January 21, 2022

Mr. Dean Fiske
Strathmore Holdings, LLC
P.O. Box 743
Cheshire, CT 06410

RE: Intersection Delay Observations
East Mitchell Avenue
Cheshire, Connecticut
SLR #141.15841.00001

Mr. Fiske:

In response to concerns brought up at the last Cheshire Planning and Zoning meeting, we have undertaken some field observations at the intersection of East Mitchell Avenue and Highland Avenue (Route 10) to evaluate the existing delays at the stop-controlled East Mitchell Avenue approach.

As part of the Traffic Impact Study completed in December 2021, intersection capacity analysis was performed at the intersection of Highland Avenue (Route 10) at East Mitchell Avenue using *Synchro 11* (*Trafficware*) traffic analysis software package. Intersection capacity results are expressed as a level of service (LOS). At stop-controlled intersections, the LOS is determined by the computed control delay for each minor movement. Control delay is generally the total time the average vehicle is stopped at a minor approach.

At the last planning and zoning meeting, some East Mitchell Avenue residents brought up some concerns about the delay they endure at the stop sign on East Mitchell Avenue. Some also expressed that the LOS and delay results computed by SLR International Corporation's (SLR) *Synchro* model and presented in the Traffic Impact Study were not realistic.

To review the residents' concerns, SLR conducted field observations at the intersection of East Mitchell Avenue and Highland Avenue (Route 10) on Wednesday, January 19, 2022, during the morning and afternoon peak hours from 8:00 to 9:00 a.m. and 4:15 to 5:15 p.m. To determine the average delay at the East Mitchell Avenue approach, SLR recorded the arrival and departure time of each vehicle, subtracted the two to determine the time each vehicle was waiting at the approach, and took the average for each peak hour. The raw field observation data is included as an attachment.

Table 1 summarizes the average delays observed on Wednesday, January 19, 2022, and compares them to the existing control delays computed by SLR's *Synchro* model. It is important to note that to provide an accurate comparison, the *Synchro* delay presented in Table 1 was computed using existing volumes conducted in September 2020. These results are different than the results presented in the Traffic Impact Study because the Traffic Impact Study compared future 2023 background and combined conditions that were increased to reflect COVID adjustments. The existing conditions *Synchro* analysis worksheets are included as an attachment.

TABLE 1
Intersection Delay Summary
Existing Conditions

INTERSECTION/LANE GROUP	DELAY (SECONDS)			
	AM PEAK HOUR		PM PEAK HOUR	
	SYNCHRO	OBSERVED	SYNCHRO	OBSERVED
Unsignalized				
Highland Avenue (Route 10) at East Mitchell Avenue				
Westbound Left/Right	16.4	15.6	19.1	15.3

Notes: *Synchro* delay calculations were performed using *Synchro 11*, using methodologies outlined in the *Highway Capacity Manual* 6th Edition. *Synchro* observations were conducted by SLR on 1/19/22.

As shown in the table, both the observed and *Synchro* computed existing delays are less than 20 seconds, which corresponds to a LOS C or better. Overall, only three cars were observed waiting at the East Mitchell Avenue approach for more than 35 seconds during both the morning and afternoon peak hours. Additionally, there was also only two times (once in the morning and once in the evening) that there were two cars waiting at the approach at the same time. The observed delays are less than the *Synchro* outputs, however, the results are close. As such, we feel the intersection capacity results reported in the Traffic Impact Study are considered accurate and if anything, a bit conservative.

We hope this report is useful to you and the Cheshire Planning and Zoning Committee. If you have any questions or need anything further, please do not hesitate to contact either of the undersigned.

Sincerely,

SLR International Corporation

David G. Sullivan, PE
US Manager of Traffic & Transportation Planning

Emily A. Foster, PE
Associate Transportation Engineer

Attachments

- Field Observations Raw Data
- Existing Conditions *Synchro* Analysis Worksheets

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East Mitchel Avenue Delay Field Visit

Date: 1/19/2022

Day: Wednesday

Weather: Cold, Partly Cloudy

CAR	DIRECTION	START TIME	END TIME	DELAY (SECONDS)	
AM PEAK 8:00 - 9:00					
1	Right	4.22	4.29	7	
2	Left	5.52	6.27	35	
3	Right	9.24	9.26	2	
4	Right	13.56	14.12	16	
5	Left	15.10	15.25	15	
6	Right	19.40	19.56	16	
7	Right	30.34	30.36	2	
8	Left	31.09	31.53	44	
9	Left	36.15	36.32	17	
10	Left	37.50	38.39	49	
11	Left	41.16	41.33	17	
12	Left	51.56	52.08	12	
13	Left	52.05	52.09	4	
14	Right	53.48	53.52	4	
15	Left	58.19	58.34	15	
16	Left	58.33	58.39	6	
17	Right	59.43	59.47	4	
Approach Average				15.59	
Movement Average			Left	21.40	(10)
			Right	7.29	(7)
PM PEAK 4:15 - 5:15					
1	Right	6.43	7.00	17	
2	Right	17.49	18.17	28	
3	Right	18.02	18.23	21	
4	Right	31.47	31.53	6	
5	Right	36.59	37.05	6	
6	Right	37.13	37.16	3	
7	Left	38.51	38.57	6	
8	Left	42.58	53.26	28	
9	Left	46.46	46.50	4	
10	Left	49.29	50.02	33	
11	Left	53.54	54.10	16	
Approach Average				15.27	
Movement Average			Left	17.40	(6)
			Right	13.50	(5)

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	15	8	477	14	6	390
Future Volume (vph)	15	8	477	14	6	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.951		0.996			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1693	0	1761	0	0	1833
Flt Permitted	0.969					0.999
Satd. Flow (perm)	1693	0	1761	0	0	1833
Link Speed (mph)	25		35			35
Link Distance (ft)	907		372			396
Travel Time (s)	24.7		7.2			7.7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	4%	0%	5%	0%
Adj. Flow (vph)	16	9	518	15	7	424
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	0	533	0	0	431
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 36.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	8	477	14	6	390
Future Vol, veh/h	15	8	477	14	6	390
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	4	0	5	0
Mvmt Flow	16	9	518	15	7	424

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	964	526	0	0	533	0
Stage 1	526	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	286	556	-	-	1020	-
Stage 1	597	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	283	556	-	-	1020	-
Mov Cap-2 Maneuver	283	-	-	-	-	-
Stage 1	597	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	341	1020	-
HCM Lane V/C Ratio	-	-	0.073	0.006	-
HCM Control Delay (s)	-	-	16.4	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	10	528	12	5	564
Future Volume (vph)	16	10	528	12	5	564
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.950		0.997			
Flt Protected	0.969					
Satd. Flow (prot)	1691	0	1762	0	0	1836
Flt Permitted	0.969					
Satd. Flow (perm)	1691	0	1762	0	0	1836
Link Speed (mph)	25		35			35
Link Distance (ft)	907		372			396
Travel Time (s)	24.7		7.2			7.7
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	4%	0%	5%	0%
Adj. Flow (vph)	17	10	550	13	5	588
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	563	0	0	593
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	10	528	12	5	564
Future Vol, veh/h	16	10	528	12	5	564
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	4	0	5	0
Mvmt Flow	17	10	550	13	5	588

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1155	557	0	0	563	0
Stage 1	557	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.15	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.245	-
Pot Cap-1 Maneuver	220	534	-	-	994	-
Stage 1	578	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	218	534	-	-	994	-
Mov Cap-2 Maneuver	218	-	-	-	-	-
Stage 1	578	-	-	-	-	-
Stage 2	549	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.1	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	282	994	-
HCM Lane V/C Ratio	-	-	0.096	0.005	-
HCM Control Delay (s)	-	-	19.1	8.6	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-