



TECHNICAL MEMORANDUM

TO: BravoFlorida, LLC
 4220 Edison Lakes Parkway
 Mishawaka, Indiana 46545

FROM: Michael D. Raysor, P.E.
 RAYSOR Transportation Consulting, LLC

SUBJECT: Burger King – City of Alachua
 Site Access Traffic Study

DATE: January 31, 2020



1.0 INTRODUCTION

This technical memorandum documents a site access traffic study performed in association with the proposed development of a Burger King fast food restaurant, located at 16130 NW U.S. Highway 441 in the City of Alachua, Florida; as shown on the project site location map (Figure 1.0). The subject site is planned for development consisting of a 3,349 square foot building with drive-through, with access to be provided via a single driveway connection to U.S. Highway 441; as shown on the project site plan (Figure 2.0). This study was prepared to satisfy the requirements of Florida Administrative Code, Rule 14-96; as coordinated with the FDOT District Two Traffic Operations Office (refer to Attachment “A” for details).

2.0 PROJECT SITE TRIP GENERATION

The daily and peak hour trip generation for the subject project was estimated using trip characteristic data, as identified in the Institute of Transportation Engineers’ *Trip Generation Manual* (ITE, 10th edition, 2017) and *Trip Generation Handbook* (ITE, 3rd edition, 2014), as shown in Table 1.0. The project site is anticipated to generate 1,578 daily driveway trips, which makes the driveway permit for this site a category “D” connection.

TABLE 1.0 TRIP GENERATION ESTIMATE SUMMARY

ITE LUC	Land Use Description	Size	Daily		AM Peak Hour				PM Peak Hour			
			Rate	Trips	Rate	Trips	Enter	Exit	Rate	Trips	Enter	Exit
934	Fast-Food Rest. w/DT	3,349 sf	470.95	1,578	40.19	135	69	66	32.67	109	57	52
Pass-By Trips			40.0%	630	49.0%	66	33	33	50.0%	54	27	27
New External Trips			--	948	--	69	36	33	--	55	30	25

The distribution of *new external* project generated trips was estimated pursuant to discussions with the FDOT District Two Traffic Operations Office, resulting in a distribution of 20% westerly and 80% easterly from the project site. The distribution of *pass-by* project traffic was estimated based on adjacent traffic patterns. Figure 3.0 shows the project generated traffic volumes, as further documented in Attachment “B”.



FIGURE 1.0 PROJECT SITE LOCATION

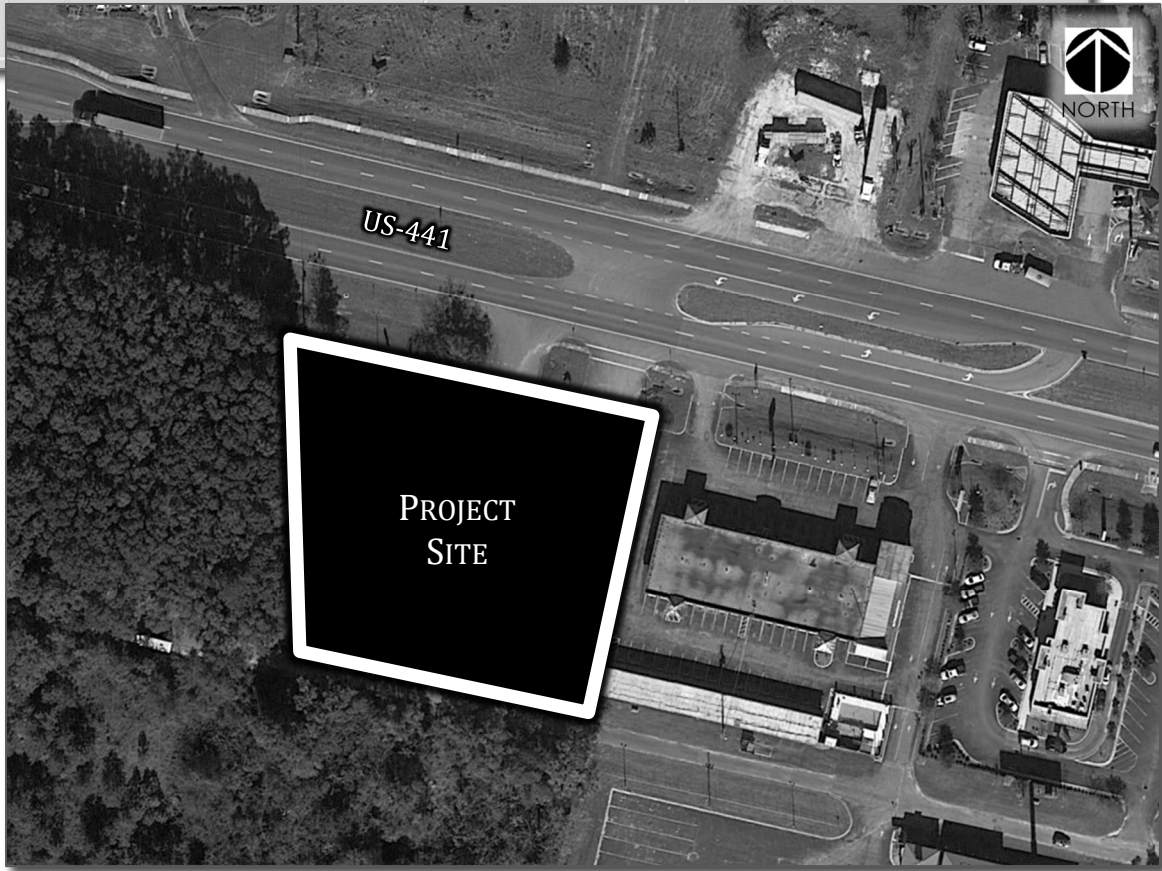
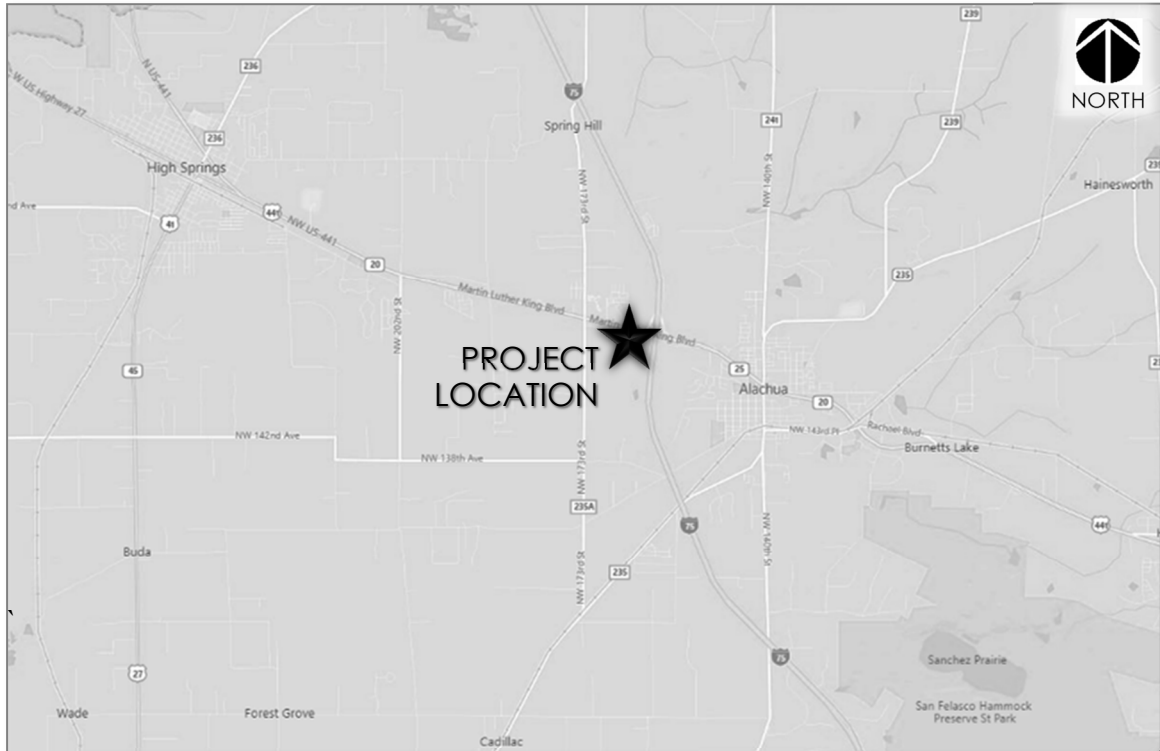
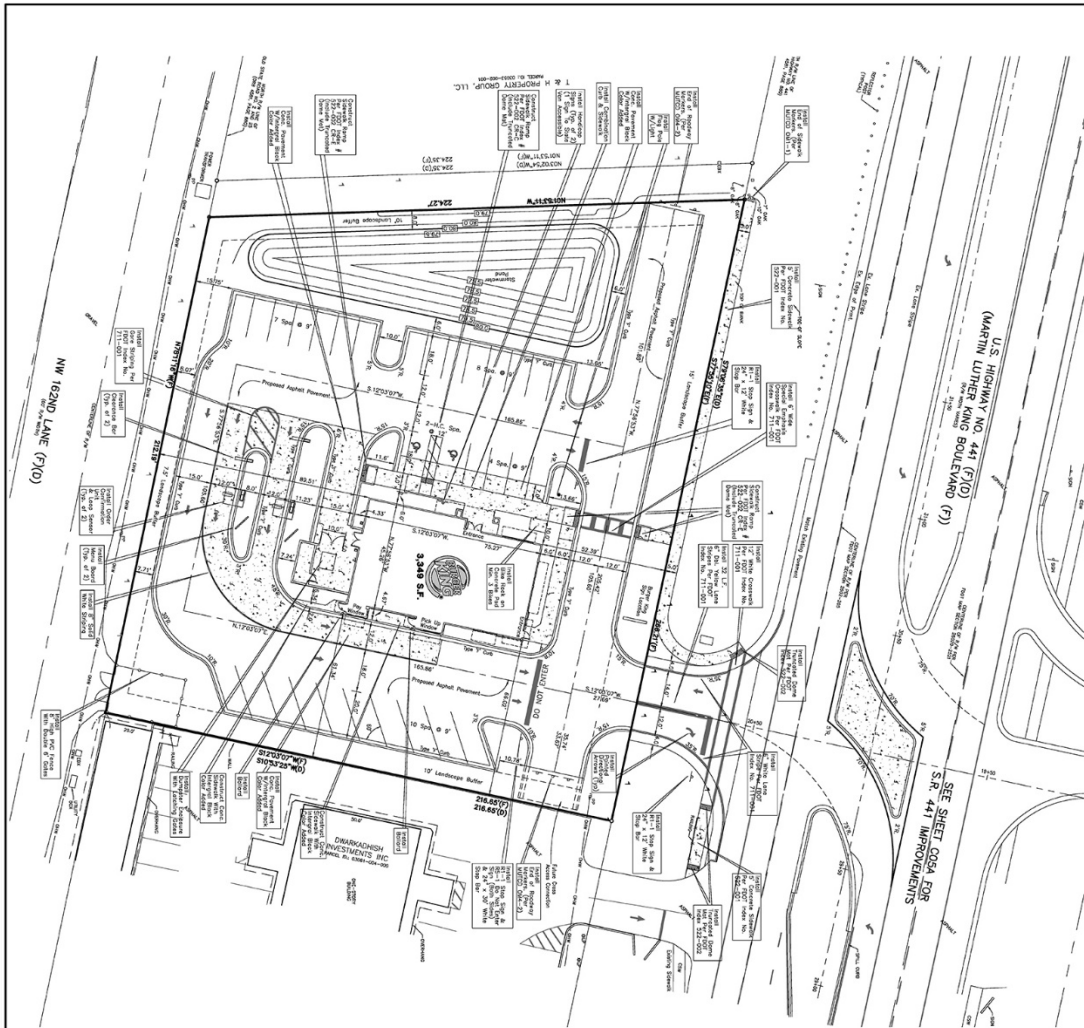
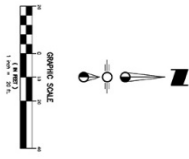




FIGURE 2.0 PROJECT SITE PLAN



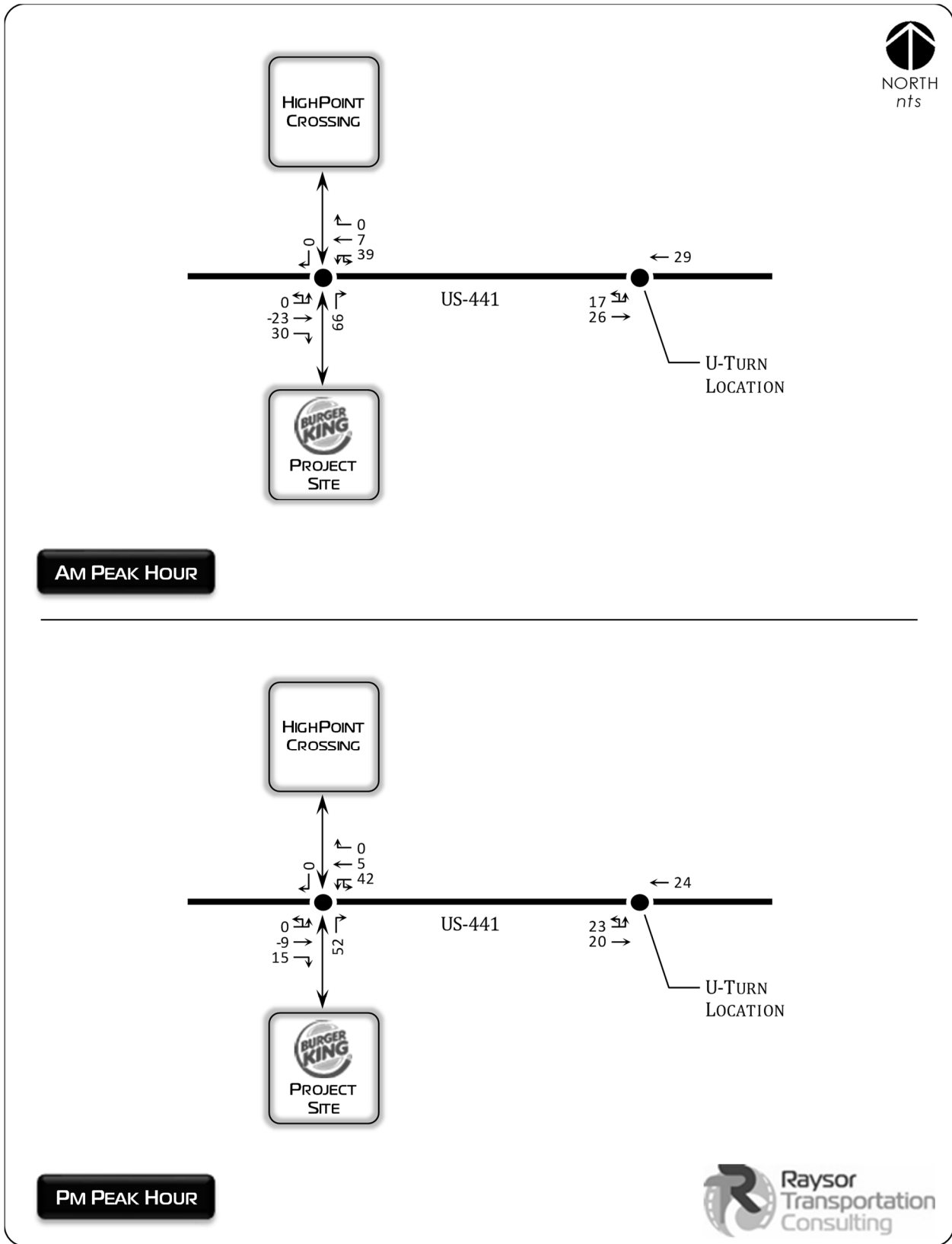
- HORIZONTAL CONTROL NOTES**
1. ALL DIMENSIONS ARE TO FACE OF CURB OR FACE OF BUILDING UNLESS OTHERWISE NOTED.
 2. REFER TO LANDSCAPE PLAN FOR LANDSCAPE DESIGN.
 3. CONFORMANCE TO VEHICLE REGULATORY CODES AT EACH SIDE OF DRIVEWAY.
 4. REFER TO ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
 5. ALL SETBACK AND STRIPING SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND CITY ORDINANCES.
 6. ALL DRIVEWAYS SHALL BE PROTECTED BY A 2' HIGH CURB OR ELEVATED SIDEWALK.
 7. DRIVEWAY AND SIDEWALK SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 8. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 9. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 10. CONFORMANCE TO ALL CITY ORDINANCES AND STATE STATUTES.
 11. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 12. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 13. DRIVEWAY SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 14. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 15. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 16. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 17. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 18. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 19. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.
 20. ALL DRIVEWAYS SHALL BE 2' WIDE FROM THE FACE OF THE CURB OR SIDEWALK TO THE FACE OF THE DRIVEWAY.



<p>HORIZONTAL CONTROL & STRIPING PLAN</p> <p>BURGER KING</p> <p>16130 NW U.S. HIGHWAY 441</p> <p>CITY OF ALACHUA, FLORIDA</p>	<p>SCALE: DATE</p> <p>1"=50' 12/20/18</p> <p>CAD: CMH</p> <p>DESIGNED BY: JDB</p> <p>CHECKED BY: JDB</p> <p>DATE: 12/20/18</p> <p>SHEET: C04</p>	<p>REVISIONS</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	NO.	DESCRIPTION	DATE	BY					<p>Developer:</p> <p>BRUVFLORIDA, LLC.</p> <p>3018 U.S. HIGHWAY 301 N.</p> <p>SUITE NO. 100</p> <p>TAMPA, FL 33619</p> <p>(813) 374-8648</p>	<p>Consultant:</p> <p>MPH</p> <p>CIVIL ENGINEERS, ARCHITECTS, INC.</p> <p>MPH Civil Consultants, Inc.</p> <p>Civil Engineering Services</p> <p>P.O. Box 1121 Edgewater, FL 33556</p> <p>813.758.8000</p> <p>duane@mphcivil.com www.mphcivil.com</p> <p>FLORIDA CA. NO. 30727</p>	<p>H. Duane Wright, P.E. No. 42857</p> <p>FLORIDA PROFESSIONAL ENGINEER No.</p>
	NO.	DESCRIPTION	DATE	BY									



FIGURE 3.0 PROJECT SITE PEAK HOUR TRAFFIC VOLUMES (REFER TO ATTACHMENT "B" FOR DETAILS)





3.0 STUDY AREA AND ANALYSIS HORIZON

The purpose of this traffic study is to satisfy the requirements of Florida Administrative Code, Rule 14-96. Therefore, the study area was identified to consist of the project site access connection and the adjacent easterly u-turn location; as coordinated with the FDOT District Two Traffic Operations Office. The project site is anticipated to be redeveloped within approximately one year, therefore 2021 was used as the analysis horizon for this study.

4.0 TRAFFIC VOLUMES

Traffic volume data was obtained from a combination of traffic counts adjusted to reflect peak season conditions using FDOT seasonal factors and traffic volumes identified in the HighPoint Crossing Traffic Impact Analysis, as prepared by CHW, Inc (dated June 1, 2017); as coordinated with the FDOT District Two Traffic Operations Office. The traffic data used in this study is documented in Attachment "C".

Future year background traffic volumes for those locations at which new traffic counts were undertaken for this study, were calculated by adding a 3.2% annual growth rate to the existing traffic volumes through the 2021 analysis-horizon. The 3.2% annual growth rate was determined from historical traffic volume trends on the adjacent segment of U.S. Highway 441, as documented in Attachment "D". Future year background traffic volumes for those locations which were obtained from the referenced HighPoint Crossing Traffic Impact Analysis were identified directly from that report. Post-development total traffic volumes were calculated by adding the traffic estimated to be generated by the project site to the background traffic volumes. Figure 4.0 shows the estimated background traffic volumes and Figure 5.0 shows the estimated post-development total traffic volumes, as used in this analysis.

5.0 OPERATIONAL ANALYSIS

An analysis of the study intersections was performed for peak hour post-development total traffic conditions, using *Highway Capacity Manual* methodologies calculated by *Synchro* software; as summarized in Table 2.0 and further documented in Attachment "E". The results of the analysis identified that the site access related traffic movements are anticipated to operate acceptably for peak hour post-development total traffic conditions, at level of service D or better with the worst-case v/c ratio identified as 0.44 (for site access related traffic movements).

6.0 TURN LANE WARRANT EVALUATION

A turn lane warrant evaluation was conducted to determine if a new right turn lane will be warranted on U.S. Highway 441 at the project site driveway connection. The evaluation was performed in consideration of the warranting criteria as documented in the Florida Department of Transportation's *Access Management Guidebook* (November 2019). In consideration that the adjacent segment of U.S. Highway 441 is a multilane roadway with a posted speed of 45 mph, the traffic volume threshold to warrant a right turn lane at this location is 80 to 125 right turns per hour. As shown in Figure 5.0 herein, the maximum estimated right turn volume from U.S. Highway 441 into the project site is estimated as 30 right turns per hour. Therefore, it is concluded that a new right turn lane is not warranted on U.S. Highway 441 at the project site driveway connection.



FIGURE 4.0 BACKGROUND PEAK HOUR TRAFFIC VOLUMES

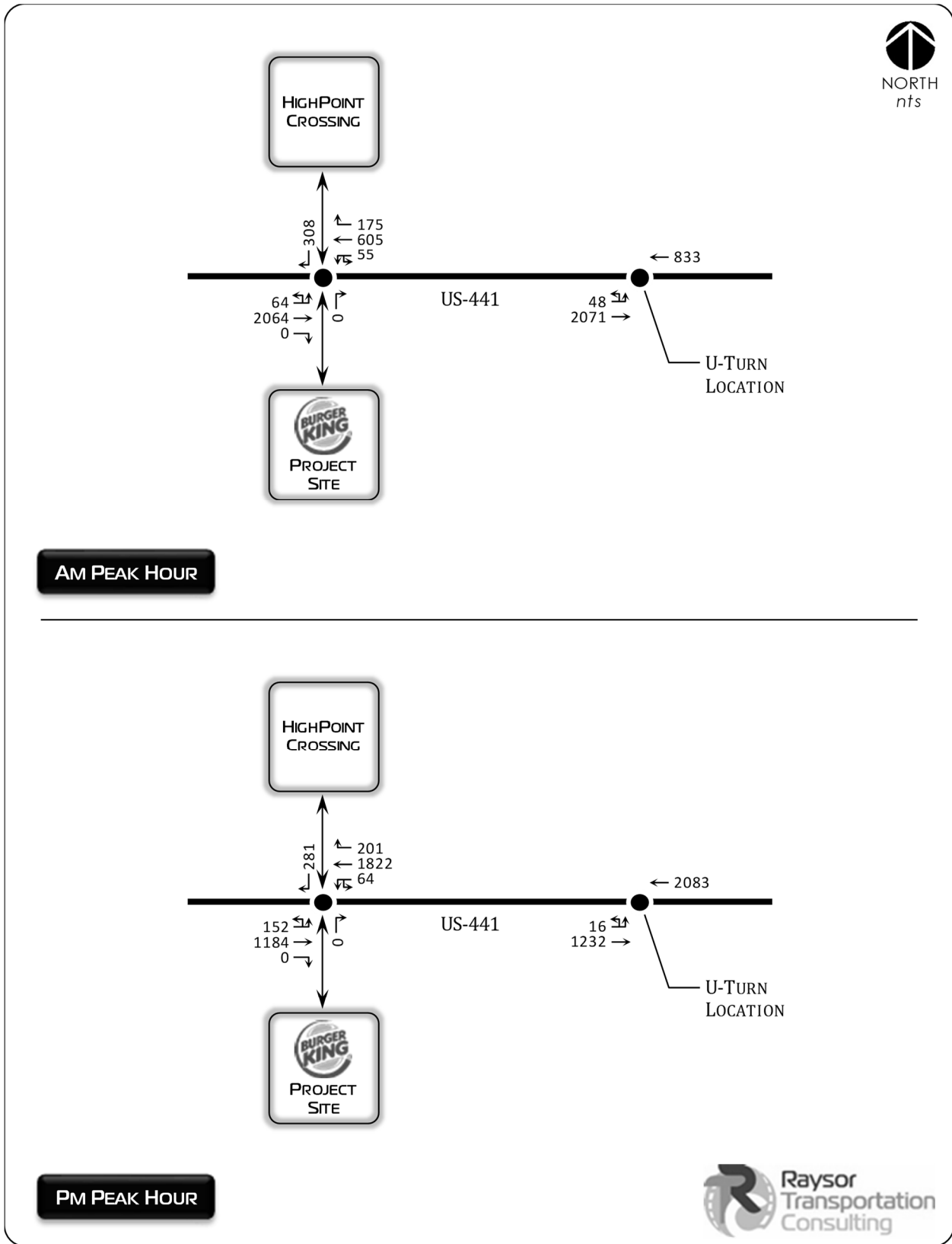




FIGURE 5.0 POST-DEVELOPMENT TOTAL PEAK HOUR TRAFFIC VOLUMES

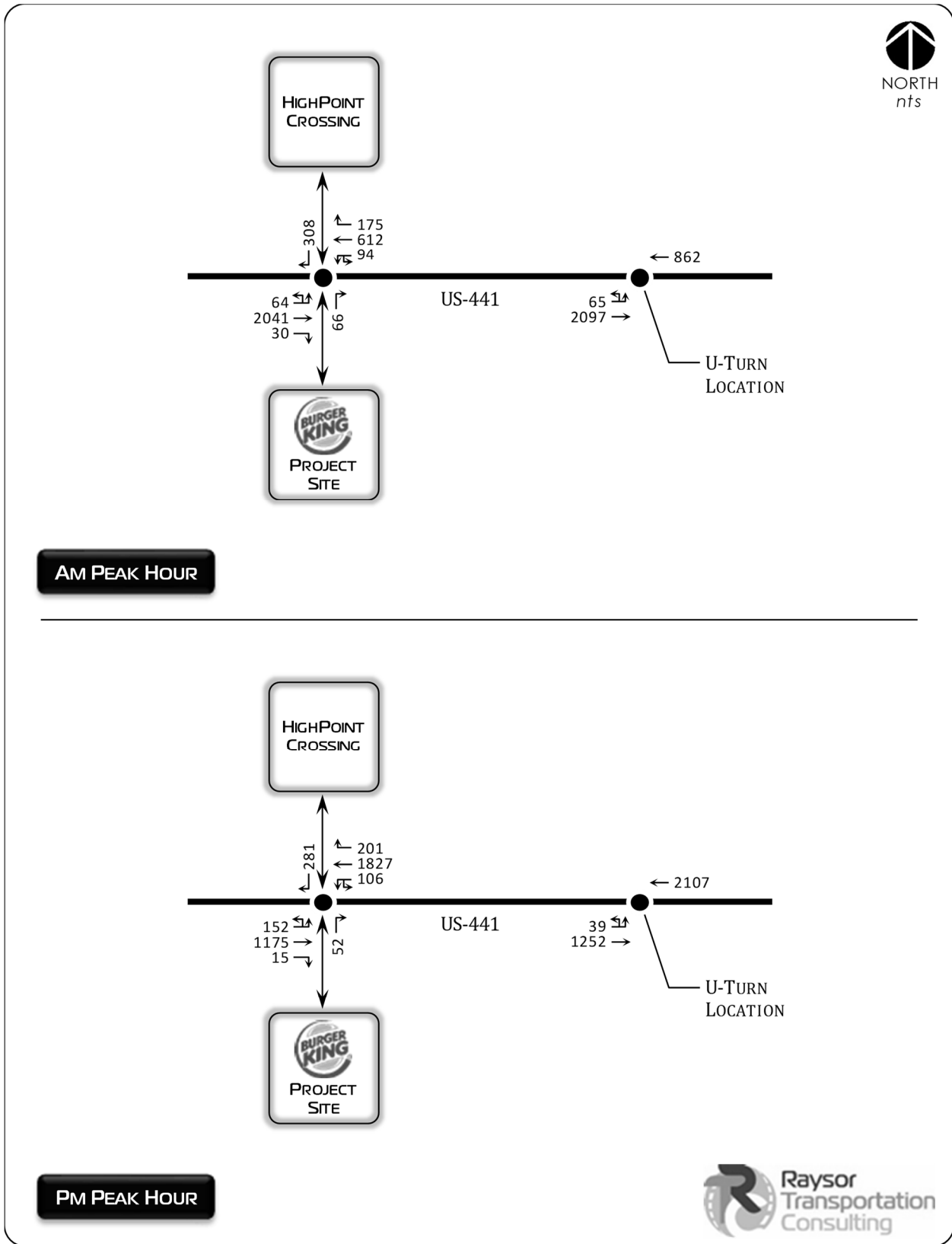




TABLE 2.0 SITE ACCESS TRAFFIC OPERATIONS ANALYSIS SUMMARY

Location	Peak Hour	Metric	Eastbound			Westbound			Northbound			Southbound		
			L/U	T	R	L/U	T	R	L	T	R	L	T	R
US-441 at Project Site Driveway	AM	LOS	B	[3]	[2]	D	[3]	[3]	[1]	[1]	D	[1]	[1]	C
		Delay (sec)	10.0	[3]	[2]	32.3	[3]	[3]	[1]	[1]	32.0	[1]	[1]	15.6
		V/C Ratio	0.09	[3]	[2]	0.44	[3]	[3]	[1]	[1]	0.35	[1]	[1]	0.50
		Queue	7'	[3]	[2]	52'	[3]	[3]	[1]	[1]	37'	[1]	[1]	69'
	PM	LOS	E	[3]	[2]	B	[3]	[3]	[1]	[1]	B	[1]	[1]	F
		Delay (sec)	41.7	[3]	[2]	13.2	[3]	[3]	[1]	[1]	14.7	[1]	[1]	146.3
		V/C Ratio	0.64	[3]	[2]	0.20	[3]	[3]	[1]	[1]	0.13	[1]	[1]	1.16
		Queue	98'	[3]	[2]	19'	[3]	[3]	[1]	[1]	11'	[1]	[1]	333'
US-441 at Adjacent Easterly U-Turn	AM	LOS	B	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		Delay (sec)	10.4	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		V/C Ratio	0.10	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		Queue	8'	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
	PM	LOS	C	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		Delay (sec)	23.8	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		V/C Ratio	0.18	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
		Queue	16'	[3]	[1]	[1]	[3]	[1]	[1]	[1]	[1]	[1]	[1]	[1]

[1] Not Applicable; [2] Shared Lane; [3] Unopposed Movement

An evaluation of the existing site access related turn lanes was performed to determine if these lanes are of adequate length to accommodate post-development total traffic conditions. Specifically, the evaluation considered the following existing turn lanes: (a) westbound-to-southbound left turn lane on U.S. Highway 441 at the project site driveway connection, and (b) eastbound-to-northbound left turn lane on U.S. Highway 441 immediately east of the project site driveway connection (at the u-turn opportunity for project generated traffic). These turn lanes are both approximately 300 feet in length, measured from the beginning of taper to the edge of the travel lane for opposing traffic. The 95th percentile queue lengths resulting from the operational analysis (as shown in Table 2.0) rounded



to the nearest 25 foot “vehicular-length” are identified as 50 feet for the subject westbound left turn lane and 25 feet for the subject eastbound left turn lane. The minimum design speed for U.S. Highway 441 is identified as 45 mph (equal to the posted speed), which would require a deceleration/taper distance of 185 feet (pursuant to FDOT’s Florida Design Manual, Exhibit 212-1). Given the above values, the total lengths required for the subject turn lanes are 235 feet for the westbound left turn lane and 210 feet for the eastbound left turn lane, including taper. Therefore, the lengths of the subject site access related turn lanes were confirmed as adequate to accommodate post-development total traffic conditions.

7.0 CONNECTION SPACING

The adjacent segment of U.S. Highway 441 has an access classification of 3, with a 45 mph posted speed; resulting in a minimum connection spacing requirement of 440 feet, pursuant to Florida Administrative Code, Rule 14-97, as applicable to the subject site. The resulting connection spacing upon development of the subject project site will be ± 60 feet easterly and $\pm 2,300$ feet westerly. Thus, connection spacing is not met (easterly) and therefore the subject project site driveway connection would be deemed as non-conforming. However, the proposed non-conforming connection should be allowed, in consideration that (a) the site redevelopment will result in a reduction in non-conforming connections [reduction from 2 to 1], (b) the site redevelopment provides for future cross access upon redevelopment of the adjacent property to the east, (c) without the subject driveway connection the project site would not be provided with reasonable access, and (d) based on the analysis documented herein, the subject project site driveway connection is not anticipate to result in adverse safety or operational issues.

8.0 CONCLUSION

Based on the data, analyses and findings contained herein, the following is concluded in consideration of the proposed development of a 3,349 square foot Burger King fast food restaurant with drive-through, located at 16130 NW U.S. Highway 441 in the City of Alachua, Florida.

- ❖ The project site is anticipated to generate 1,578 daily driveway trips, which makes the driveway permit for this site a category “D” connection.
- ❖ The site access related study intersections are anticipated to operate acceptably for post-development traffic conditions.
- ❖ A new site access right turn lane was found to not be warranted on U.S. Highway 441 at the project site driveway connection.
- ❖ The lengths of the existing site access related turn lanes were confirmed as adequate to accommodate post-development total traffic conditions.
- ❖ The project site driveway connection was identified as non-conforming; however, the connection should be allowed in consideration of the supporting factors identified herein.

ATTACHMENT "A"

mdr@raysor-transportation.com

From: Cavin, Tom <Tom.Cavin@dot.state.fl.us>
Sent: Thursday, January 9, 2020 3:06 PM
To: Doyle, Adam; mdr@raysor-transportation.com
Subject: RE: Burger King Site (16130 NW US Hwy 441, Alachua)

Mike,

Per our discussion today, I concur with your proposed methodology with the addition of a review of the Access Classification of the roadway. With this review, note FAC minimum spacing requirements and if your connections meet these minimums. If not, provide justification as to why the department should approve variances from the FAC minimums.

Also, I will look to provide you with the High Point permit TIS for the north side of the roadway. As we discussed, you can use High Point's Background traffic as your background traffic volumes. Include mention of this approved development within your study. If you don't get it from me by mid next week, send me an email reminder. The access connection for High Point needs to be considered in the proposed directional median opening design. I know your firm is not doing the site design; however, please share this with the site designer so that the directional island design is also appropriate for the High Point connection. The connection may already be constructed by now.

One thing I didn't mention to you (which may not involve you) is that a public hearing will be required to modify the full opening to a directional opening. This hearing the Department will hold. We do require the permittee provide us with the information to hold this hearing. We also ask that the permittee attend the hearing to help answer any questions. We will not advertise or hold the hearing until such time as the actual permit has been applied for and there is sufficient information (ie approved traffic study, conditional site plan, and conditional roadway improvements plan—not an approved permit).

Let me know if you have any questions.

Tom Cavin, P.E.
Jacksonville Studies Engineer
Florida Department of Transportation
2198 Edison Avenue, MS2815
Tom.cavin@dot.state.fl.us
904-360-5641



From: Doyle, Adam <Adam.Doyle@dot.state.fl.us>
Sent: Wednesday, January 8, 2020 2:48 PM
To: mdr@raysor-transportation.com
Cc: Cavin, Tom <Tom.Cavin@dot.state.fl.us>; Scanlan, Steven <Steven.Scanlan@dot.state.fl.us>; Emmons, Robert <Robert.Emmons@dot.state.fl.us>
Subject: RE: Burger King Site (16130 NW US Hwy 441, Alachua)

Mike,

ATTACHMENT "A"

Thanks for providing this information. I have copied Tom Cavin (904-360-5641) from our Traffic Operations Office. He will be reviewing the methodology and study. I would suggest you call him to discuss the traffic study requirements. Please copy me in any email correspondence so I can stay in the loop. Thank you.

Adam E. Doyle, P.E.
Permits Manager - Gainesville Operations
5301 NE 39th Avenue
Gainesville FL, 32609
adam.doyle@dot.state.fl.us
(352) 381-4308



From: mdr@raysor-transportation.com [mailto:mdr@raysor-transportation.com]
Sent: Wednesday, January 8, 2020 2:04 PM
To: Doyle, Adam <Adam.Doyle@dot.state.fl.us>
Subject: RE: Burger King Site (16130 NW US Hwy 441, Alachua)

EXTERNAL SENDER: Use caution with links and attachments.

Good afternoon Adam,

I just tried reaching you and left a voicemail. Below I have indicated our proposed methodology for conducting the FAC 14-96 traffic study for the referenced Burger King Site. Can you please review and get back to me via phone or email?

1. Trip Generation: To be estimated using ITE Trip Generation Manual 10th edition, using square footage as the independent variable; with (a) 49% AM pass-by capture, and (b) 50% PM pass-by capture (pursuant to ITE Trip Generation Handbook 3rd edition), with (c) 40% daily pass-by capture (i.e., PM – 10%, rule of thumb).
2. Trip Distribution: New external trip distribution based on area land use patterns and roadways, with 20% northwesterly of site (High Springs) and 80% southeasterly of site (I-75 and City of Alachua). Pass-by trip distribution based on existing traffic patterns.
3. Study Area: To include project site driveway connection to US 441 and adjacent (easterly) directional median opening.
4. Analysis Horizon: Study to be performed for post-development AM & PM peak hour traffic conditions.
5. Existing Traffic Conditions: To be identified from new traffic counts undertaken at the study intersection and factored to reflect peak season using FDOT PSCF.
6. Background Traffic Conditions: To be calculated for 2021 conditions using growth rate based on adjacent street historical traffic volumes.
7. Post-Development Traffic Conditions: To be calculated as background traffic plus project generated traffic.

ATTACHMENT "A"

8. Analysis Procedure: Study intersection operations to be evaluated using Synchro software to calculate HCM methods.
9. Turn Lane Analysis: Existing left turn lane length to be evaluated based on 95th percentile queue length from operational analysis, plus deceleration/taper distance based on design speed equal to posted speed per FDM Exhibit 212-1. Need for right turn lane to be based on FDOT Access Management Guidebook (Nov 2019), Chapter 6.2.
10. Documentation: A report documenting the traffic study will be prepared. The report will be signed and sealed by a professional engineer, registered in the State of Florida, with a specialization in traffic analysis and transportation planning.

Thank you, Mike

Michael D. Raysor, P.E.
RAYSOR Transportation Consulting
19046 Bruce B. Downs Boulevard, #308
Tampa, Florida 33647
(813) 625-1699 | (813) 413-7432 fx

From: mdr@raysor-transportation.com <mdr@raysor-transportation.com>

Sent: Wednesday, January 8, 2020 12:45 PM

To: 'Adam.doyle@dot.state.fl.us' <Adam.doyle@dot.state.fl.us>

Subject: Burger King Site (16130 NW US Hwy 441, Alachua)

Good afternoon Adam. I am emailing you as a follow up to the pre-app meeting held yesterday with Robin Kendall regarding the Burger King site proposed at 16130 NW US Hwy 441, in Alachua.

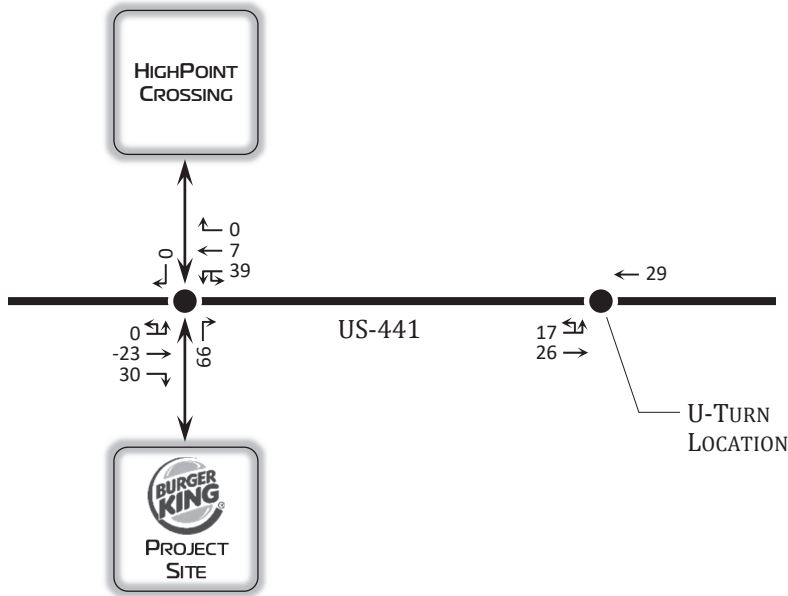
We will be undertaking the traffic study for the site, to be prepared consistent with FAC 14-96.

I will call you this afternoon to discuss.

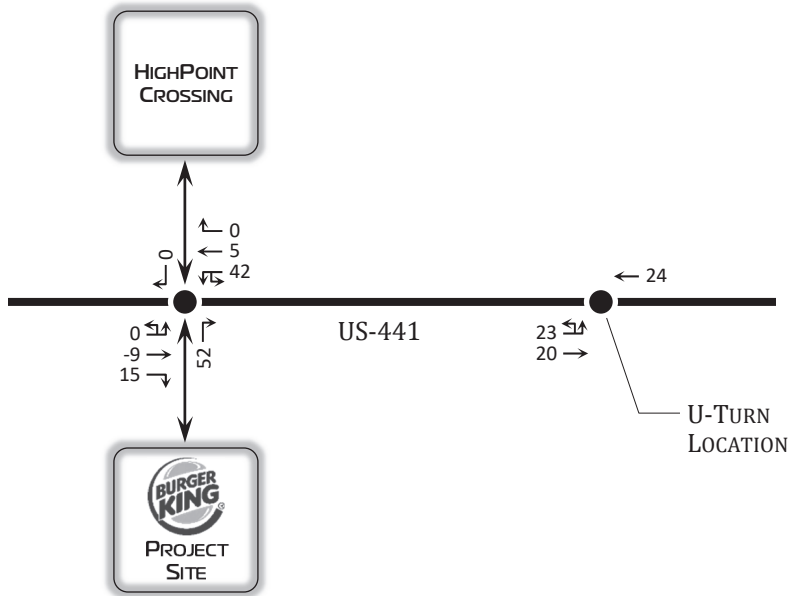
Thank you, Mike

Michael D. Raysor, P.E.
RAYSOR Transportation Consulting
19046 Bruce B. Downs Boulevard, #308
Tampa, Florida 33647
(813) 625-1699 | (813) 413-7432 fx

ATTACHMENT "B"



AM PEAK HOUR

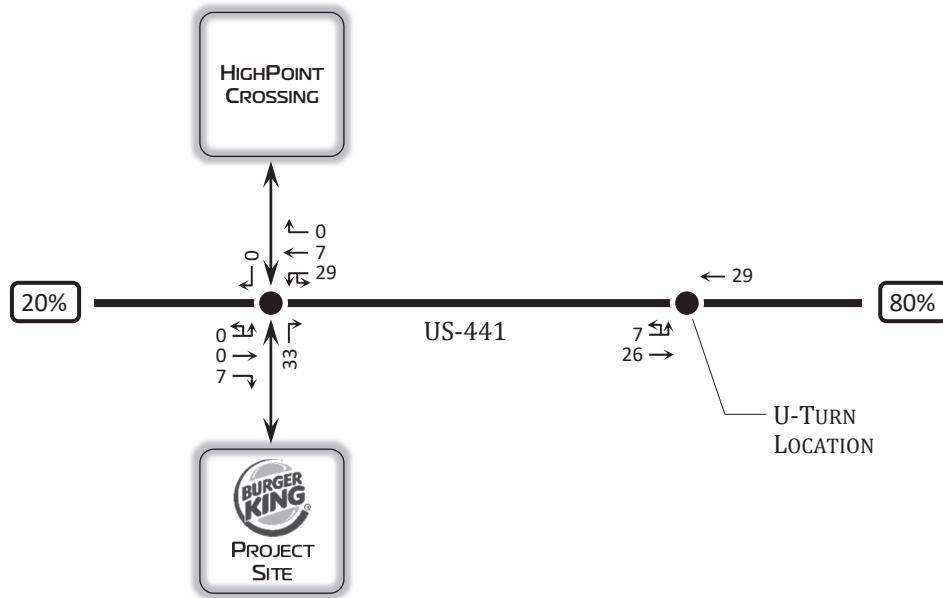


PM PEAK HOUR

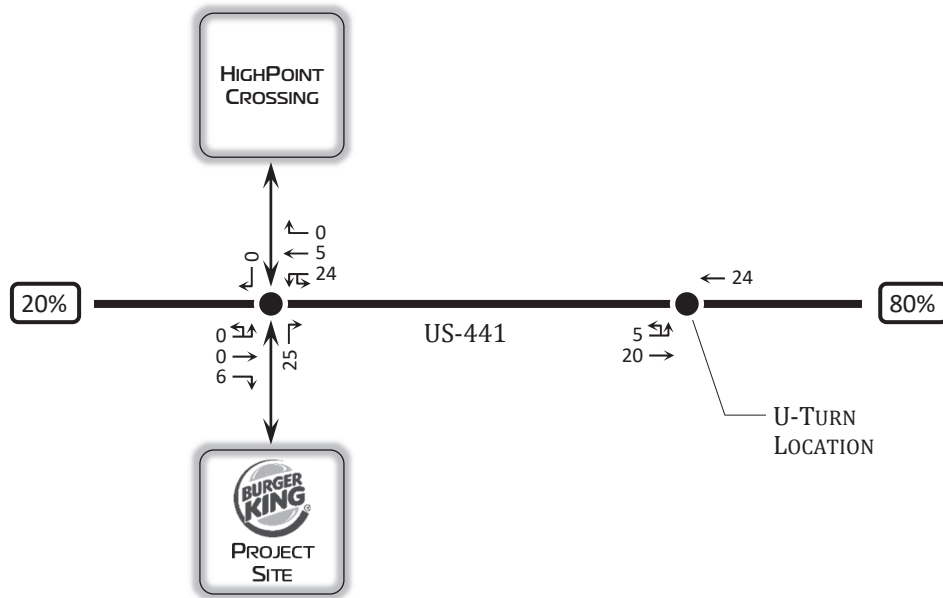


ALACHUA BURGER KING
Total Project Traffic

ATTACHMENT "B"



AM PEAK HOUR

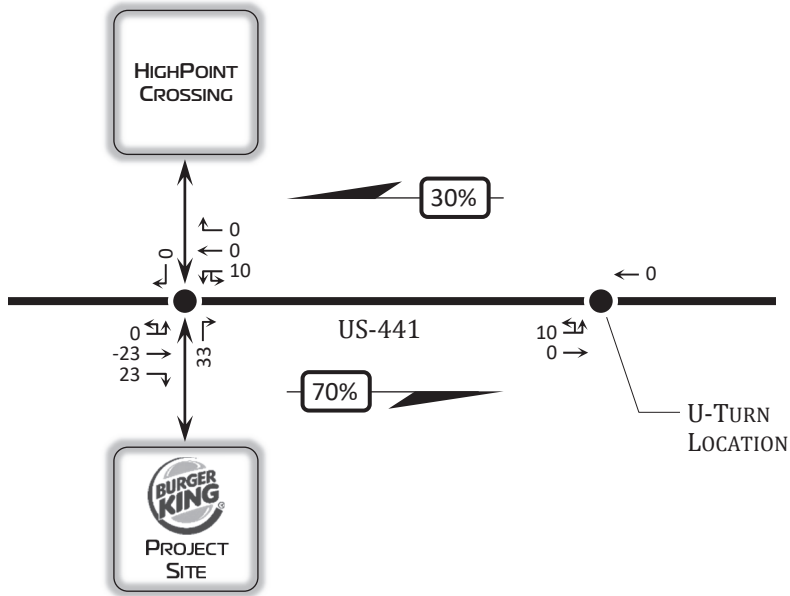


PM PEAK HOUR

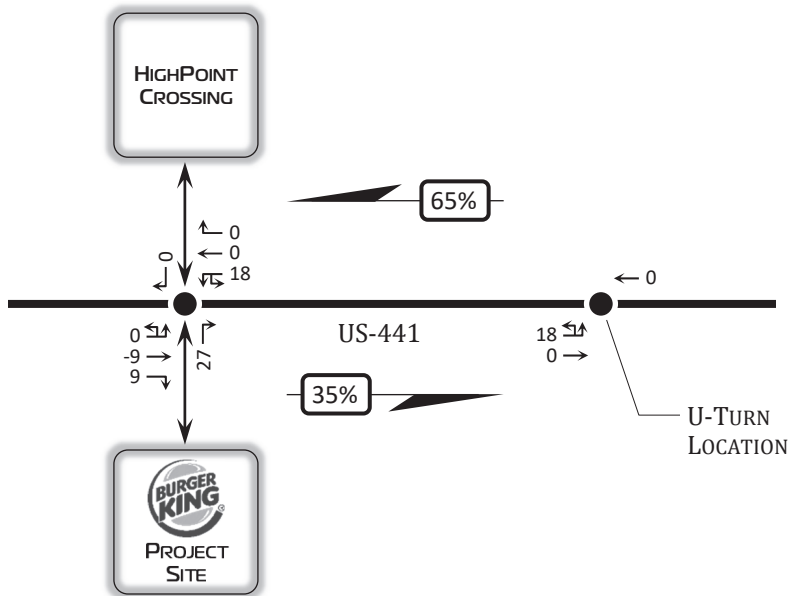


ALACHUA BURGER KING
New External Project Traffic

ATTACHMENT "B"



AM PEAK HOUR



PM PEAK HOUR



**ALACHUA BURGER KING
Pass-By Project Traffic**

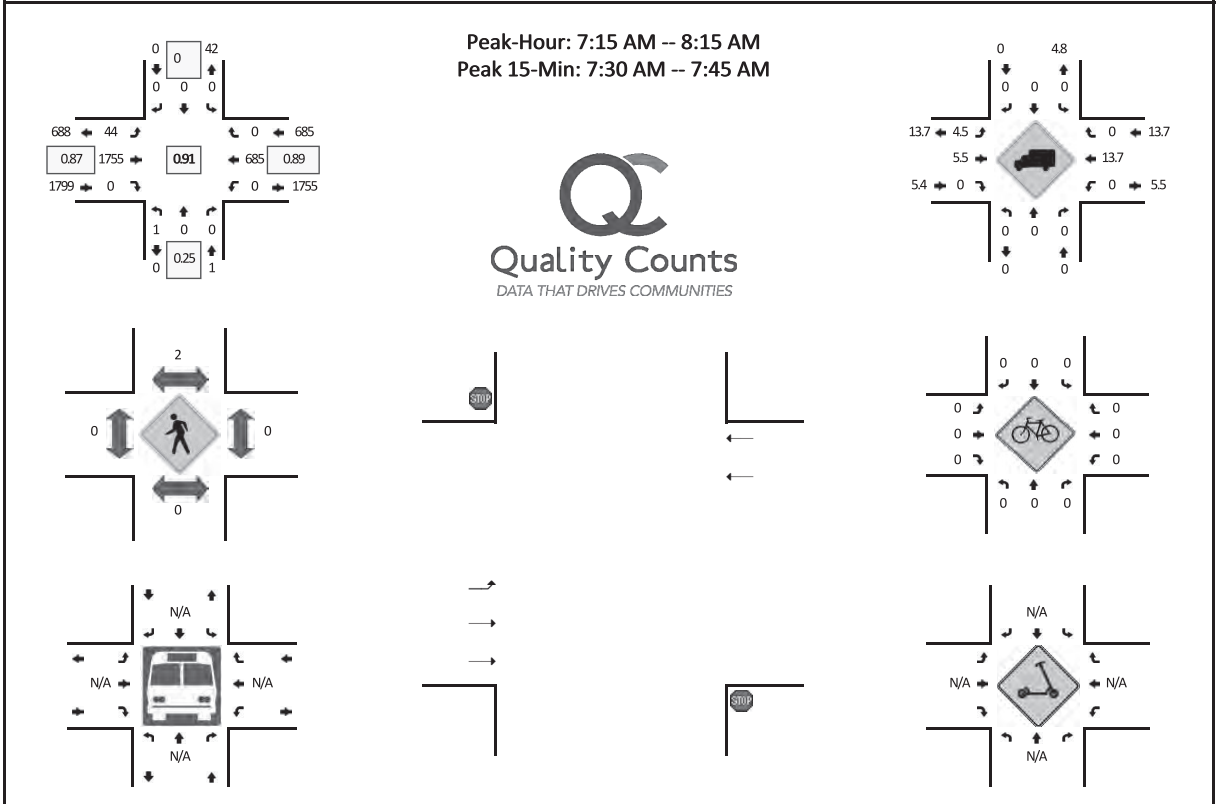
ATTACHMENT "C"

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Median Opening -- US-441
CITY/STATE: Alachua, FL

QC JOB #: 15164801
DATE: Thu, Jan 23 2020



15-Min Count Period Beginning At	Median Opening (Northbound)				Median Opening (Southbound)				US-441 (Eastbound)				US-441 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	10	426	0	0	0	113	0	0	549	
7:15 AM	0	0	0	0	0	0	0	0	8	486	0	0	0	154	0	0	648	
7:30 AM	0	0	0	0	0	0	0	0	9	506	0	0	0	165	0	0	680	
7:45 AM	1	0	0	0	0	0	0	0	12	402	0	0	0	173	0	0	588	2465
8:00 AM	0	0	0	0	0	0	0	0	13	361	0	2	0	193	0	0	569	2485
8:15 AM	0	0	0	0	0	0	0	0	14	340	0	0	0	175	0	0	529	2366
8:30 AM	0	1	0	0	1	0	0	0	1	347	0	0	0	203	0	0	553	2239
8:45 AM	0	0	0	0	0	0	0	0	6	312	0	0	0	149	0	0	467	2118
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	0	0	0	0	36	2024	0	0	0	660	0	0	2720	
Heavy Trucks	0	0	0	0	0	0	0	0	0	112	0	0	0	100	0	0	212	
Buses																		
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Scooters																		

Comments:

Report generated on 1/29/2020 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

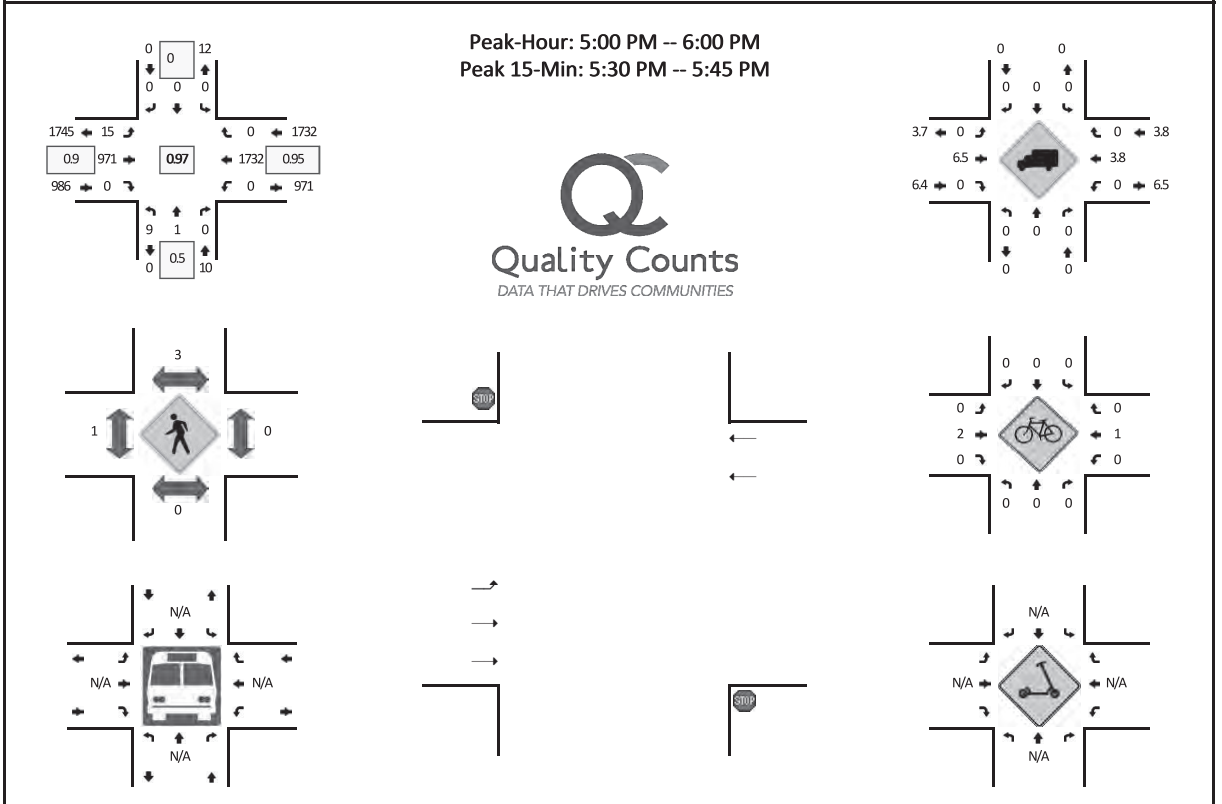
ATTACHMENT "C"

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Median Opening -- US-441
CITY/STATE: Alachua, FL

QC JOB #: 15164802
DATE: Thu, Jan 23 2020



15-Min Count Period Beginning At	Median Opening (Northbound)				Median Opening (Southbound)				US-441 (Eastbound)				US-441 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	1	0	0	0	0	0	0	4	227	0	2	0	370	0	0	606	
4:15 PM	0	0	0	0	0	0	0	0	1	230	0	2	0	353	0	0	586	
4:30 PM	2	0	0	0	0	0	0	0	1	206	0	0	0	392	0	0	601	
4:45 PM	2	0	0	0	0	0	0	0	4	224	0	1	0	418	0	0	649	2442
5:00 PM	2	0	0	0	0	0	0	0	3	271	0	1	0	415	0	0	692	2528
5:15 PM	2	0	0	0	0	0	0	0	2	223	0	0	0	420	0	0	647	2589
5:30 PM	1	0	0	0	0	0	0	0	4	245	0	0	0	456	0	0	706	2694
5:45 PM	4	1	0	0	0	0	0	0	2	232	0	3	0	441	0	0	683	2728
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	0	0	0	0	0	0	0	16	980	0	0	0	1824	0	0	2824	
Heavy Trucks	0	0	0	0	0	0	0	0	0	72	0	0	0	76	0	0	148	
Buses																		
Pedestrians		0				4				0				0			4	
Bicycles	0	0	0		0	0	0		0	0	0		0	1	0		1	
Scoters																		

Comments:

Report generated on 1/29/2020 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

ATTACHMENT "C"

2018 PEAK SEASON FACTOR CATEGORY REPORT - REPORT TYPE: ALL
 CATEGORY: 2600 ALACHUA COUNTYWIDE

WEEK	DATES	SF	MOCF: 0.97 PSCF
1	01/01/2018 - 01/06/2018	1.05	1.08
2	01/07/2018 - 01/13/2018	1.05	1.08
3	01/14/2018 - 01/20/2018	1.05	1.08
4	01/21/2018 - 01/27/2018	1.03	1.06
5	01/28/2018 - 02/03/2018	1.05	1.08
6	02/04/2018 - 02/10/2018	0.99	1.02
* 7	02/11/2018 - 02/17/2018	0.97	1.00
* 8	02/18/2018 - 02/24/2018	0.97	1.00
* 9	02/25/2018 - 03/03/2018	0.97	1.00
*10	03/04/2018 - 03/10/2018	0.97	1.00
*11	03/11/2018 - 03/17/2018	0.97	1.00
*12	03/18/2018 - 03/24/2018	0.97	1.00
*13	03/25/2018 - 03/31/2018	0.96	0.99
*14	04/01/2018 - 04/07/2018	0.96	0.99
*15	04/08/2018 - 04/14/2018	0.96	0.99
*16	04/15/2018 - 04/21/2018	0.96	0.99
*17	04/22/2018 - 04/28/2018	0.97	1.00
*18	04/29/2018 - 05/05/2018	0.98	1.01
*19	05/06/2018 - 05/12/2018	0.99	1.02
20	05/13/2018 - 05/19/2018	1.00	1.03
21	05/20/2018 - 05/26/2018	1.01	1.04
22	05/27/2018 - 06/02/2018	1.01	1.04
23	06/03/2018 - 06/09/2018	1.02	1.05
24	06/10/2018 - 06/16/2018	1.02	1.05
25	06/17/2018 - 06/23/2018	1.03	1.06
26	06/24/2018 - 06/30/2018	1.04	1.07
27	07/01/2018 - 07/07/2018	1.04	1.07
28	07/08/2018 - 07/14/2018	1.05	1.08
29	07/15/2018 - 07/21/2018	1.06	1.09
30	07/22/2018 - 07/28/2018	1.04	1.07
31	07/29/2018 - 08/04/2018	1.02	1.05
32	08/05/2018 - 08/11/2018	1.01	1.04
33	08/12/2018 - 08/18/2018	0.99	1.02
34	08/19/2018 - 08/25/2018	0.99	1.02
35	08/26/2018 - 09/01/2018	0.99	1.02
36	09/02/2018 - 09/08/2018	0.99	1.02
37	09/09/2018 - 09/15/2018	0.99	1.02
38	09/16/2018 - 09/22/2018	0.99	1.02
39	09/23/2018 - 09/29/2018	0.98	1.01
40	09/30/2018 - 10/06/2018	0.98	1.01
41	10/07/2018 - 10/13/2018	0.97	1.00
42	10/14/2018 - 10/20/2018	0.97	1.00
43	10/21/2018 - 10/27/2018	0.98	1.01
44	10/28/2018 - 11/03/2018	0.99	1.02
45	11/04/2018 - 11/10/2018	1.00	1.03
46	11/11/2018 - 11/17/2018	1.01	1.04
47	11/18/2018 - 11/24/2018	1.02	1.05
48	11/25/2018 - 12/01/2018	1.03	1.06
49	12/02/2018 - 12/08/2018	1.04	1.07
50	12/09/2018 - 12/15/2018	1.05	1.08
51	12/16/2018 - 12/22/2018	1.05	1.08
52	12/23/2018 - 12/29/2018	1.05	1.08
53	12/30/2018 - 12/31/2018	1.05	1.08

* PEAK SEASON



JACKSONVILLE | GAINESVILLE | OCALA
8563 Argyle Business Loop, Ste. 3, Jacksonville, Florida 32244
132 NW 76th Drive, Gainesville, Florida 32607
101 NE 1st Avenue, Ocala, Florida 34470
WWW.CHW-INC.COM

TRAFFIC IMPACT ANALYSIS FOR

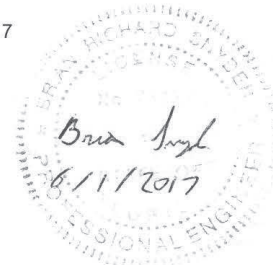


HighPoint Crossing Alachua, Florida

Submitted to:
Florida Department of Transportation
City of Alachua

Prepared for:
Alachua A One, LLC
15260 NW 147th Drive, Suite 100
Alachua, FL 32615

Submitted June 1, 2017
16-0638



planning.design.surveying.engineering.construction.

HWY 441 at Site Access - AM Peak Hour Background / Build Out Traffic Volumes

Scenario	Site Access (Southbound)			HWY 441 (Westbound)			Driveway (Northbound)			HWY 441 (Eastbound)				
	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn
	Observed Turning Movement Counts	0	0	0	0	543	5	49	21	0	3	24	1717	0
Peak Season Volume (Existing)	0	0	0	0	532	5	48	21	0	3	24	1683	0	1
2020 Background Volumes	0	0	0	0	548	5	49	21	0	3	24	1734	0	1
2020 Background + Build-Out Volumes	30	0	0	19	548	5	49	21	0	3	24	1747	7	1
2025 Background Volumes	0	0	0	0	576	5	52	21	0	3	24	1822	0	1
2025 Background + Build-Out Volumes	84	0	0	56	576	5	52	21	0	3	24	1858	20	1
2030 Background Volumes	0	0	0	0	605	5	55	21	0	3	24	1915	0	1
2030 Background + Build-Out Volumes	308	0	0	175	605	5	55	21	0	3	24	2064	63	1

Table 8 – HWY 441 at Site Access – AM

HWY 441 at Site Access - PM Peak Hour Background / Build Out Traffic Volumes

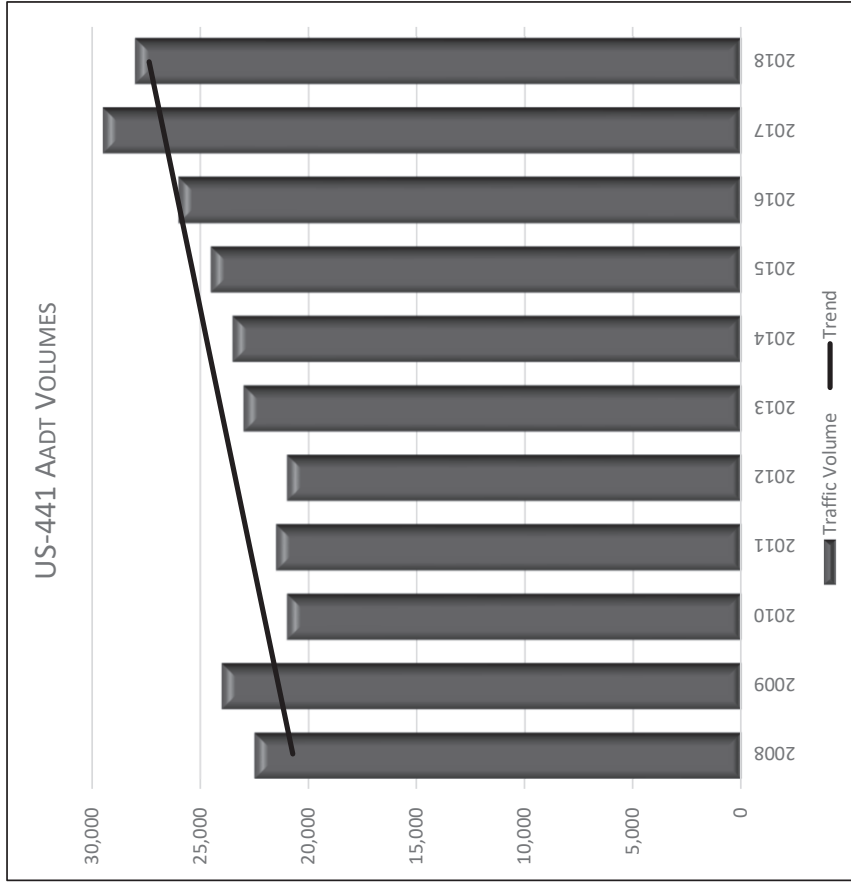
Scenario	Site Access (Southbound)			HWY 441 (Westbound)			Driveway (Northbound)			HWY 441 (Eastbound)				
	Right	Thru	Left	Right	Thru	Left	U-Turn	Right	Thru	Left	Right	Thru	Left	U-Turn
	Observed Turning Movement Counts	0	0	0	1	1634	8	57	17	0	8	22	879	0
Peak Season Volume (Existing)	0	0	0	0	1601	8	56	17	0	8	22	861	0	14
2020 Background Volumes	0	0	0	0	1650	8	58	17	0	8	22	887	0	14
2020 Background + Project Trips	22	0	0	19	1650	8	58	17	0	8	22	905	6	14
2025 Background Volumes	0	0	0	0	1734	8	61	17	0	8	22	932	0	15
2025 Background + Project Trips	160	0	0	123	1734	8	61	17	0	8	22	1035	44	15
2030 Background Volumes	0	0	0	0	1822	8	64	17	0	8	22	980	0	16
2030 Background + Project Trips	281	0	0	201	1822	8	64	17	0	8	22	1184	136	16

Table 9 – HWY 441 at Site Access – PM

Alachua Burger King
Growth Rate Calculations

Year	US-441 west of I-75	Total	Linear Trend
2018	28,000	28,000	27,364
2017	29,500	29,500	26,700
2016	26,000	26,000	26,036
2015	24,500	24,500	25,373
2014	23,500	23,500	24,709
2013	23,000	23,000	24,045
2012	21,000	21,000	23,382
2011	21,500	21,500	22,718
2010	21,000	21,000	22,055
2009	24,000	24,000	21,391
2008	22,500	22,500	20,727
10 Year Growth Rate >>>			3.2%

SOURCE
FDOT Count Station 26-0461



ATTACHMENT "D"

FLORIDA DEPARTMENT OF TRANSPORTATION
 TRANSPORTATION STATISTICS OFFICE
 2018 HISTORICAL AADT REPORT

COUNTY: 26 - ALACHUA

SITE: 0461 - SR 20 .2 MI. NW OF SR 93




















YEAR	AADT		DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
----	-----		-----	-----	-----	-----	-----
2018	28000 C	N	14000	S 14000	9.50	57.90	4.90
2017	29500 C	N	14500	S 15000	9.50	53.80	4.60
2016	26000 C	N	13000	S 13000	9.50	53.60	4.90
2015	24500 C	N	12500	S 12000	9.50	57.00	5.20
2014	23500 C	N	11500	S 12000	9.50	57.40	5.40
2013	23000 C	N	11500	S 11500	9.50	57.80	5.00
2012	21000 C	N	10500	S 10500	9.50	58.40	4.90
2011	21500 C	N	10500	S 11000	9.50	58.80	5.50
2010	21000 C	N	10500	S 10500	10.13	59.87	5.10
2009	24000 C	N	12000	S 12000	10.04	57.81	6.20
2008	22500 C	N	11000	S 11500	10.17	57.73	7.30
2007	26000 C	N	13000	S 13000	10.22	58.44	5.70
2006	24500 C	N	12000	S 12500	9.98	59.05	6.70
2005	21000 C	N	10500	S 10500	10.10	58.20	19.60
2004	22500 C	N	11500	S 11000	10.20	62.30	9.10
2003	21000 C	N	10500	S 10500	10.20	59.50	12.10

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

ATTACHMENT "E"

HCM Unsignalized Intersection Capacity Analysis
100: Project Site Driveway & US-441

Alachua Burger King
AM Peak Hour Post-Development Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	2041	30	94	612	175	0	0	66	0	0	308
Future Volume (Veh/h)	64	2041	30	94	612	175	0	0	66	0	0	308
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	69	2195	32	101	658	188	0	0	71	0	0	331
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	846			2227			3211	3397	1114	2166	3225	329
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	846			2227			3211	3397	1114	2166	3225	329
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			56			100	100	65	100	100	50
cM capacity (veh/h)	787			230			1	4	203	11	5	667
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	69	1463	764	101	329	329	188	71	331			
Volume Left	69	0	0	101	0	0	0	0	0			
Volume Right	0	0	32	0	0	0	188	71	331			
cSH	787	1700	1700	230	1700	1700	1700	203	667			
Volume to Capacity	0.09	0.86	0.45	0.44	0.19	0.19	0.11	0.35	0.50			
Queue Length 95th (ft)	7	0	0	52	0	0	0	37	69			
Control Delay (s)	10.0	0.0	0.0	32.3	0.0	0.0	0.0	32.0	15.6			
Lane LOS	B			D				D	C			
Approach Delay (s)	0.3			3.4				32.0	15.6			
Approach LOS								D	C			
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			69.2%		ICU Level of Service				C			
Analysis Period (min)			15									

ATTACHMENT "E"

HCM Unsignalized Intersection Capacity Analysis
200: US-441 & Easterly U-Turn Location

Alachua Burger King
AM Peak Hour Post-Development Traffic






















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷↷	↷↷			
Traffic Volume (veh/h)	65	2097	862	0	0	0
Future Volume (Veh/h)	65	2097	862	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	70	2255	927	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		350				
pX, platoon unblocked						
vC, conflicting volume	927				2194	464
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	927				2194	464
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	90				100	100
cM capacity (veh/h)	733				35	545
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	
Volume Total	70	1128	1128	464	464	
Volume Left	70	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	733	1700	1700	1700	1700	
Volume to Capacity	0.10	0.66	0.66	0.27	0.27	
Queue Length 95th (ft)	8	0	0	0	0	
Control Delay (s)	10.4	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	0.3			0.0		
Approach LOS						
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			61.3%		ICU Level of Service	B
Analysis Period (min)			15			

ATTACHMENT "E"

HCM Unsignalized Intersection Capacity Analysis
100: Project Site Driveway & US-441

Alachua Burger King
PM Peak Hour Post-Development Traffic

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	152	1175	15	106	1827	201	0	0	52	0	0	281
Future Volume (Veh/h)	152	1175	15	106	1827	201	0	0	52	0	0	281
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	160	1237	16	112	1923	212	0	0	55	0	0	296
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2135			1253			3046	3924	626	3140	3720	962
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2135			1253			3046	3924	626	3140	3720	962
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	36			80			0	100	87	100	100	0
cM capacity (veh/h)	250			551			0	1	427	2	1	256
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	WB 4	NB 1	SB 1			
Volume Total	160	825	428	112	962	962	212	55	296			
Volume Left	160	0	0	112	0	0	0	0	0			
Volume Right	0	0	16	0	0	0	212	55	296			
cSH	250	1700	1700	551	1700	1700	1700	427	256			
Volume to Capacity	0.64	0.49	0.25	0.20	0.57	0.57	0.12	0.13	1.16			
Queue Length 95th (ft)	98	0	0	19	0	0	0	11	333			
Control Delay (s)	41.7	0.0	0.0	13.2	0.0	0.0	0.0	14.7	146.3			
Lane LOS	E			B				B	F			
Approach Delay (s)	4.7			0.7				14.7	146.3			
Approach LOS								B	F			
Intersection Summary												
Average Delay				13.0								
Intersection Capacity Utilization			74.6%		ICU Level of Service				D			
Analysis Period (min)			15									

ATTACHMENT "E"

HCM Unsignalized Intersection Capacity Analysis 200: US-441 & Easterly U-Turn Location

Alachua Burger King
PM Peak Hour Post-Development Traffic



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↷	↷			
Traffic Volume (veh/h)	39	1252	2107	0	0	0
Future Volume (Veh/h)	39	1252	2107	0	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	41	1318	2218	0	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		350				
pX, platoon unblocked						
vC, conflicting volume	2218			2959	1109	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2218			2959	1109	
tC, single (s)	4.1			6.8	6.9	
tC, 2 stage (s)						
tF (s)	2.2			3.5	3.3	
p0 queue free %	82			100	100	
cM capacity (veh/h)	232			9	204	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	
Volume Total	41	659	659	1109	1109	
Volume Left	41	0	0	0	0	
Volume Right	0	0	0	0	0	
cSH	232	1700	1700	1700	1700	
Volume to Capacity	0.18	0.39	0.39	0.65	0.65	
Queue Length 95th (ft)	16	0	0	0	0	
Control Delay (s)	23.8	0.0	0.0	0.0	0.0	
Lane LOS	C					
Approach Delay (s)	0.7			0.0		
Approach LOS						
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			61.6%		ICU Level of Service	B
Analysis Period (min)			15			