



June 12, 2023

Mr. Michael Dwyer
Chief Operations Officer
Sacred Heart Schools
150 Valparaiso Avenue
Atherton, CA 94027

Sacred Heart Schools Traffic Monitoring

Dear Mr. Dwyer;

As requested, W-Trans has reviewed the Sacred Heart Schools traffic monitoring program and prepared a summary of the count program and its accuracy. The purpose of this letter is to summarize our findings regarding the current count program and its accuracy, and to note any discrepancies in the data collection and processing. Based on the recently collected traffic data, it was determined that Sacred Heart Schools has an accurate traffic count recording system and did not exceed the 6,000-trip cap set in their Transportation Demand Management (TDM) Plan.

Existing Conditions

Sacred Heart Schools is located at 150 Valparaiso Avenue in the Town of Atherton. According to the Schools' TDM Plan, annual traffic monitoring will be performed to verify that trips accessing the school remain under the TDM goal of 6,000 vehicle-trips per day. To accomplish this traffic monitoring, the school maintains Automatic License Plate Reader (ALPR) cameras at all entrances and exits to the campus. The locations of these 17 cameras are shown in Plate 1.

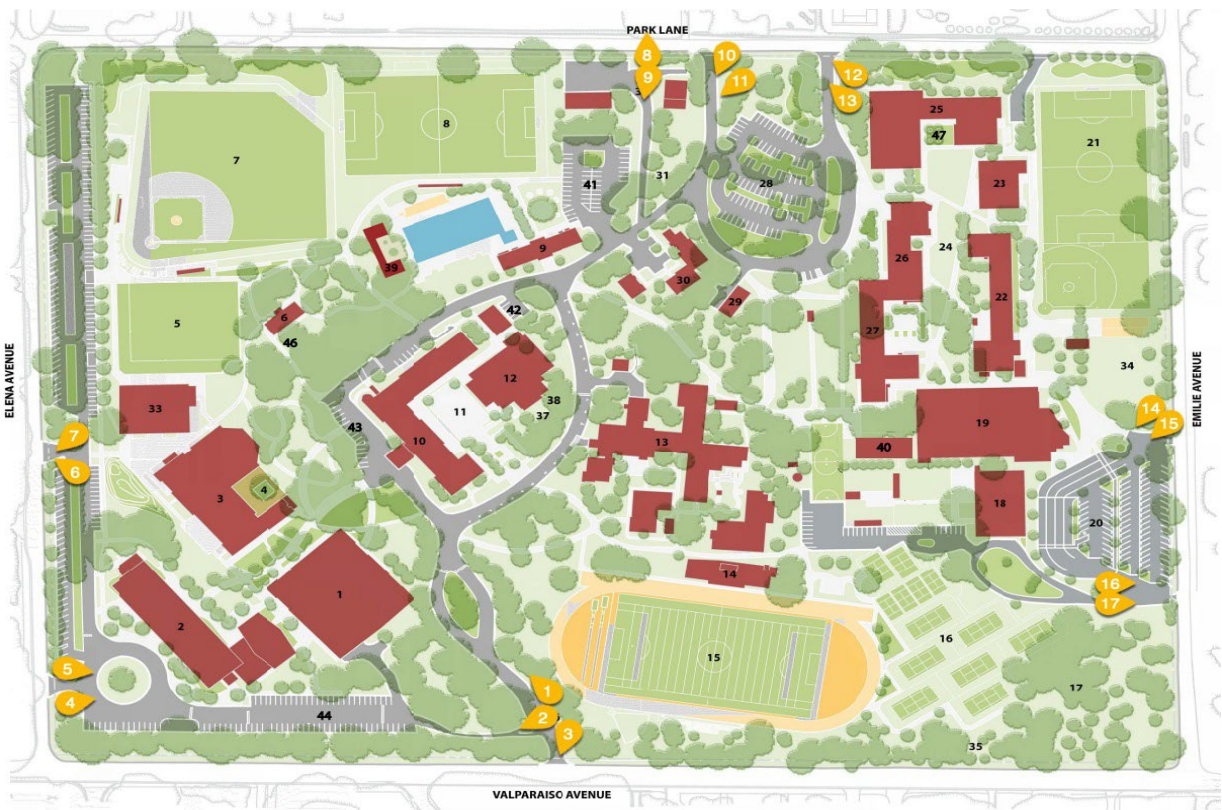


Plate 1 – Campus Map of Automatic License Plate Reader Camera Locations

The ALPR cameras capture the rear license plate of each vehicle as it passes the camera. The license plate number, date, time, and location are all uploaded to a web-based platform operated by School Pass, the school's security camera vendor. School administrative staff can view and download the data from the School Pass platform.

Data Processing

The ALPR system, similar to any traffic count data solution, has inherent limitations. Some known limitations include vehicles that cannot be counted due to missing or obscured rear license plates, missing vehicles due to drivers violating a traffic law by entering the campus through an exit driveway or leaving the campus through an entry driveway, counting vehicles based on words that are not a part of a license plate, or counting the same vehicle more than once as it moves through campus or moves up in a queue. Post-processing of the raw ALPR data helps to limit the inaccuracies created by these limitations.

To receive accurate trip information, school staff have created scripts that parse the raw ALPR data and exclude duplicates from the overall count. There are a few different scripts that have been created, with each one targeting a specific error in the ALPR system. These scripts mark entries as duplicates by examining the license plate string, date and time of the data entry, and camera location. With that information, the scripts have been written to identify duplicates or non-license plate entries and mark them for exclusion from the total trip count.

Data Review

W-Trans reviewed count data provided by the school for three typical weekdays, April 18 through April 20, 2023 (Tuesday through Thursday). The maximum number of trips counted accessing the school campus was 5,432 trips on Wednesday, April 19. On average, 5,163 trips accessed the site per day. Both the average number of trips and maximum number of trips for the data reviewed was below the 6,000-trip cap established in the School's TDM Plan. Therefore, the School appears to be in compliance with its TDM trip cap.

24-hour Manual Counts

To verify the accuracy of the ALPR cameras and the school's post-processing methods, 24-hour traffic counts were obtained at three entrances to the campus on Thursday, May 4. The entrances selected for this representative sampling of traffic counts were the entrance driveways on Emilie Avenue (Gate Five), Park Lane (Gate Four), and Elena Avenue (Gate Two). The 24-hour manual traffic counts for the selected date and locations, based on video taken by W-Trans, are enclosed.

These traffic counts represent the total sum of entrance trips for 24 hours for each counted driveway, broken down into 15-minute intervals. The manual counts were then compared to the ALPR entrance data for the same day and driveways, as summarized in Table 1.

Table 1 – Summary of 24-Hour Counts for May 4, 2023

Date	Driveway	Counts (# of Vehicles)		Summary of Counts	
		Manual	ALPR	Percent Difference	Difference in Trips
5/4/23	Emilie Ave Entrance	520	547	5.19%	27
5/4/23	Park Ln Entrance	533	534	0.19%	1
5/4/23	Elena Ave Entrance	543	542	0.18%	-1
Average		532	541	1.69%	

The two sets of counts were compared to ensure accuracy. The ALPR counts were higher than the video counts at the Emilie Avenue and Park Lane entrances, while the video counts were higher than the ALPR counts at Elena Avenue. Overall, the ALPR counts indicated 27 more inbound vehicles than the manual counts. The resulting average percent difference between the two sets of counts is 1.69 percent. Slight differences in count number can be expected due to data inaccuracies between any two data sets. For count data, less than a five percent difference is typically acceptable, on average. The average difference between the ALPR counts and the video counts was less than five percent, and was higher than the manual counts, indicating that the ALPR system is accurately capturing trips and that the trips are accurately being processed and recorded.

Sacred Heart Schools Traffic Monitoring Summary

- Sacred Heart Schools did not exceed the daily trip cap of 6,000 trips for the time period reviewed.
- The highest number of daily vehicle trips during the days reviewed was 5,432 trips, occurring on Wednesday, April 19.
- The average number of daily vehicle trips on a school day for each day reviewed was 5,163 trips.
- The differences in ALPR counts and manual traffic counts averaged 1.69 percent based on a sampling of manual counts at three entrance driveways. The difference between the ALPR cameras and manual counts for the three locations sampled was 27 more vehicles.

Conclusions

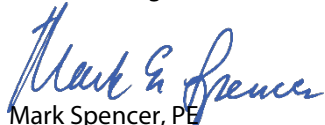
Sacred Heart Schools was in compliance with the trip cap set in their TDM Plan for the time period reviewed as the data indicated that fewer than 6,000 trips were made to the campus per day. The average number of daily vehicle trips on a school day was approximately 5,163 trips. The average difference in traffic counts between manual traffic counts and the ALPR counts was 1.69 percent, which is an acceptable variance.

It is recommended that the Town of Atherton continue monitoring the traffic volume entering the school at yearly intervals as prescribed in the TDM Plan. The school's traffic count system appears to be accurate, and the Town should continue to accept the data obtained by the school to conduct the monitoring.

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,


Nicholas Brunetto, PE
Associate Engineer


Mark Spencer, PE
Senior Principal



MES/ngb/ATH023.L1

Enclosure: 24-hour Manual Traffic Counts

Trip Gen

Location: Sacred Heart Schools, Atherton

5/4/2023

City: Atherton

Thursday

TIME	VOLUME			
	Sacred Heart Entrance (Gate 5) & Emilie Ave	Park Ln & Sacred Heart Entrance	Sacred Heart Entrance (Gate 2) & Elena Ave	TOTALS
	Location 001	Location 002	Location 003	
	Going IN	Going IN	Going IN	
12:00 AM	0	0	0	0
12:15 AM	0	0	0	0
12:30 AM	0	0	0	0
12:45 AM	0	0	0	0
1:00 AM	0	0	0	0
1:15 AM	0	0	0	0
1:30 AM	0	0	0	0
1:45 AM	0	0	0	0
2:00 AM	0	0	0	0
2:15 AM	0	0	0	0
2:30 AM	0	0	0	0
2:45 AM	0	0	0	0
3:00 AM	0	0	0	0
3:15 AM	0	0	0	0
3:30 AM	0	0	0	0
3:45 AM	0	0	0	0
4:00 AM	0	0	0	0
4:15 AM	0	0	0	0
4:30 AM	0	0	0	0
4:45 AM	0	0	0	0
5:00 AM	0	0	0	0
5:15 AM	0	0	0	0
5:30 AM	0	0	0	0
5:45 AM	1	0	0	1
6:00 AM	2	0	0	2
6:15 AM	1	0	0	1
6:30 AM	3	1	0	4
6:45 AM	0	2	0	2
7:00 AM	2	1	2	5
7:15 AM	2	9	9	20
7:30 AM	8	10	21	39
7:45 AM	11	22	30	63
8:00 AM	39	70	66	175
8:15 AM	92	138	142	372
8:30 AM	24	34	11	69
8:45 AM	28	2	9	39
9:00 AM	7	3	0	10
9:15 AM	2	0	0	2
9:30 AM	0	1	0	1
9:45 AM	0	0	0	0
10:00 AM	0	1	0	1
10:15 AM	0	1	0	1
10:30 AM	0	2	0	2
10:45 AM	1	1	0	2
11:00 AM	1	1	0	2
11:15 AM	2	2	0	4
11:30 AM	10	0	0	10
11:45 AM	2	1	0	3
12:00 PM	0	0	0	0
12:15 PM	2	0	0	2
12:30 PM	0	0	0	0
12:45 PM	0	0	0	0
1:00 PM	1	0	0	1
1:15 PM	2	1	0	3
1:30 PM	0	0	0	0
1:45 PM	1	0	0	1
2:00 PM	2	3	2	7
2:15 PM	10	3	10	23

2:30 PM	25	0	22	47
2:45 PM	27	32	13	72
3:00 PM	36	40	18	94
3:15 PM	45	30	31	106
3:30 PM	17	15	20	52
3:45 PM	13	13	26	52
4:00 PM	7	8	13	28
4:15 PM	7	9	8	24
4:30 PM	9	4	12	25
4:45 PM	7	8	11	26
5:00 PM	17	11	6	34
5:15 PM	11	9	9	29
5:30 PM	4	21	3	28
5:45 PM	4	7	7	18
6:00 PM	2	1	3	6
6:15 PM	8	4	7	19
6:30 PM	7	3	6	16
6:45 PM	12	9	26	47
7:00 PM	5	0	0	5
7:15 PM	1	0	0	1
7:30 PM	0	0	0	0
7:45 PM	0	0	0	0
8:00 PM	0	0	0	0
8:15 PM	0	0	0	0
8:30 PM	0	0	0	0
8:45 PM	0	0	0	0
9:00 PM	0	0	0	0
9:15 PM	0	0	0	0
9:30 PM	0	0	0	0
9:45 PM	0	0	0	0
10:00 PM	0	0	0	0
10:15 PM	0	0	0	0
10:30 PM	0	0	0	0
10:45 PM	0	0	0	0
11:00 PM	0	0	0	0
11:15 PM	0	0	0	0
11:30 PM	0	0	0	0
11:45 PM	0	0	0	0
Totals	520	533	543	1596