

City of Deltona

Chairman
Vacant

Vice-Chairman
Tom Burbank

Members:

Victor Ramos

Wendy Hickey

Noble Olasimbo

Adam Walosik

Herb Zischkau

Staff Liaison
Chris Bowley, AICP

PLANNING & ZONING BOARD MEETING
WEDNESDAY, JUNE 18, 2014

7:00 P.M.

CITY HALL COMMISSION CHAMBERS
2345 PROVIDENCE BOULEVARD
DELTONA, FLORIDA 32725

AGENDA

1. **CALL TO ORDER:**
2. **ROLL CALL:**
3. **APPROVAL OF MINUTES: May 21, 2014**
4. **PUBLIC COMMENTS:**
5. **OLD BUSINESS:**
6. **NEW BUSINESS:**
 - A. **Election of Officer for Vice-Chairman.**
 - B. **Ordinance No. 15-2014, Changeable Copy Signs for Houses of Worship.**
 - C. **RZ14-001, Amendment to the Official Zoning Map (Ordinance No. 05-2014).**
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

Deltona Municipal Complex, 2345 Providence Blvd., Deltona, FL 32725
(386) 878-8100; FAX: (386) 878-8501
City Webpage: www.deltonafl.gov

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**CITY OF DELTONA, FLORIDA
PLANNING & ZONING BOARD MEETING
WEDNESDAY, MAY 21, 2014**

A Regular Meeting of the Deltona Planning and Zoning Board was held on May 21, 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 Chairman McKnight.

2. ROLL CALL:

Chairman	David McKnight	Present
Member	Victor Ramos	Present
Vice-Chairman	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; Assistant Director of Planning and Development, Ron Paradise; City Planner, Scott McGrath; City Attorney, Wade Vose, Esq.; Administrative Assistant, Kathrine Kyp.

3. APPROVAL OF MINUTES:

A. Minutes:

1. Meeting – March 19, 2014.

Motion by Member Burbank, seconded by Member Olasimbo to adopt the minutes of the Planning & Zoning Board Meeting of March 19, 2014, as presented.

Motion carried unanimously.

4. PUBLIC COMMENTS: None

5. OLD BUSINESS: None

6. NEW BUSINESS:

A. RZ14-004, Amendment to the Official Zoning Map (Ordinance No. 09-2014).

Mr. McGrath provided a summary of the rezoning application. The proposal of the rezoning application is to amend the existing BPUD agreement to add Daycare Center to the list of permitted uses.

1 Member Burbank questioned the availability of the sanitary sewer supply to other locations. Mr.
2 McGrath replied the line that supplies the plaza is a dedicated six-inch line that only serves the
3 Plaza. Mr. Bowley concurred and elaborated on the history of the sewer line serving the Saxon
4 Plaza. Discussion occurred regarding the availability of sanitary sewer service, the requirements of
5 commercial developments, and the proposed study of sanitary sewer for the Saxon Boulevard area.
6

7 **Motion by Member Burbank, seconded by Member Walosik, to recommend that the City**
8 **Commission approve, RZ14-004, Amendment to the Official Zoning Map (Ordinance No.**
9 **09-2014).**

10
11 **Motion passes unanimously.**

12
13 **7. DISCUSSION:**

14
15 **A. By the Board:**

16 Member McKnight announced his resignation from the Planning and Zoning Board, effective at
17 the close of this meeting.
18

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

20 Attorney Wade Vose provided an overview presentation on 2014 Florida Open Government
21 Sunshine Laws, Penalties and Public Records. Mr. Vose advised the Board to refrain from
22 discussing City business at any time, other than the meetings, as items once addressed may at one
23 time be brought before them in the future.
24

25 Member Burbank asked if the Board is prohibited from visiting the site related to applications that
26 come before the Board. Mr. Vose replied, with regard to quasi-judicial matters for specific site
27 visits, yes, and with Sunshine Laws, no. Discussion among the Board occurred about researching
28 projects in advance of meetings. Mr. Vose will return to a future meeting after researching the
29 direction Staff has given to the Board. The Board should only be making recommendations with
30 the evidence that is presented before them.
31

32 Mr. Vose discussed an update regarding public records within email and texts, stating that any
33 discussions made by these methods are subject to disclosure for public inspection.
34

35 **C. By Planning & Development Staff:**

36 Mr Bowley and Mr. Paradise thanked Member McKnight for his service to the Board.
37

38 **8. ADJOURNMENT:**

39
40 There being no further business, the meeting adjourned at 7:31 p.m.
41
42

43 **ATTEST:**

44 **Tom Burbank, VICE-CHAIRMAN**

45
46 **Kathrine Kyp, RECORDING SECRETARY**

**POTENTIAL
MOTION:**

“I hereby move approve Ordinance No. 15-2014, an amendment to allow changeable copy signs for houses of worship.”

ATTACHMENTS:

Ordinance No. 15-2014 Proposed Amendments
Ordinance No. 15-2014 Final Draft

ORDINANCE NO. 15-2014

AN ORDINANCE OF THE CITY COMMISSION OF THE CITY OF DELTONA, FLORIDA, AMENDING THE CODE OF ORDINANCES, SUBPART B, LAND DEVELOPMENT CODE, BY REVISING SECTION 102-78, HOUSES OF WORSHIP, AND SECTION 102-102, CHANGEABLE COPY SIGNS, OF CHAPTER 102, SIGNS; PROVIDING FOR CONFLICTS, CODIFICATION, SEVERABILITY, AND AN EFFECTIVE DATE.

WHEREAS, the City of Deltona Code of Ordinances, Subpart B, is the City's Land Development Code that includes Chapter 102, Signs; and

WHEREAS, the City of Deltona is considering an amendment to Section 102-78, Houses of worship, and Section 102-102, Changeable copy signs, of the Code of Ordinances, to permit houses of worship to use electronic changeable copy signs; and

WHEREAS, Section 102-78, Houses of worship, shall be amended to include Section 102-78(3), electronic changeable copy sign regulations, and Section 102-102, shall be amended to include regulations pertaining to the quantity, location, and orientation of electronic changeable copy signs; and

WHEREAS, the City Commission of the City of Deltona has determined that it is in the best interest of the citizenry and general public to regulate electronic changeable copy signs; and

WHEREAS, the City Commission of the City of Deltona has the responsibility and authority to determine what uses are best suited to particular land use and zoning categories within the City and finds that this Ordinance promotes the general health, safety, and welfare of its citizens.

NOW, THEREFORE, be it ordained by the City Commission of the City of Deltona, Florida, as follows:

SECTION 1. Chapter 102, Section 78, of the City of Deltona, Florida, Code of Ordinances is hereby revised and restated to read as follows:

Sec. 102-78. Houses of worship.

- (a) Houses of worship and any other uses on-site may be permitted signage under this section in accordance with the following criteria:
 - (1) Freestanding signs.
 - a. Sign area, height, and setback.

1. Maximum area: 48 square feet.
 2. Maximum height: Eight feet.
 3. Minimum setback from the right-of-way: Five feet
 4. Minimum setback from the side lot lines: Ten feet
 5. Sign(s) shall be in compliance with the visual clearance requirements of chapter 96, section 37(a)(b) of this code.
- b. Freestanding sign structures on the same ownership parcel shall be a minimum of 300 feet apart and located within a 20-foot strip of land parallel to and adjoining ~~the~~ rights-of-way frontage. No more than two (2) signs shall be permitted along any one (1) right-of-way frontage.
- c. Design of the freestanding signs shall be in accordance with section 102-70(a)(4) of this chapter.
- (2) Wall signs.
- a. Sign area, height, and design requirements.
 1. Maximum sign area: 48 square feet.
 2. Maximum height of any individual letter: Two feet.
 3. Religious symbols or logos may exceed two feet; however, their area shall be counted towards the overall permitted sign area.
 4. Location: In accordance with section 102-71(b) of this chapter.
- (3) Electronic changeable copy signs.
- a. Electronic changeable copy signs for houses of worship shall be in compliance with Section 102-102(a)(3) of this chapter.
 - b. Electronic changeable copy signs for houses of worship on residentially zoned lots shall reduce the sign's intensity or brilliance during evening hours by half of the daytime ambient light illumination to be compatible with area neighborhoods.

SECTION 2. Chapter 102, Section 102, of the City of Deltona, Florida, Code of

Ordinances is hereby revised and restated to read as follows:

Sec. 102-102. Changeable copy signs.

- (a) Changeable copy signs, including manual and electronic changeable copy signs, shall be regulated under the following guidelines:
- (1) *Freestanding signs with manual or electronic changeable copy display.* Changeable copy signs shall not comprise more than 50 percent of the permitted sign area, ~~and~~ shall be included as part of the permitted sign area, and shall be limited to one (1) sign per lot; with the following exceptions, as described herein below:

- a. Motor vehicle service stations and convenience stores with gas pumps may utilize up to 100 percent of the permitted sign area for changeable prices of fuel only.
 - b. Movie theaters and other performance/entertainment facilities may utilize up to 80 percent of the permitted sign area for the display of names of films, plays or other performances currently showing. Such changeable copy areas shall be included as part of the permitted sign area.
 - c. Changeable copy signs shall be limited to commercial, ~~prohibited for office, houses of worship, and industrial uses along arterial roadway frontages~~, as described in the City of Deltona's Comprehensive Plan, and prohibited for residential uses, including residential uses within mixed-use projects.
- (2) *Wall signs-with manual-reader boards.*
- a. Use of changeable copy signs as part of permitted wall sign area is prohibited, except as described in subparagraph (b) below.
 - b. Movie theaters may use up to 80 percent of permitted wall sign area for display of names of films, plays or other performances currently showing. Such changeable copy areas shall be included as part of the permitted sign area.
- (3) *Electronic changeable copy display* shall be subject to all applicable provisions within this section and Chapter as well as the following requirements:
- a. The sign with display screen shall be located on a lot, outside of public rights-of-way, along arterial roadway frontages, as described in the City of Deltona's Comprehensive Plan, and oriented perpendicular to the arterial roadway frontage. ~~shall not be oriented toward the vicinity of or directly face property used, planned, or zoned for residential purposes.~~
 - b. Any message or picture displayed shall be static in nature and shall not project continuous scroll, blink, flicker, flash, scintillate, or be otherwise animated, except for on digital electronic changeable copy signs. Transitions from one static image to the next shall appear to be instantaneous.
 - c. Copy change of the display screen shall not be more frequent than once per two (2) seconds. The use of background animation is allowed on digital electronic changeable copy signs where the foreground of the sign displays static images prior to transitioning to another static foreground image. Transitions from one static foreground image to another may also display frame effects that last no longer than two (2) seconds. The use of flashing, foreground animation, and full motion video on such signs is prohibited.
 - d. All electronic changeable copy signs shall come equipped with automatic dimming technology that automatically adjusts the sign's brightness in direct correlation with ambient light conditions.
 - e. No electronic changeable copy sign shall exceed a brightness level of 0.3 foot candles above ambient light, as measured using a foot candle (Lux) meter at a preset distance depending on sign area, measured from a measuring distance

calculated with the following formula, and the square root of the product of the sign area multiplied by one-hundred:

Example using a 12 square foot sign:

$$\text{Measurement Distance} = \sqrt{(12 \text{ Sq. Ft.} \times 100)} = 34.6$$

(No electronic sign shall exceed an illumination of 1.0 foot candle as measured from any property line or edge of street, a standard consistent with Section 110-828 (b)(2)).

SECTION 3. CONFLICTS. All Ordinances or parts of Ordinances, insofar as they are inconsistent or in conflict with the provisions of this Ordinance, are hereby repealed to the extent of any conflict.

SECTION 4. CODIFICATION. The provisions of this Ordinance shall be codified and be made a part of the Code of Ordinances of the City of Deltona. The sections of this Ordinance may be renumbered or relettered to accomplish such intention.

SECTION 5. SEVERABILITY. In the event that any portion or section of this Ordinance is determined to be invalid, illegal, or unconstitutional, by a court of competent jurisdiction, such decision shall in no manner affect the remaining portions or sections of this Ordinance, which shall remain in full force and effect.

SECTION 6. EFFECTIVE DATE. This Ordinance shall take effect immediately upon its final passage and adoption.

PASSED AND ADOPTED THIS ____ DAY OF _____, 2014.

FIRST READING: _____

ADVERTISED: _____

SECOND READING: _____

JOHN C. MASIARCZYK SR., 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, ESQ., CITY ATTORNEY

ORDINANCE NO. 15-2014

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WHEREAS, Section 102-78, Houses of worship, shall be amended to include Section 102-78(3), electronic changeable copy sign regulations, and Section 102-102, shall be amended to include regulations pertaining to the quantity, location, and orientation of electronic changeable copy signs; and

WHEREAS, the City Commission of the City of Deltona has determined that it is in the best interest of the citizenry and general public to regulate electronic changeable copy signs; and

WHEREAS, the City Commission of the City of Deltona has the responsibility and authority to determine what uses are best suited to particular land use and zoning categories within the City and finds that this Ordinance promotes the general health, safety, and welfare of its citizens.

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- c. Design of the freestanding signs shall be in accordance with section 102-70(a)(4) of this chapter.
- (2) Wall signs.
- a. Sign area, height, and design requirements.
 1. Maximum sign area: 48 square feet.
 2. Maximum height of any individual letter: Two feet.
 3. Religious symbols or logos may exceed two feet; however, their area shall be counted towards the overall permitted sign area.
 4. Location: In accordance with section 102-71(b) of this chapter.
- (3) Electronic changeable copy signs.
- a. Electronic changeable copy signs for houses of worship shall be in compliance with Section 102-102(a)(3) of this chapter.
 - b. Electronic changeable copy signs for houses of worship on residentially zoned lots shall reduce the sign's intensity or brilliance during evening hours by half of the daytime ambient light illumination to be compatible with area neighborhoods.

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Example using a 12 square foot sign:
Measurement Distance = $\sqrt{(12 \text{ Sq. Ft.} \times 100)} = 34.6$

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PASSED AND ADOPTED THIS ____ DAY OF _____, 2014.

FIRST READING: _____

ADVERTISED: _____

SECOND READING: _____

JOHN C. MASIARCZYK SR., 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, ESQ., 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:**

That the Planning and Zoning Board recommend that the City Commission adopt Ordinance 05-2014 changing the zoning to C-1 from (VC) RR.

**POTENTIAL
MOTION:**

“I hereby make a motion to recommend that the City Commission adopt Ordinance No. 05-2014.”

ATTACHMENTS:

RZ14-001 Staff Report
Ordinance No. 05-2014

Memorandum

To: Planning and Zoning Board
From: Chris Bowley, AICP
Date: June 6, 2014
Re: Project No. RZ14-001, Amendment to the Official Zoning Map

I. SUMMARY OF APPLICATION:

APPLICANT: Rodney M. Honeycutt, P.E.
Honeycutt & Associates, Inc.
5195 S. Washington Avenue
Titusville, FL 32780

Request: The City of Deltona Planning and Development Services Department has received an application to amend the Official Zoning Map from the Volusia County classification of Rural Residential (RR-C) to C-1 Retail Commercial for a portion of parcels 9206-01-03-0010 and 9206-01-03-0012 as described below.

A. SITE INFORMATION:

1. **Tax Parcel No.:** 9206-01-03-0010, 9206-01-03-0012
2. **Property Addresses:** 110 Howland Boulevard
3. **Property Acreage:** ±8.67 Acres
4. **Property Location:** North of the intersection of SR 415 and Howland Blvd. in Deltona.
5. **Legal Description:** A PARCEL OF LAND LYING IN SECTION 6, TOWNSHIP 19 SOUTH, RANGE 32 EAST AND BEING A PART OF 2ND ADDITION TO CARNELL AS RECORDED IN PLAT BOOK 10, PAGE 128 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA. TOGETHER WITH THE PARCEL OF LAND DESCRIBED IN OFFICIAL RECORDS BOOK 2176, PAGE 1195 OF SAID PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA. SAID PARCEL OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 6, THENCE N.89°39'52"E., ALONG THE NORTH LINE OF SAID SECTION 6, A DISTANCE 995.40 FEET

TO THE INTERSECTION WITH THE EAST LINE OF THE WEST 995.40 FEET OF THE NORTHWEST 1/4 OF SAID SECTION 6; THENCE S.00°19'40"E., ALONG SAID LINE, AND PARALLEL WITH THE WEST LINE OF SAID NORTHWEST 1/4 OF SAID SECTION 6, A DISTANCE OF 886.07 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE S.00°19'40"E., ALONG SAID LINE, 385.18 FEET TO THE NORTHEAST CORNER OF SAID PARCEL OF LAND DESCRIBED IN SAID OFFICIAL RECORDS BOOK 2176, PAGE 1195; THENCE ALONG THE BOUNDARIES OF SAID PARCEL OF LAND, THE FOLLOWING FIVE COURSES AND DISTANCES: THENCE S.89°42'51"W., 314.89 FEET; THENCE S.28°43'23"E., 228.50 FEET TO A POINT LYING ON THE NORTHEASTERLY RIGHT OF WAY LINE OF HOWLAND BOULEVARD AS SHOWN ON STATE ROAD RIGHT OF WAY MAP FOR STATE ROAD NO.415, SECTION 79120, APPROVED 9/19/2008 AND SAID POINT LYING ON THE ARC OF A CIRCULAR CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 1561.19 FEET AND TO WHICH POINT A RADIAL LINE BEARS S.31°25'14"W.; THENCE ALONG SAID RIGHT OF WAY LINE AND THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 05°48'49", 158.41 FEET TO THE POINT OF TANGENCY; THENCE S.64°23'35"E., CONTINUING ALONG SAID RIGHT OF WAY LINE, 75.09 FEET TO A POINT LYING ON THE EAST LINE OF THE WEST 995.4 FEET OF SAID SECTION 6, TOWNSHIP 19 SOUTH, RANGE 32 EAST; THENCE N.00°19'40"W., ALONG SAID LINE, 15.13 FEET TO THE INTERSECTION WITH THE WESTERLY PROLONGATION OF THE NORTH RIGHT OF WAY LINE OF 6TH AVENUE SOUTH AS SHOWN OF SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE N.89°47'43"E., ALONG SAID NORTH RIGHT OF WAY LINE OF 6TH AVENUE SOUTH, 158.57 FEET TO A POINT LYING ON THE WESTERLY RIGHT OF WAY LINE OF STATE ROAD NO.415 AS SHOWN ON SAID STATE ROAD RIGHT OF WAY MAP FOR STATE ROAD NO. 415, SECTION 79120; THENCE ALONG SAID RIGHT OF WAY LINE, THE FOLLOWING FIVE COURSES AND DISTANCES: THENCE N.00°09'47"W., 7.60 FEET TO A POINT LYING ON THE ARC OF A CIRCULAR CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 1495.21 FEET AND TO WHICH POINT A RADIAL LINE BEARS N.59°01'33"W.; THENCE NORTHEASTERLY, ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 02°37'10", 68.36 FEET TO THE POINT OF TANGENCY; THENCE N.33°35'36"E., 33.07 FEET; THENCE N.43°04'48"E., 78.88 FEET; THENCE N.33°35'37"E., 734.60 FEET TO THE INTERSECTION WITH THE CENTERLINE OF THE VACATED RIGHT OF WAY OF 4TH AVENUE SOUTH AS SHOWN ON SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE DEPARTING SAID RIGHT OF WAY LINE ON A BEARING OF S.89°50'24"W., ALONG SAID CENTERLINE, 171.97 FEET TO THE INTERSECTION WITH THE CENTERLINE OF THE VACATED RIGHT OF WAY OF 1ST STREET EAST AS SHOWN OF SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE N.00°09'32"W., ALONG SAID CENTERLINE, 73.77 FEET; THENCE S.89°50'24"W., 163.60 FEET; THENCE S.33°35'37"W., 92.87 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE, CONCAVE NORTHWESTERLY AND HAVING A RADIUS OF 175.00 FEET; THENCE SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 56°17'28", 171.93 FEET TO THE POINT OF TANGENCY; THENCE S.89°53'05"W., 144.98 FEET TO THE POINT OF BEGINNING.

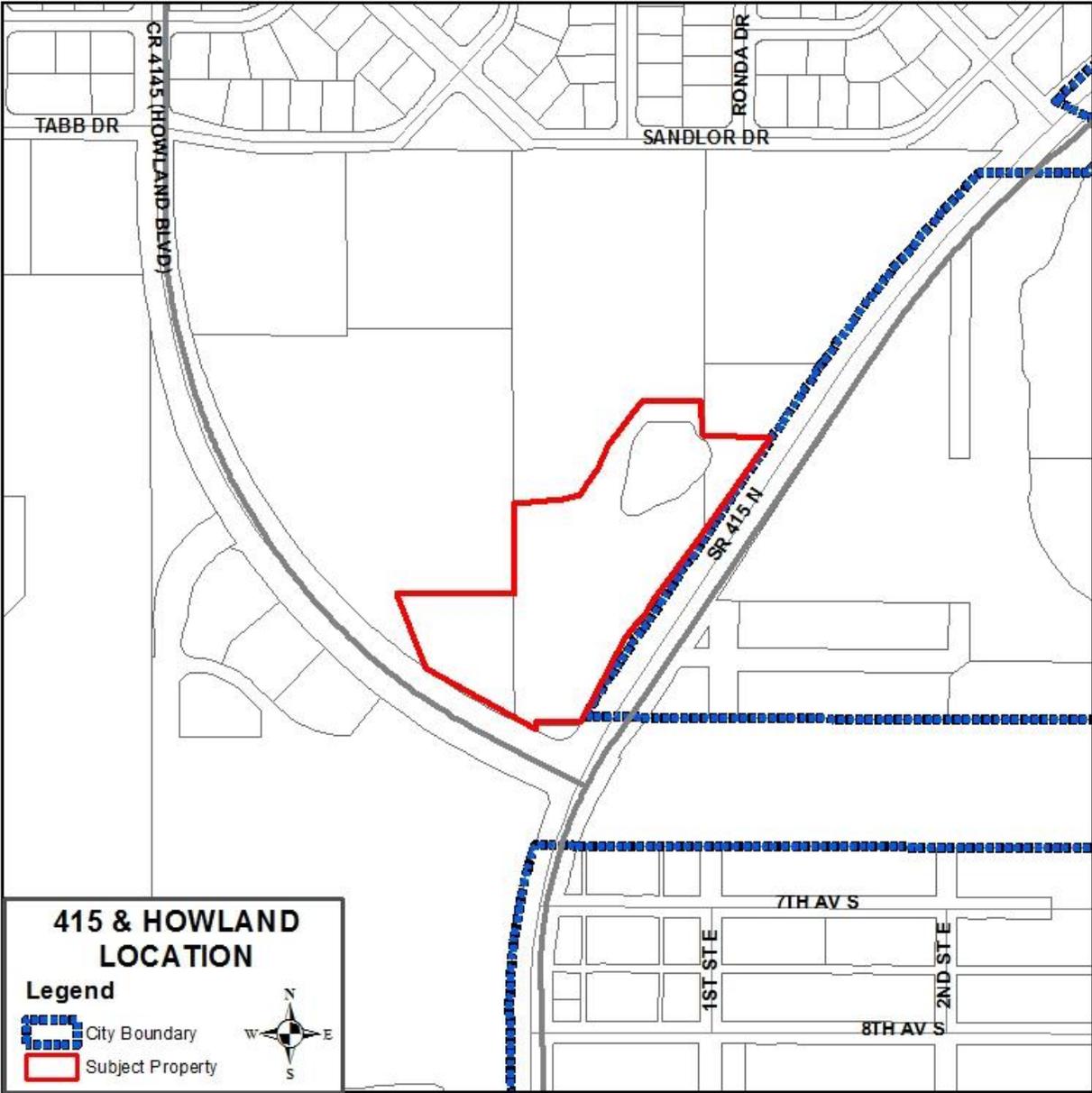


Figure 1: Location Map



Figure 2: Aerial Photo

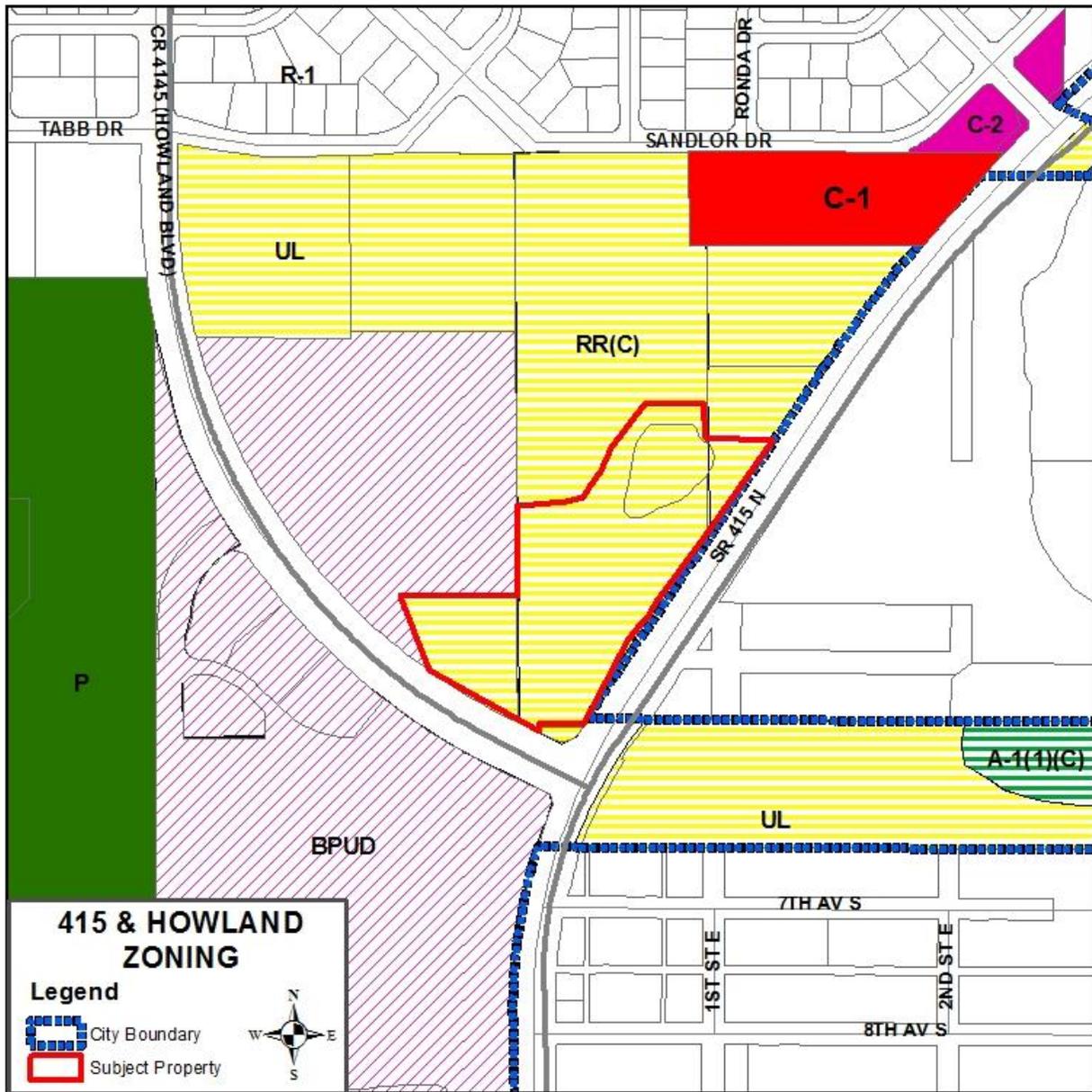


Figure 3: Existing Zoning

B. Existing Zoning:

1. Subject Property:

Existing: Volusia County Rural Residential, RR(C)

Requested: Retail Commercial, C-1

2. Adjacent Properties:

North: Volusia County Rural Residential, RR(C)

South: BPUD

East: Volusia County Osteen Mixed Use Village (OMV)

West: BPUD

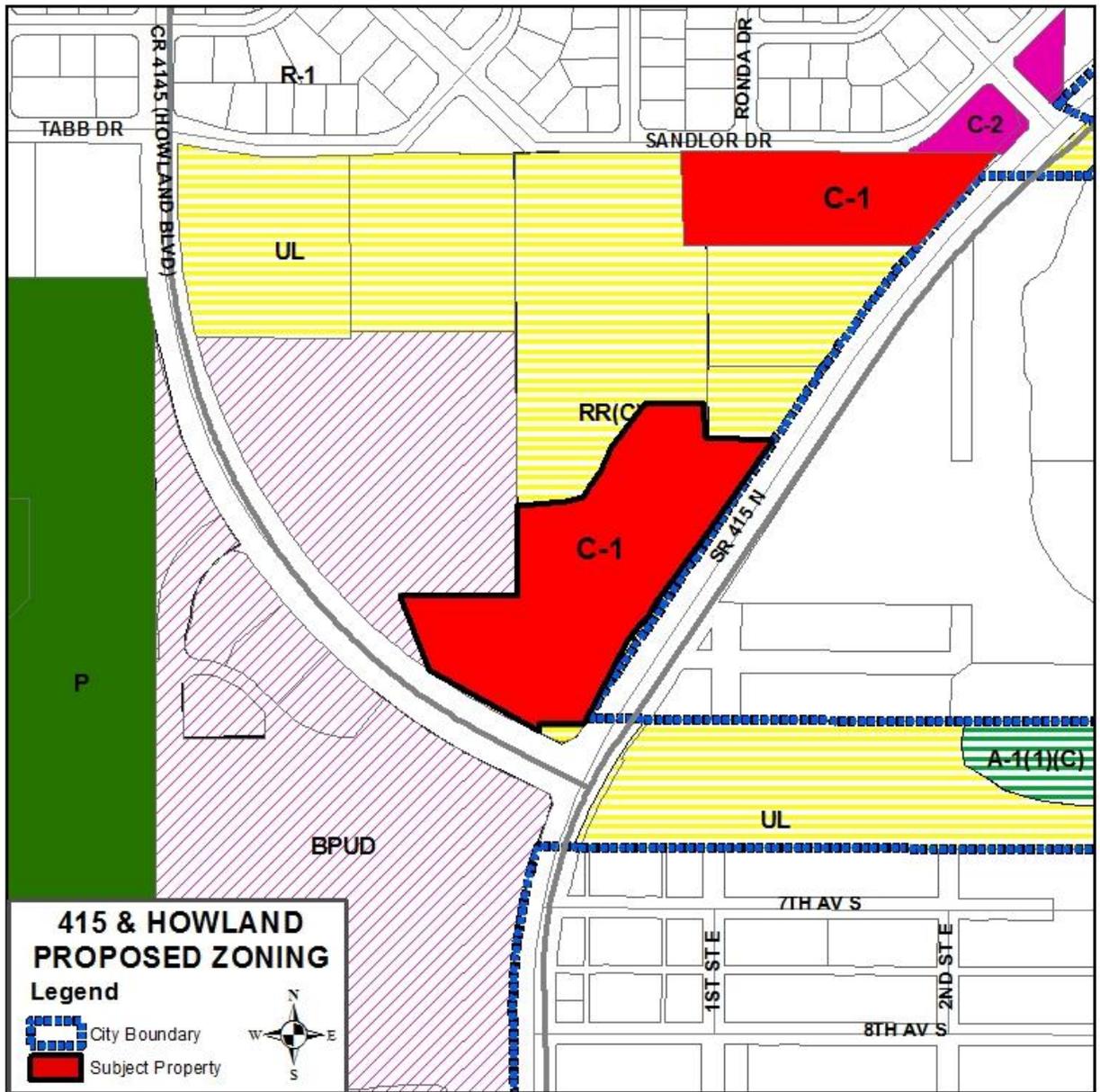


Figure 4: Proposed Zoning

C. Proposed Zoning:

Retail Commercial District (C-1) (Section 110-315 Purpose and Intent.) The purpose of the C-1-Retail Commercial Zoning District is to establish neighborhood commercial development along high-volume roads that are compatible with nearby single-family residential areas. The C-1-Retail Commercial Zoning District is not suitable for transitional areas. Therefore, low intensity commercial development with no residential mix is permitted. The C-1-Retail Commercial Zoning District was first established in the original Deltona Lakes Community Development Plan to serve this purpose in the planned development. It may be applied to achieve a commercial development that is suitable for serving surrounding single-family residential development in all other appropriate areas of the City of Deltona, including those areas that were not included in the original Deltona Lakes Community Development Plan. The C-1-Retail Commercial Zoning district shall only be applied to areas that are designated in the Commercial Future Land Use category on the adopted Future Land Use Map in the Deltona Comprehensive Plan, as it may be amended from time to time.

D. Background:

The subject property was annexed into the City in 2004. In 2006, the County Future Land Use designation of Urban Low Intensity was changed to City Commercial (C). As part of the Future Land Use Map amendment process, the Volusia Growth Management Commission (VGMC) conditionally approved the change to City Commercial. Conditions included a limitation on intensity which resulted in a Floor Area Ratio (FAR) cap of 0.22, as well as a limitation to the amount of curb cuts onto SR 415. These conditions will be adhered to throughout the development process and is supported by the FDOT design of widened SR 415.

E. Support Information

Public Facilities:

- a. Potable Water: to be supplied by Deltona Water
- b. Sanitary Sewer: to be supplied by Deltona Water
- c. Fire Protection: City Fire Station 64
- d. Law Enforcement: Volusia County Sheriff's Office (VCSO)
- e. Electricity: Florida Power and Light (FP&L)

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 current Future Land Use designation for the site is Commercial, as adopted by Ordinance No. 10-2005 and VGMC Resolution No. 2006-02. The C-1 zoning is consistent with the Commercial Future Land Use designation. In addition, the proposed rezoning is consistent with the goals, objectives and policies of the Comprehensive Plan.

2. Its impact upon the environment or natural resources.

There are a couple single family dwellings and several accessory structures onsite, but the property is primarily undeveloped. The majority of the site is forested with a mixture of pines and scrub oak. The property is located on the eastern escarpment of a physiographic area of the County known as the DeLand Ridge. The soil is predominately well drained Astatula and Cassia Fine Sand series soils. According to the February 14, 2014 FEMA flood zone maps, the subject property is not located within the 100 year floodplain. However, there is a depression area on the property proposed to be rezoned. The area, known locally as 'Lake David', is not an open water lake but an herbaceous wetland. The exact jurisdictional limits of the wetland have not been determined. However, it is possible that the wetland is less than .33 acre and would be exempt from the permitting requirements of the City Land Development Code. The exact extent of the wetland and requisite permitting requirements will be determined during the land development phase.

During a recent site visit, staff did not observe any gopher tortoise burrows, However, before property development, the applicant will need to survey for gopher tortoises. If tortoises are found, the applicant will be required to permit and relocate the 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 rezoning would facilitate the commercial development of the property. The commercial development and related improvements would represent a significant investment and an increase of taxable value. Therefore, the commercial development of the property would be an improvement and diversification of the City tax base. Another positive impact upon the local economy would be the creation of professional and/or service-oriented jobs.

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 C-1 zoning is not a residential zoning classification. Therefore, the Volusia County School Board staff has indicated that this rezoning will not affect local schools.
- b. **Sewage Disposal:** Central sewer will be required. The site will be served by City utilities and sewer capacity is available at the new wastewater treatment plant located in the vicinity of the site.
- 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 applicant did prepare a transportation impact analysis (TIA) that was submitted to this office. City staff and a peer consultant performed a review. As per the peer review comments, the TIA was updated. The updated TIA is attached as Exhibit A. Exhibit B represents the peer review comments. The applicant's traffic engineer did respond to the City peer review comments in the updated TIA. See Appendix A (page 29) of the TIA attached as Exhibit A.

The applicant's TIA assumed a development program with a total of 72,425 square feet of non-residential development. The type of non-residential development articulated in the TIA included 56,800 square feet of medical office, 5,625 square feet of medical clinic, and 10,000 square feet of retail use. As has been mentioned, the property is regulated by a Floor Area Ratio (FAR) cap of 0.22 (the cap is a result of a 2006 VGMC resolution limiting development intensity). The modeled development program for the property is below the maximum yield of 83,086 square feet facilitated by the 0.22 FAR. While the modeled development program is less intensive than the maximum possible entitlement, City staff suggests that the modeled development program is a realistic representation, in the context of general planning, of what could be developed on the property in light of parcel shape, natural characteristics, City code and contemporary development expectations.

The TIA revealed that after internal trip capture and traffic pass-by rates are figured, the project would generate 3,275 new trips onto the City transportation network. This traffic would be dispersed mostly throughout the City via the Howland, Ft. Smith and Courtland Blvd. thoroughfares. In addition, about one third of that traffic will use SR 415.

Analyzing the projected trip generation and other information in the TIA, the following observations are made:

- (1) SR 415 is in the process of being improved to carry four lanes of traffic and will have plenty of capacity to support traffic that would be generated from the development of the property.
- (2) Capacity exists on Howland Blvd. between SR 415 and Courtland Blvd. to support the commercial development of the property.
- (3) Ft. Smith Blvd., from SR 415 to Courtland Blvd., has adequate capacity.
- (4) The segment of Howland Blvd. between Elccam Blvd. and Providence Blvd. (two-lane segment) will continue to operate at a level of service "F" by the 2016 project build out (an aggressive timetable). The project does not add a significant traffic volume to this roadway segment (approximately 1.5% of the P.M. peak hour adopted roadway service volume).
- (5) The segment of Providence Blvd. between Elccam Blvd. and Ft. Smith Blvd. will operate at a level of service "F" by the 2016 project build out. The project does not add a significant traffic volume to these roadway segments (approximately 0.1% or less of the P.M. peak hour adopted roadway service volume).

- (6) The two referenced failing roadway segments are County roadways and are projected to fail without the project. Therefore, the City and County, along with private development interest, need to continue to discuss how to advance the improvements of these segments that appear on the year 2025 County long range plan, but are not funded.
- (7) No intersections within the TIA study area are projected to fail as a result of the project.

Finally, the TIA makes mention of a SR 415 driveway cut for the project. This driveway cut has not been contemplated by the FDOT as part of the SR 415 improvement. It is the understanding of City staff that the applicant is working with FDOT to effectuate some type of access to SR 415. City staff has taken the position that as long as the access comports with all applicable spacing requirements and safety standards, there should be no objection from the City. However, the burden of obtaining permission for such a SR 415 driveway cut rests on the shoulders of the applicant and should be negotiated between the applicant and FDOT independent of the City. Finally, there is a right in and right out access to Howland Blvd. planned by the applicant. Access onto Howland Blvd. will need to be associated with, at minimum, a turn lane designed to comply with the requirements of the City Land Development Code. The design of access will be determined through the land development process as projects progress through City site plan review.

Votran transit transportation is available at the Wal-Mart Super Center via bus routes 21 and 22. This site is less than the standard quarter-mile walk radius used for mass transit planning.

5. Any changes in circumstances or conditions affecting the area.

The subject property, along with other land in the area has been contemplated for commercial development for some time. The Wal-Mart Super Center complex near the property to be rezoned is almost fully developed with out-parcel uses. It is logical to expect that there would be demand for more commercial development in this strategic node. In addition, there are significant infrastructure investments occurring in the area. Investments include the SR 415 widening, the development of the City Eastern Wastewater Treatment plant and the extension of urban utilities (water and sewer). The transition of this area to a commercial area is evidenced by the recent rezoning of a 12.49 acre property located across from the Wal-Mart complex known as the Bella Vista project. In addition, a standalone retail use, Tractor Supply Company, is engaged in site plan review for an approximately 18,000 square foot facility fronting on SR 415 situated just to the north of the property proposed to be rezoned.

6. Any mistakes in the original classification.

No known mistakes.

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

The property is located within an existing and planned commercial node. The property to be rezoned is not located near any existing residential neighborhoods. The nearest residential land use entitlements are located east of SR 415 in unincorporated Volusia. The residential entitlements are part of mixed use land use category (Osteen Mixed Use Village) that is an incarnation of the Osteen Joint Planning Area. The Osteen Mixed Use Village may include residential, maybe in a multi-family format, or non-residential uses. The Osteen Mixed Use Village area is removed from the site by what will be a divided four lane highway and multi-family and other residential uses in a mixed use format tend to be more harmonious with commercial uses than areas that are developed with mostly detached housing. Therefore, the proposed rezoning will be compatible with existing and planned land uses located in the vicinity. In addition, the requested C-1 will have no adverse impacts on the health, welfare, safety or morals of the City.

CONCLUSION/STAFF RECOMMENDATION:

The proposed rezoning will encourage commercial development in the City, which is underserved by commercial uses. Furthermore, the rezoning represents an incremental improvement of the City tax base that is overly reliant on residential uses. The rezoning will be compatible with the recent rezoning efforts and adjacent land uses and is consistent with the Comprehensive Plan. Therefore, staff recommends approval of the rezoning from Volusia County Rural Residential to C-1 (Retail Commercial).

ORDINANCE NO. 05-2014

AN ORDINANCE OF THE CITY OF DELTONA, FLORIDA, AMENDING THE OFFICIAL ZONING MAP FROM THE VOLUSIA COUNTY ZONING CLASSIFICATION OF RURAL RESIDENTIAL (VC (RR)) TO RETAIL COMMERCIAL (C-1) FOR AN IRREGULAR SHAPED PARCEL LOCATED AT THE NORTHWEST CORNER OF THE INTERSECTION OF HOWLAND BLVD. AND S.R. 415 CONTAINING 8.76 ACRES MORE OR LESS, LOCATED GENERALLY AT 110 HOWLAND BLVD; PROVIDING FOR CONFLICTS; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the City has received an application to amend the Official Zoning Map from Rural Residential (Volusia County) to Retail Commercial (C-1) for property located at the northwest corner of the intersection of Howland Blvd. and S.R. 415, addressed generally at 110 Howland Boulevard; and

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 zoning for the subject property will be amended to Retail Commercial (C-1) and has further determined that said zoning amendment 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 of the following property is hereby amended from Rural Residential (Volusia County) to Retail Commercial (C-1):

LEGAL DESCRIPTION:

A PARCEL OF LAND LYING IN SECTION 6, TOWNSHIP 19 SOUTH, RANGE 32 EAST AND BEING A PART OF 2ND ADDITION TO CARNELL AS RECORDED IN PLAT BOOK 10, PAGE 128 OF THE PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA. TOGETHER WITH THE PARCEL OF LAND DESCRIBED IN OFFICIAL RECORDS BOOK 2176, PAGE 1195 OF SAID PUBLIC RECORDS OF VOLUSIA COUNTY, FLORIDA. SAID PARCEL OF LAND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 6, THENCE N.89°39'52"E., ALONG THE NORTH LINE OF SAID SECTION 6, A DISTANCE 995.40 FEET TO THE INTERSECTION WITH THE EAST LINE OF THE WEST 995.40 FEET OF THE NORTHWEST 1/4 OF SAID SECTION 6; THENCE S.00°19'40"E., ALONG SAID LINE, AND PARALLEL WITH THE WEST LINE OF SAID NORTHWEST 1/4 OF SAID SECTION 6, A DISTANCE OF 886.07 FEET TO THE POINT OF BEGINNING OF THE PARCEL OF LAND HEREIN DESCRIBED; THENCE CONTINUE S.00°19'40"E., ALONG SAID LINE, 385.18 FEET TO THE NORTHEAST CORNER OF SAID PARCEL OF LAND DESCRIBED IN SAID OFFICIAL RECORDS BOOK 2176, PAGE 1195; THENCE ALONG THE BOUNDARIES OF SAID PARCEL OF LAND, THE FOLLOWING FIVE COURSES AND DISTANCES: THENCE S.89°42'51"W., 314.89 FEET; THENCE S.28°43'23"E., 228.50 FEET TO A POINT LYING ON THE NORTHEASTERLY RIGHT OF WAY LINE OF HOWLAND BOULEVARD AS SHOWN ON STATE ROAD RIGHT OF WAY MAP FOR STATE ROAD NO.415, SECTION 79120, APPROVED 9/19/2008 AND SAID POINT LYING ON THE ARC OF A CIRCULAR CURVE, CONCAVE NORTHEASTERLY, HAVING A RADIUS OF 1561.19 FEET AND TO WHICH POINT A RADIAL LINE BEARS S.31°25'14"W.; THENCE ALONG SAID RIGHT OF WAY LINE AND THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 05°48'49", 158.41 FEET TO THE POINT OF TANGENCY; THENCE S.64°23'35"E., CONTINUING ALONG SAID RIGHT OF WAY LINE, 75.09 FEET TO A POINT LYING ON THE EAST LINE OF THE WEST 995.4 FEET OF SAID SECTION 6, TOWNSHIP 19 SOUTH, RANGE 32 EAST; THENCE N.00°19'40"W., ALONG SAID LINE, 15.13 FEET TO THE INTERSECTION WITH THE WESTERLY PROLONGATION OF THE NORTH RIGHT OF WAY LINE OF 6TH AVENUE SOUTH AS SHOWN OF SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE N.89°47'43"E., ALONG SAID NORTH RIGHT OF WAY LINE OF 6TH AVENUE SOUTH, 158.57 FEET TO A POINT LYING ON THE WESTERLY RIGHT OF WAY LINE OF STATE ROAD NO.415 AS SHOWN ON SAID STATE ROAD RIGHT OF WAY MAP FOR STATE ROAD NO. 415, SECTION 79120; THENCE ALONG SAID RIGHT OF WAY LINE, THE FOLLOWING FIVE COURSES AND DISTANCES: THENCE N.00°09'47"W., 7.60 FEET TO A POINT LYING ON THE ARC OF A CIRCULAR CURVE, CONCAVE SOUTHEASTERLY, HAVING A RADIUS OF 1495.21 FEET AND TO WHICH POINT A RADIAL LINE BEARS N.59°01'33"W.; THENCE NORTHEASTERLY, ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 02°37'10", 68.36 FEET TO THE POINT OF TANGENCY; THENCE N.33°35'36"E., 33.07 FEET; THENCE N.43°04'48"E., 78.88 FEET; THENCE N.33°35'37"E., 734.60 FEET TO THE INTERSECTION WITH THE CENTERLINE OF THE VACATED RIGHT OF WAY OF 4TH AVENUE SOUTH AS SHOWN ON SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE DEPARTING SAID RIGHT OF WAY LINE ON A BEARING OF S.89°50'24"W., ALONG SAID CENTERLINE, 171.97 FEET TO THE INTERSECTION WITH THE CENTERLINE OF THE VACATED RIGHT OF WAY OF 1ST STREET EAST AS SHOWN OF SAID PLAT OF 2ND ADDITION TO CARNELL; THENCE N.00°09'32"W., ALONG SAID CENTERLINE, 73.77 FEET; THENCE S.89°50'24"W., 163.60 FEET; THENCE S.33°35'37"W., 92.87 FEET TO THE POINT OF CURVATURE OF A CIRCULAR CURVE, CONCAVE NORTHWESTERLY AND HAVING A RADIUS OF 175.00 FEET; THENCE SOUTHWESTERLY, ALONG THE ARC OF SAID CURVE, THROUGH A CENTRAL ANGLE OF 56°17'28", 171.93 FEET TO THE POINT OF TANGENCY; THENCE S.89°53'05"W., 144.98 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, SR., 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, ESQ., CITY ATTORNEY

Exhibit A

June 2014

PROMENADE AT DELTONA
CITY OF DELTONA, FLORIDA
Transportation Impact Study



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**PROMENDA AT DELTONA
CITY OF DELTONA, FLORIDA
Transportation Impact Study**

Prepared for:

Florida Hospital Executive Office

2400 Bedford Road, 2nd Floor

Orlando, FL 32803

Prepared by:

Luke Transportation Engineering Consultants, Inc.

P. O. Box 941556

Maitland, Florida 32794-1556

June 2014

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PROFESSIONAL ENGINEER ENDORSEMENT

I hereby certify that I am a registered engineer in the State of Florida, practicing with Luke Transportation Engineering Consultants, a corporation authorized to operate as an engineering business (#EB-0007429), by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice hereby reported for:

PROJECT: Promenade at Deltona Transportation Impact Study

LOCATION: SR 415 & Howland Boulevard, Deltona, Florida

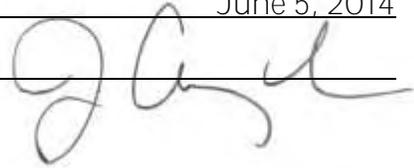
CLIENT: Florida Hospital Executive Office

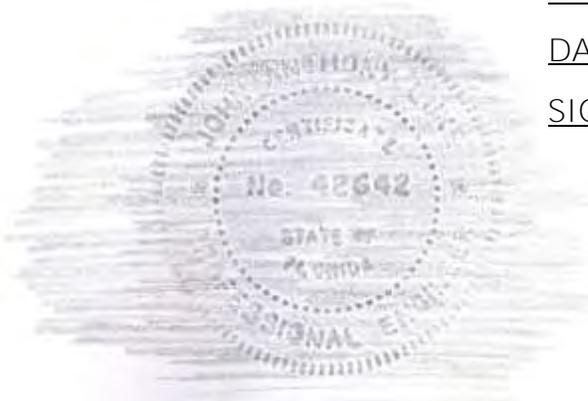
I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering, as applied through professional judgment and experience.

NAME: J. Anthony Luke, P.E.

P.E. NO.: 42642

DATE: June 5, 2014

SIGNATURE: 



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INTRODUCTION

This traffic study has been revised based on the review comments. Most of the changes are minor for clarification with the exception of adding the requested A.M. peak hour analysis. A copy of the review comments and response are included in Appendix A.

Purpose

This study was conducted in order to assess the Promenade at Deltona, which is a development of a mix of medical office building, office and retail uses within the City of Deltona. The study addressed the requirements of the City Traffic Impact Analysis (TIA) standards. The project property is ±8.67 acres and is located at the northwest quadrant of Howland Boulevard (CR 4145) and SR 415, within the City of Deltona. The project site and the surrounding road network is shown in **Figure 1**. Build-out is expected to occur by the end of 2016.

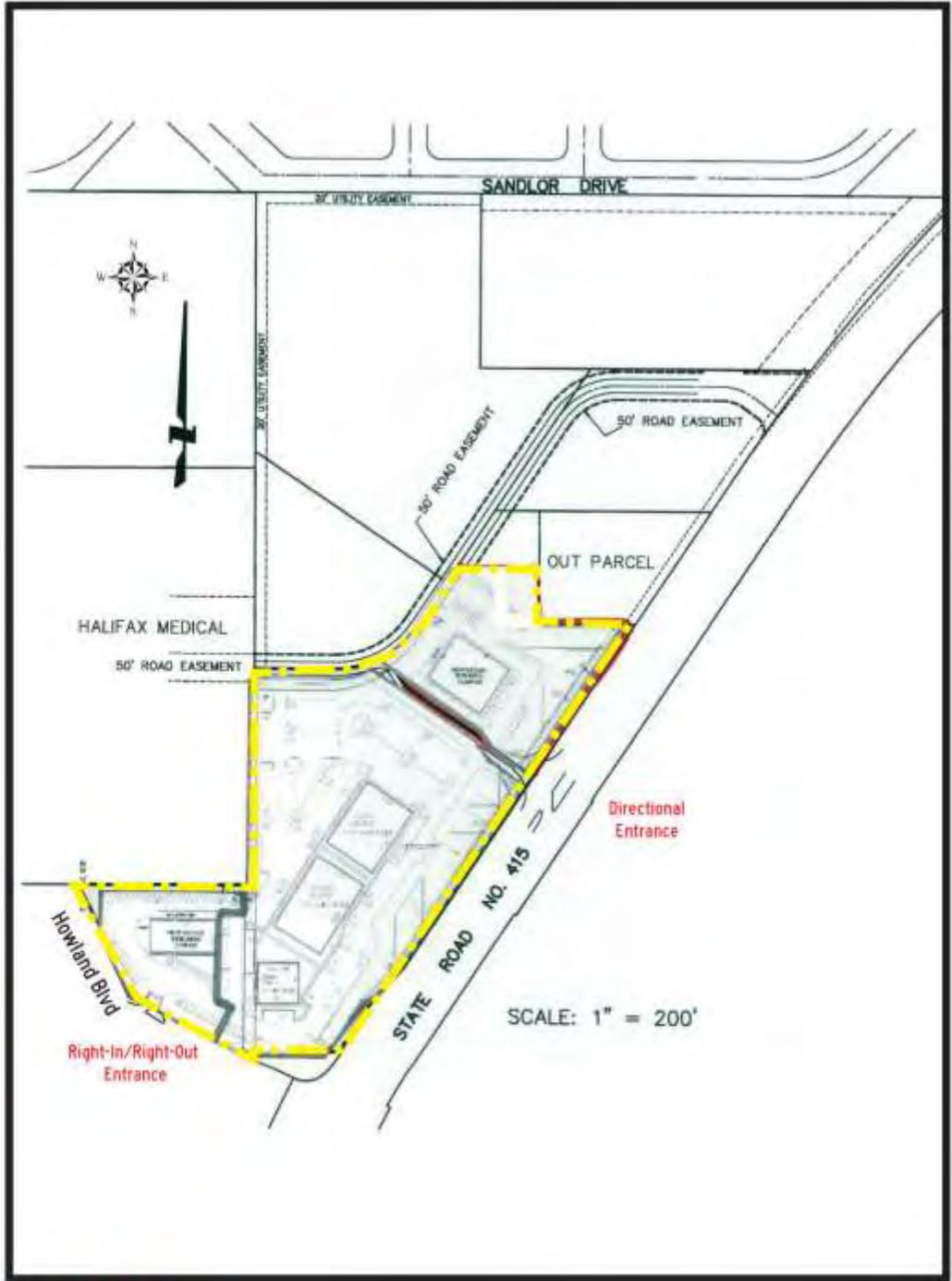
The project property fronts SR 415 and Howland Boulevard, and is proposed to have a directional access connection on SR 415 and a right-in/right-out access connection on Howland Boulevard. A conceptual site plan layout of the development parcel configuration with the access connections is shown in **Figure 2**. An internal roadway connection is planned to extend to future land uses west of the Promenade at Deltona property. The property to the west is made up of about ±19.6 acres. While these future land uses are expected to be developed over a long range at a point after build-out of the Promenade at Deltona, the City staff has requested that an estimate of the future lane use plan be included with the background traffic volumes developed for this study.

Study Methodology

Before conducting this study, the assumptions and procedures to be used in the traffic impact study was submitted to the City of Deltona staff and Volusia County staff. A copy of the study methodology and related City/County correspondence are included in **Appendix B**.

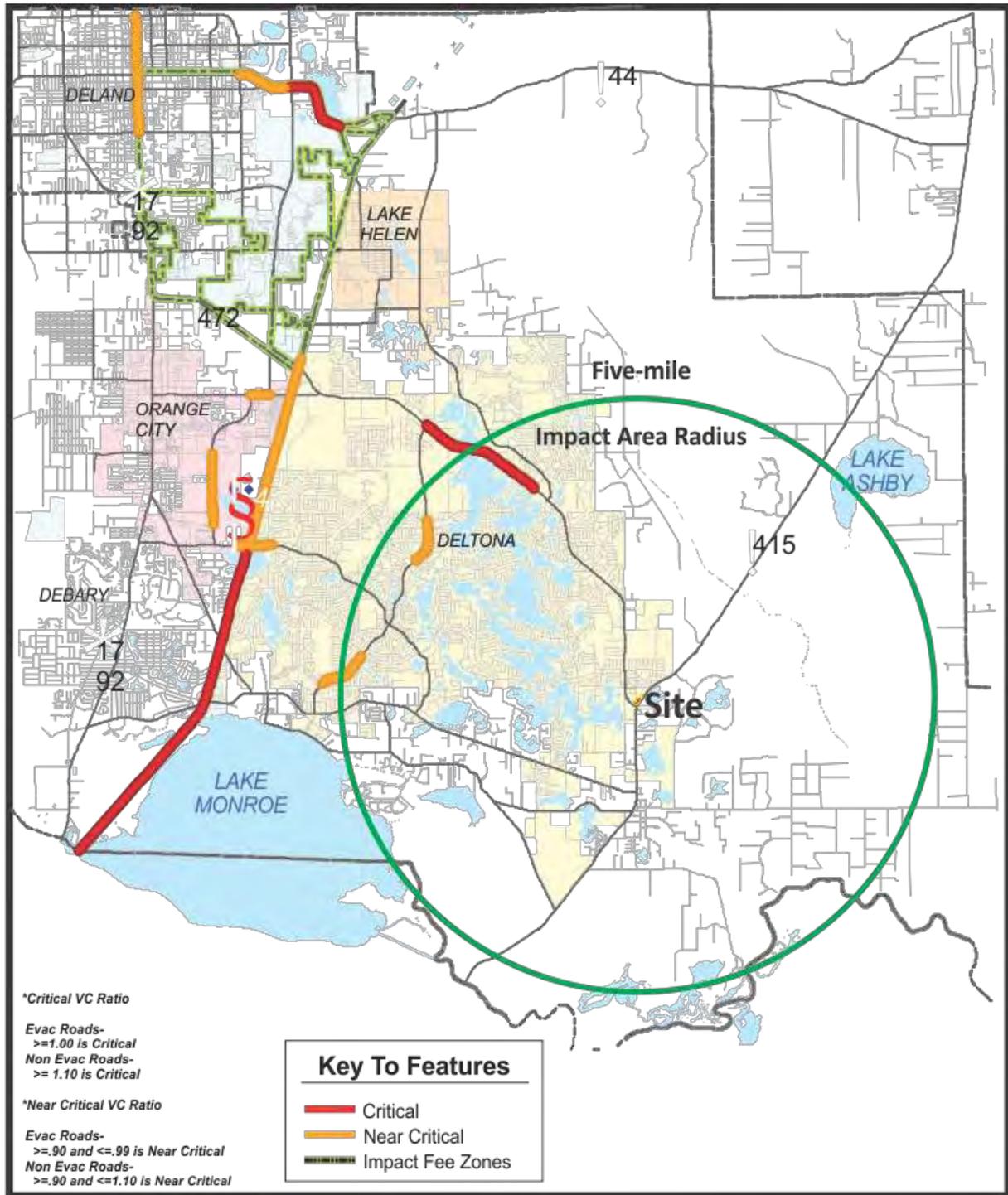
Data utilized in the study consisted of land use data provided by Project planners, traffic volume data/level of service standards obtained from Volusia County and planned **improvement's information from the Florida DOT and Volusia County**.

Based upon the study methodology assumptions, the initial impact area will consist of collector and arterial roadways within a five-mile sphere of influence impacted by P.M. peak hour 2-Way Project trips that are equal to or greater than 5% of the adopted level of service (LOS) capacity of the study roadways and Critical and Near Critical State and County Roadways adjacent to and within the five-mile impact sphere of influence. **Figure 3** is a copy of the Volusia County 5-mile impact sphere of influence.



PROMENADE AT DELTONA
CONCEPTUAL SITE PLAN ACCESS

Figure 2



PROMENADE AT DELTONA

Level of Service 2013

Critical / Near Critical* State and County Roadways

Figure 3

Table 1 was developed to show the Project impact area based on the 5-mile impact radius and 5% of the adopted level of service (LOS) P.M. peak hour 2-way service volume threshold. **Table 1** lists the roadways, number of lanes, functional class, adopted LOS standard, adopted service volume, 5% threshold volume, Project trip distribution, Project trip volume for each roadway segment and a determination of significance.

The actual study area has been defined based on the Project trip assignment where Project trips are 5% or more of the adopted P.M. peak hour two-way level of service roadway capacity, direct access roadways and critical/near critical roadways. Listed below and shown in **Figure 4** are the study area roadways and study intersections that were included in the analysis, based on methodology coordinated with the review staff:

Direct Access Roadways

- SR 415: Acorn Lake Road to Howland Boulevard
- Howland Boulevard: Fort Smith Boulevard to SR 415

5%+ Impacted Roadways

- Fort Smith Boulevard: Courtland Boulevard to Howland Boulevard

Critical/Near Critical Roadways

- Howland Boulevard: Providence Boulevard to Elkcam Boulevard
- Providence Boulevard: Elkcam Boulevard to Fort Smith Boulevard
- Providence Boulevard: Normandy Boulevard to Anderson Drive

Intersections

- SR 415 and Howland Boulevard
- SR 415 and Fort Smith Boulevard
- Howland Boulevard and Fort Smith Boulevard
- Howland Boulevard and Courtland Boulevard
- Howland Boulevard and Wal-Mart Entrance
- Fort Smith Boulevard and Courtland Boulevard
- Project access points on Howland Boulevard and SR 415

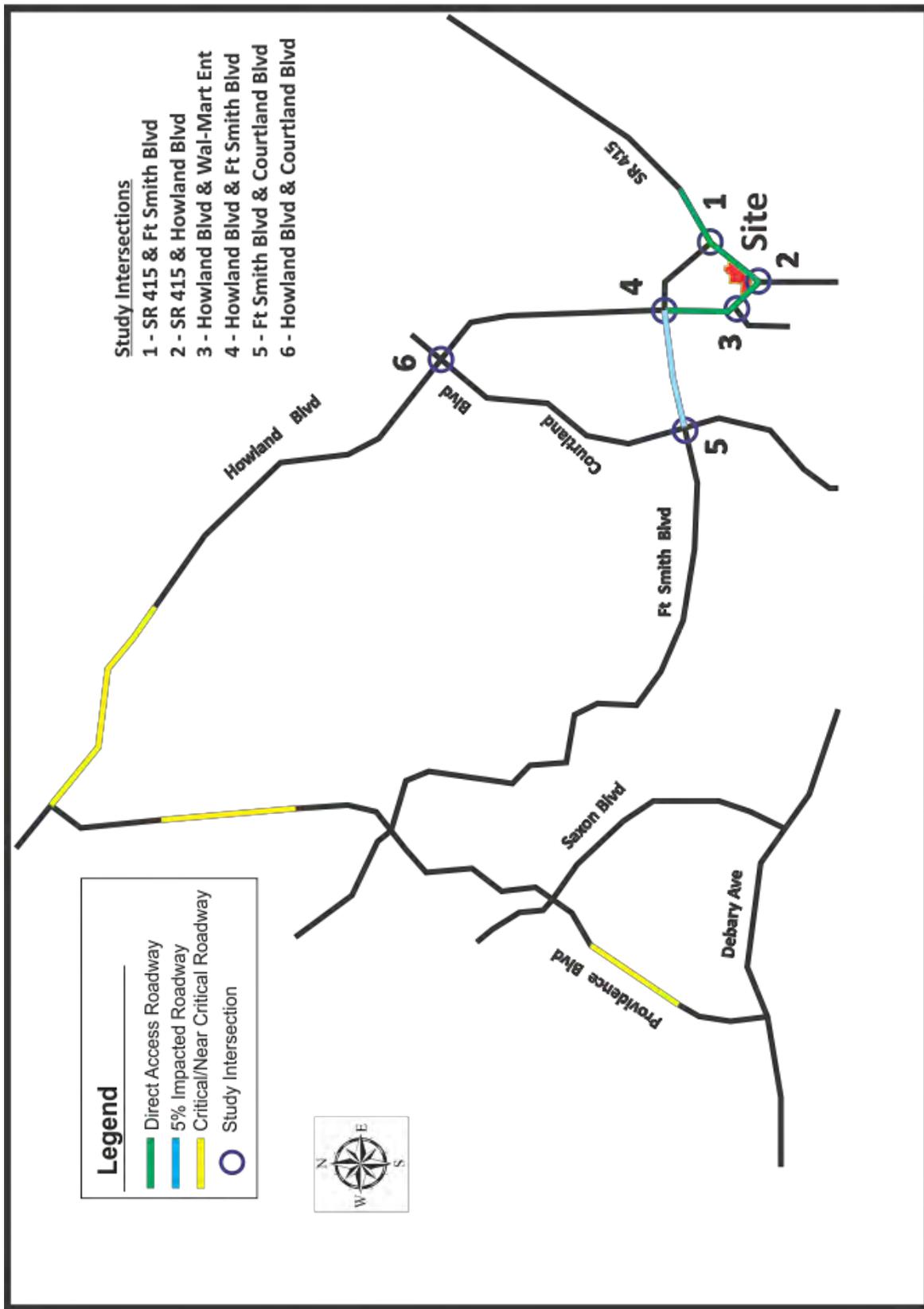
TABLE 1
STUDY ROADWAY IMPACT DETERMINATION WITHIN FIVE MILE RADIUS

Roadway Segment From To		# of Lanes	Adopted Roadway (1)				PM Peak Project Trips				
			Functional Class LOS		Service Volumes		5% of Adopted LOS	Model Distribution	2-Way Trips	% Of LOS Std	5% Sig ?
					Daily	PM Peak Hour					
SR 415											
SR 44	Acorn Lake Rd	2L	Rural Minor Arterial	C	16,400	1,550	77.5	11.14%	31	2.00%	No
Acorn Lake Rd	Howland Blvd	4LD (2)	Urban Minor Arterial	D	35,820	3,220	161.0	21.80%	61	1.89%	No
Howland Blvd	Enterprise-Osteen Rd	4LD (2)	Urban Minor Arterial	D	35,820	3,220	161.0	24.73%	69	2.14%	No
Enterprise-Osteen Rd	Seminole Co	4LD (2)	Rural Minor Arterial	D	56,610	5,090	254.5	12.03%	34	0.67%	No
Debarry Avenue/Doyle Road											
Providence Blvd	Garfield Rd	2L	Urban Minor Arterial	E	13,640	1,230	61.5	6.60%	18	1.46%	No
Garfield Rd	Saxon Blvd	2L	Urban Minor Arterial	E	13,640	1,230	61.5	7.40%	21	1.71%	No
Saxon Blvd	Courtland Blvd	2L	Urban Minor Arterial	E	13,640	1,230	61.5	9.13%	25	2.03%	No
Courtland Blvd	SR 415	2L	Urban Minor Arterial	E	13,640	1,230	61.5	10.25%	29	2.36%	No
Enterprise-Osteen Road											
Providence Blvd	Garfield Rd	2L	Rural Local	E	10,220	920	46.0	0.00%	0	0.00%	No
Garfield Rd	Reed Ellis Rd	2L	Rural Local	E	10,220	920	46.0	0.25%	1	0.11%	No
Reed Ellis Rd	SR 415	2L	Rural Local	E	10,220	920	46.0	0.57%	2	0.22%	No
Courtland Boulevard											
Beckwith St	Captain Dr	2L	Urban Collector	E	13,640	1,230	61.5	0.30%	1	0.08%	No
Captain Dr	Elkcam Blvd	2L	Urban Collector	E	13,640	1,230	61.5	2.00%	6	0.49%	No
Elkcam Blvd	Newmark Dr	2L	Urban Collector	E	13,640	1,230	61.5	0.60%	2	0.16%	No
Newmark Dr	Howland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	4.00%	11	1.08%	No
Howland Blvd	India Blvd	2L	Urban Collector	E	13,640	1,020	51.0	1.40%	4	0.39%	No
India Blvd	Fort Smith Blvd	2L	Urban Collector	E	13,640	1,020	51.0	9.60%	27	2.65%	No
Fort Smith Blvd	Doyle Rd	2L	Urban Collector	E	13,640	1,230	61.5	0.70%	2	0.16%	No
Doyle Rd	Enterprise-Osteen Rd	2L	Urban Collector	E	13,640	1,020	51.0	0.40%	1	0.10%	No
Elkcam Boulevard											
Fort Smith Blvd	Providence Blvd	2L	Urban Collector	E	13,640	1,020	51.0	0.17%	0	0.00%	No
Providence Blvd	Montecito Ave	2L	Urban Collector	E	13,640	1,020	51.0	1.20%	3	0.29%	No
Montecito Ave	Howland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	0.20%	1	0.10%	No
Howland Blvd	Lake Helen-Osteen Rd	2L	Urban Collector	E	14,740	1,330	66.5	0.30%	1	0.08%	No
Lake Helen-Osteen Rd	Courtland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	2.40%	7	0.69%	No
Courtland Blvd	Riverhead Dr	2L	Local	E	13,640	1,020	51.0	0.00%	0	0.00%	No
Fort Smith Boulevard											
Elkcam Blvd	Providence Blvd	2L	Urban Collector	E	13,640	1,020	51.0	1.60%	4	0.39%	No
Providence Blvd	Newmark Dr	2L	Urban Collector	E	14,740	1,330	66.5	2.60%	7	0.53%	No
Newmark Dr	India Blvd	2L	Urban Collector	E	14,740	1,330	66.5	4.80%	13	0.98%	No
India Blvd	Courtland Blvd	2L	Urban Collector	E	14,740	1,330	66.5	8.40%	23	1.73%	No
Courtland Blvd	Howland Blvd	2L	Urban Collector	E	14,740	1,330	66.5	24.70%	69	5.19%	Yes
Howland Blvd	SR 415	2L	Urban Collector	E	13,640	1,020	51.0	2.37%	7	0.69%	No
Garfield Road											
Doyle Rd	Enterprise-Osteen Rd	2L	Local	E	13,640	1,230	61.5	0.35%	1	0.08%	No
Howland Boulevard											
Wolf Pack Run	Catalina Blvd	4LD	Urban Minor Arterial	E	37,970	3,420	171.0	5.55%	15	0.44%	No
Catalina Blvd	Providence Blvd	4LD	Urban Minor Arterial	E	37,970	3,420	171.0	6.00%	17	0.50%	No
Providence Blvd	Elkcam Blvd	2L	Urban Minor Arterial	E	13,640	1,230	61.5	6.88%	19	1.54%	No
Elkcam Blvd	Lake Helen-Osteen Rd	4LD	Urban Minor Arterial	E	37,970	3,410	170.5	7.60%	21	0.62%	No
Lake Helen-Osteen Rd	Newmark Dr	4LD	Urban Minor Arterial	E	37,970	3,410	170.5	14.50%	40	1.17%	No
Newmark Dr	Courtland Blvd	4LD	Urban Minor Arterial	E	37,970	3,410	170.5	17.00%	47	1.38%	No
Courtland Blvd	Fort Smith Blvd	4LD (2)	Urban Minor Arterial	E	37,970	3,410	170.5	21.80%	61	1.79%	No
Fort Smith Blvd	SR 415	4LD (2)	Urban Minor Arterial	E	37,970	3,410	170.5	49.40%	138	4.05%	No
India Boulevard											
Fort Smith Blvd	Humphrey Blvd	2L	Local	E	13,640	1,020	51.0	1.00%	3	0.29%	No
Lake Helen-Osteen Road											
Haulover Blvd	Elkcam Blvd	2L	Urban Collector	E	13,640	1,230	61.5	2.25%	6	0.49%	No
Elkcam Blvd	Howland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	6.00%	17	1.67%	No
Maytown Road											
New Smyrna Blvd	Pell Rd	2L	Rural Minor Collector	E	12,300	1,160	58.0	5.20%	15	1.29%	No
Newmark Drive											
Fort Smith Blvd	Humphrey Blvd	2L	Urban Collector	E	13,640	1,020	51.0	1.40%	4	0.39%	No
Humphrey Blvd	Howland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	1.05%	3	0.29%	No
Howland Blvd	Courtland Blvd	2L	Urban Collector	E	13,640	1,020	51.0	2.35%	7	0.69%	No
Normandy Boulevard											
Tivoli Dr	Providence Blvd	3L	Urban Minor Arterial	E	13,640	1,020	51.0	1.00%	3	0.29%	No
Providence Blvd	Saxon Blvd	2L	Urban Minor Arterial	E	14,740	1,330	66.5	1.45%	4	0.30%	No
Saxon Blvd	Fort Smith Blvd	2L	Urban Collector	E	13,640	1,020	51.0	3.40%	9	0.88%	No
Providence Boulevard											
Howland Blvd	Elkcam Blvd	2L	Urban Minor Arterial	E	14,040	1,270	63.5	0.53%	1	0.08%	No
Elkcam Blvd	Fort Smith Blvd	2L	Urban Minor Arterial	E	13,640	1,020	51.0	0.20%	1	0.10%	No
Fort Smith Blvd	Tivoli Dr	4LD	Urban Minor Arterial	E	30,420	2,740	137.0	0.40%	1	0.04%	No
Tivoli Dr	Saxon Blvd	2L	Urban Minor Arterial	E	14,740	1,330	66.5	0.05%	0	0.00%	No
Saxon Blvd	Normandy Blvd	2L	Urban Minor Arterial	E	13,640	1,020	51.0	0.20%	1	0.10%	No
Normandy Blvd	Anderson Dr	2L	Urban Minor Arterial	E	13,640	1,020	51.0	0.13%	0	0.00%	No
Reed Ellis Road											
Enterprise-Osteen Rd	SR 415	2L	Local	E	13,640	1,120	56.0	0.40%	1	0.09%	No
Saxon Boulevard											
Tivoli Dr	Providence Blvd	3L	Urban Minor Arterial	E	13,640	1,020	51.0	1.20%	3	0.29%	No
Providence Blvd	Normandy Blvd	2L	Urban Collector	E	13,640	1,020	51.0	1.95%	5	0.49%	No
Normandy Blvd	Doyle Rd	2L	Urban Collector	E	13,640	1,230	61.5	0.80%	2	0.16%	No

1. Volusia County 2013 Average Annual Daily Traffic & Historical Counts

2. Programmed Roadway Widening

Luke Transportation Engineering Consultants, Inc., 2014



PROMENADE AT DELTONA

Existing Study Roadways and Intersections

Figure 4

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Existing Roadways and Traffic Conditions

A survey of characteristics of the existing roadway segments within the impact area that will be impacted by the proposed Promenade at Deltona was conducted. The purpose of this survey was to obtain information on physical and traffic characteristics of these facilities. Existing traffic volume data at the study intersections is based on turning movement counts collected during April 2014.

Study Roadways

Table 2 provides a list of the roadway parameters utilized in the analysis, taken from the *Volusia County 2013 Average Daily Traffic & Historical Counts* spreadsheet. Included in this table are; number of lanes, functional classification, adopted Level of Service (LOS) standards, roadway service volumes, daily and P.M. peak hour traffic volumes, LOS and if the roadway meets the adopted LOS. Based upon this analysis, all but the Critical and Near Critical roadway segments currently operate at acceptable levels of service.

Study Intersections

The study intersections were analyzed under existing conditions using the procedures of the *2010 Highway Capacity Manual* for signalized and unsignalized intersections. This analysis used existing traffic volumes (see **Appendix C** for the turning movement summaries of the existing intersections) and existing geometric conditions.

Figure 5 shows the existing A.M. and **Figure 6** shows the existing P.M. peak hour intersection turning movement traffic volumes at each of the study intersections. **Table 2** also includes the summary results of the intersection analysis. Analysis sheets are included in **Appendix D**. As can be seen, the study intersections operate at satisfactory Levels of Service.

Programmed Roadway Improvements

Listed below are the programmed roadway improvements under construction or scheduled for construction within the first three years of the current Volusia County TPO Transportation Improvement Program – FY 2013/14-2017/18.

- SR 415: 4-lane widening from Seminole County Line to Acorn Lake Road,
- Howland Boulevard: 4-lane widening from Courtland Boulevard to SR 415.

TABLE 2
STUDY ROADWAY PARAMETERS, EXISTING TRAFFIC VOLUMES AND LEVEL OF SERVICE (1)

Roadway Segment		# of Lanes	Adopted Functional Class		Adopted Roadway Service Volumes		2013 Traffic Volumes			Meets Adopted LOS		
			From	To	Daily	PM Peak Hour	Daily Traffic (1)	LOS	2-Way PM Traffic (3)	LOS	LOS	
SR 415												
	Howland Blvd	4LD (2)	Urban Minor Arterial	D	35,820	3,220	6,500	C	585	C	Yes	
Fort Smith Boulevard												
	Howland Blvd	2L	Urban Collector	E	14,740	1,330	8,460	D	761	D	Yes	
Howland Boulevard												
	Elkcam Blvd	2L	Urban Minor Arterial	E	13,640	1,230	15,150	F	1,364	F	No	
	SR 415	4LD (2)	Urban Minor Arterial	E	37,970	3,410	12,530	C	1,128	C	Yes	
Providence Boulevard												
	Fort Smith Blvd	2L	Urban Minor Arterial	E	13,640	1,020	13,070	E	1,176	F	No	
	Anderson Dr	2L	Urban Minor Arterial	E	13,640	1,020	13,150	E	1,184	F	No	

Study Intersections

Intersection	Control	Delay		LOS	
		A.M.	P.M.	A.M.	P.M.
Howland Boulevard and Fort Smith Boulevard	Signal	9.8	8.4	A	A
Howland Boulevard and Courtland Boulevard	Signal	14.3	13.8	B	B
Fort Smith Boulevard and Courtland Boulevard	Signal	13.2	13.6	B	B
Howland Boulevard and Wal-Mart Entrance	Signal	8.4	8.8	A	A
SR 415 and Howland Boulevard (4)	STOP	8.4//20.7	9.0//16.1	A//C	A//C
SR 415 and Fort Smith Boulevard (4)	STOP	8.1//16.7	8.1//15.0	A//C	A//B

1. Volusia County 2013 Average Annual Daily Traffic & Historical Counts

2. Programmed Roadway Widening

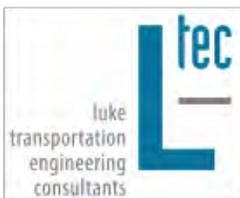
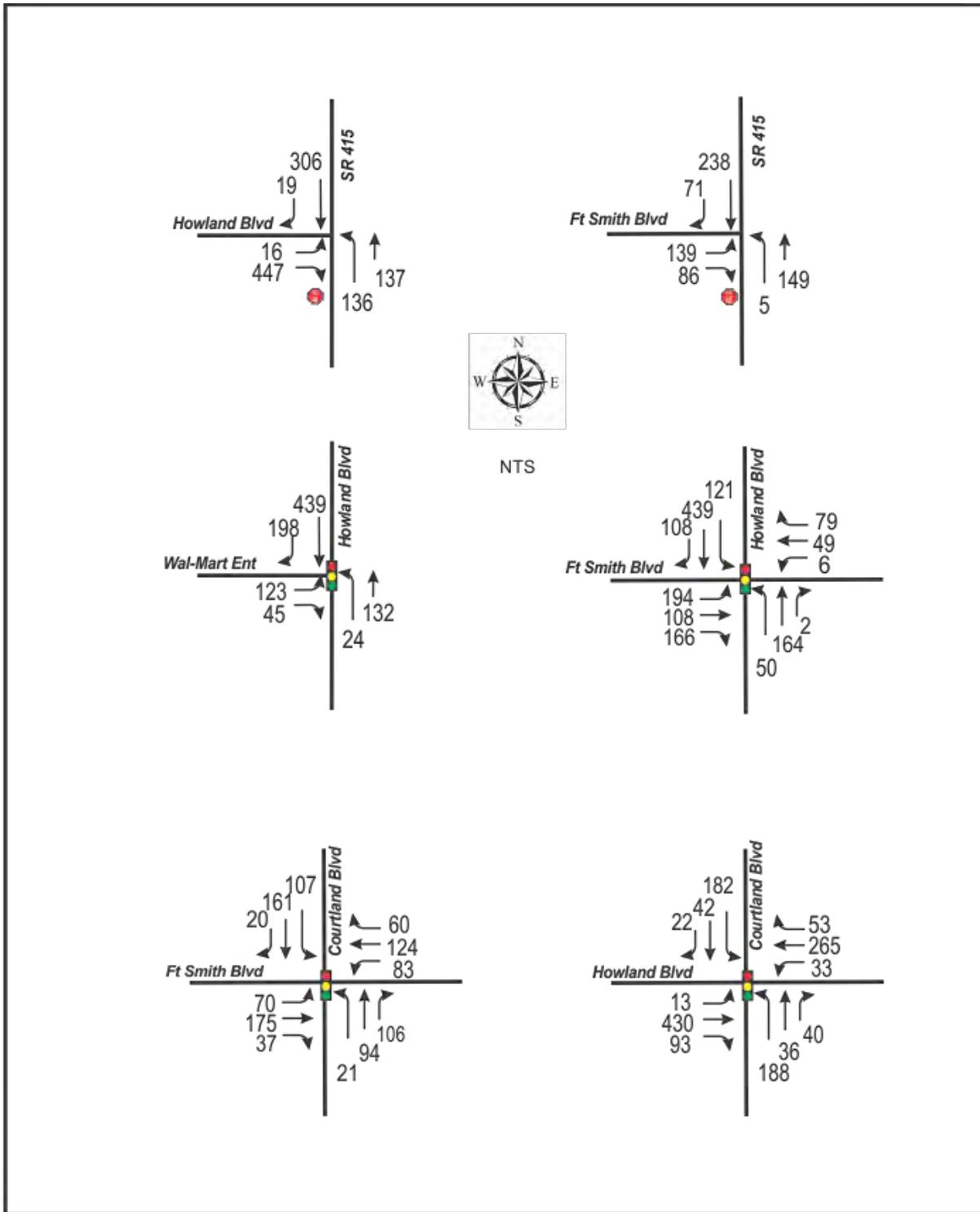
3. PM Peak Hour traffic based on K-Factor of 0.9.

4. NB Major Street Left Turns // EB Minor Street Movements

Critical Roadway

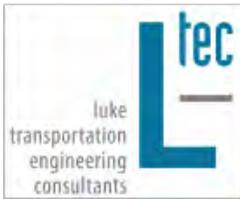
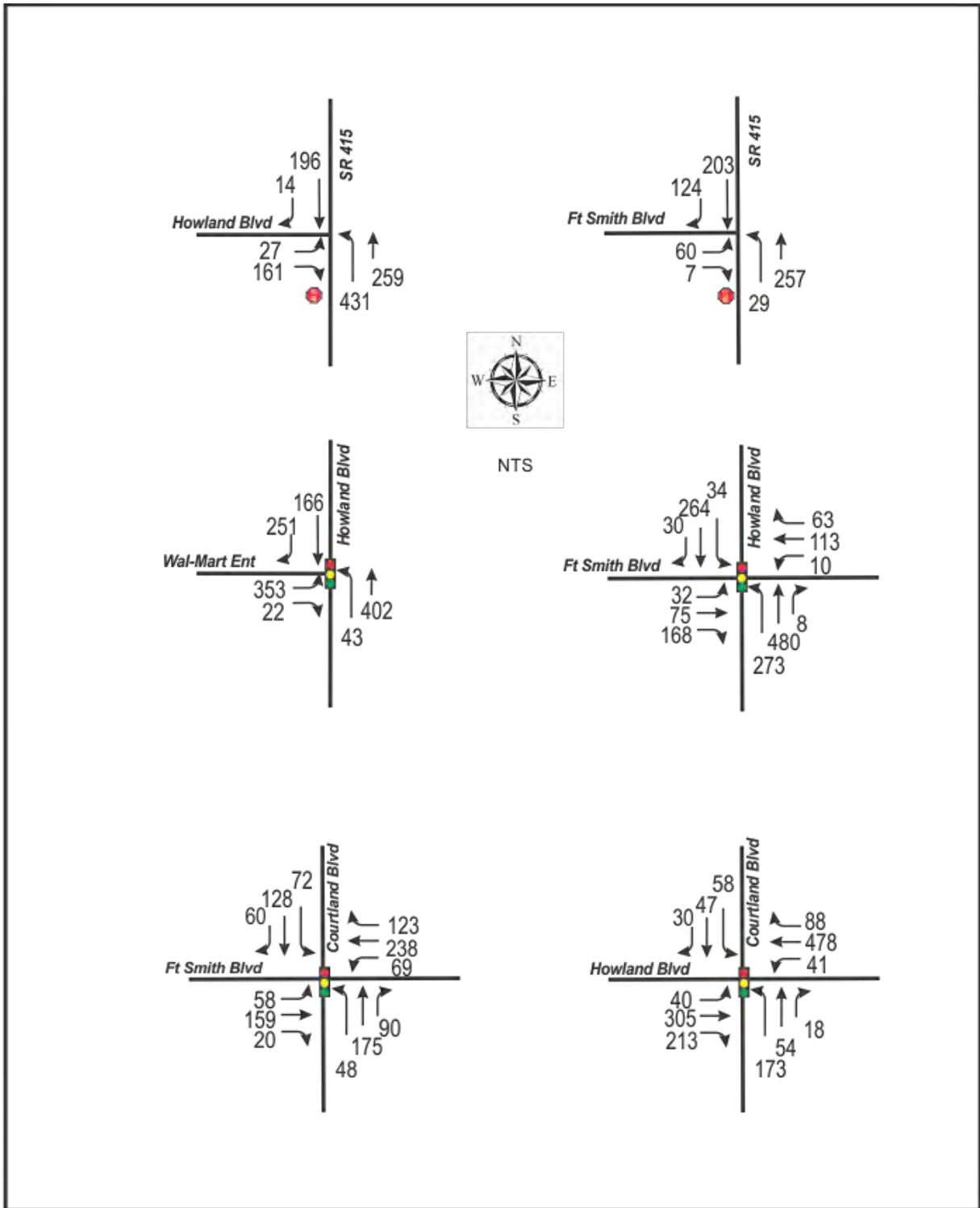
Near Critical Roadway

Luke Transportation Engineering Consultants, Inc., 2014



**PROMENADE AT DELTONA
TRAFFIC IMPACT ANALYSIS**
EXISTING A.M. PEAK HOUR TRAFFIC VOLUMES

Figure 5



**PROMENADE AT DELTONA
TRAFFIC IMPACT ANALYSIS**

EXISTING P.M. PEAK HOUR TRAFFIC VOLUMES

Figure 6

Proposed Development

The proposed land use for the Promenade at Deltona is a mixed use of medical office, medical clinic and retail. To determine the impact of this development plan, an estimate of the trip generation characteristics was prepared. This included the determination of **the site's trip generation and distribution/assignment of these different trip generation characteristics to the study roadways and study intersections.**

Trip Generation

The trip generation was calculated utilizing the **9th Edition ITE Trip Generation Report**, 2012 data as summarized in **Table 3**. This summarizes the daily, A.M. and P.M. peak hour trip ends for the proposed development. The traffic volumes represent total driveway volumes, which include internal capture due to compatible land uses and **pass-by capture trips not considered new to the area's roadways since they are attracted from the existing traffic stream on the adjacent roadway.** Internal and pass-by trip reductions will be discussed below.

Per the request of the reviewer, Table 3 also includes (for informational purposes only) the trip generation calculation for the P.M. peak hour of the generator. As can be seen in the table, only the medical office has data for the peak hour of the generator.

Internal Trips

Internal trips are defined as trips that occur between compatible portions of the development without impacting the adjacent roadway network (i.e., trips occurring between the medical office and retail land use within the proposed development site. The internal trips will have no impact on the adjacent roadway network. Utilizing the procedures contained in the **2nd Edition, ITE Trip Generation Handbook, June 2004 section on "Multi-Use Development"** and the **March 2011 NCHRP Report 684 Enhancing Internal Trip Capture Estimation for Mixed-use Developments** an internal capture calculation was performed. The trip generation tables also include the internal trip ends adjustment calculations. **Appendix E** contains the internal capture worksheets. The internal capture applied in the study was nominal (less than 12%).

Pass-by Traffic

The total driveway trips generated by the retail component **land use will comprise "new (primary)" and "pass-by" trips.** Pass-by trips are defined as those trips from the passing roadway stream that would already be on the road. Therefore, pass-by traffic does not create additional impact on the surrounding roadways. For this site, the pass-by traffic will be drawn from SR 415 and Howland Boulevard. Based upon pass-by information contained in the 2nd Edition, **ITE Trip Generation Handbook**, June 2004, a retail center will generate, on average, a P.M. peak hour pass-by trip percentage of 34%.

TABLE 3
Estimated Trip Generation (1)

Land Use	Size	ITE Code (2)	Estimated Trip Generation Rates													
			Trip Generation Rates						Total Trips							
			A.M. Peak Hour		P.M. Peak Hour		Daily		A.M. Peak Hour		P.M. Peak Hour		Daily			
Medical Office	56,800 SF	720 / E	Total	Enter	Exit	Total	Enter	Exit	2,108	136	107	29	175	49	126	
Clinic	5,625 SF	630 / R	Total	Enter	Exit	Total	Enter	Exit	31.45	4.87	2.44	1.45	28	14	17	
Retail	10,000 SF	820 / E	Total	Enter	Exit	Total	Enter	Exit	152.03	3.83	2.37	1.45	39	24	67	
			Total							3,805	203	145	58	332	210	
Land Use	Size	Internal Capture (3)	Internal Capture													
			Internal Capture						External Trips (4)							
			A.M. Peak Hour		P.M. Peak Hour		Daily		A.M. Peak Hour		P.M. Peak Hour		Daily			
Medical Office	56,800 SF	7.3%	Total	Enter	Exit	Total	Enter	Exit	2,060	127	104	23	170	48	122	
Clinic	5,625 SF	7.3%	Total	Enter	Exit	Total	Enter	Exit	172	25	12	13	28	12	16	
Retail	10,000 SF	30.8%	Total	Enter	Exit	Total	Enter	Exit	1,467	27	17	10	122	56	66	
			Total	2.8%	11.8%	3.6%	24	12	12	3,699	179	133	46	320	116	204
Land Use	Size	Pass-by Capture (5)	Pass-by Capture													
			Pass-by Capture						Net New (Primary) Trips (6)							
			A.M. Peak Hour		P.M. Peak Hour		Daily		A.M. Peak Hour		P.M. Peak Hour		Daily			
Medical Office	56,800 SF	0.0%	Total	Enter	Exit	Total	Enter	Exit	2,060	127	104	23	170	48	122	
Clinic	5,625 SF	0.0%	Total	Enter	Exit	Total	Enter	Exit	172	25	12	13	28	12	16	
Retail	10,000 SF	28.9%	Total	Enter	Exit	Total	Enter	Exit	1,043	27	17	10	81	36	46	
			Total	11.5%	0.0%	12.8%	0	0	41	3,275	179	133	46	279	96	184

(1) Trip Generation Rate from 9th Edition of ITE Trip Generation Report, 2012.
 (2) ITE Land Use Code Number / E = Fitted Curve Equation or R = Average Trip Rate
 (3) Internal Percentage calculations based on ITE "Trip Generation Handbook," June 2004 procedures.
 Individual land use percentage adjusted to match internal trip calculation.
 (4) Total Traffic Volumes minus Internal Capture Trips = External Trips.
 (5) Pass-by trips set to ITE Handbook Table 5.6 LUC 820 Shopping Center - 34% pass-by percentage. Daily assumed to be 85% of PM.
 (6) External Traffic Volumes minus Pass-by Capture Trips = Net New (Primary) Trips.
Luke Transportation Engineering Consultants, Inc., 2014

Estimated Trip Generation of the Generator (1)

Land Use	Size	ITE Code (2)	Estimated Trip Generation Rates												
			Trip Generation Rates						Total Trips						
			A.M. Peak Hour		P.M. Peak Hour		Daily		A.M. Peak Hour		P.M. Peak Hour		Daily		
Medical Office	56,800 SF	720 / E	Total	Enter	Exit	Total	Enter	Exit	37.11	4.27	1.67	2.61	243	95	148
Clinic	5,625 SF	630 / R	Total	Enter	Exit	Total	Enter	Exit	31.45	Information Not Available					
Retail	10,000 SF	820 / E	Total	Enter	Exit	Total	Enter	Exit	152.03	Information Not Available					

(1) Trip Generation Rate from 9th Edition of ITE Trip Generation Report, 2012.
 (2) ITE Land Use Code Number / E = Fitted Curve Equation or R = Average Trip Rate
Luke Transportation Engineering Consultants, Inc., 2014

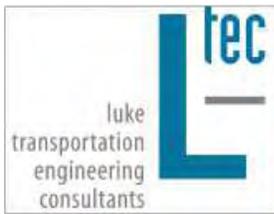
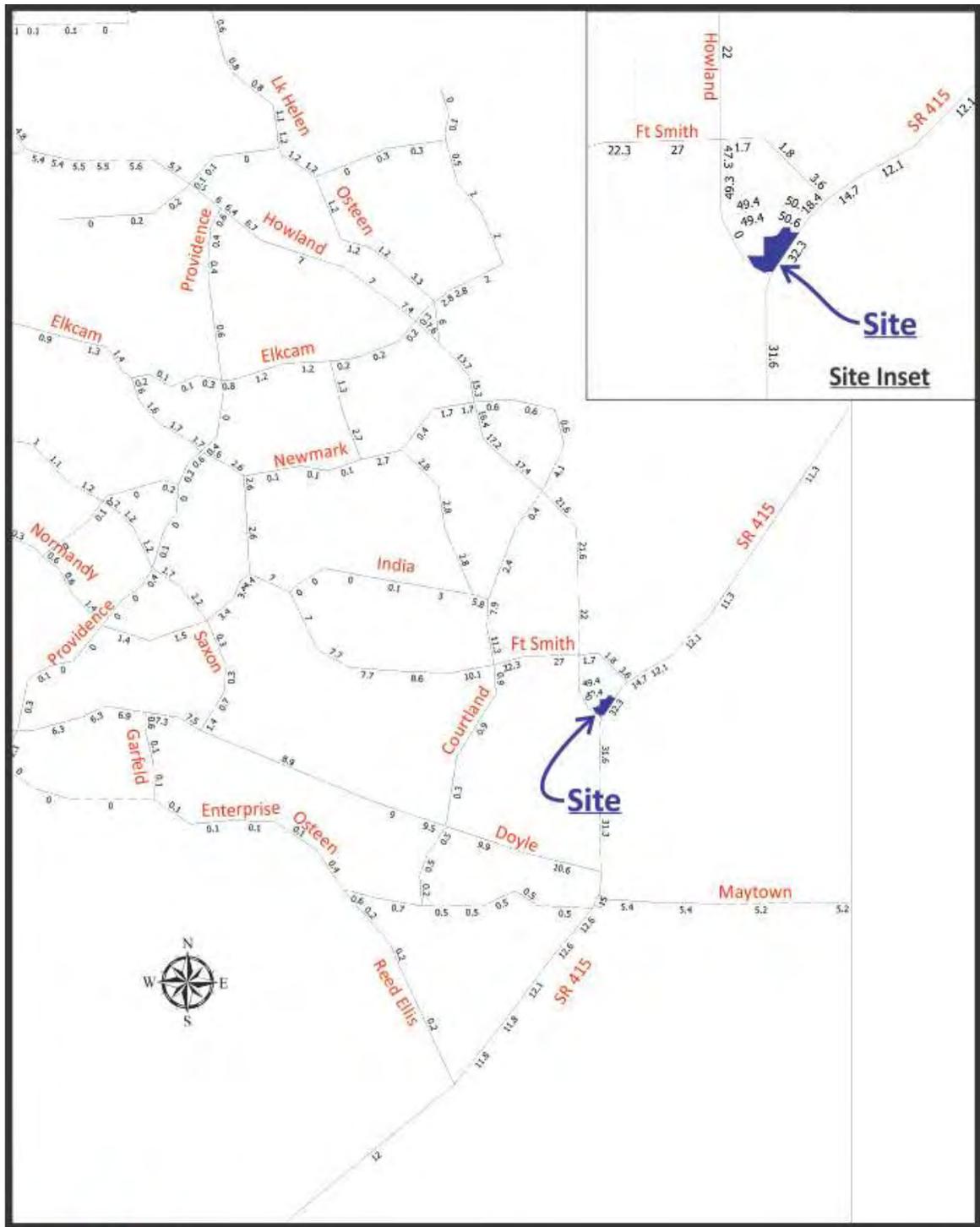
As a check, the Florida DOT **Transportation Impact Handbook**, July 4, 2010 stipulates that pass-by trips should not be higher than 10% of the adjacent street traffic. The calculated pass-by trips are approximately 4% of the existing P.M. peak hour traffic on the adjacent roadways (see calculations below). Therefore, the P.M. peak hour pass-by trip reduction was based on the ITE pass-by percentage. The trip generation tables also include the pass-by trip calculations.

SR 415 & WB Howland Boulevard Traffic	$210 + 286 + 431 = 927$
10% Threshold	$927 \times 0.10 = 93$
Pass-by Traffic	41
Is Pass-by > 10% of Adjacent street traffic?	No, $41 \div 927 = 0.044$ or 4%

As shown, the pass-by trips determined in the study was nominal (only 41 peak hour trips).

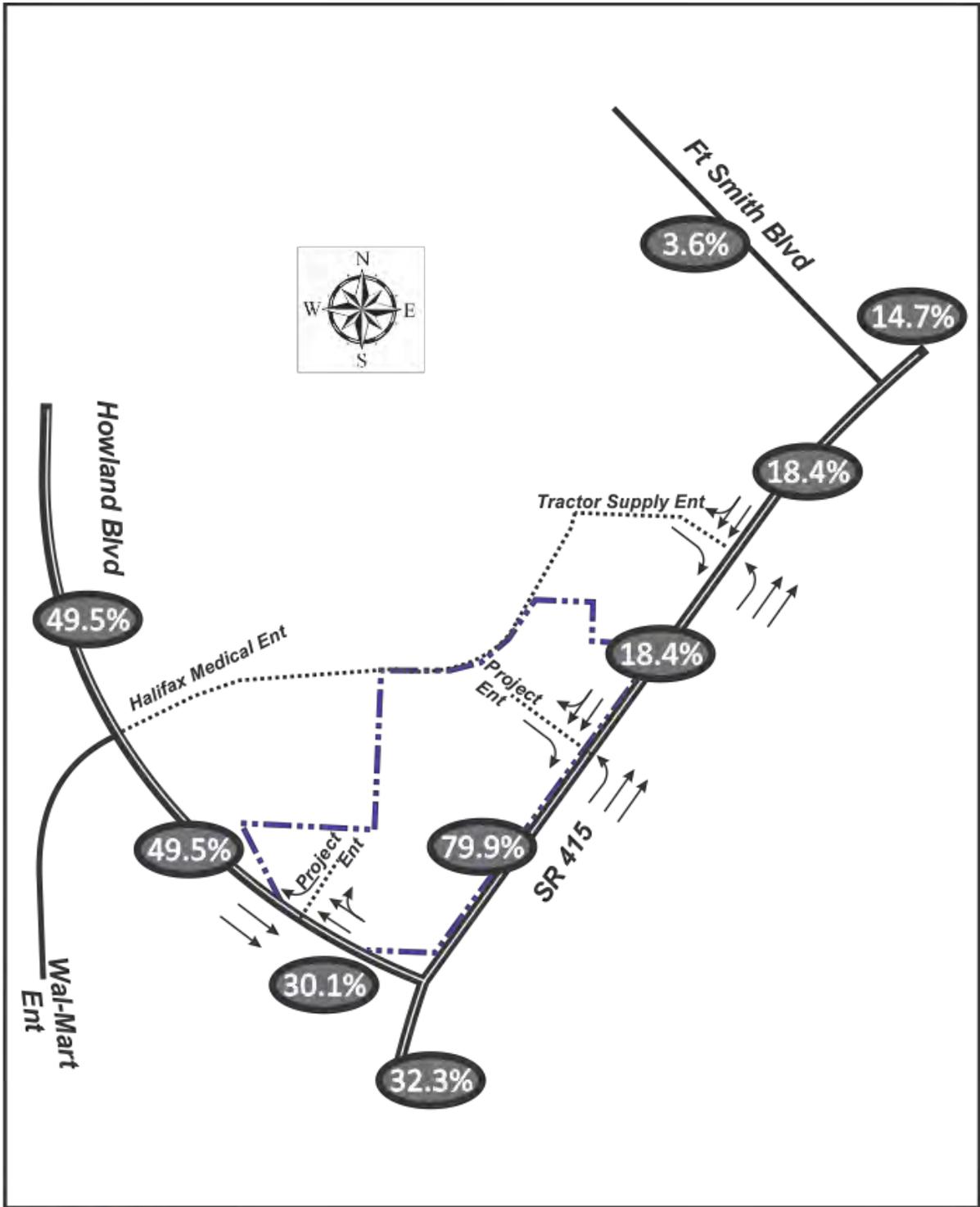
Trip Distribution

The Project trip distribution is based on a base year (2005) assignment of the FDOT Central Florida Regional Planning Model. This model distribution was used to determine estimated P.M. peak hour volumes on the study area road segments and will be used to determine the Project trip distribution at the study intersections. The model network included all planned and programmed roadways and improvements within the impact area. The socioeconomic data was updated to reflect the proposed development in a separate traffic zone. Subsequently, a selected zone assignment was performed to determine distribution of site trips in the impact area to the area roadways. Copies of the model proposed land use distribution plot is contained in **Appendix F. Figure 7** shows the model Project trip distribution on the study roadway segments. **Figure 8** presents the Project trip distribution redistributed based on the right-in/right-out access connection on Howland Boulevard and the directional access connection on SR 415.



PROMENADE AT DELTONA
PROJECT TRIP DISTRIBUTION

Figure 7



**PROMENADE AT DELTONA
TRAFFIC IMPACT ANALYSIS**
PROJECT TRIP DISTRIBUTION AT SITE ACCESS

Figure 8

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Projected Traffic Transportation Assessment

The Project trips generated by the proposed Promenade at Deltona development were combined with background traffic and assigned to the study roadways and intersections. Background traffic projections for the study roadways were estimated two ways. The first assumed a growth rate based on historical traffic counts (last five years, see **Appendix G** for linear regression worksheet) or a minimum of 1% annual growth rate.

The second assumed the build-out of land uses within the property adjacent to the western property boundary of the Promenade at Deltona. This adjacent property (about ±19.6 acres) was assumed to be developed as a medical office building with 300,000 square feet. See **Appendix A**, Comment 14 for the trip generation table. This amount of development was estimated based on the application of floor-area-ratio limitations and considered on-site parking requirements. It was assumed that this property to the west will have an internal connection to the Promenade at Deltona development, and a full-access connection to Howland Boulevard. While these future land uses are expected to be developed over a long range at a point after build-out of the Promenade at Deltona, the City staff has requested that an estimate of the future land use plan be included with the background traffic volumes developed for this study. The third included the SKMBT Tractor Supply store just to the north of the proposed development site.

The estimated daily and P.M. peak hour background traffic volumes are shown in **Table 4**. The estimated background daily traffic volumes were converted to P.M. peak hour 2-way traffic volumes based on an FDOT K-factor of 0.9.

**TABLE 4
2016 Background Traffic Calculations**

Roadway Segment From To		Daily Traffic Volumes					Intersection Growth Factor	Peak Hour Background (6)
		Existing (1)	Growth (2)	Tractor Supply (3)	MOB (4)	Background (5)		
SR 415								
Acorn Lake Rd	Howland Blvd	6,500	197	260	2,627	9,584	1.48	863
Fort Smith Boulevard								
Courtland Blvd	Howland Blvd	8,460	256	104	2,977	11,797	1.40	1,062
Howland Boulevard								
Providence Blvd	Elkcam Blvd	15,150	459	40	829	16,478	1.09	1,483
Fort Smith Blvd	SR 415	12,530	380	42	5,953	18,905	1.51	1,701
Providence Boulevard								
Elkcam Blvd	Fort Smith Blvd	13,070	396	0	24	13,490	1.03	1,214
Normandy Blvd	Anderson Dr	13,150	398	0	16	13,564	1.03	1,221

1. From Table 2
 2. Based on Linear Regression projections or 1% annual growth rate.
 3. SKMBT Tractor Supply Store - 18,800 Square Feet (September 19, 2013 Lassiter Transportation Group, Inc. study)
 4. MOB - 300,000 Square Foot Medical Office Building
 5. Existing + Growth + MOB = Background
 6. Background x 0.09 = P.M. Peak Hour 2-Way Background Traffic volume
- Luke Transportation Engineering Consultants, Inc., 2014**

Background traffic projections at the study intersections were determined by applying a roadway specific growth factor (see **Table 4**) to the existing turning movement counts and then combined with project traffic as shown in **Figure 9** (for the A.M. Peak Hour) and **Figure 10** (for the P.M. Peak Hour).

Traffic Impact Roadway Analysis

An analysis of daily and P.M. peak traffic conditions was conducted to determine if adequate capacity was available on each study roadway segment. Each impacted roadway segment was analyzed by comparing its total daily and P.M. peak hour volume to the available capacity of the segment as shown in **Table 5**. The results of this analysis indicate that all of the impacted roadway segments except the Critical and Near critical roadway segments will continue to have adequate capacity at Project build-out in 2016. As shown in **Table 5**, the Project is not significant on any of the Critical or Near Critical roadway segments.

Intersection Analysis

To determine the projected Level of Service provided by the intersections to be impacted by the proposed development, a capacity analysis was conducted utilizing the procedures of the *2010 Highway Capacity Manual* for the signalized intersections and unsignalized intersections. This analysis used projected traffic volumes (see **Figure 9** and **Figure 10**) and existing/proposed geometric conditions. Printouts of the intersection analyses may be found in **Appendix H**. The projected intersection levels of service and delay, for each study intersection, are also shown in **Table 5**. As can be seen, the signalized and unsignalized study intersections, at build-out of the proposed development, will continue to operate at acceptable levels of service similar to the existing conditions analysis.

Transit

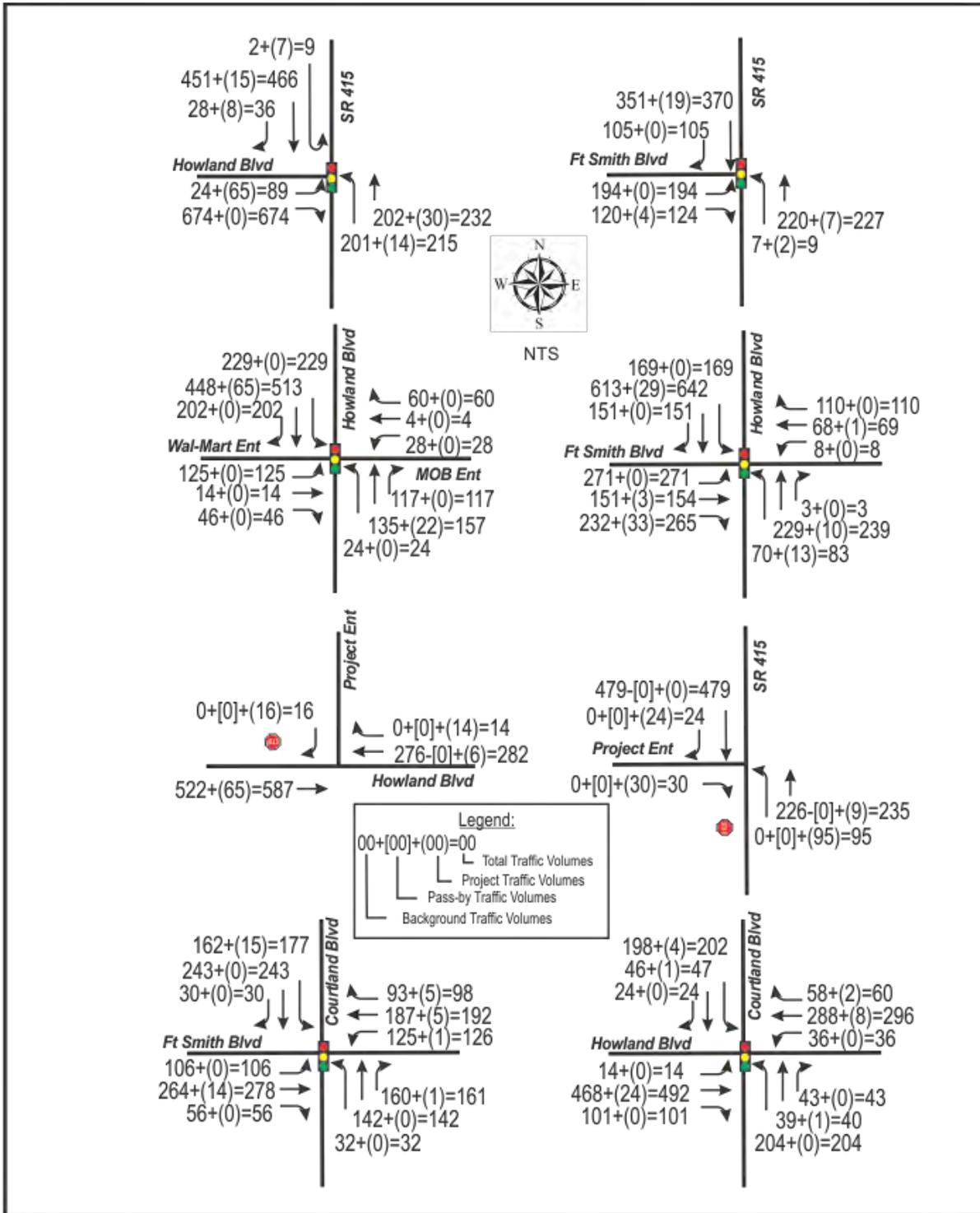
Currently VoTran Route 21 and Route 22 provide service to the Wal-Mart with stops on Howland Boulevard and SR 415. See **Appendix I** for the route schedules and routes maps.

Bicycle

The closest trail to the Promenade at Deltona Project site is the East Central Regional Rail Trail located approximately 1.8 miles south.

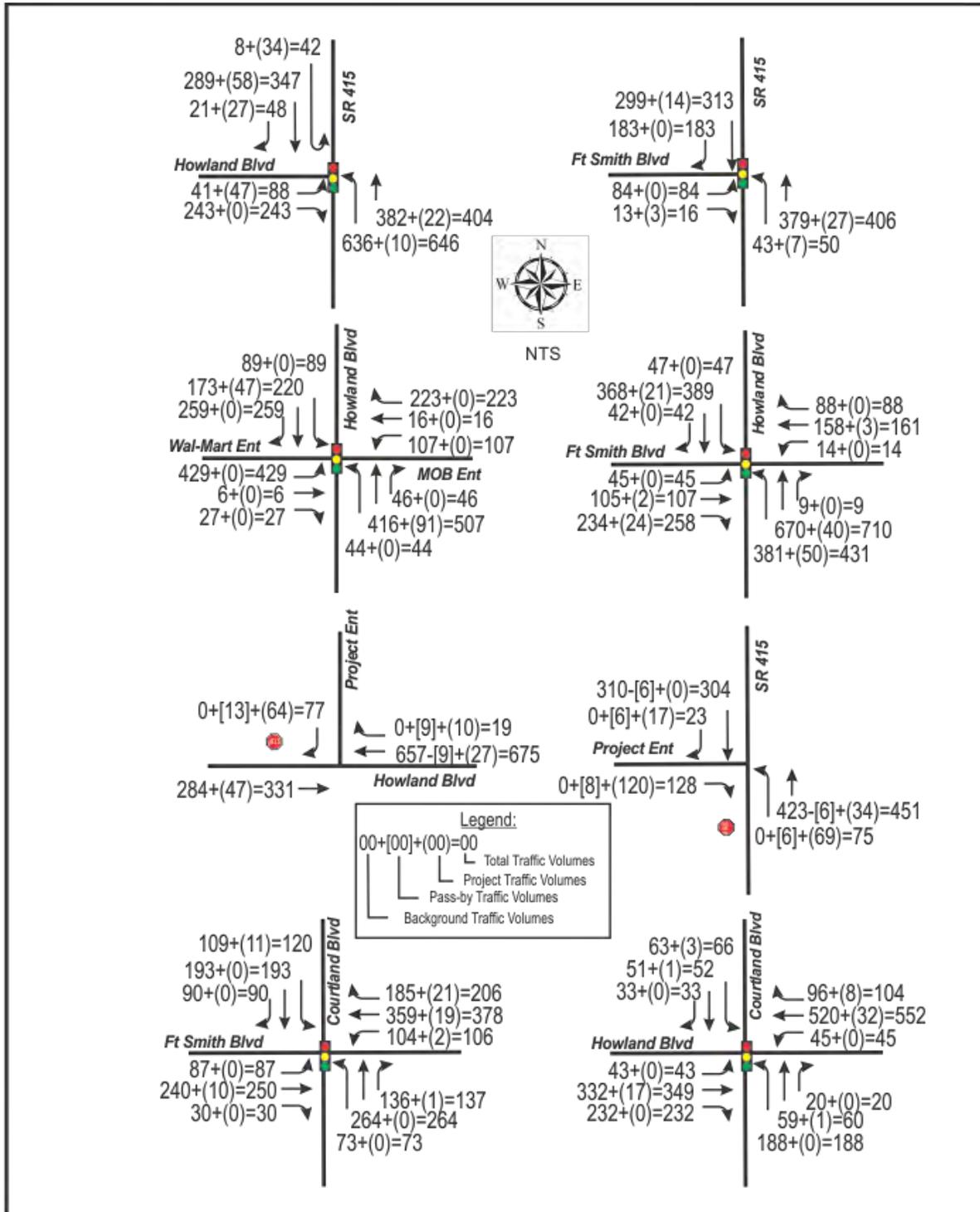
Pedestrian

Sidewalks currently exist along both sides of SR 415 and the south side of Howland Boulevard. The future on-site sidewalk system should be constructed to serve any pedestrians of this development and should be designed to connect to the external sidewalk system.



**PROMENADE AT DELTONA
 TRAFFIC IMPACT ANALYSIS**

PROJECTED 2016 A.M. PEAK HOUR TRAFFIC VOLUMES Figure 9



**PROMENADE AT DELTONA
TRAFFIC IMPACT ANALYSIS**

PROJECTED 2016 P.M. PEAK HOUR TRAFFIC VOLUMES Figure 10

TABLE 5
Projected 2016 Traffic Volumes Analysis

Roadway Segment		Project Trip Distribution	Daily Traffic Volumes		PM Peak Hour Traffic Volumes		Project % of Adopted Capacity		Meets LOS Standard			
From	To		Bkgrnd (1)	Project	Total	LOS	Bkgrnd (1)	Project	Total	LOS	Daily	PM Peak
SR 415												
Acorn Lake Rd	Project Ent	21.8%	9,584	714	10,298	C	863	61	924	C	2.0%	1.9%
Project Ent	Howland Blvd	21.8%	9,584	714	10,298	C	863	61	924	C	2.0%	1.9%
Fort Smith Boulevard												
Courtland Blvd	Howland Blvd	24.7%	11,797	809	12,606	D	1,062	69	1,131	D	5.5%	5.2%
Howland Boulevard												
Providence Blvd	Elkcam Blvd	6.9%	16,478	225	16,703	F	1,701	19	1,720	F	1.6%	1.5%
Fort Smith Blvd	Project Ent	8.4%	18,905	275	19,180	C	1,214	23	1,237	C	0.7%	0.7%
Project Ent	SR 415	49.4%	18,905	1,618	20,523	C	1,221	138	1,359	C	4.3%	4.0%
Providence Boulevard												
Elkcam Blvd	Fort Smith Blvd	0.2%	13,490	7	13,497	E	1,214	1	1,215	F	0.1%	0.1%
Normandy Blvd	Anderson Dr	0.1%	13,564	4	13,568	E	1,221	0	1,221	F	0.0%	0.0%

Study Intersections

Intersection	Control	Delay		LOS	
		A.M.	P.M.	A.M.	P.M.
Howland Boulevard and Fort Smith Boulevard	Signal	24.8	20.2	C	C
Howland Boulevard and Courtland Boulevard	Signal	15.4	14.1	B	B
Fort Smith Boulevard and Courtland Boulevard	Signal	16.1	17.6	B	B
Howland Boulevard and Wal-Mart Entrance	Signal	13.6	22.4	B	C
SR 415 and Howland Boulevard	Signal	22.8	14.1	C	B
SR 415 and Fort Smith Boulevard	Signal	6.3	5.1	A	A
SR 415 Project Entrance (2)	STOP	8.9//9.9	8.2//9.9	A//A	A//A
Howland Boulevard Project Entrance (3)	STOP	9.1	11.0	A	B

1. From Table 4

2. NB Major Street Left Turns // EB Minor Street Right Turn Movements

3. SB Minor Street Right Turn Movements..

Critical Roadway

Near Critical Roadway

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Study Conclusions

Study Conclusions

This study was undertaken to evaluate existing and future traffic conditions in the vicinity of the proposed Promenade at Deltona at the intersection of SR 415 and Howland Boulevard in Deltona, Florida. The study consisted of the determination of the vehicular trips, which would utilize the area roadways as a result of the proposed development of the vacant site. The results of the study as documented herein are summarized below:

- The proposed development will contain a 56,800 square foot medical office building, a 5,625 square foot medical clinic and 10,000 square feet of retail space.
- The trips to be generated by the proposed development were estimated to be 3,275 net new (primary) daily trip ends, 179 net new (primary) A.M. peak hour trip ends and 279 net new (primary) **P.M. peak hour trip ends**. The Project's daily, A.M. and P.M. peak hour trip ends were distributed and assigned to the adjacent roadways (daily and two-way P.M. peak hour) and study intersections (A.M. and P.M. peak hour directional trips).
- The traffic study accounted for the potential build-out of land uses within the property adjacent to the western property boundary and the northern boundary of the Promenade at Deltona.
- All of the study roadway segments directly access or significantly impacted by the proposed development have sufficient available capacity to serve the traffic generation of the proposed development.
- The study intersections will continue to operate at acceptable levels of service at build-out of the proposed development.
- Provisions for a future on-site sidewalk system should be included in the development plan to serve the Promenade at Deltona pedestrians. The on-site sidewalk system should be designed to connect to the existing external sidewalk system.
- At the Project entrance on SR 415, the northbound left turn should be designed to accommodate a queue length of 100 feet (based on A.M. peak hour traffic volumes). Based on the posted 45 mph speed limit, the total deceleration length should be 240 feet for a total northbound auxiliary turn lane length of 340 feet.
- The proposed access driveways should be designed to City of Deltona and FDOT design standards. The development of the proposed access point to SR 415 will be subject to applicable FDOT permit requirements.

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APPENDICES

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Appendix A – Response to Review Comments

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MEMORANDUM

TO: Mr. Chris Bowley, AICP
FROM: Joseph T. Roviario, AICP
DATE: May 4, 2014
RE: Promenade at Deltona, City of Deltona, Florida
Response to Review Comments
LTEC No 13-0113

The following are the responses to the request for additional information. Review comments were provided by Mr. Ron Paradise and DRMP, the City's Consultant. The review comment will be listed followed by the response.

Mr. Ron Paradise Review Comments

Comment 1: Figure 3 page 9 – Most (60) of the turns at the intersection of Ft. Smith and SR 415 from Ft. Smith to SR 415 are northbound. Seems like a lot of northbound turns. How was this figure arrived at?

Response: The traffic volumes shown in Figure 3 are the existing P.M. peak hour traffic counts which represent the peak hour from the two-hour traffic counts collected during the March 17th, March 18th and March 20th data collection effort.

Comment 2: Figure 4 page 14 – On the traffic split map there is an 87.4% figure reported near the property. Please explain the 87.4% figure.

Response: **Figure 4** is a copy of the project distribution plot from the transportation model. The software for the plot prints the project trip distribution for each segment between intersecting roadways and centroid connectors. Sometimes when there is a short segment, one value will be printed over another value. This is what happened with the 87.4 value. Project trip percentage 49.4 was overprinted with a 0 which makes it look like 87.4.

Comment 3: Figure 4 page 14 – Why is there 0% traffic assumed on the segment of Providence from Elkcam to Ft. Smith?

Response: As noted above, Figure 4 is a copy of the model project trip distribution. The model assigns trips based on the shortest path. The zero (0) value shown in Figure 4 is the result of the model assignment based on two (2) access connections (see Site Inset in **Figure 4**) for the Project and the model placement of centroid connections. The actual Project trip distribution utilized in the analysis reassigned the model Project trip distribution based on the right-in/right-out access connection on Howland Boulevard and the directional access connection on SR 415. A new **Figure 8** shows the Project trip distribution around the Project access connections.

DRMP Review Comments

Comment 1: Purpose, pg.1; paragraph 1

In the first sentence there is a space missing in “isa”

Response: The requested change has been made.

Comment 2: Purpose, pg.1; paragraph 2

Please check sentence spacing between first and second sentence.

Response: The report alignment for each paragraph is fully justified and two spaces are inserted between each sentence. Therefore, the spacing between sentences is based on the length of each word and number of words in each sentence. The actual spacing is a function of the Word 2010 sentence configuration software formula.

Comment 3 Table 1

Please explain the significance of the highlighted roadway segments.

Response: The light blue highlighted segment represents the only segment that is significantly impacted, 5% or more. Yellow highlighted segments represent those segments that fall under the County’s Critical and Near Critical classification.

Comment 4: Study Methodology

The reviewer suggests including a study area roadway and intersection figure to clearly depict all study area roadways and intersections to be analyzed for reference. They are difficult to see in Figure 1.

Response: Per the request, a new **Figure 4** has been prepared which shows the existing study roadways and existing study intersections.

Comment 5: Study Methodology

General Comment: Please include the AM peak hour in the study analysis.

Response: As documented in the study methodology, the P.M. peak hour is the critical time period and was the basis for the analysis. The attached new **Figure 5** has the A.M. peak hour traffic volumes.

Comment 6: Study Intersections, pg.7

Was a FDOT seasonal adjustment applied to the existing TMC as indicated by the methodology memo in Appendix A? Was existing signal timing obtained from Volusia County?

Response: Yes, the FDOT seasonal factor was applied to the existing turning movements. Existing signal timings were not obtained from Volusia because four of the study intersections are being modified due to roadway construction and the remaining two utilized timings obtained

from the field review. The four study intersections impacted by the roadway construction are as follows:

- SR 415 & Fort Smith Boulevard
- SR 415 & Howland Boulevard
- Howland Boulevard & Wal-Mart Entrance
- Fort Smith Boulevard & Howland Boulevard

Comment 7: Proposed Development

General Comment: Please include trip generation for the PM peak hour also.

Response: The requested P.M. peak hour of the generator is shown as a separate line item on **Table 3**. Please note that only the Medical Office has P.M. peak hour trip data for the generator and combining the peak hour of the generator with the peak hour of the adjacent street is not a valid analysis procedure.

Comment 8: Proposed Development

Proposed Site Access: Please include a discussion on proposed access locations, type, and spacing from any existing intersections.

Response: The Project property fronts SR 415 and Howland Boulevard, and is proposed to have a directional access connection on SR 415 and a right-in/right-out access connection on Howland Boulevard. The SR 415 directional access connection will be located approximately 665 feet north of Howland Boulevard and 735 feet south of the SKMBT Tractor Supply store directional median opening. The right-in/right-out access connection on Howland Boulevard will be located approximately 378 feet west of SR 415 and 786 feet east of the Wal-Mart Entrance.

Comment 9: Proposed Development

Proposed Site Access/SR 415: Please ensure that the proposed site access location on SR 415 meets FDOT standards.

Response: As shown in the attachment from Davis and Associates, the proposed access plan for the Project will meet the 660-ft spacing requirements:

- Spacing from Howland Blvd to Project Entrance at directional median opening: 665 feet.
- Spacing from directional median opening to SKMBT Tractor Supply store connection at directional median opening: 735 feet.

Comment 10: Pass-by Traffic, pg. 11; pass-by trip calculations

Please explain the volumes in the pass-by trip calculation tables. 431 – NB SR 415, 210 – SB SR 415, and WB Howland – 259 NB SR 415 + 27 SBL from Howland.

Response: Because the entrance on Howland Boulevard is a right-in/right-out only access connection, just the northbound left turn volume (431)

from SR 415 was assumed to be considered for pass-by traffic for that entrance. The southbound right turn volume (14) from SR 415 was not included in order to avoid double counting potential Howland Boulevard pass-by traffic as the right turn volume is included in the traffic volumes on SR 415.

The entrance on SR 415 is a directional entrance, so pass-by traffic would come from both the northbound (286) and southbound (210) traffic volumes. To be conservative, the 10% pass-by traffic limit was checked against existing traffic volumes.

Comment 11: Table 3, pg. 12

The reviewer suggests highlighting / or defining the Net New (Primary) Trips for easier reference.

Response: **Table 3** has been revised to include the highlighted volumes.

Comment 12: Trip Distribution, pg.13

The reviewer suggests rewording the second sentence to the following, “This model distribution was used to determine estimated P.M. peak hour volumes on the study area road segments and will be used to determine the Project trip distribution at study area intersections.”

Response: We appreciate the suggestion and have made the change.

Comment 13: Trip Distribution General Comment:

The reviewer suggests including a figure with all study area intersections to illustrate Trip Distribution more clearly and simply. For instance it is difficult to read the distribution percentages on Figure 4, and this does not clearly show the location of the proposed project driveways or the Walmart entrance.

Response: Please see the response to the comments by Mr. Ron Paradise regarding the Project trip distribution figure.

Comment 14: Projected Traffic Transportation Assessment General Comment:

Please include trip generation and distribution details for the assumed future Medical Office Building on the adjacent property.

Response: The requested trip generation table (see below) was prepared for the Halifax Medical Center medical office. The distribution pattern for the Promenade at Deltona was utilized for the Halifax Medical Center medical office building.

Estimated Trip Generation (1)

Land Use	Acres	Size	ITE Code (2)	Trip Generation Rates				Total Trips			
				Daily	P.M. Peak Hour			Daily	P.M. Peak Hour		
					Total	Enter	Exit		Total	Enter	Exit
Medical Office	12.49	300,000 SF	720 / E	40.170	2.611	0.731	1.880	12,051	783	219	564

(1) Trip Generation Rate from 9th Edition of ITE Trip Generation Report, 2012.

(2) ITE Land Use Code Number / E = Fitted Curve Equation

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Comment 15: Intersection Analysis, pg. 16

Please add delay to Table 5 as specified in the text.

Response: Table 2 and Table 5 have been corrected to include Delay in the table heading.

Comment 16: Transit, pg. 16

Please provide a route and service schedule for the existing transit in the Appendix.

Response:

Comment 17: Bicycle, pg. 16

Please clarify if there are any bike lanes on the study area roadways.

Response: Portions of Fort Smith Boulevard has bike lanes. When SR 415 and Howland Boulevard are completed they may have bike lanes.

Comment 18: Study Conclusions, pg. 19

It should be noted that while the proposed development trip generation does not add a significant percentage of daily or PM peak hour trips, it does cause the following roadway segments to experience a daily LOS F in the 2016 build out:

- **Providence Blvd from Elcam Blvd to Fort Smith Blvd**
- **Providence Blvd from Normandy Blvd to Anderson Dr.**

Future discussion may be held with the City / County in regards to the proposed projects impact to these Near Critical Roadways if deemed necessary.

Response: During the preparation of the responses, Table 5 was found to contain an error. The Project trip distribution for the Daily trip assignment was incorrectly calculated. Two Excel columns were incorrectly averaged. The correct table is attached. As can be seen, the two Near Critical roadway segments operate at LOS E under the Daily analysis.

Comment 19: Appendix A

Please include all correspondence with the City/County regarding the TIA methodology.

Response: The requested correspondence is included in the Appendix.

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Appendix B – Study Methodology and Correspondence

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transportation engineering + planning

MEMORANDUM

TO: Ron Paradise
Melissa K. Winsett
FROM: J. Anthony Luke
DATE: May 2, 2014
RE: Traffic Impact Analysis Methodology for Proposed Promenade at Deltona
LTEC № 13-0113

The following is the revised methodology for the traffic impact analysis for the Promenade at Deltona project. This methodology followed the Volusia County transportation study guidelines.

The project will be developed with a mix of medical office building, office and retail uses. The project property is 8.67 acres and is located at the northwest quadrant of Howland Boulevard (CR 4145) and SR 415, within the City of Deltona. The project site and the surrounding road network is shown in **Figure 1**. A conceptual site plan layout of the development parcel configuration with access connections is shown in **Figure 2**.

1. Proposed Development

The proposed development will consist of the following uses:

- Medical Office Building (MOB)- 56,800 sq. ft.
- Medical Clinic (CentraCare)- 5,625 sq. ft.
- Retail- 10,000 sq. ft.

The project property fronts SR 415 and Howland Boulevard, and is proposed to have an access plan as follows:

- One (1) directional access connection on SR 415
- One (1) right-in/right-out access connection on Howland Boulevard.

An internal roadway connection is planned to extend to future land uses west of the Promenade at Deltona property. These future land uses are expected to be developed over a long range at a point after build-out of the Promenade at Deltona.

2. Trip Generation

The 9th Edition of the ITE *Trip Generation Report* will be used for the trip generation calculation of the proposed development. **Table 1** provides a summary of the estimated daily, A.M. and P.M. peak hour traffic volumes for the proposed Promenade at Deltona. Internal capture procedures are based on ITE *Trip Generation Handbook*, 2nd Edition.

Page 1 of 10

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The Internal Capture worksheet is included in the **Appendix**. Pass-by trips percentage is based on the ITE *Trip Generation Handbook*, 2nd Edition, Land Use 820 Shopping Center. Based on the estimated trip generation, the study roadway segments and study intersections analysis will be performed for the P.M. peak hour.

3. Programmed Roadway Improvements

Listed below are the programmed roadway improvements under construction or scheduled for construction within the first three years of the current Volusia County TPO *Transportation Improvement Program – FY 2013/14-2017/18*.

- SR 415: 4-lane widening from Seminole County Line to Acorn Lake Road
- Howland Boulevard: Courtland Boulevard to SR 415

4. Impact Area

Based upon the project size, a five-mile sphere of influence was assumed. **Figure 3** shows the current Volusia County 2013 Critical and Near Critical State and County Roadways adjacent to and within the five-mile impact sphere of influence. The actual study area has been defined based on Project trip assignment where Project trips are 5% or more of the adopted P.M. peak hour two-way level of service roadway capacity, direct access roadways and critical roadways.

5. Trip Distribution

The Project trip distribution is based on a base year (2005) assignment of the FDOT Central Florida Regional Planning Model. This model distribution was used to determine estimated P.M. peak hour volumes on the study area road segments and will be used to determine Project trip's at the study intersections. **Figure 4** shows the model Project trip distribution on the potential study roadway segments.

6. Study Roadways and Study Intersections

Table 2 documents the Project traffic percentage impact on the potential study roadway segments. As can be seen, only one (1) roadway segment meets the five (5) percent threshold criteria. Listed below are the study area roadways and study intersections to be included in the analysis:

Direct Access Roadways

- SR 415: Acorn Lake Road to Howland Boulevard
- Howland Boulevard: Fort Smith Boulevard to SR 415

5%+ Impacted Roadways

- Fort Smith Boulevard: Courtland Boulevard to Howland Boulevard

Critical Roadways

- Howland Boulevard: Providence Boulevard to Elkcam Boulevard
- Providence Boulevard: Elkcam Boulevard to Fort Smith Boulevard
- Providence Boulevard: Normandy Boulevard to Anderson Drive

Intersections

- SR 415 and Howland Boulevard
- SR 415 and Fort Smith Boulevard
- Howland Boulevard and Fort Smith Boulevard
- Howland Boulevard and Courtland Boulevard

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- Howland Boulevard and Wal-Mart Entrance
- Fort Smith Boulevard and Courtland Boulevard
- Project access points on Howland Boulevard and SR 415

7. Projected Traffic Impact Assessment

A) Roadways

- Existing traffic volumes will be based on the 2013 annual traffic counts in the *Volusia County 2013 Average Daily Traffic & Historical Counts* spreadsheet converted to P.M. peak hour 2-way traffic volumes based on an FDOT K-factor of 0.9.
- Projected background traffic volumes on the study roadways will be based on a minimum 1% annual growth rate or a 5-Year % Trend value developed from the *Volusia County 2013 Average Daily Traffic & Historical Counts* spreadsheet.
- Background traffic will be converted to P.M. peak hour 2-way traffic volumes using the FDOT K-factor of 0.9.
- Promenade at Deltona project traffic will be added to the background traffic to obtain total traffic flows.
- P.M. peak hour traffic analysis will utilize the FDOT 2013 Quality/Level of Service Handbook for roadways.

B) Intersections

- Intersection counts will be conducted during the P.M. peak period at the study intersections.
- Existing turning movement traffic P.M. peak hour traffic volumes will be converted to peak season using the current FDOT adjustment factors.
- Projected background traffic volumes at the study intersections will be taken from the P.M. peak hour roadway segment traffic projections.
- Promenade at Deltona project traffic will be added to the background traffic to obtain total traffic.
- Intersection capacity analysis will be completed utilizing the 2010 HCM/HCS operational analysis procedures for the P.M. peak hour.

7. Traffic Report

A traffic report will be prepared summarizing study procedures, analyses and recommendations.

Please review the above information and let us know if you have any questions or comments. Based on your input, we'll finalize the transportation methodology and proceed with the traffic analysis.

c.c. Chris Bowley
Paul Scarpello
Joe Roviario

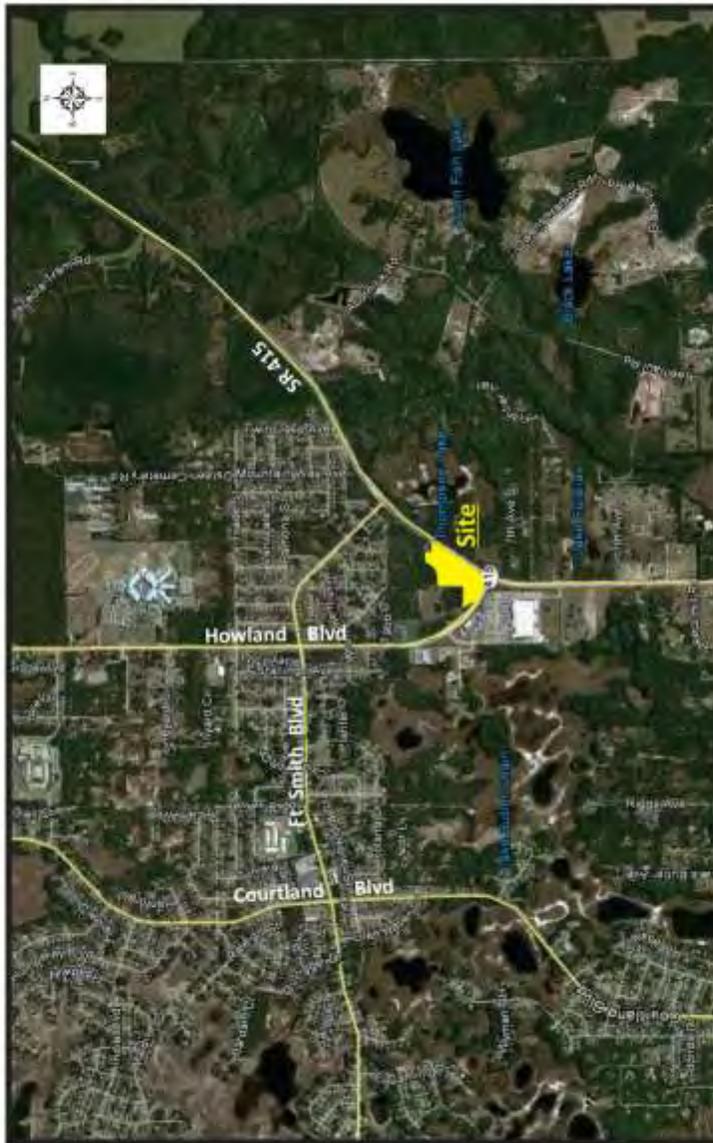
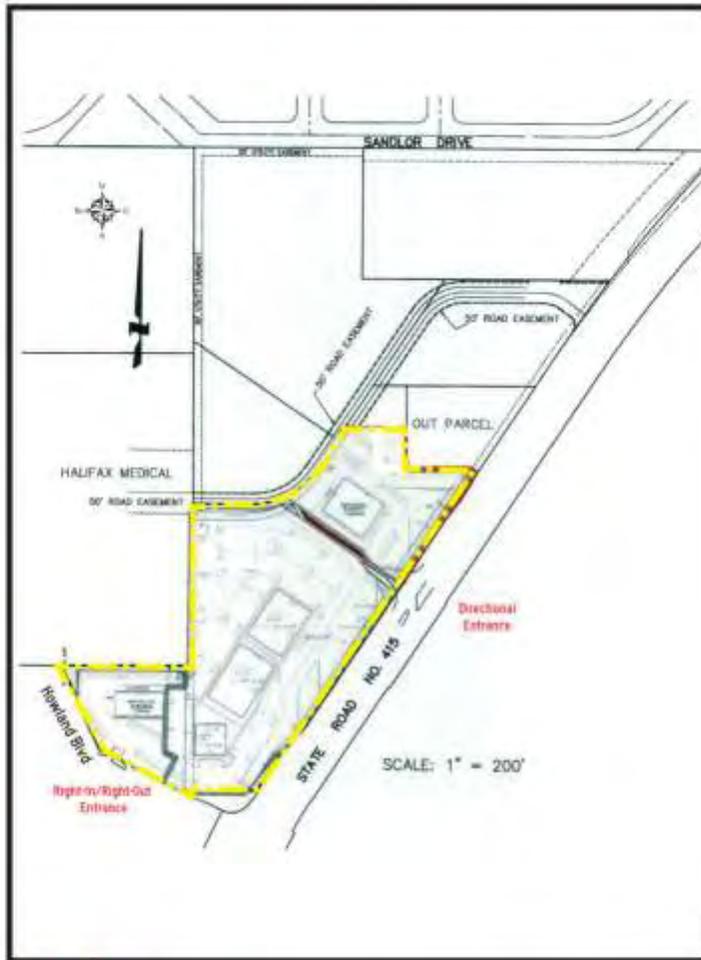


Figure 1

PROMENADE AT DELTONA
TRAFFIC IMPACT ANALYSIS
SITE LOCATION





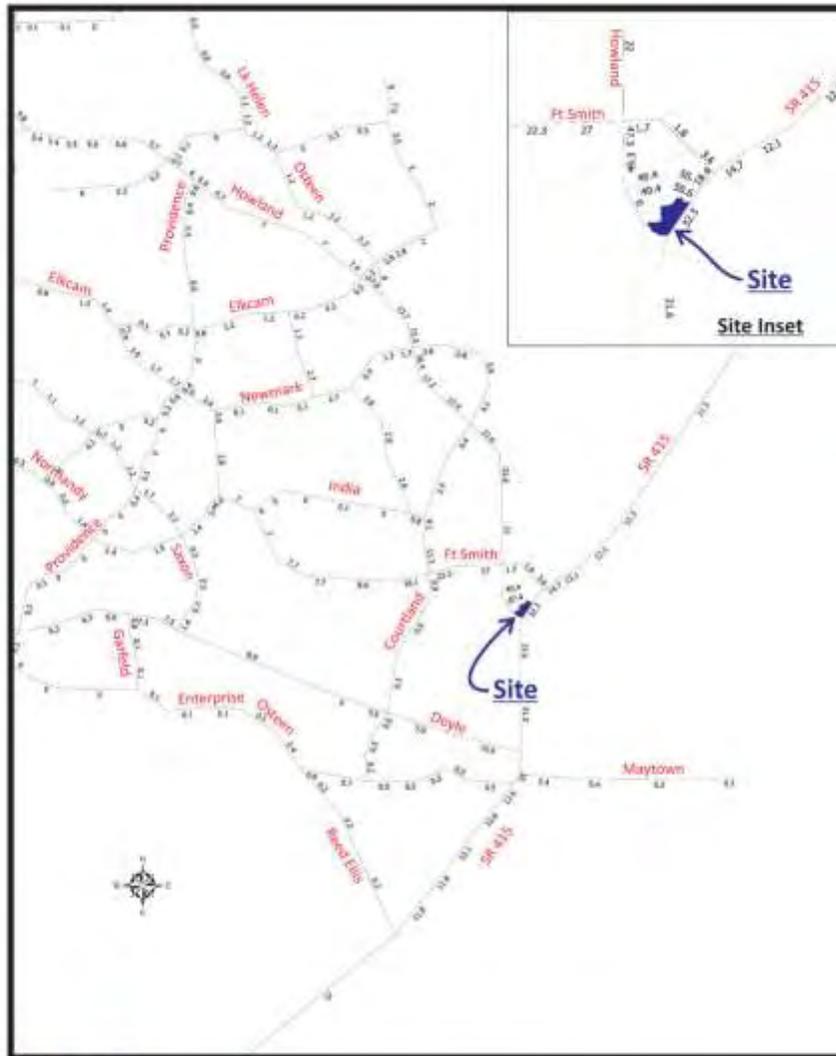
PROMENADE AT DELTONA
CONCEPTUAL SITE PLAN ACCESS

Figure 2



PROMENADE AT DELTONA
Level of Service 2013
Critical / Near Critical* State and County Roadways

Figure 3



PROMENADE AT DELTONA

PROJECT TRIP DISTRIBUTION

Figure 4

TABLE 1
Estimated Trip Generation (1)

Land Use	Size	ITE Code (2)	Trip Generation Rates						Total Trips							
			A.M. Peak Hour			P.M. Peak Hour			A.M. Peak Hour			P.M. Peak Hour				
			Daily	Total	Enter	Exit	Total	Enter	Exit	Daily	Total	Enter	Exit	Total	Enter	Exit
Medical Office	56,800 SF	720 / E	37.11	2.39	1.89	0.50	3.08	0.86	2.22	2,108	136	107	29	175	49	126
Clinic	5,625 SF	630 / R	31.45	4.87	2.44	2.44	5.18	2.12	3.06	1,777	28	14	14	29	12	17
Retail	10,000 SF	820 / E	152.03	3.83	2.37	1.45	12.81	6.15	6.66	1,520	39	24	15	128	61	67
			3,805	203	145	58	332	122	210							
			Total													
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TABLE 2
STUDY ROADWAY IMPACT DETERMINATION WITHIN FIVE MILE RADIUS

Roadway Segment	From	To	# of Lanes	Adopted Roadway (1)			PM Peak Project Trips					
				Functional Class	LOS	Service Volumes		% of Adopted LOS	Modell Distribution	2-Way Trips	% of LOS Std	Sig 2
						Daily	Peak Hour					
SR 415												
SR 44	Acors Lake Rd	Acors Lake Rd	2L	Rural/Minor Arterial	C	16,900	1,550	77.5	11.14%	31	2,000	No
Acors Lake Rd	Howland Blvd	Howland Blvd	4L(D)(2)	Urban Minor Arterial	D	35,820	2,220	161.0	21.80%	61	1,880	No
Howland Blvd	Interpre-Chosen Rd	Interpre-Chosen Rd	4L(D)(2)	Urban Minor Arterial	D	35,820	2,220	161.0	24.73%	69	2,140	No
Interpre-Chosen Rd	Sarasota Co	SR 415	4L(D)(2)	Rural/Minor Arterial	D	56,610	5,000	254.5	12.03%	34	0,870	No
Deltona Avenue/Deak Road												
Providence Blvd	Garfield Rd	Garfield Rd	2L	Urban Minor Arterial	E	17,640	1,740	81.5	6.68%	18	1,450	No
Garfield Rd	Susan Blvd	Susan Blvd	2L	Urban Minor Arterial	E	17,640	1,740	81.5	7.40%	21	1,710	No
Susan Blvd	Coastland Blvd	Coastland Blvd	2L	Urban Minor Arterial	E	17,640	1,740	81.5	8.15%	25	2,070	No
Coastland Blvd	SR 415	SR 415	2L	Urban Minor Arterial	E	17,640	1,740	81.5	10.25%	29	2,360	No
Interpre-Chosen Road												
Providence Blvd	Garfield Rd	Garfield Rd	2L	Road Local	E	10,720	920	46.0	0.60%	0	0.00%	No
Garfield Rd	Road 11th Rd	Road 11th Rd	2L	Road Local	E	10,720	920	46.0	0.75%	1	0.11%	No
Road 11th Rd	SR 415	SR 415	2L	Road Local	E	10,720	920	46.0	0.87%	2	0.15%	No
Coastland Roadway												
Boyarth Dr	Captain Dr	Captain Dr	2L	Urban Collector	E	17,640	1,240	81.5	0.80%	1	0.08%	No
Captain Dr	Elivans Blvd	Elivans Blvd	2L	Urban Collector	E	17,640	1,240	81.5	2.00%	6	0.49%	No
Talwood Dr	Newmark Dr	Newmark Dr	2L	Urban Collector	E	17,640	1,240	81.5	0.60%	3	0.16%	No
Newmark Dr	Howland Blvd	Howland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	4.00%	11	1.00%	No
Howland Blvd	India Blvd	India Blvd	2L	Urban Collector	E	17,640	1,020	51.0	1.40%	4	0.34%	No
India Blvd	Fort South Blvd	Fort South Blvd	2L	Urban Collector	E	17,640	1,020	51.0	9.60%	27	2.65%	No
Fort South Blvd	Doyle Rd	Doyle Rd	2L	Urban Collector	E	17,640	1,240	81.5	0.70%	2	0.16%	No
Doyle Rd	Interpre-Chosen Rd	Interpre-Chosen Rd	2L	Urban Collector	E	17,640	1,020	51.0	0.40%	1	0.10%	No
Elivans Roadway												
Fort South Blvd	Providence Blvd	Providence Blvd	2L	Urban Collector	E	17,640	1,020	51.0	0.17%	0	0.00%	No
Providence Blvd	Monrovia Ave	Monrovia Ave	2L	Urban Collector	E	17,640	1,020	51.0	1.20%	3	0.29%	No
Monrovia Ave	Howland Blvd	Howland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	0.20%	1	0.10%	No
Howland Blvd	Lake Helen-Oxton Rd	Lake Helen-Oxton Rd	2L	Urban Collector	E	14,740	1,330	66.5	0.30%	1	0.06%	No
Lake Helen-Oxton Rd	Coastland Blvd	Coastland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	2.40%	7	0.69%	No
Coastland Blvd	Riverhead Dr	Riverhead Dr	2L	Local	E	17,640	1,020	51.0	0.00%	0	0.00%	No
Fort South Roadway												
Elivans Blvd	Providence Blvd	Providence Blvd	2L	Urban Collector	E	17,640	1,020	51.0	1.60%	4	0.39%	No
Providence Blvd	Newmark Dr	Newmark Dr	2L	Urban Collector	E	14,740	1,330	66.5	2.60%	7	0.57%	No
Newmark Dr	India Blvd	India Blvd	2L	Urban Collector	E	14,740	1,330	66.5	4.80%	13	0.95%	No
India Blvd	Coastland Blvd	Coastland Blvd	2L	Urban Collector	E	14,740	1,330	66.5	8.40%	23	1.73%	No
Coastland Blvd	Howland Blvd	Howland Blvd	2L	Urban Collector	E	14,740	1,330	66.5	24.70%	69	5.29%	Yes
Howland Blvd	SR 415	SR 415	2L	Urban Collector	E	17,640	1,020	51.0	2.37%	7	0.69%	No
Garfield Road												
Doyle Rd	Interpre-Chosen Rd	Interpre-Chosen Rd	2L	Local	E	17,640	1,240	81.5	0.35%	1	0.08%	No
Howland Roadway												
Wolf Pack Run	Catalina Blvd	Catalina Blvd	4L(D)	Urban Minor Arterial	E	37,970	2,420	171.0	5.55%	15	0.44%	No
Catalina Blvd	Providence Blvd	Providence Blvd	4L(D)	Urban Minor Arterial	E	37,970	2,420	171.0	6.00%	17	0.50%	No
Providence Blvd	Elivans Blvd	Elivans Blvd	2L	Urban Minor Arterial	E	15,640	1,240	81.5	6.40%	19	1.54%	No
Elivans Blvd	Lake Helen-Oxton Rd	Lake Helen-Oxton Rd	4L(D)	Urban Minor Arterial	E	37,970	2,410	170.5	2.60%	21	0.62%	No
Lake Helen-Oxton Rd	Newmark Dr	Newmark Dr	4L(D)	Urban Minor Arterial	E	37,970	2,410	170.5	14.50%	40	1.17%	No
Newmark Dr	Coastland Blvd	Coastland Blvd	4L(D)	Urban Minor Arterial	E	37,970	2,410	170.5	17.00%	47	1.30%	No
Coastland Blvd	Fort South Blvd	Fort South Blvd	4L(D)(2)	Urban Minor Arterial	E	37,970	2,410	170.5	21.80%	61	1.79%	No
Fort South Blvd	SR 415	SR 415	4L(D)(2)	Urban Minor Arterial	E	37,970	2,410	170.5	40.40%	118	4.05%	No
India Roadway												
Fort South Blvd	Hungary Blvd	Hungary Blvd	2L	Local	E	17,640	1,020	51.0	1.00%	3	0.29%	No
Lake Helen-Oxton Road												
Interpre Blvd	Elivans Blvd	Elivans Blvd	2L	Urban Collector	E	17,640	1,240	81.5	2.25%	6	0.49%	No
Elivans Blvd	Howland Blvd	Howland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	6.00%	17	1.37%	No
Melton Road												
New Service Blvd	Pal Rd	Pal Rd	2L	Rural/Minor Collector	E	12,900	1,160	58.0	5.20%	15	1.29%	No
Newmark Drive												
Fort South Blvd	Hungary Blvd	Hungary Blvd	2L	Urban Collector	E	17,640	1,020	51.0	1.40%	4	0.34%	No
Hungary Blvd	Howland Blvd	Howland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	1.00%	3	0.29%	No
Howland Blvd	Coastland Blvd	Coastland Blvd	2L	Urban Collector	E	17,640	1,020	51.0	2.55%	7	0.69%	No
Norwady Roadway												
Thick Dr	Providence Blvd	Providence Blvd	2L	Urban Minor Arterial	E	17,640	1,020	51.0	1.00%	3	0.29%	No
Providence Blvd	Susan Blvd	Susan Blvd	2L	Urban Minor Arterial	E	14,740	1,330	66.5	1.45%	4	0.30%	No
Susan Blvd	Fort South Blvd	Fort South Blvd	2L	Urban Collector	E	17,640	1,020	51.0	3.40%	9	0.85%	No
Providence Roadway												
Howland Blvd	Elivans Blvd	Elivans Blvd	2L	Urban Minor Arterial	E	14,040	1,270	63.5	0.53%	1	0.08%	No
Elivans Blvd	Fort South Blvd	Fort South Blvd	2L	Urban Minor Arterial	E	17,640	1,020	51.0	0.20%	1	0.10%	No
Fort South Blvd	Thick Dr	Thick Dr	4L(D)	Urban Minor Arterial	E	30,420	2,740	137.0	0.40%	1	0.04%	No
Thick Dr	Susan Blvd	Susan Blvd	2L	Urban Minor Arterial	E	14,740	1,330	66.5	0.05%	0	0.00%	No
Susan Blvd	Norwady Blvd	Norwady Blvd	2L	Urban Minor Arterial	E	17,640	1,020	51.0	0.20%	1	0.10%	No
Norwady Blvd	Anderson Dr	Anderson Dr	2L	Urban Minor Arterial	E	17,640	1,020	51.0	0.15%	0	0.00%	No
Road 11th Road												
Interpre-Chosen Rd	SR 415	SR 415	2L	Local	E	17,640	1,120	56.0	0.40%	1	0.09%	No
Susan Roadway												
Thick Dr	Providence Blvd	Providence Blvd	2L	Urban Minor Arterial	E	17,640	1,020	51.0	1.20%	3	0.29%	No
Providence Blvd	Norwady Blvd	Norwady Blvd	2L	Urban Collector	E	17,640	1,020	51.0	1.85%	5	0.49%	No
Norwady Blvd	Doyle Rd	Doyle Rd	2L	Urban Collector	E	17,640	1,240	81.5	0.80%	2	0.16%	No

1. Volume Count 2017 Average Annual Daily Traffic & Historical Counts
2. Programmed Roadway Mileage
Luke Transportation Engineering Consultants, Inc., 2024

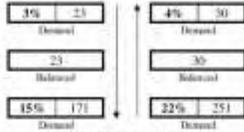
Luke Transportation Engineering Consultants

Appendix

Daily Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Site (SF): 10,000			
	Total	Internal	External
Enter	360	30	330
Exit	360	23	337
Total	1,520	53	1,467
%	100%	3.5%	96.5%



LAND USE B: OFFICE

ITE LU Code: 630 & 730			
Site (SF): 62,425			
	Total	Internal	External
Enter	1,143	23	1,120
Exit	1,143	30	1,113
Total	2,285	53	2,232
%	100%	2.3%	97.7%

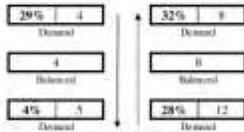
Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	730	1,120	1,850	
Exit	737	1,113	1,850	
Total	1,467	2,232	3,699	2.8%
Single Use ITE Trip Gen. Est.	1,520	2,285	3,805	106

A.M. Peak Hour Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Site (SF): 10,000			
	Total	Internal	External
Enter	24	0	24
Exit	15	4	11
Total	39	12	27
%	100%	30.8%	69.2%



LAND USE B: OFFICE

ITE LU Code: 630 & 730			
Site (SF): 62,425			
	Total	Internal	External
Enter	121	4	117
Exit	43	8	35
Total	164	12	152
%	100%	7.3%	92.7%

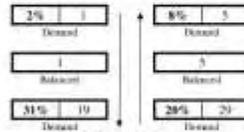
Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	16	117	133	
Exit	11	35	46	
Total	27	152	179	11.8%
Single Use ITE Trip Gen. Est.	39	164	203	24

P.M. Peak Hour Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Site (SF): 10,000			
	Total	Internal	External
Enter	61	5	56
Exit	67	1	66
Total	128	6	122
%	100%	4.7%	95.3%



LAND USE B: OFFICE

ITE LU Code: 630 & 730			
Site (SF): 62,425			
	Total	Internal	External
Enter	61	1	60
Exit	143	5	138
Total	204	6	198
%	100%	2.9%	97.1%

Net External Trips for Multi-Use Development

	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	56	60	116	
Exit	66	138	204	
Total	122	198	320	3.8%
Single Use ITE Trip Gen. Est.	128	204	332	12

Luke Transportation Engineering Consultants, Inc., 2014

Joseph Thomas Roviario

From: Ron Paradise <RParadise@deltonafl.gov>
Sent: Thursday, April 3, 2014 4:12 PM
To: John Anthony Luke PE
Cc: Chris Bowley; Paul Scarpello (paul@classadevelopers.com); Joseph Thomas Roviario; Melissa Winsett (mwinsett@volusia.org); Scott McGrath; Kathrine Kyp
Subject: RE: Promenade at Deltona project

Mr. Luke, here are my comments:

- 1) Are the directional access points on SR 415 approved by the State? If not the TIA should be formulated consistent with actual approved access points.
- 2) Please provide turning counts for all driveway cuts.
- 3) What data is used to determine that the Bella Vista site, located west of the property, will develop after the Promenade project? Please provide the support documentation.
- 4) The impact area radius needs to be consistent with the Volusia TPO TIA methodology.
- 5) Should also look at the Courtland and Ft. Smith and Courtland and Howland intersections.
- 6) Growth rates should be figured at 1%.
- 7) Could not seem to find a traffic splits map with the percentages. Did I miss something?

Be prepared for Mr. Bowley to submit comments. Also have you sent this over to Volusia County?

Ron

From: John Anthony Luke PE [<mailto:tony@ltec-fl.com>]
Sent: Wednesday, April 02, 2014 4:08 PM
To: Ron Paradise
Cc: Chris Bowley; Paul Scarpello (paul@classadevelopers.com); Joseph Thomas Roviario
Subject: Promenade at Deltona project

Ron-

I left you a ph message- I'm working w/ Paul Scarpello to prepare the Traffic Impact Study for the proposed Promenade at Deltona project located at the northwest quadrant of Howland Boulevard (CR 4145) and SR 415. Attached is the proposed methodology for the traffic impact analysis. Please let me know if you have any questions or comments.

Tony Luke, PE
President
tony@ltec-fl.com

	Luke Transportation Engineering Consultants, Inc.	
	Office Address 29 East Pine Street Orlando, FL 32801 Phone: (407) 423-8055 Fax: (407) 423-8022	Mailing Address P.O. Box 841556 Maitland, FL 32784-1556 www.Ltec-FL.com

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Joseph Thomas Roviaro

From: Melissa Winsett <mwinsett@volusia.org>
Sent: Monday, April 14, 2014 3:38 PM
To: RParadise@deltonafl.gov; Joseph Thomas Roviaro
Cc: John Anthony Luke PE; CBowley@deltonafl.gov
Subject: Re: Promenade at Deltona Project

Thank you for the revised methodology. We highly recommend that you wait to receive formal TIA methodology comments back from our reviewers before moving forward with the TIA. They have not seen this project yet since I was the only county reviewer who scanned the previous methodology and made only a few comments, mainly concerning the need to follow TPO TIA Guidelines. Now that the full methodology is submitted, we will need at least a week to review it and provide written comments.

If you have any questions, please feel free to contact me.

Melissa K. Winsett
Transportation Planner III/Acting 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

>>> Joseph Thomas Roviaro <jtr@ltec-fl.com> 4/14/2014 3:28 PM >>>
Melissa and Ron,
Attached is the revised traffic study methodology based on Volusia County's TIA Guidelines and the April 3rd City of Deltona comments.
We are proceeding with the analysis based on the proposed methodology.

Joe

Joseph Thomas Roviaro, AICP
Director of Transportation Planning
jtr@ltec-fl.com Mobile: 407-415-1086

Joseph Thomas Roviaro

From: Ron Paradise <RParadise@deltonafl.gov>
Sent: Friday, May 2, 2014 3:52 PM
To: Joseph Thomas Roviaro; mwirsett@co.volusia.fl.us
Cc: John Anthony Luke PE; Chris Bowley
Subject: RE: Revised Promenade at Deltona Study Methodology

Mr. Roviaro, I have reviewed the methodology. Some of these responses Luke Engineering has seen before.

- 1) I think the site proposed to be rezoned is going to be about 7.5 acres not 21.5 acres. However, I have not seen a final survey. I would check with Mr. Scarpello or Mr. Honeycutt to determine the status of the survey.
- 2) The access on to SR 415 has not been finalized and there is doubt cast on FDOT approving that full movement. Suggest the SR 415 movement not be modeled and the internal access shared with Tractor Supply be relied upon as the primary access to SR 415.
- 3) This has been mentioned in the past. Cannot assume that the property to the north (Bella Vista) will develop after this project is developed. There is no data to support that assertion. In any, event the City really needs to know and understand the cumulative impacts of the rezoning so that an informed decision can be made. Please account for and analyze the Bella Vista traffic.

Have a good day,

Ron

From: Joseph Thomas Roviaro [<mailto:jtr@ltec-fl.com>]
Sent: Friday, May 02, 2014 1:44 PM
To: mwirsett@co.volusia.fl.us; Ron Paradise
Cc: John Anthony Luke PE; Chris Bowley
Subject: Revised Promenade at Deltona Study Methodology

Melissa and Ron,
I revised the methodology based on a change in the development density (it went down and shrink in parcel size) as well as the need to include the 2013 Critical and Near Critical map.
Please review and let me know if you have any questions or require additional information.

Joe

Joseph Thomas Roviaro, AICP
Director of Transportation Planning
jtr@ltec-fl.com Mobile: 407-415-1086

 <p>ltec luke transportation engineering consultants A DBE/MBE Company</p>	Luke Transportation Engineering Consultants, Inc.	
	Office Address: 29 East Pine Street Orlando, FL 32828 Phone: (407) 423-8055 Fax: (407) 423-8022	Mailing Address: P.O. Box 941556 Maitland, FL 32794-1556 <small>1000 Lakeshore Blvd. Suite 401</small> www.ltec-fl.com

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Joseph Thomas Roviario

From: Melissa Winsett <mwinsett@volusia.org>
Sent: Thursday, April 24, 2014 11:59 AM
To: Joseph Thomas Roviario
Cc: Paradise, Ron
Subject: Re: Promenade at Deltona Project
Attachments: CriticalNearCritical_2.pdf

Hello,

Please see the countywide 2013 critical/near critical map, which was just finished today. We don't have a five mile map for your project at this stage, but you can use this to figure your 5 mile radius - I didn't want you to wait any longer.

Melissa K. Winsett
Transportation Planner III/Acting 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

>>> Joseph Thomas Roviario <jtr@ltec-fl.com> 4/14/2014 3:28 PM >>>

Melissa and Ron,

Attached is the revised traffic study methodology based on Volusia County's TIA Guidelines and the April 3rd City of Deltona comments.

We are proceeding with the analysis based on the proposed methodology.

Joe

Joseph Thomas Roviario, AICP
Director of Transportation Planning
jtr@ltec-fl.com Mobile: 407-415-1086

Joseph Thomas Roviaro

From: Melissa Winsett <mwinsett@volusia.org>
Sent: Monday, May 5, 2014 1:22 PM
To: Joseph Thomas Roviaro
Cc: Paradise, Ron
Subject: Re: Revised Promenade at Deltona Study Methodology

Joe,

Your methodology looked great, and I have forwarded a hard copy to our director for comment. A couple of minor areas were missing (Or perhaps I didn't see them):

- 1) Proposed Build out schedule
- 2) Multimodal analysis: transit, bike, ped connections; etc.

Jon may have a couple of additional things, but I don't anticipate much. I will provide formal methodology comments when I get them from him, but in the mean time I wanted to let you know about the two areas above. Also, we are monitoring discussions between the city and applicant with regard to this review.

Melissa K. Winsett
Transportation Planner III/Acting Traffic Engineering Supervisor
Transportation Planning, Engineering Studies, Development Review

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

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386-423-3300 x12322 (New Smyrna Area)

Fax 386-740-5242

>>> Joseph Thomas Roviaro <jtr@ltec-fl.com> 5/2/2014 1:44 PM >>>

Melissa and Ron,

I revised the methodology based on a change in the development density (it went down and shrink in parcel size) as well as the need to include the 2013 Critical and Near Critical map.

Please review and let me know if you have any questions or require additional information.

Joe

Joseph Thomas Roviaro, AICP
Director of Transportation Planning
jtr@ltec-fl.com Mobile: 407-415-1086

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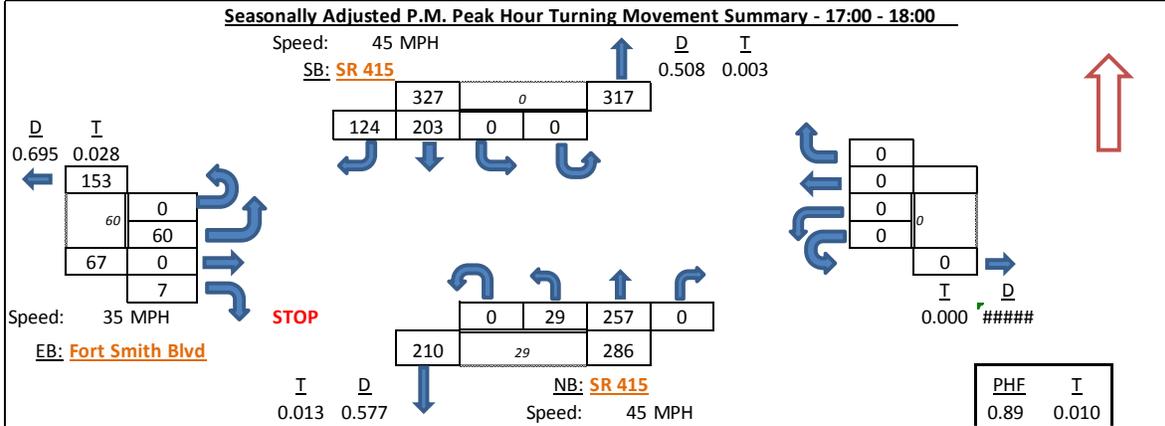
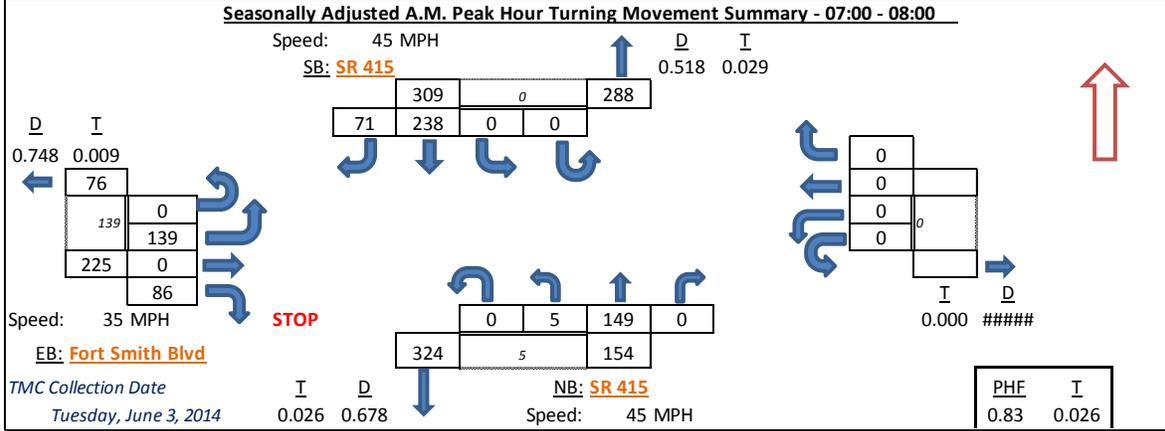
Appendix C – Traffic Count Data

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Summary of Vehicle Movements

Luke Transportation Engineering Consultants

Project:	Promenade at Deltona		LTEC 13-0113			
N/S Road:	SR 415	Observer:	LTEC			
E/W Road:	Fort Smith Blvd	Weather:	Clear			
Date:	Tuesday, March 18, 2014	Rd Condition:	Ok			
City:	Deltona	Signal:	No			
County:	Volusia	Major St Movement:	North/South		Latitude:	28.876143°
FDOT SF:	0.93 PM 1.02 AM	PM Pk Hr Factor:	0.89		Longitude:	-81.158079°
					Station #:	2



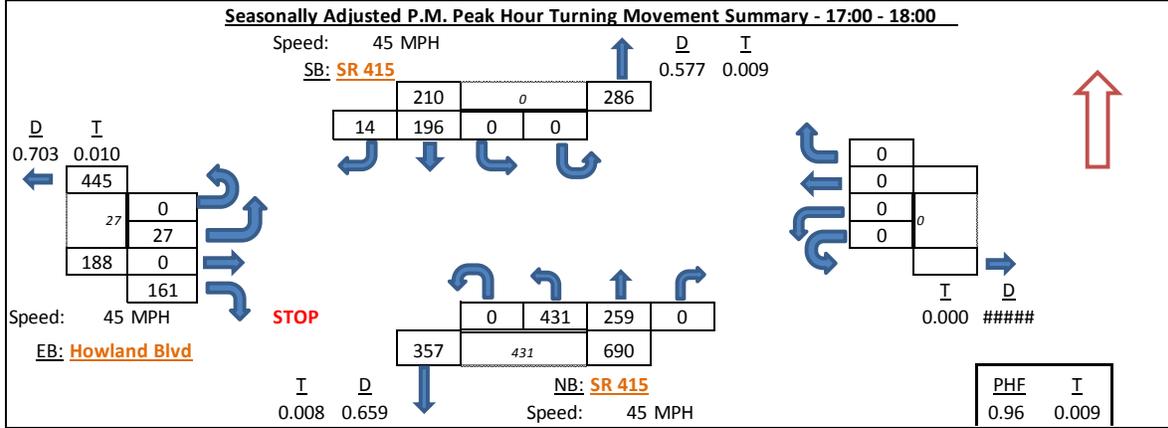
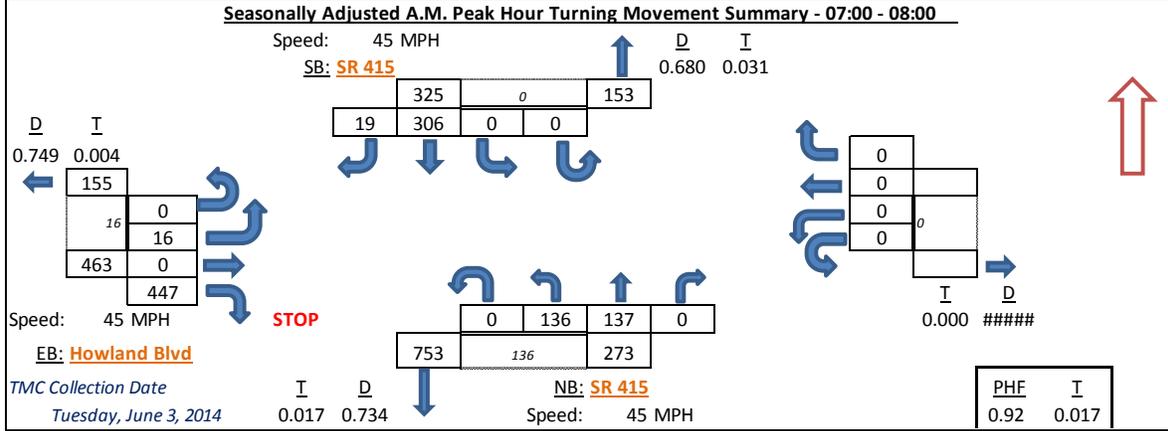
Peak Hour	SR 415 Northbound				SR 415 Southbound				Fort Smith Blvd Eastbound				Fort Smith Blvd Westbound			
	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt
# Lanes	1			1			1	<	>							
7:00 7:15	0	1	35	0	0	0	55	26	0	34	0	20	0	0	0	0
7:15 7:30	0	1	35	0	0	0	73	20	0	51	0	26	0	0	0	0
7:30 7:45	0	0	38	0	0	0	52	10	0	28	0	30	0	0	0	0
7:45 8:00	0	3	38	0	0	0	53	14	0	23	0	8	0	0	0	0
Hourly Sum	0	5	146	0	0	0	233	70	0	136	0	84	0	0	0	0
8:00 8:15	0	1	35	0	0	0	41	9	0	28	0	7	0	0	0	0
8:15 8:30	0	3	51	0	0	0	66	19	1	25	0	5	0	0	0	0
8:30 8:45	0	4	42	0	0	0	40	8	0	22	0	5	0	0	0	0
8:45 9:00	0	1	44	0	0	0	36	7	0	20	0	3	0	0	0	0
Hourly Sum	0	9	172	0	0	0	183	43	1	95	0	20	0	0	0	0
16:00 16:15	0	10	50	0	0	0	50	20	0	20	0	1	0	0	0	0
16:15 16:30	0	7	43	0	0	0	61	15	0	13	0	3	0	0	0	0
16:30 16:45	0	4	67	0	0	0	53	18	0	10	0	2	0	0	0	0
16:45 17:00	0	8	56	0	0	0	52	29	1	15	0	3	0	0	0	0
Hourly Sum	0	29	216	0	0	0	216	82	1	58	0	9	0	0	0	0
17:00 17:15	0	3	81	0	0	0	50	33	0	17	0	0	0	0	0	0
17:15 17:30	0	9	60	0	0	0	44	30	0	15	0	3	0	0	0	0
17:30 17:45	0	11	65	0	0	0	57	29	0	16	0	2	0	0	0	0
17:45 18:00	0	8	70	0	0	0	67	41	0	16	0	3	0	0	0	0
Hourly Sum	0	31	276	0	0	0	218	133	0	64	0	8	0	0	0	0

Luke Transportation Engineering Consultants, 2014

Summary of Vehicle Movements

Luke Transportation Engineering Consultants

Project:	Promenade at Deltona			LTEC 13-0113					
N/S Road:	SR 415			Observer:	LTEC				
E/W Road:	Howland Blvd			Weather:	Clear				
Date:	Tuesday, March 18, 2014			Rd Condition:	Ok				
City:	Deltona			Signal:	No				
County:	Volusia			Major St Movement:	North/South			Latitude:	28.871272°
FDOT SF:	0.93 PM	1.02 AM		PM Pk Hr Factor:	0.96			Longitude:	-81.162182°
								Station #:	1



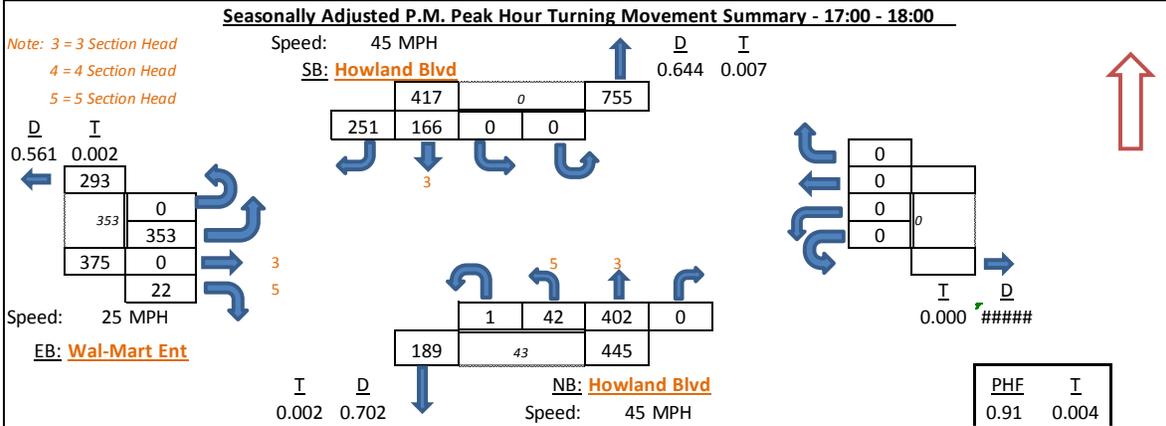
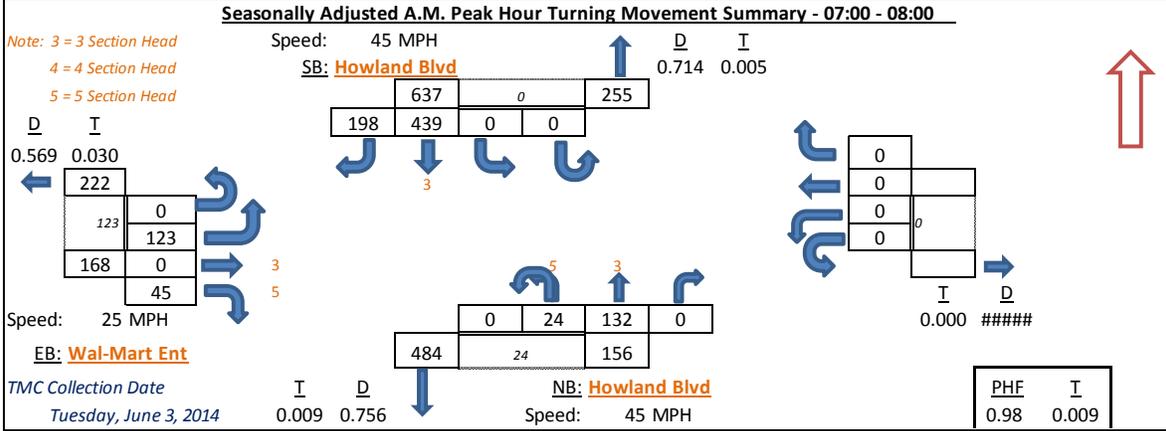
Peak Hour Time Interval	SR 415 Northbound				SR 415 Southbound				Howland Blvd Eastbound				Westbound			
	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt
# Lanes	1				1				1				1			
7:00 7:15	0	38	32	0	0	0	71	4	0	3	0	109	0	0	0	0
7:15 7:30	0	27	34	0	0	0	92	7	0	3	0	125	0	0	0	0
7:30 7:45	0	34	35	0	0	0	80	2	0	2	0	116	0	0	0	0
7:45 8:00	0	34	33	0	0	0	57	6	0	8	0	88	0	0	0	0
Hourly Sum	0	133	134	0	0	0	300	19	0	16	0	438	0	0	0	0
8:00 8:15	0	40	30	0	0	0	48	1	0	6	0	86	0	0	0	0
8:15 8:30	0	31	47	0	0	0	67	3	0	6	0	61	0	0	0	0
8:30 8:45	0	25	38	0	0	0	43	3	0	6	0	71	0	0	0	0
8:45 9:00	0	41	40	0	0	0	33	4	0	4	0	50	0	0	0	0
Hourly Sum	0	137	155	0	0	0	191	11	0	22	0	268	0	0	0	0
16:00 16:15	0	81	54	0	0	0	55	2	0	6	0	50	0	0	0	0
16:15 16:30	0	76	51	0	0	0	59	6	0	7	0	40	0	0	0	0
16:30 16:45	0	60	69	0	0	0	52	2	0	3	0	41	0	0	0	0
16:45 17:00	0	92	58	0	0	0	51	4	0	8	0	46	0	0	0	0
Hourly Sum	0	309	232	0	0	0	217	14	0	24	0	177	0	0	0	0
17:00 17:15	0	98	65	0	0	0	41	6	0	16	0	54	0	0	0	0
17:15 17:30	0	136	69	0	0	0	53	1	0	4	0	41	0	0	0	0
17:30 17:45	0	120	73	0	0	0	55	2	0	6	0	39	0	0	0	0
17:45 18:00	0	109	72	0	0	0	62	6	0	3	0	39	0	0	0	0
Hourly Sum	0	463	279	0	0	0	211	15	0	29	0	173	0	0	0	0

Luke Transportation Engineering Consultants, 2014

Summary of Vehicle Movements

Luke Transportation Engineering Consultants

Project:	Promenade at Deltona			LTEC 13-0113			
N/S Road:	Howland Blvd			Observer:	LTEC		
E/W Road:	Wal-Mart Ent			Weather:	Clear		
Date:	Tuesday, March 18, 2014			Rd Condition:	Ok		
City:	Deltona			Signal:	Yes		
County:	Volusia			Major St Movement:	-	Latitude:	28.873233°
FDOT SF:	0.93 PM	1.02 AM		PM Pk Hr Factor:	0.91	Longitude:	-81.164780°
						Station #:	4



Peak Hour Time Interval	Howland Blvd Northbound				Howland Blvd Southbound				Wal-Mart Ent Eastbound				Wal-Mart Ent Westbound			
	Uturn	Lt	Thru	Rt	Uturn	Lt	Thru	Rt	Uturn	Lt	Thru	Rt	Uturn	Lt	Thru	Rt
# Lanes	1				2				2				1			
7:00 7:15	0	8	30	0	0	0	117	36	0	36	0	5	0	0	0	0
7:15 7:30	0	10	28	0	0	0	126	42	0	28	0	11	0	0	0	0
7:30 7:45	0	3	33	0	0	0	98	59	0	23	0	14	0	0	0	0
7:45 8:00	0	3	38	0	0	0	89	57	0	34	0	14	0	0	0	0
Hourly Sum	0	24	129	0	0	0	430	194	0	121	0	44	0	0	0	0
8:00 8:15	0	4	31	0	0	0	80	57	0	39	0	8	0	0	0	0
8:15 8:30	0	8	31	0	0	0	57	51	0	35	0	7	0	0	0	0
8:30 8:45	0	4	25	0	1	0	66	60	0	41	0	9	0	0	0	0
8:45 9:00	0	4	36	0	0	0	50	50	0	38	0	7	0	0	0	0
Hourly Sum	0	20	123	0	1	0	253	218	0	153	0	31	0	0	0	0
16:00 16:15	0	9	69	0	0	0	51	67	0	115	0	9	0	0	0	0
16:15 16:30	0	8	80	0	0	0	32	71	0	90	0	11	0	0	0	0
16:30 16:45	0	5	54	0	0	0	35	64	0	103	0	6	0	0	0	0
16:45 17:00	0	9	83	0	2	0	56	85	0	71	0	8	0	0	0	0
Hourly Sum	0	31	286	0	2	0	174	287	0	379	0	34	0	0	0	0
17:00 17:15	0	9	96	0	0	0	48	58	0	94	0	6	0	0	0	0
17:15 17:30	1	10	126	0	0	0	45	89	0	87	0	6	0	0	0	0
17:30 17:45	0	17	106	0	0	0	41	60	0	96	0	8	0	0	0	0
17:45 18:00	0	9	104	0	0	0	45	63	0	103	0	4	0	0	0	0
Hourly Sum	1	45	432	0	0	0	179	270	0	380	0	24	0	0	0	0

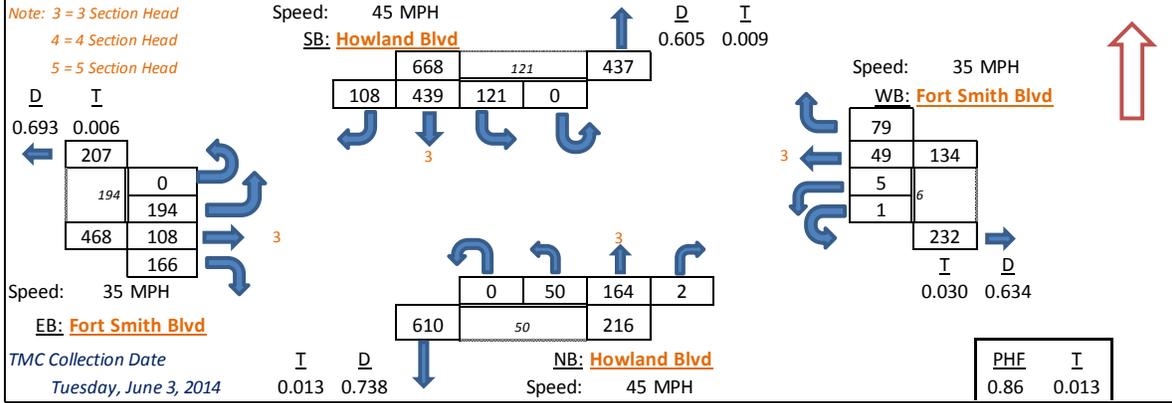
Luke Transportation Engineering Consultants, 2014

Summary of Vehicle Movements

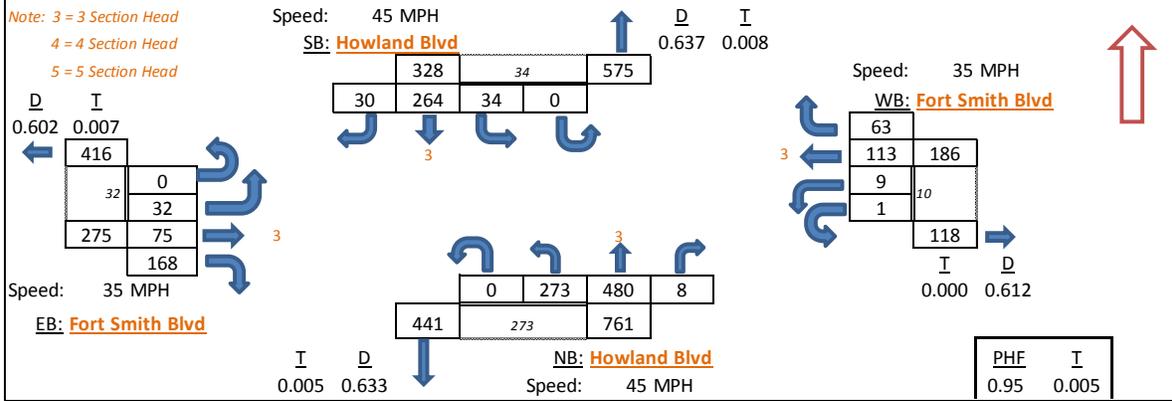
Luke Transportation Engineering Consultants

Project:	Promenade at Deltona			LTEC 13-0113				
N/S Road:	Howland Blvd			Observer:	LTEC			
E/W Road:	Fort Smith Blvd			Weather:	Clear			
Date:	Thursday, March 20, 2014			Rd Condition:	Ok			
City:	Deltona			Signal:	Yes			
County:	Volusia			Major St Movement:	-			
FDOT SF:	0.93 PM	1.02 AM		PM Pk Hr Factor:	0.95			
				Latitude:	28.879942°			
				Longitude:	-81.165587°			
				Station #:	3			

Seasonally Adjusted A.M. Peak Hour Turning Movement Summary - 07:00 - 08:00



Seasonally Adjusted P.M. Peak Hour Turning Movement Summary - 17:00 - 18:00



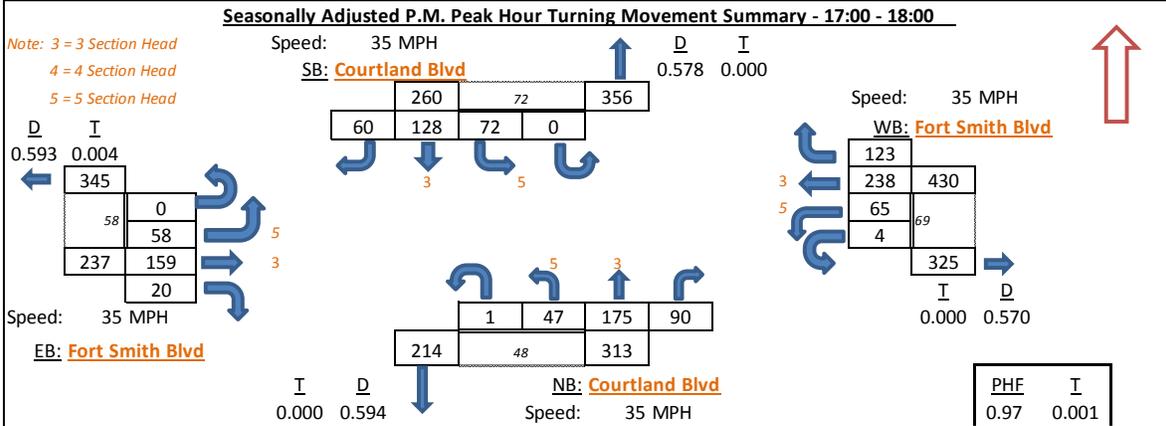
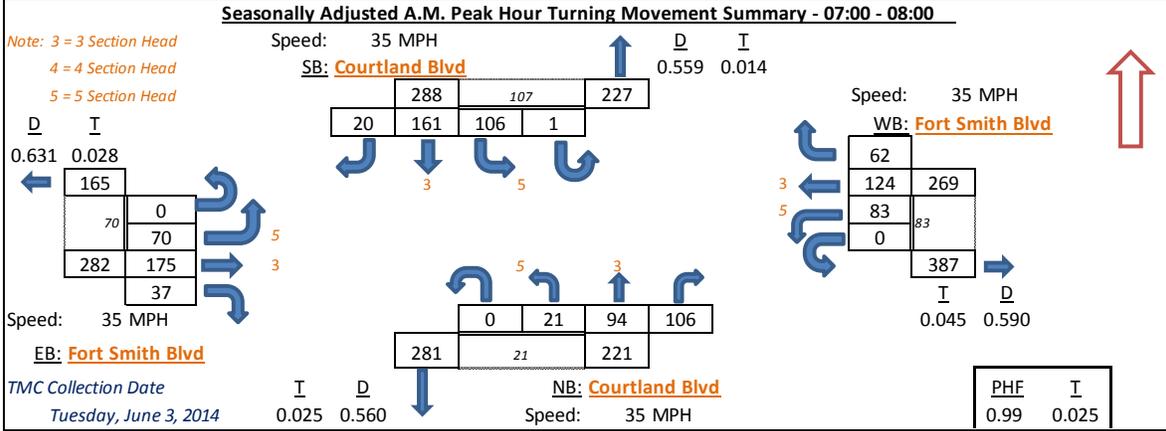
Peak Hour Time Interval	Howland Blvd Northbound				Howland Blvd Southbound				Fort Smith Blvd Eastbound				Fort Smith Blvd Westbound			
	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt	Utturn	Lt	Thru	Rt
# Lanes	1		1	<	1		1	<	1		1	<	1		1	<
7:00 7:15	0	12	56	2	0	22	113	33	0	69	31	39	0	1	11	25
7:15 7:30	0	14	40	0	0	43	112	38	0	68	30	40	0	2	17	26
7:30 7:45	0	11	32	0	0	32	98	24	0	31	29	42	0	1	9	14
7:45 8:00	0	12	33	0	0	22	107	11	0	22	16	42	1	1	11	12
Hourly Sum	0	49	161	2	0	119	430	106	0	190	106	163	1	5	48	77
8:00 8:15	0	20	41	1	0	7	60	10	0	15	24	39	0	1	10	6
8:15 8:30	0	24	44	0	0	13	90	12	0	22	21	30	0	2	13	8
8:30 8:45	0	28	30	1	0	10	77	20	0	12	21	36	0	3	9	6
8:45 9:00	0	24	41	3	0	7	69	7	0	14	20	56	0	1	16	8
Hourly Sum	0	96	156	5	0	37	296	49	0	63	86	161	0	7	48	28
16:00 16:15	0	74	105	9	0	7	68	5	0	10	16	50	0	3	32	14
16:15 16:30	0	46	92	3	0	6	52	6	0	6	19	49	0	0	30	22
16:30 16:45	0	60	113	3	0	6	67	11	0	6	26	25	0	5	37	18
16:45 17:00	0	48	90	4	0	17	94	5	0	3	14	52	0	0	32	16
Hourly Sum	0	228	400	19	0	36	281	27	0	25	75	176	0	8	131	70
17:00 17:15	0	76	139	1	0	9	68	8	0	5	21	49	0	2	30	15
17:15 17:30	0	67	117	3	0	9	77	6	0	12	17	49	0	3	24	18
17:30 17:45	0	73	125	1	0	10	67	8	0	9	23	38	1	2	31	16
17:45 18:00	0	78	135	4	0	9	72	10	0	8	20	45	0	3	37	19
Hourly Sum	0	294	516	9	0	37	284	32	0	34	81	181	1	10	122	68

Luke Transportation Engineering Consultants, 2014

Summary of Vehicle Movements

Luke Transportation Engineering Consultants

Project:	Promenade at Deltona		LTEC 13-0113			
N/S Road:	Courtland Blvd		Observer:	LTEC		
E/W Road:	Fort Smith Blvd		Weather:	Clear		
Date:	Thursday, April 17, 2014		Rd Condition:	Ok		
City:	Deltona		Signal:	Yes		
County:	Volusia		Major St Movement:	-	Latitude:	28.878642°
FDOT SF:	0.97 PM	1.02 AM	PM Pk Hr Factor:	0.97	Longitude:	-81.178766°
					Station #:	5



Peak Hour Time Interval	Courtland Blvd Northbound				Courtland Blvd Southbound				Fort Smith Blvd Eastbound				Fort Smith Blvd Westbound			
	Uturm	Lt	Thru	Rt	Uturm	Lt	Thru	Rt	Uturm	Lt	Thru	Rt	Uturm	Lt	Thru	Rt
# Lanes	1				1				<				1			
7:00 7:15	0	3	29	36	0	31	34	6	0	14	59	11	0	9	23	14
7:15 7:30	0	4	18	23	0	33	41	3	0	9	44	6	0	28	34	16
7:30 7:45	0	9	22	22	0	20	40	3	0	21	36	10	0	16	30	18
7:45 8:00	0	5	23	23	1	20	43	8	0	25	33	9	0	28	35	13
Hourly Sum	0	21	92	104	1	104	158	20	0	69	172	36	0	81	122	61
8:00 8:15	0	5	42	20	0	20	25	7	0	11	30	7	0	12	21	20
8:15 8:30	0	3	31	18	0	24	28	5	0	7	32	8	0	18	25	17
8:30 8:45	0	4	33	15	0	18	29	12	0	19	31	8	0	11	21	17
8:45 9:00	0	5	32	9	0	31	36	16	0	11	32	3	0	13	21	12
Hourly Sum	0	17	138	62	0	93	118	40	0	48	125	26	0	54	88	66
16:00 16:15	0	8	36	14	0	25	39	17	0	20	35	7	0	14	42	12
16:15 16:30	0	9	40	8	0	14	22	9	0	9	31	5	0	13	34	28
16:30 16:45	0	11	36	11	0	16	30	15	0	19	31	7	4	15	34	17
16:45 17:00	0	9	44	17	0	24	25	15	0	11	46	9	0	15	41	23
Hourly Sum	0	37	156	50	0	79	116	56	0	59	143	28	4	57	151	80
17:00 17:15	0	13	40	23	0	23	21	13	0	11	42	6	1	19	59	32
17:15 17:30	0	11	51	25	0	15	30	13	0	16	50	4	1	17	67	31
17:30 17:45	0	6	48	24	0	14	32	17	0	18	37	6	1	15	73	30
17:45 18:00	1	18	41	21	0	22	49	19	0	15	35	5	1	16	46	34
Hourly Sum	1	48	180	93	0	74	132	62	0	60	164	21	4	67	245	127

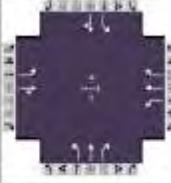
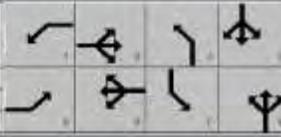
Luke Transportation Engineering Consultants, 2014

Appendix D – HCS Existing Worksheets

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HCS 2010 Signalized Intersection Results Summary																
General Information							Intersection Information									
Agency	LTEC						Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014				Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour				PHF	0.95							
Intersection	Howland Boulevard & Fort						Analysis Year	2014						Analysis Period	1> 17:00	
File Name	Hb FSb Exist AM.xus															
Project Description	Existing AM Peak															
Demand Information				EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h	194	108	166	6	49	79	50	164	2	121	439	108				
Signal Information																
Cycle, s	33.7	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	Yes	Simult. Gap E/W	On	Green	14.0	9.8	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	3.6	0.0	0.0	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0				
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase					4					8						
Case Number					6.0					6.0						
Phase Duration, s					14.4					14.4						
Change Period, (Y+R), s					4.6					4.6						
Max Allow Headway (MAH), s					3.3					3.3						
Queue Clearance Time (qc), s					9.2					7.1						
Green Extension Time (gv), s					0.7					0.0						
Phase Call Probability					1.00					1.00						
Max Out Probability					0.30					1.00						
Movement Group Results				EB			WB			NB			SB			
Approach Movement	L	T	R	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	204	288		6	135		53	175		127	578					
Adjusted Saturation Flow Rate (s), veh/h/ln	1250	1680		1086	1676		834	1859		1205	1799					
Queue Service Time (qs), s	5.1	5.0		0.2	2.1		2.0	2.0		2.6	9.3					
Cycle Queue Clearance Time (qc), s	7.2	5.0		5.1	2.1		11.2	2.0		4.6	9.3					
Green Ratio (g/C)	0.29	0.29		0.29	0.29		0.42	0.42		0.42	0.42					
Capacity (c), veh/h	500	489		370	488		330	772		641	747					
Volume-to-Capacity Ratio (X)	0.409	0.590		0.017	0.276		0.159	0.226		0.199	0.771					
Available Capacity (ca), veh/h	693	748		370	488		380	882		856	1067					
Back of Queue (Q), veh/ln (50th percentile)	1.0	1.3		0.0	0.5		0.3	0.5		0.4	2.3					
Queue Storage Ratio (RQ) (50th percentile)	0.13	0.00		0.01	0.00		0.03	0.00		0.04	0.00					
Uniform Delay (di), s/veh	12.0	10.2		12.4	9.2		13.3	6.4		7.8	8.5					
Incremental Delay (di), s/veh	0.2	0.4		0.0	0.1		0.1	0.1		0.1	1.2					
Initial Queue Delay (di), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0					
Control Delay (d), s/veh	12.2	10.7		12.4	9.3		13.4	6.4		7.9	9.7					
Level of Service (LOS)	B	B		B	A		B	A		A	A					
Approach Delay, s/veh / LOS	11.3		B	9.5		A	8.0		A	9.4		A				
Intersection Delay, s/veh / LOS	9.8						A									
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS																
Bicycle LOS Score / LOS																

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.93							
Intersection	Howland Boulevard & Court					Analysis Year	2014		Analysis Period	1> 7:00					
File Name	Hb Cb Exist AM.xus														
Project Description	Existing AM														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	13	430	93	33	265	53	188	36	40	182	42	22			
Signal Information															
Cycle, s	45.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	0.8	1.0	14.0	5.0	0.8	4.9					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	0.0	3.6	3.6	0.0	3.6					
				Red	1.0	0.0	1.0	1.0	0.0	1.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				5	2	1	6	3	8	7	4				
Case Number				1.1	3.0	1.1	4.0	1.1	4.0	1.1	4.0				
Phase Duration, s				5.4	18.6	6.4	19.6	9.6	9.5	10.4	10.4				
Change Period, (Y+R), s				4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Allow Headway (MAH), s				3.1	3.1	3.1	3.1	3.1	3.2	3.1	3.2				
Queue Clearance Time (qc), s				2.2	12.2	2.6	5.2	6.5	4.0	6.2	3.6				
Green Extension Time (gv), s				0.0	1.7	0.0	1.7	0.0	0.2	0.1	0.2				
Phase Call Probability				0.16	1.00	0.36	1.00	0.92	0.99	0.91	0.99				
Max Out Probability				0.00	0.00	0.00	0.00	1.00	0.00	0.53	0.00				
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	3	8	18	7	4	14			
Adjusted Flow Rate (v), veh/h	14	462	100	35	174	168	202	82		196	69				
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1774	1863	1756	1774	1702		1774	1754				
Queue Service Time (qs), s	0.2	10.2	2.1	0.6	3.1	3.2	4.5	2.0		4.2	1.6				
Cycle Queue Clearance Time (qc), s	0.2	10.2	2.1	0.6	3.1	3.2	4.5	2.0		4.2	1.6				
Green Ratio (g/C)	0.33	0.31	0.31	0.35	0.33	0.33	0.22	0.11		0.24	0.13				
Capacity (c), veh/h	420	580	492	310	621	586	423	187		475	226				
Volume-to-Capacity Ratio (X)	0.033	0.797	0.203	0.115	0.280	0.287	0.478	0.437		0.412	0.305				
Available Capacity (ca), veh/h	861	2152	1824	633	1531	1443	423	756		639	779				
Back of Queue (Q), veh/ln (50th percentile)	0.1	3.5	0.6	0.2	1.0	1.0	1.5	0.7		1.4	0.6				
Queue Storage Ratio (RQ) (50th percentile)	0.01	0.00	0.00	0.02	0.00	0.00	0.11	0.00		0.15	0.00				
Uniform Delay (di), s/veh	10.4	14.2	11.4	10.9	11.0	11.1	15.5	18.7		14.7	17.8				
Incremental Delay (di), s/veh	0.0	1.0	0.1	0.1	0.1	0.1	0.3	0.6		0.2	0.3				
Initial Queue Delay (di), s/veh	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	10.4	15.2	11.5	10.9	11.1	11.2	15.8	19.3		14.9	18.1				
Level of Service (LOS)	B	B	B	B	B	B	B	B		B	B				
Approach Delay, s/veh / LOS	14.4		B	11.1		B	16.8		B	15.7		B			
Intersection Delay, s/veh / LOS	14.3						B								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.97							
Intersection	Fort Smith Boulevard & Co					Analysis Year	2014		Analysis Period	1> 7:00					
File Name	FSb Cb Exist AM.xus														
Project Description	Existing AM														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	70	175	37	83	124	60	21	94	106	107	161	20			
Signal Information															
Cycle, s	36.3	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	2.6	0.3	6.7	1.0	2.4	4.9					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	0.0	3.6	3.6	0.0	3.6					
				Red	1.0	0.0	1.0	1.0	0.0	1.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				5	2	1	6	3	8	7	4				
Case Number				1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0				
Phase Duration, s				7.2	11.3	7.5	11.7	5.6	9.5	8.0	11.9				
Change Period, (Y+R), s				4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6				
Max Allow Headway (MAH), s				3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1				
Queue Clearance Time (qc), s				3.1	6.1	3.4	4.2	2.4	4.3	3.9	5.3				
Green Extension Time (gv), s				0.0	0.7	0.1	0.7	0.0	0.7	0.1	0.7				
Phase Call Probability				0.52	1.00	0.58	1.00	0.20	0.98	0.67	0.99				
Max Out Probability				0.00	0.00	0.01	0.00	0.00	0.00	0.02	0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	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	72	219		86	128	62	22	97	109	110	187				
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1806		1774	1863	1579	1774	1863	1579	1774	1826				
Queue Service Time (qs), s	1.1	4.1		1.4	2.2	1.2	0.4	1.7	2.3	1.9	3.3				
Cycle Queue Clearance Time (qc), s	1.1	4.1		1.4	2.2	1.2	0.4	1.7	2.3	1.9	3.3				
Green Ratio (g/C)	0.26	0.19		0.27	0.19	0.19	0.16	0.14	0.14	0.23	0.20				
Capacity (c), veh/h	426	335		425	362	306	313	253	214	477	368				
Volume-to-Capacity Ratio (X)	0.170	0.651		0.201	0.353	0.202	0.069	0.383	0.510	0.231	0.508				
Available Capacity (ca), veh/h	787	994		772	973	825	752	1025	868	901	1005				
Back of Queue (Q), veh/ln (50th percentile)	0.3	1.3		0.4	0.7	0.3	0.1	0.6	0.7	0.6	1.1				
Queue Storage Ratio (RQ) (50th percentile)	0.04	0.00		0.05	0.00	0.03	0.01	0.00	0.10	0.10	0.00				
Uniform Delay (di), s/veh	10.7	13.7		10.5	12.7	12.3	13.0	14.3	14.6	11.6	12.9				
Incremental Delay (di), s/veh	0.1	0.8		0.1	0.2	0.1	0.0	0.4	0.7	0.1	0.4				
Initial Queue Delay (di), s/veh	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	10.7	14.5		10.6	12.9	12.4	13.0	14.7	15.3	11.7	13.3				
Level of Service (LOS)	B	B		B	B	B	B	B	B	B	B				
Approach Delay, s/veh / LOS	13.6		B	12.1		B	14.8		B	12.7		B			
Intersection Delay, s/veh / LOS	13.2						B								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR		Analysis Date	5/8/2014		Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour		PHF	0.91								
Intersection	Howland Boulevard & Wal-					Analysis Year	Existing 2014		Analysis Period	1> 17:00					
File Name	Hb WalMart Exist AM.xus														
Project Description	Existing AM Peak														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	123		45				24	132			439	198			
Signal Information															
Cycle, s	27.6	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	0.9	7.3	3.8	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.0	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4					5	2	6			
Case Number					9.0					1.0	4.0	7.3			
Phase Duration, s					8.8					6.2	18.8	12.6			
Change Period, (Y+R), s					5.0					5.3	5.3	5.3			
Max Allow Headway (MAH), s					3.2					3.1	3.1	3.1			
Queue Clearance Time (qc), s					3.0					2.3	2.6	5.3			
Green Extension Time (gw), s					0.3					0.0	2.0	2.0			
Phase Call Probability					0.76					0.18	1.00	1.00			
Max Out Probability					0.00					0.00	0.00	0.00			
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement	7		14				5	2				6	16		
Adjusted Flow Rate (v), veh/h	135		49				26	145				482	218		
Adjusted Saturation Flow Rate (s), veh/h/ln	1723		1579				1774	1756				1773	1563		
Queue Service Time (qs), s	1.0		0.7				0.3	0.6				3.2	3.3		
Cycle Queue Clearance Time (qc), s	1.0		0.7				0.3	0.6				3.2	3.3		
Green Ratio (g/C)	0.14		0.17				0.37	0.49				0.26	0.26		
Capacity (c), veh/h	474		270				454	1717				934	412		
Volume-to-Capacity Ratio (X)	0.285		0.183				0.058	0.084				0.517	0.529		
Available Capacity (ca), veh/h	2000		969				1103	3695				4246	1872		
Back of Queue (Q), veh/ln (50th percentile)	0.3		0.2				0.0	0.1				0.7	0.7		
Queue Storage Ratio (RQ) (50th percentile)	0.02		0.00				0.00	0.00				0.00	0.06		
Uniform Delay (di), s/veh	10.7		9.8				6.1	3.8				8.7	8.7		
Incremental Delay (di), s/veh	0.1		0.1				0.0	0.0				0.2	0.4		
Initial Queue Delay (di), s/veh	0.0		0.0				0.0	0.0				0.0	0.0		
Control Delay (d), s/veh	10.8		9.9				6.1	3.8				8.8	9.1		
Level of Service (LOS)	B		A				A	A				A	A		
Approach Delay, s/veh / LOS	10.6		B	0.0				4.1	A	8.9		A			
Intersection Delay, s/veh / LOS	8.4						A								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	JTR		Intersection	SR 415 & Howland Blvd				
Agency/Co.	LTEC		Jurisdiction	Deltona				
Date Performed	5/8/2014		Analysis Year	2014				
Analysis Time Period	AM Peak Hour							
Project Description Existing								
East/West Street: Howland Boulevard			North/South Street: SR 415					
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)	136	137			306	19		
Peak-Hour Factor, PHF	0.92	0.92	1.00	1.00	0.92	0.92		
Hourly Flow Rate, HFR (veh/h)	147	148	0	0	332	20		
Percent Heavy Vehicles	3	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	0	1	0		
Configuration	L	T				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)	16		447					
Peak-Hour Factor, PHF	0.92	1.00	0.92	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	17	0	485	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
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	L					L		R
v (veh/h)	147					17		485
C (m) (veh/h)	1201					318		701
v/c	0.12					0.05		0.69
95% queue length	0.42					0.17		5.58
Control Delay (s/veh)	8.4					17.0		20.8
LOS	A					C		C
Approach Delay (s/veh)	--	--				20.7		
Approach LOS	--	--				C		

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TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JTR			Intersection	SR 415 & Ft Smith Blvd			
Agency/Co.	LTEC			Jurisdiction	Deltona			
Date Performed	5/8/2014			Analysis Year	2014			
Analysis Time Period	AM Peak Hour							
Project Description Existing								
East/West Street: Fort Smith Boulevard				North/South Street: SR 415				
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)	5	149			238	71		
Peak-Hour Factor, PHF	0.83	0.83	1.00	1.00	0.83	0.83		
Hourly Flow Rate, HFR (veh/h)	6	179	0	0	286	85		
Percent Heavy Vehicles	3	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	0	1	0		
Configuration	L	T				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)	139		86					
Peak-Hour Factor, PHF	0.83	1.00	0.83	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	167	0	103	0	0	0		
Percent Heavy Vehicles	2	0	2	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	L						LR	
v (veh/h)	6						270	
C (m) (veh/h)	1182						575	
v/c	0.01						0.47	
95% queue length	0.02						2.49	
Control Delay (s/veh)	8.1						16.7	
LOS	A						C	
Approach Delay (s/veh)	--	--					16.7	
Approach LOS	--	--					C	

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HCS 2010 Signalized Intersection Results Summary																			
General Information							Intersection Information												
Agency	LTEC						Duration, h	0.25											
Analyst	JTR	Analysis Date	5/8/2014				Area Type	Other											
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.95											
Intersection	Howland Boulevard & Fort		Analysis Year	2014			Analysis Period	1> 17:00											
File Name	Hb FSb Exist.kus																		
Project Description	Existing PM Peak																		
Demand Information				EB			WB			NB		SB							
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R							
Demand (v), veh/h	32	75	168	10	113	63	273	480	8	34	264	30							
Signal Information																			
Cycle, s	30.5	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	Yes	Simult. Gap E/W	On		Green	13.9	6.7	0.0	0.0	0.0	0.0	0.0							
Force Mode	Fixed	Simult. Gap N/S	On		Yellow	4.3	3.6	0.0	0.0	0.0	0.0	0.0							
					Red	1.0	1.0	0.0	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			6.0		6.0		6.0		6.0										
Phase Duration, s			11.3		11.3		19.2		19.2										
Change Period, (Y+R), s			4.6		4.6		5.3		5.3										
Max Allow Headway (MAH), s			3.2		3.2		3.3		3.3										
Queue Clearance Time (g _s), s			6.3		6.6		12.8		9.3										
Green Extension Time (g _e), s			0.5		0.0		1.1		2.3										
Phase Call Probability			0.98		0.98		1.00		1.00										
Max Out Probability			0.04		1.00		1.00		0.14										
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	34	256		11	185		287	514		36	309								
Adjusted Saturation Flow Rate (s), veh/h/ln	1194	1657		1119	1750		1066	1857		883	1829								
Queue Service Time (g _s), s	0.8	4.3		0.3	2.8		7.4	6.3		1.0	3.4								
Cycle Queue Clearance Time (g _c), s	3.6	4.3		4.6	2.8		10.8	6.3		7.3	3.4								
Green Ratio (g/C)	0.22	0.22		0.22	0.22		0.46	0.46		0.46	0.46								
Capacity (c), veh/h	388	363		323	384		604	846		455	834								
Volume-to-Capacity Ratio (X)	0.087	0.704		0.033	0.483		0.476	0.607		0.079	0.371								
Available Capacity (c _a), veh/h	715	816		323	384		678	976		632	1201								
Back of Queue (Q), veh/ln (50th percentile)	0.2	1.2		0.1	0.8		1.0	1.2		0.1	0.6								
Queue Storage Ratio (RQ) (50th percentile)	0.02	0.00		0.01	0.00		0.10	0.00		0.01	0.00								
Uniform Delay (d _i), s/veh	11.9	11.0		13.1	10.4		9.0	6.2		9.0	5.4								
Incremental Delay (d _i), s/veh	0.0	0.9		0.0	0.4		0.2	0.4		0.0	0.1								
Initial Queue Delay (d _s), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0								
Control Delay (d), s/veh	12.0	11.9		13.1	10.7		9.2	6.7		9.0	5.5								
Level of Service (LOS)	B	B		B	B		A	A		A	A								
Approach Delay, s/veh / LOS	11.9		B	10.9		B	7.6		A	5.9		A							
Intersection Delay, s/veh / LOS	8.4						A												
Multimodal Results				EB			WB			NB		SB							
Pedestrian LOS Score / LOS																			
Bicycle LOS Score / LOS																			

HCS 2010 Signalized Intersection Results Summary														
General Information						Intersection Information								
Agency	LTEC					Duration, h	0.25							
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other							
Jurisdiction	Deltona		Time Period	PM Peak Hour		PHF	0.93							
Intersection	Howland Boulevard & Cour		Analysis Year	2014		Analysis Period	1> 17:00							
File Name	Hb Cb Exist.xus													
Project Description	Existing PM													
Demand Information				EB			WB			NB		SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R		
Demand (v), veh/h	40	305	213	41	478	88	173	54	18	58	47	30		
Signal Information														
Cycle, s	40.7	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	Yes	Simult. Gap E/W	On	Green	2.0	10.8	2.5	2.4	4.6	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	3.6	3.6	0.0	3.6	0.0				
				Red	1.0	1.0	1.0	0.0	1.0	0.0				
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT			
Assigned Phase				5	2	1	6	3	8	7	4			
Case Number				1.1	3.0	1.1	4.0	1.1	4.0	1.1	4.0			
Phase Duration, s				6.5	15.4	6.6	15.4	9.6	11.6	7.1	9.2			
Change Period, (Y+R), s				4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6			
Max Allow Headway (MAH), s				3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1			
Queue Clearance Time (qc), s				2.7	8.4	2.7	8.1	5.6	3.5	3.2	3.8			
Green Extension Time (ge), s				0.0	2.4	0.0	2.3	0.0	0.2	0.0	0.2			
Phase Call Probability				0.39	1.00	0.39	1.00	0.88	0.98	0.51	0.92			
Max Out Probability				0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00			
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	3	8	18	7	4	14		
Adjusted Flow Rate (v), veh/h	43	328	229	44	312	297	186	77		62	83			
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1774	1863	1762	1774	1783		1774	1741			
Queue Service Time (qs), s	0.7	6.4	5.1	0.7	6.0	6.1	3.6	1.5		1.2	1.8			
Cycle Queue Clearance Time (qc), s	0.7	6.4	5.1	0.7	6.0	6.1	3.6	1.5		1.2	1.8			
Green Ratio (g/C)	0.31	0.26	0.26	0.31	0.27	0.27	0.24	0.17		0.18	0.11			
Capacity (c), veh/h	316	493	418	376	494	468	484	308		401	197			
Volume-to-Capacity Ratio (X)	0.136	0.666	0.548	0.117	0.630	0.635	0.385	0.251		0.156	0.421			
Available Capacity (ca), veh/h	755	2380	2017	726	1693	1601	485	876		726	855			
Back of Queue (Q), veh/ln (50th percentile)	0.2	2.2	1.4	0.2	2.0	1.9	1.2	0.5		0.4	0.6			
Queue Storage Ratio (RQ) (50th percentile)	0.03	0.00	0.00	0.02	0.00	0.00	0.08	0.00		0.04	0.00			
Uniform Delay (d), s/veh	10.7	13.4	12.9	10.4	13.2	13.2	13.3	14.6		14.4	16.8			
Incremental Delay (di), s/veh	0.1	0.6	0.4	0.1	0.5	0.5	0.2	0.2		0.1	0.5			
Initial Queue Delay (di), s/veh	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	10.8	13.9	13.3	10.4	13.7	13.7	13.5	14.7		14.4	17.3			
Level of Service (LOS)	B	B	B	B	B	B	B	B		B	B			
Approach Delay, s/veh / LOS	13.5	B		13.5	B		13.9	B		16.1	B			
Intersection Delay, s/veh / LOS	13.8						B							
Multimodal Results				EB			WB			NB		SB		
Pedestrian LOS Score / LOS														
Bicycle LOS Score / LOS														

HCS 2010 Signalized Intersection Results Summary																											
General Information							Intersection Information																				
Agency	LTEC						Duration, h	0.25																			
Analyst	JTR			Analysis Date	5/8/2014			Area Type	Other																		
Jurisdiction	Deltona			Time Period	PM Peak Hour			PHF	0.97																		
Intersection	Fort Smith Boulevard & Co			Analysis Year	2014			Analysis Period	1> 17:00																		
File Name	FSb Cb Exist.kus																										
Project Description	Existing PM																										
Demand Information				EB			WB			NB			SB														
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R												
Demand (v), veh/h				58	159	20	69	238	123	48	175	90	72	128	60												
Signal Information																											
Cycle, s	36.8	Reference Phase	2																								
Offset, s	0	Reference Point	End																								
Uncoordinated	Yes	Simult. Gap E/W	On	Green	2.3	0.3	7.1	2.0	0.7	6.1																	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	0.0	3.6	3.6	0.0	3.6																	
				Red	1.0	0.0	1.0	1.0	0.0	1.0																	
Timer Results				EBL			EBT			WBL			WBT			NBL			NBT			SBL			SBT		
Assigned Phase				5			2			1			6			3			8			7			4		
Case Number				1.1			4.0			1.1			3.0			1.1			3.0			1.1			4.0		
Phase Duration, s				6.9			11.7			7.2			12.0			6.6			10.7			7.3			11.3		
Change Period, (Y+R), s				4.6			4.6			4.6			4.6			4.6			4.6			4.6			4.6		
Max Allow Headway (MAH), s				3.1			3.1			3.1			3.1			3.1			3.1			3.1			3.1		
Queue Clearance Time (g _s), s				3.0			5.3			3.1			6.5			2.8			5.3			3.2			5.7		
Green Extension Time (g _e), s				0.0			1.0			0.0			0.9			0.0			0.8			0.0			0.8		
Phase Call Probability				0.46			1.00			0.52			1.00			0.40			0.99			0.53			1.00		
Max Out Probability				0.00			0.00			0.00			0.00			0.00			0.00			0.00			0.00		
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	3	8	18	7	4	14												
Adjusted Flow Rate (v), veh/h				60	185		71	245	127	49	180	93	74	194													
Adjusted Saturation Flow Rate (s), veh/h/ln				1774	1826		1774	1863	1579	1774	1863	1579	1774	1762													
Queue Service Time (g _s), s				1.0	3.3		1.1	4.5	2.6	0.8	3.3	1.9	1.2	3.7													
Cycle Queue Clearance Time (g _c), s				1.0	3.3		1.1	4.5	2.6	0.8	3.3	1.9	1.2	3.7													
Green Ratio (g/C)				0.26	0.19		0.26	0.20	0.20	0.22	0.16	0.16	0.24	0.18													
Capacity (c), veh/h				335	352		443	374	317	325	307	261	415	323													
Volume-to-Capacity Ratio (X)				0.178	0.524		0.161	0.656	0.400	0.152	0.587	0.356	0.179	0.600													
Available Capacity (c _a), veh/h				706	991		799	960	814	710	1011	857	768	956													
Back of Queue (Q), veh/ln (50th percentile)				0.3	1.1		0.3	1.5	0.7	0.3	1.1	0.6	0.4	1.2													
Queue Storage Ratio (RQ) (50th percentile)				0.04	0.00		0.04	0.00	0.07	0.03	0.00	0.08	0.07	0.00													
Uniform Delay (d _i), s/veh				11.1	13.4		10.6	13.6	12.8	11.9	14.2	13.6	11.3	13.8													
Incremental Delay (d _i), s/veh				0.1	0.5		0.1	0.7	0.3	0.1	0.7	0.3	0.1	0.7													
Initial Queue Delay (d _s), s/veh				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				11.2	13.8		10.6	14.3	13.1	12.0	14.9	14.0	11.4	14.5													
Level of Service (LOS)				B	B		B	B	B	B	B	B	B														
Approach Delay, s/veh / LOS				13.2		B	13.4		B	14.2		B	13.6		B												
Intersection Delay, s/veh / LOS				13.6						B																	
Multimodal Results				EB			WB			NB			SB														
Pedestrian LOS Score / LOS																											
Bicycle LOS Score / LOS																											

HCS 2010 Signalized Intersection Results Summary															
General Information							Intersection Information								
Agency	LTEC						Duration, h	0.25							
Analyst	JTR			Analysis Date	5/8/2014			Area Type	Other						
Jurisdiction	Deltona			Time Period	PM Peak Hour			PHF	0.91						
Intersection	Howland Boulevard & Wal-			Analysis Year	Existing 2014			Analysis Period	1> 17:00						
File Name	Hb WalMart Exist.kus														
Project Description	Existing PM Peak														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				353		22				43	402			166	251
Signal Information															
Cycle, s	32.4	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.7	9.0	6.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.0	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4			5	2		6				
Case Number					9.0			1.0	4.0		7.3				
Phase Duration, s					11.0			7.0	21.4		14.3				
Change Period, (Y+R), s					5.0			5.3	5.3		5.3				
Max Allow Headway (MAH), s					3.1			3.1	3.1		3.1				
Queue Clearance Time (g _s), s					5.3			2.5	4.3		6.9				
Green Extension Time (g _e), s					0.8			0.0	2.1		2.1				
Phase Call Probability					0.98			0.35	1.00		1.00				
Max Out Probability					0.00			0.00	0.00		0.00				
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14				5	2		6	16	
Adjusted Flow Rate (v), veh/h				388		24				47	442		182	276	
Adjusted Saturation Flow Rate (s), veh/h/ln				1723		1579				1774	1773		1773	1579	
Queue Service Time (g _s), s				3.3		0.4				0.5	2.3		1.3	4.9	
Cycle Queue Clearance Time (g _c), s				3.3		0.4				0.5	2.3		1.3	4.9	
Green Ratio (g/C)				0.18		0.24				0.40	0.50		0.28	0.28	
Capacity (c), veh/h				638		377				605	1762		992	441	
Volume-to-Capacity Ratio (X)				0.608		0.064				0.078	0.251		0.184	0.625	
Available Capacity (c _a), veh/h				1702		865				1113	3176		3614	1608	
Back of Queue (Q), veh/ln (50th percentile)				1.0		0.1				0.1	0.4		0.3	1.2	
Queue Storage Ratio (RQ) (50th percentile)				0.09		0.00				0.01	0.00		0.00	0.11	
Uniform Delay (d _i), s/veh				12.1		9.5				6.3	4.7		8.9	10.2	
Incremental Delay (d _i), s/veh				0.4		0.0				0.0	0.0		0.0	0.5	
Initial Queue Delay (d _s), s/veh				0.0		0.0				0.0	0.0		0.0	0.0	
Control Delay (d), s/veh				12.5		9.6				6.3	4.7		8.9	10.7	
Level of Service (LOS)				B		A				A	A		A	B	
Approach Delay, s/veh / LOS				12.3		B	0.0			4.9		A	10.0		A
Intersection Delay, s/veh / LOS				8.8						A					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	JTR		Intersection	SR 415 & Howland Blvd				
Agency/Co.	LTEC		Jurisdiction	Deltona				
Date Performed	5/8/2014		Analysis Year	2014				
Analysis Time Period	PM Peak Hour							
Project Description Existing								
East/West Street: Howland Boulevard			North/South Street: SR 415					
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)	431	259			196	14		
Peak-Hour Factor, PHF	0.96	0.96	1.00	1.00	0.96	0.96		
Hourly Flow Rate, HFR (veh/h)	448	269	0	0	204	14		
Percent Heavy Vehicles	2	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0			0		
Lanes	1	1	0	0	1	0		
Configuration	L	T				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)	27		161					
Peak-Hour Factor, PHF	0.96	1.00	0.96	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	28	0	167	0	0	0		
Percent Heavy Vehicles	2	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	1	0	1	0	0	0		
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	L					L		R
v (veh/h)	448					28		167
C (m) (veh/h)	1352					107		829
v/c	0.33					0.26		0.20
95% queue length	1.47					0.97		0.75
Control Delay (s/veh)	9.0					50.2		10.4
LOS	A					F		B
Approach Delay (s/veh)	--	--				16.1		
Approach LOS	--	--				C		

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5/8/2014

TWO-WAY STOP CONTROL SUMMARY								
General Information					Site Information			
Analyst	JTR				Intersection	SR 415 & FDr Smith Blvd		
Agency/Co.	LTEC				Jurisdiction	Deltona		
Date Performed	5/8/2014				Analysis Year	2014		
Analysis Time Period	PM Peak Hour							
Project Description: Existing								
East/West Street: Fort Smith Boulevard					North/South Street: SR 415			
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)	29	257			203	124		
Peak-Hour Factor, PHF	0.88	0.88	1.00	1.00	0.88	0.88		
Hourly Flow Rate, HFR (veh/h)	32	292	0	0	230	140		
Percent Heavy Vehicles	2	--	--	0	--	--		
Median Type	Undivided							
RT Channelized			0				0	
Lanes	1	1	0	0	1	0		
Configuration	L	T				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)	60		7					
Peak-Hour Factor, PHF	0.88	1.00	0.88	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	68	0	7	0	0	0		
Percent Heavy Vehicles	3	0	3	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	L						LR	
v (veh/h)	32						75	
C (m) (veh/h)	1189						435	
v/c	0.03						0.17	
95% queue length	0.08						0.62	
Control Delay (s/veh)	8.1						15.0	
LOS	A						B	
Approach Delay (s/veh)	--	--				15.0		
Approach LOS	--	--				B		

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5/8/2014

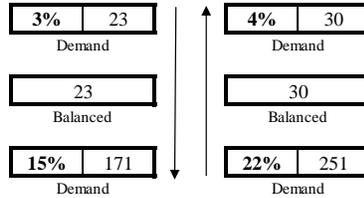
Appendix E – Internal Capture Worksheet

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Daily Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Size(SF): 10,000			
	Total	Internal	External
Enter	760	30	730
Exit	760	23	737
Total	1,520	53	1,467
%	100%	3.5%	96.5%



LAND USE B: OFFICE

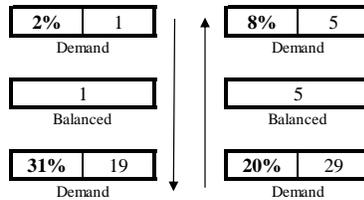
ITE LU Code: 630 & 720			
Size (SF): 62,425			
	Total	Internal	External
Enter	1,143	23	1,120
Exit	1,143	30	1,113
Total	2,285	53	2,232
%	100%	2.3%	97.7%

Net External Trips for Multi-Use Development				
	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	730	1,120	1,850	
Exit	737	1,113	1,850	
Total	1,467	2,232	3,699	
Single Use ITE Trip Gen. Est.	1,520	2,285	3,805	106

P.M. Peak Hour Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Size (SF): 10,000			
	Total	Internal	External
Enter	61	5	56
Exit	67	1	66
Total	128	6	122
%	100%	4.7%	95.3%



LAND USE B: OFFICE

ITE LU Code: 630 & 720			
Size (SF): 62,425			
	Total	Internal	External
Enter	61	1	60
Exit	143	5	138
Total	204	6	198
%	100%	2.9%	97.1%

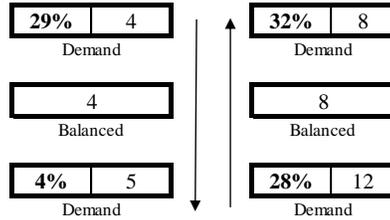
Net External Trips for Multi-Use Development				
	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	56	60	116	
Exit	66	138	204	
Total	122	198	320	
Single Use ITE Trip Gen. Est.	128	204	332	12

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A.M. Peak Hour Multi-Use External Trip Generation

LAND USE A: RETAIL LAND USE

ITE LU Code: 820			
Size (SF): 10,000			
	Total	Internal	External
Enter	24	8	16
Exit	15	4	11
Total	39	12	27
%	100%	30.8%	69.2%



LAND USE B: OFFICE

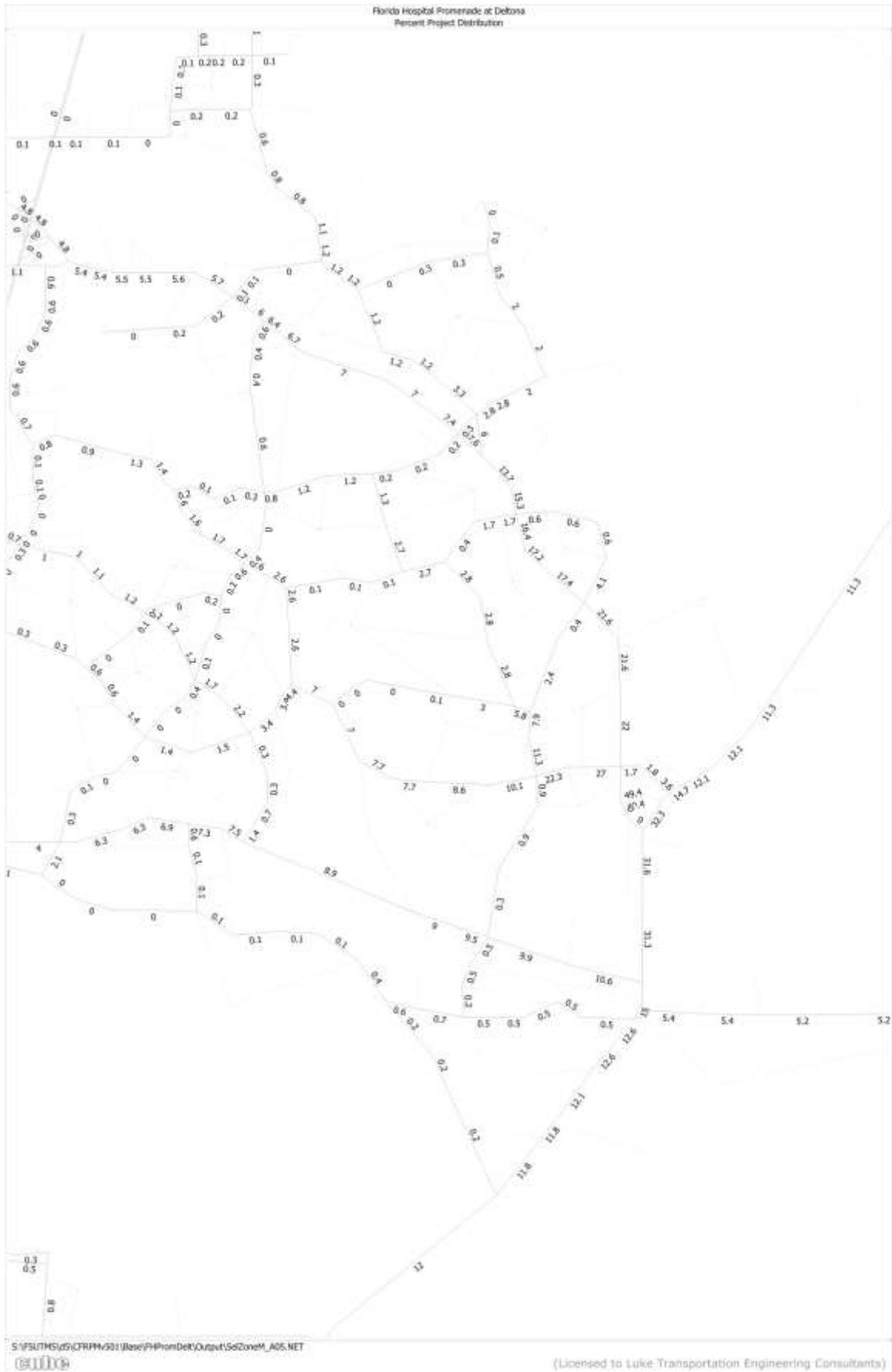
ITE LU Code: 630 & 720			
Size (SF): 62,425			
	Total	Internal	External
Enter	121	4	117
Exit	43	8	35
Total	164	12	152
%	100%	7.3%	92.7%

Net External Trips for Multi-Use Development				
	Land Use A	Land Use B	Total	Internal Capture Percentage
Enter	16	117	133	
Exit	11	35	46	
Total	27	152	179	11.8%
Single Use ITE Trip Gen. Est.	39	164	203	24

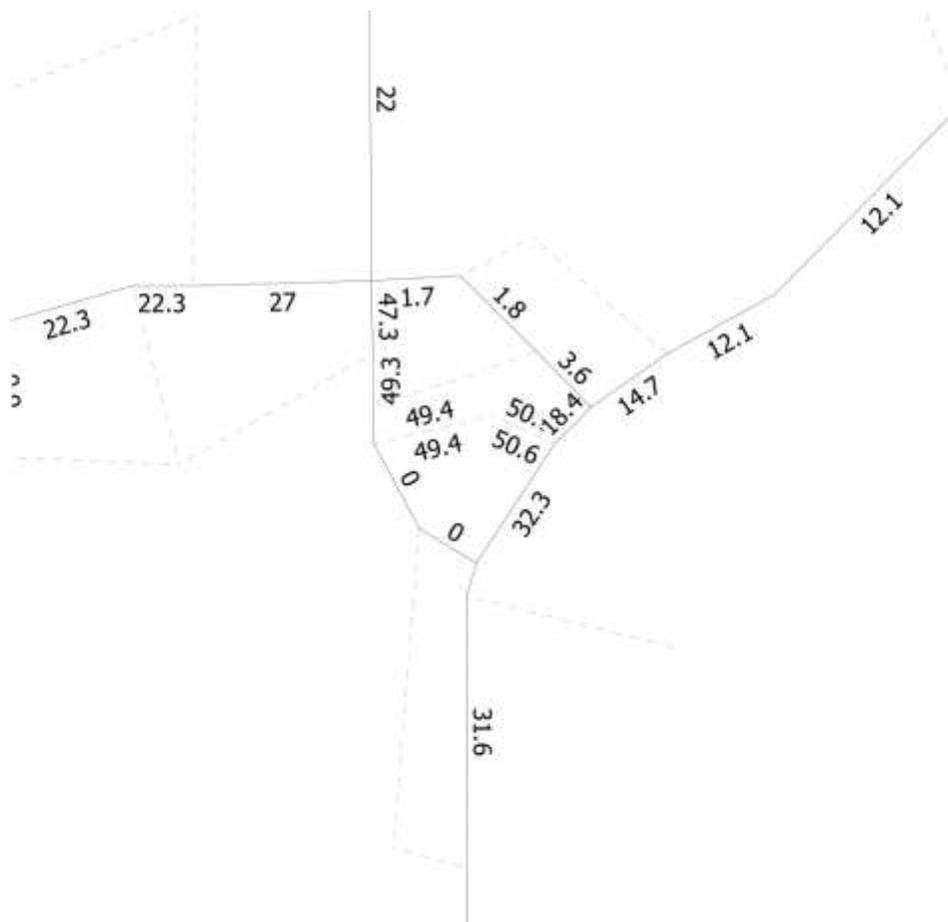
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Appendix F – 2005 Model Plots

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Blowup of Model Plot



Appendix G – Linear Regression Worksheet

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**Linear Regression
Historical Traffic Counts**

SR 415 - Acorn Lake Road to Howland Boulevard							
Year:	ADT	Rel Year	Linear Growth	LN ADT	Exponential Growth	LN Year	Decaying Growth
2009	6,700	1	6,500	8.8099	6,500	0.0000	6,500
2010	6,400	2	6,400	8.7641	6,400	0.6931	6,400
2011	5,900	3	6,400	8.6827	6,400	1.0986	6,400
2012	6,500	4	6,400	8.7796	6,400	1.3863	6,300
2013	6,500	5	6,300	8.7796	6,300	1.6094	6,300
2014		6	6,300		6,300	1.7918	6,300
2015		7	6,300		6,300	1.9459	6,200
2016		8	6,300		6,300	2.0794	6,200
RSQ			0.0250		0.0221		0.1072
Slope			-30.000		-0.005		-154.587
Intercept			6490.000		8.777		6548.016
			Low Rsq		Low Rsq		Low Rsq
Projected ADT:							
Forecast 2014			6,300		6,300		6,300
Forecast 2016			6,300		6,300		6,200
Annual Growth:			0.0%		0.0%		-0.8%
2016 Growth Factor:			100.0%		100.0%		98.4%
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor:					103.0%		
Providence Boulevard - Elkcarn Boulevard to Fort Smith Boulevard							
Year:	ADT	Rel Year	Linear Growth	LN ADT	Exponential Growth	LN Year	Decaying Growth
2009	15,160	1	14,900	9.6264	14,900	0.0000	15,000
2010	13,630	2	14,400	9.5200	14,400	0.6931	14,300
2011	14,680	3	14,000	9.5942	14,000	1.0986	13,800
2012	13,460	4	13,600	9.5075	13,600	1.3863	13,500
2013	13,070	5	13,100	9.4781	13,100	1.6094	13,300
2014		6	12,700		12,700	1.7918	13,100
2015		7	12,300		12,400	1.9459	12,900
2016		8	11,800		12,000	2.0794	12,800
RSQ			0.6101		0.6144		0.6146
Slope			-435.000		-0.031		-1086.225
Intercept			15305.000		9.638		15040.059
			Low Rsq		Low Rsq		Low Rsq
Projected ADT:							
Forecast 2014			12,700		12,700		13,100
Forecast 2016			11,800		12,000		12,800
Annual Growth:			-3.5%		-2.8%		-1.1%
2016 Growth Factor:			92.9%		94.5%		97.7%
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor:					103.0%		

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**Linear Regression
Historical Traffic Counts**

Howland Boulevard - Providence Boulevard to Elkcarn Boulevard							
Year:	ADT	Rel Year	Linear Growth	LN ADT	Exponential Growth	LN Year	Decaying Growth
2009	13,380	1	14,500	9.5015	14,500	0.0000	14,100
2010	15,390	2	14,800	9.6415	14,700	0.6931	14,800
2011	16,890	3	15,000	9.7345	14,900	1.0986	15,100
2012	14,140	4	15,200	9.5568	15,200	1.3863	15,400
2013	15,150	5	15,400	9.6258	15,400	1.6094	15,600
2014		6	15,700		15,700	1.7918	15,700
2015		7	15,900		16,000	1.9459	15,900
2016		8	16,100		16,200	2.0794	16,000
RSQ			0.0738	0.0856		0.1815	
Slope			229.000	0.016		893.712	
Intercept			14303.000	9.563		14134.272	
			Low Rsq	Low Rsq		Low Rsq	
Projected ADT:							
Forecast	2014		15,700		15,700		15,700
Forecast	2016		16,100		16,200		16,000
Annual Growth:			1.3%	1.6%		1.0%	
2016 Growth Factor:			102.5%	103.2%		101.9%	
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor:					103.0%		
Providence Boulevard - Normandy Boulevard to Anderson Drive							
Year:	ADT	Rel Year	Linear Growth	LN ADT	Exponential Growth	LN Year	Decaying Growth
2009	14,460	1	14,100	9.5791	14,100	0.0000	14,200
2010	12,950	2	13,900	9.4689	13,900	0.6931	13,800
2011	14,410	3	13,700	9.5757	13,700	1.0986	13,600
2012	13,510	4	13,500	9.5112	13,500	1.3863	13,500
2013	13,150	5	13,300	9.4842	13,300	1.6094	13,300
2014		6	13,100		13,100	1.7918	13,200
2015		7	12,900		12,900	1.9459	13,200
2016		8	12,700		12,700	2.0794	13,100
RSQ			0.2140	0.2074		0.2359	
Slope			-206.000	-0.015		-538.093	
Intercept			14314.000	9.568		14211.223	
			Low Rsq	Low Rsq		Low Rsq	
Projected ADT:							
Forecast	2014		13,100		13,100		13,200
Forecast	2016		12,700		12,700		13,100
Annual Growth:			-1.5%	-1.5%		-0.4%	
2016 Growth Factor:			96.9%	96.9%		99.2%	
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor:					103.0%		

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Linear Regression Historical Traffic Counts

Howland Boulevard - Fort Smith Boulevard to SR 415							
Year:	ADT	Linear Growth	Exponential		Decaying		
			Growth	Growth	Growth		
2009	11,580	1	12,100	9.3570	12,100	0.0000	11,900
2010	12,770	2	12,200	9.4549	12,200	0.6931	12,200
2011	12,650	3	12,300	9.4454	12,300	1.0986	12,400
2012	12,180	4	12,500	9.4076	12,500	1.3863	12,500
2013	12,530	5	12,600	9.4359	12,600	1.6094	12,600
2014		6	12,700		12,700	1.7918	12,700
2015		7	12,900		12,900	1.9459	12,800
2016		8	13,000		13,000	2.0794	12,800
RSQ			0.1865		0.1955		0.3420
Slope			131.000		0.011		441.374
Intercept			11949.000		9.387		11919.386
			Low Rsq		Low Rsq		Low Rsq
Projected ADT:							
Forecast	2014		12,700		13,000		12,800
Forecast	2016		13,000		13,000		12,800
Annual Growth:			1.2%		0.0%		0.0%
2016 Growth Factor:			102.4%		100.0%		100.0%
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor: 103.0%							
Fort Smith Boulevard - Courtland Boulevard to Howland Boulevard							
Year:	ADT	Linear Growth	Exponential		Decaying		
			Growth	Growth	Growth		
2004	5,670	1	6,600	8.6429	6,600	0.0000	6,100
2005	7,460	2	6,900	8.9173	6,800	0.6931	6,900
2006		3	7,100		7,100	1.0986	7,400
2007	7,388	4	7,400	8.9076	7,300	1.3863	7,700
2008	8,497	5	7,600	9.0475	7,600	1.6094	8,000
2009		6	7,900		7,800	1.7918	8,200
2010		7	8,100		8,100	1.9459	8,400
2011		8	8,400		8,400	2.0794	8,500
RSQ			0.5861		0.5564		0.8156
Slope			250.752		0.035		1175.649
Intercept			6391.691		8.758		6086.228
			Low Rsq		Low Rsq		
Projected ADT:							
Forecast	2014		7,900		8,400		8,500
Forecast	2016		8,400		8,400		8,500
Annual Growth:			3.2%		0.0%		0.0%
2016 Growth Factor:			106.3%		100.0%		100.0%
2016 Minimum 1% Annual Compound Growth							103.03%
Use 2016 Growth Factor: 103.2%							

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Appendix H – Projected HCS Worksheets

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HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.95							
Intersection	Howland Blvd & Ft Smith B					Analysis Year	2016		Analysis Period	1> 7:00					
File Name	Hb FSb 2016 AM.xus														
Project Description	Projected with Total Trips														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	271	154	265	8	69	110	83	239	3	169	642	151			
Signal Information															
Cycle, s	92.7	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	50.4	32.4	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	3.6	0.0	0.0	0.0	0.0					
				Red	1.0	1.0	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			6.0			6.0			6.0			6.0			
Phase Duration, s			37.0			37.0			55.7			55.7			
Change Period, (Y+R), s			4.6			4.6			5.3			5.3			
Max Allow Headway (MAH), s			3.3			3.3			3.3			3.3			
Queue Clearance Time (qc), s			30.5			23.8			51.2			38.7			
Green Extension Time (gv), s			1.8			0.0			0.2			0.0			
Phase Call Probability			1.00			1.00			1.00			1.00			
Max Out Probability			0.00			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	7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate (v), veh/h	285	441		8	188		87	255		178	835				
Adjusted Saturation Flow Rate (s), veh/h/ln	1190	1672		944	1677		655	1859		1120	1801				
Queue Service Time (qs), s	21.0	21.2		0.7	7.5		12.2	6.7		9.4	36.7				
Cycle Queue Clearance Time (qc), s	28.5	21.2		21.8	7.5		49.2	6.7		16.6	36.7				
Green Ratio (g/C)	0.35	0.35		0.35	0.35		0.54	0.54		0.54	0.54				
Capacity (c), veh/h	404	593		197	594		166	999		592	968				
Volume-to-Capacity Ratio (X)	0.707	0.744		0.043	0.317		0.525	0.255		0.300	0.862				
Available Capacity (ca), veh/h	3275	4628		197	594		193	1073		592	968				
Back of Queue (Q), veh/ln (50th percentile)	5.9	8.1		0.2	2.9		2.0	2.6		2.3	15.6				
Queue Storage Ratio (RQ) (50th percentile)	0.75	0.00		0.04	0.00		0.20	0.00		0.19	0.00				
Uniform Delay (di), s/veh	31.9	26.0		35.4	21.5		39.7	11.4		16.0	18.3				
Incremental Delay (di), s/veh	0.9	0.7		0.0	0.1		1.0	0.0		0.1	7.7				
Initial Queue Delay (di), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Control Delay (d), s/veh	32.7	26.7		35.5	21.7		40.6	11.4		16.1	26.0				
Level of Service (LOS)	C	C		D	C		D	B		B	C				
Approach Delay, s/veh / LOS	29.1		C	22.3		C	18.9		B	24.3		C			
Intersection Delay, s/veh / LOS	24.8 C														
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.93							
Intersection	Howland Blvd & Courtland					Analysis Year	2016						Analysis Period	1> 7:00	
File Name	Hb Cb 2016 AM.xus														
Project Description	Projected with Total Trips														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	14	492	101	36	296	60	204	40	43	202	47	24			
Signal Information															
Cycle, s	49.3	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	0.9	1.1	16.9	5.0	2.0	5.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	0.0	3.6	3.6	0.0	3.6					
				Red	1.0	0.0	1.0	1.0	0.0	1.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase	5			2			1			6					
Case Number	1.1			3.0			1.1			4.0					
Phase Duration, s	5.5			21.5			6.7			22.6					
Change Period, (Y+R), s	4.6			4.6			4.6			4.6					
Max Allow Headway (MAH), s	3.1			3.1			3.1			3.1					
Queue Clearance Time (qc), s	2.3			14.9			2.7			5.8					
Green Extension Time (gw), s	0.0			2.0			0.0			2.0					
Phase Call Probability	0.19			1.00			0.41			1.00					
Max Out Probability	0.00			0.00			0.00			0.00					
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	3	8	18	7	4	14			
Adjusted Flow Rate (v), veh/h	15	529	109	39	195	188	219	89		217	76				
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1774	1863	1754	1774	1704		1774	1756				
Queue Service Time (qs), s	0.3	12.9	2.4	0.7	3.7	3.8	5.0	2.5		5.2	1.9				
Cycle Queue Clearance Time (qc), s	0.3	12.9	2.4	0.7	3.7	3.8	5.0	2.5		5.2	1.9				
Green Ratio (g/C)	0.36	0.34	0.34	0.39	0.37	0.37	0.20	0.10		0.24	0.14				
Capacity (c), veh/h	430	639	542	293	682	642	408	172		463	248				
Volume-to-Capacity Ratio (X)	0.035	0.828	0.201	0.132	0.286	0.292	0.538	0.520		0.469	0.308				
Available Capacity (ca), veh/h	827	1961	1662	577	1433	1350	408	690		571	711				
Back of Queue (Q), veh/ln (50th percentile)	0.1	4.6	0.7	0.2	1.2	1.2	2.0	0.9		1.8	0.7				
Queue Storage Ratio (RQ) (50th percentile)	0.01	0.00	0.00	0.02	0.00	0.00	0.15	0.00		0.19	0.00				
Uniform Delay (di), s/veh	10.3	14.9	11.4	11.3	11.1	11.1	18.2	21.1		16.2	19.0				
Incremental Delay (di), s/veh	0.0	1.1	0.1	0.1	0.1	0.1	0.8	0.9		0.3	0.3				
Initial Queue Delay (di), s/veh	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	10.4	16.0	11.5	11.4	11.2	11.2	18.9	22.0		16.5	19.3				
Level of Service (LOS)	B	B	B	B	B	B	B	C		B	B				
Approach Delay, s/veh / LOS	15.1		B	11.2		B	19.8		B	17.2		B			
Intersection Delay, s/veh / LOS	15.4						B								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary																						
General Information						Intersection Information																
Agency	LTEC					Duration, h	0.25															
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other															
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.97														
Intersection	Fort Smith Boulevard & Co					Analysis Year	2016						Analysis Period	1> 7:00								
File Name	FSb Cb 2016 AM.xus																					
Project Description	Projected with Total Traffic																					
Demand Information				EB			WB			NB			SB									
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R										
Demand (v), veh/h	106	278	56	126	192	98	32	142	161	177	243	30										
Signal Information																						
Cycle, s	45.9	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	3.8	0.3	11.0	1.7	3.6	7.1	Yellow	3.6	0.0	3.6	3.6	0.0	3.6	Red	1.0	0.0	1.0	1.0
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT											
Assigned Phase	5			2			1			6												
Case Number	1.1			4.0			1.1			3.0												
Phase Duration, s	8.4			15.6			8.7			15.9												
Change Period, (Y+R), s	4.6			4.6			4.6			4.6												
Max Allow Headway (MAH), s	3.1			3.1			3.1			3.1												
Queue Clearance Time (qc), s	4.0			10.2			4.4			6.1												
Green Extension Time (gw), s	0.1			0.8			0.1			1.1												
Phase Call Probability	0.75			1.00			0.81			1.00												
Max Out Probability	0.03			0.26			0.00			0.01												
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	109	344		130	198	101	33	146	166	182	281											
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1808		1774	1863	1579	1774	1863	1579	1774	1827											
Queue Service Time (qs), s	2.0	8.2		2.4	4.1	2.4	0.7	3.3	4.6	3.7	6.4											
Cycle Queue Clearance Time (qc), s	2.0	8.2		2.4	4.1	2.4	0.7	3.3	4.6	3.7	6.4											
Green Ratio (g/C)	0.32	0.24		0.33	0.25	0.25	0.19	0.15	0.15	0.29	0.23											
Capacity (c), veh/h	437	434		377	459	389	279	288	244	466	427											
Volume-to-Capacity Ratio (X)	0.250	0.793		0.345	0.431	0.260	0.118	0.509	0.681	0.392	0.660											
Available Capacity (ca), veh/h	677	630		722	771	653	676	406	344	800	756											
Back of Queue (Q), veh/ln (50th percentile)	0.7	3.1		0.8	1.5	0.7	0.2	1.3	1.5	1.2	2.3											
Queue Storage Ratio (RQ) (50th percentile)	0.08	0.00		0.10	0.00	0.07	0.03	0.00	0.21	0.22	0.00											
Uniform Delay (di), s/veh	11.6	16.4		12.0	14.6	13.9	15.5	17.8	18.4	13.0	16.0											
Incremental Delay (di), s/veh	0.1	2.6		0.2	0.2	0.1	0.1	0.5	1.3	0.2	0.7											
Initial Queue Delay (di), s/veh	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	11.8	19.0		12.2	14.8	14.1	15.6	18.3	19.6	13.2	16.6											
Level of Service (LOS)	B	B		B	B	B	B	B	B	B	B											
Approach Delay, s/veh / LOS	17.2		B	13.9		B	18.7		B	15.3		B										
Intersection Delay, s/veh / LOS	16.1						B															
Multimodal Results				EB			WB			NB			SB									
Pedestrian LOS Score / LOS																						
Bicycle LOS Score / LOS																						

HCS 2010 Signalized Intersection Results Summary																			
General Information						Intersection Information													
Agency	LTEC					Duration, h	0.25												
Analyst	JTR		Analysis Date	5/8/2014		Area Type	Other												
Jurisdiction	Deltona		Time Period	AM Peak Hour		PHF	0.91												
Intersection	Howland Blvd & Wal-Mart I					Analysis Year	Existing 2014		Analysis Period	1> 7:00									
File Name	Hb WalMart 2016 AM.xus																		
Project Description	Projected with Total Trips																		
Demand Information				EB			WB			NB			SB						
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R							
Demand (v), veh/h	125	14	46	28	4	60	24	157	117	229	513	202							
Signal Information																			
Cycle, s	41.9	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	Yes	Simult. Gap E/W	On	Green	1.3	4.8	7.9	4.5	3.5	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	0.0	4.3	3.6	3.6	0.0									
				Red	1.0	0.0	1.0	1.0	1.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase			4		8		5		2		1		6						
Case Number			10.0		11.0		1.1		4.0		1.1		3.0						
Phase Duration, s			9.1		8.1		6.6		13.2		11.5		18.0						
Change Period, (Y+R), s			4.6		4.6		5.3		5.3		5.3		5.3						
Max Allow Headway (MAH), s			3.2		3.3		3.1		3.1		3.1		3.1						
Queue Clearance Time (qc), s			3.6		3.7		2.5		5.4		6.3		7.5						
Green Extension Time (gw), s			0.3		0.1		0.0		2.5		0.2		2.5						
Phase Call Probability			0.91		0.69		0.26		1.00		0.95		1.00						
Max Out Probability			0.00		0.00		0.00		0.00		0.62		0.00						
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	137	66		35	66	26	157	144	252	564	222								
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1637		1785	1579	1774	1863	1606	1774	1773	1579								
Queue Service Time (qs), s	1.6	1.6		0.8	1.7	0.5	3.1	3.4	4.3	5.5	4.8								
Cycle Queue Clearance Time (qc), s	1.6	1.6		0.8	1.7	0.5	3.1	3.4	4.3	5.5	4.8								
Green Ratio (g/C)	0.11	0.11		0.08	0.08	0.22	0.19	0.19	0.37	0.30	0.30								
Capacity (c), veh/h	373	177		148	131	334	351	303	551	1079	480								
Volume-to-Capacity Ratio (X)	0.368	0.372		0.238	0.505	0.079	0.446	0.477	0.457	0.522	0.462								
Available Capacity (ca), veh/h	1234	586		639	566	744	3514	3029	713	6437	2865								
Back of Queue (Q), veh/ln (50th percentile)	0.5	0.5		0.3	0.6	0.2	1.1	1.0	1.2	1.7	1.3								
Queue Storage Ratio (RQ) (50th percentile)	0.05	0.00		0.00	0.00	0.01	0.00	0.00	0.21	0.00	0.12								
Uniform Delay (di), s/veh	17.3	17.3		18.0	18.4	13.0	15.1	15.1	10.0	12.0	11.8								
Incremental Delay (di), s/veh	0.2	0.5		0.3	1.1	0.0	0.3	0.4	0.2	0.1	0.3								
Initial Queue Delay (di), s/veh	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	17.6	17.8		18.3	19.5	13.0	15.4	15.6	10.2	12.2	12.0								
Level of Service (LOS)	B	B		B	B	B	B	B	B	B	B								
Approach Delay, s/veh / LOS	17.6		B	19.1		B	15.3		B	11.7		B							
Intersection Delay, s/veh / LOS	13.6						B												
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS																			
Bicycle LOS Score / LOS																			

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HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.95							
Intersection	SR 415 & Howland Boulev					Analysis Year	2016						Analysis Period	1> 7:00	
File Name	415 Hb 2016 AM.xus														
Project Description	Projected 2016 AM														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	89	0	674	0	0	0	215	232		9	466	36			
Signal Information															
Cycle, s	77.7	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	10.1	14.0	37.6	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.3	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4					8	5	2	6		
Case Number					7.0					8.0	1.0	4.0	5.3		
Phase Duration, s					42.9					42.9	15.4	34.7	19.3		
Change Period, (Y+R), s					5.3					5.3	5.3	5.3	5.3		
Max Allow Headway (MAH), s					3.3					0.0	3.1	3.1	3.1		
Queue Clearance Time (q _c), s					35.0					9.8	5.6	12.3			
Green Extension Time (g _e), s					2.1					0.0	0.4	1.8	1.5		
Phase Call Probability					1.00					0.99	1.00	1.00			
Max Out Probability					0.00					0.00	0.00	0.04			
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		1	6	16			
Adjusted Flow Rate (v), veh/h	94 709			0			226 244			9 491 38					
Adjusted Saturation Flow Rate (s), veh/h/ln	1440 1579			0			1774 1773			1131 1773 1610					
Queue Service Time (q _s), s	2.8 33.0			0.0			7.6 3.6			0.5 10.3 1.6					
Cycle Queue Clearance Time (q _c), s	2.8 33.0			0.0			7.6 3.6			0.5 10.3 1.6					
Green Ratio (g/C)	0.48 0.48						0.34 0.38			0.18 0.18 0.18					
Capacity (c), veh/h	792 767						367 1344			296 641 291					
Volume-to-Capacity Ratio (X)	0.118 0.925			0.000			0.616 0.182			0.032 0.766 0.130					
Available Capacity (c _a), veh/h	1796 1869						1242 5282			408 993 451					
Back of Queue (Q), veh/ln (50th percentile)	0.8 10.9						3.0 1.4			0.1 4.3 0.6					
Queue Storage Ratio (RQ) (50th percentile)	0.00 0.00			0.00			0.30 0.00			0.01 0.00 0.06					
Uniform Delay (d ₁), s/veh	11.1 18.8						21.1 16.3			26.6 30.6 27.0					
Incremental Delay (d ₂), s/veh	0.0 2.2			0.0			0.6 0.0			0.0 0.7 0.1					
Initial Queue Delay (d ₃), s/veh	0.0 0.0			0.0			0.0 0.0			0.0 0.0 0.0					
Control Delay (d), s/veh	11.1 21.0						21.7 16.3			26.6 31.3 27.1					
Level of Service (LOS)	B C						C B			C C C					
Approach Delay, s/veh / LOS	19.9	B	B	0.0			18.9	B	B	31.0	C	C			
Intersection Delay, s/veh / LOS	22.9						C								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR		Analysis Date	5/8/2014			Area Type	Other							
Jurisdiction	Deltona		Time Period	AM Peak Hour			PHF	0.95							
Intersection	SR 415 & Fort Smith Boulev					Analysis Year	2016		Analysis Period	1> 7:00					
File Name	415 FSb 2016 AM.xus														
Project Description	Projected 2016 with Total Trips														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	194		124				9	227			370	106			
Signal Information															
Cycle, s	20.2	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
				Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				4				2	6						
Case Number				9.0				6.0	7.0						
Phase Duration, s				9.2				11.0	11.0						
Change Period, (Y+R), s				5.0				5.3	5.3						
Max Allow Headway (MAH), s				0.0				0.0	0.0						
Queue Clearance Time (q _c), s				0.0				0.0	0.0						
Green Extension Time (g _e), s				0.0				0.0	0.0						
Phase Call Probability				0.00				0.00	0.00						
Max Out Probability				0.00				0.00	0.00						
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement	7		14				5	2		6	16				
Adjusted Flow Rate (v), veh/h	0		0				0	0		0	0				
Adjusted Saturation Flow Rate (s), veh/h/ln	0		0				0	0		0	0				
Queue Service Time (g _s), s	0.0		0.0				0.0	0.0		0.0	0.0				
Cycle Queue Clearance Time (g _c), s	0.0		0.0				0.0	0.0		0.0	0.0				
Green Ratio (g/C)	0.21		0.21				0.28	0.28		0.28	0.28				
Capacity (c), veh/h	373		332				545	991		991	441				
Volume-to-Capacity Ratio (X)	0.548		0.394				0.017	0.241		0.393	0.251				
Available Capacity (c _a), veh/h	0		0				0	0		0	0				
Back of Queue (Q), veh/ln (50th percentile)	0.4		0.2				0.0	0.1		0.2	0.1				
Queue Storage Ratio (RQ) (50th percentile)	0.06		0.00				0.00	0.00		0.00	0.02				
Uniform Delay (d _i), s/veh	7.1		6.9				6.7	5.6		5.9	5.6				
Incremental Delay (d ₂), s/veh	0.5		0.3				0.0	0.0		0.1	0.1				
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0	0.0				
Control Delay (d), s/veh	7.6		7.1				6.7	5.7		6.0	5.7				
Level of Service (LOS)	A		A				A	A		A	A				
Approach Delay, s/veh / LOS	7.4		A	0.0			5.7	A		5.9	A				
Intersection Delay, s/veh / LOS	6.3						A								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

TWO-WAY STOP CONTROL SUMMARY								
General Information			Site Information					
Analyst	JTR		Intersection	SR 415 & Project Entr				
Agency/Co.	LTEC		Jurisdiction	Deltona				
Date Performed	5/8/2014		Analysis Year	2016				
Analysis Time Period	AM Peak Hour							
Project Description: <i>Projected with Total Traffic</i>								
East/West Street: <i>Project Entrance</i>			North/South Street: <i>SR 415</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)	95	235			479	24		
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	100	247	0	0	504	25		
Percent Heavy Vehicles	2	--	--	0	--	--		
Median Type	Raised curb							
RT Channelized			0			0		
Lanes	1	2	0	0	2	0		
Configuration	L	T			T	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)			30					
Peak-Hour Factor, PHF	1.00	1.00	0.95	1.00	1.00	1.00		
Hourly Flow Rate, HFR (veh/h)	0	0	31	0	0	0		
Percent Heavy Vehicles	0	0	2	0	0	0		
Percent Grade (%)	0			0				
Flared Approach		N			N			
Storage		0			0			
RT Channelized			0			0		
Lanes	0	0	1	0	0	0		
Configuration			R					
Delay, Queue Length, and Level of Service								
Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	L							R
v (veh/h)	100							31
C (m) (veh/h)	1034							773
v/c	0.10							0.04
95% queue length	0.32							0.13
Control Delay (s/veh)	8.9							9.9
LOS	A							A
Approach Delay (s/veh)	--	--				9.9		
Approach LOS	--	--				A		

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TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst	JTR			Intersection	Howland Blvd & Project Entr			
Agency/Co.	LTEC			Jurisdiction	Deltona			
Date Performed	5/8/2014			Analysis Year	2016			
Analysis Time Period	AM Peak Hour							
Project Description: <i>Projected with Total Traffic</i>								
East/West Street: <i>Howland Boulevard</i>				North/South Street: <i>Project Entrance</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)		587			282	14		
Peak-Hour Factor, PHF	1.00	0.95	0.95	1.00	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	617	0	0	296	14		
Percent Heavy Vehicles	0	--	--	0	--	--		
Median Type	Raised curb							
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)						16		
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	16		
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)								16
C (m) (veh/h)								890
v/c								0.02
95% queue length								0.05
Control Delay (s/veh)								9.1
LOS								A
Approach Delay (s/veh)	--	--						9.1
Approach LOS	--	--						A

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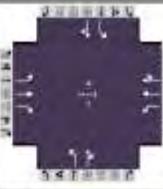
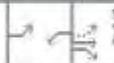
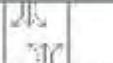
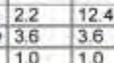
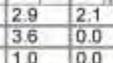
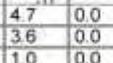
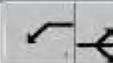
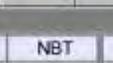
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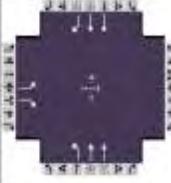
HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR		Analysis Date	5/8/2014			Area Type	Other							
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.95							
Intersection	Howland Blvd & Ft Smith B					Analysis Year	2016		Analysis Period	1> 17:00					
File Name	Hb FSb 2016.xus														
Project Description	Projected with Total Trips														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	45	107	258	14	161	88	431	710	9	47	389	42			
Signal Information															
Cycle, s	84.9	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	52.9	22.0	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	3.6	0.0	0.0	0.0	0.0	0.0	0.0			
				Red	1.0	1.0	0.0	0.0	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				6.0	6.0			6.0			6.0				
Phase Duration, s				26.6	26.6			58.2			58.2				
Change Period, (Y+R), s				4.6	4.6			5.3			5.3				
Max Allow Headway (MAH), s				3.3	3.3			3.4			3.4				
Queue Clearance Time (qc), s				21.1	22.3			52.8			28.1				
Green Extension Time (g _e), s				1.0	0.0			0.1			0.0				
Phase Call Probability				1.00	1.00			1.00			1.00				
Max Out Probability				0.00	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	7	4	14	3	8	18	5	2	12	1	6	16			
Adjusted Flow Rate (v), veh/h	47	384		15	262		454	757		49	454				
Adjusted Saturation Flow Rate (s), veh/h/ln	1113	1652		995	1751		933	1859		705	1831				
Queue Service Time (qs), s	3.3	19.1		1.2	11.1		40.2	21.9		4.1	10.5				
Cycle Queue Clearance Time (qc), s	14.3	19.1		20.3	11.1		50.8	21.9		26.1	10.5				
Green Ratio (g/C)	0.26	0.26		0.26	0.26		0.62	0.62		0.62	0.62				
Capacity (c), veh/h	229	429		120	454		551	1160		341	1142				
Volume-to-Capacity Ratio (X)	0.206	0.896		0.123	0.577		0.824	0.653		0.145	0.397				
Available Capacity (ca), veh/h	3269	4943		120	454		551	1160		341	1142				
Back of Queue (Q), veh/ln (50th percentile)	0.9	7.5		0.3	4.6		9.1	7.7		0.6	3.5				
Queue Storage Ratio (RQ) (50th percentile)	0.11	0.00		0.08	0.00		0.92	0.00		0.05	0.00				
Uniform Delay (d _i), s/veh	33.6	30.3		40.1	27.4		20.7	10.1		18.5	8.0				
Incremental Delay (d _i), s/veh	0.2	2.7		0.2	1.2		9.2	1.0		0.1	0.1				
Initial Queue Delay (d _i), s/veh	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Control Delay (d), s/veh	33.7	33.1		40.3	28.6		29.9	11.2		18.5	8.1				
Level of Service (LOS)	C	C		D	C		C	B		B	A				
Approach Delay, s/veh / LOS	33.2	C	C	29.2	C		18.2	B		9.1	A				
Intersection Delay, s/veh / LOS	20.2						C								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other								
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.93							
Intersection	Howland Blvd & Courtland					Analysis Year	2016		Analysis Period	1> 17:00					
File Name	Hb Cb 2016.xus														
Project Description	Projected with Total Trips														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	43	349	232	45	552	104	188	60	20	66	52	33			
Signal Information															
Cycle, s	42.8	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	2.2	12.4	2.9	2.1	4.7	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	3.6	3.6	0.0	3.6	0.0					
				Red	1.0	1.0	1.0	0.0	1.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase	5			2			1			6					
Case Number	1.1			3.0			1.1			4.0					
Phase Duration, s	6.7			17.0			6.8			17.1					
Change Period, (Y+R), s	4.6			4.6			4.6			4.6					
Max Allow Headway (MAH), s	3.1			3.1			3.1			3.1					
Queue Clearance Time (qc), s	2.8			9.7			2.8			9.3					
Green Extension Time (g+), s	0.0			2.8			0.0			2.7					
Phase Call Probability	0.42			1.00			0.44			1.00					
Max Out Probability	0.00			0.00			0.00			0.00					
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	3	8	18	7	4	14			
Adjusted Flow Rate (v), veh/h	46	375	249	48	362	343	202	86		71	91				
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1863	1579	1774	1863	1760	1774	1783		1774	1741				
Queue Service Time (qs), s	0.8	7.7	5.7	0.8	7.3	7.3	4.2	1.8		1.5	2.1				
Cycle Queue Clearance Time (qc), s	0.8	7.7	5.7	0.8	7.3	7.3	4.2	1.8		1.5	2.1				
Green Ratio (g/C)	0.34	0.29	0.29	0.34	0.29	0.29	0.23	0.16		0.18	0.11				
Capacity (c), veh/h	312	542	459	372	545	515	456	287		380	193				
Volume-to-Capacity Ratio (X)	0.148	0.693	0.543	0.130	0.665	0.667	0.443	0.300		0.187	0.473				
Available Capacity (ca), veh/h	721	2265	1919	696	1655	1563	456	834		677	814				
Back of Queue (Q), veh/ln (50th percentile)	0.2	2.6	1.6	0.2	2.5	2.3	1.4	0.6		0.5	0.8				
Queue Storage Ratio (RQ) (50th percentile)	0.03	0.00	0.00	0.02	0.00	0.00	0.10	0.00		0.05	0.00				
Uniform Delay (di), s/veh	10.6	13.5	12.8	10.2	13.3	13.3	14.5	15.8		15.1	17.8				
Incremental Delay (di), s/veh	0.1	0.6	0.4	0.1	0.5	0.6	0.3	0.2		0.1	0.7				
Initial Queue Delay (di), s/veh	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	10.7	14.1	13.2	10.3	13.8	13.9	14.7	16.0		15.2	18.5				
Level of Service (LOS)	B	B	B	B	B	B	B	B		B	B				
Approach Delay, s/veh / LOS	13.5		B	13.6		B	15.1		B	17.1		B			
Intersection Delay, s/veh / LOS	14.1						B								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary																
General Information						Intersection Information										
Agency	LTEC					Duration, h	0.25									
Analyst	JTR	Analysis Date	5/8/2014			Area Type	Other									
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.97								
Intersection	Fort Smith Boulevard & Co					Analysis Year	2016						Analysis Period	1> 17:00		
File Name	FSb Cb 2016.xus															
Project Description	Projected with Total Traffic															
Demand Information				EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	
Demand (v), veh/h	87	250	30	106	378	206	73	264	137	120	193	90				
Signal Information																
Cycle, s	48.6	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	Yes	Simult. Gap E/W	On	Green	3.5	0.3	12.5	3.2	0.9	9.8						
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.6	0.0	3.6	3.6	0.0	3.6						
				Red	1.0	0.0	1.0	1.0	0.0	1.0						
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT					
Assigned Phase				5	2	1	6	3	8	7	4					
Case Number				1.1	4.0	1.1	3.0	1.1	3.0	1.1	4.0					
Phase Duration, s				8.1	17.1	8.5	17.4	7.8	14.4	8.7	15.3					
Change Period, (Y+R), s				4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6					
Max Allow Headway (MAH), s				3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1					
Queue Clearance Time (qc), s				3.7	8.8	4.1	11.5	3.6	8.6	4.6	9.5					
Green Extension Time (gv), s				0.1	1.3	0.1	1.3	0.1	0.3	0.1	1.1					
Phase Call Probability				0.70	1.00	0.77	1.00	0.64	1.00	0.81	1.00					
Max Out Probability				0.01	0.21	0.00	0.19	0.00	1.00	0.00	0.05					
Movement Group Results				EB			WB			NB			SB			
Approach Movement	L	T	R	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	90	289		109	390	212	75	272	141	124	292					
Adjusted Saturation Flow Rate (s), veh/h/ln	1774	1828		1774	1863	1579	1774	1863	1579	1774	1762					
Queue Service Time (qs), s	1.7	6.8		2.1	9.5	5.6	1.6	6.6	3.8	2.6	7.5					
Cycle Queue Clearance Time (qc), s	1.7	6.8		2.1	9.5	5.6	1.6	6.6	3.8	2.6	7.5					
Green Ratio (g/C)	0.33	0.26		0.34	0.26	0.26	0.27	0.20	0.20	0.29	0.22					
Capacity (c), veh/h	304	469		417	491	416	290	376	318	368	387					
Volume-to-Capacity Ratio (X)	0.295	0.616		0.262	0.794	0.510	0.259	0.724	0.444	0.336	0.754					
Available Capacity (ca), veh/h	541	602		750	728	617	612	383	325	731	689					
Back of Queue (Q), veh/ln (50th percentile)	0.6	2.4		0.7	3.6	1.7	0.5	3.0	1.2	0.9	2.7					
Queue Storage Ratio (RQ) (50th percentile)	0.07	0.00		0.09	0.00	0.18	0.07	0.00	0.17	0.16	0.00					
Uniform Delay (di), s/veh	12.9	16.0		11.9	16.7	15.2	14.4	18.1	17.0	13.8	17.7					
Incremental Delay (di), s/veh	0.2	0.5		0.1	2.0	0.4	0.2	5.6	0.4	0.2	1.1					
Initial Queue Delay (di), s/veh	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	13.1	16.4		12.1	18.7	15.6	14.6	23.8	17.4	14.0	18.9					
Level of Service (LOS)	B	B		B	B	B	B	C	B	B	B					
Approach Delay, s/veh / LOS	15.7		B	16.7		B	20.5		C	17.4		B				
Intersection Delay, s/veh / LOS				17.6						B						
Multimodal Results				EB			WB			NB			SB			
Pedestrian LOS Score / LOS																
Bicycle LOS Score / LOS																

HCS 2010 Signalized Intersection Results Summary																			
General Information						Intersection Information													
Agency	LTEC					Duration, h	0.25												
Analyst	JTR		Analysis Date	5/8/2014			Area Type	Other											
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.91											
Intersection	Howland Blvd & Wal-Mart I					Analysis Year	Existing 2014		Analysis Period	1> 17:00									
File Name	Hb WalMart 2016.xus																		
Project Description	Projected with Total Trips																		
Demand Information				EB			WB			NB			SB						
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R							
Demand (v), veh/h	429	6	27	107	16	223	44	507	46	89	220	259							
Signal Information																			
Cycle, s	58.8	Reference Phase	2																
Offset, s	0	Reference Point	End																
Uncoordinated	Yes	Simult. Gap E/W	On	Green	2.7	1.3	13.5	10.4	11.2	0.0									
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	0.0	4.3	3.6	3.6	0.0									
				Red	1.0	0.0	1.0	1.0	1.0	0.0									
Timer Results				EBL		EBT		WBL		WBT		NBL		NBT		SBL		SBT	
Assigned Phase			4		8		5		2		1		6						
Case Number			10.0		11.0		1.1		4.0		1.1		3.0						
Phase Duration, s			15.0		15.8		8.0		18.8		9.3		20.0						
Change Period, (Y+R), s			4.6		4.6		5.3		5.3		5.3		5.3						
Max Allow Headway (MAH), s			3.1		3.3		3.1		3.1		3.1		3.1						
Queue Clearance Time (q _c), s			9.7		10.8		3.2		11.0		4.4		11.7						
Green Extension Time (g _e), s			0.7		0.4		0.0		2.4		0.1		2.4						
Phase Call Probability			1.00		1.00		0.55		1.00		0.80		1.00						
Max Out Probability			0.24		0.53		0.00		0.00		0.04		0.00						
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	471	36		135	245	48	308	300	98	242	285								
Adjusted Saturation Flow Rate (s), veh/h/ln	1723	1624		1785	1579	1774	1863	1808	1774	1773	1579								
Queue Service Time (q _s), s	7.7	1.1		3.9	8.8	1.2	9.0	9.0	2.4	3.2	9.7								
Cycle Queue Clearance Time (q _c), s	7.7	1.1		3.9	8.8	1.2	9.0	9.0	2.4	3.2	9.7								
Green Ratio (g/C)	0.18	0.18		0.19	0.19	0.28	0.23	0.23	0.30	0.25	0.25								
Capacity (c), veh/h	610	287		339	300	390	427	415	305	889	396								
Volume-to-Capacity Ratio (X)	0.773	0.126		0.399	0.818	0.124	0.720	0.723	0.321	0.272	0.719								
Available Capacity (c _a), veh/h	877	413		454	402	638	2497	2423	485	4573	2035								
Back of Queue (Q), veh/ln (50th percentile)	3.0	0.4		1.5	3.5	0.4	3.6	3.5	0.9	1.2	3.3								
Queue Storage Ratio (RQ) (50th percentile)	0.27	0.00		0.00	0.00	0.03	0.00	0.00	0.15	0.00	0.30								
Uniform Delay (d _i), s/veh	23.1	20.4		20.9	22.9	16.0	21.0	21.0	16.2	17.8	20.2								
Incremental Delay (d _i), s/veh	1.5	0.1		0.3	7.0	0.1	0.9	0.9	0.2	0.1	0.9								
Initial Queue Delay (d _i), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
Control Delay (d _c), s/veh	24.6	20.5		21.2	29.9	16.1	21.8	21.9	16.4	17.8	21.1								
Level of Service (LOS)	C	C		C	C	B	C	C	B	B	C								
Approach Delay, s/veh / LOS	24.3		C	26.8		C	21.4		C	19.1		B							
Intersection Delay, s/veh / LOS	22.4						C												
Multimodal Results				EB			WB			NB			SB						
Pedestrian LOS Score / LOS																			
Bicycle LOS Score / LOS																			

HCS 2010 Signalized Intersection Results Summary															
General Information						Intersection Information									
Agency	LTEC					Duration, h	0.25								
Analyst	JTR		Analysis Date	5/8/2014			Area Type	Other							
Jurisdiction	Deltona		Time Period	PM Peak Hour			PHF	0.95							
Intersection	SR 415 & Howland Boulev					Analysis Year	2016		Analysis Period	1> 17:00					
File Name	415 Hb 2016.xus														
Project Description	Projected 2016 PM														
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	88		243				646	404		42	347	48			
Signal Information															
Cycle, s	55.5	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	19.2	9.3	11.2	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.3	4.3	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase				4				5	2	6					
Case Number				9.0				1.0	4.0	5.3					
Phase Duration, s				16.5				24.5	39.1	14.6					
Change Period, (Y+R), s				5.3				5.3	5.3	5.3					
Max Allow Headway (MAH), s				3.3				3.1	3.1	3.1					
Queue Clearance Time (q _c), s				10.6				17.6	5.0	7.3					
Green Extension Time (g _e), s				0.6				1.5	2.1	2.0					
Phase Call Probability				1.00				1.00	1.00	1.00					
Max Out Probability				0.01				0.00	0.00	0.01					
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Assigned Movement	7		14				5	2		1	6	16			
Adjusted Flow Rate (v), veh/h	93		256				680	425		44	365	51			
Adjusted Saturation Flow Rate (s), veh/h/ln	1774		1579				1774	1773		958	1773	1610			
Queue Service Time (g _q), s	2.4		8.6				15.6	3.0		2.2	5.3	1.5			
Cycle Queue Clearance Time (g _c), s	2.4		8.6				15.6	3.0		2.2	5.3	1.5			
Green Ratio (g/C)	0.20		0.20				0.55	0.61		0.17	0.17	0.17			
Capacity (c), veh/h	357		318				815	2157		290	594	270			
Volume-to-Capacity Ratio (X)	0.259		0.805				0.834	0.197		0.152	0.614	0.187			
Available Capacity (c _a), veh/h	670		596				1542	5101		508	1403	637			
Back of Queue (Q), veh/ln (50th percentile)	0.9		3.0				4.4	0.7		0.5	2.0	0.5			
Queue Storage Ratio (RQ) (50th percentile)	0.00		0.00				0.45	0.00		0.05	0.00	0.05			
Uniform Delay (d _i), s/veh	18.7		21.2				10.1	4.9		20.2	21.5	19.9			
Incremental Delay (d _i), s/veh	0.1		1.8				0.9	0.0		0.1	0.4	0.1			
Initial Queue Delay (d _i), s/veh	0.0		0.0				0.0	0.0		0.0	0.0	0.0			
Control Delay (d), s/veh	18.9		23.0				11.0	4.9		20.3	21.9	20.0			
Level of Service (LOS)	B			C			B			A			C		
Approach Delay, s/veh / LOS	21.9		C	0.0			8.6	A		21.5		C			
Intersection Delay, s/veh / LOS	14.1						B								
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

HCS 2010 Signalized Intersection Results Summary															
General Information							Intersection Information								
Agency	LTEC						Duration, h	0.25							
Analyst	JTR			Analysis Date	5/8/2014			Area Type	Other						
Jurisdiction	Deltona			Time Period	Projected PM Peak Hour			PHF	0.95						
Intersection	SR 415 & Fort Smith Boule			Analysis Year	2016			Analysis Period	1> 17:00						
File Name	415 FSb 2016.xus														
Project Description	Projected 2016 with Total Trips														
															
Demand Information				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	84		16							50	406			313	183
Signal Information															
Cycle, s	18.8	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	Yes	Simult. Gap E/W	On	Green	6.4	2.1	0.0	0.0	0.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	4.3	4.0	0.0	0.0	0.0	0.0	0.0	0.0			
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0			
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					4					2					
Case Number					9.0					6.0					
Phase Duration, s					7.1					11.7					
Change Period, (Y+R), s					5.0					5.3					
Max Allow Headway (MAH), s					3.2					3.1					
Queue Clearance Time (qc), s					2.9					4.0					
Green Extension Time (gv), s					0.1					2.4					
Phase Call Probability					0.42					1.00					
Max Out Probability					0.00					0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2					6	16	
Adjusted Flow Rate (v), veh/h	88		17				53	427					329	193	
Adjusted Saturation Flow Rate (s), veh/h/ln	1774		1579				1046	1773					1773	1579	
Queue Service Time (qs), s	0.9		0.2				0.7	1.7					1.3	1.7	
Cycle Queue Clearance Time (qc), s	0.9		0.2				2.0	1.7					1.3	1.7	
Green Ratio (g/C)	0.11		0.11				0.34	0.34					0.34	0.34	
Capacity (c), veh/h	199		177				866	1205					1205	536	
Volume-to-Capacity Ratio (X)	0.443		0.095				0.079	0.355					0.273	0.359	
Available Capacity (ca), veh/h	1793		1596				2314	6792					7547	3359	
Back of Queue (Q), veh/ln (50th percentile)	0.2		0.0				0.0	0.1					0.1	0.1	
Queue Storage Ratio (RQ) (50th percentile)	0.03		0.00				0.01	0.00					0.00	0.01	
Uniform Delay (di), s/veh	7.8		7.5				5.3	4.7					4.5	4.7	
Incremental Delay (di), s/veh	0.6		0.1				0.0	0.1					0.0	0.2	
Initial Queue Delay (di), s/veh	0.0		0.0				0.0	0.0					0.0	0.0	
Control Delay (d), s/veh	8.4		7.6				5.3	4.7					4.6	4.8	
Level of Service (LOS)	A		A				A	A					A	A	
Approach Delay, s/veh / LOS	8.2		A		0.0		4.8	A		4.7			A		
Intersection Delay, s/veh / LOS				5.1						A					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS															
Bicycle LOS Score / LOS															

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	JTR			Intersection	SR 415 & Project Entr		
Agency/Co.	LTEC			Jurisdiction	Deltona		
Date Performed	5/8/2014			Analysis Year	2016		
Analysis Time Period	PM Peak Hour						
Project Description: <i>Projected with Total Traffic</i>							
East/West Street: <i>Project Entrance</i>				North/South Street: <i>SR 415</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)	75	451			304	23	
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	78	474	0	0	320	24	
Percent Heavy Vehicles	2	--	--	0	--	--	
Median Type	Raised curb						
RT Channelized			0			0	
Lanes	1	2	0	0	2	0	
Configuration	L	T			T	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)			128				
Peak-Hour Factor, PHF	1.00	1.00	0.95	1.00	1.00	1.00	
Hourly Flow Rate, HFR (veh/h)	0	0	134	0	0	0	
Percent Heavy Vehicles	0	0	2	0	0	0	
Percent Grade (%)	0			0			
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	0	1	0	0	0	
Configuration			R				
Delay, Queue Length, and Level of Service							
Approach	Northbound	Southbound	Westbound			Eastbound	
Movement	1	4	7	8	9	10	11
Lane Configuration	L						R
v (veh/h)	78						134
C (m) (veh/h)	1212						870
v/c	0.06						0.15
95% queue length	0.21						0.54
Control Delay (s/veh)	8.2						9.9
LOS	A						A
Approach Delay (s/veh)	--	--					9.9
Approach LOS	--	--					A

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6/5/2014

TWO-WAY STOP CONTROL SUMMARY							
General Information				Site Information			
Analyst	JTR			Intersection	Howland Blvd & Project Entr		
Agency/Co.	LTEC			Jurisdiction	Deltona		
Date Performed	5/8/2014			Analysis Year	2016		
Analysis Time Period	PM Peak Hour						
Project Description: <i>Projected with Total Traffic</i>							
East/West Street: <i>Howland Boulevard</i>				North/South Street: <i>Project Entrance</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)		331			675	19	
Peak-Hour Factor, PHF	1.00	0.95	0.95	1.00	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	0	348	0	0	710	20	
Percent Heavy Vehicles	0	--	--	0	--	--	
Median Type	<i>Raised curb</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)						77	
Peak-Hour Factor, PHF	0.95	0.95	1.00	1.00	0.95	0.95	
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	81	
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
Lane Configuration							R
v (veh/h)							81
C (m) (veh/h)							678
v/c							0.12
95% queue length							0.40
Control Delay (s/veh)							11.0
LOS							B
Approach Delay (s/veh)	--	--					11.0
Approach LOS	--	--					B

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Appendix I – VoTran Route Maps and Schedules

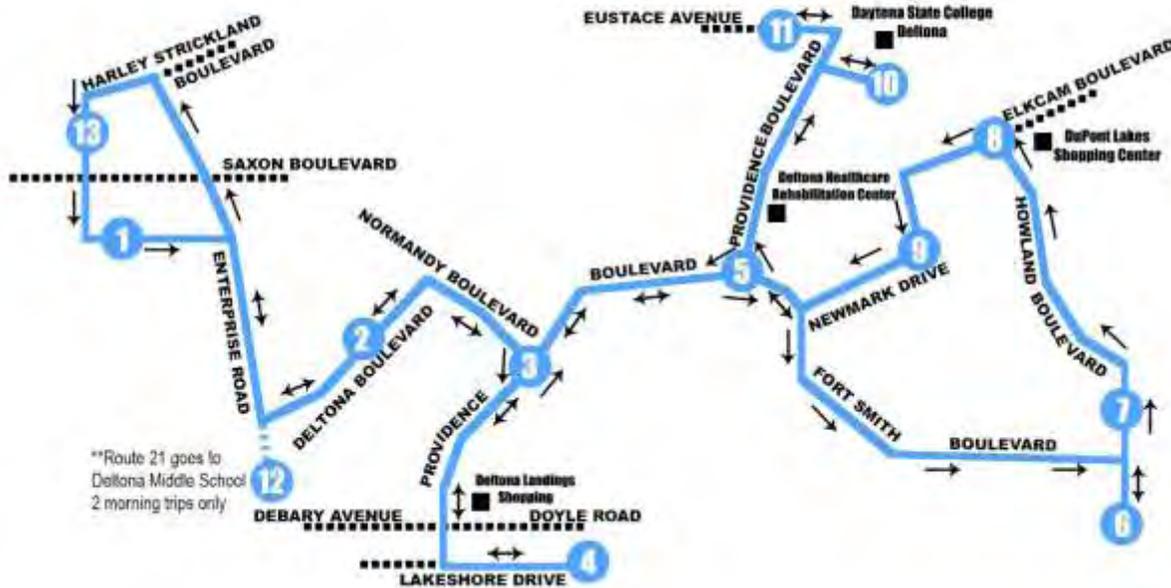
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ROUTE 21- Deltona

Serving:

- | | |
|---|--------------------------------------|
| 1 Market Place Shopping Plaza | 7 Pine Ridge High School |
| 2 Deltona Plaza | 8 Howland Boulevard/Elkcam Boulevard |
| 3 Providence Boulevard/Normandy Boulevard | 9 Newmark Drive/Monticello Avenue |
| 4 Deltona Community Center | 10 Deltona City Hall |
| 5 Providence Boulevard/Fort Smith Boulevard | 11 Deltona Library |
| 6 Walmart - Osteen | 12 Deltona Middle School** |
| | 13 Crown Center |



**Route 21 goes to Deltona Middle School 2 morning trips only

*All afternoon times are in **bold**

21 - 21 Deltona | Weekday - Outbound

Market Place Recovery	Deltona Plaza Ob	Providence & Normandy 1st	Deltona Community Center	Normandy & Providence 2nd Ob	Providence & Ft. Smith 21 Ob	Wal-Mart Osteen
6:25 AM	6:34 AM	6:40 AM	6:46 AM	6:52 AM	6:58 AM	7:11 AM
8:32 AM	8:40 AM	8:47 AM	8:53 AM	8:59 AM	9:05 AM	9:18 AM
10:32 AM	10:40 AM	10:47 AM	10:53 AM	10:59 AM	11:05 AM	11:18 AM
12:32 PM	12:40 PM	12:47 PM	12:53 PM	12:59 PM	1:05 PM	1:18 PM
12:32 PM	12:40 PM	12:47 PM	12:53 PM	12:59 PM	1:05 PM	1:18 PM
2:32 PM	2:40 PM	2:47 PM	2:53 PM	2:59 PM	3:05 PM	3:18 PM
2:32 PM	2:40 PM	2:47 PM	2:53 PM	2:59 PM	3:05 PM	3:18 PM
4:32 PM	4:40 PM	4:47 PM	4:53 PM	4:59 PM	5:05 PM	5:18 PM
6:32 PM	6:40 PM	6:47 PM	6:53 PM	6:59 PM	7:05 PM	7:18 PM

21 - 21 Deltona | Weekday - Inbound

Wal-Mart Osteen	Pineridge High School 21 Ib	Howland & Elkcam Ib	Newmark Dr & Montecito Ave Ib	Providence Blvd./ Ft Smith 21&22	Deltona City Hall	Deltona Library	Providence And Ft Smith 21&23 Ib	Providence & E Normandy Ib	Deltona Plaza Ib	Deltona Middle School	Crown Center - Publix	Market Place Recovery
5:33 AM	5:36 AM	5:43 AM	5:48 AM	5:52 AM	5:56 AM	5:58 AM	6:03 AM	6:08 AM	6:15 AM	--	6:24 AM	6:27 AM
7:14 AM	7:17 AM	7:27 AM	7:34 AM	7:38 AM	7:49 AM	7:51 AM	7:56 AM	8:01 AM	8:08 AM	8:13 AM	8:20 AM	8:23 AM
9:26 AM	9:29 AM	9:36 AM	9:41 AM	9:45 AM	9:49 AM	9:51 AM	9:56 AM	10:01 AM	10:08 AM	10:13 AM	10:20 AM	10:23 AM
11:26 AM	11:29 AM	11:36 AM	11:41 AM	11:45 AM	11:49 AM	11:51 AM	11:56 AM	12:01 PM	12:08 PM	--	12:17 PM	12:20 PM
1:26 PM	1:29 PM	1:36 PM	1:41 PM	1:45 PM	1:49 PM	1:51 PM	1:56 PM	2:01 PM	2:08 PM	--	2:17 PM	2:20 PM
3:26 PM	3:29 PM	3:36 PM	3:41 PM	3:45 PM	3:49 PM	3:51 PM	3:56 PM	4:01 PM	4:08 PM	--	4:17 PM	4:20 PM
5:26 PM	5:29 PM	5:36 PM	5:41 PM	5:45 PM	5:49 PM	5:51 PM	5:56 PM	6:01 PM	6:08 PM	--	6:17 PM	6:20 PM

21 - 21 Deltona | Saturday - Outbound

Market Place Recovery	Deltona Plaza Ob	Providence & Normandy 1st	Deltona Community Center	Normandy & Providence 2nd Ob	Providence & Ft. Smith 21 Ob	Wal-Mart Osteen
8:32 AM	8:40 AM	8:47 AM	8:53 AM	8:59 AM	9:05 AM	9:18 AM
10:32 AM	10:40 AM	10:47 AM	10:53 AM	10:59 AM	11:05 AM	11:18 AM
12:32 PM	12:40 PM	12:47 PM	12:53 PM	12:59 PM	1:05 PM	1:18 PM
12:32 PM	12:40 PM	12:47 PM	12:53 PM	12:59 PM	1:05 PM	1:18 PM
2:32 PM	2:40 PM	2:47 PM	2:53 PM	2:59 PM	3:05 PM	3:18 PM
4:32 PM	4:40 PM	4:47 PM	4:53 PM	4:59 PM	5:05 PM	5:18 PM
6:32 PM	6:40 PM	6:47 PM	6:53 PM	6:59 PM	7:05 PM	7:18 PM

21 - 21 Deltona | Saturday - Inbound

Wal-Mart Osteen	Pineridge High School 21 Ib	Howland & Elkcam Ib	Newmark Dr & Montecito Ave Ib	Providence Blvd./ Ft Smith 21&22	Deltona City Hall	Deltona Library	Providence And Ft Smith 21&23 Ib	Providence & E Normandy Ib	Deltona Plaza Ib	Crown Center - Publix	Market Place Recovery
7:26 AM	7:29 AM	7:36 AM	7:41 AM	7:45 AM	7:49 AM	7:51 AM	7:56 AM	8:01 AM	8:08 AM	8:17 AM	8:20 AM
9:26 AM	9:29 AM	9:36 AM	9:41 AM	9:45 AM	9:49 AM	9:51 AM	9:56 AM	10:01 AM	10:08 AM	10:17 AM	10:20 AM
11:26 AM	11:29 AM	11:36 AM	11:41 AM	11:45 AM	11:49 AM	11:51 AM	11:56 AM	12:01 PM	12:08 PM	12:17 PM	12:20 PM
1:26 PM	1:29 PM	1:36 PM	1:41 PM	1:45 PM	1:49 PM	1:51 PM	1:56 PM	2:01 PM	2:08 PM	2:17 PM	2:20 PM
3:26 PM	3:29 PM	3:36 PM	3:41 PM	3:45 PM	3:49 PM	3:51 PM	3:56 PM	4:01 PM	4:08 PM	4:17 PM	4:20 PM
5:26 PM	5:29 PM	5:36 PM	5:41 PM	5:45 PM	5:49 PM	5:51 PM	5:56 PM	6:01 PM	6:08 PM	6:17 PM	6:20 PM



ROUTE 22- Deltona

Serving:

- | | |
|---|--------------------------------------|
| 1 Market Place Shopping Plaza | 7 Deltona Library |
| 2 Deltona Plaza | 8 Howland Boulevard/Elkcam Boulevard |
| 3 Deltona Middle School** | 9 Pine Ridge High School |
| 4 Providence Boulevard and Normandy Boulevard | 10 Walmart - Osteen |
| 5 Providence Boulevard/Fort Smith Boulevard | 11 Deltona Community Center |
| 6 Deltona City Hall | 12 Crowne Center |



**Route 22 goes to Deltona Middle School 1 afternoon trip only

*All afternoon times are in **bold**

22 - 22 Deltona | Weekday - Outbound

Market Place Recovery	Deltona Middle School	Deltona Plaza Ob	Normandy & Providence 2nd Ob	Ft Smith & Providence	Deltona City Hall	Deltona Library	Elkcam Blvd & Howland Blvd Ob	Pineridge High School 22 Ob	Wal-Mart Osteen
--	--	--	5:57 AM	6:03 AM	6:08 AM	6:10 AM	6:18 AM	6:25 AM	6:29 AM
7:32 AM	--	7:40 AM	7:47 AM	7:53 AM	7:58 AM	8:01 AM	8:10 AM	8:17 AM	8:22 AM
9:32 AM	--	9:40 AM	9:47 AM	9:53 AM	9:58 AM	10:01 AM	10:10 AM	10:17 AM	10:22 AM
11:32 AM	--	11:40 AM	11:47 AM	11:53 AM	11:58 AM	12:01 PM	12:10 PM	12:17 PM	12:22 PM
1:32 PM	1:40 PM	1:44 PM	1:51 PM	1:57 PM	2:01 PM	2:03 PM	2:12 PM	2:19 PM	2:24 PM
1:32 PM	1:40 PM	1:44 PM	1:51 PM	1:57 PM	2:01 PM	2:03 PM	2:12 PM	2:19 PM	2:24 PM
3:32 PM	--	3:40 PM	3:47 PM	3:53 PM	3:58 PM	4:01 PM	4:10 PM	4:17 PM	4:22 PM
5:32 PM	--	5:40 PM	5:47 PM	5:53 PM	5:58 PM	6:01 PM	6:10 PM	6:17 PM	6:22 PM

22 - 22 Deltona | Weekday - Inbound

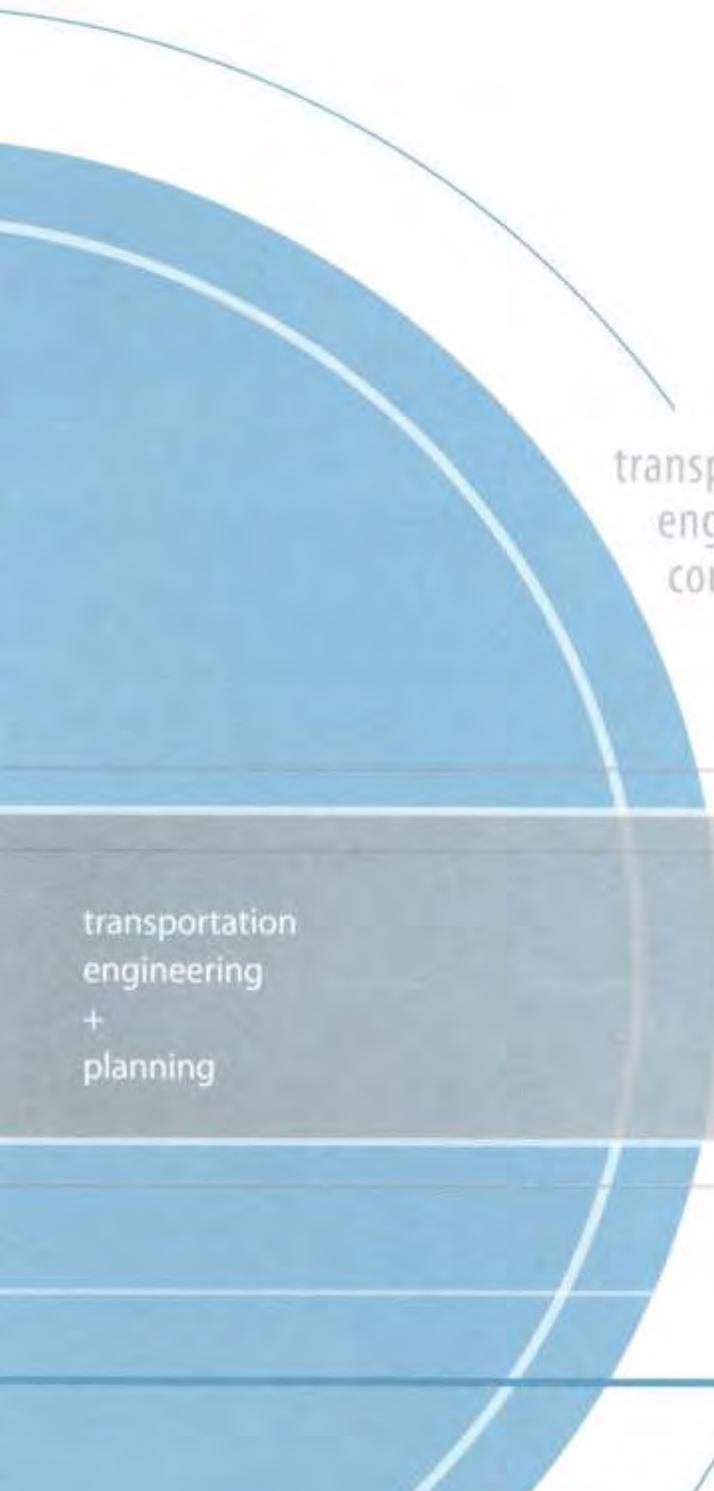
Wal-Mart Osteen	Providence And Ft. Smith 21 lb	Providence & Normandy 1st	Deltona Community Center	Providence & E Normandy lb	Deltona Plaza lb	Crown Center - Publix	Market Place Recovery
6:31 AM	6:44 AM	6:50 AM	6:56 AM	7:02 AM	7:09 AM	7:18 AM	7:20 AM
8:31 AM	8:44 AM	8:50 AM	8:56 AM	9:02 AM	9:09 AM	9:18 AM	9:20 AM
10:31 AM	10:44 AM	10:50 AM	10:56 AM	11:02 AM	11:09 AM	11:18 AM	11:20 AM
12:31 PM	12:44 PM	12:50 PM	12:56 PM	1:02 PM	1:09 PM	1:18 PM	1:20 PM
2:31 PM	2:44 PM	2:50 PM	2:56 PM	3:02 PM	3:09 PM	3:18 PM	3:20 PM
4:31 PM	4:44 PM	4:50 PM	4:56 PM	5:02 PM	5:09 PM	5:18 PM	5:20 PM
6:27 PM	6:40 PM	6:46 PM	6:52 PM	6:58 PM	7:05 PM	7:14 PM	7:17 PM

22 - 22 Deltona | Saturday - Outbound

Market Place Recovery	Deltona Plaza Ob	Normandy & Providence 2nd Ob	Ft Smith & Providence	Deltona City Hall	Deltona Library	Elkcam Blvd & Howland Blvd Ob	Pineridge High School 22 Ob	Wal-Mart Osteen
7:32 AM	7:40 AM	7:47 AM	7:53 AM	7:58 AM	8:01 AM	8:10 AM	8:17 AM	8:22 AM
9:32 AM	9:40 AM	9:47 AM	9:53 AM	9:58 AM	10:01 AM	10:10 AM	10:17 AM	10:22 AM
11:32 AM	11:40 AM	11:47 AM	11:53 AM	11:58 AM	12:01 PM	12:10 PM	12:17 PM	12:22 PM
11:32 AM	11:40 AM	11:47 AM	11:53 AM	11:58 AM	12:01 PM	12:10 PM	12:17 PM	12:22 PM
1:32 PM	1:40 PM	1:47 PM	1:53 PM	1:58 PM	2:01 PM	2:10 PM	2:17 PM	2:22 PM
1:32 PM	1:40 PM	1:47 PM	1:53 PM	1:58 PM	2:01 PM	2:10 PM	2:17 PM	2:22 PM
3:32 PM	3:40 PM	3:47 PM	3:53 PM	3:58 PM	4:01 PM	4:10 PM	4:17 PM	4:22 PM
5:32 PM	5:40 PM	5:47 PM	5:53 PM	5:58 PM	6:01 PM	6:10 PM	6:17 PM	6:22 PM

22 - 22 Deltona | Saturday - Inbound

Wal-Mart Osteen	Providence And Ft. Smith 21 lb	Providence & Normandy 1st	Deltona Community Center	Providence & E Normandy lb	Deltona Plaza lb	Crown Center - Publix	Market Place Recovery
6:31 AM	6:44 AM	6:50 AM	6:56 AM	7:02 AM	7:09 AM	7:18 AM	7:20 AM
8:31 AM	8:44 AM	8:50 AM	8:56 AM	9:02 AM	9:09 AM	9:18 AM	9:20 AM
10:31 AM	10:44 AM	10:50 AM	10:56 AM	11:02 AM	11:09 AM	11:18 AM	11:20 AM
12:31 PM	12:44 PM	12:50 PM	12:56 PM	1:02 PM	1:09 PM	1:18 PM	1:20 PM
2:31 PM	2:44 PM	2:50 PM	2:56 PM	3:02 PM	3:09 PM	3:18 PM	3:20 PM
4:31 PM	4:44 PM	4:50 PM	4:56 PM	5:02 PM	5:09 PM	5:18 PM	5:20 PM



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Exhibit B

MEMORANDUM

Date: May 28, 2014 **DRMP Project #:** 09-0857.009

To: Mr. Chris Bowley, AICP
Planning and Development Services Director
City of Deltona
2345 Providence Boulevard
Deltona, Florida 32725

Reviewed By: Lisa Lanman, AICP & Melissa Gross, EI
DRMP, Inc.
941 Lake Baldwin Lane
Orlando, Florida 32814

As requested by the City, DRMP has reviewed the Transportation Impact Study provided by the applicant that corresponds to the Promenade at Deltona provided by the City on May 13, 2014. The following narrative provides further input regarding DRMP’s recommendations for further information.

Comment Number	Section/ Page Number	Comment
1	Purpose, pg.1; paragraph 1	In the first sentence there is a space missing in “isa”
2	Purpose, pg.1; paragraph 2	Please check sentence spacing between first and second sentence.
3	Table 1	Please explain the significance of the highlighted roadway segments.
4	Study Methodology	The reviewer suggests including a study area roadway and intersection figure to clearly depict all study area roadways and intersections to be analyzed for reference. They are difficult to see in Figure 1.
5	Study Methodology	General Comment: Please include the AM peak hour in the study analysis.
6	Study Intersections, pg.7	Was a FDOT seasonal adjustment applied to the existing TMC as indicated by the methodology memo in Appendix A? Was existing signal timing obtained from Volusia County?

Comment Number	Section/ Page Number	Comment
7	Proposed Development	General Comment: Please include trip generation for the PM peak hour also.
8	Proposed Development	Proposed Site Access: Please include a discussion on proposed access locations, type, and spacing from any existing intersections.
9	Proposed Development	Proposed Site Access/SR 415: Please ensure that the proposed site access location on SR 415 meets FDOT standards.
10	Pass-by Traffic, pg. 11; pass-by trip calculations	Please explain the volumes in the pass-by trip calculation tables. 431 – NB SR 415, 210 – SB SR 415, and WB Howland – 259 NB SR 415 + 27 SBL from Howland.
11	Table 3, pg. 12	The reviewer suggests highlighting / or defining the Net New (Primary) Trips for easier reference.
12	Trip Distribution, pg.13	The reviewer suggests rewording the second sentence to the following, “This model distribution was used to determine estimated P.M. peak hour volumes on the study area road segments and will be used to determine the Project trip distribution at study area intersections.”
13	Trip Distribution	General Comment: The reviewer suggests including a figure with all study area intersections to illustrate Trip Distribution more clearly and simply. For instance it is difficult to read the distribution percentages on Figure 4, and this does not clearly show the location of the proposed project driveways or the Walmart entrance.
14	Projected Traffic Transportation Assessment	General Comment: Please include trip generation and distribution details for the assumed future Medical Office Building on the adjacent property.
15	Intersection Analysis, pg. 16	Please add delay to Table 5 as specified in the text.
16	Transit, pg. 16	Please provide a route and service schedule for the existing transit in the Appendix.
17	Bicycle, pg. 16	Please clarify if there are any bike lanes on the study area roadways.
18	Study Conclusions, pg. 19	It should be noted that while the proposed development trip generation does not add a significant percentage of daily or PM peak hour trips, it does cause the following roadway segments to experience a daily LOS F in the 2016 build out: <ul style="list-style-type: none"> • Providence Blvd from Elkcarn Blvd to Fort Smith Blvd

Comment Number	Section/ Page Number	Comment
		<ul style="list-style-type: none"> • Providence Blvd from Normandy Blvd to Anderson Dr. <p>Future discussion may be held with the City / County in regards to the proposed projects impact to these Near Critical Roadways if deemed necessary.</p>
19	Appendix A	Please include all correspondence with the City/County regarding the TIA methodology.

DRMP appreciates the opportunity to support the City of Deltona on this project. Please contact Lisa Lanman at llanman@drmp.com if you have any questions or wish to discuss further.