



Engineers, Surveyors, Planners, Scientists

October 1, 2021

Michael Hendershot, P.E., CSSBB
 Senior Civil Engineer- Development
 City of Dublin
 5200 Emerald Parkway
 Dublin, Ohio 43017

Subject: Avondale Woods – Signal Warrant Analysis

Dear Mr. Hendershot,

This letter serves to summarize the results of a signal warrant analyses conducted at the Avery Road/Avondale Woods Boulevard intersection. Consistent with the requirements of the Infrastructure Agreement dated November 4, 2014, signal warrant analyses were conducted using a combination of existing traffic volumes and forecasted trips for the buildout of Phase 4. The results of the analyses are detailed herein and indicate warrant thresholds are not expected to be satisfied with this phase of development.

EMH&T conducted a turning movement count at the Avery Road/Avondale Woods Boulevard intersection on Tuesday, August 31, 2021 between the hours of 6:00 AM to 8:00 PM. This count data was used to document traffic volumes using Avondale Woods Boulevard from completed sections of the development. A copy of this traffic count has been attached.

Full buildout of Phase 4 is expected to consist of 48 multi-family units and 51 single family units. At the time traffic count data was collected, 5 multi-family units and 1 single family unit were existing and occupied. Trip ends for the remaining undeveloped units were forecast and distributed to Avery Road consistent with the methodology used in the Avondale Woods, Traffic Study dated July 19, 2013. Trip generation results are summarized in Table 1, below.

**Table 1
 Summary of Trip Generation**

Land Use	Square Feet or Units	ITE Code	Time Period	ITE Formula	Total Trips	Trips		
						Entering	Exiting	
<u>Single Family - Detached</u>	50 units	210	ADT	$\text{Ln}(T)=0.92\text{Ln}(x)+2.71$	550	275	275	
			AM Peak	$T=0.71(x)+4.8$	40	10	30	
			PM Peak	$\text{Ln}(T)=0.96\text{Ln}(x)+0.2$	52	33	19	
<u>Multifamily Housing</u> Low Rise (One or two floors)	43 units	220	ADT	$T=7.56(x) - 40.86$	284	142	142	
			AM Peak	$\text{Ln}(T)=0.95\text{Ln}(x)-0.51$	21	5	16	
			PM Peak	$\text{Ln}(T)=0.89\text{Ln}(x)-0.02$	28	18	10	
					ADT	834	417	417
					AM TOTAL	61	15	46
					PM TOTAL	80	51	29

Hourly distribution of forecasted trips were generated using data obtained from the Institute of Transportation Engineers (ITE) for land use code 210 (for single-family) and code 220 (multi-family). Hourly traffic distributions and volume calculations supporting signal warrant analyses are detailed in the attached material.

Consistent with the Avondale Woods, Traffic Study dated July 19, 2013, warrant analyses were conducted in accordance with the Ohio Manual of Uniform Traffic Control Devices §4C (Ohio Department of Transportation) comparing volume projections to both Warrant 1 (eight-hour traffic volumes) and Warrant 2 (four-hour traffic volumes). The results of analysis show that the combination of counted and forecasted traffic volumes are not expected to meet warrant thresholds for Warrant 1 (eight-hour) or Warrant 2 (four-hour). Based on the results of this warrant study, installation of a traffic signal is not recommended at this time.

Should questions or comments arise during your review of this material please contact me at (614) 775-4645.

Sincerely,



Jason D. Smallwood, PE
Senior Traffic Engineer

Attachments: Traffic count data, Signal Warrant Volume Development,
8-Hour Warrant Analysis, 4-Hour Warrant Analysis



EMH&T Inc. : Columbus (OH)
5500 New Albany Rd.

New Albany, Ohio, United States 43054
(614) 775-4500 rirwin@emht.com

Count Name: 2020-1174 Avondale
Site Code: 20201174
Start Date: 08/31/2021
Page No: 1

Turning Movement Data

Start Time	Avery Road Southbound				Avery Road Northbound				Avondale Woods Boulevard Eastbound				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
6:00 AM	0	24	0	24	45	1	0	46	1	2	0	3	73
6:15 AM	0	26	0	26	43	0	0	43	1	0	0	1	70
6:30 AM	0	42	0	42	78	1	0	79	0	1	0	1	122
6:45 AM	0	75	0	75	113	2	0	115	2	0	0	2	192
Hourly Total	0	167	0	167	279	4	0	283	4	3	0	7	457
7:00 AM	2	76	0	78	122	0	0	122	3	0	0	3	203
7:15 AM	0	158	0	158	137	0	0	137	1	0	0	1	296
7:30 AM	0	101	0	101	200	0	0	200	1	0	0	1	302
7:45 AM	0	84	0	84	186	1	0	187	4	0	0	4	275
Hourly Total	2	419	0	421	645	1	0	646	9	0	0	9	1076
8:00 AM	2	82	0	84	111	3	0	114	1	1	0	2	200
8:15 AM	0	83	0	83	154	3	0	157	2	2	0	4	244
8:30 AM	0	55	0	55	119	1	0	120	1	1	0	2	177
8:45 AM	2	77	0	79	115	3	0	118	2	2	0	4	201
Hourly Total	4	297	0	301	499	10	0	509	6	6	0	12	822
9:00 AM	1	82	0	83	120	4	0	124	3	2	0	5	212
9:15 AM	2	69	0	71	89	3	0	92	3	0	0	3	166
9:30 AM	4	70	0	74	103	3	0	106	5	3	1	9	189
9:45 AM	2	56	0	58	78	5	0	83	3	2	0	5	146
Hourly Total	9	277	0	286	390	15	0	405	14	7	1	22	713
10:00 AM	4	60	0	64	66	3	0	69	3	4	0	7	140
10:15 AM	1	61	0	62	79	6	0	85	1	4	0	5	152
10:30 AM	6	75	0	81	82	4	0	86	7	1	0	8	175
10:45 AM	4	83	0	87	78	2	0	80	4	1	0	5	172
Hourly Total	15	279	0	294	305	15	0	320	15	10	0	25	639
11:00 AM	3	68	0	71	84	4	0	88	5	4	0	9	168
11:15 AM	0	58	0	58	65	5	0	70	3	5	0	8	136
11:30 AM	4	67	0	71	96	11	0	107	1	4	0	5	183
11:45 AM	6	96	0	102	96	2	0	98	5	8	0	13	213
Hourly Total	13	289	0	302	341	22	0	363	14	21	0	35	700
12:00 PM	3	115	0	118	68	1	0	69	6	5	0	11	198
12:15 PM	4	96	1	101	96	3	0	99	3	5	0	8	208
12:30 PM	3	82	1	86	96	2	0	98	4	3	0	7	191
12:45 PM	3	116	0	119	116	1	0	117	7	3	0	10	246
Hourly Total	13	409	2	424	376	7	0	383	20	16	0	36	843
1:00 PM	3	91	0	94	85	0	1	86	7	3	0	10	190

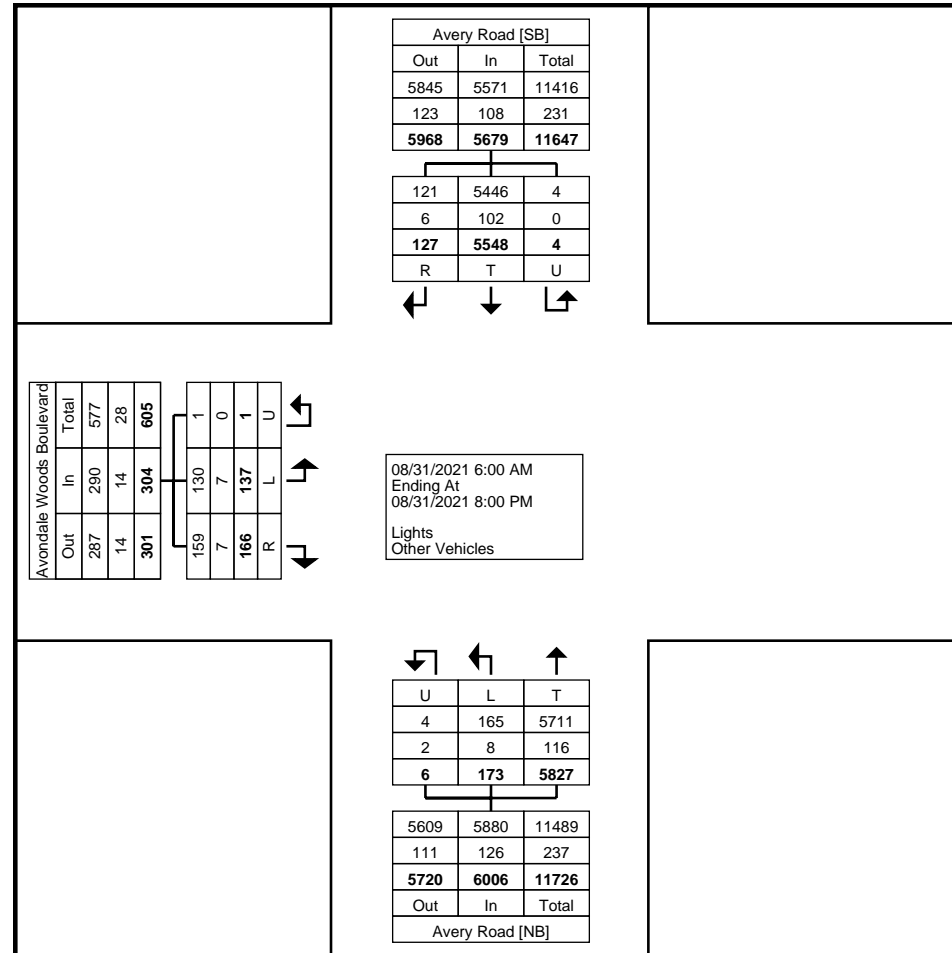
1:15 PM	2	86	1	89	82	6	0	88	2	5	0	7	184
1:30 PM	5	77	0	82	85	3	0	88	8	5	0	13	183
1:45 PM	3	86	0	89	107	6	1	114	4	5	0	9	212
Hourly Total	13	340	1	354	359	15	2	376	21	18	0	39	769
2:00 PM	1	80	0	81	84	4	0	88	6	4	0	10	179
2:15 PM	5	114	0	119	102	4	0	106	1	3	0	4	229
2:30 PM	3	87	0	90	114	5	0	119	1	2	0	3	212
2:45 PM	0	88	0	88	146	8	0	154	6	4	0	10	252
Hourly Total	9	369	0	378	446	21	0	467	14	13	0	27	872
3:00 PM	3	128	0	131	97	4	0	101	4	3	0	7	239
3:15 PM	1	103	0	104	99	2	0	101	3	3	0	6	211
3:30 PM	0	136	0	136	116	4	0	120	0	1	0	1	257
3:45 PM	2	136	0	138	121	6	1	128	3	3	0	6	272
Hourly Total	6	503	0	509	433	16	1	450	10	10	0	20	979
4:00 PM	2	134	1	137	128	3	0	131	5	0	0	5	273
4:15 PM	2	157	0	159	133	4	1	138	3	3	0	6	303
4:30 PM	5	162	0	167	118	1	0	119	3	5	0	8	294
4:45 PM	3	192	0	195	113	6	0	119	2	1	0	3	317
Hourly Total	12	645	1	658	492	14	1	507	13	9	0	22	1187
5:00 PM	3	173	0	176	144	6	1	151	3	4	0	7	334
5:15 PM	2	205	0	207	138	3	0	141	3	5	0	8	356
5:30 PM	1	157	0	158	136	3	1	140	1	2	0	3	301
5:45 PM	5	178	0	183	121	4	0	125	3	1	0	4	312
Hourly Total	11	713	0	724	539	16	2	557	10	12	0	22	1303
6:00 PM	3	134	0	137	112	0	0	112	2	3	0	5	254
6:15 PM	6	125	0	131	112	4	0	116	1	1	0	2	249
6:30 PM	2	113	0	115	97	2	0	99	2	0	0	2	216
6:45 PM	5	106	0	111	77	2	0	79	3	2	0	5	195
Hourly Total	16	478	0	494	398	8	0	406	8	6	0	14	914
7:00 PM	1	118	0	119	86	1	0	87	1	1	0	2	208
7:15 PM	1	82	0	83	81	6	0	87	1	2	0	3	173
7:30 PM	2	98	0	100	72	1	0	73	3	1	0	4	177
7:45 PM	0	65	0	65	86	1	0	87	3	2	0	5	157
Hourly Total	4	363	0	367	325	9	0	334	8	6	0	14	715
Grand Total	127	5548	4	5679	5827	173	6	6006	166	137	1	304	11989
Approach %	2.2	97.7	0.1	-	97.0	2.9	0.1	-	54.6	45.1	0.3	-	-
Total %	1.1	46.3	0.0	47.4	48.6	1.4	0.1	50.1	1.4	1.1	0.0	2.5	-
Lights	121	5446	4	5571	5711	165	4	5880	159	130	1	290	11741
% Lights	95.3	98.2	100.0	98.1	98.0	95.4	66.7	97.9	95.8	94.9	100.0	95.4	97.9
Other Vehicles	6	102	0	108	116	8	2	126	7	7	0	14	248
% Other Vehicles	4.7	1.8	0.0	1.9	2.0	4.6	33.3	2.1	4.2	5.1	0.0	4.6	2.1



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Site Code: 20201174
Start Date: 08/31/2021
Page No: 3



Turning Movement Data Plot



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Count Name: 2020-1174 Avondale
Site Code: 20201174
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Turning Movement Peak Hour Data (7:00 AM)

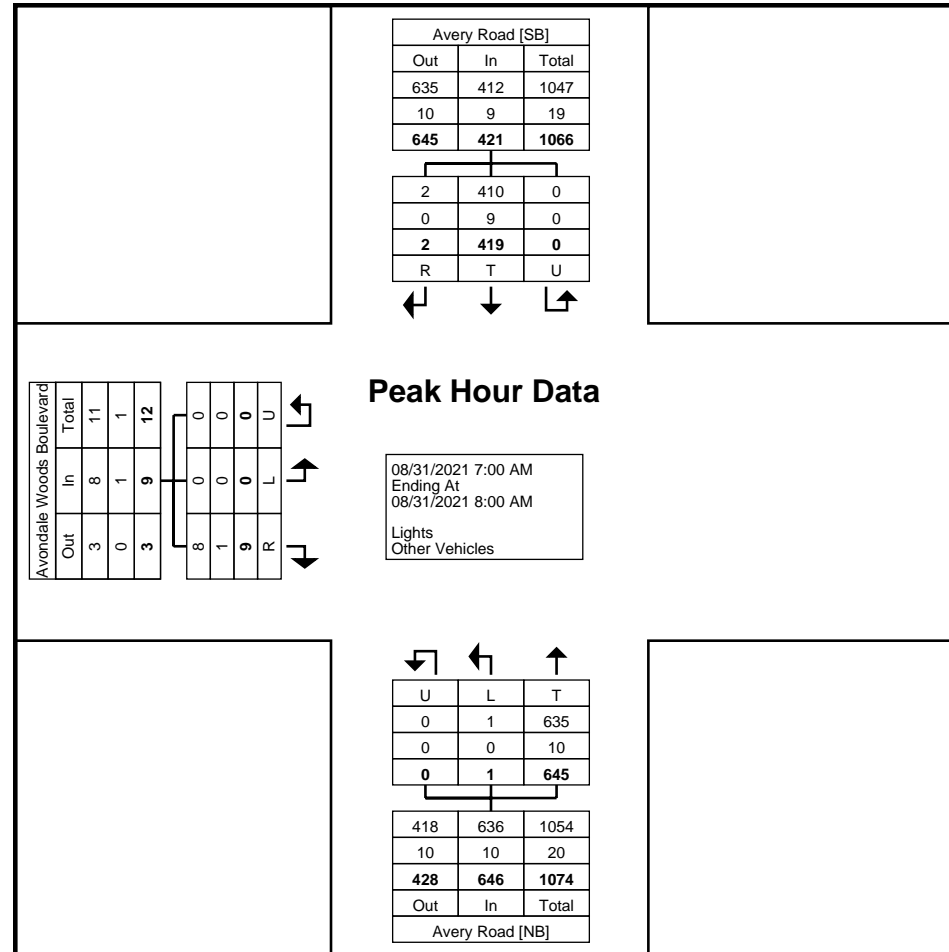
Start Time	Avery Road Southbound				Avery Road Northbound				Avondale Woods Boulevard Eastbound				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
7:00 AM	2	76	0	78	122	0	0	122	3	0	0	3	203
7:15 AM	0	158	0	158	137	0	0	137	1	0	0	1	296
7:30 AM	0	101	0	101	200	0	0	200	1	0	0	1	302
7:45 AM	0	84	0	84	186	1	0	187	4	0	0	4	275
Total	2	419	0	421	645	1	0	646	9	0	0	9	1076
Approach %	0.5	99.5	0.0	-	99.8	0.2	0.0	-	100.0	0.0	0.0	-	-
Total %	0.2	38.9	0.0	39.1	59.9	0.1	0.0	60.0	0.8	0.0	0.0	0.8	-
PHF	0.250	0.663	0.000	0.666	0.806	0.250	0.000	0.808	0.563	0.000	0.000	0.563	0.891
Lights	2	410	0	412	635	1	0	636	8	0	0	8	1056
% Lights	100.0	97.9	-	97.9	98.4	100.0	-	98.5	88.9	-	-	88.9	98.1
Other Vehicles	0	9	0	9	10	0	0	10	1	0	0	1	20
% Other Vehicles	0.0	2.1	-	2.1	1.6	0.0	-	1.5	11.1	-	-	11.1	1.9



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Start Date: 08/31/2021
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Turning Movement Peak Hour Data Plot (7:00 AM)



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Count Name: 2020-1174 Avondale
Site Code: 20201174
Start Date: 08/31/2021
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Turning Movement Peak Hour Data (4:45 PM)

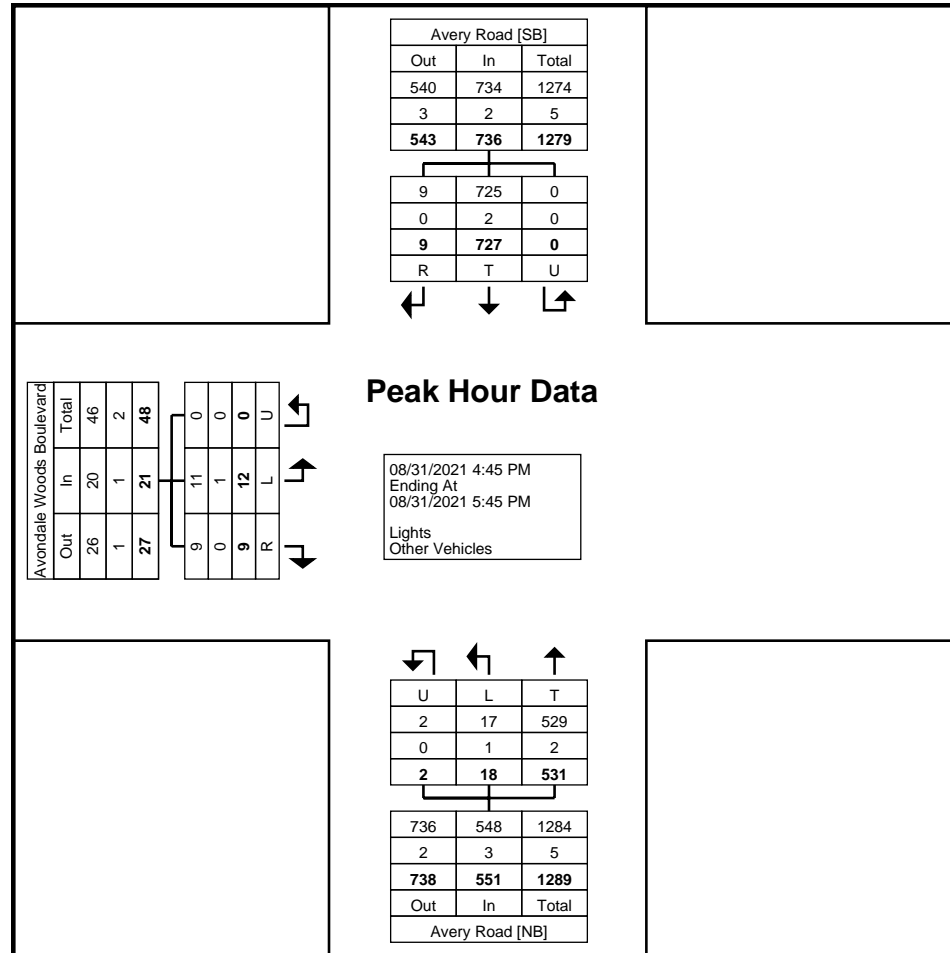
Start Time	Avery Road Southbound				Avery Road Northbound				Avondale Woods Boulevard Eastbound				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
4:45 PM	3	192	0	195	113	6	0	119	2	1	0	3	317
5:00 PM	3	173	0	176	144	6	1	151	3	4	0	7	334
5:15 PM	2	205	0	207	138	3	0	141	3	5	0	8	356
5:30 PM	1	157	0	158	136	3	1	140	1	2	0	3	301
Total	9	727	0	736	531	18	2	551	9	12	0	21	1308
Approach %	1.2	98.8	0.0	-	96.4	3.3	0.4	-	42.9	57.1	0.0	-	-
Total %	0.7	55.6	0.0	56.3	40.6	1.4	0.2	42.1	0.7	0.9	0.0	1.6	-
PHF	0.750	0.887	0.000	0.889	0.922	0.750	0.500	0.912	0.750	0.600	0.000	0.656	0.919
Lights	9	725	0	734	529	17	2	548	9	11	0	20	1302
% Lights	100.0	99.7	-	99.7	99.6	94.4	100.0	99.5	100.0	91.7	-	95.2	99.5
Other Vehicles	0	2	0	2	2	1	0	3	0	1	0	1	6
% Other Vehicles	0.0	0.3	-	0.3	0.4	5.6	0.0	0.5	0.0	8.3	-	4.8	0.5



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Turning Movement Peak Hour Data Plot (4:45 PM)

Avondale Woods
Signal Warrant Analysis
Trip Generation Calculations
Institute of Transportation Engineers, 10th Edition

Land Use	Square Feet or Units	ITE Code	Time Period	ITE Formula	Total Trips	Trips Entering	Trips Exiting	
Single Family - Detached	50 units	210	ADT	$\ln(T)=0.92\ln(x)+2.71$	550	275	275	
			AM Peak	$T=0.71(x)+4.8$	40	10	30	
			PM Peak	$\ln(T)=0.96\ln(x)+0.2$	52	33	19	
Multifamily Housing Low Rise (One or two floors)	43 units	220	ADT	$T=7.56(x) - 40.86$	284	142	142	
			AM Peak	$\ln(T)=0.95\ln(x)-0.51$	21	5	16	
			PM Peak	$\ln(T)=0.89\ln(x)-0.02$	28	18	10	
					ADT	834	417	417
					AM TOTAL	61	15	46
					PM TOTAL	80	51	29

Avondale Woods
Signal Warrant Analysis
Traffic Volume Calculations

2021 Counted Traffic Volumes			AM Peak Hour		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	2	419	0	1	645
	RT	9	LT	TH	

Direcitonal distribution and assignment			AM Peak Hour		
			 NORTH		
			55%		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	55%		55%	45%	45%
	RT	45%	LT	TH	
			45%		

Site Trips			AM Peak Hour		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	8		25	7	
	RT	21	LT	TH	
in	15				
out	46				

2021 Total Traffic			AM Peak Hour		
			d=a+c		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	10	419	25	8	645
	RT	30	LT	TH	

Avondale Woods
Signal Warrant Analysis
Traffic Volume Calculations

2021 Counted Traffic Volumes			PM Peak Hour		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	9	727	12	18	531
			RT	9	LT TH

Direcitonal distribution and assignment			PM Peak Hour		
			 NORTH		
			55%		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	55%		55%	45%	45%
			RT	45%	LT TH
			45%		

Site Trips			PM Peak Hour		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	28		16	23	
			RT	13	LT TH
in	51				
out	29				

2021 Total Traffic			PM Peak Hour		
			d=a+c		
			 NORTH		
Avondale Woods Blvd	RT	TH	Avery Road	LT	TH
	37	727	28	41	531
			RT	22	LT TH

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use

Source: ITE *Trip Generation Manual*, 10th Edition

Land Use Code	210			
Land Use	Single-Family Detached Housing			
Setting	General Urban/Suburban			
Time Period	Weekday			
Trip Type	Vehicle			
# Data Sites	6			
	% of 24-Hour Traffic		Entering	Exiting
Time	Entering	Exiting	Entering	Exiting
12-1 AM	0.5	0.2	0.5%	
1-2 AM	0.2	0.2		
2-3 AM	0.2	0		
3-4 AM	0.2	0.2		
4-5 AM	0.3	0.8		
5-6 AM	0.5	2.0		
6-7 AM	1.6	5.9	1.6%	5.9%
7-8 AM	3.2	10.2	3.2%	10.2%
8-9 AM	3.7	8.6	3.7%	8.6%
9-10 AM	3.2	5.4	3.2%	5.4%
10-11 AM	4.2	5.4	4.2%	5.4%
11-12 PM	5.4	5.1	5.4%	5.1%
12-1 PM	5.5	5.6	5.5%	5.6%
1-2 PM	6.0	5.9	6.0%	5.9%
2-3 PM	7.0	6.2	7.0%	6.2%
3-4 PM	8.5	6.0	8.5%	6.0%
4-5 PM	10.5	7.5	10.5%	7.5%
5-6 PM	10.3	7.4	10.3%	7.4%
6-7 PM	8.6	5.9	8.6%	5.9%
7-8 PM	6.2	4.3	6.2%	4.3%
8-9 PM	6.3	3.1		
9-10 PM	4.5	2.4		
10-11 PM	2.2	1.1		
11-12 AM	1.3	0.7		

Hourly Distribution of Entering and Exiting Vehicle Trips by Land Use

Source: ITE *Trip Generation Manual*, 10th Edition

Land Use Code	220			
Land Use	Multifamily Housing (Low-Rise)			
Setting	General Urban/Suburban			
Time Period	Weekday			
Trip Type	Vehicle			
# Data Sites	9			
	% of 24-Hour Traffic			
Time	Entering	Exiting	Entering	Exiting
12-1 AM	0.7	0.3	0.7%	0.3%
1-2 AM	0.4	0.1	0.4%	0.1%
2-3 AM	0.3	0.3	0.3%	0.3%
3-4 AM	0.3	0.4	0.3%	0.4%
4-5 AM	0.4	1.0	0.4%	1.0%
5-6 AM	0.1	2.6	0.1%	2.6%
6-7 AM	1.1	5.8	1.1%	5.8%
7-8 AM	2.6	12.9	2.6%	12.9%
8-9 AM	4.0	9.1	4.0%	9.1%
9-10 AM	3.9	7.2	3.9%	7.2%
10-11 AM	3.9	4.7	3.9%	4.7%
11-12 PM	4.9	5.5	4.9%	5.5%
12-1 PM	5.6	5.4	5.6%	5.4%
1-2 PM	4.8	4.9	4.8%	4.9%
2-3 PM	5.9	6.0	5.9%	6.0%
3-4 PM	8.3	5.2	8.3%	5.2%
4-5 PM	10.0	5.1	10.0%	5.1%
5-6 PM	11.4	6.7	11.4%	6.7%
6-7 PM	9.5	6.3	9.5%	6.3%
7-8 PM	7.1	4.3	7.1%	4.3%
8-9 PM	5.7	3.5	5.7%	3.5%
9-10 PM	4.7	1.4	4.7%	1.4%
10-11 PM	2.9	1.0	2.9%	1.0%
11-12 AM	1.5	0.4	1.5%	0.4%

**Site Hourly Distribution & Signal Warrant Volumes, Avondale Woods Blvd
Proposed Single family homes**

Avondale Woods/Avery	Percent of daily Exiting traffic*	Avondale Woods Blvd		Percent of daily Entering traffic*	Avery Road	
		EB Exiting Approach	EB Right		EB Left	SBRT/NBLT
Time						
6:00 AM - 7:00 AM	5.9%	8	10	1.6%	3	3
7:00 AM - 8:00 AM	10.2%	13	17	3.2%	5	5
8:00 AM - 9:00 AM	8.6%	11	14	3.7%	6	6
9:00 AM - 10:00 AM	5.4%	7	9	3.2%	5	5
10:00 AM - 11:00 AM	5.4%	7	9	4.2%	7	7
11:00 AM - 12:00 PM	5.1%	7	9	5.4%	8	8
12:00 PM - 1:00 PM	5.6%	7	8	5.5%	10	8
1:00 PM - 2:00 PM	5.9%	7	8	6.0%	10	9
2:00 PM - 3:00 PM	6.2%	8	8	7.0%	12	10
3:00 PM - 4:00 PM	6.0%	7	8	8.5%	15	12
4:00 PM - 5:00 PM	7.5%	9	10	10.5%	18	15
5:00 PM - 6:00 PM	7.4%	9	10	10.3%	18	15
6:00 PM - 7:00 PM	5.9%	7	8	8.6%	15	13
7:00 PM - 8:00 PM	4.3%	5	6	6.2%	11	9

*Hourly distribution for single-family detach homes (210) downloaded from ITE web site on June 2 2021 (limited to clock hours)

6 AM -12 PM hourly volumes ratioed from AM Peak Hour on Plate c of volume calcs

12-8 PM hourly volumes ratioed from PM Peak Hour on Plate c of volume calcs

**Site Hourly Distribution & Signal Warrant Volumes, Avondale Woods Blvd
Multi-family homes**

Avondale Woods/Avery	Percent of daily Exiting traffic*	Avondale Woods Blvd		Percent of daily Entering traffic*	Avery Road	
		EB Exiting Approach	EB Right		EB Left	SBRT/NBLT
Time						
6:00 AM - 7:00 AM	5.8%	3	4	1.1%	1	1
7:00 AM - 8:00 AM	12.9%	7	9	2.6%	3	2
8:00 AM - 9:00 AM	9.1%	5	6	4.0%	5	3
9:00 AM - 10:00 AM	7.2%	4	5	3.9%	5	3
10:00 AM - 11:00 AM	4.7%	3	3	3.9%	5	3
11:00 AM - 12:00 PM	5.5%	3	4	4.9%	6	4
12:00 PM - 1:00 PM	5.4%	3	5	5.6%	5	4
1:00 PM - 2:00 PM	4.9%	3	4	4.8%	4	3
2:00 PM - 3:00 PM	6.0%	4	5	5.9%	5	4
3:00 PM - 4:00 PM	5.2%	3	5	8.3%	7	6
4:00 PM - 5:00 PM	5.1%	3	5	10.0%	9	7
5:00 PM - 6:00 PM	6.7%	4	6	11.4%	10	8
6:00 PM - 7:00 PM	6.3%	4	6	9.5%	8	7
7:00 PM - 8:00 PM	4.3%	3	4	7.1%	6	5

*Hourly distribution for single-family detach homes (220) downloaded from ITE web site on June 2 2021 (limited to clock hours)

6 AM -12 PM hourly volumes ratioed from AM Peak Hour on Plate c of volume calcs and trip generation

12-8 PM hourly volumes ratioed from PM Peak Hour on Plate c of volume calcs and trip generation

2021 Count volumes
Avery Rd & Avondale Woods Blvd

	Avondale Woods Blvd		Avery Road			
Time	EB Right	EB Left	SB Right	SB Through	NB Left	NB Through
6:00 AM - 7:00 AM	4	3	0	167	4	279
7:00 AM - 8:00 AM	9	0	2	419	1	645
8:00 AM - 9:00 AM	6	6	4	297	10	499
9:00 AM - 10:00 AM	14	7	9	277	15	390
10:00 AM - 11:00 AM	15	10	15	279	15	305
11:00 AM - 12:00 PM	14	21	13	289	22	341
12:00 PM - 1:00 PM	20	16	13	409	7	376
1:00 PM - 2:00 PM	21	18	13	340	15	359
2:00 PM - 3:00 PM	14	13	9	369	21	446
3:00 PM - 4:00 PM	10	10	6	503	16	433
4:00 PM - 5:00 PM	13	9	12	645	14	492
5:00 PM - 6:00 PM	10	12	11	713	16	539
6:00 PM - 7:00 PM	8	6	16	478	8	398
7:00 PM - 8:00 PM	8	6	4	363	9	325

2021 Total Volumes

Avery Rd & Avondale Woods Blvd

Time	Avondale Woods Blvd		Avery Road					
	EB Right	EB Left	SB Right	SB Through	SB Approach	NB Left	NB Through	NB Approach
6:00 AM - 7:00 AM	15	17	4	167	171	7	279	286
7:00 AM - 8:00 AM	29	26	10	419	429	8	645	653
8:00 AM - 9:00 AM	22	27	14	297	311	19	499	518
9:00 AM - 10:00 AM	25	21	19	277	296	23	390	413
10:00 AM - 11:00 AM	24	22	26	279	305	25	305	330
11:00 AM - 12:00 PM	23	33	27	289	316	34	341	375
12:00 PM - 1:00 PM	30	28	28	409	437	19	376	395
1:00 PM - 2:00 PM	31	30	28	340	368	27	359	386
2:00 PM - 3:00 PM	25	27	26	369	395	35	446	481
3:00 PM - 4:00 PM	20	23	28	503	531	34	433	467
4:00 PM - 5:00 PM	25	24	39	645	684	36	492	528
5:00 PM - 6:00 PM	23	28	39	713	752	39	539	578
6:00 PM - 7:00 PM	19	20	39	478	517	27	398	425
7:00 PM - 8:00 PM	16	16	21	363	384	23	325	348

SIGNAL WARRANT WORKSHEET

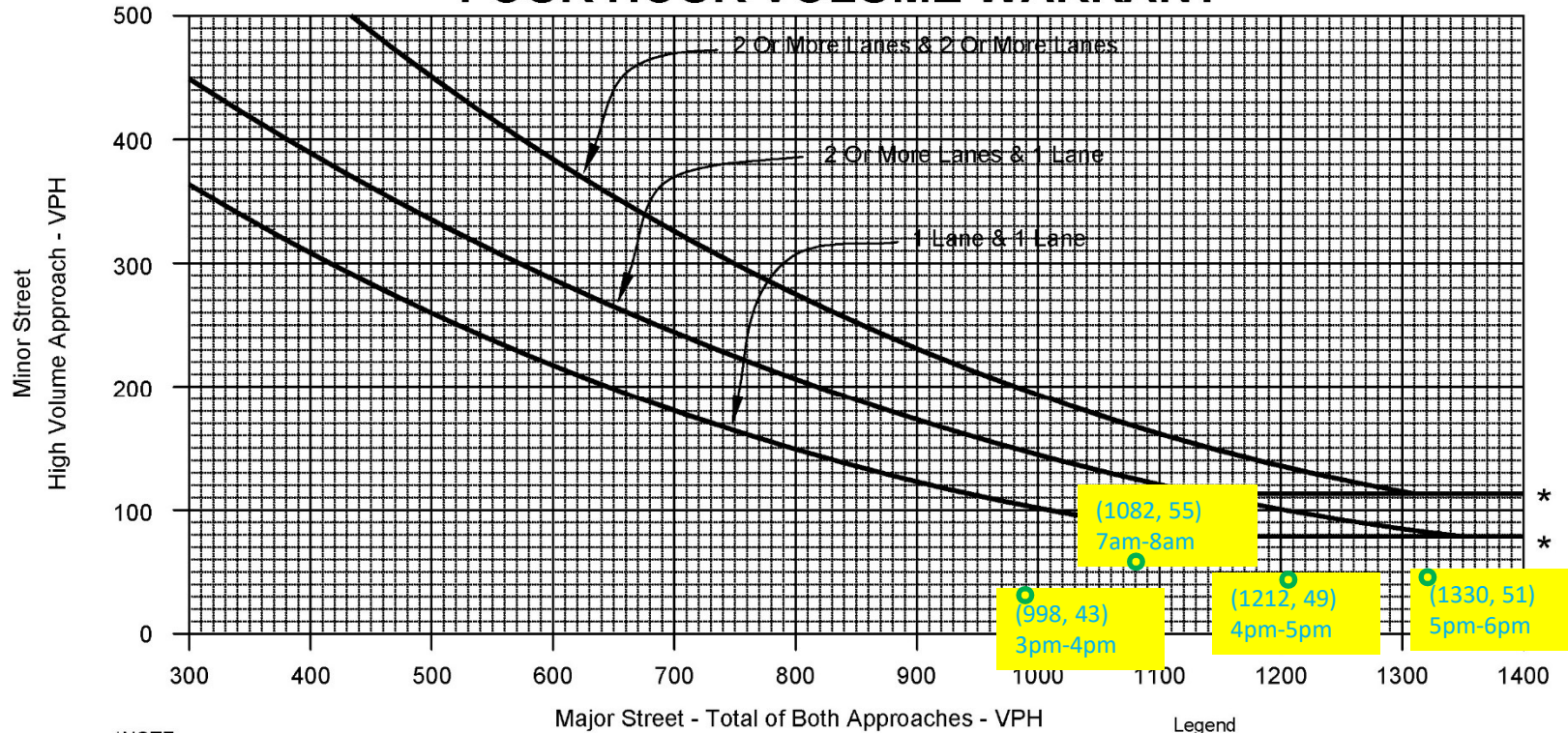
Warrant 1 Ohio Manual of Uniform Traffic Control Devices

Avondale Woods Blvd & Avery Rd 2021 Total Volumes

CONDITION	# OF LANES	MAJOR STREET-Avery Rd			MINOR STREET-Avondale Woods			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	EB Left	EB RT	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1							500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1			X			X	350	105	280	84	525	53	420	42
High Speed	2+							420	140	336	112	630	70	504	56
6:00 AM		171	286	457	17	15	32	YES	NO	YES	NO	NO	NO	YES	NO
7:00		429	653	1082	26	29	55	YES	NO	YES	NO	YES	YES	YES	YES
8:00		311	518	829	27	22	49	YES	NO	YES	NO	YES	NO	YES	YES
9:00		296	413	709	21	25	46	YES	NO	YES	NO	YES	NO	YES	YES
10:00		305	330	635	22	24	46	YES	NO	YES	NO	YES	NO	YES	YES
11:00		316	375	691	33	23	56	YES	NO	YES	NO	YES	YES	YES	YES
Noon		437	395	832	28	30	58	YES	NO	YES	NO	YES	YES	YES	YES
1:00 PM		368	386	754	30	31	61	YES	NO	YES	NO	YES	YES	YES	YES
2:00		395	481	876	27	25	52	YES	NO	YES	NO	YES	NO	YES	YES
3:00		531	467	998	23	20	43	YES	NO	YES	NO	YES	NO	YES	YES
4:00		684	528	1212	24	25	49	YES	NO	YES	NO	YES	NO	YES	YES
5-6 PM		752	578	1330	28	23	51	YES	NO	YES	NO	YES	NO	YES	YES
6-7 PM		517	425	942	20	19	39	YES	NO	YES	NO	YES	NO	YES	NO
7-8 PM		384	348	732	16	16	32	YES	NO	YES	NO	NO	NO	YES	NO
Hours Met								13	0	13	0	11	4	13	11
Hours Warrant Met								0	0	0	0	4	11	11	11
Warrant Satisfied ?								NO	NO	NO	NO	NO	YES	YES	YES

Condition A : NOT MET
Condition B : NOT MET
80% of Condition A and B : NOT MET

FOUR HOUR VOLUME WARRANT



*NOTE:
 115 VPH applies as the lower threshold volume for a minor street approach with two or more lanes.
 80 VPH applies as the lower threshold volume for a minor street approach with one lanes.

Legend
 ● = One Hour Vehicular Volume @ X Time WARRANTED
 ○ = One Hour Vehicular Volume @ X Time NOT WARRANTED

Avery Road & Avondale Woods Blvd
 2021 Total volumes w/o Right turn reduction

Warranted: No