569	569	569	569			569	
11:00 AM	596	596	596	596	596	596	596			596	
12:00 PM	562	562	562	562	562	562	562			562	
1:00 PM	679	679	679	679	679	679	679			679	
2:00 PM	578	578	578	578	578	578	578			578	
3:00 PM	643	643	643	643	643	643	643			643	
4:00 PM	589	589	589	589	589	589	589			589	
5:00 PM	617	617	617	617	617	617	617			617	
6:00 PM	532	532	532	532	532	532	532			532	
7:00 PM	441	441	441	441	441	441	441			441	
8:00 PM	377	377	377	377	377	377	377			377	
9:00 PM	217	217	217	217	217	217	217			217	
10:00 PM	114	114	114	114	114	114	114			114	
11:00 PM	66	66	66	66	66	66	66			66	
Day Total	10495	10495	10495	10495	10495	10495	10495			10495	
% Weekday Average	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
% Week Average	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
AM Peak	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM			7:00 AM	
Volume	1093	1093	1093	1093	1093	1093	1093			1093	
PM Peak	1:00 PM	1:00 PM	1:00 PM	1:00 PM	1:00 PM	1:00 PM	1:00 PM			1:00 PM	
Volume	679	679	679	679	679	679	679			679	
<i>Comments:</i>											

LOCATION: Sterling Silver Blvd north of Saxon Blvd
SPECIFIC LOCATION: 200 ft from Saxon Blvd
CITY/STATE: Deltona, FL

QC JOB #: 11213814
DIRECTION: SB
DATE: Sep 11 2013 - Sep 11 2013

Start Time	Mon	Tue	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM			3			3			3	
1:00 AM			0			0			0	
2:00 AM			0			0			0	
3:00 AM			2			2			2	
4:00 AM			2			2			2	
5:00 AM			10			10			10	
6:00 AM			16			16			16	
7:00 AM			36			36			36	
8:00 AM			27			27			27	
9:00 AM			28			28			28	
10:00 AM			21			21			21	
11:00 AM			30			30			30	
12:00 PM			21			21			21	
1:00 PM			23			23			23	
2:00 PM			25			25			25	
3:00 PM			32			32			32	
4:00 PM			25			25			25	
5:00 PM			30			30			30	
6:00 PM			22			22			22	
7:00 PM			23			23			23	
8:00 PM			14			14			14	
9:00 PM			7			7			7	
10:00 PM			7			7			7	
11:00 PM			0			0			0	
Day Total			404			404			404	
% Weekday Average			100.0%							
% Week Average			100.0%			100.0%				
AM Peak			7:00 AM			7:00 AM			7:00 AM	
Volume			36			36			36	
PM Peak			3:00 PM			3:00 PM			3:00 PM	
Volume			32			32			32	
<i>Comments:</i>										

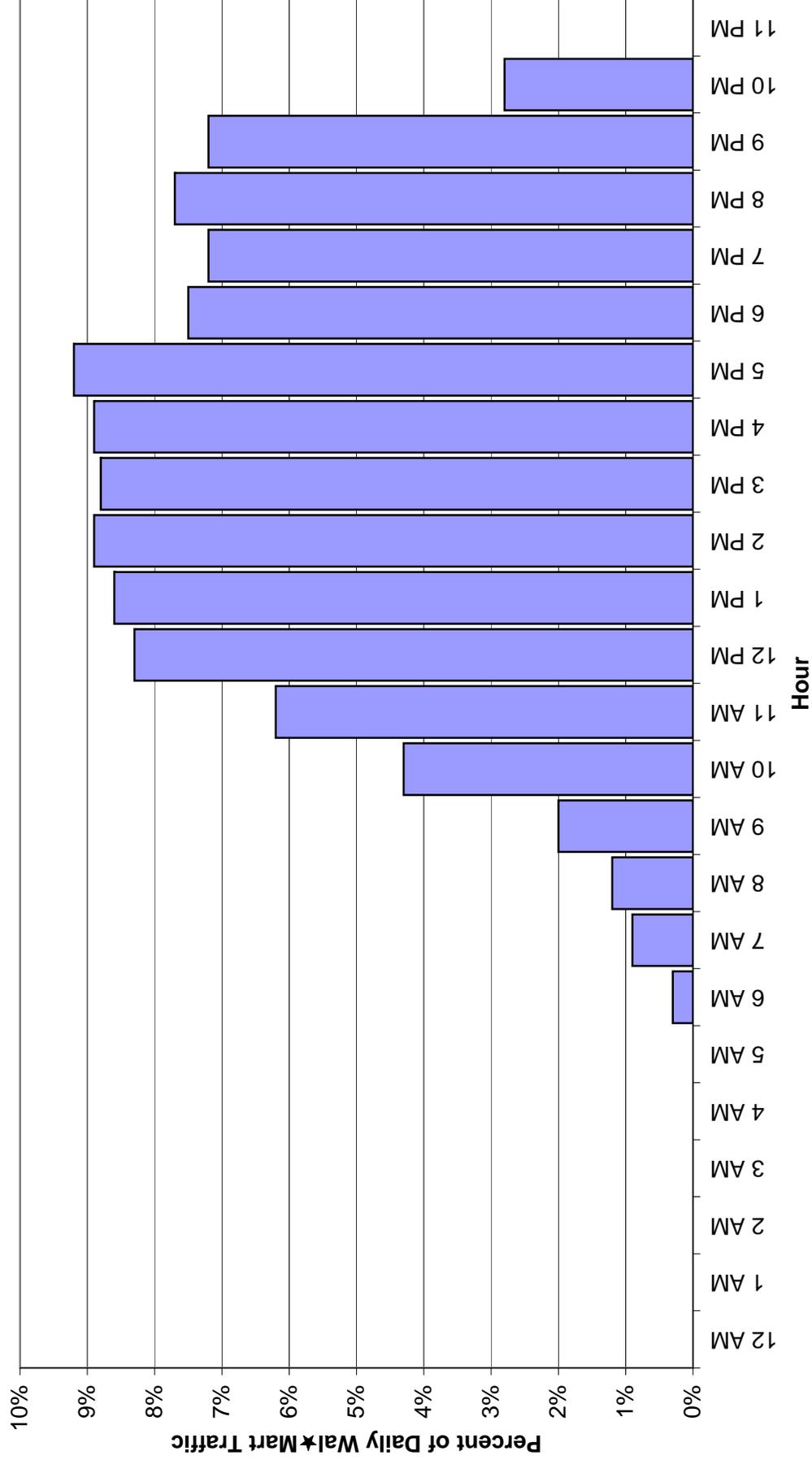
Hourly Variation in Shopping Center Traffic

(Based upon ITE Trip Generation, 9th Edition)

Time Interval	Percent of 24-Hour Entering Traffic	Percent of 24- Hour Exiting Traffic
12:00 AM to 1:00 AM	0.00%	0.00%
1:00 AM to 2:00 AM	0.00%	0.00%
2:00 AM to 3:00 AM	0.00%	0.00%
3:00 AM to 4:00 AM	0.00%	0.00%
4:00 AM to 5:00 AM	0.00%	0.00%
5:00 AM to 6:00 AM	0.00%	0.00%
6:00 AM to 7:00 AM	0.80%	0.30%
7:00 AM to 8:00 AM	2.00%	0.90%
8:00 AM to 9:00 AM	3.10%	1.20%
9:00 AM to 10:00 AM	5.50%	2.00%
10:00 AM to 11:00 AM	7.00%	4.30%
11:00 AM to 12:00 PM	8.40%	6.20%
12:00 PM to 1:00 PM	9.40%	8.30%
1:00 PM to 2:00 PM	8.20%	8.60%
2:00 PM to 3:00 PM	7.70%	8.90%
3:00 PM to 4:00 PM	7.80%	8.80%
4:00 PM to 5:00 PM	8.00%	8.90%
5:00 PM to 6:00 PM	8.40%	9.20%
6:00 PM to 7:00 PM	8.00%	7.50%
7:00 PM to 8:00 PM	7.90%	7.20%
8:00 PM to 9:00 PM	4.30%	7.70%
9:00 PM to 10:00 PM	1.80%	7.20%
10:00 PM to 11:00 PM	1.70%	2.80%
11:00 PM to 12:00 AM	0.00%	0.00%
	100.00%	100.00%

Hourly Variation in Shopping Center Traffic

(Based upon ITE Trip Generation, 9th Edition)



Shopping Center Hourly Trip Generation Determination

Daily Trip Generation:
Daily Outbound Left-Turning Traffic at Sterling Silver Blvd.
Daily SB Right-Turning Traffic

15,676	<-- Start Here
47%	
18%/26%	

Time Interval			Percent of Daily Volume	Total Trips
12:00 AM	to	1:00 AM	0.00%	0
1:00 AM	to	2:00 AM	0.00%	0
2:00 AM	to	3:00 AM	0.00%	0
3:00 AM	to	4:00 AM	0.00%	0
4:00 AM	to	5:00 AM	0.00%	0
5:00 AM	to	6:00 AM	0.00%	0
6:00 AM	to	7:00 AM	0.30%	11
7:00 AM	to	8:00 AM	0.90%	33
8:00 AM	to	9:00 AM	1.20%	44
9:00 AM	to	10:00 AM	2.00%	74
10:00 AM	to	11:00 AM	4.30%	158
11:00 AM	to	12:00 PM	6.20%	228
12:00 PM	to	1:00 PM	8.30%	306
1:00 PM	to	2:00 PM	8.60%	317
2:00 PM	to	3:00 PM	8.90%	328
3:00 PM	to	4:00 PM	8.80%	324
4:00 PM	to	5:00 PM	8.90%	328
5:00 PM	to	6:00 PM	9.20%	339
6:00 PM	to	7:00 PM	7.50%	276
7:00 PM	to	8:00 PM	7.20%	265
8:00 PM	to	9:00 PM	7.70%	284
9:00 PM	to	10:00 PM	7.20%	265
10:00 PM	to	11:00 PM	2.80%	103
11:00 PM	to	12:00 AM	0.00%	0
Totals:			100.00%	3,684

24-HOUR TUBE DATA

RAW DATA				PSCF DATA				SORTING							
TIME	EB	WB	TOTAL	TIME	EB	WB	TOTAL	TIME	EB	WB	TOTAL	TIME	EB	WB	TOTAL
12	95	42	137	12	105	46	151	17	1,256	679	1,935	33			
1	52	27	79	1	57	30	87	7	537	1,202	1,739	40			
2	34	21	55	2	37	23	61	16	1,051	648	1,698	28			
3	21	38	59	3	23	42	65	15	901	707	1,608	35			
4	26	107	133	4	29	118	146	18	946	585	1,531	24			
5	55	331	386	5	61	364	425	13	708	747	1,455	25			
6	146	751	897	6	161	826	987	14	751	636	1,387	28			
7	488	1,093	1,581	7	537	1,202	1,739	12	738	618	1,356	23			
8	379	846	1,225	8	417	931	1,348	8	417	931	1,348	30			
9	377	659	1,036	9	415	725	1,140	19	774	485	1,260	25			
10	483	589	1,072	10	531	626	1,157	11	550	656	1,206	33			
11	500	596	1,096	11	550	656	1,206	10	531	626	1,157	23			
12	671	562	1,233	12	738	618	1,356	9	415	725	1,140	31			
13	644	679	1,323	13	708	747	1,455	20	672	415	1,087	15			
14	683	578	1,261	14	751	636	1,387	6	161	826	987	18			
15	819	643	1,462	15	901	707	1,608	5	517	239	756	8			
16	955	589	1,544	16	1,051	648	1,698	28	61	364	425	11			
17	1,142	617	1,759	17	1,256	679	1,935	33	278	125	404	8			
18	860	532	1,392	18	946	585	1,531	24	194	73	266	0			
19	704	441	1,145	19	774	485	1,260	25	12	105	151	3			
20	611	377	988	20	672	415	1,087	15	29	118	146	2			
21	470	217	687	21	517	239	756	8	1	57	30	0			
22	253	114	367	22	278	125	404	8	3	23	42	2			
23	176	66	242	23	194	73	266	2	37	23	61	0			
TOTAL	10,644	10,495	21,139	TOTAL	11,708	11,545	23,253	TOTAL	11,708	11,545	23,253	444			

PEAK 8-HOURS				PEAK 4-HOURS			
TIME	EB	WB	TOTAL	TIME	EB	WB	TOTAL
7	537	1,202	1,739	7	537	1,202	1,739
12	738	618	1,356	15	901	707	1,608
13	708	747	1,455	16	1,051	648	1,698
14	751	636	1,387	17	1,256	679	1,935
15	901	707	1,608				
16	1,051	648	1,698				
17	1,256	679	1,935				
18	946	585	1,531				

PROJECT TRIPS

TIME	SB
7	33
12	306
13	317
14	328
15	324
16	328
17	339
18	276

TRAFFIC SIGNAL WARRANT SUMMARY

City: Deltona
 County: Volusia

Engineer: CPH, Inc.
 Date: September 20, 2013

Major Street: Saxon Boulevard
 Minor Street: Sterling Silver Blvd.

Lanes: 2 Critical Approach Speed: 40
 Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
 2. Is the intersection in a built-up area of isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 1 - EIGHT-HOUR VEHICULAR VOLUME

Applicable: Yes No
 Satisfied: Yes No

Warrant 1 is satisfied if Condition A or Condition B is "100%" satisfied.
 Warrant is also satisfied if both Condition A and Condition B are "80%" satisfied.

Condition A - Minimum Vehicular Volume

100% Satisfied: Yes No
 80% Satisfied: Yes No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours																
					1		2 or more		7:00 AM -	8:00 AM	12:00 PM -	1:00 PM	1:00 PM -	2:00 PM	2:00 PM -	3:00 PM	3:00 PM -	4:00 PM	4:00 PM -	5:00 PM	5:00 PM -
	100%	70%	100%	70%																	
Both Approaches on Major Street	500 (400)	350	600 (480)	420	1,739	1,356	1,455	1,387	1,608	1,698	1,935	1,531									
Highest Approach on Minor Street	150 (120)	105	200 (160)	140	28	258	268	277	274	277	286	234									

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

Condition B - Interruption of Continuous Traffic

Condition B is intended for application where the traffic volume is so heavy that traffic on the minor street suffers excessive delay.

Applicable: Yes No
 Excessive Delay: Yes No
 100% Satisfied: Yes No
 80% Satisfied: Yes No

(volumes in veh/hr)	Minimum Requirements (80% Shown in Brackets)				Eight Highest Hours																
					1		2 or more		7:00 AM -	8:00 AM	12:00 PM -	1:00 PM	1:00 PM -	2:00 PM	2:00 PM -	3:00 PM	3:00 PM -	4:00 PM	4:00 PM -	5:00 PM	5:00 PM -
	100%	70%	100%	70%																	
Both Approaches on Major Street	750 (600)	525	900 (720)	630	1,739	1,356	1,455	1,387	1,608	1,698	1,935	1,531									
Highest Approach on Minor Street	75 (60)	53	100 (80)	70	28	258	268	277	274	277	286	234									

Record 8 highest hours and the corresponding volumes in boxes provided. Condition is 100% satisfied if the minimum volumes are met for eight hours. Condition is 80% satisfied if parenthetical volumes are met for eight hours.

TRAFFIC SIGNAL WARRANT SUMMARY

City: Deltona
 County: Volusia

Engineer: CPH, Inc.
 Date: September 20, 2013

Major Street: Saxon Boulevard
 Minor Street: Sterling Silver Blvd.

Lanes: 2 Critical Approach Speed: 40
 Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
 2. Is the intersection in a built-up area of isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

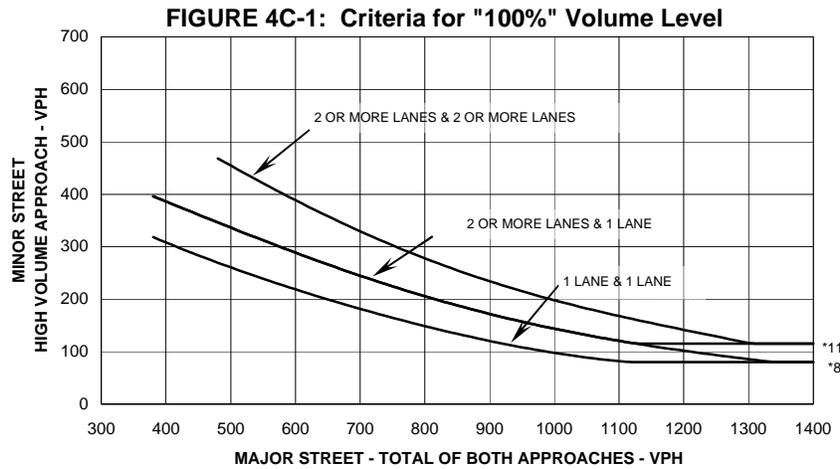
WARRANT 2 - FOUR-HOUR VEHICULAR VOLUME

If all four points lie above the appropriate line, then the warrant is satisfied.

Applicable: Yes No
 Satisfied: Yes No

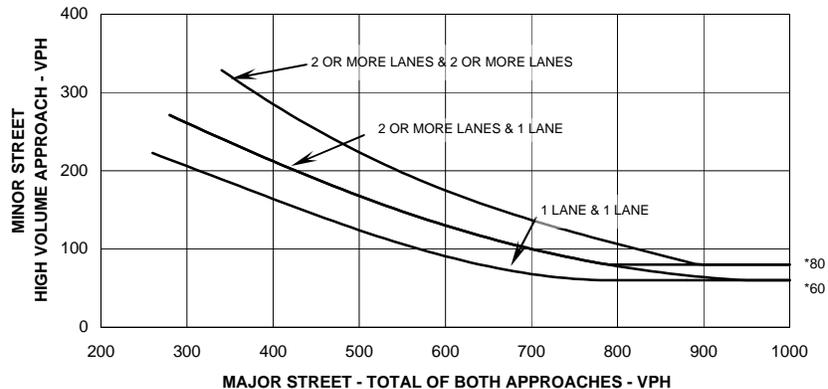
Plot four volume combinations on the applicable figure below.

Four Highest Hours	Volumes	
	Major Street	Minor Street
7:00 AM - 8:00 AM	1,739	28
3:00 PM - 4:00 PM	1,608	274
4:00 PM - 5:00 PM	1,698	277
5:00 PM - 6:00 PM	1,935	286



* Note: 115 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 80 vph applies as the lower threshold volume threshold for a minor street approach with one lane.

FIGURE 4C-2: Criteria for "70%" Volume Level
 (Community Less than 10,000 population or above 70 km/hr (40 mph) on Major Street)



* Note: 80 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 60 vph applies as the lower threshold volume threshold for a minor street approach with one lane.

TRAFFIC SIGNAL WARRANT SUMMARY

City: Deltona
 County: Volusia

Engineer: CPH, Inc.
 Date: September 20, 2013

Major Street: Saxon Boulevard
 Minor Street: Sterling Silver Blvd.

Lanes: 2 Critical Approach Speed: 40
 Lanes: 1

Volume Level Criteria

1. Is the critical speed of major street traffic > 70 km/h (40 mph) ? Yes No
 2. Is the intersection in a built-up area of isolated community of <10,000 population? Yes No
- If Question 1 or 2 above is answered "Yes", then use "70%" volume level 70% 100%

WARRANT 3 - PEAK HOUR

If all three criteria are fulfilled or the plotted point lies above the appropriate line, then the warrant is satisfied.

Applicable: Yes No
 Satisfied: Yes No

Unusual condition justifying use of warrant:

Record hour when criteria are fulfilled and the corresponding delay or volume in boxes provided.

Peak Hour		

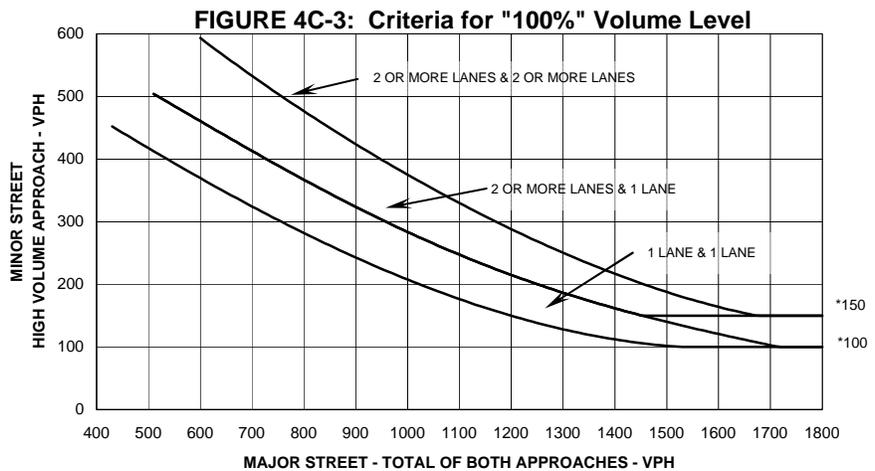
Criteria

1. Delay on Minor Approach *(vehicle-hours)		
Approach Lanes	1	2
Delay Criteria*	4.0	5.0
Delay*		
Fulfilled?:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

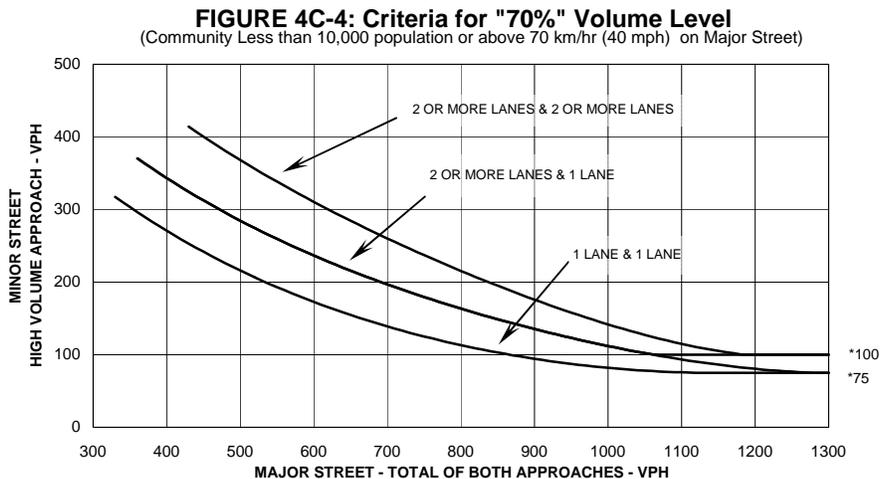
2. Volume on Minor Approach *(vehicles per hour)		
Approach Lanes	1	2
Volume Criteria*	100	150
Volume*		
Fulfilled?:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

3. Total Entering Volume *(vehicles per hour)		
No. of Approaches	3	4
Volume Criteria*	650	800
Volume*		
Fulfilled?:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Plot volume combination on the applicable figure below.



* Note: 150 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 100 vph applies as the lower threshold volume threshold for a minor street approach with one lane.



* Note: 100 vph applies as the lower threshold volume for a minor street approach with two or more lanes and 75 vph applies as the lower threshold volume threshold for a minor street approach with one lane.

TRAFFIC SIGNAL WARRANT SUMMARY

City: Deltona
 County: Volusia

Engineer: CPH, Inc.
 Date: September 20, 2013

Major Street: Saxon Boulevard
 Minor Street: Sterling Silver Blvd.

Lanes: 2 Critical Approach Speed: 40
 Lanes: 1

WARRANT 4 - PEDESTRIAN VOLUME

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if condition 1 or 2 is fulfilled and condition 3 is fulfilled.

Applicable: Yes No
 Satisfied: Yes No

Criteria	Hour	Pedestrian Volume	Pedestrian Gaps	Fulfilled?	
				Yes	No
1. Pedestrian volume crossing the major street is 100 ped/hr or more for each of any four hours <u>and</u> there are less than 60 gaps per hour in the major street traffic stream of adequate length.					
2. Pedestrian volume crossing the major street is 190 ped/hr or more for any one hour <u>and</u> there are less than 60 gaps per hour in the major street traffic stream of adequate length.					
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.					

WARRANT 5 - SCHOOL CROSSING

Record hours where criteria are fulfilled and the corresponding volume or gap frequency in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Applicable: Yes No
 Satisfied: Yes No

Criteria	Fulfilled?	
	Yes	No
1. There are a minimum of 20 students crossing the major street during the highest crossing hour.	Students:	Hour:
2. There are fewer adequate gaps in the major street traffic stream during the period when the children are using the crossing than the number of minutes in the same period.	Minutes:	Gaps:
3. The nearest traffic signal along the major street is located more than 90 m (300 ft) away, or the nearest signal is within 90 m (300 ft) but the proposed traffic signal will not restrict the progressive movement of traffic.		

WARRANT 6 - COORDINATED SIGNAL SYSTEM

Indicate if the criteria are fulfilled in the boxes provided. The warrant is satisfied if either criterion is fulfilled. This warrant should not be applied when the resulting signal spacing would be less than 300 m (1,000 ft).

Applicable: Yes No
 Satisfied: Yes No

Criteria	Fulfilled?	
	Yes	No
1. On a one-way street or a street that has traffic predominately in one direction, the adjacent signals are so far apart that they do not provide the necessary degree of vehicle platooning.		
2. On a two-way street, adjacent signals do not provide the necessary degree of platooning, and the proposed and adjacent signals will collectively provide a progressive operation.		

TRAFFIC SIGNAL WARRANT SUMMARY

City: Deltona
 County: Volusia

Engineer: CPH, Inc.
 Date: September 20, 2013

Major Street: Saxon Boulevard
 Minor Street: Sterling Silver Blvd.

Lanes: 2 Critical Approach Speed: 40
 Lanes: 1

WARRANT 7 - CRASH EXPERIENCE

Record hours where criteria are fulfilled, the corresponding volume, and other information in the boxes provided. The warrant is satisfied if all three of the criteria are fulfilled.

Applicable: Yes No
 Satisfied: Yes No

Criteria	Hour	Volume	Met?		Fulfilled?	
			Yes	No	Yes	No
1. One of the warrants to the right is met.	Warrant 1, Condition A (80% satisfied)					
	Warrant 1, Condition B (80% satisfied)					
	Warrant 4, Pedestrian Volume at 80% of volume requirements:					
	80 ped/hr for four (4) hours or 152 ped/hr for one (1) hour					
2. Adequate trial of other remedial measure has failed to reduce crash frequency.	Measure tried:					
3. Five or more reported crashes, of types susceptible to correction by signal, have occurred within a 12-mo. period.	Number of crashes per 12 months:					

WARRANT 8 - ROADWAY NETWORK

Record hours where criteria are fulfilled, and the corresponding volume or other information in the boxes provided. The warrant is satisfied if at least one of the criteria is fulfilled and if all intersecting routes have one or more of the characteristics listed.

Applicable: Yes No
 Satisfied: Yes No

Criteria	Met?		Fulfilled?		
	Yes	No	Yes	No	
1. Both of the criteria to the right are met.	a. Total entering volume of at least 1,000 veh/hr during a typical weekday peak hour.	Entering Volume: 1,672			
	b. Five-year projected volumes that satisfy one or more of Warrants 1, 2, or 3.	Warrant:	1	2	3
2. Total entering volume at least 1,000 veh/hr for each of any 5 hrs of a non-normal business day (Sat. or Sun.)					← Hour
					← Volume

Characteristics of Major Routes	Met?		Fulfilled?	
	Yes	No	Yes	No
1. Part of the street or highway system that serves as the principal roadway network for through traffic flow.	Major Street:			
	Minor Street:			
2. Rural or suburban highway outside of, entering, or traversing a city.	Major Street:			
	Minor Street:			
3. Appears as a major route on an official plan.	Major Street:			
	Minor Street:			

CONCLUSIONS

Warrants Satisfied:

Remarks: _____



Volusia County
Traffic Engineering

Project Name: Saxon Sterling Silver BPUD
Subject: TIA comments
Date: 12-03-13

- | No. | Comment |
|------------|--|
| 1. | The report overall relies on references to the numerous appendices in the back. Please consider bringing into the body of the report key information to better assist the readers in following/understanding the report. Also consider placing tabs to assist the reader in getting to aforementioned and relevant appendices. |
| 2 | Page 2, Executive Summary: 1) Regarding the intersection of Saxon Blvd/Finland Drive am peak hour cycle length being modified, please understand that the corridor between Finland Drive and Enterprise Road would have to be retimed since this is part of a computerized signal system and there are traffic impacts to the interchange ramps. 2) With regard to the signalization of Sterling Silver Blvd/Saxon Blvd, the county will allow the signal to be built and placed on flash mode until traffic volumes warrant. 3) Regarding the right-turn lane lengths at Driveways 1 and 2, a 1 foot non-vehicular easement prohibits driveways. Therefore, please redo the TIA. If the city will allow a cross-access easement, Driveway 1 TMCs should be included with the existing driveway. 4) A westbound right turn lane will be needed at Sterling Silver Drive. |
| 3 | Page 3, Site access, bullet 1: The two specified right-in/right-out driveways are not allowed per the 1 foot non-vehicular easement. The TIA will need to be redone to demonstrate new traffic flow patterns. |
| 4 | Page 6, Site Plan: Related to comments in #2 and #3, the two right-in/right-out driveways are not allowed. |
| 5 | Table 3-2, Net new trips: Please revise the TIA to demonstrate how the net new trips were derived; i.e, show gross, internal capture, pass-by and new trips. Please document the source for internal capture and pass-by rates. We see that the information is contained in the methodology, but the data needs to be brought into the analysis for clarity. |
| 6 | Page 9, Trip Distribution and Assignment: Please provide the CFRPM plot showing traffic volume distribution on the network. Appendix D does not include a distribution plot. |
| 7 | Figure 4-1, Project Traffic Distribution: Please show the percentage of the project traffic that is present west of the interstate on Saxon Blvd. |
| 8 | Table 4-1, Significance Test, page 11: 1) Please include "New Net PM Peak Trips" in the table title. 2) Please document how capacities were determined. Why are they different from the LOS service volumes in Table 5-1? 3) Please highlight the 5% |



Volusia County
Traffic Engineering

significance links.

- 9 Page 12, Traffic Data Collection (Appendix C): The signal timings at Providence Blvd/Tivoli Drive are missing.
- 10 Future Traffic Conditions, Page 13/Appendix D: Several of the AM and PM TMC percentages do not match Figure 4-1. Please revise the TMCs. For example, 47% of net new AM peak trips are shown in Figure 3A where Figure 4-1 shows that this link is supposed to show 23%.
- 11 Table 5-1, PM Peak Hour 2-way Roadway Analysis: 1) The Saxon Blvd segment between Sterling Silver Blvd and Tivoli is 4 Lane divided. 2) Please check with the City of Deltona to confirm the LOS standard on Tivoli Drive. 3) Please explain how the LOS standard service volume for the roads on the bottom four rows of the table.
- 12 Signal Warrant Analysis, Page 17: 1) Related to the TMCs, please see our comment regarding the lack of consistency in #9. 2) Please check that the 8 highest hourly volumes were used. Our review indicates otherwise.
- 13 Signal Warrant Analysis, Results, Page 18: The warrant analysis needs to be redone considering comments made on this TIA (especially TMCs and access issues related to the non-vehicular easement). The county will allow the installation of a signal to be operated on flash mode until the traffic volumes warrant full operation.
- 14 Table 7-1, Turn Lane Analysis, page 19: 1) Please strike the first two site driveway intersections listed on the table since they are not allowed per the BPUD. 2) Related to the intersection of Saxon Blvd/Sterling Silver Blvd, please redo the turn lane analysis based upon a revised site plan (eliminating both right-in/right-out driveways), as more traffic volume will be accessing the site via Sterling Silver Blvd.
- 15 Recommendations, Page 20: 1) Please omit bullets 3 and 4 listed for reasons identified previously. 2) Include commitment for signal retiming for the loop system between Finland Drive and Enterprise Road. 3) Include commitment for construction of a westbound right-turn lane at Sterling Silver Blvd/Saxon Blvd.
- 16 The TPO Guidelines section 4(d) specify a requirement to assess sidewalks, bikeways, and transit routes of users (including special needs). The site plan needs to address how walking, biking, and transit ridership will be encouraged. Please review this section of the guidelines, with particular focus on VOTRAN's Transit Development Guidelines. Specifically, the county will be looking for safe cross-Saxon access between the commercial properties and the nearby residences and also students. The Guidelines can be found on the Volusia TPO website: www.volusiatpo.org. Please specifically show how transit riders will be able to access the site.

DEVELOPMENT AGREEMENT
For the project known as the Saxon Sterling Silver BPUD located at Saxon Boulevard

Exhibit ~~A~~ to Ordinance No. ~~02-2014~~—~~2013~~

THIS AGREEMENT (the "Agreement") entered into and made as of the ____ day of _____, ~~2013~~, 2014 by and between the CITY OF DELTONA, FLORIDA, (hereinafter referred to as the "City"), and DELTONA RETAIL INVESTMENT, L.L.C., a South Carolina limited liability company (hereinafter referred to as the "Owner/Developer"), and DELTONA GROUP INVESTORS, LLC, a Washington limited liability company, and RETIREMENT COMMUNITY AT STERLING PARK POA, INC., a ____ corporation, (hereinafter referred to jointly and severally as the "Current Owner")

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W I T N E S S E T H

WHEREAS, this Agreement replaces the Development Agreement recorded in Official Record Book 5825, Pages 1350 through 1370 of the Public Records of Volusia County, Florida, known as the Saxon Retirement Village MPUD and hereinafter referred to as the "SRV PUD," as to Lots 1, 2 and 4, and also as to Tract "B" Common Area, Tract "C" Common Area and vacated Road "B", all per Retirement Community at Sterling Park MPUD Subdivision, Plat Book 53, Pages 59 and 60, Public Records of Volusia County, Florida; and

WHEREAS, the SRV-PUD remains in effect as to all other lands as described therein;

~~a~~And

WHEREAS, the Saxon Sterling Silver BPUD shall include Lots 1,2, and 4 and also Tract "B" Common Area, Tract "C" Common Area and vacated Road "B" and hereinafter be referred to as the "Subject Property"; and

WHEREAS, the Current Owner warrants that it holds legal title to the property described

in Paragraph 2 below, and the Owner/Developer warrants that it is the contract purchaser thereof and that the holders of any and all liens and encumbrances affecting such property will subordinate their interests to this Agreement; and

WHEREAS, the Owner/Developer desires to facilitate the orderly development of the subject property, in compliance with all of the laws and regulations of the City, and of other applicable governmental authorities, and the Owner/Developer desires to ensure that its development is compatible with other properties in the area and complies with all applicable local government transportation policies and regulations. ~~planned traffic patterns~~; and

WHEREAS, it is the purpose of this Agreement to clearly set forth the understanding and agreement of the parties concerning the matters contained herein; and

WHEREAS, the Owner/Developer has sought the City's approval for plans to develop its property, and the City has approved a the Saxon Sterling Sliver BPUD Master Development Plan (the "MDP") on _____, ~~2013~~, 2014 subject to the covenants, restrictions, and easements offered by the Owner/Developer and contained herein; and

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WHEREAS, this Agreement is entered into based on the City's home rule powers.

NOW THEREFORE, in consideration of the mutual covenants and agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

1. Incorporation. The recitals herein contained are true and correct and are incorporated herein by reference.

2. Ownership. The Current Owner represents that it is the present owner of parcel #'s 8130-78-00-000B, 8130-78-00-0003, 8130-78-00-0040, 8130-78-00-0001, 8130-78-00-0020, and 8130-78-00-0010, and more particularly described in Ordinance No. 02-2014 ~~2013~~,

Exhibit A (~~the “Property” or the “Subject Property”~~), and that the said Subject P property is under contract for sale to Owner/Developer.

3. Title Opinion/Certification. The Owner/Developer will provide to the City, in advance of the City's execution of this Agreement, a title insurance commitment, a title opinion of an attorney licensed in the State of Florida, or a certification by an abstractor or title company authorized to do business in the State of Florida, showing, upon conveyance of the property from Current Owner, marketable title to the Subject Property to be in the name of the Owner/Developer and showing all liens, mortgages, and other encumbrances that have not been satisfied or released of record.

4. Subordination/Joinder. ~~Except as to the items listed on the attached Exhibit B, Schedule of Permitted Exceptions, unless otherwise agreed to by the City, a~~ All liens, mortgages, and other encumbrances not satisfied or released of record, must be subordinated to the terms of this Agreement or the lienholder must join in this Agreement. It shall be the responsibility of the Owner/Developer to promptly obtain the said subordination or joinder, as well as joinder of the owner of Lot 3 of the SRV PUD ~~SRV PUD~~, in form and substance set forth on the attached Exhibit ~~C~~ B, prior to the City's execution of the Agreement.

5. Development Agreement. The Master Development Agreement shall be comprised of this Development Agreement and the Master Development Plan (“MDP” or ~~“BPUD Plan”~~) attached as **Exhibit D**.

6. Development Standards.

a. Sidewalks: The ~~owner/developer~~ Owner-Developer of the SRV PUD has previously constructed all required sidewalks for the SRV PUD. However, the Owner/Developer is required to construct any sidewalks as warranted per the

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City's Code of Ordinances for the Saxon Sterling Silver BPUD or to repair/maintain any previously constructed sidewalks installed within the SRV PUD. ~~Owner/Developer has no further obligations to construct sidewalks.~~

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b. Permitted Uses:

The following land uses, ~~together with customary incidental and subordinate accessory uses shall be permitted without restriction on hours of operation (other than general, city wide limitations with regard to hours of sale of alcoholic beverages for on-premises consumption):~~

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- Lot 1: Any business, medical, including medical clinic, or professional office use.

- Maximum FAR on Lot 1 - 0.25

- ~~Alcoholic beverage retail store and liquor store.~~

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- ~~Pharmacies including, without limitation, pharmacies with drive through facilities.~~

- Lots 2 and 4: All uses as permitted by the C-1, ~~or PB~~ zoning districts under the Code of Ordinances, City of Deltona, Florida, as it is in effect as of the time of the adoption of this ordinance, ~~and as may be permitted in the future, by amendments from time to time to the permitted uses allowed in those districts~~ except convenience stores, type C automobile service stations, Types A, B, and C, gas stations, fast food restaurants, bars, and nightclubs, and other uses not allowed in the C-1 zoning, ~~shall not be allowed; and except that, on that part of the Subject Property westerly of Sterling Silver Boulevard, no building housing a Restaurant, Type B, shall~~

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~~be allowed north of the Use Restriction Line (as shown on the BPUD Plan); and also except that the hours of operation (serving customers) for all uses except for medical clinics shall be limited to the period of 6 a.m. until 11 p.m. on that part of the Subject Property westerly of Sterling Silver Boulevard. Restaurants are permitted to have signs exhibited or displayed indicating that alcoholic beverages are obtainable for consumption on the premises~~

Maximum FAR on Lots 2 and 4 – 0.16 of the total land area of Lots 2 and 4.

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Hours of operation on Lots 2 and 4 – 7:00 am to 10:00 pm. Includes all services, deliveries, trash collection and general use.

c. Site Lighting. Site lighting within the Property shall conform to the standards contained in the City Lighting Code, Ordinance No. 10-2004 and the design requirements of Section 110-828 (b)(2) of that code. An illumination plan shall be designed by a licensed engineer and submitted with any Final Site Plan application.

d. Parking. ~~Except as otherwise stated herein, all~~ All parking shall conform to Sections 110-828 and 110-829 of the Deltona Code of Ordinances, as ~~it~~ may be amended from time to time. ~~At the Owner/Developer's election, the entire Property, or any portion thereof containing more than one lot, may be treated as a unified shopping center for parking requirements.~~

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e. Site Access. Subject to the requirements of the County of Volusia (the "County") on Saxon Boulevard, the site access shall be managed as follows: ~~provided in the locations shown on the approved Master Development Plan, subject to the~~

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following conditions:

1. Except as otherwise provided herein, all development shall meet the City's and County's transportation concurrency management, driveway design, and internal circulation requirements, and no design shall be approved that does not meet the City's ~~Land Development Code~~ of Ordinances.
2. ~~The existing 1 ft. non-vehicular access easement currently shown on the plat of Retirement Community at Sterling Park MPUD Subdivision, is intended to be vacated at the locations of the access points as shown on the MDP.~~
3. Right in and Right out access on to Saxon Blvd. will be allowed for Lot 1 only. However, a raised concrete median will be required to be constructed by the Owner/Developer in the Saxon Blvd. right-of-way across from the Lot 1 right in right out access, along with a concrete 'pork chop' (no 'bat wings'). Both the 'pork chop and raised median in the Saxon Blvd. right-of-way shall be designed and constructed to discourage illegal left hand turns. ~~Access management shall be consistent with that shown on the Master Development Plan (MDP) and shall conform to roadway design standards for the City of Deltona along Deltona public rights-of-way and the County design standards for Saxon Boulevard. Notwithstanding the provisions of section 118-829 (f) (1) of the Code, the minimum distance requirement from the street right-of-way line of Alabaster Way to interior service drives is ten (10) feet and for parking aisles with direct access to driveways connecting to Alabaster~~

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~~3.4. Provide access management, as recommended in GMB Engineering review of the submitted TIA, to provide a signalization at the Saxon Blvd. Sterling Silver Blvd. intersection, a deceleration land along the frontage of Lots 2 and 4, to maintain the existing 1-ft. non-vehicular ingress and egress easement along the Saxon Blvd. frontage of Lots 2 and 4, and comply with the City Land Development Code for access management and other design standards. Way is forty (40) feet, and the minimum distance requirement from the right of way line of Saxon Boulevard to interior service drives or parking aisles with direct access to a driveway connecting to Saxon Boulevard is fifty (50) feet.~~

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4.5. Subject to the approval of Volusia County and at its own expense, the Owner/Developer, shall be permitted to design, permit, purchase, construct, and install a “span wire” traffic signal at the intersection of Sterling Silver Boulevard with Saxon Boulevard which, if not immediately warranted, may be operated in flashing yellow mode.

~~All lots within the Subject Property which are developed hereunder shall be vested for transportation system purposes based on the installation and construction of the said traffic signal and shall not be responsible for any future fair share payments for installation of a traffic signal. Additionally, the City acknowledges that Lot 3 of the SRV PUD shall have no obligation relating to a traffic signal including, without limitation, escrowing money, and that said Lot 3 is likewise vested for transportation system purposes.~~

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f. Building Setbacks. Minimum building setbacks from the property lines of the lots within the Subject Property shall be as follows:

- Yards on Saxon Boulevard and Alabaster Way: 25 feet.
- All other yards on a public road: 15 feet.
- Internal lot lines: 0 5 feet.
- Side or Rear Yards adjacent to residential: 30 feet
- ~~Except as provided above: 10 feet.~~

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g. Maximum Building Height: 35 36 feet.

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h. Minimum building separation: 10 feet ~~There is no minimum building separation requirement between buildings located within the Subject Property.~~

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i. Maximum Impervious Surface Coverage: Not to exceed 70% 65 % per lot ~~of the total Property area shown on the approved Master Development Plan. Individual parcels within the Subject Property may have more or less impervious surface coverage, but the total impervious surface area on the Subject Property shall not exceed the permitted maximum set forth herein. This standard shall not exempt any lot from the minimum landscaping buffer or stormwater requirements.~~

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j. Perimeter Landscaped Buffers and other landscaping requirements: shall comply with Section 110-808 of the City Code of Ordinances. ~~Landscape buffers in the width as set forth below, shall be provided along the respective road frontages and property lines:~~

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Saxon Boulevard: _____ 25 feet

Sterling Silver Boulevard: _____ 15 feet

Alabaster Way: _____ 10 feet

Adjacent to Residential: _____ 30 feet

All other perimeter property boundary lines of the Subject Property: _____ 10 feet

Internal lot lines within the Subject Property _____ none

However, ~~Aa~~ masonry, finished six foot high wall consistent with that constructed along the north boundary of the adjacent retirement center shall be erected along the north and west property boundaries of Hlot 1 to buffer and visually screen the proposed uses from the existing residential homes. Landscaping shall be placed on the proposed development's side of the wall. The wall and its associated landscaping shall be erected and maintained by the developer of Hlot 1.

~~Except as otherwise provided herein, any landscape plan submitted with any final site plan application shall comply with all provisions of section 110-808 of the City's Zoning Code. All dumpsters shall be screened from view, per the City's Code of Ordinances. Stormwater ponds and swales are permitted within and, where landscaped, shall count as a part of the required landscape buffers.~~

- k. Clearing and Grading: Shall conform to the procedures and requirements listed within the City's Code of Ordinances and shall follow NPDES standards. ~~If the Owner/Developer wishes to clear and/or grade any or all lot(s) in accordance with a preliminary plat development order, and before a final site plan development order is approved for such lot(s), then the Owner/Developer may do so, but shall simultaneously install the minimum landscape buffers as required by this Development Agreement. In that event, the Owner/Developer shall provide temporary ground cover within these rough graded areas, as required to meet the best management practices established in The Florida Stormwater, Erosion, and~~

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~~Sedimentation Control for Developing Areas and Inspector's Manual.~~

1. Building Design, Location and Architecture: Buildings shall be designed to include aesthetic architectural elements on the parcels in a unified project architectural design provided, however, that the architectural design on the east side of Sterling Silver Boulevard can differ from architectural design on the west side of Sterling Silver Boulevard. If the architectural designs vary from each other on either side of Sterling Silver Boulevard, then both designs have to be consistent with master project signage and master project landscaping for the overall project. Buildings shall be designed so that the side of any such building facing Saxon Boulevard, Sterling Silver Boulevard, or Alabaster Way that is not the main entrance shall incorporate architectural treatments that enhance the appearance of the respective building façade or that give the appearance of being the front of the building. The City August 4, 2008 Urban Design Pattern Book shall be used for guidance with regard to building architecture and related elements. Commercial buildings on Lots 2 and 4 shall be scaled, oriented, massed and located as close to Saxon Blvd. as possible. For all Lots within the BPUD, service areas shall be located away from residential uses to the greatest extent possible and have those service areas screened from adjacent properties.
- m. Utilities: The Owner/Developer shall install water and sewer lines at its expense to service the entire Subject-Property ~~if necessary~~, and shall not interrupt water or sewer service to Lot 3 of the SRV PUD-~~SRV PUD~~. Any site related upgrades necessary to provide service for the Subject Property and to continue uninterrupted water and sewer service to Lot 3 of the SRV PUDe-~~SRV PUD~~, shall

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be provided at the Owner/Developer's sole expense.

- n. Platting and Final Site Plans: Lots 2 and 4 may be combined consistent with Section 106-27(a)(7)(a) of the City Code of Ordinances. ~~The Subject Property~~

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~~shall be replatted for purposes including, without limitation, of creating fewer or additional lots, reconfiguring lot lines, eliminating certain easements and as otherwise contemplated by the MDP. The requirement that a sketch plan be submitted to the City prior to the application for approval of a subdivision preliminary plat development order, as required by the City's Land Development Code, shall be satisfied by the approval of a combined Master Development Plan and Overall Development Plan (MDP/ODP) for the overall project contemplated herein.~~

~~To replat the Property, the Owner/Developer shall submit and receive approval from the City Commission. The development review process for a preliminary plat, the final plat, and any final site plan(s) may, at Owner/Developer's risk and option, may be pursued concurrently and shall be in accordance with the City's Code of Ordinances.~~

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- o. Final Site Plan. The approved final site plan shall be ~~generally~~ consistent with the approved MDP, and strictly in compliance with the City Code of Ordinances and this Agreement, ~~except where variances and modifications are specifically authorized as permitted by the City Code and according to the procedures set forth therein.~~

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~~The submission of a conceptual plan prior to the application for approval of a final site plan development order for the proposed BPUD development, as~~

~~required by the City Code shall be satisfied by the approval of the MDP/ODP, and the City shall not require the submission of any additional conceptual plans. The approved final site plan and development order shall be consistent with the specific development standards and conditions contained herein.~~

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p. Stormwater: Upon development of each lot, or within a master stormwater system, stormwater retention shall be provided in accordance with the City of Deltona ~~Land Development Code~~ Code of Ordinances, Deltona Comprehensive Plan, and all applicable St. Johns River Water Management District regulations.

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q. Signs: All signs shall comply with Chapter 102, Deltona Code of Ordinances as it may be amended from time to time. ~~Except as otherwise stated herein, signage shall comply with Chapter 102, Deltona Code of Ordinances, on the date that a Final Site Plan Development Order is approved, as it is amended from time to time:~~

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~~1. In addition to other signage which would otherwise be allowed by code, Owner/Developer shall be allowed two free standing monument style signs, neither to exceed 96 sq. feet, one on each side of Sterling Silver Boulevard, which signs may be shared by businesses within that part of the Project as is on the same side of the said street (in addition to such wall signs and such other signs as are permitted in accordance with Chapter 102).~~

~~2. Master project signage for the Project shall comply with Chapter 102, Deltona Code of Ordinances, as a planned unit development. A Sign Plan shall be included within the MDP/ODP.~~

~~3. Restaurants are permitted to have signs exhibited or displayed indicating that alcoholic beverages are obtainable for consumption on the premises.~~

~~4. The master sign package, attached hereto as Exhibit E, shall be permitted, though Owner/Developer is not obligated to follow it so long as signage otherwise complies with this Agreement.~~

r. Environmental: ~~Before any development order will be issued on any lot within the Subject Property, As part of the City site plan review process,~~ any state, federal and local required environmental permits shall be obtained and copies provided to the City.

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s. ~~Maximum Floor Area Ratio=0.25.~~

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7. Obligations. The Owner/Developer shall perform its obligations as described in this Agreement within a period of bonding or constructing such obligations. Any surface improvement as described and as obligated to, such as signalization, walls, stormwater management facilities, utilities, etc. shall be performed prior to the issuance of the first Certificate of Occupancy receipt. Should the Owner/Developer fail to undertake and complete its obligations as described in this Agreement, to the City's specifications, then the City shall give the Owner/Developer thirty (30) days written notice to commence and ninety (90) days to complete said required obligation at the sole expense of the Owner/Developer. ~~If the Owner/Developer fails to complete the obligations within the ninety (90) day period then the City, without further notice to the Owner/Developer, or its successors in interest, may, without prejudice to any other rights or remedies it may have, perform any and all of the obligations described in this Agreement.~~ Further, the City is hereby authorized to assess the actual and verified cost of completing the obligations required under this Agreement and record a lien

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against the Subject Property in that amount. The lien of such assessments shall be superior to all others, and all existing lienholders and mortgagees, by their execution of the subordination or joinder documents, agree to subordinate their liens or mortgages to the City's said liens or assessments. Notice to the Owner/Developer and its successors in interest shall be deemed to have been given upon the mailing of notice to the above-mentioned address.

~~NOTWITHSTANDING THE FOREGOING, IF OWNER/DEVELOPER SELLS OR OTHERWISE TRANSFERS OWNERSHIP OF ANY PORTION OF THE SUBJECT PROPERTY, ANY FAILURE OF OBLIGATIONS ON THE PART OF OWNER/DEVELOPER TO BE PERFORMED THAT PERTAIN TO SUCH SOLD OR TRANSFERRED PORTION SHALL BE THE RESPONSIBILITY OF THE PURCHASER/TRANSEEREE, AND ANY LIEN FOR COSTS TO THE CITY, OR OBLIGATIONS OR THE INDEMNITY CONTAINED IN SECTION 8 OF THIS AGREEMENT SHALL APPLY ONLY TO SUCH SOLD/TRANSFERRED PORTION OF THE SUBJECT PROPERTY~~

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8. Enforcement. In the event that enforcement of this Agreement by the City becomes necessary, and the City is successful in such enforcement, the Owner/Developer shall be responsible for all costs and expenses, including attorneys' fees, whether or not litigation is necessary and, if necessary, both at trial and on appeal, incurred in enforcing or ensuring compliance with the terms and conditions of this Agreement which costs, expenses and fees shall also be a lien upon the Subject Property superior to all others. Should this Agreement require the payment of any monies to the City, the recording of this Agreement shall constitute a lien upon the Subject Property for said monies, until said are paid, in addition to such other obligations as this Agreement may impose upon the Subject Property and the Owner/Developer. Interest on

unpaid overdue sums shall accrue at the rate of the lesser of eighteen percent (18%) compound annually or at the maximum rate allowed by law.

9. Indemnification. The Owner/Developer or a purchaser/transferee (as referred to in Section 9 hereof), each only as to such portion of the Subject Property then owned by the Owner/Developer or purchaser/transferee, shall indemnify and hold harmless the City from and against all claims, demands, disputes, damages, costs, expenses (to include attorneys' fees whether or not litigation is necessary and if necessary, both at trial and on appeal), incurred by the City as a result of the use or development of the ~~s~~Subject ~~p~~Property, except those claims or liabilities caused by or arising from the negligence of the City, or its employees or agents. It is specifically understood that the City is not guaranteeing the appropriateness, efficiency, quality or legality of the use or development of the Subject Property, including, but not limited to, drainage or sewer plans, fire safety, or quality of construction, whether or not inspected, approved, or permitted by the City.

10. Site Plan Approval. The MDP/ODP approval for the Subject Property, given at second and final reading at the regular meeting of the City Commission on _____, ~~2013~~ 2014, is specifically incorporated into this Agreement by reference for the purpose of clarifying boundaries, locations, areas, and improvements described in this Agreement, and all development shall be in substantial accordance with and subject to the terms of the said MDP/ODP approval.

11. Compliance. The Owner/Developer agrees that it, and its successors and assigns, will abide by the provisions of this Agreement, the City's Comprehensive Plan, and the City's ~~Land Development Code~~ of Ordinances, including but not limited to, the site plan regulations of the City as amended from time to time, which are incorporated herein by reference and such

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subsequent amendments hereto as may be applicable. Further, all required improvements, including landscaping, shall be continuously maintained by the Owner/Developer, or its successors and assigns, in accordance with the City's ~~Land Development Code~~ of Ordinances.

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The City may, without prejudice to any other legal or equitable right or remedy it may have, withhold permits, certificates of occupancy or approvals, to the ~~s~~Subject ~~p~~Property should the Owner/Developer fail to comply with the terms of this Agreement. ~~In the event of a conflict between this Development Agreement and the City's Land Development Code, this Agreement shall govern the development of the BPUD property.~~

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12. Utility Easements. The Owner/Developer shall provide to the City such easements and other legal documentation, in form mutually acceptable to the City Attorney and the Owner/Developer, as the City may deem reasonably necessary or appropriate for the installation and maintenance of the utility and other services serving the Subject Property and Lot 3 of the SRV PUD. ~~that SRV PUD~~. Such easements shall not materially interfere with the Owner/Developer's use and enjoyment of the Subject Property, but shall sufficiently provide continued uninterrupted sewer and water service to Lot 3, SRV PUD. ~~SRV PUD~~.

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13. Concurrency and Vested Rights. The Owner/Developer acknowledges and agrees that prior to the issuance of any building permit(s) for the Property, the Owner/Developer must have received and be in the possession of a valid unexpired certificate of capacity. The certificate of capacity verifies the availability of infrastructure capacity sufficient to permit development pursuant to the approved site plan for the Subject Property without causing a reduction in the levels of service adopted in the City's Comprehensive Plan. The certificate of capacity shall be effective for a term as defined in the City's ~~Land Development Code~~ of Ordinances. Neither this Agreement nor the approved BPUD Plan shall create or result in a vested right or rights to

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develop the Property without a current and valid certificate of capacity.

14. Notices. Where notice is herein required to be given, it shall be by certified mail return receipt requested, addressee only, hand delivery or courier. Said notice shall be sent to the following, as applicable:

OWNER/DEVELOPER'S REPRESENTATIVES:

Deltona Retail Investment, L.L.C
550 Long Point Road
Mount Pleasant, ~~NC~~SC 29464
(843) 654-7887
Fax: (843) 654-7889

With Copies To:

F.A. (Alex) Ford, Jr., Esq
Landis Graham French, P.A.
P.O. Box 48
DeLand, FL 32721-0048
(386) 734-3451
Fax: (386) 736-1350

and

CPH, INC.
P.J. Sutch, P.E.
500 W. Fulton Street
Sanford, Florida 32771
(407) 322-6841
Fax: (407) 330-0639

CITY'S REPRESENTATIVES:

Director Development Services
City of Deltona
2345 Providence Boulevard
Deltona, FL 32725
(386) 561-2200
Fax: (386) 789-7234

and

City Attorney
City of Deltona
2345 Providence Boulevard
Deltona, FL 32725
(386) 561-2200
Fax: (386) 789-7234

Should any party identified above change, it shall be said party's obligation to notify the remaining parties of the change in a fashion as is required for notices herein. It shall be the Owner/Developer's obligation to identify its lender(s) to all parties in a fashion as is required for notices herein.

15. Captions. The captions used herein are for convenience only and shall not be relied upon in construing this Agreement.

16. Binding Effect. This Agreement shall run with the land, shall be binding upon and inure to the benefit of the Owner/Developer and its assigns and successors in interest, and the City and its assigns and successors in interest. The Owner/Developer shall pay the cost of recording this document in the Public Records of Volusia County, Florida. This Agreement does not, and is not intended to prevent or impede the City from exercising its legislative authority as the same may affect the Subject Property or grant the authority to supersede federal and state laws.

17. Severability. If any part of this Agreement is found invalid or unenforceable in any court, such invalidity or unenforceability shall not affect the other parts of this Agreement, if the rights and obligations of the parties contained herein are not materially prejudiced and if the intentions of the parties can be affected. To that end, this Agreement is declared severable.

18. Condition Precedent; Effect of SRV PUD. As a condition precedent to this Agreement, the Owner/Developer shall have purchased the Subject Property from the Current

Owner, as conclusively established by the recording of a deed or deeds from the Current Owner to the Owner/Developer in the Public Records of Volusia County, Florida. ~~Upon the recording of this Agreement, the SRV PUD shall have no further applicability to the Subject Property, but shall remain in effect as to all other lands described therein. Further, the City acknowledges the provisions of Section 6.e.4. of this Agreement with regard to the expense of signalization on vesting of Lot 3, SRV PUD, with regard to transportation system requirements.~~

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IN WITNESS WHEREOF, the Owner/Developer, Current Owner and the City have executed this Agreement as of the day and year first above written.

IN WITNESS WHEREOF, the Owner/Developer and the City have executed this Agreement as of the day and year first above written.

SIGNED, SEALED, AND DELIVERED IN THE PRESENCE OF THE OWNER/DEVELOPER:

OWNER/DEVELOPER:

DELTONA RETAIL INVESTMENT, LLC.,
a South Carolina limited liability company,
by WRS, INC, a South Carolina corporation,
its Manager

Signature of Witness # 1

Print or type name

Signature of Witness #2

Print or type name

By:

Signature

Print or type name

As:

Print or type

ATTEST:

Signature

Print or Type Name

As:

Mailing Address: _____

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,
2013, by _____, and _____, of _____,
_____, who is/are personally known to me or who has/have produced _____

_____ as identification and who did not (did) take an oath.

Signature of Notary

(NOTARY SEAL)

Print or type name

ACCEPTED FOR THE CITY OF DELTONA:

By:

John C. Masiarczyk, Sr., Mayor

Date:

ATTEST:

Joyce Raftery, CMC, City Clerk

Date:

Mailing Address: City of Deltona
2345 Providence Boulevard
Deltona, Florida, 32725

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 2013, by _____, who are personally known to me and acknowledge executing the same freely and voluntarily under authority vested in them and that the seal affixed thereto is the true and corporate seal of the City of Deltona, Florida.

Signature of Notary

(NOTARY SEAL)

Print or type name

Approved as to form and legality for use and reliance by the City of Deltona, Florida

GRETCHEN R.H. VOSE, City Attorney

**CURRENT OWNER:
DELTONA GROUP INVESTORS, LLC, a
Washington limited liability company**

By: _____
Printed name: _____
Title: _____

Signature of Witness # 1

Print or type name

Signature of Witness #2

Print or type name

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this ___ day of _____,
2013, by _____, of DELTONA GROUP INVESTORS, LLC, a
Washington limited liability company, who is personally known to me or who has/have produced
_____ as identification and who did not (did) take an oath.

(NOTARY SEAL)

Signature of Notary
Print or type name: _____

**CURRENT OWNER:
RETIREMENT COMMUNITY AT STERLING
PARK POA, INC., a _____ corporation**

Signature of Witness # 1

Print or type name

Signature of Witness #2

Print or type name

By: _____
Printed name: _____
Title: _____

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 2013, by _____, of RETIREMENT COMMUNITY AT STERLING PARK POA, INC., a _____ corporation, who is personally known to me or who has/have produced _____ as identification and who did not (did) take an oath.

(NOTARY SEAL)

Signature of Notary
Print or type name: _____

SUBORDINATION AGREEMENT

THIS SUBORDINATION AGREEMENT made this ____ day of _____, 20__, by _____ whose address is _____, referred to as "Mortgagee".

WITNESSETH: The Mortgagee of the property described in the foregoing Agreement which property is owned by _____, does hereby agree to subordinate all its interests and rights contained in the property to the foregoing Agreement which property is owned by _____ entered into by _____ as Owner/Developer and the CITY OF DELTONA. This Subordination Agreement shall bind all successors, assigns, and representatives of the Mortgagee.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

MORTGAGEE:

Signature of Witness # 1

Print or type name

Signature of Witness # 2

Print or type name

By: _____
Signature

Print or type name

AS: _____
Print or type office

STATE OF FLORIDA
COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20__, by _____ and _____, of _____, who is/are personally known to me or who has/have produced _____ as identification and who did not (did) take an oath.

(NOTARY SEAL)

Signature of Notary

Print or type name

EXHIBIT A
LEGAL DESCRIPTION

EXHIBIT B
SCHEDULE OF PERMITTED EXCEPTIONS

NONE DELETE

EXHIBIT C

JOINDER AND CONSENT OF LOT 3 OWNER

The undersigned, Owner of the fee simple title of Lot 3, Retirement Community at Sterling Park M.P.U.D., according to the plat thereof, recorded in Plat Book 53, Pages 59 and 60, Public Records of Volusia County, Florida, hereby joins in and consents to the terms of Section 6(e)(4) and 18 of the Development Agreement to which this Joinder and Consent is attached.

IN WITNESS WHEREOF, the undersigned has executed this Instrument as of the day first set forth above.

Signed, sealed and delivered in the presence of the following two witnesses:

(Signed name of witness one)

(Printed name of witness one)

(Signed name of witness two)

(Printed name of witness two)

STATE OF WASHINGTON
COUNTY OF CLARK

The foregoing instrument was acknowledged before me this ____ day of _____, 2013, by Barton G. Colson, as President of Hawthorn Management Services Corp., a Washington corporation, the Manager of Deltona Retirement Residence LLC, an Oregon limited liability company. He is personally known to me.

Notary Public for Washington

Printed Name

My Commission expires
[AFFIX NOTARY SEAL]

BORROWER:

**DELTONA RETIREMENT RESIDENCE
LLC**, an Oregon limited liability company

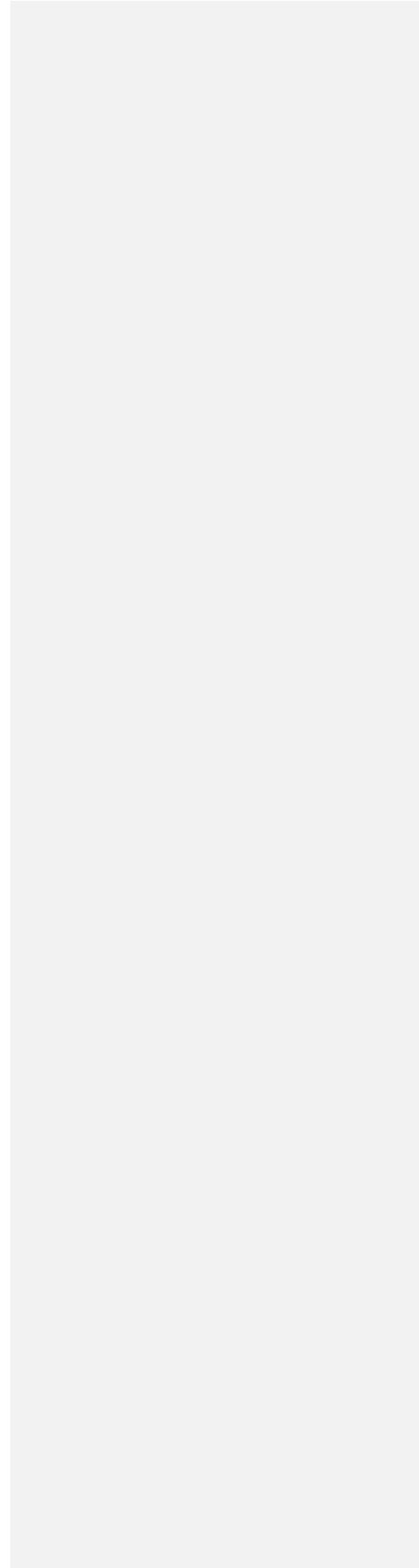
By: Hawthorn Management Services Corp., a
Washington corporation, its Manager

By: _____
Barton G. Colson, as President

EXHIBIT D
MASTER DEVELOPMENT PLAN

EXHIBIT E
MASTER SIGN PACKAGE

| DELETE



ORDINANCE NO. 2-2014

AN ORDINANCE OF THE CITY OF DELTONA, FLORIDA, REZONING LOTS 1, 2, AND 4 AND TRACTS “B” AND “C” AND ROAD “B” OF THE RETIREMENT COMMUNITY AT STERLING PARK MPUD SUBDIVISION ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 53, PAGES 59 AND 60 OF THE PUBLIC RECORD OF VOLUSIA COUNTY, FLORIDA, FROM MIXED USE PLANNED UNIT DEVELOPMENT TO BUSINESS PLANNED UNIT DEVELOPMENT, LOCATED ALONG SAXON BOULEVARD AT AND NORTH OF THE INTERSECTION OF STERLING SILVER AND SAXON BOULEVARDS; PROVIDING FOR SEVERABILITY; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received an application to rezone lots 1, 2 and 4 and tracts “B” and “C” and road “B” of the Saxon Sterling Silver Mixed Use Planned Unit Development plat, to Business Planned Unit Development from Mixed Use Planned Unit Development;

WHEREAS, the City of Deltona, Florida, and its Land Planning Agency have complied with the requirements of Municipal Home Rule Powers Act, sections 166.011 et seq., Florida Statutes, in considering the proposed zoning amendment; and

WHEREAS, after said public hearing, the City Commission of the City of Deltona, Florida, has determined that the lots 1, 2, and 4 and tracts “B” and “C” and road “B” of the Retirement Community at Sterling Park MPUD plat will be rezoned to Business Planned Unit Development from Mixed Use Planned Unit Development and has further determined that the said zoning action is consistent with the Comprehensive Plan of the City of Deltona, Florida.

NOW, THEREFORE, BE IT ENACTED BY THE CITY COMMISSION OF THE CITY OF DELTONA, VOLUSIA COUNTY, FLORIDA, AS FOLLOWS:

SECTION 1. Lots 1, 2, and 4 and tracts “B” and “C” and road “B” of the Retirement Community at Sterling Park MPUD plat as recorded in Map Book 53, Pages 59 and 60 of the public record of Volusia County, Florida, located in the City of Deltona, Florida, is hereby rezoned to Business Planned Unit Development.

SECTION 2. This Ordinance is adopted in conformity with and pursuant to the Comprehensive Plan of the City of Deltona, the local government Planning and Land Development Act, Sections 163.161 et. Seq., Florida Statutes, and the Municipal Home Rule Powers Act, Sections 166.011 et. seq., Florida Statutes.

SECTION 3. Conflicts. Any and all Ordinances or parts of Ordinances in conflict herewith are hereby repealed.

SECTION 4. Severability. If any provision of this Ordinance or the application thereof to any person or circumstance is held invalid, the invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are declared severable.

SECTION 5. Effective Date. This Ordinance shall become effective immediately upon its final passage and adoption.

**ADOPTED BY THE CITY COMMISSION OF THE CITY OF DELTONA,
FLORIDA THIS _____ DAY OF _____ 2014.**

FIRST READING: _____

ADVERTISED: _____

SECOND READING: _____

BY: _____
JOHN C. MASIARCZYK, MAYOR

ATTEST:

JOYCE RAFTERY, CMC, CITY CLERK

Approved as to form and legality
for use and reliance by the
City of Deltona, Florida

GRETCHEN R. H. VOSE, CITY ATTORNEY

**ORIGINATING
DEPARTMENT:**

Department of Planning & Development Services

**REVIEWED BY:
PRESENTED BY:**

Reviewed by Ron A. Paradise, Assistant Director, Planning & Development Services
Presented by Scott McGrath, Planner II, Planning & Development Services

**STAFF
RECOMENDATION:**

Staff recommends that the Planning and Zoning Board recommend that the City Commission adopt Ordinance 4-2014 changing the zoning to C-2 from OR and P.

**POTENTIAL
MOTION:**

“I hereby make a motion to recommend that the City Commission adopt Ordinance No. 04-2014.”

ATTACHMENTS:

RZ13-009 Staff Report
Ordinance No. 04-2014

Memorandum

To: Planning and Zoning Board
From: Chris Bowley, AICP
Date: February 4, 2014
Re: Project No. RZ13-009, Amendment to the Official Zoning Map

I. SUMMARY OF APPLICATION:

APPLICANT: Brian Potts P.E.
Tannath Design
2494 Rose Spring Drive
Orlando, FL 32825

Request: The City of Deltona Planning and Development Services Department has received an application to amend the Official Zoning Map from Office Residential (OR) and Public to C-2, General Commercial for a group of parcels located in the 2000 block of Saxon Boulevard situated between Finland Drive and West Apache Drive.

A. SITE INFORMATION:

- 1. Tax Parcel No.:** 30-18-31-03-40-0280, 30-18-31-03-40-0270
30-18-31-03-40-0290, 30-18-31-03-40-0310
30-18-31-03-40-0230, 30-18-31-03-40-0240
30-18-31-03-40-0250, 30-18-31-03-40-0260
30-18-31-03-40-0300, 30-18-31-03-40-0320
30-18-31-03-00-0110
- 2. Property Addresses:** 890 N. SR 415
- 3. Property Acreage:** ±3.9 Acres
- 4. Property Location:** North side of the 2000 block of Saxon Boulevard
between Finland and West Apache Drive.
- 5. Property Legal Description:**

A TRACT OF LAND, BEING LOTS 23, 24, 25, 26, 27, 28, 29, 30, 31, 32 AND TRACT "K", BLOCK 101, DELTONA LAKES UNIT THREE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 25, PAGES 105 THROUGH 120, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, BEING DESCRIBED AS FOLLOWS.

COMMENCE AT THE NORTHWEST CORNER OF SAID LOT 32, FOR A POINT OF BEGINNING; THENCE RUN NORTH 89°23'36" EAST, ALONG THE NORTH LINE OF SAID LOT 32, A DISTANCE OF 125.00 FEET TO THE NORTHEAST CORNER OF SAID LOT 32; THENCE RUN NORTH 00°50'10" WEST, ALONG THE WEST LINE OF SAID TRACT "K", 100.00 FEET TO THE NORTHWEST CORNER OF SAID TRACT "K", THE RUN NORTH 89°29'56" EAST ALONG THE NORTH LINE OF SAID TRACT "K", LOT 24 AND LOT 23, A DISTANCE OF 403.76 FEET TO THE NORTHEAST CORNER OF SAID LOT 23; THENCE RUN SOUTH 09°42'25" EAST, ALONG THE EAST LINE OF SAID LOT 23, A DISTANCE OF 128.53 FEET TO THE SOUTHEAST CORNER OF SAID LOT 23 AND A POINT LYING ON THE WEST RIGHT-OF-WAY LINE OF W. APACHE CIRCLE AS RECORDED IN AFORESAID PLAT OF DELTONA LAKES UNIT THREE, SAID POINT ALSO LIES ON A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY; THENCE RUN SOUTHWESTERLY, ALONG SAID WEST RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 130.00 FEET, A CENTRAL ANGLE OF 77°00'37", AN ARC LENGTH OF 174.73 FEET, A CHORD LENGTH OF 161.87 FEET AND A CHORD BEARING OF SOUTH 41°47'17" WEST TO THE POINT OF TANGENCY; THENCE RUN SOUTH 03°16'58" WEST, ALONG SAID WEST RIGHT-OF-WAY LINE, 159.13 FEET TO A POINT OF CURVATURE OF A CURVE CONCAVE NORTHWESTERLY; THENCE RUN SOUTHWESTERLY, ALONG SAID WEST RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 25.00 FEET, A CENTRAL ANGLE OF 49°18'42", AN ARC LENGTH OF 21.52 FEET, A CHORD LENGTH OF 20.86 FEET AND A CHORD BEARING OF SOUTH 27°56'20" WEST TO A POINT LYING ON THE NORTHERLY RIGHT-OF-WAY LINE OF SAXON BOULEVARD, AS DESCRIBED IN THAT CERTAIN WARRANTY DEED AS RECORDED IN OFFICIAL RECORDS BOOK 4981, PAGE 3204, OF SAID PUBLIC RECORDS; SAID POINT ALSO LIES ON A NON-TANGENT CURVE CONCAVE NORTHEASTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE PER SAID OFFICIAL RECORDS BOOK 4981, PAGE 3204 AND THE FOLOWING OFFICIAL RECORDS BOOKS 6233 PAGE 3574, OFFICIAL RECORDS BOOK 4716 PAGE 4217, OFFICIAL RECORDS BOOK 4857 PAGE 1546 OF SAID PUBLIC RECORDS AND SAID CURVE, HAVING A RADIUS OF 1088.00 FEET A CENTRAL ANGLE OF 11°50'21", AN ARC LENGTH OF 224.81 FEET, A CHORD LENGTH OF 224.41 FEET AND A CHORD BEARING OF NORTH 79°05'56" WEST TO THE POINT OF TANGENCY; THENCE RUN NORTH 73°10'46" WEST, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, 55.15 FEET TO THE POINT OF CURVATURE OF A CURVE CONCAVE SOUTHWESTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 807.00 FEET, A CENTRAL ANGLE OF 08°27'39", AN ARC LENGTH OF 119.17 FEET,

A CHORD LENGTH OF 119.06 FEET AND A CHORD BEARING OF NORTH 77°24'35" WEST TO THE POINT OF REVERSE CURVATURE OF A CURVE CONCAVE NORTHEASTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 35.00 FEET, A CENTRAL ANGLE OF 80°48'15", AN ARC LENGTH OF 49.36 FEET, A CHORD LENGTH OF 45.37 FEET AND A CHORD BEARING OF NORTH 41°14'18" WEST TO THE POINT OF TANGENCY, SAID POINT LYING ON THE EASTERLY RIGHT-OF-WAY LINE OF FINLAND DRIVE, AS RECORDED IN THE AFORESAID PLAT OF DELTONA LAKES UNIT THREE, THENCE RUN NORTH 00°50'10" WEST, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 201.39 FEET TO THE POINT OF BEGINNING.

CONTAINING 3.9 ACRES MORE OR LESS.



Figure 1: Location Map



Figure 2: Aerial Photo

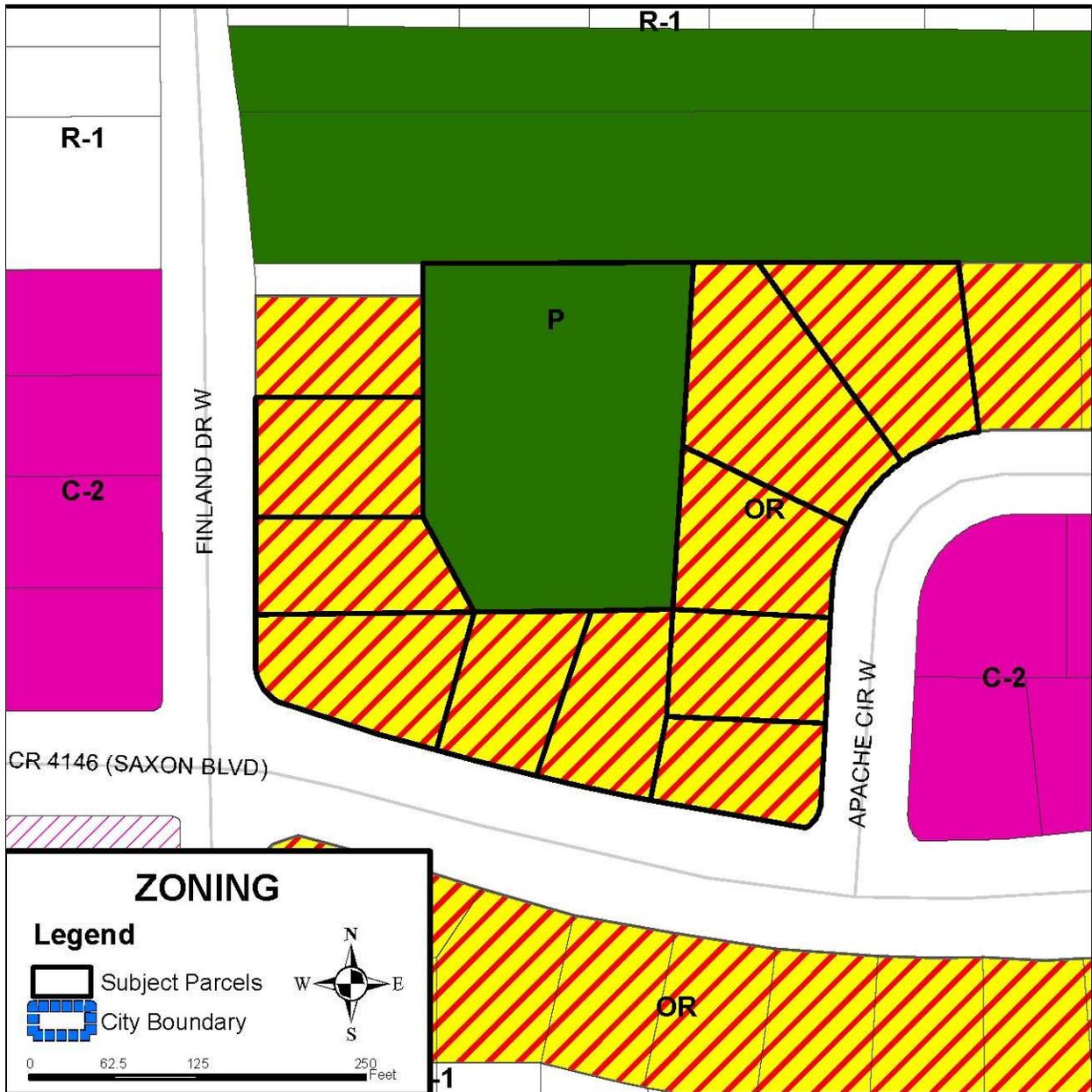


Figure 3: Existing Zoning

B. Existing Zoning:

1. Subject Property:

Existing: Office Residential (OR) and Public (P)

Requested: General Commercial, C-2

2. Adjacent Properties:

North: Public (P)

South: Office Residential (OR)

East: General Commercial, C-2

West: General Commercial, C-2

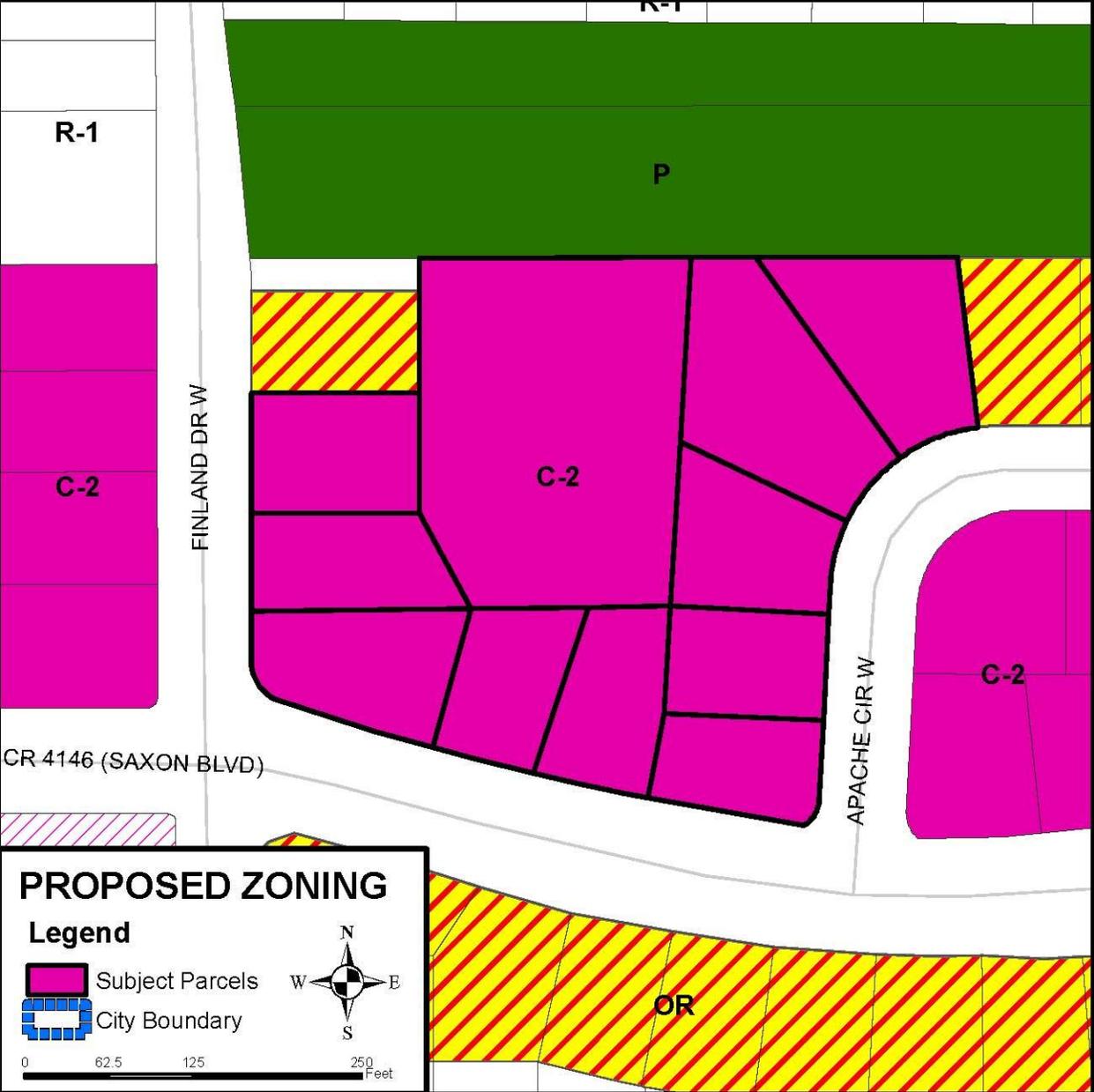


Figure 4: Proposed Zoning

C. Proposed Zoning:

General Commercial District (C-2) (Section 110-316 Purpose and Intent.) The purpose and intent of the C-2 General Commercial classification is to encourage the development of intensive commercial areas, providing a wide range of goods and services, located adjoining at least one major collector or arterial road. The C-2 classification is intended to be applied to strip retail areas, Interstate Highway interchange areas, and other intersections that are characterized by high traffic volumes appropriate for highway-oriented commercial development and shopping centers. This district is not intended to be applied within established residential areas, except when those areas are either in transition, blighted, or designated in the commercial future land use category on the adopted Future Land Use Map. This zoning district shall only be applied to areas designated in the Commercial future land use category on the adopted Deltona Comprehensive Plan Future Land Use Map, as it may be amended from time to time.

D. Back Ground:

The subject property is being rezoned to accommodate an automobile service station type C use known as RaceTrac. The RaceTrac facility will involve the removal of seven existing single family homes in an effort that is considered redevelopment. While this may seem like another service oriented use, this amendment and development represents much more than that. This is one of the first redevelopment activities located along Saxon Blvd. between I-4 and Normandy Blvd. in nearly a decade. The prospect of this development has sparked interest by others in redeveloping the Saxon corridor. The subject proposal has also initiated a study to extend/upgrade sewer service along the Saxon Blvd. corridor between I-4 and Normandy Blvd. The actual sewer installation would facilitate more commercial development opportunities along Saxon Blvd. In the past, lack of City sewer has discouraged many would-be commercial developers from looking into the area, despite efforts to resolve properties to allow for non-residential uses.

E. Support Information

Public Facilities:

- a. Potable Water: to be supplied by Deltona Water
- b. Sanitary Sewer: to be supplied by Deltona Water (once available)
- c. Fire Protection: City Fire Station 62
- d. Law Enforcement: Volusia County Sheriff's Office (VCSO)
- e. Electricity: Duke Energy (FKA Progress Energy)

F. Matters for Consideration:

Section 110-1101, Code of City Ordinances, states that the City shall consider the following matters when reviewing applications for amendments to the Official Zoning Map:

1. Whether it is consistent with all adopted elements of the Comprehensive Plan.

The amendment to the Official Zoning Map will not diminish the vision of the goals or the policies of the Comprehensive Plan. The current future land use designation for the site is Commercial. The C-2 zoning is consistent with the Commercial future land use designation.

2. Its impact upon the environment or natural resources.

Outer portions of the subject property along the roads are largely developed with single family residences, the inner portion is undeveloped and forested with a mixture of palms and scrub oaks. There is a depressional area on the property featuring steep slopes. This area appears to be a sinkhole. Water is ponded at the bottom of this area and exhibits wetland characteristics. However, the wetland is probably less than one-third of an acre and development within the wetland may be considered exempt under Chapter 98 of the City Land Development Code. The predominate soil on site is well drained and is classified as Paola Fine Sand. According to the September 2011, FEMA flood zone maps, the subject property is not located within the 100 year floodplain.

The site is home to many small animals such as rabbits, armadillos, squirrels, etc. that are tolerant of developed areas. Burrows were observed on the site. However, it was unclear if they were created by gopher tortoises. Before property development, the applicant will need survey the site for gopher tortoises. If tortoises are found, then the applicant will need to permit the relocation of tortoises to a suitable mitigation bank site. There are no other known listed species that utilize the property.

3. Its impact upon the economy of any affected area.

The proposed impact upon the local economy would be the creation of service-oriented jobs. The proposed rezoning would facilitate retail commercial development of the property. Currently, a significant portion of the property proposed to be rezoned is or has been used for residential uses. In addition, the area of the property that is zoned Public was once owned by the City and not taxed. However, the area zoned Public has been sold to the applicant. Therefore, the rezoning to the requested C-2 would result in the property being used and taxed at a commercial rate, which is likely to yield more than the current taxable values.

The RaceTrac convenience store will create service sector jobs. However, these types of jobs can often be considered entry level and part time.

More importantly, the redevelopment of a major gateway (Saxon Boulevard) with appropriately located, designed and scaled commercial uses has long been the goal of the City. This potential development moves Deltona closer to reaching that goal.

4. **Notwithstanding the provisions of Article XIV of the Land Development Code, Ordinance No. 92-25 [Chapter 86, Code of Ordinances] as it may be amended from time to time, its impact upon necessary governmental services, such as schools, sewage disposal, potable water, drainage, fire and police protection, solid waste or transportation systems.**
 - a. **Schools:** The Volusia County School Board staff has indicated that this rezoning will not affect local schools.
 - b. **Sewage Disposal:** City sewer capacity is available. However, suitable transmission lines are more the quarter mile away that are required for development. Therefore, the site will be served by an onsite septic system. The City is currently undertaking a feasibility study to provide sewer to this area. If the site is developed with a septic system, the system should be designed to facilitate connection to central sewer when central service becomes available.
 - c. **Potable Water:** Deltona Water will serve the site and sufficient potable water capacity is available.
 - d. **Drainage:** All site related stormwater runoff will be managed on-site and will be constructed in accordance with the necessary requirements of the City's Land Development Code and other permitting agencies.
 - e. **Transportation Systems:** The subject property is located near the intersection of I-4 and Saxon Boulevard – a congested area of the City. The segment of Saxon Blvd. (I-4 to Normandy Blvd.), of which the property proposed for rezoning is associated with, is operating at a Level of Service “F”. A Level of Service (LOS) “F” indicates that vehicle flow is sometimes halted by heavy traffic volumes typically at peak hours (morning and evening rush hours). The current traffic condition of the Saxon Blvd segment from I-4 to Normandy Blvd., at peak hours, can be characterized by very slow speeds, limited maneuverability, turn lane storage areas at or beyond capacity and drivers maybe having to wait through more than one traffic signal cycle.

The Comprehensive Plan has established a policy that the LOS on City thoroughfares generally should not be allowed to operate below a LOS of E. A level of service (LOS) E represents the maximization of an important and expensive public resource – roads. From a user standpoint, a roadway facility operating at a LOS E represents flowing traffic, at times below the speed limit and limited maneuvering opportunity. The purpose of implementing LOS standards is

to maintain a level of mobility within the City. Mobility is critical to ensuring convenient travel throughout the City. However, LOS standards, while being a good way to quantifiably maintain and protect roadway capacity, can result in the limitation of land use opportunity offered by major thoroughfares. Ironically, traffic volume is an indicator used by potential businesses for site selection. This dichotomy of commercial uses looking for heavy traffic volumes to support viable business and a local government establishing a policy to protect roadway capacity is an issue. Fortunately, the City, in an attempt to encourage the efficient use of land through redevelopment, does have a policy allowing the City to contemplate traffic volumes exceeding the LOS E threshold. The following policy from the City Comprehensive Plan is applicable:

Policy CIE1-1.4

The determination of concurrency for backlogged facilities, included in the Thoroughfare System segments shall be consistent with the revised Land Development Regulations and established in the following manner:

9J-5.016(3)(c)(1,3,4&6)

a. Establish Benchmark Traffic Counts

The most recent twenty-four hour traffic counts taken prior to the adoption of this Comprehensive Plan shall be used as the benchmark counts for each backlogged road identified in the Transportation Element.

b. Set Percent Thresholds of Benchmark Traffic Counts

Each of these backlogged thoroughfare roads shall not be allowed to degrade its operational service standards on a peak hour basis (using the most recent sanction FDOT Highway Capacity Tables) by allowing no more than twenty (20) percent of the peak hour bench mark counts for such facilities in The City. Some backlogged thoroughfare roads will only be allowed to be degraded ten (10) or fifteen (15) percent from the adopted Level of Service.

c. Track Development - Trip Generation/Distribution

The City shall track all proposed new developments and based on generally accepted traffic modeling procedures identify the likely number of trips generated by such developments and their distribution specifically for this objective to the previously identified backlogged thoroughfare roads. Tracking shall start upon the Comprehensive Plan's effective date of the revised Land Development Regulations.

d. Tracking On A Cumulative Basis

This tracking of the additional trips to the twenty percent threshold of the benchmark counts and trips originating within the boundaries of the Future Transportation Map, shall be done on a cumulative basis following the adoption of this plan.

e. Cumulative Thresholds Twenty, Fifteen and Ten Percent

The City shall not approve any additional final development orders, (excluding vested properties) including building permits, once the percent threshold for projects that would generate trips in excess of ten/fifteen/twenty percent on a peak hour basis, unless a final development order is subject to the adoption and implementation of an Area-wide Traffic Action Mitigation Plan. An Area-wide Traffic Action Mitigation Plan shall include, but not be limited to, the following activities:

- *additional or modified turn lanes*
- *additional or modified signalization*
- *incentives for mass transit use where available*
- *incentives for van/carpooling programs*
- *promote staggered work hours*
- *operating lanes*

f. It shall be the goal of each Area-wide Traffic Action Mitigation Plan to achieve 100 percent mitigation of the impacts of a proposed development. Such plans shall include, when applicable, participants in addition to the property owner or applicant in question such as but not limited to adjacent property owners and business establishments.

While this policy indicates capacity on a City thoroughfare roadway may be allowed to exceed a LOS E by up to 20%, there is a requirement for traffic mitigation. According to policy CIE1-1.4, mitigation options include, but are not limited to, access management in the form of modified turn lanes. The access management element of this policy will be implemented during the City land development review phase. According to the applicant's traffic impact analysis submitted, as part of the rezoning request, a Saxon Blvd. right-in and right-out access to the site is proposed for Saxon Blvd. This right-in right-out on Saxon Blvd. does not comport with the City Land Development Code driveway spacing requirements. In addition, the right-in, right-out will result in more turning maneuvers on Saxon Blvd. More turning on the Saxon Blvd. thoroughfare will cause friction, constraining traffic flow and create safety problems. The safety problems with the right-in, right-out are more acute when traffic speeds, road curvature and limited sight distances associated with the subject segment of Saxon Blvd. are factored.

A significant component regarding access to the site will be a driveway cut-off of Finland Drive. However, according to the City Land Development Code, the entrance should be no closer than 250 feet to the intersection of Saxon Blvd. and Finland Dr. The intent of the 250 foot separation is to protect the flow and function of major intersections. Driveways that are too close to major intersections, especially those associated with a land use featuring a high traffic

flow, like a RaceTrac, have the potential to cause car stacking resulting in a gridlock situation. For example, cars attempting to negotiate a left turn on to Finland Dr. from Saxon Blvd. could be halted in the west bound drive isles of Saxon Blvd. by cars lined up along Finland waiting to make a right turn into the RaceTrac. A review of the property survey submitted with the rezoning application revealed that there was not enough road frontage along Finland Dr. to accommodate the Land Development Code 250 foot driveway/intersection separation distance. Interestingly, "Lot 33", as depicted on the survey, is owned by an entity that is part of this rezoning request, but "Lot 33" is not part of the rezoning request (Staff does not understand why this small lot was withheld from the rezoning application.) If "Lot 33" were added to the rest of the property to be rezoned, compliance with the Land Development Code driveway spacing requirement would be possible. The abovementioned Land Development Code requirements are not intended to represent an exhaustive list of all requirements. In addition, since this is a straight rezoning request to C-2, the City cannot condition this type of rezoning action. The purpose of illustrating this Land Development Code information is to foreshadow how the City is going to address traffic with regard to access; establish a record that there will be access controls (including no direct access to Saxon Blvd.); and to communicate a possibility that the RaceTrac project could be delayed based on the applicant having to go back and rezone "Lot 33" to facilitate compliance with the intersection/driveway cut separation distances (Please be advised that the applicant cannot include "Lot 33" into this rezoning application because the legal description associated with due public notice does not include "Lot 33".)

As has been mentioned, the applicant did prepare a Traffic Impact Analysis (TIA). The TIA indicated that the proposed RaceTrac will generate 3,256 trips per day which is a significant amount, especially in light of the fact that the segment of Saxon Blvd. between Normandy Blvd. and I-4 is operating at a LOS of F. However, as explained above, the City has the ability to relax LOS thresholds to facilitate redevelopment. As illustrated in policy CIE 1-1.4, redevelopment could exceed the LOS by up to 20%. The proposed project, along with background traffic, would create a condition where Saxon Blvd would operate at an LOS E + 6.9%. The traffic generation characteristics of the land use (RaceTrac) and roadway infrastructure makes the access management and design requirements of the City Land Development Code very important to maintaining roadway and intersection function.

Votran transit transportation is available via bus routes 23.

5. Any changes in circumstances or conditions affecting the area.

In Deltona, the Saxon Blvd. corridor has remained largely unchanged for some time now. However, the County is performing major renovations to the Orange City side of Saxon Boulevard on the other side of I-4. The City has hired a consult to study the feasibility of installing a sewer transmission line to the area to serve commercial development along Saxon Blvd. from Normandy Blvd. to the I-4 interchange.

6. Any mistakes in the original classification.

No known mistakes.

7. Its effect upon the public health, welfare, safety or morals.

Early in its history, the City changed the City Future Land Use Map for residential properties along the Saxon Blvd. corridor between I-4 and Normandy Blvd. from a residential land use category to Commercial. Notwithstanding the platting characteristics and an existing residential development pattern, the change to Commercial on the Future Land Use Map represents a City policy that the area is to be one day developed at a commercial capacity. The City did follow up the land use policy action by administratively rezoning the area to both C-2 and Office Residential (OR). What these policy actions indicate is the residential neighborhood is going to transition to commercial uses. The City policy to earmark this area for commercial opportunity was driven by the fact that the area is associated with a major City thoroughfare (Saxon Blvd.) and is near a major interstate interchange. While residential uses may dominate existing land use in this area, the stage has been set for a conversion from residential to commercial. Walgreens at the northwest corner of Saxon Blvd. and Normandy Blvd. was one of the first conversions. RaceTrac represents another conversion opportunity. This incremental conversion from residential to commercial will have impacts on the existing residential areas that are designated as Commercial. More traffic on Apache Circle is an example. However, these neighborhood impacts are a result of the implementation of City land use policy geared towards expanding business opportunity in a very strategic area of the City.

The OR category is a consistent use with the underlying Commercial future land use designation, but the use contemplated by RaceTrac is not allowed in the OR zoning. The property to be rezoned is now under unified control, making development activity viable on the site. Therefore, the C-2 designation would be appropriate to facilitate redevelopment of the area. In addition, the site is flanked on both sides to a limited extent by C-2 zoned areas. Rezoning the property to C-2 would represent a logical extension of the C-2 zoning.

CONCLUSION/STAFF RECOMMENDATION:

The proposed rezoning is consistent with the Comprehensive Plan and will have no adverse impacts on the health, welfare, safety or morals of the City. The requested C-2 zoning will support a commercial development – RaceTrac fueling station. The rezoning represents an incremental improvement of the City tax base, which is overly reliant on residential uses. In addition, the commercial development will facilitate more commercial options for residents in a City that is underserved by commercial uses. Therefore, staff recommends approval of the rezoning from Office and Public to C-2 (General Commercial).

TRAFFIC IMPACT STUDY

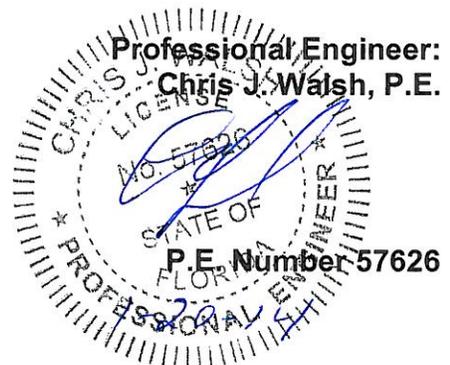
For
RaceTrac Gas Station
Saxon Boulevard at Finland Drive
Deltona, Florida

Prepared for:

RaceTrac Petroleum, Inc



Traffic Engineering Data Solutions, Inc.
80 Spring Vista Drive
DeBary, Florida 32713
January 2014



INTRODUCTION

Traffic Engineering Data Solutions, Inc. (TEDS) has been retained to conduct a traffic impact analysis for the proposed RaceTrac gas station in the northeast quadrant of the Saxon Boulevard/Finland Drive intersection in the City of Deltona, Florida (see **Figure 1**). The proposed gas station will include 20 vehicle fueling positions along with a 5,928 square-foot convenience store. A preliminary site plan of the proposed development is included in the **Appendix**.

This study, which evaluates the overall impact of the development on the adjacent roadway network, was prepared to meet the City of Deltona's transportation concurrency requirements. This study was conducted in accordance with the approved methodology as provided in the **Appendix**.

PROJECT ACCESS

Access to the proposed development is proposed via three driveways. Driveway #1, a full access driveway, will be located on Finland Drive Williamson Boulevard approximately 130 feet north of Saxon Boulevard. Driveway #2 is a proposed right-in/right-out driveway on Saxon Boulevard approximately 230 feet east of Finland Drive. It is proposed to have a westbound right-turn lane on Saxon Boulevard at Driveway #2. Another full-access driveway, Driveway #3, is also proposed on Apache Circle approximately 130 feet north of Saxon Boulevard.

STUDY AREA

Because the proposed development is projected to generate between 100 and 300 PM peak-hour trips, the study area was determined based upon a three-percent level of significance as consistent with the Volusia TPO Transportation Impact Analysis (TIA) Guidelines. However, as summarized in the methodology, the development impact will not exceed three percent on any of the adjacent roadways. Regardless, the following roadways were analyzed.

- Saxon Boulevard from Interstate 4 to Finland Drive
- Saxon Boulevard from Finland Drive to Normandy Boulevard
- Finland Drive south of Saxon Boulevard
- Finland Drive north of Saxon Boulevard
- Apache Circle

The study intersections include the following:

- Saxon Boulevard at Finland Drive
- Saxon Boulevard at Apache Circle
- All access point intersections with public streets



Figure 1
Site Location Map

EXISTING CONDITIONS

For purposes of this study, a PM peak-period turning movement count, from 4:00 PM to 6:00 PM, was conducted at the Saxon Boulevard/Finland Drive intersection as well as at Apache Circle. **Figure 2** summarizes the existing PM peak-hour turning movement volumes at the study intersections. Printout of the traffic counts are provided in the **Appendix**.

The PM peak-hour two-way volumes on the roadway segments were calculated from the PM peak-hour turning movement volumes shown in **Figure 2**. These volumes were then compared against the generalized service volume for each study roadway segment. The generalized peak-hour two-way service volume for each roadway segment was obtained from FDOT's 2012 Generalized Service Volume tables based on the adopted level of service standards from the City of Deltona's Comprehensive Plan. **Table 1** below shows the adopted level of service and generalized service volume under the adopted level of service for each study roadway segment. As shown in **Table 1**, the existing PM peak-hour two-way volumes for all study roadway segments are below the generalized service volume, thereby indicating that all roadway segments currently have acceptable operating conditions.

The PM peak-hour existing operating conditions for the Saxon Boulevard/Finland Drive intersection were evaluated using the Highway Capacity Software (HCS) 2010 which utilizes analysis methodologies contained in the 2010 Highway Capacity Manual. The existing PM peak-hour turning movement volumes, existing roadway geometry, and existing signal timings were utilized in the analyses. Based on the HCS analyses, the Saxon Boulevard/Finland Drive intersection currently operates acceptably with an overall intersection level of service of C (average delay of 33.5 seconds/vehicle). The unsignalized intersection of Saxon Boulevard/Apache Circle was also analyzed using HCS 2010. Based on the analysis the southbound approach and eastbound left-turn movement both currently operate acceptably at level of service B. HCS printouts are provided in the **Appendix**.

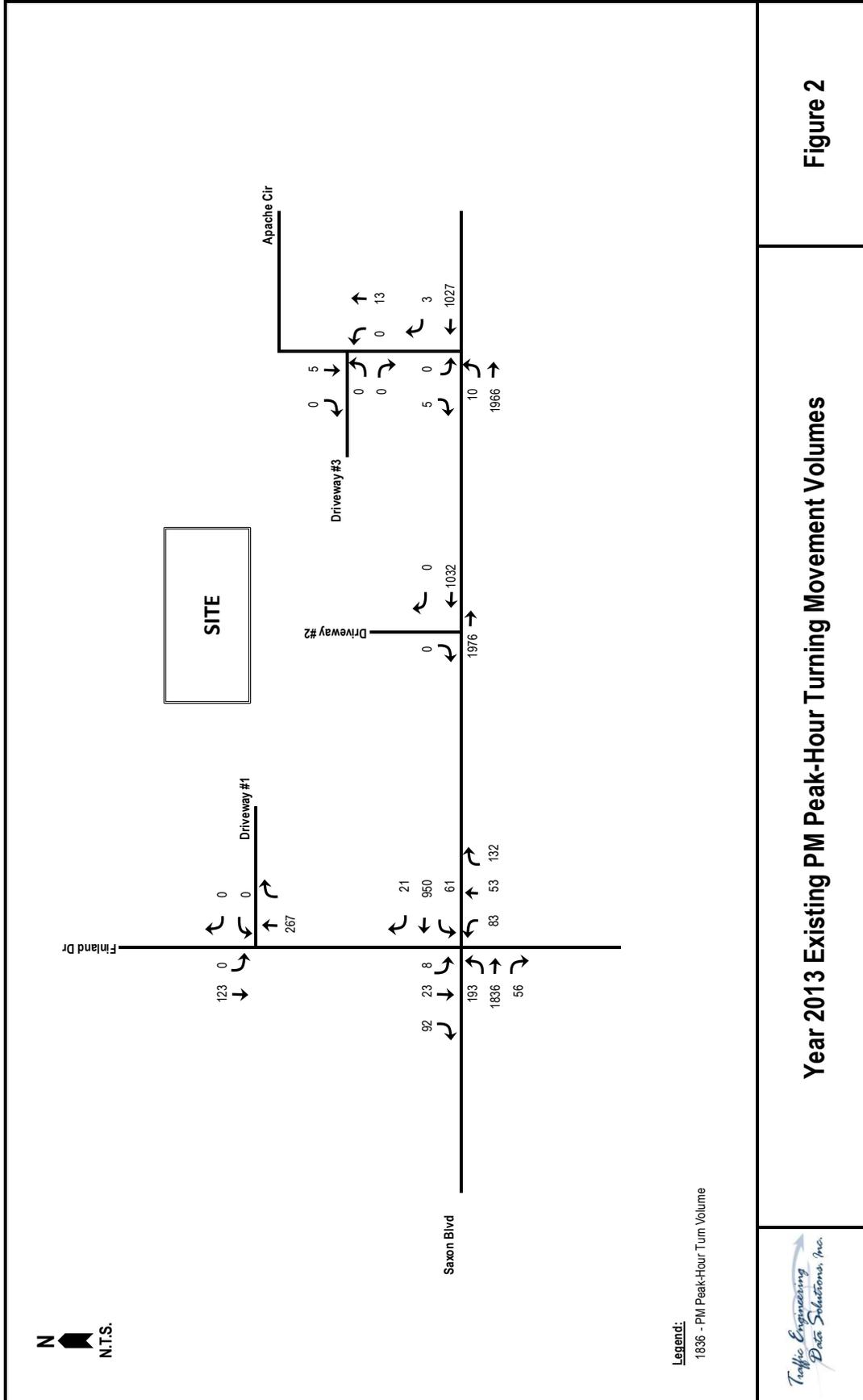


Figure 2

Year 2013 Existing PM Peak-Hour Turning Movement Volumes



Table 1
Existing Roadway Segment Operating Conditions (PM Peak Hour)

Roadway Segment	Existing Number of Lanes	Adopted Level of Service Std.	Pk-Hr 2-Way Generalized Service Volume	Existing PM Pk-Hr 2-Way Volume	Year of Count	Existing Volume Exceeds Svc Vol?
Saxon Blvd						
Interstate 4 to Finland Dr	4	E	3,222	3,210	2013	no
Finland Dr to Normandy Blvd	4	E	3,222	3,008	2013	no
Apache Cir						
Saxon Blvd to Normandy Blvd	2	D	931	18	2013	no
Finland Dr						
South of Saxon Blvd	2	D	931	390	2013	no
Saxon Blvd to Sullivan St	2	D	931	390	2013	no

FUTURE BACKGROUND TRAFFIC

Future background traffic is the non-project-related traffic projected to utilize the study roadways and intersections. For the purposes of this analysis, trips from the proposed Saxon Sterling Silver retail development and the proposed Halifax Medical walk-in clinic (5,037 square feet) were added to the existing traffic volumes to obtain the future background traffic volumes on the study roadways and intersections. The trips from the Saxon Sterling Silver development were obtained from Transportation Impact Analysis dated November 2013 as prepared by CPH. The trips for the Halifax Medical clinic were calculated using ITE and assigning the trips to the study roadways. The resulting future background turning movement volumes are shown in **Figure 3**. Supporting documentation regarding vested trip information is provided in the **Appendix**.

The future background PM peak-hour bi-directional volumes on the study roadway segments were calculated based on the volumes in **Figure 3** and are summarized in **Table 2**. The resulting annual growth rates from the vested trips were then calculated. Based on the vested trips, the resulting annual growth rate on Saxon Boulevard ranges between 7% and 8%. In reviewing the County's historical traffic data on Saxon Boulevard as maintained on the County website, this level of growth is conservatively high as traffic volumes over the last 5 years have been stagnant and/or decreased. Relative to the resulting growth on Finland Drive, current historical data is not available. However, recognizing that these roadways essentially serve areas that are built out, the resulting annual growth rate of 2% south of Finland Drive and 13% north of Finland Drive are conservatively high. As for Apache Circle, no traffic growth is expected. **Table 2** shows the future background PM peak-hour two-way volumes on the study roadway segments.

Table 2
Future Background Volumes for Roadway Segments (PM Peak Hour)

Roadway Segment	Existing PM Pk-Hr 2-Way Volume	Year of Count	Future Bckgrnd PM Pk-Hr 2-Way Volumes	Total Future Bckgrnd PM Pk-Hr 2-Way Volumes	Resulting Annual Growth Rate
Saxon Blvd					
Interstate 4 to Finland Dr	3,210	2013	235	3,445	7%
Finland Dr to Normandy Blvd	3,008	2013	249	3,257	8%
Apache Cir					
Saxon Blvd to Normandy Blvd	18	2013	0	18	0%
Finland Dr					
South of Saxon Blvd	390	2013	52	442	13%
Saxon Blvd to Sullivan St	390	2013	7	397	2%

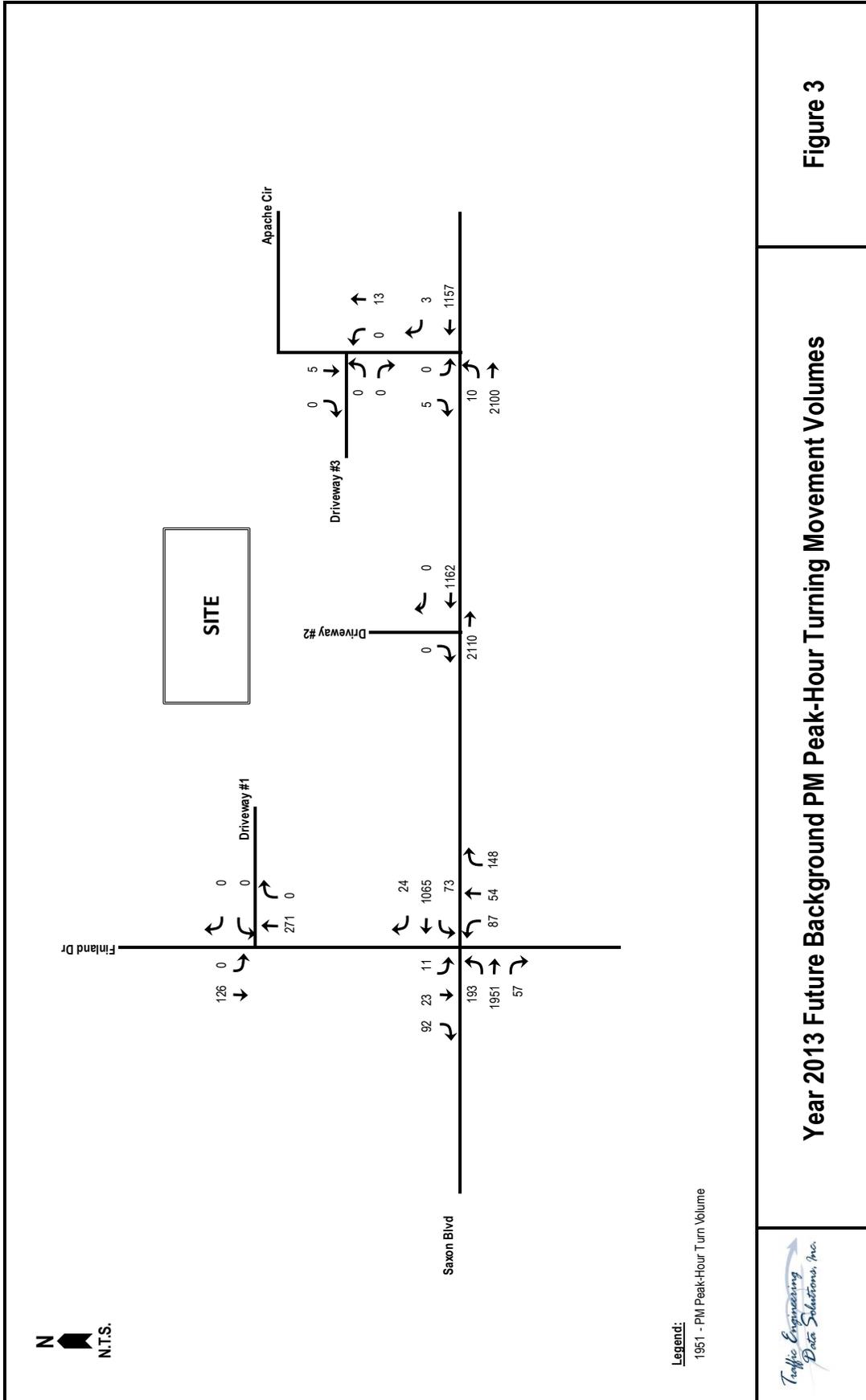


Figure 3

Year 2013 Future Background PM Peak-Hour Turning Movement Volumes



TRIP GENERATION

The number of vehicle trips that will originate from, or are destined to, a development is dependent upon the type and amount of land uses contained within that development. The total daily and PM peak-hour trip generation potential for the development was determined based on trip generation equations and rates provided in the Institute of Transportation Engineer's (ITE) Informational Report, *Trip Generation, 9th Edition*. For the proposed development, ITE Land Use Code 945 (Gas Station with Convenience Store) was used. As summarized in **Table 3**, the proposed development is projected to generate 3,256 total daily trips and 270 total PM peak-hour trips (135 in, 135 out).

In order to determine the net effect of the proposed development on the future road system, the trip generation volumes need to be adjusted to consider the effects of pass-by trips. Pass-by trips are those trips that will stop at the site while traveling by the site on the adjacent roadways. Because pass-by trips are effectively vehicles that are already on the roadway, pass-by trips do not create any new impacts on the adjacent roadway segments. Pass-by trips for the gas station were calculated based on the pass-by rate of 56% for ITE Land Use Code 945 (Gas Station with Convenience Store) as provided in ITE's *Trip Generation Handbook, 2nd Edition*. Of the total trip generation potential of the site, 151 PM peak-hour trips (76 in, 75 out) are expected to be pass-by trips. The Volusia TPO's TIA Guidelines limit pass-by trips to 14% of the background traffic on the adjacent streets. Based on **Figure 3**, the future background traffic on Saxon Boulevard adjacent to the site is 3,272 PM trips, of which 14% equates to 458 trips. Therefore, the 151 pass-by trips as shown in **Table 3** are acceptable. As summarized in **Table 3**, the proposed development is projected to generate 119 new external PM peak-hour trips (59 in, 60 out).

Table 3
Trip Generation Projection for Proposed RaceTrac Gas Station

Land Use	Intensity	Units	Daily			PM Peak		
			In	Out	Total	In	Out	Total
Gas/Svc Station with Convenience Market	20	Vehicle Fueling Positions	1628	1,628	3,256	135	135	270
Pass-By Trips	Pass-By %	56.0%	912	912	1,824	76	75	151
Net New External Trips			716	716	1,432	59	60	119

Gasoline/Service Station with Convenience Market(ITE 9th Edition - Land Use Code 945)

Daily	$T = 162.78 \times (\# \text{ of VFP})$	50% In	50% Out
PM Peak Hour	$T = 13.51 \times (\# \text{ of VFP})$	50% In	50% Out

TRIP DISTRIBUTION

The trip distribution pattern defines the primary corridors that will be traveled by the traffic generated by the project. By reviewing the land use types in the vicinity of the site, proximity to competing sites such as the existing RaceTrac service station on the west side of Interstate 4, and applying engineering judgment with regard to the interaction with the project, a trip distribution pattern for the net new external trips was estimated. The trip distribution is shown in **Figure 4**.

TRIP ASSIGNMENT

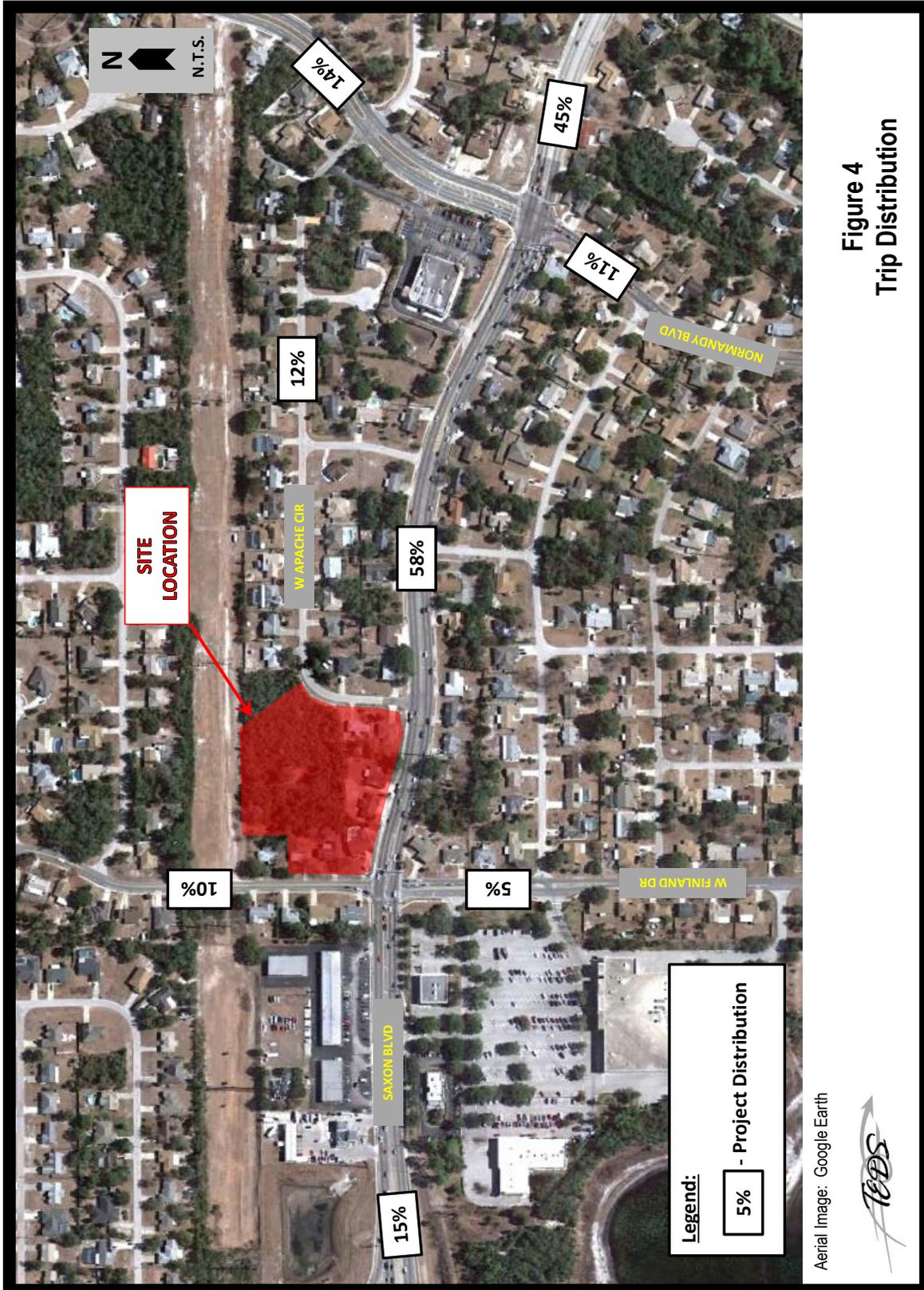
The new external PM peak-hour project trips were assigned to the study roadways and intersections based on the trip distribution. Recognizing that the site will directly access on to Apache Circle, 25% of those trips traveling to the site from Normandy Boulevard north of Saxon Boulevard were assigned to Apache Circle. As for the 70% exiting the site to travel east, it is estimated that approximately 25% of these trips will instead use Apache Circle.

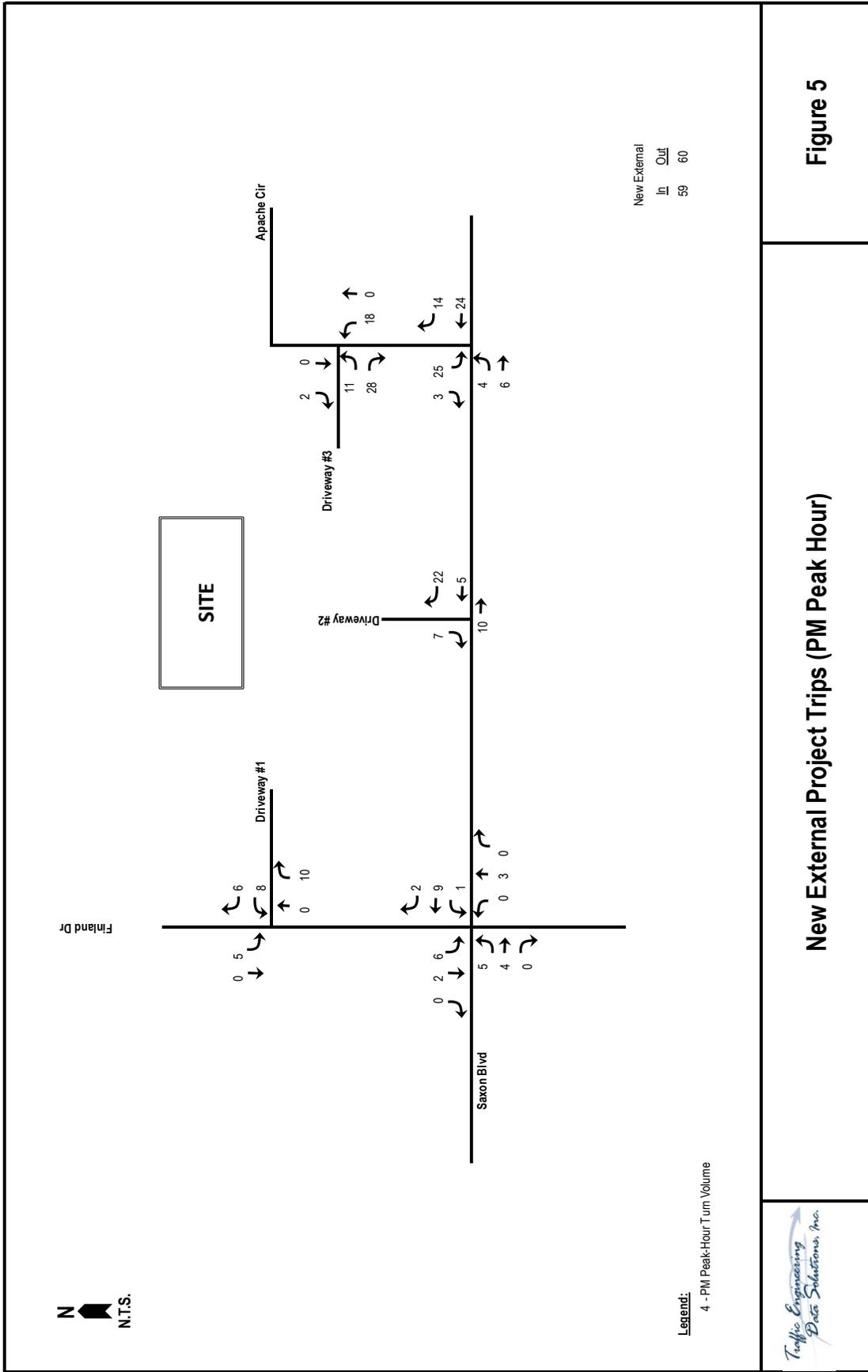
Pass-by trips were also assigned to the project driveways and study intersections. However, the assignment of pass-by trips considered the volume of traffic on the roadways adjacent to the site, ease of access to the site for each direction of travel, as well as the consideration of other service stations in close proximity to the proposed development. **Figure 5** and **Figure 6** show the PM peak-hour new external trips and pass-by trips, respectively, assigned to the study intersections.

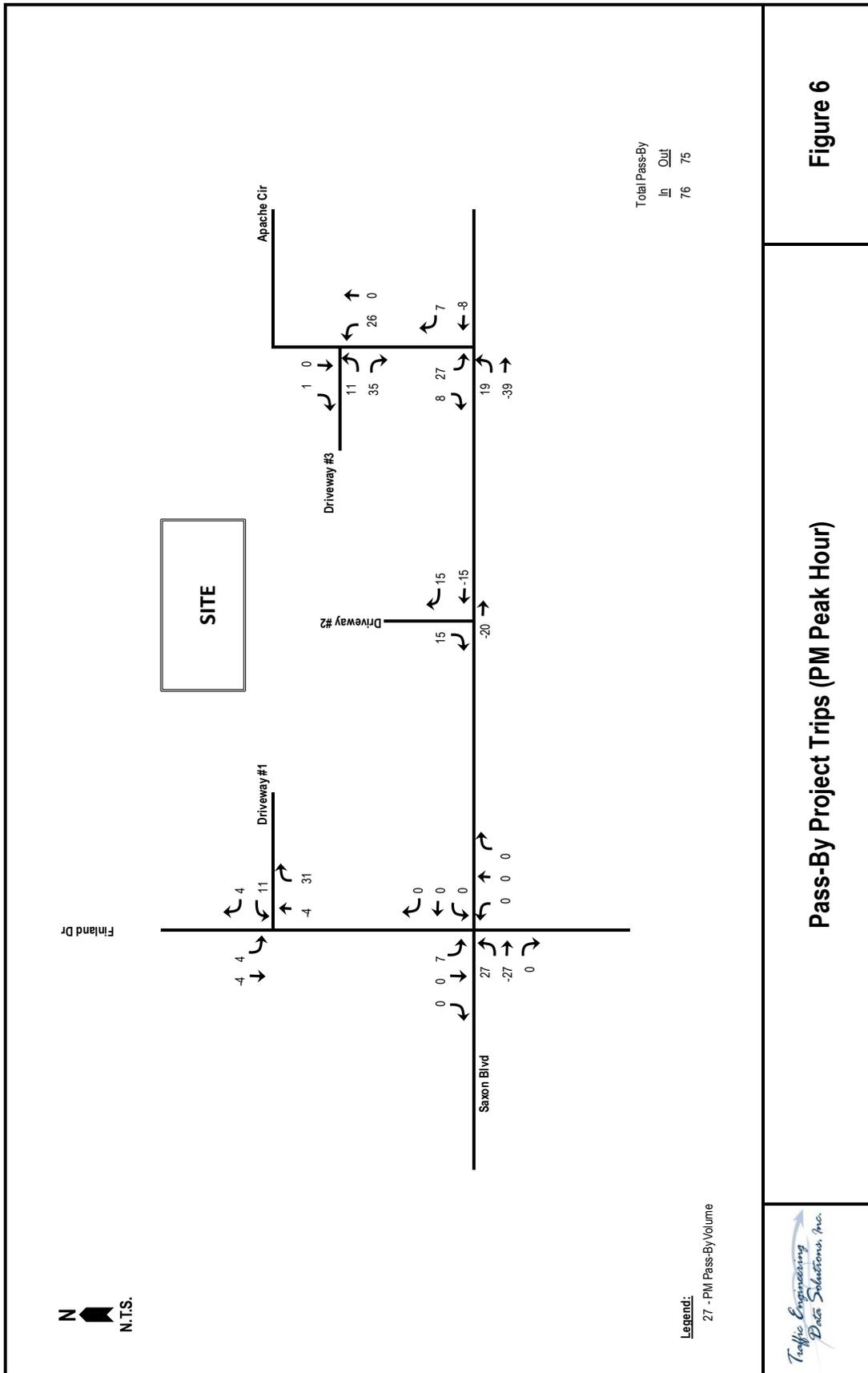
The project trips were then added to the future background traffic volumes to arrive at the total future PM peak-hour volumes for both the roadway segments and intersections. **Figure 7** shows the total (year 2014) PM peak-hour turning movement projections at the study intersections at build out of the development. **Table 4** summarizes the total PM peak-hour two-way volumes in year 2014 on the roadway segments at build out of the development.

Table 4
Year 2014 Roadway Segment Volumes and Operating Conditions
(PM Peak Hour Two-Way)

Roadway Segment	Number of Lanes	Adopted Level of Service Std.	Pk-Hr 2-Way Generalized Service Volume	Total Future Bckgrnd PM Pk-Hr 2-Way Volumes	Percent Assignment	Pk-Hr 2-Way Project Trips	Future PM Pk-Hr 2-Way Volume	Future Total Volume Exceeds Svc Vol?
Saxon Blvd								
Interstate 4 to Finland Dr	4	E	3,222	3,445	15.0%	18	3,463	YES
Finland Dr to Normandy Blvd	4	E	3,222	3,257	58.0%	69	3,326	YES
Apache Cir								
Saxon Blvd to Normandy Blvd	2	D	931	18	12.0%	14	32	no
Finland Dr								
South of Saxon Blvd	2	D	931	442	5.0%	6	448	no
Saxon Blvd to Sullivan St	2	D	931	397	10.0%	12	409	no



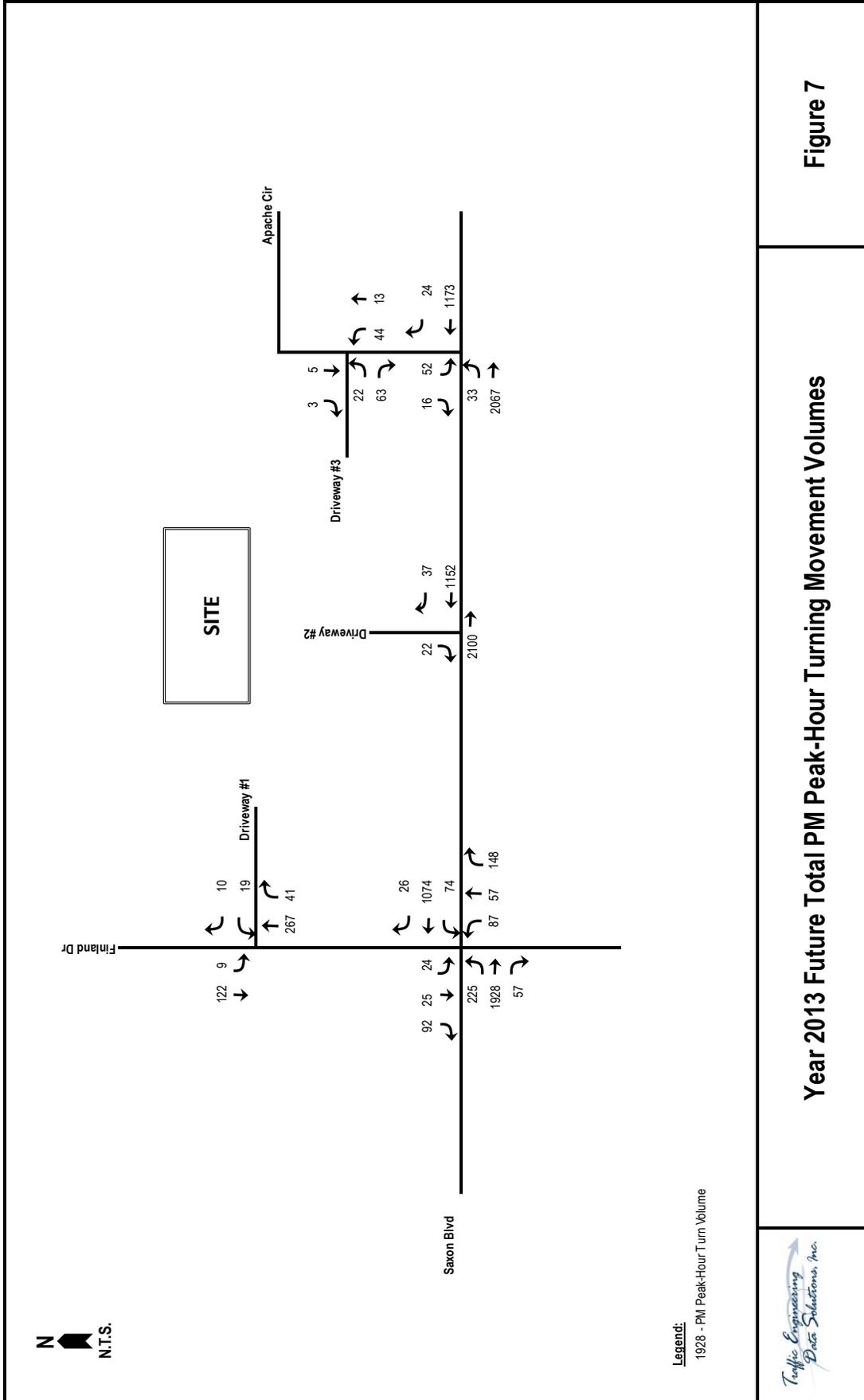




Traffic Engineering
Data Solutions, Inc.

Figure 6





FUTURE CONDITIONS ANALYSIS

The PM peak-hour operating conditions of the roadway segments were analyzed by comparing total projected PM peak-hour two-way segment volumes to each roadway's generalized service volume. As summarized in **Table 4**, the projected volumes on all study roadway segments are below the generalized service volumes, with the exception of Saxon Boulevard between Interstate 4 and Finland Drive and between Finland Drive and Normandy Boulevard. However, it should be noted that future background volumes on these two same roadway segments also exceed the generalized service volume thereby indicating that the deficiency is triggered by background traffic. Because a development is not required to mitigate deficiencies triggered by background traffic, the proposed development is not required to mitigate these deficiencies on Saxon Boulevard. All other study roadway segments are projected to have acceptable operating conditions in year 2014 at build out of the proposed RaceTrac gas station.

The PM peak-hour operating conditions of the Saxon Boulevard/Finland Drive intersection were analyzed at build out of the proposed development in year 2014 using HCS 2010 and the projected turning movements. Based on the HCS analysis, this intersection is projected to operate acceptably at overall level of service D (average delay of 40.0 seconds/vehicle) at build out of the proposed RaceTrac gas station. The HCS printout is provided in the **Appendix**. Despite the intersection being shown to operate at an acceptable level of service, the developer is proposing to construct a southbound right-turn lane at the Saxon Boulevard/Finland Drive intersection to enhance operating conditions at the intersection. Based on the evaluation provided in the **Appendix**, the project trips will increase the critical movement volume at the intersection by 8 PM peak-hour trips. However, the addition of a southbound right-turn lane increases the capacity of the critical movement sum by 92 PM peak-hour trips, thereby substantially offsetting the project's impact. Recognizing that the proposed improvement provides a capacity enhancement to City/County facilities, the engineering and construction costs for such improvement should be creditable against the project's transportation impact fees.

The unsignalized study intersections were also analyzed using HCS 2010 and the future turning movement volumes. As summarized in **Table 5**, all movements at the unsignalized intersections are projected to operate with acceptable levels of service. HCS printouts are provided in the **Appendix**.

Table 5
Summary of Unsignalized Intersection Analyses (PM Peak Hour)
Future Conditions (2014)

Intersection	Level of Service Standard	Delay (sec/veh)	Level of Service
Finland Drive at Driveway #1			
Southbound Left/Through	D	7.9	A
Westbound Left	D	11.4	B
Westbound Right	D	9.8	A
Saxon Boulevard at Driveway #2			
Southbound Right	E	12.2	B
Saxon Boulevard at Apache Circle			
Eastbound Left	E	11.5	B
Southbound Left/Right	E	42.0	E
Apache Circle at Driveway #3			
Northbound Left/Through	D	7.3	A
Eastbound Left/Right	D	8.9	A

CRITICAL/NEAR-CRITICAL ROADWAY SEGMENTS

A critical, near critical and hurricane critical roadway segment is one where the existing daily volume is 90 percent or more of a roadway's service volume at the adopted LOS standard. The Volusia TPO Transportation Impact Analysis Guidelines specifies that convenience store developments are to analyze such roadways that are located within a one-mile radius. As conveyed in the approved methodology, due to the fact that another RaceTrac gas station is located on the west of the Saxon Boulevard/Interstate 4 interchange, no roadways will be evaluated west of I-95 as motorists would be expected to use that RaceTrac service station. The only other critical/near-critical roadway located within a one-mile radius is Saxon Boulevard between Interstate 4 and Normandy Boulevard. However, these roadway segments were already evaluated in a prior section of this study. Therefore, no other roadways are analyzed as part of this section.

CONCLUSIONS

Traffic Engineering Data Solutions, Inc. (TEDS) was retained to analyze the projected traffic impact for a proposed RaceTrac gas station proposed in the northeast quadrant of the Saxon Boulevard/Finland Drive intersection in Deltona, Florida.

Based on the analyses, the existing PM peak-hour two-way volumes for all study roadway segments are below the generalized service volume, thereby indicating that all roadway segments currently have acceptable operating conditions. Additionally, the Saxon Boulevard/Finland Drive intersection currently operates acceptably with an overall intersection level of service (LOS) of D during the PM peak hour. Also, the southbound approach and eastbound left-turn movement at the Saxon Boulevard/Apache Circle intersection both currently operate acceptably at level of service B.

At build out of the proposed RaceTrac in 2014, the projected volumes on all study roadway segments are below the generalized service volumes, with the exception of Saxon Boulevard between Interstate 4 and Finland Drive and between Finland Drive and Normandy Boulevard. However, it should be noted that future background volumes on these two same roadway segments also exceed the generalized service volume thereby indicating that the deficiency is triggered by background traffic. Because a development is not required to mitigate deficiencies triggered by background traffic, the proposed development is not required to mitigate these deficiencies on Saxon Boulevard. All other study roadway segments are projected to have acceptable operating conditions in year 2014 at build out of the proposed RaceTrac gas station.

The Saxon Boulevard/Finland Drive intersection is projected to operate acceptably at LOS D at build out of the proposed development in 2014. Despite the intersection being shown to operate at an acceptable level of service, the developer is proposing to construct a southbound right-turn lane at the Saxon Boulevard/Finland Drive intersection to enhance operating conditions at the intersection. The addition of a southbound right-turn lane substantially offsets the project's impact. Recognizing that the proposed improvement provides a capacity enhancement to City/County facilities, the engineering and construction costs for such improvement should be creditable against the project's transportation impact fees.

With regard to the unsignalized intersections, all movements at the project driveways and the Saxon Boulevard/Apache Circle intersection are projected to operate acceptably at build out of the proposed RaceTrac service station in 2014.

Appendix

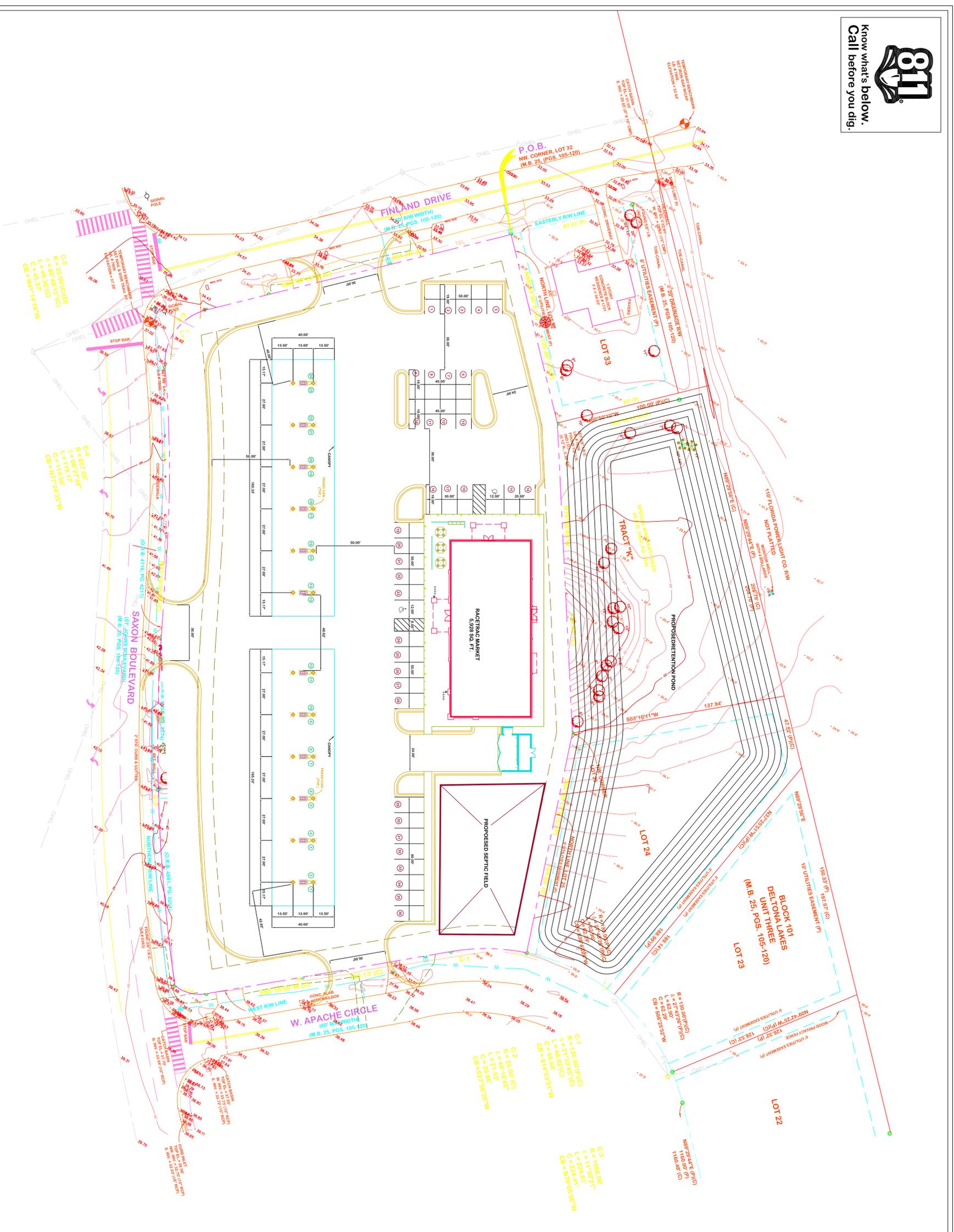


Preliminary Site Plan



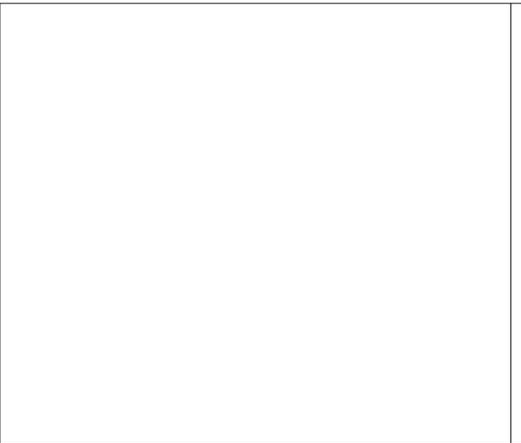


Know what's below.
Call before you dig.



CONTACT RACETRAC PETROLEUM, INC. PROJECT MANAGER PRIOR TO ANY REVISIONS TO THE PLAN SUPPLIED BY RACETRAC PETROLEUM, INC.

VICINITY MAP
NTS



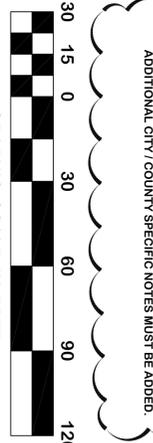
LEGEND

- PROPOSED ELEMENTS
- EXISTING ELEMENTS
- WATER LINE
- OVERHEAD ELECTRICAL LINE
- UNDERGROUND ELECTRICAL LINE
- TELEPHONE LINE
- GAS LINE
- SANITARY SEWER LINE
- (SD-4) DETAIL REFERENCE
- (N5000.00) NORTHINGS & EASTING COORDINATES
- (E5000.00)
- (E) ELECTRICAL TRANSFORMER PAD
- (1) PARKING SPACE COUNT / DISPENSER NUMBER
- (C) STORM CATCH BASIN
- (J) STORM JUNCTION BOX
- (CS) STORM OUTLET CONTROL STRUCTURE
- (SM) SANITARY SEWER MANHOLE
- (P) POWER POLE

SITE PLAN NOTES:

1. ALL WORK AND MATERIALS SHALL COMPLY WITH _____ COUNTY AND/OR CITY OF _____ REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
2. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS, DOOR LOCATIONS, AND UTILITY ENTRANCES.
3. ALL DISTURBED AREAS SHALL RECEIVE 4 INCHES OF TOPSOIL, SEED, MULCH, AND WATER UNTIL A HEALTHY STAND OF GRASS IS ESTABLISHED.
4. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE ABANDONED, REMOVED, OR RELOCATED PER PLANS. ALL COST SHALL BE INCLUDED IN BASE BID.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS AND POLES, ETC. AS REQUIRED PER PLANS. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL CURB DIMENSIONS ARE TO THE FACE OF GUTTER OF CURB UNLESS OTHERWISE NOTED.
6. ALL CURB DIMENSIONS ARE TO THE FACE OF STRUCTURAL CMU.
7. ALL BUILDING DIMENSIONS ARE TO THE FACE OF STRUCTURAL CMU. THE BOTTOM OF CANOPY AT ITS LOWEST POINT IS TO BE 18 FEET ABOVE THE FINISH FLOOR ELEVATION OF THE BUILDING.
9. ALL STRIPING ON THIS PLAN IS TO BE PAINTED WITHIN 48 HOURS OF COMPLETED PAVING UNLESS OTHERWISE NOTED.

NOTE TO DEC:
• ALL NOTES MUST BE EDITED TO BE SITE SPECIFIC.
• ADDITIONAL CITY / COUNTY SPECIFIC NOTES MUST BE ADDED.



<p>SITE PLAN RACETRAC MARKET Saxon Boulevard @ Finland Drive Deltona, Florida Volusia County</p>		<p>RACETRAC PETROLEUM, INC. 3225 CUMBERLAND BOULEVARD SUITE 100 ATLANTA, GA 30339 (770) 431-7600</p>		<p>THESE PLANS ARE SUBJECT TO FEDERAL COPYRIGHT LAWS: ANY USE OF SAME WITHOUT THE EXPRESSED WRITTEN PERMISSION OF RACETRAC PETROLEUM, INC. IS PROHIBITED.</p>		<p>NO.</p>	<p>DATE</p>
DATE	04/12/2013						
SCALE	1" = 30'						
DRAWN-BY	TR						
DRAWING NAME	1061-RT6000.dwg						
SHEET NO.	C-3.1						
VERSION	1						

Methodology



Ref: 10560

TECHNICAL MEMORANDUM

To: Mr. Chris Bowley, AICP
From: Chris J. Walsh, P.E.
Subject: Traffic Impact Analysis Methodology – RaceTrac
(Saxon Boulevard at Finland Drive) Deltona, Florida
Date: December 27, 2013

Introduction

Traffic Engineering Data Solutions, Inc. (TEDS) has been retained to conduct a traffic impact analysis for the proposed RaceTrac gas station in the northeast quadrant of the Saxon Boulevard/Finland Drive intersection in the City of Deltona, Florida (see **Figure 1**). The proposed gas station will include 24 vehicle fueling positions along with a 5,928 square-foot convenience store. A preliminary site plan of the proposed development is attached. This letter summarizes the methodology for the City of Deltona concurrency study and for the Volusia County Use Permit Traffic Impact Analysis (TIA).

Project Access

Access to the proposed development is proposed via three driveways. One full access driveway is proposed on Finland Drive approximately 120 feet north of Saxon Boulevard. A right-in/right-out driveway is proposed on Saxon Boulevard approximately 185 feet east of Finland Drive. A full ingress and right-out egress access driveway is proposed on Apache Road, approximately 110 feet north of Saxon Boulevard.

Trip Generation

The total daily and PM peak-hour trip generation potential for the development was determined based on trip generation equations and rates provided in the Institute of Transportation Engineer's (ITE) Information Report, *Trip Generation, 9th Edition*. For the gas station with convenience market, Land Use Code 945 (Gas Station with Convenience Store) was used. As summarized in **Table 1**, the proposed development is projected to generate 3,908 total daily trips and 324 total PM peak-hour trips (162 in, 162 out).

Pass-by trips for the gas station were calculated based on the pass-by rate of 56% for Land Use Code 945 (Gas Station with Convenience Store) as provided in ITE's *Trip Generation Handbook, 2nd Edition*. Of the total trip generation potential of the site, 181 PM peak-hour trips (91 in, 90 out) are expected to be pass-by trips. As summarized in **Table 1**, the proposed development is projected to generate 143 new external PM peak-hour trips (71 in, 72 out).

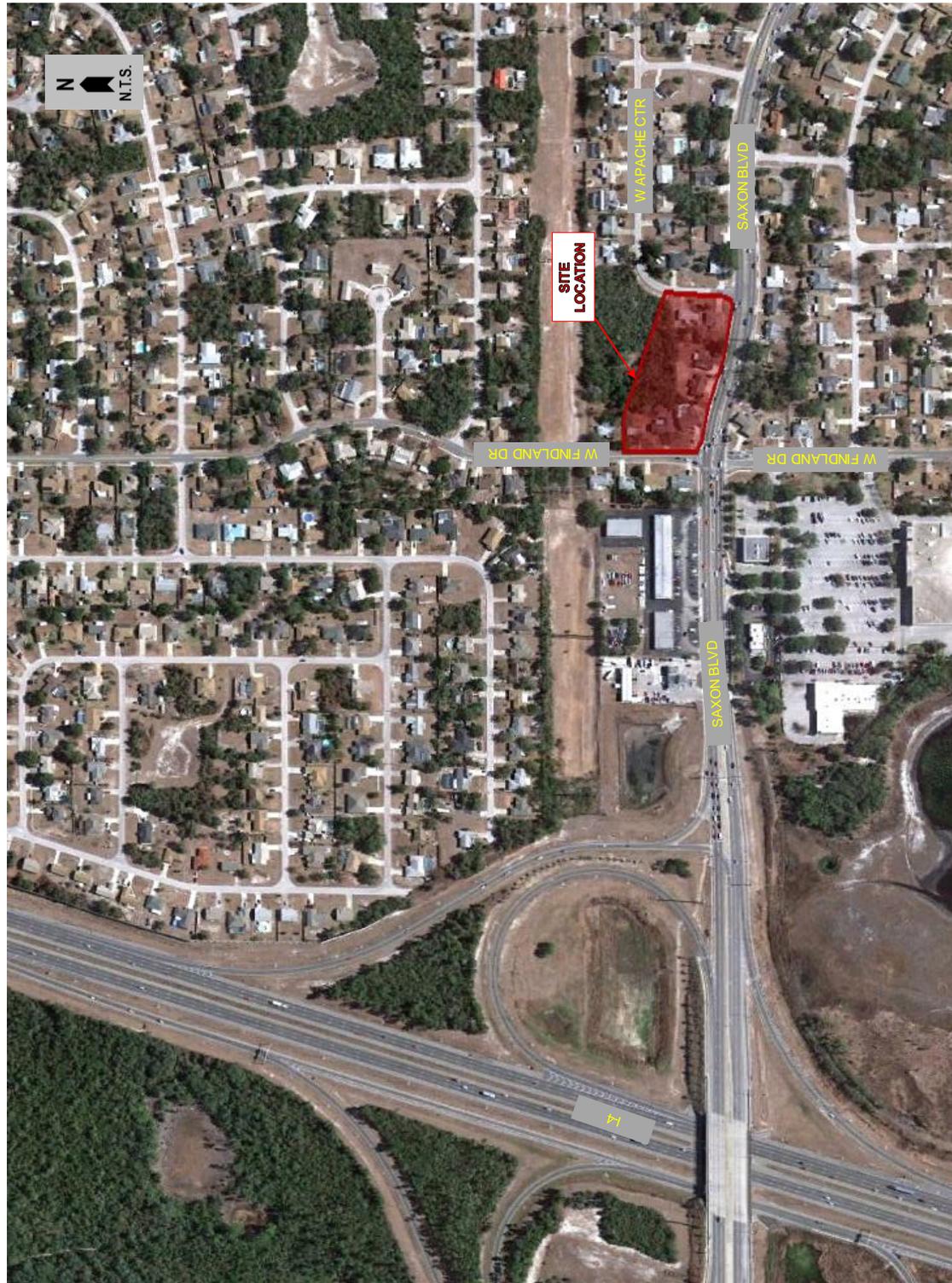


Figure 1
Site Location Map

Aerial Image: Google Earth
TEDS

**Table 1
 Total Trip Generation Summary**

Land Use	Intensity	Units	Daily			PM Peak		
			In	Out	Total	In	Out	Total
Gas/Svc Station with Convenience Market	24	Vehicle Fueling Positions	1954	1,954	3,908	162	162	324
Pass-By Trips	Pass-By %	56.0%	1,095	1,095	2,190	91	90	181
Net New External Trips			859	859	1,718	71	72	143

Gasoline/Service Station with Convenience Market(ITE 9th Edition - Land Use Code 945)

Daily	T = 162.78 x (# of VFP)	50% In	50% Out
PM Peak Hour	T = 13.51 x (# of VFP)	50% In	50% Out

In addition to the trip generation calculations above, a trip generation comparison will also be provided for the maximum development intensity allowed under both the approved and existing zoning for the parcels of the site.

Trip Distribution & Assignment

Project trips will be assigned to the study area roadways based on applying engineering judgment. The proposed trip distribution is provided in **Figure 2**.

Study Area

Because the proposed development is projected to generate more than 100 PM peak-hour trips, the study area was determined based upon a three-percent level of significance as consistent with the Volusia TPO Transportation Impact Analysis (TIA) Guidelines. A summary of the determination of the three-percent significance area can be found in **Table 2**. The adopted levels of service (LOS) included in **Table 2** were obtained from the City of Deltona’s comprehensive plan and the generalized service volumes based on FDOT’s 2012 Generalized Service Volume Tables.



**Table 2
 Summary of Significant Impact Determination**

Roadway Segment	Existing Number of Lanes	Adopted Level of Service Std.	Pk-Hr 2-Way Generalized Service Volume	Percent Assignment	Pk-Hr 2-Way Project Trips	Project Trips as % of Svc Vol.	Impact Exceeds 3%?
Saxon Blvd							
Interstate 4 to Finland Dr	4	E	3,222	15.0%	16	0.50%	no
Project to Normandy Blvd	4	E	3,222	70.0%	75	2.33%	no
Normandy Blvd to Tivoli Dr	4	E	3,222	70.0%	75	2.33%	no
Finland Dr							
South of Saxon Blvd	2	E	931	5.0%	5	0.54%	no
North of Project	2	E	931	10.0%	11	1.18%	no

Based on **Table 2**, none of the adjacent roadway segments meet or exceed three percent. However, the following roadway segments will be analyzed:

- Saxon Boulevard from Interstate 4 to Finland Drive
- Saxon Boulevard from Finland Drive to Normandy Boulevard
- Finland Drive south of Saxon Boulevard
- Finland Drive north of Saxon Boulevard
- Apache Circle

The study intersections will include the following:

- Saxon Boulevard at Finland Drive
- Saxon Boulevard at Apache Circle
- All access point intersections with public streets

The PM peak-hour background traffic volumes for the roadway segments will be projected based on vested trips from the City of Deltona and/or historical growth rates. Project trips will then be added to the future background volumes to project the build out conditions for each roadway segment and intersection.

The existing and future roadway segment and intersection operating conditions will be analyzed for the PM peak hour. The roadway segments will be analyzed by comparing the two-way link volumes to the generalized service volumes. Should the projected volume be less than the generalized service volume then it shall be concluded that the roadway will operate at an acceptable LOS standard at build out of the project. In the event the future volume of a roadway exceeds the generalized service volume, TEDS may conduct a more detailed highway/arterial analysis to further refine the level of service evaluation.

Existing and future PM peak-hour intersection operating conditions will be analyzed using the Highway Capacity Software based upon the committed geometry. Existing signal timings and phasing will be used for intersection analyses. A study intersection will be deemed to operate acceptably if the overall intersection LOS meets the adopted LOS standard for the roadways. Per the Volusia TPO TIA Guidelines, in the event the two intersecting roadways have different LOS standards, then the lower standard shall prevail. For example, if one roadway has a LOS standard of D and the intersecting road has a LOS standard of E, then the overall intersection LOS standard shall be E.

Critical and Near Critical Study Area

A critical, near critical and hurricane critical roadway segment is one where the existing daily volume is 90 percent or more of a roadway's service volume at the adopted LOS standard. All critical, near critical, and hurricane critical roadway segments located within a five-mile travel distance of the development will be analyzed if the project's impact is deemed to be non-deminimus. It should be noted that due to the fact that another RaceTrac gas station is located on the west of the Saxon Boulevard/Interstate 4 interchange, no roadways will be evaluated west of I-95 as motorists would be expected to use that RaceTrac service station.

Conclusions, Recommendations and Mitigation

Based upon the results of the analysis, conclusions and recommendations will be prepared. If the TIA identifies deficient roadways/intersections and the project's impacts are non-deminimus, then a plan to mitigate the project's impacts will be provided.

Chris Walsh

From: Chris Walsh <cwash@teds-fl.com>
Sent: Friday, January 10, 2014 9:44 AM
To: 'Ron Paradise'
Cc: 'Chris Bowley'; 'Melissa Winsett (mwinsett@volusia.org)'; 'Scott McGrath'; 'Kathrine Kyp'
Subject: RE: RaceTrac (Saxon at Finland) - Traffic Methodology
Attachments: Saxon&Normandy-PM Counts.pdf

Good morning Ron,

Upon receiving the Saxon Sterling TIA, I reviewed the TMC for Normandy/Saxon and think our assignment of traffic to Normandy (north/south of Saxon) and to Saxon (east of Normandy) as conveyed in item 4 in my response-to-comments email is not appropriate and should be adjusted. As shown in the attached count sheet, of traffic on the west leg of the Normandy/Saxon intersection, approx. 20% is to/from the north on Normandy, 16% to/from the south on Normandy, and 64% to/from the east on Saxon. Recognizing that our project assignment on Saxon (east of the project) is 70%, this means our new proposed assignment is as follows:

To/from the north on Normandy = $70\% \times 20\% = \underline{14\%}$
To/from the south on Normandy = $70\% \times 16\% = \underline{11\%}$
To/from the east on Saxon (east of Normandy) = $70\% \times 64\% = \underline{45\%}$

Thus, we would like to revise our response to comment #4 to as follows:

- 4) Trip Distribution – Suggest that a certain percentage of trips will use Apache Circle and Apache needs to be modeled.

Response: Project-related trips will be assigned to Apache. However, access onto apache has not been finalized in terms of full access or turn restrictions. When considering the assignment of traffic it should be noted that of the 70% project trips to/from the east on Saxon, 11% will be to/from the south on Normandy (south of Saxon), 14% to/from the north on Normandy (north of Saxon), and the remaining 45% to/from the east on Saxon (east of Normandy).

I know you are probably jazzed up by reading this technical stuff....but that's what we do. Please call or email with any questions and also please let me know if you find this revised response acceptable.

Chris

Chris J. Walsh, PE
Senior Transportation Engineer

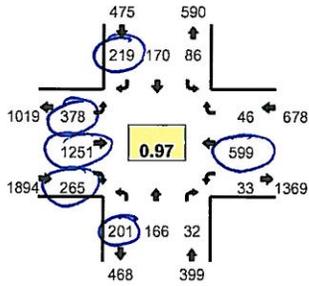


Traffic Engineering Data Solutions, Inc.
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DeBary, Florida 32713
386.753.0558 (o) 386.801.5682 (c)
[cwash@teds-fl.com](mailto:cwalsh@teds-fl.com)
www.teds-fl.com

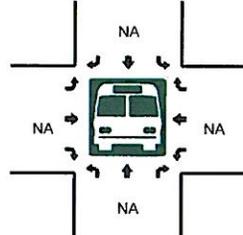
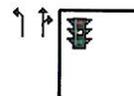
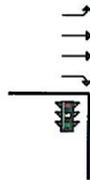
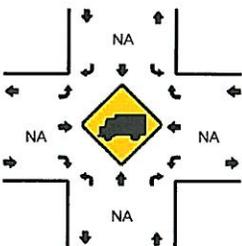
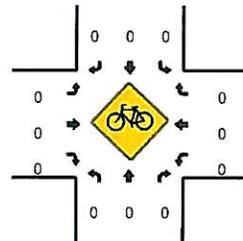
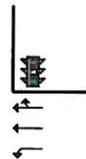
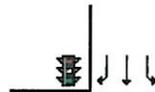
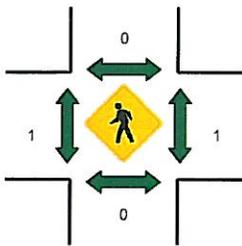
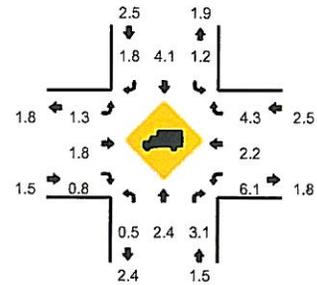
From: Ron Paradise [mailto:RParadise@deltonafl.gov]
Sent: Thursday, January 09, 2014 10:34 AM

LOCATION: Normandy Blvd -- Saxon Blvd
 CITY/STATE: Deltona, FL

QC JOB #: 11213804
 DATE: Wed, Sep 11 2013



Peak-Hour: 5:00 PM -- 6:00 PM
 Peak 15-Min: 5:15 PM -- 5:30 PM



15-Min Count Period Beginning At	Normandy Blvd (Northbound)				Normandy Blvd (Southbound)				Saxon Blvd (Eastbound)				Saxon Blvd (Westbound)				Total	Hourly Totals				
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*							
4:00 PM	40	28	5	0	2	13	33	23	0	11	77	261	48	0	9	8	141	8	0	0	707	
4:15 PM	43	32	3	0	1	12	33	48	0	13	91	237	54	0	13	4	123	9	0	0	716	
4:30 PM	52	39	6	0	1	11	31	35	0	20	80	272	47	0	14	7	148	9	0	0	772	
4:45 PM	40	35	10	0	3	23	35	36	0	18	98	293	48	0	22	6	150	5	0	2	824	3019
5:00 PM	47	47	5	0	0	19	35	33	0	12	93	297	40	0	22	7	181	11	0	1	850	3162
5:15 PM	56	37	7	0	1	22	52	51	0	16	93	315	50	0	18	11	146	12	0	0	887	3333
5:30 PM	50	44	10	0	1	21	35	41	0	12	89	320	54	0	17	7	142	10	0	2	855	3416
5:45 PM	48	38	8	0	0	24	48	36	0	18	103	319	48	0	16	8	130	8	0	2	854	3446

$219 + 378 + 1251 + 599 + 265 + 201 = 2913$
 $To/From NORTH = 20\% = \left(\frac{219 + 378}{2913}\right)$
 $To/From SOUTH = \left(\frac{201 + 265}{2913}\right) = 16\%$
 $To/From EAST = \left(\frac{1251 + 599}{2913}\right) = 64\%$

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total				
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*						
All Vehicles	224	148	28	0	4	88	208	204	0	64	372	1260	200	0	72	44	584	48	0	0	3548
Heavy Trucks	0	0	0			0	0	8			8	36	0			4	12	4			72
Pedestrians	0	0				0	0				0	0				4					4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Railroad																					
Stopped Buses																					

Comments:

To: Chris Walsh
Cc: Chris Bowley; Melissa Winsett (mwinsett@volusia.org); Scott McGrath; Kathrine Kyp
Subject: RE: RaceTrac (Saxon at Finland) - Traffic Methodology

Chris, thanks for the responses. Please be advised that both Apache and Finland are local roads have a LOS of "D" Comp Plan requirement.

With regard to access, it is understood that TEDS will model the traffic with the access off of Saxon. However, that access assumption will probably result in staff questions and will possibly create a condition for the City to engage in peer review – at the expense of the applicant. In addition, the process may be protracted.

Finally, modeling the access off of Saxon does not obligate the City to approve or otherwise acknowledge the appropriateness of such access during the rezoning or subsequent land development reviews/processes.

If there are any questions feel free to contact me at 878-8610.

Have a good day.

Ron Paradise

From: Chris Walsh [<mailto:cwalsh@teds-fl.com>]
Sent: Tuesday, January 07, 2014 1:22 PM
To: Ron Paradise
Cc: Chris Bowley; 'Melissa Winsett'; Scott McGrath; Kathrine Kyp
Subject: RE: RaceTrac (Saxon at Finland) - Traffic Methodology

Good afternoon Ron,

Below are responses to the methodology comments. Please let me know if these responses are acceptable to the City.

Thanks

Chris

Senior Transportation Engineer



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DeBary, Florida 32713
386.753.0558 (o) 386.801.5682 (c)
cwalsh@teds-fl.com
www.teds-fl.com

From: Ron Paradise [<mailto:RParadise@deltonafl.gov>]
Sent: Tuesday, December 31, 2013 2:45 PM
To: Chris Walsh
Cc: Chris Bowley; Melissa Winsett (mwinsett@volusia.org); Scott McGrath; Kathrine Kyp
Subject: RE: RaceTrac (Saxon at Finland) - Traffic Methodology

Mr. Walsh, Mr. Bowley and I went over the methodology provided to us by TEDS. Thanks.

Below are some comments:

1) Project Access – The proposed right in and right out on Saxon does not comply with section 96-37(a)(10)(c)(5)(ii) of the City Land Development Code. That Section calls for 250' of turn lane for right turns. In addition, Table 96-6B of the City Code (Chapter 96) requires at least 335' of separation between access points. The site has about 420' of frontage. Also, City staff is concerned about the safety ramifications regarding a right in and right out on Saxon. There is no problem with the suggested full access points on Finland and Apache Circle being modeled. However, the exact distances from Saxon will be determined as project review matures.

Response: The TIA will reflect the proposed access. Should the proposed access be adjusted based on further discussion with the City/County, then the TIA will be adjusted accordingly.

2) Trip Generation - The 3,908 total daily trips seems reasonable.

Response: No comment

3) Location Map – The site location maps do not depict the entire property. (Picky I know.)

Response: The maps within the TIA will be modified accordingly.

4) Trip Distribution – Suggest that a certain percentage of trips will use Apache Circle and Apache needs to be modeled.

Response: Project-related trips will be assigned to Apache. However, access onto Apache has not been finalized in terms of full access or turn restrictions. When considering the assignment of traffic it should be noted that of the 70% project trips to/from the east on Saxon, 20% will be to/from the south on Normandy, south of Saxon, 30% to/from the north on Normandy, north of Saxon, and the remaining 20% to/from the east on Saxon, east of Normandy.

5) Trip Distribution Map – Please provide directional information for traffic splits.

Response: The percentages shown in the distribution map reflect each direction. So, as an example, the 15% on Saxon west of Finland indicates that 15% of the inbound traffic and 15% of the outbound traffic will be assigned to this roadway segment.

6) Table 2 – Apache Circle should be included in Table 2. In addition, Apache and Finland are considered local roads and have a LOS threshold of “D” as articulated in Policy T1-4.3 of the City Comprehensive Plan.

Response: Apache will be added to Table 2

7) PM Peak Hour Volumes – With regard to volume projections and City growth rates, please be advised that the City utilizes a 2.5% annual growth rate as per the City CIE. In addition, there are several projects that will affect traffic volumes on the Saxon corridor associated with the project. The projects include the Saxon/Sterling Silver development (retail and office) and the Halifax medical clinic located near Publix.

Response: The background trips will account for trips to/from both developments.

Mr. Bowley and I will be calling you to discuss when you get back in the office.

Thanks and have a great day.

Ron

From: Chris Walsh [<mailto:cwalsh@teds-fl.com>]
Sent: Friday, December 27, 2013 2:55 PM
To: Ron Paradise
Cc: bpotts@tannathdesign.com; 'Sutapaha, Victor'
Subject: RaceTrac (Saxon at Finland) - Traffic Methodology

Good afternoon Ron,

Attached is a proposed methodology for a traffic impact study for the proposed RaceTrac service station in the northeast quadrant of the Saxon/Finland intersection. Please call or email with any questions.

Chris

Chris J. Walsh, PE
Senior Transportation Engineer



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DeBary, Florida 32713
386.753.0558 (o) 386.801.5682 (c)
cwalsh@teds-fl.com
www.teds-fl.com

Florida has a very broad Public Records Law. Virtually all written communications to or from State and Local Officials and employees are public records available to the public and media upon request. The City of Deltona's policy does not differentiate between personal and business emails. This means email messages, including your e-mail address and any attachments and information we receive online might be disclosed to any person or media making a public records request. E-mail sent on the City system will be considered public and will only be withheld from disclosure if deemed confidential or exempt pursuant to State Law. If you are an individual whose identifying information is exempt under 119.071, Florida Statutes, please so indicate in your email or other communication. If you have any questions about the Florida public records law refer to Chapter 119 Florida Statutes.

Traffic Data



Traffic Engineering Data Solutions, Inc.

80 Spring Vista Drive
DeBary, FL 32713

File Name : Not Named 2
Site Code : 00000000
Start Date : 5/6/2013
Page No : 1

Groups Printed- All Vehicles

Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	23	0	2	0	25	4	3	53	0	60	6	114	6	0	126	5	390	5	0	400	611
07:15 AM	28	1	5	0	34	8	3	43	0	54	7	135	2	0	144	5	474	2	0	481	713
07:30 AM	35	1	9	0	45	3	3	73	0	79	13	165	7	0	185	7	447	4	1	459	768
07:45 AM	25	1	8	0	34	10	2	50	0	62	9	154	2	0	165	8	485	2	0	495	756
Total	111	3	24	0	138	25	11	219	0	255	35	568	17	0	620	25	1796	13	1	1835	2848
08:00 AM	18	0	6	0	24	2	1	61	0	64	7	142	3	0	152	5	476	9	0	490	730
08:15 AM	27	1	4	0	32	4	6	42	1	53	6	126	2	2	136	3	317	3	0	323	544
08:30 AM	18	3	6	0	27	1	4	39	0	44	14	144	12	0	170	5	359	0	0	364	605
08:45 AM	11	3	7	0	21	3	2	45	1	51	16	150	6	0	172	8	330	5	1	344	588
Total	74	7	23	0	104	10	13	187	2	212	43	562	23	2	630	21	1482	17	1	1521	2467
*** BREAK ***																					
04:00 PM	22	16	29	0	67	4	5	39	0	48	34	404	11	0	449	8	193	5	2	208	772
04:15 PM	18	4	19	0	41	6	11	26	1	44	40	392	11	0	443	24	240	5	0	269	797
04:30 PM	23	11	25	0	59	5	11	26	0	42	32	380	6	0	418	9	231	1	0	241	760
04:45 PM	32	8	27	0	67	2	7	25	0	34	39	395	17	0	451	19	220	4	2	245	797
Total	95	39	100	0	234	17	34	116	1	168	145	1571	45	0	1761	60	884	15	4	963	3126
05:00 PM	23	13	35	0	71	1	5	24	1	31	56	435	15	0	506	13	247	2	0	262	870
05:15 PM	23	13	39	0	75	2	6	22	0	30	41	485	16	0	542	13	228	7	2	250	897
05:30 PM	20	15	26	0	61	3	3	19	0	25	49	479	13	2	543	18	242	7	0	267	896
05:45 PM	17	12	32	0	61	2	9	27	0	38	47	437	12	1	497	17	233	5	0	255	851
Total	83	53	132	0	268	8	23	92	1	124	193	1836	56	3	2088	61	950	21	2	1034	3514
Grand Total	363	102	279	0	744	60	81	614	4	759	416	4537	141	5	5099	167	5112	66	8	5353	11955
Apprch %	48.8	13.7	37.5	0		7.9	10.7	80.9	0.5		8.2	89	2.8	0.1		3.1	95.5	1.2	0.1		
Total %	3	0.9	2.3	0	6.2	0.5	0.7	5.1	0	6.3	3.5	38	1.2	0	42.7	1.4	42.8	0.6	0.1	44.8	

Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	28	1	5	0	34	8	3	43	0	54	7	135	2	0	144	5	474	2	0	481	713
07:30 AM	35	1	9	0	45	3	3	73	0	79	13	165	7	0	185	7	447	4	1	459	768
07:45 AM	25	1	8	0	34	10	2	50	0	62	9	154	2	0	165	8	485	2	0	495	756
08:00 AM	18	0	6	0	24	2	1	61	0	64	7	142	3	0	152	5	476	9	0	490	730
Total Volume	106	3	28	0	137	23	9	227	0	259	36	596	14	0	646	25	1882	17	1	1925	2967
% App. Total	77.4	2.2	20.4	0		8.9	3.5	87.6	0		5.6	92.3	2.2	0		1.3	97.8	0.9	0.1		
PHF	.757	.750	.778	.000	.761	.575	.750	.777	.000	.820	.692	.903	.500	.000	.873	.781	.970	.472	.250	.972	.966

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM					07:15 AM					07:30 AM					07:45 AM				
+0 mins.	23	0	2	0	25	8	3	43	0	54	7	135	2	0	144	5	474	2	0	481
+15 mins.	28	1	5	0	34	3	3	73	0	79	13	165	7	0	185	7	447	4	1	459
+30 mins.	35	1	9	0	45	10	2	50	0	62	9	154	2	0	165	8	485	2	0	495
+45 mins.	25	1	8	0	34	2	1	61	0	64	7	142	3	0	152	5	476	9	0	490
Total Volume	111	3	24	0	138	23	9	227	0	259	36	596	14	0	646	25	1882	17	1	1925
% App. Total	80.4	2.2	17.4	0		8.9	3.5	87.6	0		5.6	92.3	2.2	0		1.3	97.8	0.9	0.1	
PHF	.793	.750	.667	.000	.767	.575	.750	.777	.000	.820	.692	.903	.500	.000	.873	.781	.970	.472	.250	.972

Traffic Engineering Data Solutions, Inc.

80 Spring Vista Drive
DeBary, FL 32713

File Name : Not Named 2
Site Code : 00000000
Start Date : 5/6/2013
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Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	23	13	35	0	71	1	5	24	1	31	56	435	15	0	506	13	247	2	0	262	870
05:15 PM	23	13	39	0	75	2	6	22	0	30	41	485	16	0	542	13	228	7	2	250	897
05:30 PM	20	15	26	0	61	3	3	19	0	25	49	479	13	2	543	18	242	7	0	267	896
05:45 PM	17	12	32	0	61	2	9	27	0	38	47	437	12	1	497	17	233	5	0	255	851
Total Volume	83	53	132	0	268	8	23	92	1	124	193	1836	56	3	2088	61	950	21	2	1034	3514
% App. Total	31	19.8	49.3	0		6.5	18.5	74.2	0.8		9.2	87.9	2.7	0.1		5.9	91.9	2	0.2		
PHF	.902	.883	.846	.000	.893	.667	.639	.852	.250	.816	.862	.946	.875	.375	.961	.847	.962	.750	.250	.968	.979

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM					04:00 PM					05:00 PM					05:00 PM				
+0 mins.	32	8	27	0	67	4	5	39	0	48	56	435	15	0	506	13	247	2	0	262
+15 mins.	23	13	35	0	71	6	11	26	1	44	41	485	16	0	542	13	228	7	2	250
+30 mins.	23	13	39	0	75	5	11	26	0	42	49	479	13	2	543	18	242	7	0	267
+45 mins.	20	15	26	0	61	2	7	25	0	34	47	437	12	1	497	17	233	5	0	255
Total Volume	98	49	127	0	274	17	34	116	1	168	193	1836	56	3	2088	61	950	21	2	1034
% App. Total	35.8	17.9	46.4	0		10.1	20.2	69	0.6		9.2	87.9	2.7	0.1		5.9	91.9	2	0.2	
PHF	.766	.817	.814	.000	.913	.708	.773	.744	.250	.875	.862	.946	.875	.375	.961	.847	.962	.750	.250	.968

Traffic Engineering Data Solutions, Inc.

80 Spring Vista Drive
DeBary, FL 32713

File Name : AM_PM Peak TMC
Site Code : 00000000
Start Date : 5/6/2013
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Groups Printed- Heavy Vehicles

Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	0	1	0	1	0	2	0	0	2	1	8	0	0	9	1	1	0	0	2	14
07:15 AM	0	0	0	0	0	1	0	0	0	1	1	3	0	0	4	0	3	0	0	3	8
07:30 AM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	4	0	1	5	8
07:45 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	4
Total	2	0	1	0	3	1	2	0	0	3	2	14	0	0	16	1	10	0	1	12	34
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	3	0	0	3	6
08:15 AM	1	0	0	0	1	1	0	0	0	1	0	4	0	2	6	0	1	0	0	1	9
08:30 AM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	3	0	0	3	5
08:45 AM	0	0	1	0	1	0	0	0	1	1	0	4	0	0	4	0	4	1	1	6	12
Total	1	0	1	0	2	1	1	0	1	3	0	12	0	2	14	0	11	1	1	13	32

*** BREAK ***

04:00 PM	0	0	0	0	0	1	0	0	0	1	0	5	0	0	5	0	1	0	2	3	9
04:15 PM	1	0	0	0	1	0	0	0	1	1	0	2	0	0	2	0	6	0	0	6	10
04:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
Total	2	0	0	0	2	2	0	0	1	3	0	11	0	0	11	0	15	0	2	17	33
05:00 PM	0	0	0	0	0	0	0	0	1	1	2	4	0	0	6	0	6	0	0	6	13
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	2	5	5
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	0	1	0	0	1	3
Total	0	0	0	0	0	0	0	0	1	1	2	5	0	1	8	0	12	0	2	14	23
Grand Total	5	0	2	0	7	4	3	0	3	10	4	42	0	3	49	1	48	1	6	56	122
Apprch %	71.4	0	28.6	0		40	30	0	30		8.2	85.7	0	6.1		1.8	85.7	1.8	10.7		
Total %	4.1	0	1.6	0	5.7	3.3	2.5	0	2.5	8.2	3.3	34.4	0	2.5	40.2	0.8	39.3	0.8	4.9	45.9	

Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	0	1	0	1	0	2	0	0	2	1	8	0	0	9	1	1	0	0	2	14
07:15 AM	0	0	0	0	0	1	0	0	0	1	1	3	0	0	4	0	3	0	0	3	8
07:30 AM	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	4	0	1	5	8
07:45 AM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	2	0	0	2	4
Total Volume	2	0	1	0	3	1	2	0	0	3	2	14	0	0	16	1	10	0	1	12	34
% App. Total	66.7	0	33.3	0		33.3	66.7	0	0		12.5	87.5	0	0		8.3	83.3	0	8.3		
PHF	.500	.000	.250	.000	.750	.250	.250	.000	.000	.375	.500	.438	.000	.000	.444	.250	.625	.000	.250	.600	.607

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:00 AM					07:00 AM					07:00 AM					07:15 AM				
+0 mins.	0	0	1	0	1	0	2	0	0	2	1	8	0	0	9	0	3	0	0	3
+15 mins.	0	0	0	0	0	1	0	0	0	1	1	3	0	0	4	0	4	0	1	5
+30 mins.	1	0	0	0	1	0	0	0	0	0	0	2	0	0	2	0	2	0	0	2
+45 mins.	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	3	0	0	3
Total Volume	2	0	1	0	3	1	2	0	0	3	2	14	0	0	16	0	12	0	1	13
% App. Total	66.7	0	33.3	0		33.3	66.7	0	0		12.5	87.5	0	0		0	92.3	0	7.7	
PHF	.500	.000	.250	.000	.750	.250	.250	.000	.000	.375	.500	.438	.000	.000	.444	.000	.750	.000	.250	.650

Traffic Engineering Data Solutions, Inc.

80 Spring Vista Drive
DeBary, FL 32713

File Name : AM_PM Peak TMC
Site Code : 00000000
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Start Time	FINLAND Northbound					FINLAND Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	1	0	0	0	1	0	0	0	1	1	0	2	0	0	2	0	6	0	0	6	10
04:30 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	5
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	5	0	0	5	9
05:00 PM	0	0	0	0	0	0	0	0	1	1	2	4	0	0	6	0	6	0	0	6	13
Total Volume	2	0	0	0	2	1	0	0	2	3	2	10	0	0	12	0	20	0	0	20	37
% App. Total	100	0	0	0		33.3	0	0	66.7		16.7	83.3	0	0		0	100	0	0		
PHF	.500	.000	.000	.000	.500	.250	.000	.000	.500	.750	.250	.625	.000	.000	.500	.000	.833	.000	.000	.833	.712

Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM					03:45 PM					04:15 PM					04:15 PM					
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	6	0	0	6	
+15 mins.	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	
+30 mins.	1	0	0	0	1	0	0	0	1	1	0	4	0	0	4	0	5	0	0	5	
+45 mins.	1	0	0	0	1	1	0	0	0	1	2	4	0	0	6	0	6	0	0	6	
Total Volume	2	0	0	0	2	2	0	0	1	3	2	10	0	0	12	0	20	0	0	20	
% App. Total	100	0	0	0		66.7	0	0	33.3		16.7	83.3	0	0		0	100	0	0		
PHF	.500	.000	.000	.000	.500	.500	.000	.000	.250	.750	.250	.625	.000	.000	.500	.000	.833	.000	.000	.833	

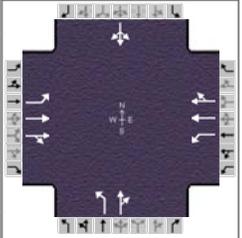
Groups Printed- All Vehicles

Start Time	APACHE Northbound					APACHE Southbound					SAXON Eastbound					SAXON Westbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
04:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	2
04:15 PM	0	0	0	0	0	0	0	3	0	3	3	0	0	0	3	0	0	1	0	1	7
04:30 PM	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	3	0	3	1	0	0	0	1	0	0	0	0	0	4
Total	0	0	0	0	0	0	0	7	0	7	7	0	0	0	7	0	0	2	0	2	16
05:00 PM	0	0	0	0	0	0	0	3	0	3	3	0	0	0	3	0	0	0	0	0	6
05:15 PM	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	0	2	1	3	6
05:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	1	0	1	3
05:45 PM	0	0	0	0	0	0	0	1	0	1	3	0	0	1	4	0	0	0	0	0	5
Total	0	0	0	0	0	0	0	5	0	5	10	0	0	1	11	0	0	3	1	4	20
Grand Total	0	0	0	0	0	0	0	12	0	12	17	0	0	1	18	0	0	5	1	6	36
Apprch %	0	0	0	0		0	0	100	0		94.4	0	0	5.6		0	0	83.3	16.7		
Total %	0	0	0	0	0	0	0	33.3	0	33.3	47.2	0	0	2.8	50	0	0	13.9	2.8	16.7	

Existing Conditions HCS

HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	TEDS			Duration, h	0.25	
Analyst	KJM	Analysis Date	May 14, 2013		Area Type	Other
Jurisdiction	Deltona	Time Period	PM Peak Hour		PHF	0.95
Intersection	Saxon Blvd at Finland Drive	Analysis Year	2013		Analysis Period	1 > 7:00
File Name	Existing Conditions - PM Peak Hour.xus					
Project Description	Existing Conditions					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	193	1836	56	61	950	21	83	53	132	8	23	92

Signal Information				Signal Timing (s)								Signal Phases												
Cycle, s	130.0	Reference Phase	2	Green	6.0	4.1	70.4	23.5	0.0	0.0	Yellow	4.5	4.5	4.5	4.0	0.0	0.0	Red	2.0	2.0	2.0	2.5	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	23.1	87.5	12.5	76.9		30.0		30.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.0	0.0	4.0	0.0		5.3		5.3
Queue Clearance Time (g _s), s	16.5		6.6			25.0		16.2
Green Extension Time (g _e), s	0.1	0.0	0.1	0.0		0.0		1.4
Phase Call Probability	1.00		0.90			1.00		1.00
Max Out Probability	1.00		0.01			1.00		0.54

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	203	996	996	64	513	509	87	195			114	
Adjusted Saturation Flow Rate (s), veh/h/ln	1792	1845	1825	1792	1881	1867	1296	1667			1609	
Queue Service Time (g _s), s	14.5	57.5	58.8	4.6	22.4	22.4	8.7	14.1			0.0	
Cycle Queue Clearance Time (g _c), s	14.5	57.5	58.8	4.6	22.4	22.4	23.0	14.1			14.2	
Capacity (c), veh/h	229	1149	1137	83	1019	1011	147	301			321	
Volume-to-Capacity Ratio (X)	0.887	0.867	0.876	0.774	0.504	0.504	0.594	0.646			0.355	
Available Capacity (c _a), veh/h	255	1149	1137	200	1019	1011	147	301			321	
Back of Queue (Q), veh/ln (95th percentile)	12.8	32.7	33.3	4.3	14.8	14.7	5.7	10.5			6.0	
Overflow Queue (Q ₃), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Queue Storage Ratio (RQ) (95th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.44	0.00			0.00	
Uniform Delay (d ₁), s/veh	55.8	20.1	20.3	61.3	18.8	18.8	60.2	49.4			46.8	
Incremental Delay (d ₂), s/veh	27.3	8.9	9.5	14.1	1.8	1.8	7.5	5.4			0.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	83.1	28.9	29.9	75.4	20.6	20.6	67.7	54.8			47.8	
Level of Service (LOS)	F	C	C	E	C	C	E	D			D	
Approach Delay, s/veh / LOS	34.4	C		23.8	C		58.8	E		47.8	D	
Intersection Delay, s/veh / LOS	33.5						C					

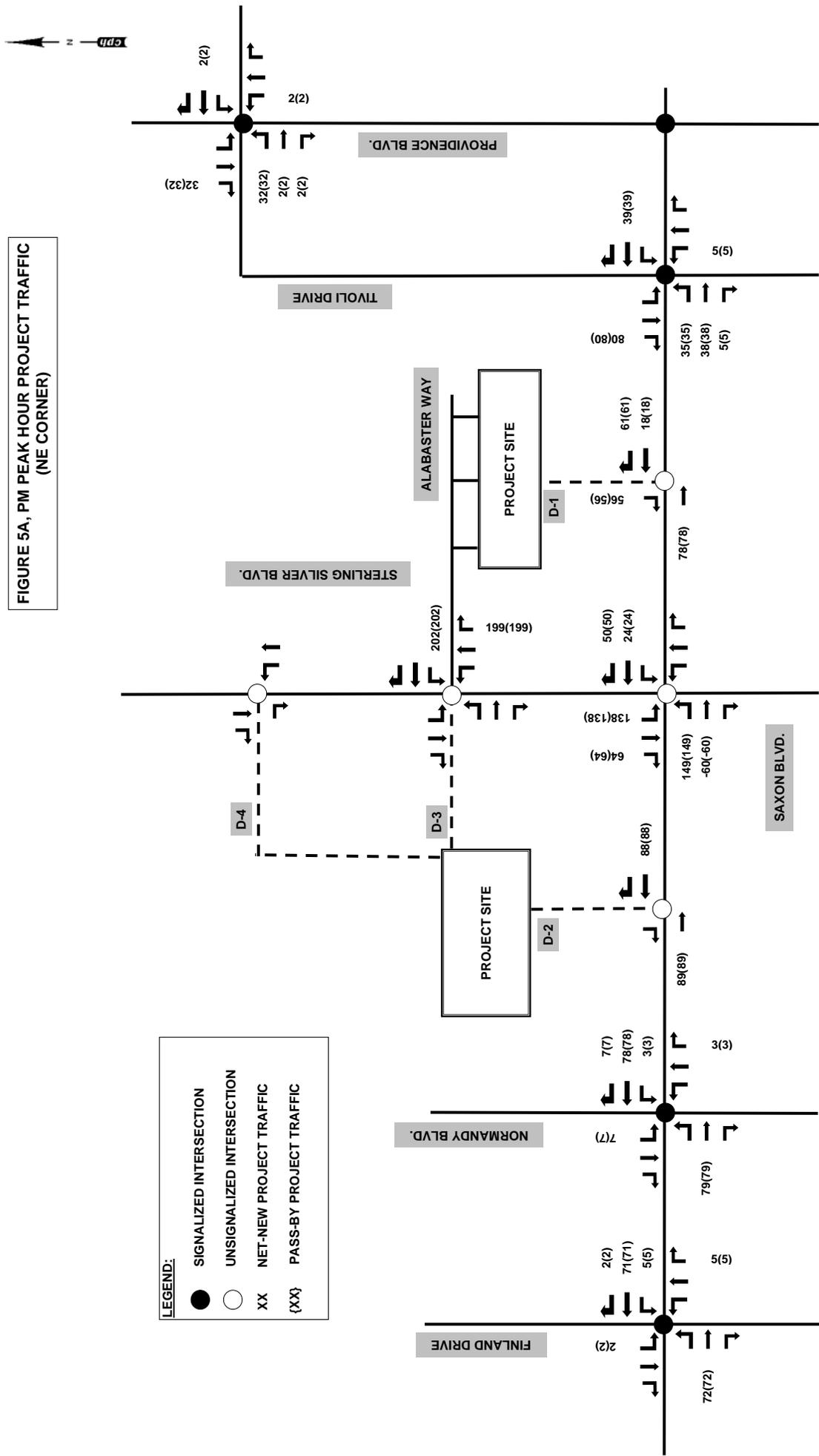
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	2.3	B	1.4	A	1.0	A	0.7	A

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	TEDS		Intersection	Saxon at Apache				
Agency/Co.	TEDS		Jurisdiction	Deltona				
Date Performed	1/15/2014		Analysis Year	2013				
Analysis Time Period	PM Peak							
Project Description Saxon Blvd at Apache - PM Peak - Existing Conditions								
East/West Street: Saxon Blvd			North/South Street: Apache Circle					
Intersection Orientation: East-West			Study Period (hrs): 0.25					
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	10	1966			1027	3		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	10	1966	0	0	1027	3		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Two Way Left Turn Lane							
RT Channelized			0			0		
Lanes	1	2	0	0	2	0		
Configuration	L	T			T	TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				0		5		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	5		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (veh/h)	10						5	
C (m) (veh/h)	682						564	
v/c	0.01						0.01	
95% queue length	0.04						0.03	
Control Delay (s/veh)	10.4						11.4	
LOS	B						B	
Approach Delay (s/veh)	--	--					11.4	
Approach LOS	--	--					B	

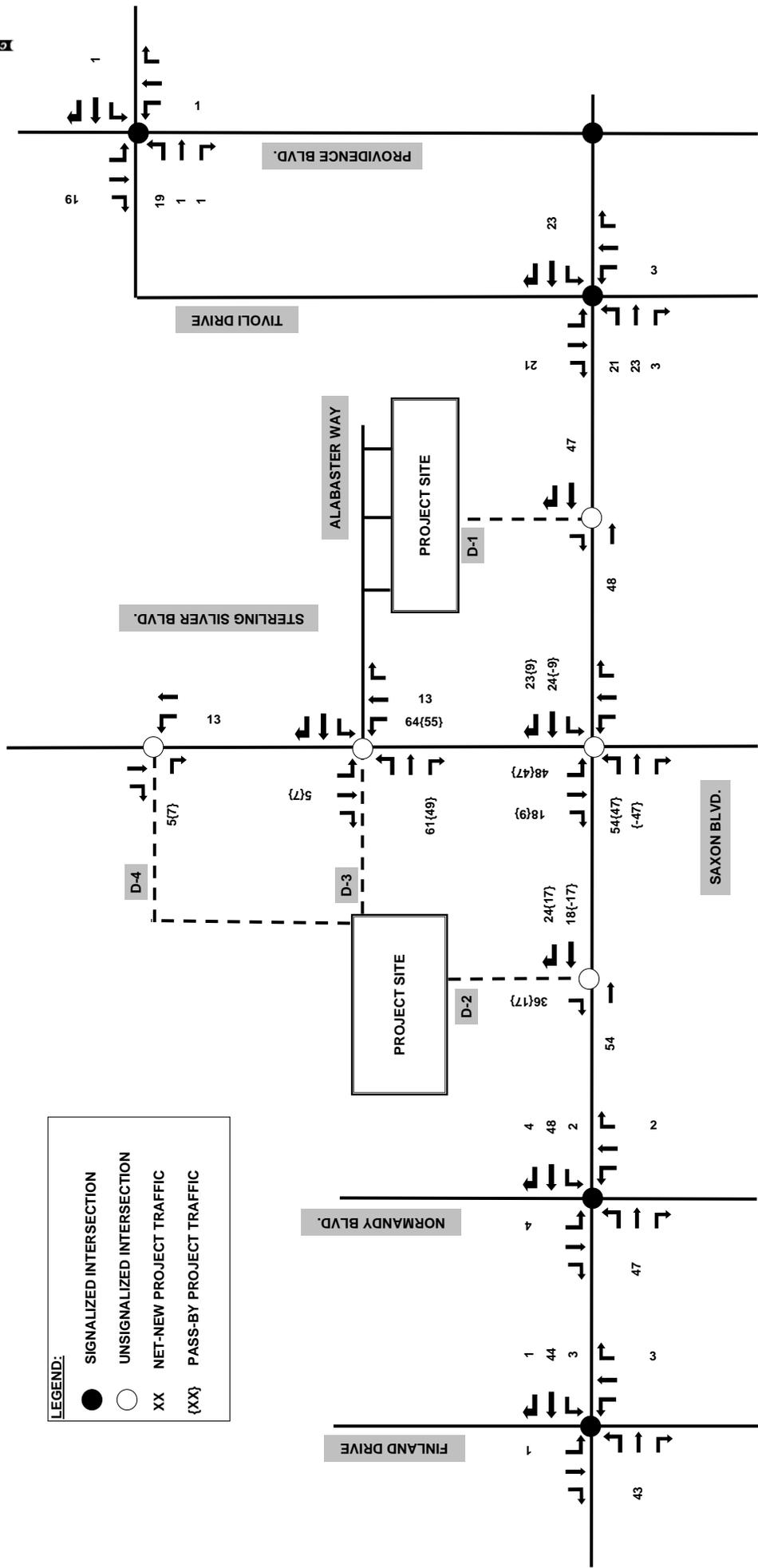
Vested Development Information



FIGURE 5A, PM PEAK HOUR PROJECT TRAFFIC
(NE CORNER)



**FIGURE 5B, PM PEAK HOUR PROJECT TRAFFIC
(NW CORNER)**





Legend:
115 - PM Peak-Hour Turn Volume



Saxon Sterling PM Peak-Hour Turning Movement Volumes

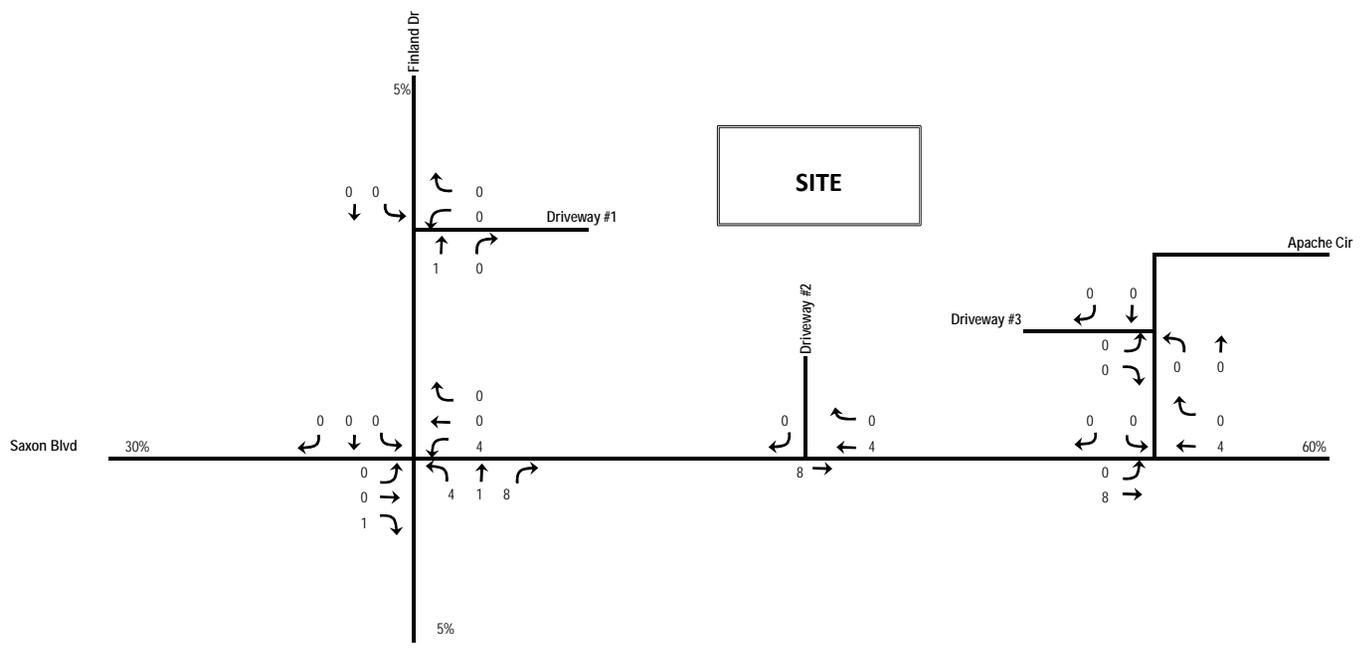
Figure

Halifax Medical Walk-In Clinic

Land Use	Intensity	Units	PM Peak		
			In	Out	Total
Medical-Dental Office	5,037	SF	6	14	20

Medical-Dental Office Building (ITE 9th Edition)

PM Peak Hour (ITE 720) $\ln(T) = 0.9 \times \ln(1000\text{'s of SF}) + 1.53$ 28% In 72% Out



Legend:
8 - PM Peak-Hour Turn Volume

In Out
6 14



Halifax Clinic PM Peak-Hour Turning Movement Volumes

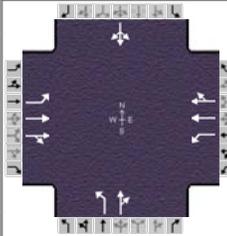
Figure

Future Conditions (2014) HCS



HCS 2010 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	TEDS			Duration, h	0.25	
Analyst	KJM	Analysis Date	May 14, 2013		Area Type	Other
Jurisdiction	Deltona	Time Period	PM Peak Hour		PHF	0.95
Intersection	Saxon Blvd at Finland Drive	Analysis Year	2014		Analysis Period	1 > 7:00
File Name	Future Conditions - PM Peak Hour.xus					
Project Description	Build Out Conditions					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	225	1928	57	74	1074	26	87	57	148	24	25	92

Signal Information				Signal Phases									
Cycle, s	130.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	7.3	4.7	68.5	23.5	0.0	0.0			
Uncoordinated	No	Simult. Gap E/W	On	Yellow	4.5	4.5	4.5	4.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Red	2.0	2.0	2.0	2.5	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		8.0
Phase Duration, s	25.0	86.2	13.8	75.0		30.0		30.0
Change Period, (Y+R _c), s	6.5	6.5	6.5	6.5		6.5		6.5
Max Allow Headway (MAH), s	4.0	0.0	4.0	0.0		5.4		5.4
Queue Clearance Time (g _s), s	19.2		7.6			25.5		20.3
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		0.0		0.8
Phase Call Probability	1.00		0.94			1.00		1.00
Max Out Probability	1.00		0.04			1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	237	1045	1045	78	581	577	92	216			133	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1844	1774	1863	1847	1281	1649			1039	
Queue Service Time (g _s), s	17.2	64.2	65.7	5.6	27.9	27.9	5.2	16.0			2.3	
Cycle Queue Clearance Time (g _c), s	17.2	64.2	65.7	5.6	27.9	27.9	23.5	16.0			18.3	
Capacity (c), veh/h	253	1143	1131	99	981	973	106	298			221	
Volume-to-Capacity Ratio (X)	0.938	0.914	0.924	0.787	0.592	0.592	0.862	0.724			0.601	
Available Capacity (c _a), veh/h	253	1143	1131	198	981	973	106	298			221	
Back of Queue (Q), veh/ln (95th percentile)	15.6	37.5	38.3	5.1	17.9	17.8	7.9	11.8			8.0	
Overflow Queue (Q ₃), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Queue Storage Ratio (RQ) (95th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.00			0.00	
Uniform Delay (d ₁), s/veh	55.2	22.1	22.4	60.6	21.1	21.2	63.6	50.2			48.8	
Incremental Delay (d ₂), s/veh	40.0	12.7	13.8	12.8	2.6	2.7	48.3	9.1			5.3	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	95.2	34.8	36.2	73.4	23.8	23.8	111.9	59.3			54.1	
Level of Service (LOS)	F	C	D	E	C	C	F	E			D	
Approach Delay, s/veh / LOS	41.6		D	26.9		C	75.0		E	54.1		D
Intersection Delay, s/veh / LOS	40.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.9	C	2.9	C
Bicycle LOS Score / LOS	2.4	B	1.5	A	1.0	A	0.7	A

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	TEDS			Intersection	Finland at Driveway #1			
Agency/Co.	TEDS			Jurisdiction	Deltona			
Date Performed	1/15/2014			Analysis Year	2014			
Analysis Time Period	PM Peak							
Project Description <i>Finland Dr at D/W #1 - PM Peak - 2014</i>								
East/West Street: <i>Driveway #1</i>				North/South Street: <i>Finland Drive</i>				
Intersection Orientation: <i>North-South</i>				Study Period (hrs): <i>0.25</i>				
Vehicle Volumes and Adjustments								
Major Street	Northbound			Southbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		267	41	9	122			
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	267	41	9	122	0		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	0	1	0	0	1	0		
Configuration			TR	LT				
Upstream Signal		0			0			
Minor Street	Eastbound			Westbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				19		10		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	0	0	19	0	10		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	1	0	1		
Configuration				L		R		
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		LT	L		R			
v (veh/h)		9	19		10			
C (m) (veh/h)		1264	584		756			
v/c		0.01	0.03		0.01			
95% queue length		0.02	0.10		0.04			
Control Delay (s/veh)		7.9	11.4		9.8			
LOS		A	B		A			
Approach Delay (s/veh)	--	--	10.8					
Approach LOS	--	--	B					

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	TEDS			Intersection	Saxon at Driveway #2			
Agency/Co.	TEDS			Jurisdiction	Deltona			
Date Performed	1/15/2014			Analysis Year	2014			
Analysis Time Period	PM Peak							
Project Description Saxon Blvd at D/W #2 - PM Peak - 2014								
East/West Street: Saxon Blvd				North/South Street: Driveway #2				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)		2100			1152	37		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	2100	0	0	1152	37		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Two Way Left Turn Lane							
RT Channelized			0			0		
Lanes	0	2	0	0	2	1		
Configuration		T			T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)						22		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	22		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)		0			0			
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	1		
Configuration						R		
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration								R
v (veh/h)								22
C (m) (veh/h)								521
v/c								0.04
95% queue length								0.13
Control Delay (s/veh)								12.2
LOS								B
Approach Delay (s/veh)	--	--				12.2		
Approach LOS	--	--				B		

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	TEDS			Intersection	Saxon at Apache			
Agency/Co.	TEDS			Jurisdiction	Deltona			
Date Performed	1/15/2014			Analysis Year	2014			
Analysis Time Period	PM Peak							
Project Description Saxon Blvd at Apache - PM Peak - 2014								
East/West Street: Saxon Blvd				North/South Street: Apache Circle				
Intersection Orientation: East-West				Study Period (hrs): 0.25				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	33	2067			1173	24		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	33	2067	0	0	1173	24		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Two Way Left Turn Lane							
RT Channelized			0			0		
Lanes	1	2	0	0	2	0		
Configuration	L	T			T	TR		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)				52		16		
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	0	0	52	0	16		
Percent Heavy Vehicles	0	0	0	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L						LR	
v (veh/h)	33						68	
C (m) (veh/h)	590						163	
v/c	0.06						0.42	
95% queue length	0.18						1.86	
Control Delay (s/veh)	11.5						42.0	
LOS	B						E	
Approach Delay (s/veh)	--	--					42.0	
Approach LOS	--	--					E	

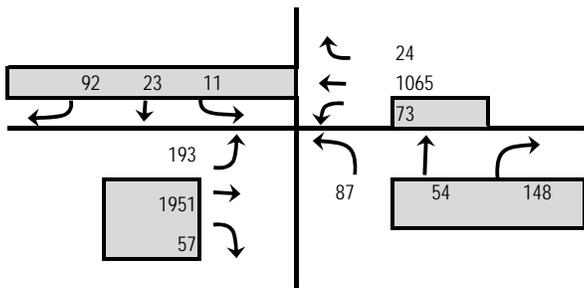
TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	TEDS			Intersection	Apache at Driveway #3		
Agency/Co.	TEDS			Jurisdiction	Deltona		
Date Performed	1/15/2014			Analysis Year	2014		
Analysis Time Period	PM Peak						
Project Description Apache Cir at D/W #3 - PM Peak - 2014							
East/West Street: Driveway #3				North/South Street: Apache Circle			
Intersection Orientation: North-South				Study Period (hrs): 0.25			
Vehicle Volumes and Adjustments							
Major Street	Northbound			Southbound			
Movement	1	2	3	4	5	6	
	L	T	R	L	T	R	
Volume (veh/h)	44	13			3	5	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	44	13	0	0	3	5	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	Undivided						
RT Channelized			0				0
Lanes	0	1	0	0	1	0	
Configuration	LT						TR
Upstream Signal		0			0		
Minor Street	Eastbound			Westbound			
Movement	7	8	9	10	11	12	
	L	T	R	L	T	R	
Volume (veh/h)	22		63				
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	22	0	63	0	0	0	
Percent Heavy Vehicles	0	0	0	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	0	0	0	0	
Configuration	LR						
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11 12
Lane Configuration	LT					LR	
v (veh/h)	44						85
C (m) (veh/h)	1625						1019
v/c	0.03						0.08
95% queue length	0.08						0.27
Control Delay (s/veh)	7.3						8.9
LOS	A					A	
Approach Delay (s/veh)	--	--				8.9	
Approach LOS	--	--				A	

**Critical Movement Evaluation
for Saxon Boulevard/Finland Drive
Southbound Right-Turn Lane Improvement**



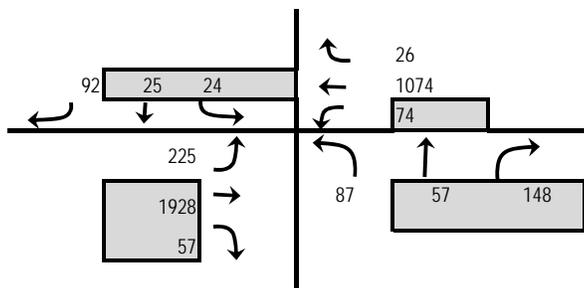
Critical Movement Evaluation of Southbound Right-Turn Lane Improvement at Saxon Boulevard/Finland Drive

Future Background Volumes



Critical Sum (Existing Geometry) = $(92+23+11)/1 \text{ lane} + (54+148)/1 \text{ lane} + 73/1 \text{ lane} + (1951+57)/2 \text{ lanes} = 1405$

Future Total Volumes



Critical Sum (Existing Geometry) = $(92+25+24)/1 \text{ lane} + (57+148)/1 \text{ lane} + 74/1 \text{ lane} + (1928+57)/2 \text{ lanes} = 1413$

Project impact on Critical Movements is $1413 - 1405 = 8$ PM peak-hour trips

Critical Sum (with Southbound Right-Turn Lane) = $(25+24)/1 \text{ lane} + (57+148)/1 \text{ lane} + 74/1 \text{ lane} + (1928+57)/2 \text{ lanes} = 1321$

Improvement impact on Critical Movements is $1321 - 1413 = 92$ PM peak-hour trips

ORDINANCE NO. 4-2014

AN ORDINANCE OF THE CITY OF DELTONA, FLORIDA, AMENDING THE OFFICIAL ZONING MAP FOR THE FOLLOWING PARCELS: A TRACT OF LAND, BEING LOTS 23, 24, 25, 26, 27, 28, 29, 30, 31, 32 AND TRACT "K", BLOCK 101, DELTONA LAKES UNIT THREE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 25, PAGES 105 THROUGH 120, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA. CONTAINING 3.9 ACRES MORE OR LESS, LOCATED AT THE NORTH SIDE OF THE 2000 BLOCK OF SAXON BOULEVARD; PROVIDING FOR SEVERABILITY; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received an application to amend the Official Zoning Map from Office Residential and Public to General Commercial (C-2) for 3.9 acres of land,

WHEREAS, the City of Deltona, Florida, and its Land Planning Agency have complied with the requirements of Municipal Home Rule Powers Act, sections 166.011 et seq., Florida Statutes, in considering the proposed zoning amendment; and

WHEREAS, after said public hearing, the City Commission of the City of Deltona, Florida, has determined that the subject property will be amended to General Commercial (C-2), and has further determined that said zoning action is consistent with the Comprehensive Plan of the City of Deltona, Florida.

NOW, THEREFORE, BE IT ENACTED BY THE CITY COMMISSION OF THE CITY OF DELTONA, VOLUSIA COUNTY, FLORIDA, AS FOLLOWS:

SECTION 1. The zoning classification for the subject property, located in the City of Deltona, Florida, is hereby amended from Office Residential and Public to General Commercial (C-2) for the following property:

A TRACT OF LAND, BEING LOTS 23, 24, 25, 26, 27, 28, 29, 30, 31, 32 AND TRACT "K", BLOCK 101, DELTONA LAKES UNIT THREE, ACCORDING TO THE PLAT THEREOF AS RECORDED IN MAP BOOK 25, PAGES 105 THROUGH 120, PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA, BEING DESCRIBED AS FOLLOWS.

COMMENCE AT THE NORTHWEST CORNER OF SAID LOT 32, FOR A POINT OF BEGINNING; THENCE RUN NORTH 89°23'36" EAST, ALONG THE NORTH LINE OF SAID LOT 32, A DISTANCE OF 125.00 FEET TO THE NORTHEAST CORNER OF SAID LOT 32; THENCE RUN NORTH 00°50'10" WEST, ALONG THE WEST LINE OF SAID TRACT "K", 100.00 FEET TO THE NORTHWEST CORNER OF SAID TRACT "K", THE RUN NORTH 89°29'56" EAST ALONG THE NORTH LINE OF SAID TRACT "K", LOT 24 AND LOT 23, A DISTANCE OF 403.76 FEET TO THE NORTHEAST CORNER OF SAID LOT 23; THENCE RUN SOUTH 09°42'25" EAST, ALONG THE EAST LINE OF SAID LOT 23, A DISTANCE OF 128.53 FEET TO THE SOUTHEAST CORNER OF SAID LOT 23 AND A POINT LYING ON THE WEST RIGHT-OF-WAY LINE OF W. APACHE CIRCLE AS RECORDED IN AFORESAID PLAT OF DELTONA LAKES UNIT THREE, SAID POINT ALSO LIES ON A NON-TANGENT CURVE CONCAVE SOUTHEASTERLY; THENCE RUN SOUTHWESTERLY, ALONG SAID WEST RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 130.00 FEET, A CENTRAL ANGLE OF 77°00'37", AN ARC LENGTH OF 174.73 FEET, A CHORD LENGTH OF 161.87 FEET AND A CHORD BEARING OF SOUTH 41°47'17" WEST TO THE POINT OF TANGENCY; THENCE RUN SOUTH 03°16'58" WEST, ALONG SAID WEST RIGHT-OF-WAY LINE, 159.13 FEET TO A POINT OF CURVATURE OF A CURVE CONCAVE NORTHWESTERLY; THENCE RUN SOUTHWESTERLY, ALONG SAID WEST RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 25.00 FEET, A CENTRAL ANGLE OF 49°18'42", AN ARC LENGTH OF 21.52 FEET, A CHORD LENGTH OF 20.86 FEET AND A CHORD BEARING OF SOUTH 27°56'20" WEST TO A POINT LYING ON THE NORTHERLY RIGHT-OF-WAY LINE OF SAXON BOULEVARD, AS DESCRIBED IN THAT CERTAIN WARRANTY DEED AS RECORDED IN OFFICIAL RECORDS BOOK 4981, PAGE 3204, OF SAID PUBLIC RECORDS; SAID POINT ALSO LIES ON A NON-TANGENT CURVE CONCAVE NORTHEASTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE PER SAID OFFICIAL RECORDS BOOK 4981, PAGE 3204 AND THE FOLOWING OFFICIAL RECORDS BOOKS 6233 PAGE 3574, OFFICIAL RECORDS BOOK 4716 PAGE 4217, OFFICIAL RECORDS BOOK 4857 PAGE 1546 OF SAID PUBLIC RECORDS AND SAID CURVE, HAVING A RADIUS OF 1088.00 FEET A CENTRAL ANGLE OF 11°50'21", AN ARC LENGTH OF 224.81 FEET, A CHORD LENGTH OF 224.41 FEET AND A CHORD BEARING OF NORTH 79°05'56" WEST TO THE POINT OF TANGENCY; THENCE RUN NORTH 73°10'46" WEST, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE, 55.15 FEET TO THE POINT OF CURVATURE OF A CURVE CONCAVE SOUTHWESTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 807.00 FEET, A CENTRAL ANGLE OF 08°27'39", AN ARC LENGTH OF 119.17 FEET, A CHORD LENGTH OF 119.06 FEET AND A CHORD BEARING OF NORTH 77°24'35" WEST TO THE POINT OF REVERSE CURVATURE OF A CURVE CONCAVE NORTHEASTERLY; THENCE RUN NORTHWESTERLY, ALONG SAID NORTHERLY RIGHT-OF-WAY LINE AND SAID CURVE, HAVING A RADIUS OF 35.00 FEET, A CENTRAL ANGLE OF 80°48'15", AN ARC LENGTH OF 49.36 FEET, A CHORD LENGTH OF 45.37 FEET AND A CHORD BEARING OF NORTH 41°14'18" WEST TO THE POINT OF TANGENCY, SAID POINT LYING ON THE EASTERLY RIGHT-OF-WAY LINE OF FINLAND DRIVE, AS RECORDED IN THE AFORESAID PLAT OF DELTONA LAKES UNIT THREE, THENCE RUN NORTH 00°50'10" WEST, ALONG SAID EASTERLY RIGHT-OF-WAY LINE, 201.39 FEET TO THE POINT OF BEGINNING.

SECTION 2. This Ordinance is adopted in conformity with and pursuant to the Comprehensive Plan of the City of Deltona, the local government Planning and Land

Development Act, Sections 163.161 et. Seq., Florida Statutes, and the Municipal Home Rule Powers Act, Sections 166.011 et. seq., Florida Statutes.

SECTION 3. Conflicts. Any and all Ordinances or parts of Ordinances in conflict herewith are hereby repealed.

SECTION 4. Severability. If any provision of this Ordinance or the application thereof to any person or circumstance is held invalid, the invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this Ordinance are declared severable.

SECTION 5. Effective Date. This Ordinance shall become effective immediately upon its final passage and adoption.

**ADOPTED BY THE CITY COMMISSION OF THE CITY OF DELTONA,
FLORIDA THIS _____ DAY OF _____ 2014.**

FIRST READING: _____

ADVERTISED: _____

SECOND READING: _____

BY: _____

JOHN C. MASIARCZYK, MAYOR

ATTEST:

JOYCE RAFTERY, CMC, CITY CLERK

Approved as to form and legality
for use and reliance by the
City of Deltona, Florida

GRETCHEN R. H. VOSE, CITY ATTORNEY