



October 28, 2021

Mr. Michael Vroman, TE
Town of Los Gatos
41 Miles Avenue
Los Gatos, CA 95030

Hillbrook School 2020-2021 Spring Trimester Monitoring

Dear Mr. Vroman;

As requested, W-Trans has prepared a summary of the Spring Trimester traffic monitoring of Hillbrook School in Los Gatos for the 2020-2021 school year. The purpose of this memo is to summarize the 2021 Spring Trimester daily vehicle trips and to note any discrepancies in the data collection. Overall, Hillbrook School did not exceed the maximum number of daily vehicle trips during the Spring Trimester.

Existing Conditions

The Hillbrook School is located at 300 Marchmont Drive in the Town of Los Gatos. According to Condition 17 of the School's Conditional Use Permit, "the maximum number of daily vehicle trips shall not exceed 880." The School can identify up to 10 exception days where they are permitted to exceed the maximum number of daily trips, however, the total number of trips on these exception days shall not exceed 960. During the summer trimester "the maximum number of daily vehicle trips shall not exceed 300." The school maintains two Sensys magnetometer traffic counters embedded in the pavement of the exit lane outside the school's gate, approximately 30 feet apart. These magnetometers (Sensys counters) are calibrated to detect the presence of vehicles and motorcycles, but not bicycles or other non-motorized means of transportation.

Hillbrook School and Sensys staff continuously monitor the functionality of the system. The magnetometers are self-calibrating, self-tuning, and are upgraded remotely as new software is released. The sensors are to be calibrated and validated each trimester. Hillbrook School confirmed that the sensors were reviewed at the beginning of the 2020-2021 school year. Sensys staff have previously conducted an independent validation of the county system and concluded the daily counts are showing between 97% and 99.75% accuracy. Hillbrook School has implemented traffic control measures to improve the flow of vehicles over the sensors in order to maintain data accuracy, such as lane delineators along Marchmont Drive.

Hillbrook School has only one vehicular access point, and because of this it is assumed that all exit trips also made an entrance trip through this location. For reporting purposes, the maximum of either Exit A or Exit B is used to determine the number of daily trips. The trips have the potential to be detected by one or both sensors, and thus could possibly increase in the number of days where the difference between sensors is larger than five percent.

The Conditional Use Permit also outlines the requirements of manual data collection in Condition 19 and "the school shall be considered out of compliance if any mechanical readings exceed the Sensys counts by more than five percent and where the readings are above the maximum number of daily vehicle trips."

A permanent backup pneumatic tube counter, a MetroCount MC56000 Vehicle Classifier System, is located in both the entrance and exit lanes just outside of the School's gate. Pneumatic tube systems utilize rubber tubes placed across traffic lanes in specific configurations. When a vehicle travels over the tube the air pressure in the tube is compressed and this compression triggers an event recording. The system is programmed to classify vehicles based on the distance between the front and rear axle. The School's MetroCount system counts the total number of trips, both entrance and exit trips. While the Sensys system can be accessed remotely online, the MetroCount system is local to the School's network. The School has agreed to, and continues to, actively provide W-Trans with backup data directly from the MetroCount system when necessary.

24-hour Manual Counts and Observations

For the 2021 Spring Trimester, traffic counts were obtained on Marchmont Drive on February 4th, April 14th, and May 4th. These dates were selected as random, non-consecutive days that did not include an athletic or other school event. The traffic counts based on video taken by W-Trans represent the total sum of entrance and exit trips for 24-hours, broken down into 15-minute intervals. The Sensys counts represent the exit trips for the same 24-hour period. In order to convert exit trips to both entrance and exit trips, the maximum count from either Exit A or Exit B was determined and then doubled (assuming one trip in is equivalent to one trip out). The data from the Exit A sensor was higher than the data from the Exit B sensor on February 4th; therefore, the Sensys counts, when compared to the video counts on that day, is the doubled number of counts from the Exit A sensor. On April 12th, a significant difference between the Exit A and Exit B sensors was detected. The Sensys Engineer noted "blips" in the Exit B sensor and directed only Exit A data to be used. For the remainder of the Spring Trimester, only Exit A data was reported. The raw Sensys data and video counts are attached. The manual counts were then compared to the Sensys data for the same time period in Table 1.

Table 1 – Summary of 24-Hour Counts for Spring Trimester 2021

Date	Day of the Week	Counts (Number of Vehicles)		Summary of Counts	
		Video	Sensys	Percent Difference	Difference in Trips
02/04/21	Thursday	750	762	1.59%	12
04/14/21	Wednesday	88	78	12.05%	10
05/04/21	Tuesday	796	816	2.48%	20
Average		545	552	5.37%	14

The manually counted video counts were reviewed to ensure accuracy. The average difference, overall and on each day, should be considered acceptable and within the margin of error. Additionally, none of the data points exceeded the Conditional Use Permit daily trip cap of 880 daily trips for normal school days or 960 daily trips for an exception day.

2021 Spring Trimester Summary

- Hillbrook School did not host any athletic or other school event during the Spring Trimester.
- On Tuesday, March 23, 2021, the Exit A sensor recorded 330 vehicles and the Exit B sensor recorded 741 vehicles. The percent difference between the two sensors was 76.75 percent. It is reasonable to assume that the recorded vehicle count at the Exit B sensor was a data anomaly. Thus, the count from the Exit A sensor was doubled to produce the total vehicle count for March 23, 2021.
- During the 2021 Spring Trimester, Hillbrook School did not exceed the maximum number of daily trips (880). Enclosed is the daily summary of Sensys counts for the 2021 Spring Trimester. There were no exception days during the 2021 Spring Trimester. The number of daily trips did not exceed the maximum number of daily trips (880) for a regular school day.
- The Exit B Count Station did not record vehicles between April 12, 2021 and the end of the Spring Trimester. For [MS1][AW2] those dates, the Exit A Count Station data was used to determine the number of daily trips. The Exit B Count Station came back online after the Spring Trimester concluded.
- The highest number of daily vehicle trips was 868 trips and occurred on March 9, 2021.

- The average number of school day vehicle trips for the 2021 Spring Trimester while school was in-session on-campus was approximately 543 trips, which is fewer trips than the daily maximum of 880 trips allowed by the Conditional Use Permit.
- Excluding weekends and school holidays, and the days following the switch to only Exit A Count Station data, there were 13 instances where the difference between Sensor A and Sensor B was greater than five percent (5%). The average difference between the Sensor A and Sensor B counts was seven vehicles.
- The cumulative percent difference between Sensor A and Sensor B for the 2021 Spring Trimester was 1.36%, which is within the allowable five percent outlined in the Conditional Use Permit.
- The largest daily difference between Sensor A and Sensor B was 59 vehicles on April 2, 2021. In January 2021 the average daily difference between Sensor A and Sensor B was approximately six vehicles. The difference was approximately four vehicles in February, eight vehicles in March, and 30 vehicles in April.

Conclusions

Overall, Hillbrook School was in compliance with Condition 17 of the School's Conditional Use Permit for the school year 2020-2021 Spring Trimester. The next monitoring report is the Fall 2021 Trimester Counts anticipated to be completed in December 2021, prior to the conclusion of Hillbrook School's Fall Trimester. We will continue to provide monthly downloads of Sensys data during the first week of each month.

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

Sincerely,



Allison Woodworth, EIT
Associate Engineer



Mark Spencer, PE
Senior Principal



MES/akw/LGA004-12.L2

Enclosures: Spring Trimester Count Summary



Table 1 – Daily Sensys Count Summary – 2021 Spring Trimester

Date	Day of the Week	Sensys Counts (# of Vehicles)		Summary of Sensys Counts		Notes
		Exit A	Exit B	Percent Difference	Daily Trips	
01/04/21	Monday	22	24	8.7%	48	
01/05/21	Tuesday	143	140	2.1%	286	
01/06/21	Wednesday	111	109	1.8%	222	
01/07/21	Thursday	127	126	0.8%	254	
01/08/21	Friday	23	22	4.4%	46	
01/09/21	Saturday	0	0	N/A	0	
01/10/21	Sunday	0	0	N/A	0	
01/11/21	Monday	24	25	4.1%	50	
01/12/21	Tuesday	31	36	14.9%	72	
01/13/21	Wednesday	34	28	19.4%	68	
01/14/21	Thursday	30	26	14.3%	60	
01/15/21	Friday	32	31	3.2%	64	
01/16/21	Saturday	12	17	34.5%	34	
01/17/21	Sunday	15	14	6.9%	30	
01/18/21	Monday	21	22	4.7%	44	MLK Day - Campus Closed
01/19/21	Tuesday	382	370	3.2%	764	
01/20/21	Wednesday	414	406	2.0%	828	
01/21/21	Thursday	358	347	3.1%	716	
01/22/21	Friday	372	363	2.4%	744	
01/23/21	Saturday	14	17	19.4%	34	
01/24/21	Sunday	19	17	11.1%	38	
01/25/21	Monday	359	354	1.4%	718	
01/26/21	Tuesday	396	375	5.4%	792	
01/27/21	Wednesday	42	43	2.4%	86	
01/28/21	Thursday	392	382	2.6%	784	
01/29/21	Friday	399	402	0.7%	804	
01/30/21	Saturday	16	16	0.0%	32	
01/31/21	Sunday	18	15	18.2%	36	
02/01/21	Monday	219	216	1.4%	438	
02/02/21	Tuesday	389	390	0.3%	780	
02/03/21	Wednesday	376	370	1.6%	752	
02/04/21	Thursday	381	378	0.8%	762	

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		Exit A	Exit B	Percent Difference	Daily Trips	
02/05/21	Friday	368	366	0.5%	736	
02/06/21	Saturday	13	10	26.1%	26	
02/07/21	Sunday	18	16	11.8%	36	
02/08/21	Monday	372	373	0.3%	746	
02/09/21	Tuesday				713	Backup Tube Counter Data
02/10/21	Wednesday	360	352	2.2%	720	
02/11/21	Thursday	366	355	3.1%	732	
02/12/21	Friday	364	363	0.3%	728	
02/13/21	Saturday	8	18	76.9%	36	
02/14/21	Sunday	9	8	11.8%	18	
02/15/21	Monday	17	18	5.7%	36	February Break - No School
02/16/21	Tuesday	53	55	3.7%	110	February Break - No School
02/17/21	Wednesday	50	59	16.5%	118	February Break - No School
02/18/21	Thursday	56	56	0.0%	112	February Break - No School
02/19/21	Friday	46	47	2.2%	94	February Break - No School
02/20/21	Saturday	14	21	40.0%	42	
02/21/21	Sunday	17	18	5.7%	36	
02/22/21	Monday	248	250	0.8%	500	
02/23/21	Tuesday	126	126	0.0%	252	
02/24/21	Wednesday	49	61	21.8%	122	
02/25/21	Thursday	61	60	1.7%	122	
02/26/21	Friday	70	68	2.9%	140	
02/27/21	Saturday	18	20	10.5%	40	
02/28/21	Sunday	9	11	20.0%	22	
03/01/21	Monday	59	56	5.2%	118	
03/02/21	Tuesday	73	78	6.6%	156	
03/03/21	Wednesday	401	390	2.8%	802	
03/04/21	Thursday	384	381	0.8%	768	
03/05/21	Friday	414	392	5.5%	828	
03/06/21	Saturday	25	25	0.0%	50	
03/07/21	Sunday	12	13	8.0%	26	
03/08/21	Monday	433	409	5.7%	866	
03/09/21	Tuesday	434	416	4.2%	868	
03/10/21	Wednesday	370	360	2.7%	740	
03/11/21	Thursday	79	83	4.9%	166	

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		Exit A	Exit B	Percent Difference	Daily Trips	
03/12/21	Friday	68	72	5.7%	144	
03/13/21	Saturday	17	16	6.1%	34	
03/14/21	Sunday	10	12	18.2%	24	
03/15/21	Monday	374	369	1.3%	748	
03/16/21	Tuesday	340	356	4.6%	712	
03/17/21	Wednesday	332	323	2.7%	664	
03/18/21	Thursday	347	352	1.4%	704	
03/19/21	Friday	325	326	0.3%	652	
03/20/21	Saturday	21	23	9.1%	46	
03/21/21	Sunday	14	16	13.3%	32	
03/22/21	Monday	320	326	1.9%	652	
03/23/21	Tuesday	330	741	76.8%	660	Exit B Data Anomaly
03/24/21	Wednesday	297	291	2.0%	594	
03/25/21	Thursday	319	322	0.9%	644	
03/26/21	Friday	317	312	1.6%	634	
03/27/21	Saturday	13	11	16.7%	26	
03/28/21	Sunday	16	22	31.6%	44	
03/29/21	Monday	326	323	0.9%	652	
03/30/21	Tuesday	339	336	0.9%	678	
03/31/21	Wednesday	317	308	2.9%	634	
04/01/21	Thursday	336	336	0.0%	672	
04/02/21	Friday	339	398	16.0%	796	
04/03/21	Saturday	19	18	5.4%	38	
04/04/21	Sunday	7	7	0.0%	14	
04/05/21	Monday	29	34	15.9%	68	Spring Break - Campus Closed
04/06/21	Tuesday	23	23	0.0%	46	Spring Break - Campus Closed
04/07/21	Wednesday	22	24	8.7%	48	Spring Break - Campus Closed
04/08/21	Thursday	42	40	4.9%	84	Spring Break - Campus Closed
04/09/21	Friday	27	32	16.9%	64	Spring Break - Campus Closed
04/10/21	Saturday	17	13	26.7%	34	
04/11/21	Sunday	20	15	28.6%	40	
04/12/21	Monday	158			316	
04/13/21	Tuesday	172			344	
04/14/21	Wednesday	39			78	

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		Exit A	Exit B	Percent Difference	Daily Trips	
04/15/21	Thursday	59			118	
04/16/21	Friday	59			118	
04/17/21	Saturday	6			12	
04/18/21	Sunday	10			20	
04/19/21	Monday	349			698	
04/20/21	Tuesday	374			748	
04/21/21	Wednesday	363			726	
04/22/21	Thursday	374			748	
04/23/21	Friday	350			700	
04/24/21	Saturday	0			0	
04/25/21	Sunday	0			0	
04/26/21	Monday	254			508	
04/27/21	Tuesday	347			694	
04/28/21	Wednesday	355			710	
04/29/21	Thursday	363			726	
04/30/21	Friday	363			726	
05/01/21	Saturday	7			14	
05/02/21	Sunday	16			32	
05/03/21	Monday	367			734	
05/04/21	Tuesday	408			816	
05/05/21	Wednesday	345			690	
05/06/21	Thursday	348			696	
05/07/21	Friday	329			658	
05/08/21	Saturday	8			16	
05/09/21	Sunday	6			12	
05/10/21	Monday	349			698	
05/11/21	Tuesday	365			730	
05/12/21	Wednesday	325			650	
05/13/21	Thursday	367			734	
05/14/21	Friday	159			318	
05/15/21	Saturday	24			48	
05/16/21	Sunday	24			48	
05/17/21	Monday	342			684	
05/18/21	Tuesday	369			738	

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		Exit A	Exit B	Percent Difference	Daily Trips	
05/19/21	Wednesday	330			660	
05/20/21	Thursday	309			618	
05/21/21	Friday	333			666	
05/22/21	Saturday	12			24	
05/23/21	Sunday	17			34	
05/24/21	Monday	353			706	
05/25/21	Tuesday	287			574	
05/26/21	Wednesday	318			636	
05/27/21	Thursday	295			590	
05/28/21	Friday	282			564	
05/29/21	Saturday	19			38	
05/30/21	Sunday	13			26	
05/31/21	Monday	15			30	Memorial Day - Campus Closed
06/01/21	Tuesday	106			212	8th Grade Graduation
06/02/21	Wednesday	134			268	8th Grade Graduation

Note: Allowable percent difference less than five percent; daily trip cap 880 trips during school year. Red = value exceeds conditional use permit threshold