Turn Lane Study

Paxton Aging Center
22174 US 331, Paxton, FL

Prepared for:

Forefront Architecture + Engineering
Clermont, FL

Prepared by:

HSA Columbia
1101 Gulf Breeze Pkwy
Gulf Breeze, FL 32561

August 1, 2023

This item has been digitally signed and sealed by David J Anderson on the date adjacent to the seal.

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David J Anderson

David J Anderson
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HSA Columbia

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Paxton Aging Center
22174 US 331
Paxton, FL

HSA Columbia
August 1, 2023

INTRODUCTION

A 3485 sq ft senior center is being proposed for 2.31 acres on the east side of US 331 approximately 500' south of Parker Lane in Paxton, FL. The proposed access point will be an existing driveway that will be shared with Paxton Auto, Truck and Tractor Parts. The purpose of this report is to analyze the traffic at the proposed access point in accordance with FDOT requirements and to identify any turn lane improvements needed to accommodate the project trips.

The project location is shown in **Exhibit 1** (vicinity map) and **Exhibit 2** (zoomed to specific location). The preliminary site plan is presented in **Appendix A**.

EXHIBIT 1 – Project Vicinity Map

EXHIBIT 2 – Project Location Map (zoomed)

EXISTING CONDITIONS

US 331 is a two-lane undivided rural arterial with a posted speed of 40 mph. There are no turn lanes into the existing driveway

A four-hour turning movement count was conducted on US 331 at the existing driveway from 8:00 – 10:00am and 2:00 – 4:00pm. The count was conducted on Thursday, July 27, 2023. A printout of the TMC with AM and PM peak hour summaries is included in **Appendix B**.

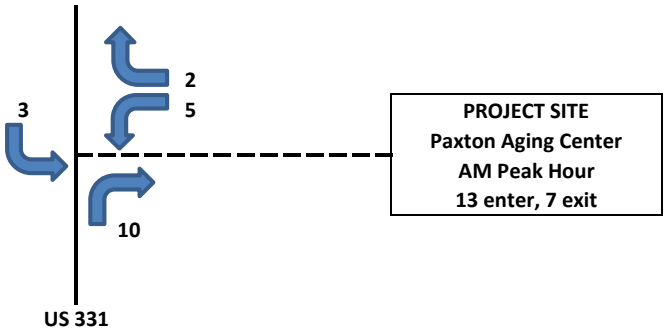
PROJECT TRIP GENERATION

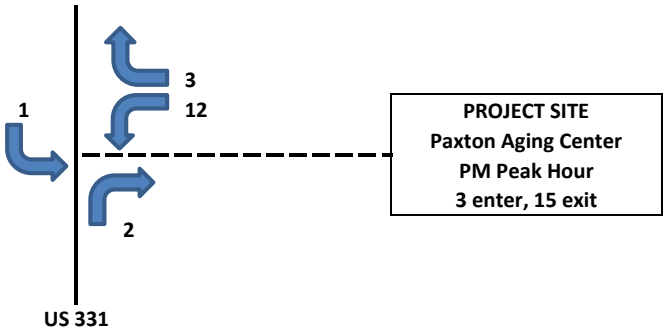
For this particular land use, there are no suitable categories in the ITE Trip Generation Manual. Project trips were therefore estimated by conducting counts at a similar facility in DeFuniak Springs, FL, the Life Enhancement Senior Center at 312 College Avenue. Entering and exiting trips were counted from 8:00 – 10:00am and 2:00 – 4:00pm on Thursday, July 27, 2023. A printout of the results is presented in **Appendix C**. The results show that in the AM peak hour, there were 13 entering trips and 7 exiting trips, and in the PM peak hour, there were 3 entering trips and 15 exiting trips. The DeFuniak Springs facility is 9090 sq ft, compared to the 3485 sq ft facility proposed for Paxton, so the future Paxton trips will likely be less than those observed at DeFuniak Springs. To be extra conservative, however, the same trip volumes were assumed for the proposed project.

PROJECT TRIP DISTRIBUTION

Trips were distributed onto US 331 at the proposed access point using professional judgment and observed traffic patterns. **Figure 1** presents the anticipated distribution of the AM and PM peak hour project volumes at the project site.

FIGURE 1
Distribution of Peak Hour Project Trips





TURN LANE WARRANTS

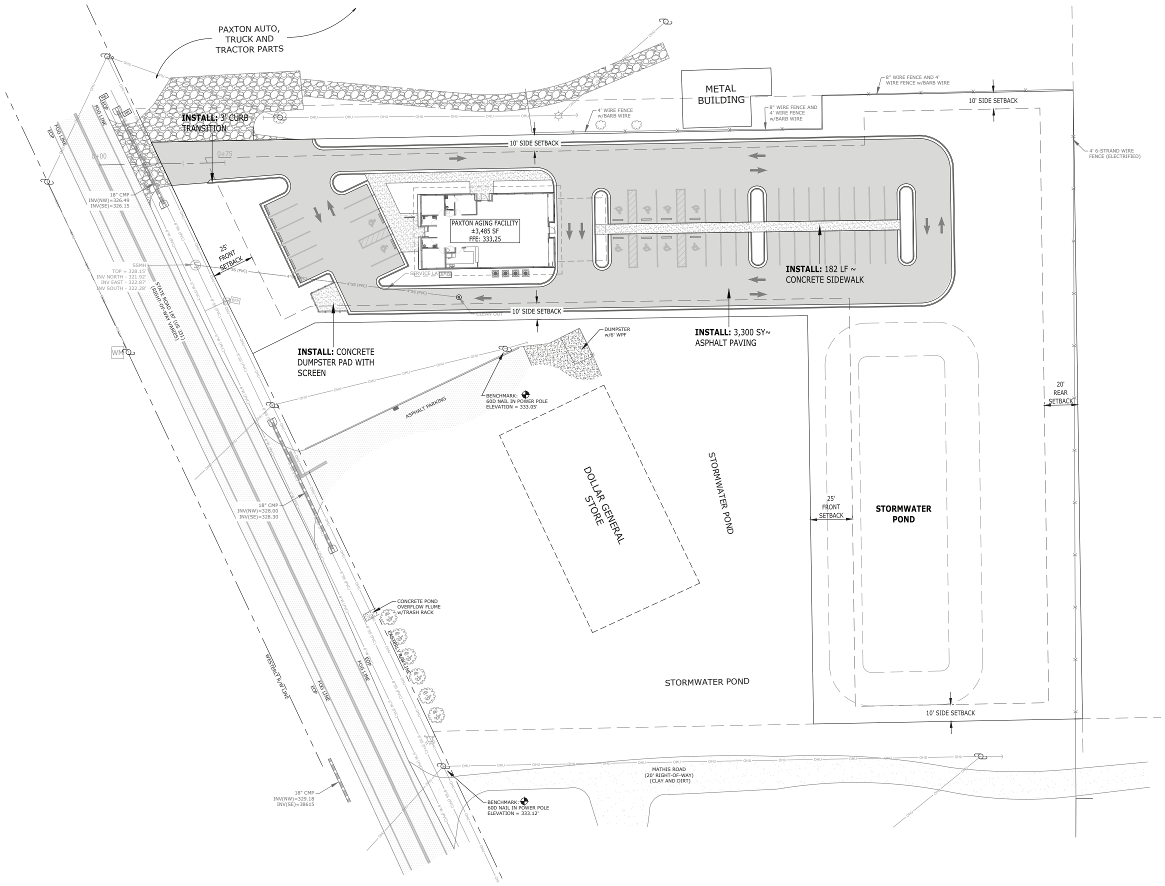
The need for a northbound right turn lane and a southbound left turn lane was assessed for the project access point on US 331. The need for turn lanes was analyzed using Excel templates based on NCHRP Report 457.

The AM peak hour volumes represent the worst case at the driveway, with a total (existing + project) northbound approach of 186 with 17 right turns, and a total (existing + project) southbound approach of 141, with 3 left turns. The Report 457 printouts show that neither a right turn lane nor a left turn lane are warranted (see **Appendix D**).

Based on the above data, **no turn lanes are recommended at the project driveway.**

APPENDIX A

Preliminary Site Plan



SITE INFORMATION

	SF	AC
TOTAL PARCEL AREA =	100,562	2.31
PRE-DEVELOPED		
PERVIOUS AREA =	81,507	1.87
IMPERVIOUS AREA (ASPHALT) =	19,055	0.44
POST-DEVELOPED		
PERVIOUS AREA =	100,562	2.31
PAVERS/SEMI-PERVIOUS AREA =		0.00
IMPERVIOUS AREA =	0	0
CONCRETE =		
ASPHALT =		
BUILDINGS =		
PERCENT PERVIOUS COVER =	#REF!	
FLOOR AREA RATIO (FAR) =	#REF!	

SITE BUILDING SETBACKS

FRONT = 25 FEET
SIDE = 10 FEET
REAR = 20 FEET

N

GRAPHIC SCALE:

30 15 0 30 60 90

SCALE IN FEET SCALE: 1" = 30'

ARCHITECTURE + ENGINEERING
License No. 26002939 License No. 30900
1230 Oakley Seaver Drive, Suite 200 - Clermont, FL 34711
P: 888-850-FFAE (3323)
www.forefrontae.com

FOREFRONT
Service Beyond Design

Dale E. Long, P.E.
P.E. #55393

SITE PLAN

PAXTON AGING FACILITY

22174 US HWY 331 N, PAXTON, FL 32567
WALTON COUNTY FLORIDA

MUNICIPAL ENGINEERING SERVICES INC

REVISIONS

JOB #: 230001
DATE: MARCH 2023

C-000

APPENDIX B

Turning Movement Count

US 331 at Existing Driveway (Paxton Auto, Truck and Tractor Parts, south driveway)

HSA Columbia
1101 Gulf Breeze Pkwy
Gulf Breeze FL, 32561

File Name : us331&driveway
Site Code : 00000000
Start Date : 7/27/2023
Page No : 1

Groups Printed- Cars - Trucks

	US 331 Southbound			Paxton Auto Parts Westbound			US 331 Northbound			Eastbound			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
08:00	1	25	0	3	0	0	0	32	1	0	0	0	62
08:15	0	27	0	0	0	0	0	28	2	0	0	0	57
08:30	0	29	0	0	0	0	0	35	1	0	0	0	65
08:45	0	42	0	1	0	0	0	37	1	0	0	0	81
Total	1	123	0	4	0	0	0	132	5	0	0	0	265
09:00	0	31	0	1	0	0	0	54	3	0	0	0	89
09:15	0	34	0	2	0	1	0	34	1	0	0	0	72
09:30	0	31	0	1	0	1	0	44	2	0	0	0	79
09:45	0	36	0	0	0	0	0	34	3	0	0	0	73
Total	0	132	0	4	0	2	0	166	9	0	0	0	313
*********													
14:00	0	58	0	0	0	1	0	30	0	0	0	0	89
14:15	0	71	0	0	0	1	0	38	1	0	0	0	111
14:30	2	65	0	1	0	0	0	30	2	0	0	0	100
14:45	0	61	0	3	0	0	0	31	2	0	0	0	97
Total	2	255	0	4	0	2	0	129	5	0	0	0	397
15:00	0	78	0	1	0	0	0	39	1	0	0	0	119
15:15	1	63	0	1	0	2	0	33	4	0	0	0	104
15:30	0	73	0	3	0	0	0	54	3	0	0	0	133
15:45	1	47	0	3	0	1	0	41	0	0	0	0	93
Total	2	261	0	8	0	3	0	167	8	0	0	0	449
Grand Total	5	771	0	20	0	7	0	594	27	0	0	0	1424
Apprch %	0.6	99.4	0.0	74.1	0.0	25.9	0.0	95.7	4.3	0.0	0.0	0.0	
Total %	0.4	54.1	0.0	1.4	0.0	0.5	0.0	41.7	1.9	0.0	0.0	0.0	

HSA Columbia
1101 Gulf Breeze Pkwy
Gulf Breeze FL, 32561

File Name : us331&driveway
Site Code : 00000000
Start Date : 7/27/2023
Page No : 2

	US 331 Southbound				Paxton Auto Parts Westbound				US 331 Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 08:00 to 09:45 - Peak 1 of 1																	
Intersection	08:45																
Volume	0	138	0	138	5	0	2	7	0	169	7	176	0	0	0	0	321
Percent	0.0	100.0	0.0		71.4	0.0	28.6		0.0	96.0	4.0		0.0	0.0	0.0		
09:00 Volume	0	31	0	31	1	0	0	1	0	54	3	57	0	0	0	0	89
Peak Factor																	0.902
High Int.	08:45				09:15				09:00				7:45:00 AM				
Volume	0	42	0	42	2	0	1	3	0	54	3	57					
Peak Factor				0.821				0.583				0.772					
Peak Hour From 14:00 to 15:45 - Peak 1 of 1																	
Intersection	14:45																
Volume	1	275	0	276	8	0	2	10	0	157	10	167	0	0	0	0	453
Percent	0.4	99.6	0.0		80.0	0.0	20.0		0.0	94.0	6.0		0.0	0.0	0.0		
15:30 Volume	0	73	0	73	3	0	0	3	0	54	3	57	0	0	0	0	133
Peak Factor																	0.852
High Int.	15:00				14:45				15:30								
Volume	0	78	0	78	3	0	0	3	0	54	3	57					
Peak Factor				0.885				0.833				0.732					

APPENDIX C

Enter / Exit Counts

Life Enhancement Senior Center, DeFuniak Springs

Life Enhancement Senior Center, DeFuniak Springs
July 27, 2023

	ENTER	EXIT	TOTAL
AM			
8:00 - 8:15	7	0	7
8:15 - 8:30	5	1	6
8:30 - 8:45	1	0	1
8:45 - 9:00	2	1	3
9:00 - 9:15	3	3	6
9:15 - 9:30	0	0	0
9:30 - 9:45	7	1	8
9:45 - 10:00	3	3	6
PM			
2:00 - 2:15	4	1	5
2:15 - 2:30	2	0	2
2:30 - 2:45	2	6	8
2:45 - 3:00	0	1	1
3:00 - 3:15	0	4	4
3:15 - 3:30	1	4	5
3:30 - 3:45	0	2	2
3:45 - 4:00	1	2	3

APPENDIX D

Turn Lane Warrants

Paxton Aging Center

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

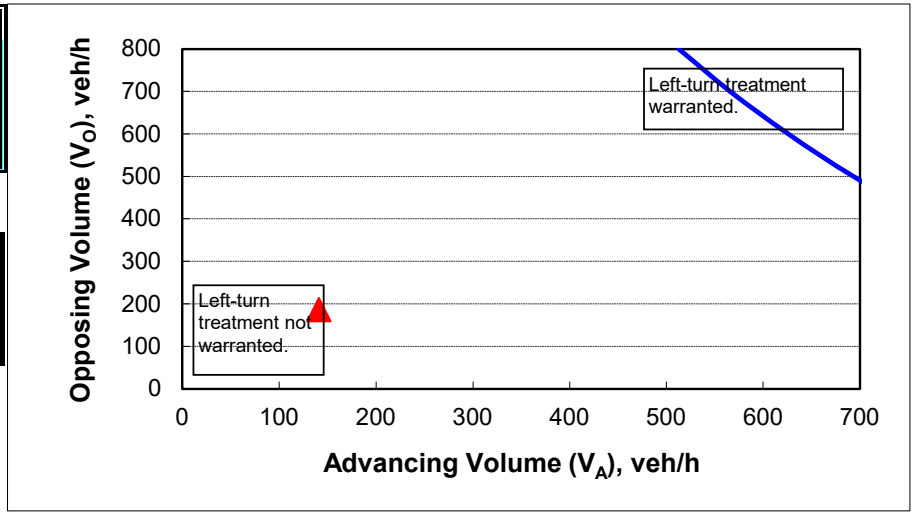
2-lane roadway (English)

INPUT

Variable	Value
85th percentile speed, mph:	40
Percent of left-turns in advancing volume (V_A), %:	2%
Advancing volume (V_A), veh/h:	141
Opposing volume (V_O), veh/h:	186

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	973
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Right Turn Lane Warrant - US 331 at Proposed Driveway (AM Peak)

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

INPUT

Roadway geometry:	2-lane roadw ay

Variable	Value
Major-road speed, mph:	40
Major-road volume (one direction), veh/h:	186
Right-turn volume, veh/h:	17

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	1197
Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:	
Do NOT add right-turn bay.