



MEMORANDUM

TO: Joseph Waldman
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DATE: August 31, 2020

RE: Highgates Development Traffic Assessment

The purpose of this memorandum is to summarize the methodology and result of the traffic analysis conducted to determine the impact and necessary improvements associated with the Highgates Multifamily development on Cedar Creek Road. The 168 unit development is proposed on the southside of Cedar Creek Road, with access 300 feet west of the intersection with US 150 (Bardstown Road) and Brentlinger Lane

Existing Conditions

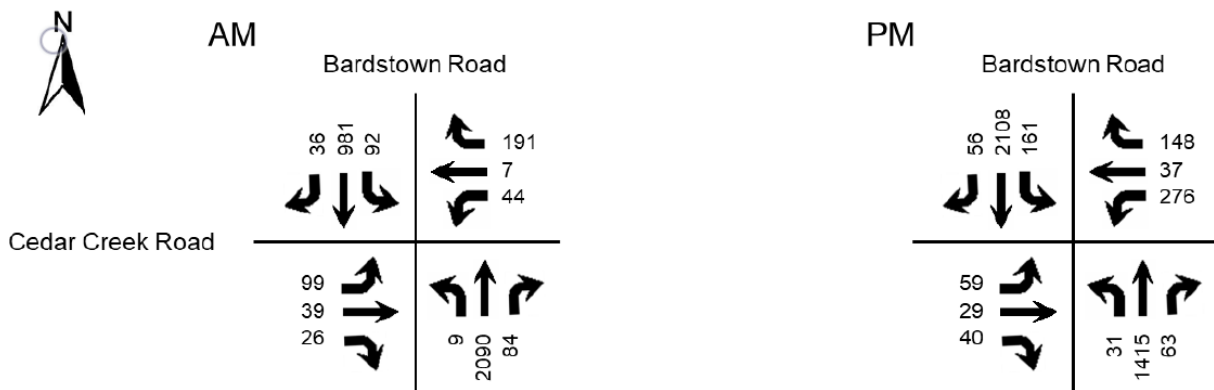
The intersection of US 150 (Bardstown Road) and Cedar Creek Road is a 4-leg signal controlled intersection. All approaches have exclusive left-turn lanes with a single through lane on the cross-streets and two through lanes on US 150. The northbound and westbound approaches also provide exclusive right turn lanes. Cedar Creek Road and Brentlinger Lane operate on a single phase with permissive left turn movements, while protected-permitted left turn phase are provided for left turn phases on US 150. Figure 1 shows an aerial of the critical intersection.

Existing traffic counts were collected on Tuesday March 3, 2020, prior to COVID-19 impacts, as part of a July 8 Traffic Study by Diane Zimmerman. Figure 2 summarizes the AM (7-8 a.m) and PM (4:45-5:45 p.m.) peak hour turning volumes.

Figure 1: US 150 (Bardstown Road) at Cedar Creek Road/Brentlinger Lane



Figure 2: Existing Traffic Counts



Trip Generation

Trip generation was conducted using the ITE Trip Generation Manual, 10th Edition, for Land Use Code 221 (Multi-Family Housing Mid-Rise). Based on this land use, the 168 units is projected to generate 54 trips during the AM peak and 69 trips during the PM peak period.

All traffic was assumed to access Bardstown Road, to present a worst-case demand scenario. Traffic was then distributed through the intersection based on existing traffic patterns. Figure 3 shows the AM and PM peak hour trips generated. The final traffic volumes include a 1 percent background growth rate to estimate year of opening 2023 volumes and are shown in Figure 4.

Figure 3: Trip Distribution

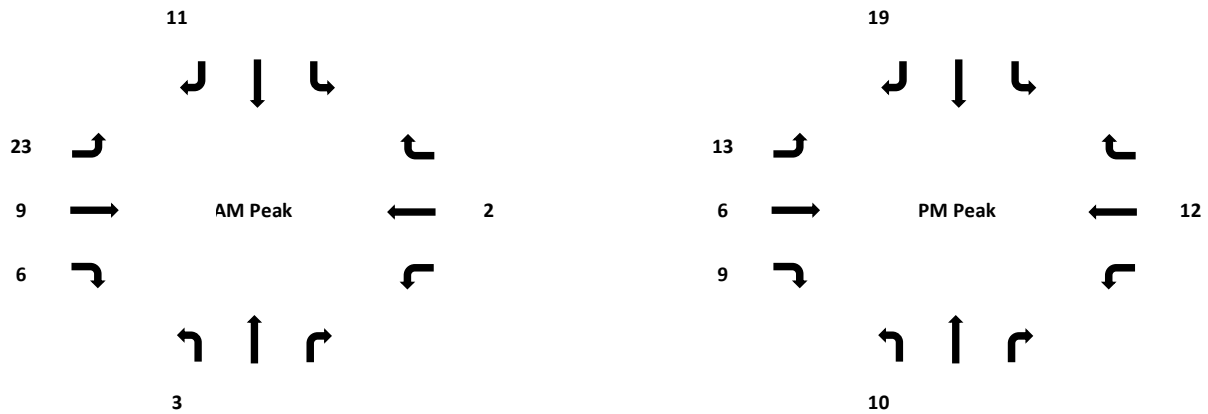
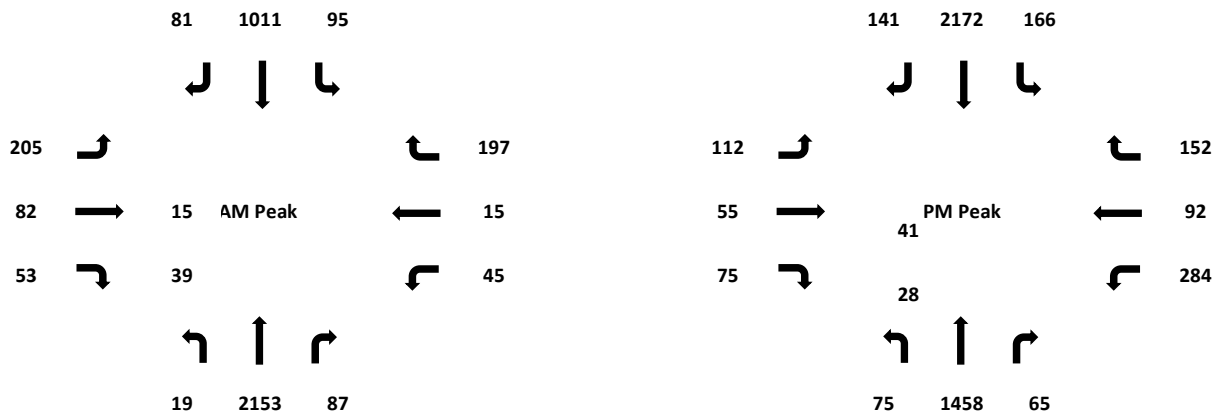


Figure 4: 2023 Opening year Build Volumes



Traffic Analysis

Two different scenarios were evaluated for both the AM and PM peak hours

- 1) 2023 No Build scenario, demonstrates operations without development traffic
- 2) 2023 Build with Highgates Development.

Traffic analysis was conducted using HCS 7 software for signalized intersections. Existing signal cycle lengths of 180 (AM) and 225 (PM) seconds were used for all scenarios, with signal timing adjusted to accommodate the change in traffic demand. Tables 1 and 2 summarize the level of service, delay and volume to capacity ratios for all approaches and scenarios.

Table 1: AM Peak Hour Analysis Summary

Intersection/ Approach	2023 No Build			2023 Build		
	LOS	DELAY (sec/ veh)	V/C*	LOS	DELAY (sec/ veh)	V/C*
Bardstown Road and Cedar Creek	C	25.4		C	23.5	
EB Cedar Creek	E	76.5	0.61	E	78.2	0.75
WB Brentlinger	E	79.7	0.74	E	77.3	0.69
NB Bardstown Rd	C	21.9	0.86	B	17.9	0.87
SB Bardstown Rd	A	10.0	0.65	B	10.4	0.66
* Indicates highest V/C ratio of all movements on approach						

Table 2: PM Peak Hour Analysis Summary

Intersection/ Approach	2023 No Build			2023 Build		
	LOS	DELAY (sec/ veh)	V/C*	LOS	DELAY (sec/ veh)	V/C*
Bardstown Road and Cedar Creek	D	50.6		D	54.4	
EB Cedar Creek	E	76.1	0.27	E	74.3	0.31
WB Brentlinger	F	132.2	1.10	F	145.3	1.17
NB Bardstown Rd	C	25.4	0.60	C	25.7	0.72
SB Bardstown Rd	D	48.7	0.98	D	52.6	0.98
* Indicates highest V/C ratio of all movements on approach						

Conclusion

As can be seen from the tables, the PM peak period presents the worst analysis period, with Cedar Creek Road and Brentlinger operating at LOS E and F, respectively. The primary delay at this intersection is due to the heavy demand for the westbound left turn from Brentlinger Lane, which is not increased with the proposed development. Overall delays at the intersection remain relatively unaffected with the additional 54 AM trips and 69 PM trips generated by the development.