there was a 19 percent improvement for eastbound traffic but an 18 percent decrease in average speed for westbound traffic. This is primarily the result of the additional signals along the corridor at Whippoorwill Lane and the two-phase operation of the DDI signals. With significantly lower westbound traffic volumes in the PM peak period. With approximately 50 percent less demand in the westbound direction, more green time is provided for eastbound traffic, resulting in more delay.

In the Opening Year (2025) AM peak hour, there was a 10 percent improvement for eastbound traffic but an 11 percent decrease in average speed for westbound traffic. In the PM peak hour, there was a 20 percent decrease for eastbound traffic and a 15 percent decrease in average speed for westbound traffic. The decrease in average speeds is primarily the result of the two-phase operation of the DDI, which does not allow both eastbound and westbound traffic to run simultaneously as they would in the existing diamond configuration, as well as the additional signals along the corridor at Whippoorwill Lane. Although average speeds on Pine Ridge Road are generally lower than existing conditions, overall network performance is improved as discussed in Section 7.5.

Table 7.10: Opening Year (2025) and Design Year (2040) Arterial Analysis – AM Peak

Segment	Length (miles)	2025 No-Build		2025 Build		2040 No-Build		2040 Build	
		Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)
Pine Ridge EB: West of Livingston Rd to East of Logan Blvd	2.4	6.7	21	6.1	23	7.9	18	7.1	20
Pine Ridge WB: East of Logan Blvd to West of Livingston Rd	2.3	5.6	25	6.3	22	8.8	16	7.3	19

Table 7.11: Opening Year (2025) and Design Year (2040) Arterial Analysis – PM Peak

Segment	Length (miles)	2025 No-Build		2025 Build		2040 No-Build		2040 Build	
		Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)	Travel Time (min)	Average Speed (mph)
Pine Ridge EB: West of Livingston Rd to East of Logan Blvd	2.4	4.7	30	5.9	24	8.4	17	7.1	20
Pine Ridge WB: East of Logan Blvd to West of Livingston Rd	2.4	5.8	24	6.8	21	6.1	23	7.4	19

7.5 Network Performance Summary

The network performance results shown below in **Table 7.12** and **Table 7.13** provide a good assessment of overall operations within the study area during the Opening Year (2025) and Design Year (2040) AM and PM peak hours. Average delay (seconds) for all vehicles in the network was reduced by 11 and 13 percent in the Opening Year (2025) AM and PM peak hours, respectively. In the Design Year (2040) the average delay for all vehicles was reduced by 38 percent in the AM peak and 64 percent in the PM peak. Average speed network-wide was also improved in the Design Year

(2040) Build condition, with a 32 and 75 percent improvement in the AM and PM peak hours, respectively.

Latent demand and latent delay apply to vehicles that cannot enter the network due to queuing and provide a good indication of capacity constraints within the model. Latent demand is present in the Design Year (2040) No-Build AM and PM peak hours. The Build condition provided up to a 70 percent improvement in latent demand and latent delay in the AM peak hour and nearly 100 percent improvement in the PM peak hour. The latent demand that remains in the Build condition during the AM peak hour is primarily the result of queuing on northbound Whippoorwill Lane that is not able to be served. A high volume of right-turning vehicles is trying to use the downstream U-turn to head westbound on Pine Ridge Road. This results in a lane imbalance for the triple right-turn lane that causes queuing to exceed the limits of the Vissim network.

Table 7.12: Opening Year (2025) Network Performance Summary

Parameter	AM Peak Hour			PM Peak Hour		
	2025 No-Build	2025 Build	% Difference	2025 No-Build	2025 Build	% Difference
Average Speed (mph)	25	26	3%	26	27	4%
Average Delay (sec)	109	97	-11%	98	85	-13%
Total Travel Time (hr)	904	873	-3%	913	876	-4%
Total Delay (hr)	358	319	-11%	333	288	-14%
Total Distance (mi)	22,599	22,519	0%	24,082	23,971	0%
Arrived Vehicles (veh)	11,021	11,041	0%	11,392	11,390	0%
Latent Demand (veh)	0	0	0%	0	0	0%
Latent Delay (hr)	1	0	-44%	0	0	0%
Total Delay + Latent Delay (hr)	359	320	-11%	334	288	-14%

Table 7.13: Design Year (2040) Network Performance Summary

Parameter	AM Peak Hour			PM Peak Hour		
	2040 No-Build	2040 Build	% Difference (2040)	2040 No-Build	2040 Build	% Difference (2040)
Average Speed (mph)	16	21	32%	14	25	75%
Average Delay (sec)	258	159	-38%	303	110	-64%
Total Travel Time (hr)	1,787	1,418	-21%	1,969	1,200	-39%
Total Delay (hr)	1,105	691	-37%	1,295	467	-64%
Total Distance (mi)	28,318	29,625	5%	28,021	29,895	7%
Arrived Vehicles (veh)	13,478	14,285	6%	13,220	14,125	7%
Latent Demand (veh)	651	204	-69%	512	5	-99%
Latent Delay (hr)	354	106	-70%	223	1	-99%
Total Delay + Latent Delay (hr)	1,459	797	-45%	1,519	469	-69%