

TRAFFIC IMPACT STUDY

Variety Retail Store US Highway 17 Green Cove Springs, Florida

May 11, 2022

prepared for:
FLORIDA DOT DISTRICT 2

submitted on behalf of:
Concept Development, Inc.

prepared by:
The logo for HAGEN CONSULTING SERVICES, LLC features a stylized blue cross symbol to the left of the word "HAGEN" in a bold, sans-serif font. Below "HAGEN" are the words "CONSULTING" and "SERVICES, LLC" in a smaller, all-caps, sans-serif font.

PROFESSIONAL ENGINEER ENDORSEMENT

I hereby certify that I am a Registered Professional Engineer in the State of Florida and currently practicing as the principal of Hagen Consulting Services, LLC.

Hagen Consulting Services, LLC is authorized via Registry No: 27955 to operate as an Engineering Business by the Florida Board of Professional Engineers, State of Florida, Department of Professional Regulation.

I have prepared or supervised the preparation of the evaluation, findings, conclusions, recommendations, and professional opinions/advice contained in this document. My endorsement constitutes my approval of these items.

PROJECT: Green Cove Retail Store
LOCATION: Green Cove Springs, Florida
CLIENT: Concept Development, Inc.

The results contained in this report were developed using procedures and references standard to the transportation engineering practice. These references and procedures were applied using professional judgment and experience.

Name: Lawrence T. Hagen, P.E., PTOE, RSP
Florida P.E. No.: 43968
Date: May 17, 2022



This item has been digitally signed and sealed by Lawrence T. Hagen on the date adjacent to the seal.

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EXECUTIVE SUMMARY

The results of the traffic impact analysis for the proposed variety retail store location on US Highway 17 south of Green Cove Springs show that the traffic generated by the development will not have a significant impact on the operation of the roadway network surrounding it. The proposed STOP-Controlled driveway connection at the intersection will continue to operate at an acceptable Level of Service with the addition of the projected traffic from the development.

The project location is within unincorporated Clay County south of the City of Green Cove Springs, Florida and US Highway 17 is under the jurisdiction of the Florida DOT. This study utilized turning movement count data for the AM and PM Peak Hours collected by Hagen Consulting Services in May of 2022. The turning movement count information for the AM and PM Peak Hours of traffic were analyzed with and without the project traffic utilizing the Highway Capacity Manual (HCM) procedures.

The project traffic was developed using the Institute of Transportation Engineers (ITE) *Trip Generation* – 11th Edition. The ITE Land Use Code for a variety retail store was used to estimate the trips generated by the proposed 10,640 square foot building. The trips were then distributed on the transportation network to estimate the traffic impacts.

The HCM analysis showed that the intersection, and hence the roadway network adjacent to the site, will be able to accommodate the traffic from the proposed development without a significant degradation in operational performance. Traffic conditions in the area will continue to operate at a very good level that meets the needs of the traveling public.

INTRODUCTION

Hagen Consulting Services, LLC is assisting Concept Development, Inc. with the transportation impacts for the proposed new 10,640 square foot variety retail store in Clay County, Florida. The site will serve the Green Cove Springs community. The proposed retail store site is located off US Highway 17 South of Green Cove Springs. The approximate address for the site is 5010 US Highway 17. US Highway 17 is under the jurisdiction of the Florida Department of Transportation, District Two. The proposed site will have a connection to US 17. The site currently is occupied by a business selling small, manufactured buildings and other miscellaneous uses. The project location is shown in **Figure 1** below.

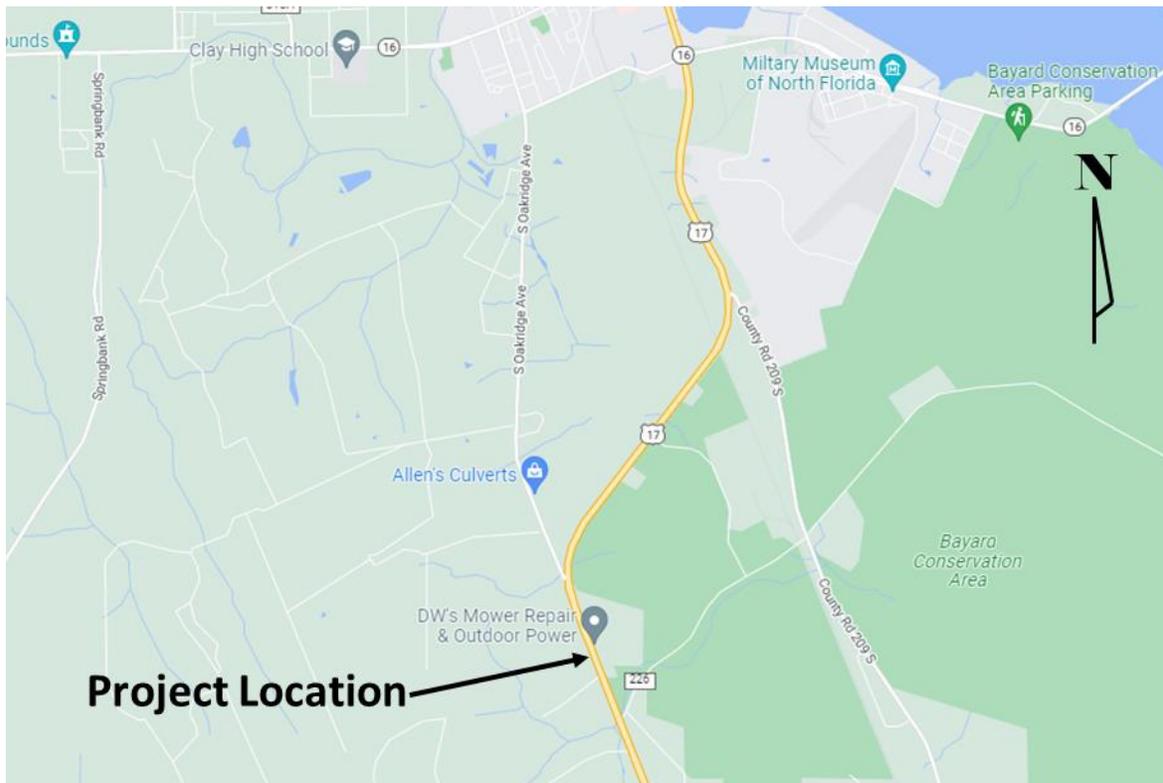


Figure 1 - Project Location Map

The preliminary site plan for the proposed retail store is shown in **Figure 2** on the following page.

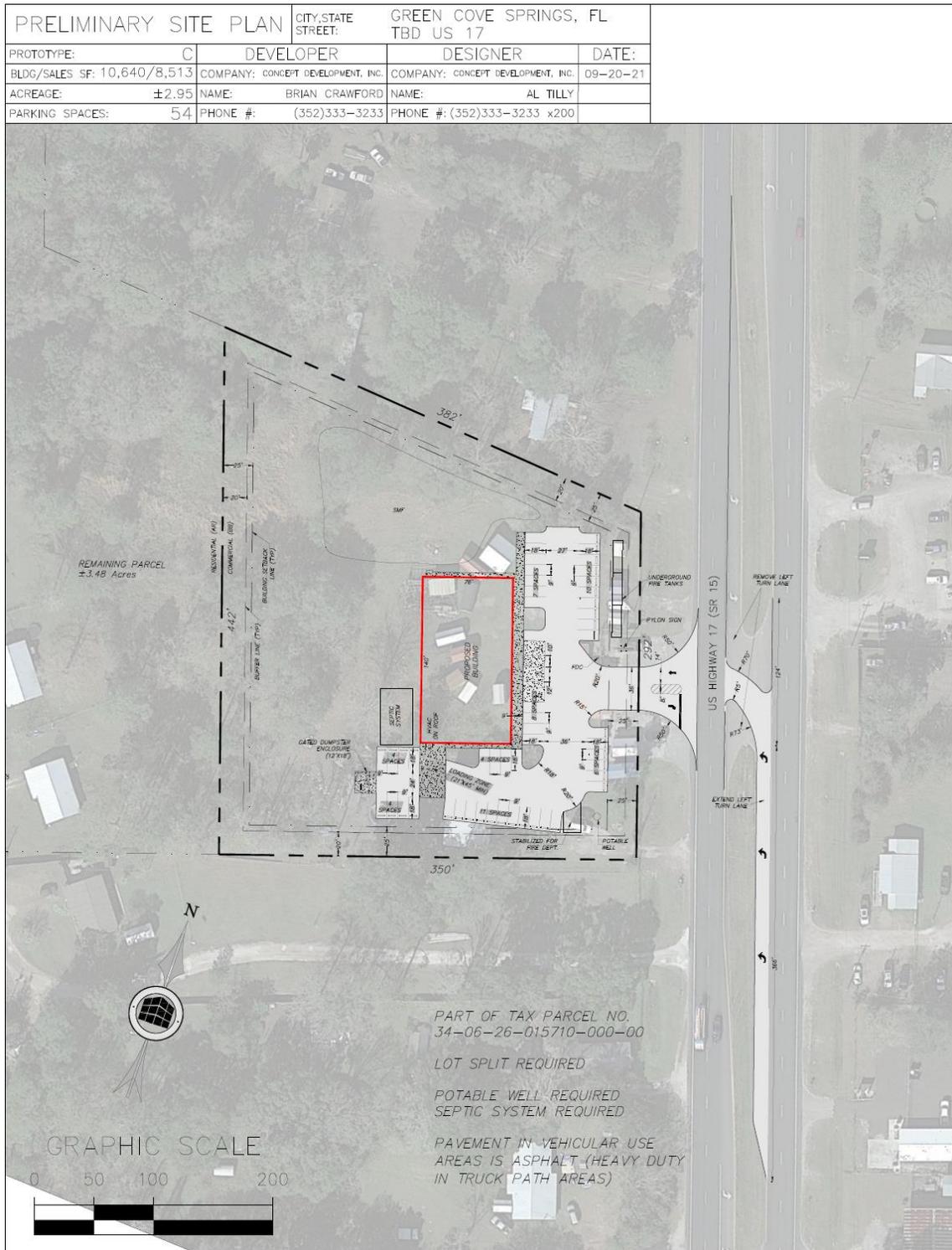


Figure 2 - Preliminary Site Plan

The 11th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation* is the recognized authoritative source for estimating the trips generated by developments such as the proposed variety retail store facility. According to *Trip Generation*, a variety retail facility such as proposed here falls under ITE Land Use Code 814 – Variety Store. The assessment of the traffic impacts of the proposed variety retail store will be based on the impacts to traffic in the AM and PM peak hour periods.

The traffic impacts of the proposed development will be based on a Highway Capacity Software analysis of the operation of the signalized intersection adjoining the site both with and without the traffic generated by the development. A comparison of the delay and Level Of Service (LOS) with and without the project traffic will serve as the basis of the analysis.

EXISTING CONDITIONS

US Highway 17 is a four-lane divided cross-section, featuring two lanes in each direction and a center grass median. The cross-section features paved shoulders and has open drainage outside of the shoulder. As US Highway 17 approaches the proposed retail store site, there are existing left turn lanes developed in both directions and a full median opening at the project site location. The posted speed limit on US Highway 17 in the vicinity of the proposed retail store is 60 mph.

Existing AM and PM Peak Hour turning movement counts were collected at the proposed project site. Two hours of AM Peak data (7:00 AM – 9:00 AM) and two hours of PM Peak data (4:00 PM – 6:00 PM) were collected. From these counts, the AM Peak Hour (7:00 – 8:00 AM) and PM Peak Hour (4:30 – 5:30 PM) turning movement counts were determined. The AM and PM Peak Hour turning movement counts are shown in **Figure 3** below.

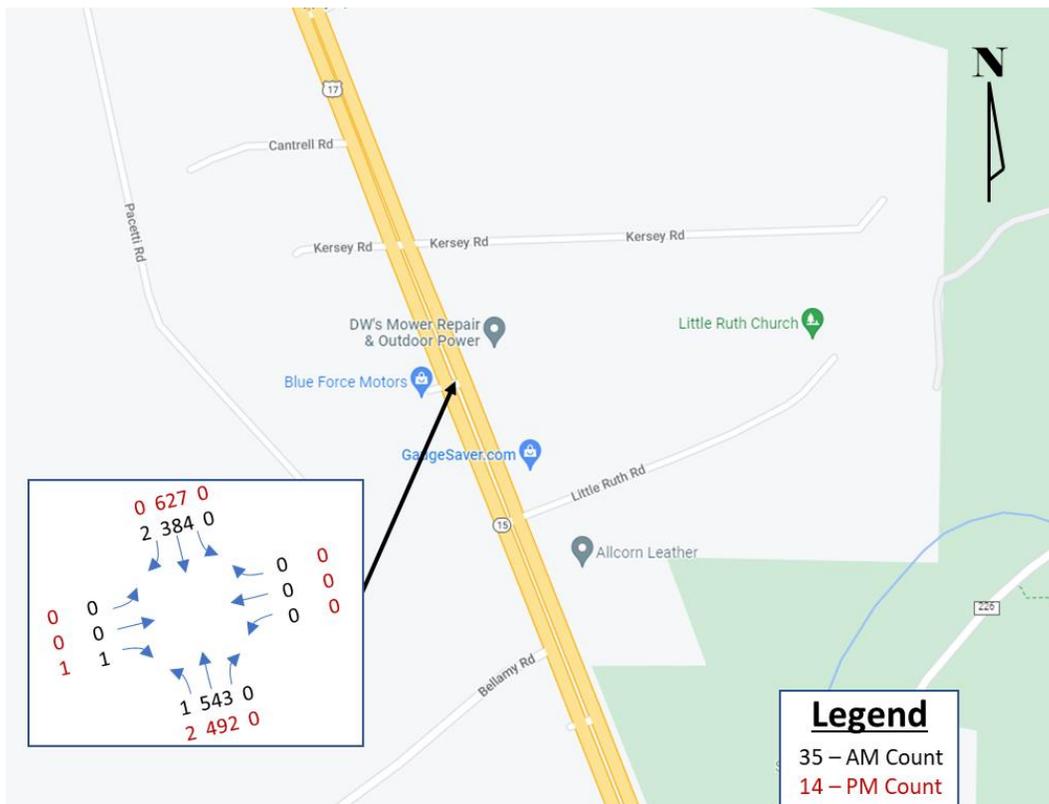


Figure 3 - Existing AM and PM Peak Hour Turning Movement Counts

The raw turning movement count data for the AM and PM Peak Hour is included in Appendix A.

TRIP GENERATION

The Institute of Transportation Engineers (ITE) *Trip Generation* 11th Edition was used to calculate the project trip estimates for the new land use at the project site. Trip generations estimates are shown in terms of daily traffic, as well as the AM and PM peak hours. The proposed Variety Retail Store falls under ITE Land Use Code 814 – Variety Store. The trip generation information for the proposed Variety Retail Store is shown in Table 1 below.

TABLE 1: Trip Generation
Variety Retail Store – ITE Land Use 814 – 10,640 SF
 Green Cove Springs, Florida

Period	ITE Rate	Units	Trips	Distribution		Trips		
				% In	% Out	In	Out	Net
Weekday	T = 63.66 (X)	10.64	677	50%	50%	339	339	677
AM Peak	T = 3.04 (X)	10.64	32	55%	45%	18	15	32
PM Peak	T = 6.70 (X)	10.64	71	51%	49%	36	35	71

Source: ITE 11th Edition of Trip Generation - Units: 1,000 square feet Gross Floor Area

The 2021 Pass-By Tables for ITE’s *Trip Generation* indicate a 34% pass-by rate for Land Use 814. This means that 34% of the trips generated are existing pass-by trips, and the net new trips represent 66% of the estimated *Trip Generation* number.

TABLE 2: Net Trip Generation with Pass-By Reduction

Period	Trips	Pass-By	Net Trips	Distribution		Net Trips		
				% In	% Out	In	Out	Net
Weekday	677	34%	447	50%	50%	224	224	447
AM Peak	32	34%	21	55%	45%	12	10	21
PM Peak	71	34%	47	51%	49%	24	23	47

The trip generation data is then used to develop the external distribution of project trips onto the adjacent roadway network from the project site. The next section of the report presents information on the trip distribution.

TRIP DISTRIBUTION

The distribution of project trips on the roadway network is a manual assignment derived from the AM and PM peak period traffic data collected on the adjacent roadway and a review of existing locations of interacting land-uses. The distribution is based on engineering judgment of the expected routes that patrons would take to / from the proposed development. An essential consideration in the trip distribution will be the access management of US 17. The existing connection at the project site is a full median opening. As a part of the development of the project, the existing median opening will be converted to a directional opening with left turn access into the proposed project site. The AM and PM Peak Hour Project Net Trip Distribution is shown in **Figure 4** below.

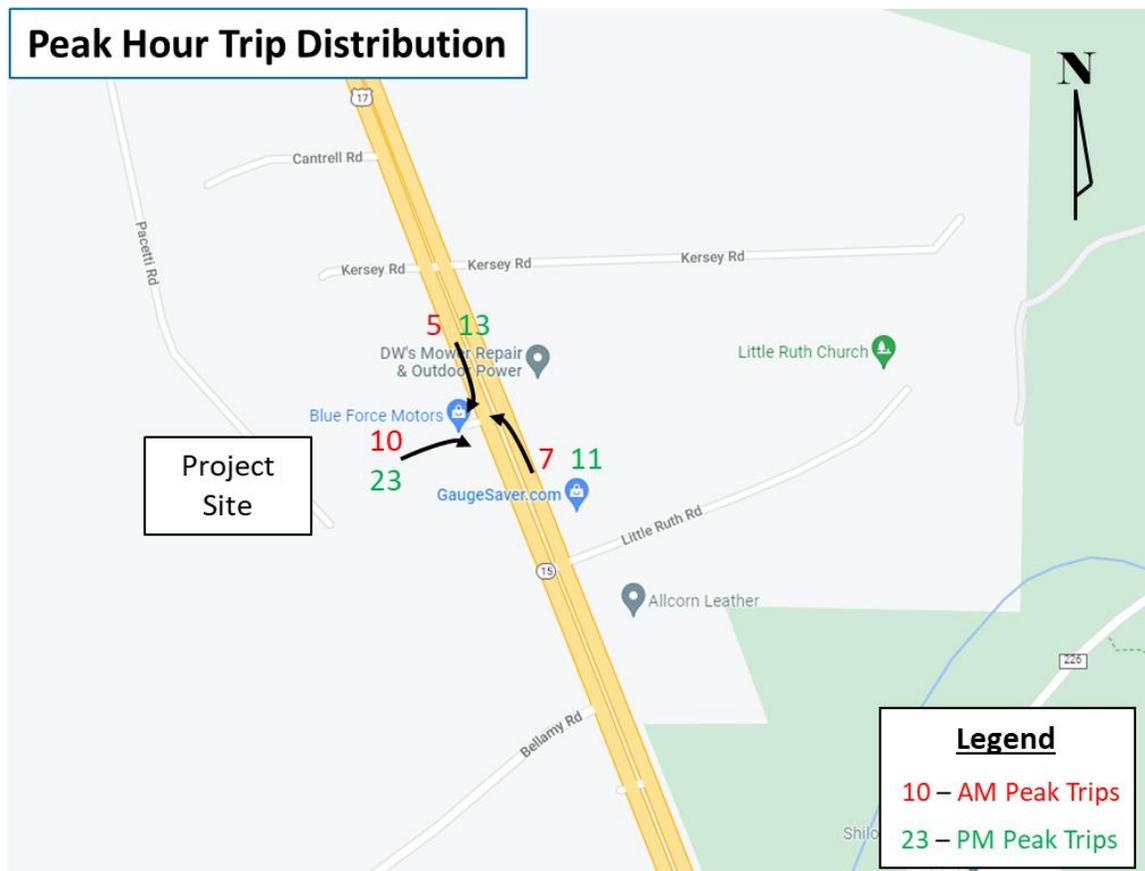


Figure 4 - Peak Hour Project Net Trip Distribution

INTERSECTION LEVEL OF SERVICE (LOS) ANALYSIS

The roadway Level Of Service (LOS) analysis is conducted using the procedures outlined in the Transportation Research Board’s *Highway Capacity Manual* (HCM). The HCM procedures represent the state-of-the-practice for the analysis of transportation facilities. It is assumed that the retail store connection would be a STOP-controlled connection onto US 17. For a STOP-Controlled intersection such as this, the primary metric for determination of the operating LOS is the amount of control delay in second per vehicle.

Existing turning movement count data was collected on Tuesday, May 3, 2022 at the project site location. Two hours of turning movement count data were collected for both the AM peak period (7 AM to 9 AM) and the PM peak period (4 PM to 6 PM). Out of that two-hours of data collection in each period, the overall AM peak hour of 7:00 AM to 8:00 AM and the overall PM peak hour of 4:30 PM to 5:30 PM were used in the analysis. The AM peak hour volumes along with the assigned new project trips are provided in **Table 3** below. The PM peak hour volumes along with the assigned new project trips are provided in **Table 4** below.

Table 3 – AM Peak Hour Volumes

Roadway	US Highway 17						Project Site					
Approach	Northbound			Southbound			Eastbound			Westbound		
Movement	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt
2022	1	543	0	0	384	2	0	0	1	0	0	0
Project	7	0	0	0	0	5	0	0	10	0	0	0
2023	8	543	0	0	384	7	0	0	11	0	0	0

Table 4 – PM Peak Hour Volumes

Roadway	US Highway 17						Project Site					
Approach	Northbound			Southbound			Eastbound			Westbound		
Movement	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt	Lt	Thru	Rt
2022	2	492	0	0	627	0	0	0	1	0	0	0
Project	11	0	0	0	0	13	0	0	23	0	0	0
2023	13	492	0	0	627	13	0	0	24	0	0	0

The Highway Capacity Software (HCS) Two-Way Stop-Controlled intersection module was utilized in analyzing the existing (2022) and the existing plus project traffic (2023). The results from the HCS analyses are summarized in **Table 5** and **Table 6** below. The outputs from HCS are included in Appendix B.

Table 5 – Intersection Level Of Service (AM)

Roadway	US Highway 17				Project Site			
Approach	Northbound		Southbound		Eastbound		Westbound	
MOE	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2022	A	8.3	A	8.8	A	9.6	-	-
2023	A	8.3	-	-	A	9.7	-	-

Table 6 – Intersection Level Of Service (PM)

Roadway	US Highway 17				Project Site			
Approach	Northbound		Southbound		Eastbound		Westbound	
MOE	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
2022	A	9.0	A	8.5	B	10.5	-	-
2023	A	9.1	-	-	B	10.8	-	-

Note that in Table 5 and Table 6, the values shown for the Northbound and Southbound delays reflect just the left turning vehicular delay since the through movements and right turns are uninterrupted. The values shown for the Project Site reflect the delays of all traffic exiting the proposed store site.

The HCS analyses show that the impacts of the proposed variety retail store development on the operation of the intersection is minimal. The project intersection is currently operating at a very good Level Of Service. All of the movements are operating at volume / capacity ratios of 0.1 or less. With the addition of the project traffic to this intersection, the intersection continues to provide a very good operation to the public.

CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing data and analysis provided, the following conclusions and recommendations are offered:

Conclusions:

- The proposed variety retail store is estimated to generate 21 net new trips in the AM Peak Hour and 47 net new trips in the PM Peak Hour
- The additional traffic generated by the proposed variety retail store will not have a noticeable impact on the Level Of Service of the adjoining STOP-controlled intersection and will not degrade the performance of the transportation network.

Recommendations:

- Approve the project connection on US Highway 17.

APPENDIX A: TURNING MOVEMENT COUNTS

Green Cove Springs Retail Site - TMC

Tue May 3, 2022

Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Vehicles)

All Movements

ID: 945915, Location: 29.927525, -81.685903, Site Code: 5010 US 17 Green Cove Springs

Provided by: Hagen Consulting Services
361 Strawder Road,
Ray City, GA, 31645, US

Leg Direction	US 17 Southbound				US 17 Northbound				5010 Driveway Eastbound				Int	
	T	R	U	App	L	T	U	App	L	R	U	App		
2022-05-03 7:00AM	98	1	0	99	1	131	0	132	0	0	0	0	0	231
7:15AM	114	1	0	115	0	156	0	156	0	0	0	0	0	271
7:30AM	83	0	0	83	0	131	0	131	0	0	0	0	0	214
7:45AM	89	0	0	89	0	125	0	125	0	1	0	0	1	215
Hourly Total	384	2	0	386	1	543	0	544	0	1	0	0	1	931
8:00AM	89	0	0	89	0	102	0	102	0	0	0	0	0	191
8:15AM	95	0	1	96	0	91	0	91	0	0	0	0	0	187
8:30AM	88	0	0	88	0	96	0	96	0	0	0	0	0	184
8:45AM	88	0	0	88	0	100	0	100	0	0	0	0	0	188
Hourly Total	360	0	1	361	0	389	0	389	0	0	0	0	0	750
4:00PM	135	1	0	136	0	109	0	109	0	0	0	0	0	245
4:15PM	140	0	0	140	0	107	0	107	0	0	0	0	0	247
4:30PM	171	0	0	171	1	110	1	112	0	1	0	0	1	284
4:45PM	126	0	0	126	0	133	0	133	0	0	0	0	0	259
Hourly Total	572	1	0	573	1	459	1	461	0	1	0	0	1	1035
5:00PM	174	0	0	174	0	132	0	132	0	0	0	0	0	306
5:15PM	156	0	0	156	0	117	0	117	0	0	0	0	0	273
5:30PM	143	0	0	143	0	107	0	107	0	0	0	0	0	250
5:45PM	145	0	0	145	0	148	0	148	0	0	0	0	0	293
Hourly Total	618	0	0	618	0	504	0	504	0	0	0	0	0	1122
Total	1934	3	1	1938	2	1895	1	1898	0	2	0	2	2	3838
% Approach	99.8%	0.2%	0.1%	-	0.1%	99.8%	0.1%	-	0%	100%	0%	-	-	-
% Total	50.4%	0.1%	0%	50.5%	0.1%	49.4%	0%	49.5%	0%	0.1%	0%	0.1%	-	-
Vehicles	1934	3	1	1938	2	1895	1	1898	0	2	0	2	2	3838
% Vehicles	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%	0%	100%	100%	100%

*L: Left, R: Right, T: Thru, U: U-Turn

Green Cove Springs Retail Site - TMC

Tue May 3, 2022

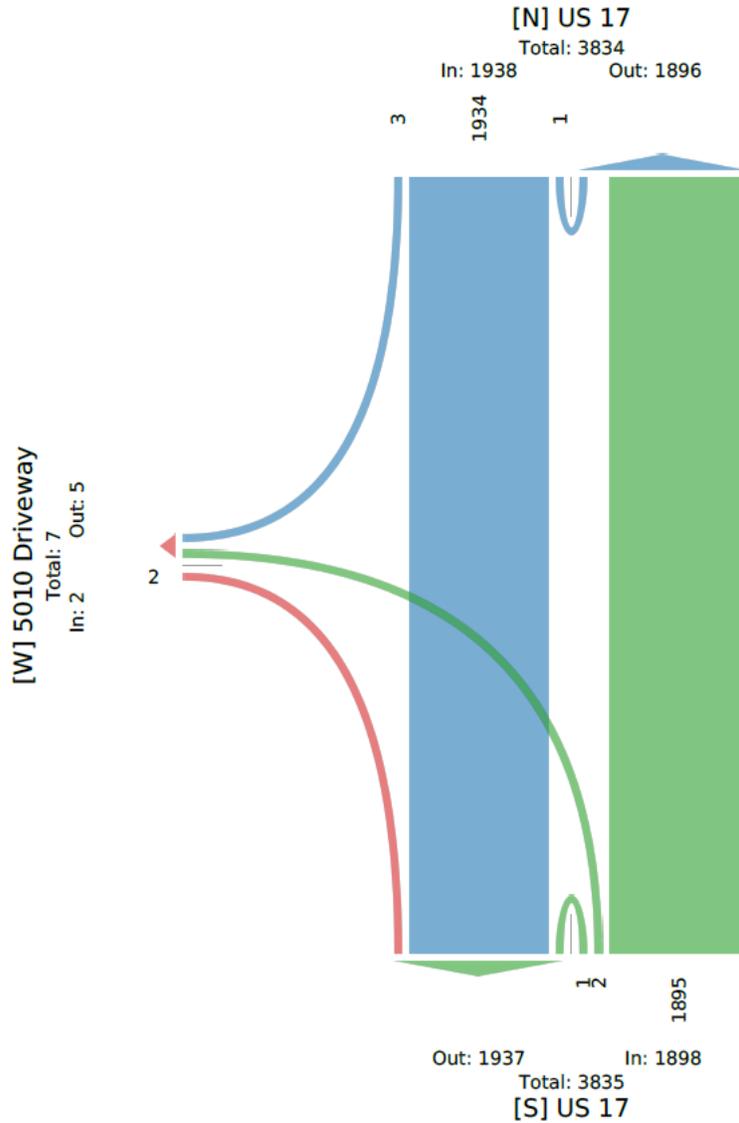
Full Length (7 AM-9 AM, 4 PM-6 PM)

All Classes (Vehicles)

All Movements

ID: 945915, Location: 29.927525, -81.685903, Site Code: 5010 US 17 Green Cove Springs

Provided by: Hagen Consulting Services
361 Strawder Road,
Ray City, GA, 31645, US



Green Cove Springs Retail Site - TMC

Tue May 3, 2022

AM Peak (7 AM - 8 AM)

All Classes (Vehicles)

All Movements

ID: 945915, Location: 29.927525, -81.685903, Site Code: 5010 US 17 Green Cove Springs

Provided by: Hagen Consulting Services
361 Strawder Road,
Ray City, GA, 31645, US

Leg Direction	US 17 Southbound				US 17 Northbound				5010 Driveway Eastbound				Int	
	T	R	U	App	L	T	U	App	L	R	U	App		
2022-05-03 7:00AM	98	1	0	99	1	131	0	132	0	0	0	0	0	231
7:15AM	114	1	0	115	0	156	0	156	0	0	0	0	0	271
7:30AM	83	0	0	83	0	131	0	131	0	0	0	0	0	214
7:45AM	89	0	0	89	0	125	0	125	0	1	0	1	1	215
Total	384	2	0	386	1	543	0	544	0	1	0	1	1	931
% Approach	99.5%	0.5%	0%	-	0.2%	99.8%	0%	-	0%	100%	0%	-	-	-
% Total	41.2%	0.2%	0%	41.5%	0.1%	58.3%	0%	58.4%	0%	0.1%	0%	0.1%	-	-
PHF	0.842	0.500	-	0.839	0.250	0.870	-	0.872	-	0.250	-	0.250	0.859	0.859
Vehicles	384	2	0	386	1	543	0	544	0	1	0	1	1	931
% Vehicles	100%	100%	0%	100%	100%	100%	0%	100%	0%	100%	0%	100%	100%	100%

*L: Left, R: Right, T: Thru, U: U-Turn

Green Cove Springs Retail Site - TMC

Tue May 3, 2022

PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Vehicles)

All Movements

ID: 945915, Location: 29.927525, -81.685903, Site Code: 5010 US 17 Green Cove Springs

Provided by: Hagen Consulting Services
361 Strawder Road,
Ray City, GA, 31645, US

Leg Direction	US 17 Southbound				US 17 Northbound				5010 Driveway Eastbound				Int
	T	R	U	App	L	T	U	App	L	R	U	App	
2022-05-03 4:30PM	171	0	0	171	1	110	1	112	0	1	0	1	284
4:45PM	126	0	0	126	0	133	0	133	0	0	0	0	259
5:00PM	174	0	0	174	0	132	0	132	0	0	0	0	306
5:15PM	156	0	0	156	0	117	0	117	0	0	0	0	273
Total	627	0	0	627	1	492	1	494	0	1	0	1	1122
% Approach	100%	0%	0%	-	0.2%	99.6%	0.2%	-	0%	100%	0%	-	-
% Total	55.9%	0%	0%	55.9%	0.1%	43.9%	0.1%	44.0%	0%	0.1%	0%	0.1%	-
PHF	0.901	-	-	0.901	0.250	0.925	0.250	0.929	-	0.250	-	0.250	0.917
Vehicles	627	0	0	627	1	492	1	494	0	1	0	1	1122
% Vehicles	100%	0%	0%	100%	100%	100%	100%	100%	0%	100%	0%	100%	100%

*L: Left, R: Right, T: Thru, U: U-Turn

Green Cove Springs Retail Site - TMC

Tue May 3, 2022

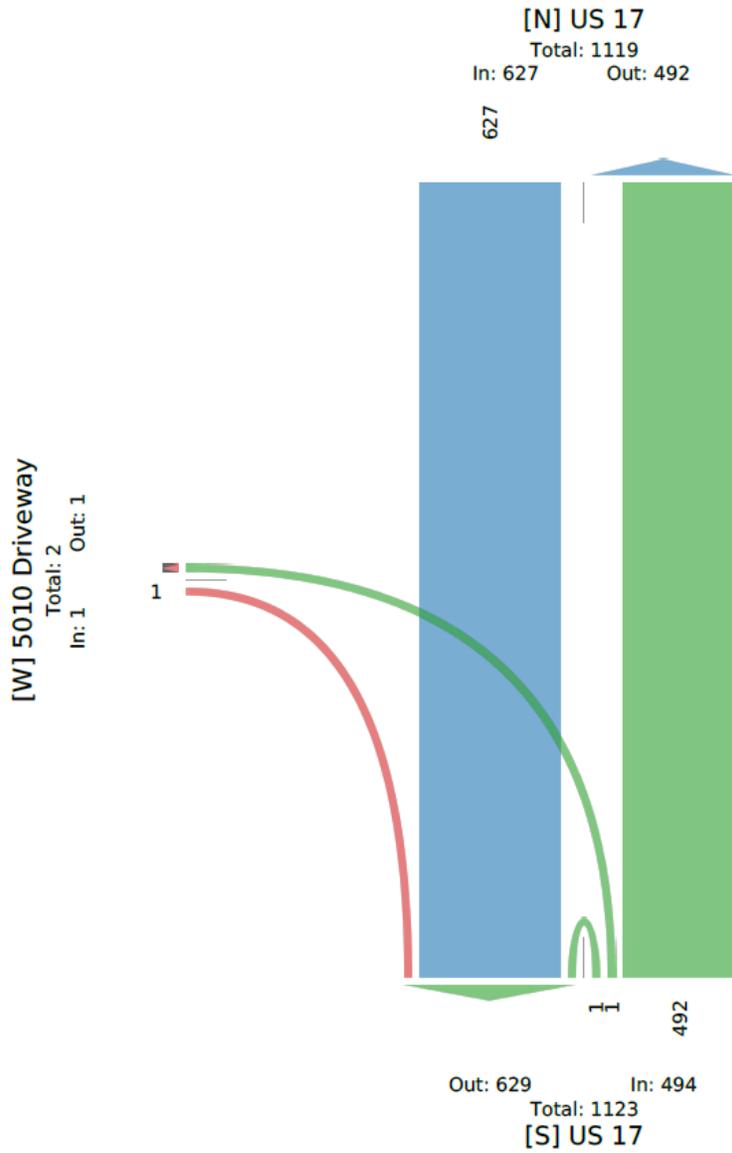
PM Peak (4:30 PM - 5:30 PM) - Overall Peak Hour

All Classes (Vehicles)

All Movements

ID: 945915, Location: 29.927525, -81.685903, Site Code: 5010 US 17 Green Cove Springs

Provided by: Hagen Consulting Services
361 Strawder Road,
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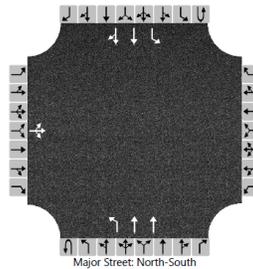


APPENDIX B: HIGHWAY CAPACITY ANALYSES

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	LTH	Intersection	5010 US Highway 17
Agency/Co.	Hagen Consulting Services, LLC	Jurisdiction	Clay County
Date Performed	5/11/2022	East/West Street	Project Site
Analysis Year	2022	North/South Street	US Highway 17
Time Analyzed	AM Peak	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Variety Retail Store		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0		0	1	2	0	0	1	2	0
Configuration			LTR							L	T			L	T	TR	
Volume (veh/h)		0	0	1						0	1	543		0	0	384	2
Percent Heavy Vehicles (%)		3	3	3						3	3			3	3		
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type Storage		Left Only								5							

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9						4.1				4.1		
Critical Headway (sec)		7.56	6.56	6.96						4.16				4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2				2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33						2.23				2.23		

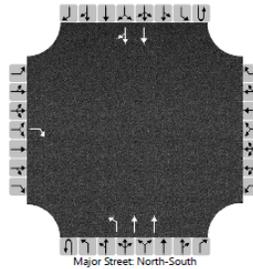
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			1							1				0			
Capacity, c (veh/h)			776							1101				940			
v/c Ratio			0.00							0.00				0.00			
95% Queue Length, Q ₉₅ (veh)			0.0							0.0				0.0			
Control Delay (s/veh)			9.6							8.3				8.8			
Level of Service (LOS)			A							A				A			
Approach Delay (s/veh)		9.6								0.0				0.0			
Approach LOS		A								A				A			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	LTH	Intersection	5010 US Highway 17
Agency/Co.	Hagen Consulting Services, LLC	Jurisdiction	Clay County
Date Performed	5/11/2022	East/West Street	Project Site
Analysis Year	2023	North/South Street	US Highway 17
Time Analyzed	AM Peak+Project	Peak Hour Factor	0.86
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Variety Retail Store		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	2	0	0	0	2	0
Configuration				R						L	T				T	TR
Volume (veh/h)				11					0	8	543				384	7
Percent Heavy Vehicles (%)				3					3	3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type Storage		Left Only									5					

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9									4.1				
Critical Headway (sec)				6.96									4.16				
Base Follow-Up Headway (sec)				3.3									2.2				
Follow-Up Headway (sec)				3.33									2.23				

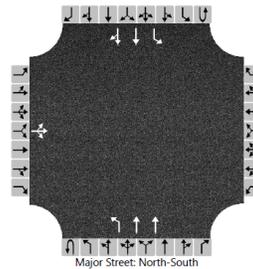
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				13									9					
Capacity, c (veh/h)				772									1095					
v/c Ratio				0.02									0.01					
95% Queue Length, Q ₉₅ (veh)				0.1									0.0					
Control Delay (s/veh)				9.7									8.3					
Level of Service (LOS)				A									A					
Approach Delay (s/veh)		9.7								0.1								
Approach LOS		A									A							

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	LTH	Intersection	5010 US Highway 17
Agency/Co.	Hagen Consulting Services, LLC	Jurisdiction	Clay County
Date Performed	5/11/2022	East/West Street	Project Site
Analysis Year	2022	North/South Street	US Highway 17
Time Analyzed	PM Peak	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Variety Retail Store		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound				
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R	
Movement																	
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6	
Number of Lanes		0	1	0		0	0	0	0	1	2	0	0	1	2	0	
Configuration			LTR							L	T			L	T	TR	
Volume (veh/h)		0	0	1					0	2	492		0	0	627	0	
Percent Heavy Vehicles (%)		3	3	3					3	3			3	3			
Proportion Time Blocked																	
Percent Grade (%)		0															
Right Turn Channelized																	
Median Type Storage		Left Only												5			

Critical and Follow-up Headways

Base Critical Headway (sec)		7.5	6.5	6.9						4.1					4.1		
Critical Headway (sec)		7.56	6.56	6.96						4.16					4.16		
Base Follow-Up Headway (sec)		3.5	4.0	3.3						2.2					2.2		
Follow-Up Headway (sec)		3.53	4.03	3.33						2.23					2.23		

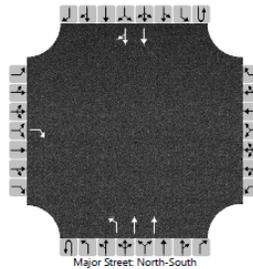
Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			1							2					0		
Capacity, c (veh/h)			652							900					1022		
v/c Ratio			0.00							0.00					0.00		
95% Queue Length, Q ₉₅ (veh)			0.0							0.0					0.0		
Control Delay (s/veh)			10.5							9.0					8.5		
Level of Service (LOS)			B							A					A		
Approach Delay (s/veh)		10.5								0.0				0.0			
Approach LOS		B								A				A			

HCS Two-Way Stop-Control Report

General Information		Site Information	
Analyst	LTH	Intersection	5010 US Highway 17
Agency/Co.	Hagen Consulting Services, LLC	Jurisdiction	Clay County
Date Performed	5/11/2022	East/West Street	Project Site
Analysis Year	2023	North/South Street	US Highway 17
Time Analyzed	PM Peak+Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description	Variety Retail Store		

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	1		0	0	0	0	1	2	0	0	0	2	0
Configuration				R						L	T				T	TR
Volume (veh/h)				24					0	13	492				627	13
Percent Heavy Vehicles (%)				3					3	3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized		No														
Median Type Storage		Left Only											5			

Critical and Follow-up Headways

Base Critical Headway (sec)				6.9													4.1
Critical Headway (sec)				6.96													4.16
Base Follow-Up Headway (sec)				3.3													2.2
Follow-Up Headway (sec)				3.33													2.23

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)				26													14
Capacity, c (veh/h)				645													889
v/c Ratio				0.04													0.02
95% Queue Length, Q ₉₅ (veh)				0.1													0.0
Control Delay (s/veh)				10.8													9.1
Level of Service (LOS)				B													A
Approach Delay (s/veh)		10.8								0.2							
Approach LOS		B								A							