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MEMORANDUM

DATE: 4/21/2025

TO: Melissa Garrard
Pulte Group

FROM: Trevor Reich, PE
A&F Engineering Co., LLC

RE: US 40 & Miles Road – Residential Development – Plainfield, Indiana

A&F Engineering previously completed a traffic impact study for the proposed Pulte Group residential development located along the south side of US 40 to the east of Miles Road in Plainfield, Indiana. As part of the review process by the Town of Plainfield, the question of when the proposed development would require a second access drive along US 40 arose.

In this scenario, it was assumed that the entirety of the traffic volumes that would exit the site onto US 40 would use the Proposed West Access Drive. **Table 1** is a summary of the year 2030 background + proposed AM and PM peak hour traffic volumes at the Proposed West Access Drive.

TABLE 1 – TRAFFIC VOLUME SUMMARY: US 40 & PROPOSED WEST ACCESS DRIVE

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT
AM PEAK	36	0	97	0	0	0	0	655	12	33	382	0
PM PEAK	25	0	67	0	0	0	0	596	42	114	859	0

Based on the above traffic volumes, the turn lane analysis, capacity analysis, and level of service analysis were rerun. The turn lane warrant analysis showed that a westbound left-turn lane would still be warranted because US 40 is a four-lane highway with a median width equal to or greater than 24 feet. The right-turn lane has shown to not be warranted. However, it should be noted that INDOT could require a right-turn lane treatment based on state standards. The right-turn lane graph is included at the end of this memorandum. A summary of the level of service capacity analysis results are shown below in **Table 2**. The intersection reports illustrating the capacity analysis results are included at the end of this memorandum.

Level of Service	Control Delay (seconds/vehicle) UNSIGNALIZED
A	Less than or equal to 10
B	Between 10.1 and 15
C	Between 15.1 and 25
D	Between 25.1 and 35
E	Between 35.1 and 50
F	greater than 50

TABLE 2 – LEVEL OF SERVICE SUMMARY: US 40 & PROPOSED WEST ACCESS DRIVE

APPROACH	AM PEAK	PM PEAK
Northbound Approach	C	D
Southbound Approach	A	A
Eastbound Approach	---	---
Westbound Approach	A	A

Analysis considers construction of the northbound access drive with one inbound and at least one outbound lane that will stop for US 40, and installation of an exclusive westbound left-turn lane along US 40.

Capacity analyses have shown that all approaches to this intersection will operate at acceptable levels of service during the AM and PM peak hours with the following intersection conditions:

- Construction of the northbound proposed full-access drive with one inbound and at least one outbound lane.
- Construction of an exclusive westbound left-turn lane along US 40 at the access drive location.
- The intersection should be stop-controlled with the access drive stopping for US 40.

It should be noted that these recommendations are the same as those found in the original traffic impact study.

Total Approach Volume	Right-Turn Volume
0	90
500	90
1200	40
1600	40

AM Peak Hour Traffic Volume Input		PM Peak Hour Traffic Volume Input	
Total Approach Volume	667	Total Approach Volume	638
Right-Turn Volume	12	Right-Turn Volume	42
WARRANTED?	NO	WARRANTED?	NO

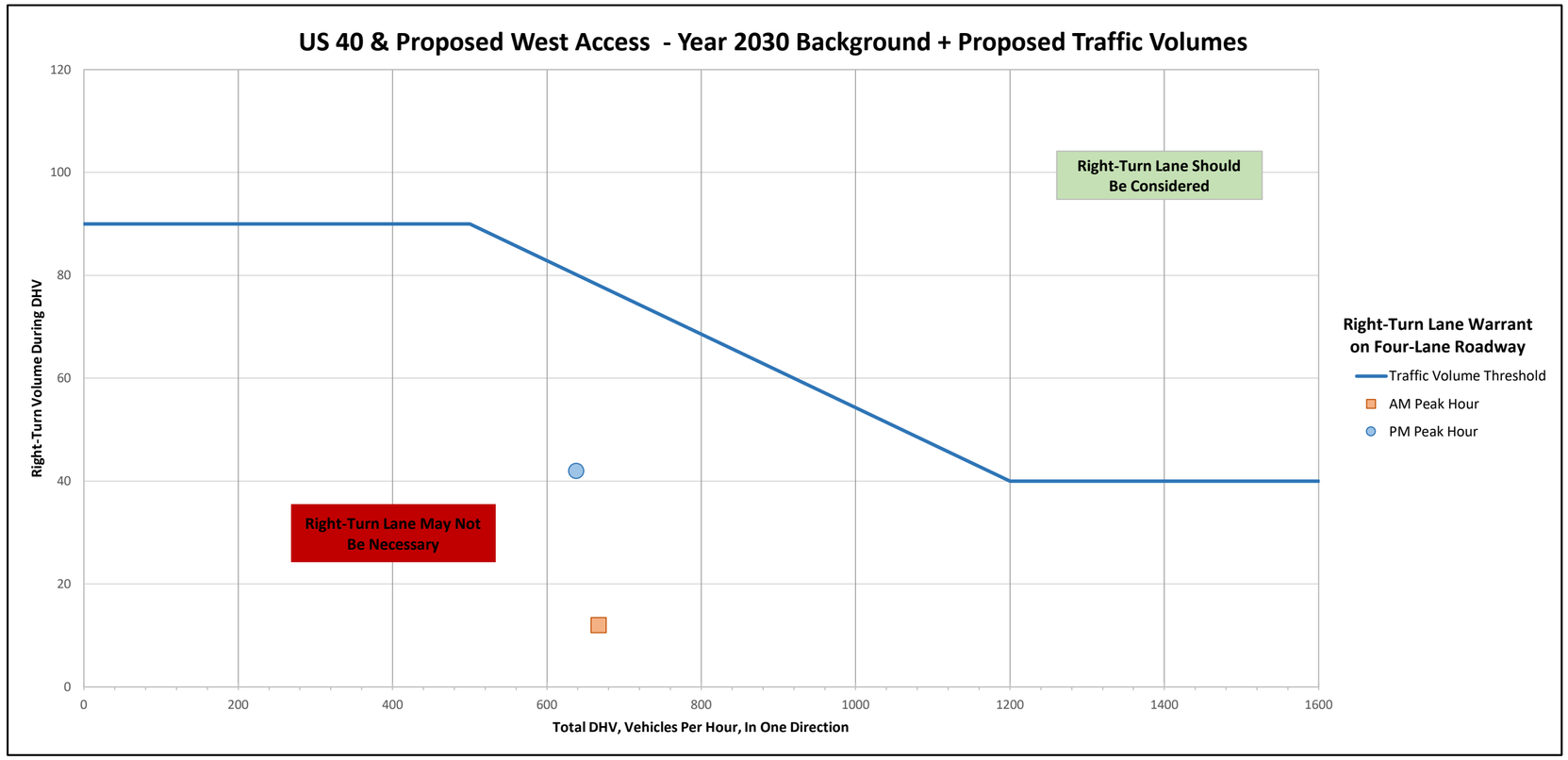

Figure is only applicable on highways with a design speed of 80 km/h (50 mph) or greater. For speeds less than 80 km/h (50 mph) , see Section 18 (b,c).

SECTION 18 : RIGHT TURN LANES ON 4-LANE HIGHWAYS

A right turn lane shall be constructed to a driveway approach that will allow the turning vehicles to decelerate and to enter the approach safely and without creating unnecessary congestion to highway through traffic. A right turn will be required when one or more of the following criteria is met :

a) On rural or urban highways where traffic satisfies the criteria in figure 18.1.

b) Where a capacity analysis determines a right turn lane is necessary to meet the level-of-service criteria.

c) Where the accident experience, existing traffic operations, sight distance restrictions (e.g., intersection beyond a crest vertical curve), or engineering judgment indicates a significant conflict related to right turning vehicles.

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	655	12	33	382	0	36	0	97	0	0	0
Future Vol, veh/h	0	655	12	33	382	0	36	0	97	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	712	13	36	415	0	39	0	105	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	415	0	0	725	0	0	998	1205	363	843	1212	208
Stage 1	-	-	-	-	-	-	718	718	-	487	487	-
Stage 2	-	-	-	-	-	-	279	487	-	356	725	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1140	-	-	874	-	-	198	182	634	257	181	798
Stage 1	-	-	-	-	-	-	386	431	-	531	549	-
Stage 2	-	-	-	-	-	-	704	549	-	634	428	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1140	-	-	874	-	-	190	175	634	205	173	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	175	-	205	173	-
Stage 1	-	-	-	-	-	-	386	431	-	509	526	-
Stage 2	-	-	-	-	-	-	675	526	-	529	428	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	0.74	19.66	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	388	1140	-	-	874	-	-	-
HCM Lane V/C Ratio	0.372	-	-	-	0.041	-	-	-
HCM Ctrl Dly (s/v)	19.7	0	-	-	9.3	-	-	0
HCM Lane LOS	C	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.7	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	596	42	114	859	0	25	0	67	0	0	0
Future Vol, veh/h	0	596	42	114	859	0	25	0	67	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	648	46	124	934	0	27	0	73	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	934	0	0	693	0	0	1385	1852	347	1505	1875	467
Stage 1	-	-	-	-	-	-	671	671	-	1182	1182	-
Stage 2	-	-	-	-	-	-	715	1182	-	324	693	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	729	-	-	898	-	-	103	73	649	83	71	543
Stage 1	-	-	-	-	-	-	412	453	-	202	262	-
Stage 2	-	-	-	-	-	-	388	262	-	662	443	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	729	-	-	898	-	-	88	63	649	64	61	543
Mov Cap-2 Maneuver	-	-	-	-	-	-	88	63	-	64	61	-
Stage 1	-	-	-	-	-	-	412	453	-	174	226	-
Stage 2	-	-	-	-	-	-	334	226	-	588	443	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0	1.13	30.59	0
HCM LOS			D	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	238	729	-	-	898	-	-	-
HCM Lane V/C Ratio	0.419	-	-	-	0.138	-	-	-
HCM Ctrl Dly (s/v)	30.6	0	-	-	9.7	-	-	0
HCM Lane LOS	D	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	1.9	0	-	-	0.5	-	-	-