MEMORANDUM

Date: January 18, 2018

To: Alpine City

From: Hales Engineering

Subject: Alpine – Mountainville Academy Traffic Study

UT18-1336

Background

Mountainville Academy is a K-9 school, located on the east side of Main Street at approximately 200 South. The school begins at 8:00 a.m. and finishes at 3:00 p.m., Monday through Thursday; on Fridays, school starts at 8:00 a.m. and finishes at 12:30 p.m. A vicinity map of the Mountainville Academy can be seen in Figure 1.

The Mountainville Academy currently experiences some traffic congestion before school; however, more significant congestion occurs after school, during the student pick-up time. The morning drop-off begins around 7:30 a.m., and peaks around 7:45 a.m. The school has a morning program in the Gym that starts around 7:30 a.m., to allow parents to drop off students earlier, to help disperse the drop-off peak traffic flows.

During the afternoon pick up, many parents arrive early and wait in line for up to 30 minutes. School lets out at 3:00 p.m. and pick-up peak occurs at approximately 3:05 p.m. During the peak after school pick-up (15 minutes) congestion along Main Street is high, and queues were observed to extend (northbound) from the school access back to the roundabout; this is likely caused by a few different issues. One potential problem at the intersections of 100 South and 120 South occurs when students are crossing Main Street (at the crosswalk south of 120 South), and vehicles must stop in all directions for the students to cross. Since a two-way left-turn lane does not exist, northbound left-turning vehicles (120 South) must wait in the through travel lane on Main Street for a gap in the southbound traffic to make their turn, thereby creating additional delays during the peak out-loading of the school. Many vehicles are utilizing the shoulder of the roadway while picking up students along Main Street near Legacy Park. This causes drivers to slow down

and sometimes stop in the through travel lane, causing additional delays in the northbound direction.

There are several key issues of concern, but these have been simplified into the following list:

1. The northbound morning drop-off traffic on Main Street queues south from the school and occasionally interferes with the roundabout at Canyon Crest Road
2. In the afternoon, many vehicles arrive early to sit and wait for exiting students, causing extensive queuing in the school parking lot and extending from the school access along Main Street and down toward the roundabout. It should be noted that after school many students leave the school property and walk north along the east side of Main Street to Legacy Park where they then wait to be picked up (only a few were picked up along Main Street).
3. Northbound left-turns from Main Street to 120 South must wait for a gap in southbound traffic to turn west. This causes northbound delays and queuing, essentially blocking the school access.
4. Some vehicles picking up students at the school remain in the pick-up area for many minutes waiting for their student to arrive, causing further delay for those behind them in the queue.

Figure 1: Vicinity map showing the Mountainville Academy in Alpine, Utah

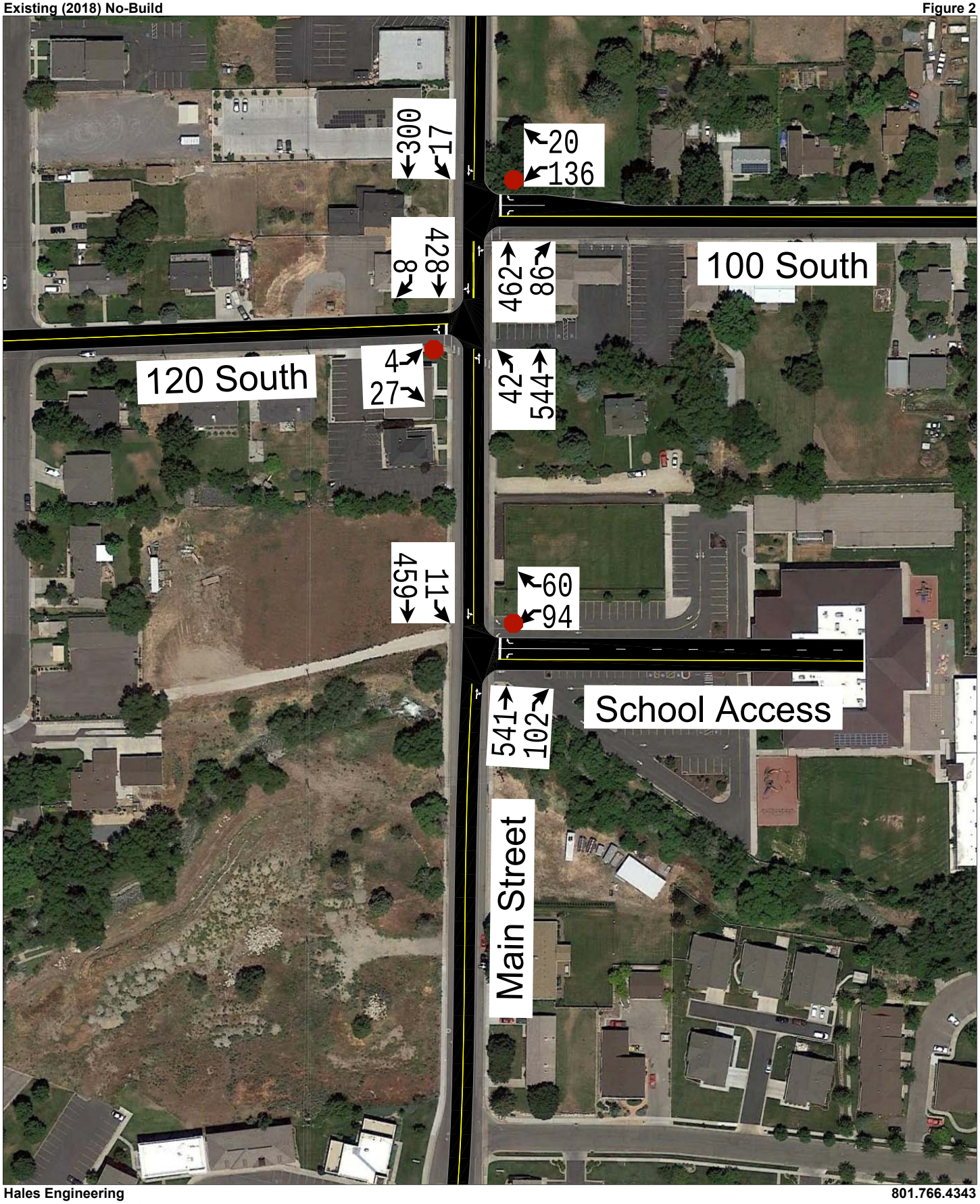
Data Collection

Weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak period traffic counts were performed at the following intersections:

- School Access / Main Street
- 120 South / Main Street
- 100 South / Main Street

The school access counts were performed on Wednesday, October 24, 2018. The morning peak hour was determined to be between 7:15 and 8:15 a.m., and the afternoon peak hour was determined to be between 2:30 and 3:30 p.m. The morning peak hour volumes were approximately 18% higher than the afternoon peak hour volumes. Therefore, the evening peak hour volumes were used in the analysis to represent the worst-case conditions. The 120 South and 100 South intersections were counted November 13 and 14, 2018. The afternoon peak hour was found to be busier than the morning peak hour. Detailed count data are included in Appendix.

Hales Engineering observed the pick-up and drop-off periods at the school to identify queue lengths, congestion, and problem areas. Hales Engineering also spoke with the teachers on duty directing the traffic to get their feedback on the traffic congestion. According to the traffic counts and observations, the afternoon peak hour represents the worst-case conditions even through the traffic counts were higher in the morning peak hour at the school access. The existing traffic counts can be found in Figure 2. This is likely due to the picking up of students at the park and school. Picking up students typically take more time to occur than does dropping off students.


300
17
428
8
20
136
462
86
100 South
120 South
4
27
42
544
459
11
60
94
541
102
School Access
Main Street

Existing Conditions

During a site visit, many observations were made about the school pick-up area, the Legacy Park, and the congestion on Main Street. Mountainville Academy has done a good job trying to maximize efficiency in their pick-up area when school lets out. They have two lines for parents to wait in and to pick up their student/s. They have several teachers and staff out in the parking lot directing traffic and helping vehicles move safely about. It was noted that many of the parents had to wait over 2 minutes for their student to get into the vehicle. This is higher than other schools observed by Hales Engineering.

During the afternoon pick-up, many of the students walk over to Legacy Park and get picked up from there. This is beneficial for the school and parents since there are two pick up areas that divide up the traffic congestion on Main Street and in the school parking lot. There is a crossing guard to help students cross 100 South and Main Street (at 120 South). The crossing guards have been well trained to make students wait for a minute to form a larger group before stopping traffic. It is recommended that crossing guards wait at least one minute between traffic interruptions or longer.

In a conversation with the principle of the Mountainville Academy, it was mentioned that parents were told not to pick up or drop-of students along Main Street, the Bank of American Fork parking lot, or the Alpine Dermatology parking lot. Although great effort has been made to inform parents not to pick up students at these locations, it was observed that they are still occurring in limited numbers. It is recommended that the school continue to discourage parents dropping off students in these locations.

Entering Mountainville Academy during pick-up or drop-off times should only be done heading northbound and making a right-turn into the school. This rule is well followed. A staff member stands out at the entrance with a construction cone and waves to all the entering parents and students. The queue to enter the school was observed backing up to at least Red Pine Drive if not further during the morning and afternoon. These vehicles wait/travel in the shoulder as they approach the entrance.

The school egress is very busy during both the start and end of the day. Left- and right-turns are permitted at all times of the days. During the afternoon pick-up, left-turns out of the school were observed to be difficult. Some vehicles would be able to exit as some vehicles on Main Street would stop to let them out. Right-turns out were not as difficult; however, Main Street traffic would also stop to let out vehicles.

There was significant queueing that was observed during the afternoon peak hour that extended from 100/120 South, south to the roundabout at Canyon Crest Road. Some of

the congestion is also caused by the parents of students getting picked up at Legacy Park, as vehicles enter and exit the Main Street traffic flow.

Analysis

Synchro/SimTraffic was used to model the existing afternoon peak hour conditions that were observed on site. To understand the model outputs more easily, the term Level of Service (LOS) is used. LOS is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections. Figure 2 provides a visual representation of each LOS letter designation.

The Highway Capacity Manual (HCM), 6th Edition, methodology was used in this study to remain consistent with "state-of-the-practice" professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized and all-way stop intersections, the LOS is provided for the overall intersection (weighted average of all approach delays). For all other unsignalized intersections LOS is reported based on the worst approach.

For the purposes of this study, a minimum overall intersection performance for each of the study intersections was set at LOS D. However, if LOS E or F conditions exist, an explanation and/or mitigation measures will be presented. A LOS D threshold is consistent with "state-of-the-practice" traffic engineering principles for urbanized areas.

Table 1: Level of Service Description

Level of Service	Description of Traffic Conditions	Average Delay (seconds/vehicle)
	Signalized Intersections	**Overall Intersection**
A	Extremely favorable progression and a very low level of control delay. Individual users are virtually unaffected by others in the traffic stream.	0 ≤ 10.0
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 10.0 and ≤ 20.0
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	>20.0 and ≤ 35.0
D	Marginal progression with relatively elevated levels of control delay. Operating conditions are noticeably more constrained.	> 35.0 and ≤ 55.0
E	Poor progression with unacceptably elevated levels of control delay. Operating conditions are at or near capacity.	> 55.0 and ≤ 80.0
F	Unacceptable progression with forced or breakdown operating conditions.	> 80.0
	Unsignalized Intersections	**Worst Approach**
A	Free Flow / Insignificant Delay	0 ≤ 10.0
B	Stable Operations / Minimum Delays	>10.0 and ≤ 15.0
C	Stable Operations / Acceptable Delays	>15.0 and ≤ 25.0
D	Approaching Unstable Flows / Tolerable Delays	>25.0 and ≤ 35.0
E	Unstable Operations / Significant Delays Can Occur	>35.0 and ≤ 50.0
F	Forced Flows / Unpredictable Flows / Excessive Delays Occur	> 50.0

Source: Hales Engineering Descriptions, based on Highway Capacity Manual, 2016 Methodology (Transportation Research Board, 2016)

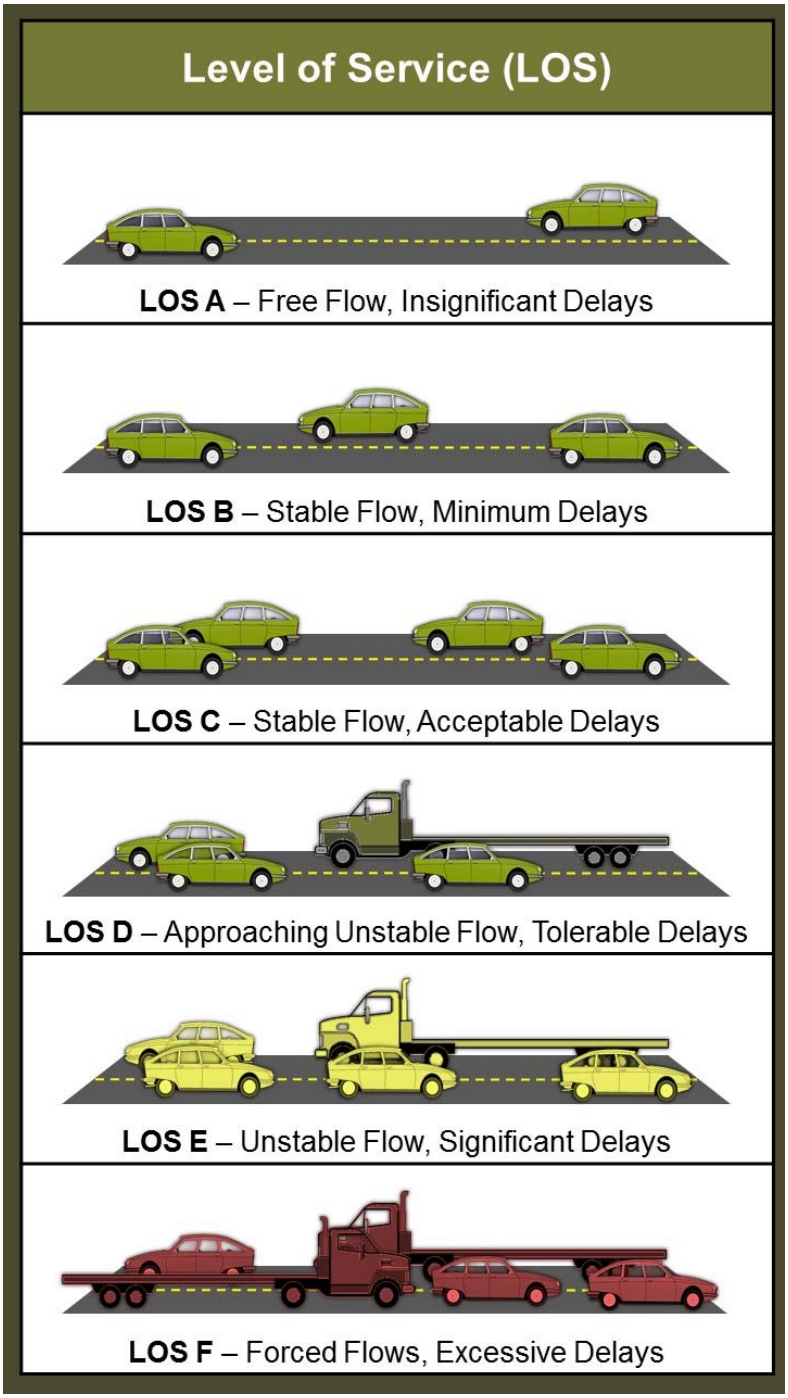


Figure 2: LOS Letter Designation

For the afternoon peak hour, the LOS for each intersection was calculated and can be seen in Table 2 (see Appendix for detailed LOS tables). All intersections in the study area currently function at acceptable LOS during the evening peak hour except 100 South / Main Street. It is important to note that LOS is based on the average delay over an hour. It is likely that during the peak 20-minute period after school ends, the school accesses, and the adjacent intersections will perform at a lower LOS. The heavy congestion lasts for approximately 15 – 20 minutes, and then diminishes quickly. As mentioned previously, there was significant queueing that was observed during the afternoon peak hour that extended from 100/120 South, south to the roundabout at Canyon Crest Road. Some of the congestion is also caused by the parents of students getting picked up at Legacy Park, vehicles entering and exiting the Main Street traffic flow.

Table 2: Existing (2018) Afternoon Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
School Access / Main Street	WB Stop	NB	27.2	D	-	-
120 South / Main Street	EB Stop	NB	24.9	C	-	-
100 South / Main Street	WB Stop	WB	> 50	F	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2018

In order to improve the traffic operations and safety in the area around the school, numerous different alternatives were considered, analyzed, and discussed.

Traffic Alternatives

Ten alternatives were identified to mitigate the issues outlined in the previous sections. These alternatives were brainstormed to be used in conjunction with other alternatives or alone. The following are the ten alternatives have been identified to potentially mitigate traffic conditions in the study area:

1. Restripe Main Street to have a three-lane cross section between the school egress and Legacy Park.
2. Shift Main Street striping to the west providing a wide shoulder on the east side of Main Street
3. Offset school hours
4. Hold after school programs that keep a high number of kids at the school
    i. Sports, clubs, etc.
5. Incentivize Car-pooling
6. Lower student enrollment
7. Number system
8. Group Pick-up
9. Construct a new access out to 100 South from Mountainville Academy
10. School Ingress radius

The alternatives are discussed below:

Alternative 1 – Stripe Main Street to have three lanes from the School Egress to Legacy Park

The first alternative is to restripe Main Street to a three-lane cross-section from the School Egress to north of 100 South. This would allow the northbound left-turns at 120 South to be removed from the main flow of traffic while waiting for a gap in traffic. The stripping could not be extended to the south since the northbound shoulder is currently being used for queue storage for vehicles entering the school. The striping could not be extended to far north of 100 South since the northbound shoulder is also being used to pick-up students. This shoulder is also used by Legacy Park patrons. This alternative, along with the routes that would be taken to access each school, is shown in Figure 3.

Figure 3: Alternative 1 – Three-lane Cross-section

An analysis was completed for the afternoon peak hours using Alternative 1. As shown in Table 3, all study intersections are anticipated to operate at an acceptable LOS, except 120 South / Main Street (see Appendix for detailed LOS tables). This alternative is able to remove the northbound left-turns at 120 South and prevent northbound through vehicles from having to wait behind that vehicle. It is anticipated that this alternative will reduce delay in the area. This alternative was also able to reduce the northbound queues by several hundred feet.

Table 3: Alternative 1 - Afternoon Peak Hour Level of Service

Intersection		Worst Approach			Overall Intersection	
Description	Control	Approach[1,3]	Aver. Delay (Sec/Veh)[1]	LOS[1]	Aver. Delay (Sec/Veh)[2]	LOS[2]
School Access / Main Street	WB Stop	WB	26.9	D	-	-
120 South / Main Street	EB Stop	NB	13.8	B	-	-
100 South / Main Street	WB Stop	WB	> 50	F	-	-

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for non-all-way stop unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle) and is reported for all-way stop and signal-controlled intersections.
3. SB = Southbound approach, etc.

Source: Hales Engineering, November 2018

Alternative 2 – Shift Main Street Striping West

The second alternative is to shift the striping on Main Street a few feet to the west to allow for a larger northbound shoulder. This would allow vehicles to pass parked cars more comfortably and safely. The few extra feet would also provide a little better sight distance for passing vehicles when pedestrians step out from between parked cars. This measure would best be completed south of the school access and adjacent to Legacy Park.

Alternative 3 – Offset school hours

The third alternative is to offset school hours for the elementary and middle school grades. This reduces the demand that occurs during a single 15-minute period but lengthens the congested period. Since Mountainville Academy has a large range of grades, there are many families that have students in both the elementary and middle school grades. This scheduling would cause some families to have to wait around to pick up the later finishing students or return during the second pick-up period. Since many families would likely have to wait for both pick-up periods, this could likely result in increased congestion. Therefore, this alternative is not recommended.

Alternative 4 – After School Activities

The fourth alternative is to consider holding numerous after school activities that will encourage many of the students to stay later after school. This would spread out and reduce the pick-up demand during the 15 minutes immediately when school ends. After

school activities could include study hall, sports or intramurals, clubs, dance, drama, band, etc. Even a 30 minute after school activity for 25% of the students would dramatically reduce congestion by spreading out the pick-up period**.** Mountainville Academy currently holds after school clubs and activities. It is recommended that these activities be further encouraged by the school for further participation.

Alternative 5 – Incentivize Car-pooling

The fifth alternative is to reduce the demand for vehicular pick-up/drop-off by incentivizing car-pooling. Incentives could include reduced required parent volunteer hours at the school (if required), treats, reduced transportation fee, dedicated pick up lane, early release of students, etc. Any of these options would require internal study to determine feasibility and effectiveness. More car-pooling would reduce the total number of vehicles arriving to pick-up their students.

Alternative 6 – Reduce student body enrollment

The sixth alternative to reduce the demand for vehicular pick-up/drop-off, is to reduce the number of students at the school. Fewer students typically correlates to fewer vehicles travelling to / from the school.

Alternative 7 – Vehicle numbering system

The seventh alternative is to increase the rate at which vehicles are loaded during the pick-up time. It was observed that the average vehicle takes over 2 minutes to pick-up their student. Other charter schools have been observed to take approximately 2 minutes or less. With a school that accommodates both elementary and middle school grades, it often takes several minutes for a family to get all of their children gathered and in the vehicle. This is one of the major reasons that the queuing backs up so far in the afternoons. By improving the efficiency of the pick-up, the queues and congestion can be reduced.

Using a numbering system to alert students, in advance, that their car has arrived lets the student have ample time to find their car at the curb. By having the students waiting at the curb for their car to pull up, queues and pick-up times can be decreased.

This has been done at other charter schools by having a name or number in the vehicle window. A school staff member waits a few hundred feet ahead of the pick-up area and will announce the vehicle over the school intercom so that the students are waiting and ready to go when the vehicle approaches the pick-up zone. This will reduce the average pick-up time for vehicles at the school.

For this system to work effectively, the students need to be gathered in a large central location that can hear the intercom. Mountainville Academy does not appear to have a large location near the pick-up area that would effectively hold a majority of the school body which makes this alternative difficult.

Alternative 8 – Group Pick-up

The eighth alternative is to implement a group style pick up system. This allows for two lanes of cars to be picking-up at a time. Using this methodology for pick-up, no vehicles would move as the 20 – 30 vehicles all load at the same time. Then, the entire group of vehicles pulls away, and the next group pulls forward. This alternative could dramatically increase the rate of pick-up if it is administered correctly. Using this system, students would need to be waiting at the curb for their vehicles. This would require a large waiting area near the front of the school to queue students. If students take too long, this system could break down and become ineffective and potentially be worse than the existing system since there is no by-pass lane for parents that have already pick-up their student. This alternative is shown below (see Figure 4).

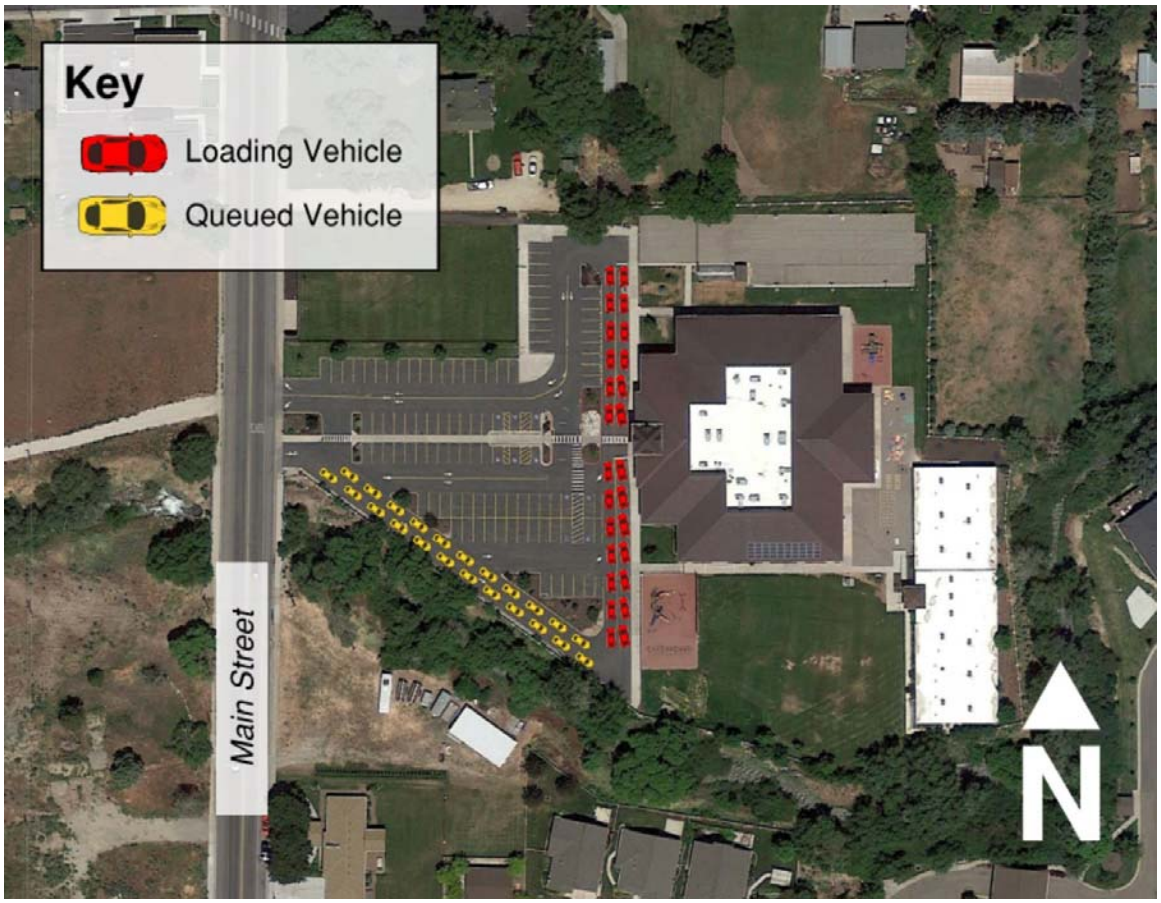


Figure 4: Alternative 8 – Group Pick-up

Alternative 9 – New access to 100 South

The ninth alternative is to construct a new access out to 100 South. This would allow vehicles to exit the school access easier since there are fewer vehicles on 100 South than there are on Main Street. There are however, many vehicles that want to travel south via Main Street, which places a large number of vehicles turning left at the 100 South / Main Street intersection. This intersection already performs poorly, and additional vehicles will only make this worse. Due to more vehicles headed southbound on Main Street from 100 South, more conflicts between pedestrians and vehicles will occur making this crossing more unsafe. This alternative would relocate the School Access egress issues to 100 South where known problems already exist. This alternative would also be costly with property acquisition and construction costs. Creating this new access and circulation pattern will be costly and not create a large benefit to the school or the City.

Alternative 10 – School Ingress Radius

The tenth alternative is to let vehicles use the entire ingress lane at the school access. Currently a staff member places a cone at the access a few feet from the sidewalk. This narrows down the entrance and is likely done to prevent left-turns in. This cone also makes people entering the site to slow down further than necessary to make sure that they don't hit the cone on the way in or hit the curb at the entrance. This slows down entering vehicles and can cause additional queueing on Main Street. By removing the cone from with in the access while a staff member is present, vehicles will be able to enter unimpeded and potentially reduce some queueing that occurs on Main Street during mainly the morning drop off time.

Conclusions and Recommendations

Hales Engineering finds the following conclusions:

- Each alternative will have a varying degree of improvement if implemented.
    - Alternatives 2 and 10 are indented to improve safety more than increase capacity.
- Alternative 1 is anticipated to reduce some of the queueing and delay with in the study area by adding a two-way left-turn lane between the School Access and Legacy Park
    - It is recommended that Alternative 1 be implemented to allow additional capacity at 120 South.
- The alternatives have been anticipated to be implemented independently or as a group.
- It is recommended that the school continue to discourage parents from picking up students in near by business parking lots of along Main Street.
- It is recommended that crossing guards wait at least one minute between traffic interruptions but preferably 90 seconds or longer. It is also recommended that both crossing guards stop traffic at the same time.
- It is recommended that the school explore ways to get students to vehicles faster to improve curb side waiting times.
- It is recommended that all alternatives be considered for feasibility and possible implementation.

APPENDIX

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

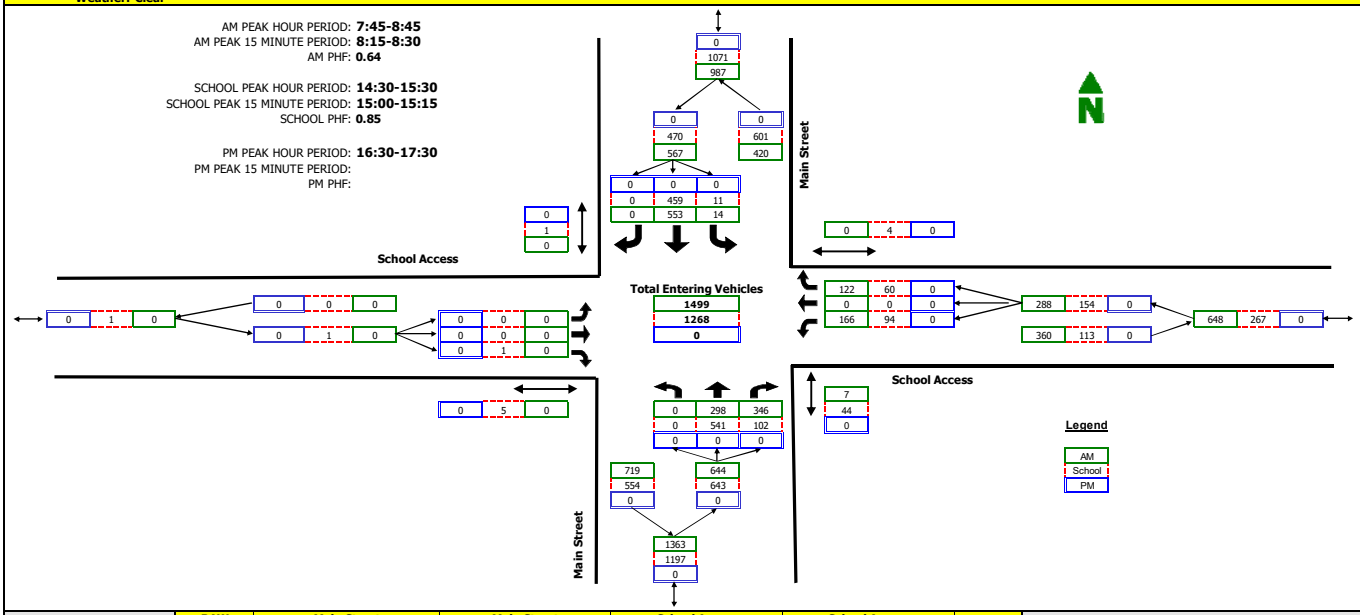
Intersection: Main Street / School Access
North/South: Main Street
East/West: School Access
Jurisdiction: Alpine
Project Title: Alpine Mountainville Academy TS
Project No: UT18-1336
Weather: Clear

Date: 10-24-18, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #:
Growth Rate: 0.0%
Number of Years:

AM PEAK HOUR PERIOD: **7:45-8:45**
AM PEAK 15 MINUTE PERIOD: **8:15-8:30**
AM PHF: **0.64**

SCHOOL PEAK HOUR PERIOD: **14:30-15:30**
SCHOOL PEAK 15 MINUTE PERIOD: **15:00-15:15**
SCHOOL PHF: **0.85**

PM PEAK HOUR PERIOD: **16:30-17:30**
PM PEAK 15 MINUTE PERIOD:
PM PHF:



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				School Access Eastbound				School Access Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	26	1	0	1	40	0	0	0	0	0	0	0	0	0	0	68
7:15-7:30	0	61	2	0	0	68	0	0	0	0	0	0	1	0	0	0	132
7:30-7:45	0	62	6	0	1	97	0	0	0	0	0	0	0	0	0	0	166
7:45-8:00	0	43	27	0	1	188	0	0	0	0	0	0	5	0	0	0	264
8:00-8:15	0	61	121	1	5	120	0	0	0	0	0	0	44	0	13	0	364
8:15-8:30	0	96	179	0	6	125	0	0	0	0	0	0	86	0	90	0	582
8:30-8:45	0	98	19	6	2	120	0	0	0	0	0	0	31	0	19	0	289
8:45-9:00	0	92	5	2	1	83	0	0	0	0	1	0	4	0	4	0	190

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30-9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45-10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00-10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15-10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30-10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45-11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00-13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15-13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30-13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45-14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00-14:15	0	109	2	0	1	70	0	0	0	0	0	0	4	0	2	0	188
14:15-14:30	0	97	7	4	1	82	0	0	0	0	0	0	1	0	0	0	188
14:30-14:45	0	141	17	1	2	93	0	0	0	0	0	0	6	0	0	0	259
14:45-15:00	0	120	23	4	4	111	0	0	0	0	0	0	9	0	1	0	268
15:00-15:15	0	129	45	39	4	119	0	0	0	0	1	5	39	0	34	4	371
15:15-15:30	0	151	17	0	1	136	0	1	0	0	0	0	40	0	25	0	370
15:30-15:45	0	141	5	2	2	136	0	2	0	0	0	0	15	0	3	0	302
15:45-16:00	0	115	1	1	1	146	0	3	0	0	0	0	9	0	0	0	272

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15-16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TrafficCounts

2364 North 1450 East
Lehi, UT 84043
801.636.0891

Intersection Turning Movement Summary

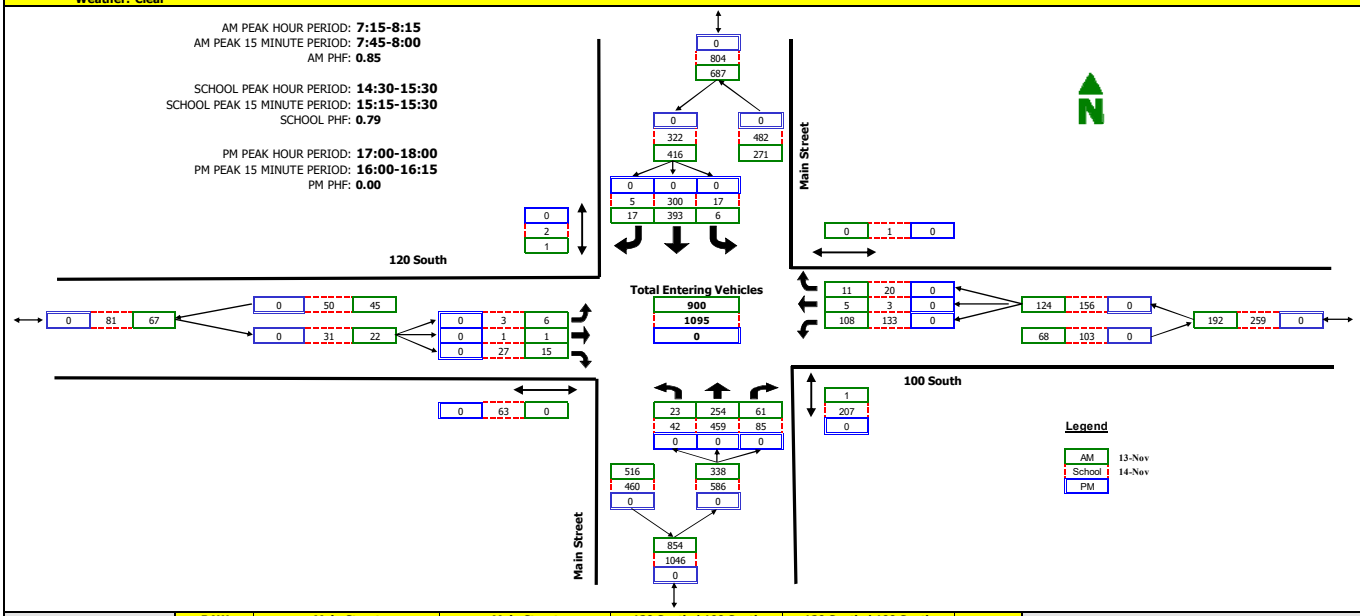
Intersection: Main Street / 120 South / 100 South
North/South: Main Street
East/West: 120 South / 100 South
Jurisdiction: Alpine
Project Title: Alpine Mountainville Academy TS
Project No: UT18-1336
Weather: Clear

Date: 11-13-18, Tue and 11-14-18, Wed
Day of Week Adjustment: 100.0%
Month of Year Adjustment: 100.0%
Adjustment Station #: 0
Growth Rate: 0.0%
Number of Years: 0

AM PEAK HOUR PERIOD: **7:15-8:15**
AM PEAK 15 MINUTE PERIOD: **7:45-8:00**
AM PHF: **0.85**

SCHOOL PEAK HOUR PERIOD: **14:30-15:30**
SCHOOL PEAK 15 MINUTE PERIOD: **15:15-15:30**
SCHOOL PHF: **0.79**

PM PEAK HOUR PERIOD: **17:00-18:00**
PM PEAK 15 MINUTE PERIOD: **16:00-16:15**
PM PHF: **0.00**



RAW COUNT SUMMARIES	Main Street Northbound				Main Street Southbound				120 South / 100 South Eastbound				120 South / 100 South Westbound				
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	

AM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
7:00-7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15-7:30	1	46	8	1	1	132	1	1	0	0	5	0	23	1	0	0	218
7:30-7:45	7	54	8	0	1	104	1	0	1	0	4	0	28	0	0	0	208
7:45-8:00	14	92	29	0	3	78	10	0	1	0	4	0	25	2	8	0	266
8:00-8:15	1	62	16	0	1	79	5	0	4	1	2	0	32	2	3	0	208
8:15-8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30-8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45-9:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

MIDDAY PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
9:00-9:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15-9:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30-9:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45-10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00-10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15-10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30-10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45-11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00-11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15-11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30-11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45-12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00-12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15-12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30-12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45-13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00-13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15-13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30-13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45-14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00-14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15-14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30-14:45	13	101	19	0	2	55	1	0	0	0	2	0	28	1	5	0	227
14:45-15:00	10	93	11	1	7	78	3	2	1	1	9	2	44	1	2	1	260
15:00-15:15	14	93	18	192	3	81	1	0	2	0	10	59	30	0	8	0	260
15:15-15:30	5	172	37	14	5	86	0	0	0	0	6	2	31	1	5	0	348
15:30-15:45	6	130	23	2	3	114	0	0	4	1	5	1	40	0	7	0	333
15:45-16:00	5	119	32	0	3	89	3	0	0	0	4	2	32	0	10	0	297

PM PERIOD COUNTS

Period	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	TOTAL
16:00-16:15	15	87	35	0	3	89	0	0	1	1	13	0	33	0	7	0	284
16:15-16:30	3	96	38	1	4	77	0	0	1	1	2	1	23	0	5	0	250
16:30-16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30-17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45-18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: Alpine - Mountainville Academy TS
Analysis Period: *Existing (2018) No-Build*
Time Period: *Afternoon Peak Hour* **Project #:** *UT18-1336*

Intersection: Main Street & School Access
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	541	546	101	26.9	D
	R	102	104	102	28.8	D
	Subtotal	***643***	***650***	***101***	***27.2***	***D***
SB	L	11	10	91	9.6	A
	T	463	452	98	1.2	A
	Subtotal	474	462	97	1.4	A
WB	L	94	93	99	33.8	D
	R	60	58	97	11.9	B
	Subtotal	154	151	98	25.4	D
Total		1,270	1,263	99	17.6	C

Intersection: 120 South & Main Street
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	42	38	91	27.5	D
	T	559	564	101	24.7	C
	Subtotal	***601***	***602***	***100***	***24.9***	***C***
SB	T	441	426	97	6.4	A
	R	8	9	109	3.9	A
	Subtotal	449	435	97	6.3	A
EB	L	4	4	94	30.0	D
	R	27	28	105	6.7	A
	Subtotal	31	32	103	9.6	A
Total		1,082	1,069	99	16.9	C

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: **Alpine - Mountainville Academy TS**
Analysis Period: ***Existing (2018) No-Build***
Time Period: ***Afternoon Peak Hour*** **Project #:** ***UT18-1336***

Intersection: **Main Street & 100 South**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	466	467	100	1.3	*A*
	R	86	87	101	2.1	*A*
	Subtotal	552	554	100	1.4	*A*
SB	L	17	18	106	18.9	*C*
	T	304	307	101	7.9	*A*
	Subtotal	321	325	101	8.5	*A*
WB	L	136	117	86	218.5	*F*
	R	20	19	95	120.6	*F*
	Subtotal	***156***	***136***	***87***	***204.8***	***F***
Total		1,029	1,015	99	34.4	*D*

3: Main Street & School Access Performance by movement Interval #1 2:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.4	0.5	0.2	0.0	0.2
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.3
Total Del/Veh (s)	18.3	7.6	2.7	2.9	7.6	1.0	3.2
Vehicles Entered	18	12	122	20	2	112	286
Vehicles Exited	18	12	123	20	2	111	286
Hourly Exit Rate	72	48	492	80	8	444	1144
Input Volume	70	45	490	76	11	432	1124
% of Volume	103	107	100	105	73	103	102

3: Main Street & School Access Performance by movement Interval #2 2:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.5	0.5	0.0	0.0	0.3
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.3
Total Del/Veh (s)	15.7	5.1	4.2	3.6	6.1	0.8	3.7
Vehicles Entered	19	12	124	20	2	103	280
Vehicles Exited	19	12	123	21	2	105	282
Hourly Exit Rate	76	48	492	84	8	420	1128
Input Volume	70	45	490	76	11	432	1124
% of Volume	109	107	100	111	73	97	100

3: Main Street & School Access Performance by movement Interval #3 3:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Denied Del/Veh (s)	0.2	0.2	3.7	2.8	0.0	0.0	1.8
Total Delay (hr)	0.5	0.1	2.0	0.5	0.0	0.1	3.2
Total Del/Veh (s)	46.9	16.6	41.4	41.3	13.3	1.8	27.6
Vehicles Entered	40	23	166	44	3	134	410
Vehicles Exited	37	22	150	40	3	133	385
Hourly Exit Rate	148	88	600	160	12	532	1540
Input Volume	165	105	694	179	11	556	1710
% of Volume	90	84	86	89	109	96	90

3: Main Street & School Access Performance by movement Interval #4 3:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.1	0.1	2.3	2.8	0.0	0.0	1.3
Total Delay (hr)	0.2	0.0	1.9	0.3	0.0	0.0	2.5
Total Del/Veh (s)	30.6	12.8	43.5	44.2	14.5	1.2	27.8
Vehicles Entered	16	13	137	19	2	102	289
Vehicles Exited	19	13	150	23	2	103	310
Hourly Exit Rate	76	52	600	92	8	412	1240
Input Volume	70	45	490	76	11	432	1124
% of Volume	109	116	122	121	73	95	110

3: Main Street & School Access Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.3	0.1	0.0	0.0	0.4
Denied Del/Veh (s)	0.2	0.1	1.9	1.9	0.0	0.0	1.0
Total Delay (hr)	0.9	0.2	4.1	0.8	0.0	0.2	6.2
Total Del/Veh (s)	33.8	11.9	26.9	28.8	9.6	1.2	17.6
Vehicles Entered	93	59	548	104	10	452	1266
Vehicles Exited	93	58	546	104	10	452	1263
Hourly Exit Rate	93	58	546	104	10	452	1263
Input Volume	94	60	541	102	11	463	1270
% of Volume	99	97	101	102	91	98	99

5: 120 South & Main Street Performance by movement Interval #1 2:30

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.6	0.2	0.0	0.8
Total Del/Veh (s)	42.6	6.5	20.3	15.5	6.2	3.5	11.7
Vehicles Entered	1	6	8	127	103	2	247
Vehicles Exited	1	6	8	129	106	2	252
Hourly Exit Rate	4	24	32	516	424	8	1008
Input Volume	4	25	37	498	410	8	982
% of Volume	100	96	86	104	103	100	103

5: 120 South & Main Street Performance by movement Interval #2 2:45

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.6	0.2	0.0	0.8
Total Del/Veh (s)	21.2	5.2	20.5	15.7	6.5	3.7	11.8
Vehicles Entered	1	7	8	126	99	3	244
Vehicles Exited	1	7	8	123	97	3	239
Hourly Exit Rate	4	28	32	492	388	12	956
Input Volume	4	25	37	498	410	8	982
% of Volume	100	112	86	99	95	150	97

5: 120 South & Main Street Performance by movement Interval #3 3:00

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.8	0.2	0.3
Total Delay (hr)	0.0	0.0	0.1	1.5	0.2	0.0	1.9
Total Del/Veh (s)	32.3	8.5	34.3	32.5	5.7	3.6	20.9
Vehicles Entered	1	9	12	160	126	3	311
Vehicles Exited	1	9	12	160	128	3	313
Hourly Exit Rate	4	36	48	640	512	12	1252
Input Volume	5	32	56	743	535	9	1380
% of Volume	80	112	86	86	96	133	91

5: 120 South & Main Street Performance by movement Interval #4 3:15

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)		0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.1	1.3	0.2	0.0	1.6
Total Del/Veh (s)	24.1	5.8	27.5	28.3	7.4	3.1	20.1
Vehicles Entered	0	6	9	153	98	2	268
Vehicles Exited	1	6	10	152	95	2	266
Hourly Exit Rate	4	24	40	608	380	8	1064
Input Volume	4	25	37	498	410	8	982
% of Volume	100	96	108	122	93	100	108

5: 120 South & Main Street Performance by movement Entire Run

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.0	0.0	0.2	0.1	0.1
Total Delay (hr)	0.0	0.1	0.3	3.9	0.8	0.0	5.1
Total Del/Veh (s)	30.0	6.7	27.5	24.7	6.4	3.9	16.9
Vehicles Entered	4	28	38	567	426	9	1072
Vehicles Exited	4	28	38	564	426	9	1069
Hourly Exit Rate	4	28	38	564	426	9	1069
Input Volume	4	27	42	559	441	8	1082
% of Volume	94	105	91	101	97	109	99

7: Main Street & 100 South Performance by movement Interval #1 2:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	3.0	0.0	0.1	1.1	0.3	0.2
Total Delay (hr)	1.0	0.0	0.0	0.0	0.0	0.2	1.3
Total Del/Veh (s)	104.9	38.7	1.3	2.1	16.9	7.2	19.0
Vehicles Entered	33	4	107	21	4	74	243
Vehicles Exited	30	4	106	21	4	76	241
Hourly Exit Rate	120	16	424	84	16	304	964
Input Volume	136	20	411	81	16	282	946
% of Volume	88	80	103	104	100	108	102

7: Main Street & 100 South Performance by movement Interval #2 2:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	3.3	0.0	0.0	0.1	0.1	0.2
Total Delay (hr)	1.0	0.1	0.0	0.0	0.0	0.1	1.2
Total Del/Veh (s)	91.5	31.4	1.1	1.8	12.7	4.9	18.4
Vehicles Entered	33	6	101	20	5	68	233
Vehicles Exited	35	6	102	20	5	67	235
Hourly Exit Rate	140	24	408	80	20	268	940
Input Volume	136	20	411	81	16	282	946
% of Volume	103	120	99	99	125	95	99

7: Main Street & 100 South Performance by movement Interval #3 3:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	3.1	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	2.1	0.2	0.1	0.0	0.0	0.2	2.7
Total Del/Veh (s)	208.9	142.1	1.4	2.4	17.8	8.6	32.4
Vehicles Entered	32	6	135	22	5	94	294
Vehicles Exited	23	5	133	21	4	94	280
Hourly Exit Rate	92	20	532	84	16	376	1120
Input Volume	136	20	629	101	20	371	1277
% of Volume	68	100	85	83	80	101	88

7: Main Street & 100 South Performance by movement Interval #4 3:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	1.1	4.2	0.0	0.0	0.0	0.1	0.3
Total Delay (hr)	4.0	0.4	0.0	0.0	0.0	0.2	4.7
Total Del/Veh (s)	304.9	203.9	1.4	2.0	23.9	10.6	59.8
Vehicles Entered	33	6	123	25	5	70	262
Vehicles Exited	29	4	125	26	5	70	259
Hourly Exit Rate	116	16	500	104	20	280	1036
Input Volume	136	20	411	81	16	282	946
% of Volume	85	80	122	128	125	99	110

7: Main Street & 100 South Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.5	3.5	0.0	0.0	0.3	0.1	0.2
Total Delay (hr)	8.2	0.7	0.2	0.1	0.1	0.7	9.9
Total Del/Veh (s)	218.5	120.6	1.3	2.1	18.9	7.9	34.4
Vehicles Entered	132	22	467	87	18	306	1032
Vehicles Exited	117	19	467	87	18	307	1015
Hourly Exit Rate	117	19	467	87	18	307	1015
Input Volume	136	20	466	86	17	304	1029
% of Volume	86	95	100	101	106	101	99

Total Zone Performance By Interval

Interval Start	2:30	2:45	3:00	3:15	All
Denied Delay (hr)	0.0	0.0	0.2	0.1	0.4
Denied Del/Veh (s)	0.6	0.5	2.6	1.9	1.5
Total Delay (hr)	2.4	2.3	7.8	8.7	21.3
Total Del/Veh (s)	299.5	248.6	363.8	560.4	879.7
Vehicles Entered	226	231	336	238	1034
Vehicles Exited	7	9	14	9	40
Hourly Exit Rate	28	36	56	36	40
Input Volume	3052	3052	4367	3052	3381
% of Volume	1	1	1	1	1

Intersection: 3: Main Street & School Access, Interval #1

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	69	46	112	64
Average Queue (ft)	40	30	18	14
95th Queue (ft)	73	57	144	64
Link Distance (ft)	403	403	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #2

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	68	45	120	51
Average Queue (ft)	38	26	27	10
95th Queue (ft)	66	54	162	47
Link Distance (ft)	403	403	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #3

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	167	85	774	120
Average Queue (ft)	101	49	367	24
95th Queue (ft)	184	88	934	114
Link Distance (ft)	403	403	1049	303
Upstream Blk Time (%)			7	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #4

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	109	61	738	73
Average Queue (ft)	53	34	380	17
95th Queue (ft)	117	61	1056	72
Link Distance (ft)	403	403	1049	303
Upstream Blk Time (%)			4	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, All Intervals

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	169	87	817	146
Average Queue (ft)	58	35	198	16
95th Queue (ft)	129	69	734	78
Link Distance (ft)	403	403	1049	303
Upstream Blk Time (%)			3	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: 120 South & Main Street, Interval #1

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	46	299	105
Average Queue (ft)	20	214	93
95th Queue (ft)	49	321	116
Link Distance (ft)	492	303	62
Upstream Blk Time (%)		1	19
Queuing Penalty (veh)		7	80
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 120 South & Main Street, Interval #2

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	51	271	103
Average Queue (ft)	18	179	88
95th Queue (ft)	50	316	118
Link Distance (ft)	492	303	62
Upstream Blk Time (%)		3	17
Queuing Penalty (veh)		14	72
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 120 South & Main Street, Interval #3

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	44	344	101
Average Queue (ft)	23	310	94
95th Queue (ft)	53	384	107
Link Distance (ft)	492	303	62
Upstream Blk Time (%)		23	20
Queuing Penalty (veh)		184	97
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 120 South & Main Street, Interval #4

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	42	337	101
Average Queue (ft)	17	265	93
95th Queue (ft)	49	405	109
Link Distance (ft)	492	303	62
Upstream Blk Time (%)		17	20
Queuing Penalty (veh)		91	84
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: 120 South & Main Street, All Intervals

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	64	345	113
Average Queue (ft)	20	242	92
95th Queue (ft)	50	385	114
Link Distance (ft)	492	303	62
Upstream Blk Time (%)		11	19
Queuing Penalty (veh)		74	83
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Main Street & 100 South, Interval #1

Movement	WB	WB	NB	SB	B1
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	225	102	99	140	49
Average Queue (ft)	141	36	67	95	16
95th Queue (ft)	292	127	105	161	61
Link Distance (ft)	951		62	68	71
Upstream Blk Time (%)			6	15	2
Queuing Penalty (veh)			31	45	5
Storage Bay Dist (ft)		50			
Storage Blk Time (%)	69	0			
Queuing Penalty (veh)	14	0			

Intersection: 7: Main Street & 100 South, Interval #2

Movement	WB	WB	NB	SB	B1
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	254	107	92	114	28
Average Queue (ft)	149	46	65	66	4
95th Queue (ft)	309	142	107	136	32
Link Distance (ft)	951		62	68	71
Upstream Blk Time (%)			5	8	1
Queuing Penalty (veh)			25	23	2
Storage Bay Dist (ft)		50			
Storage Blk Time (%)	67	1			
Queuing Penalty (veh)	13	1			

Intersection: 7: Main Street & 100 South, Interval #3

Movement	WB	WB	NB	SB	B1
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	402	126	97	138	75
Average Queue (ft)	257	39	75	105	23
95th Queue (ft)	583	136	105	167	83
Link Distance (ft)	951		62	68	71
Upstream Blk Time (%)			9	21	4
Queuing Penalty (veh)			64	82	17
Storage Bay Dist (ft)		50			
Storage Blk Time (%)	76	1			
Queuing Penalty (veh)	15	1			

Intersection: 7: Main Street & 100 South, Interval #4

Movement	WB	WB	NB	SB	B1
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	575	149	99	133	68
Average Queue (ft)	449	66	75	85	16
95th Queue (ft)	818	186	106	158	70
Link Distance (ft)	951		62	68	71
Upstream Blk Time (%)	3		8	19	6
Queuing Penalty (veh)	0		41	57	18
Storage Bay Dist (ft)		50			
Storage Blk Time (%)	100	1			
Queuing Penalty (veh)	20	1			

Intersection: 7: Main Street & 100 South, All Intervals

Movement	WB	WB	NB	SB	B1
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	582	150	107	144	94
Average Queue (ft)	249	47	70	87	15
95th Queue (ft)	588	150	107	160	64
Link Distance (ft)	951		62	68	71
Upstream Blk Time (%)	1		7	16	3
Queuing Penalty (veh)	0		40	52	10
Storage Bay Dist (ft)		50			
Storage Blk Time (%)	78	1			
Queuing Penalty (veh)	16	1			

Zone Summary

Zone wide Queuing Penalty, Interval #1: 181
Zone wide Queuing Penalty, Interval #2: 151
Zone wide Queuing Penalty, Interval #3: 461
Zone wide Queuing Penalty, Interval #4: 311
Zone wide Queuing Penalty, All Intervals: 276

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: Alpine - Mountainville Academy TS
Analysis Period: *Existing (2018) TWLTL*
Time Period: *Afternoon Peak Hour* **Project #:** *UT18-1336*

Intersection: Main Street & School Access
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	541	530	98	6.6	*A*
	R	102	105	103	6.3	*A*
	Subtotal	643	635	99	6.6	*A*
SB	L	11	11	100	7.3	*A*
	T	463	448	97	1.0	*A*
	Subtotal	474	459	97	1.2	*A*
WB	L	94	93	99	37.5	*E*
	R	60	60	100	10.5	*B*
	Subtotal	***154***	***153***	***99***	***26.9***	***D***
Total		1,270	1,247	98	7.1	*A*

Intersection: Main Street & 120 South
Type: Unsignalized

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	L	42	44	105	15.1	*C*
	T	559	547	98	13.7	*B*
	Subtotal	***601***	***591***	***98***	***13.8***	***B***
SB	T	441	430	97	6.3	*A*
	R	8	9	109	4.6	*A*
	Subtotal	449	439	98	6.3	*A*
EB	L	4	4	94	31.9	*D*
	R	27	28	105	6.7	*A*
	Subtotal	31	32	103	9.9	*A*
Total		1,082	1,062	98	10.6	*B*

HALES ENGINEERING
innovative transportation solutions

SimTraffic LOS Report

Project: **Alpine - Mountainville Academy TS**
Analysis Period: ***Existing (2018) TWLTL***
Time Period: ***Afternoon Peak Hour*** **Project #:** ***UT18-1336***

Intersection: **Main Street & 100 South**
Type: **Unsignalized**

Approach	Movement	Demand Volume	Volume Served		Delay/Veh (sec)	
			Avg	%	Avg	LOS
NB	T	466	452	97	1.1	*A*
	R	86	87	101	1.7	*A*
	Subtotal	552	539	98	1.2	*A*
SB	L	17	16	94	15.9	*C*
	T	304	300	99	4.7	*A*
	Subtotal	321	316	98	5.3	*A*
WB	L	136	127	93	183.6	*F*
	R	20	20	100	99.2	*F*
	Subtotal	***156***	***147***	***94***	***172.1***	***F***
Total		1,029	1,002	97	29.5	*D*

3: Main Street & School Access Performance by movement Interval #1 2:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.5	0.4	0.1	0.0	0.3
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	17.1	7.9	2.2	1.7	3.2	0.7	2.7
Vehicles Entered	17	12	120	22	2	113	286
Vehicles Exited	17	12	118	21	2	111	281
Hourly Exit Rate	68	48	472	84	8	444	1124
Input Volume	70	45	490	76	11	432	1124
% of Volume	97	107	96	111	73	103	100

3: Main Street & School Access Performance by movement Interval #2 2:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.5	0.4	0.0	0.0	0.3
Total Delay (hr)	0.1	0.0	0.1	0.0	0.0	0.0	0.2
Total Del/Veh (s)	17.2	6.3	2.1	1.7	4.6	0.8	2.9
Vehicles Entered	20	11	123	22	3	100	279
Vehicles Exited	20	11	125	22	3	102	283
Hourly Exit Rate	80	44	500	88	12	408	1132
Input Volume	70	45	490	76	11	432	1124
% of Volume	114	98	102	116	109	94	101

3: Main Street & School Access Performance by movement Interval #3 3:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.2	0.9	0.8	0.0	0.0	0.5
Total Delay (hr)	0.6	0.1	0.6	0.1	0.0	0.1	1.5
Total Del/Veh (s)	57.8	14.6	12.3	9.9	15.0	1.8	13.1
Vehicles Entered	38	25	169	42	3	130	407
Vehicles Exited	34	24	162	41	3	128	392
Hourly Exit Rate	136	96	648	164	12	512	1568
Input Volume	165	105	694	179	11	556	1710
% of Volume	82	91	93	92	109	92	92

3: Main Street & School Access Performance by movement Interval #4 3:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.5	0.5	0.0	0.1	0.3
Total Delay (hr)	0.2	0.0	0.2	0.0	0.0	0.0	0.5
Total Del/Veh (s)	29.3	7.7	6.4	7.5	3.8	0.8	6.2
Vehicles Entered	18	12	119	20	3	106	278
Vehicles Exited	22	13	126	22	4	107	294
Hourly Exit Rate	88	52	504	88	16	428	1176
Input Volume	70	45	490	76	11	432	1124
% of Volume	126	116	103	116	145	99	105

3: Main Street & School Access Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.2	0.1	0.6	0.6	0.0	0.0	0.3
Total Delay (hr)	1.0	0.2	1.0	0.2	0.0	0.1	2.5
Total Del/Veh (s)	37.5	10.5	6.6	6.3	7.3	1.0	7.1
Vehicles Entered	93	60	531	105	11	448	1248
Vehicles Exited	93	60	530	105	11	448	1247
Hourly Exit Rate	93	60	530	105	11	448	1247
Input Volume	94	60	541	102	11	463	1270
% of Volume	99	100	98	103	100	97	98

5: Main Street & 120 South Performance by movement Interval #1 2:30

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.4	0.2	0.0	0.6
Total Del/Veh (s)	45.9	7.1	16.7	10.3	5.7	5.9	8.5
Vehicles Entered	1	6	10	120	106	2	245
Vehicles Exited	1	6	10	124	109	2	252
Hourly Exit Rate	4	24	40	496	436	8	1008
Input Volume	4	25	37	498	410	8	982
% of Volume	100	96	108	100	106	100	103

5: Main Street & 120 South Performance by movement Interval #2 2:45

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.4	0.2	0.0	0.6
Total Del/Veh (s)	30.5	5.3	12.9	10.0	6.4	3.5	8.6
Vehicles Entered	1	6	10	125	98	2	242
Vehicles Exited	1	6	10	122	96	2	237
Hourly Exit Rate	4	24	40	488	384	8	948
Input Volume	4	25	37	498	410	8	982
% of Volume	100	96	108	98	94	100	97

5: Main Street & 120 South Performance by movement Interval #3 3:00

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.1	0.2	0.0	0.0	0.8	0.4	0.3
Total Delay (hr)	0.0	0.0	0.1	0.9	0.2	0.0	1.1
Total Del/Veh (s)	20.6	7.6	15.8	17.1	5.6	4.2	12.4
Vehicles Entered	1	10	13	174	122	4	324
Vehicles Exited	1	10	13	172	124	4	324
Hourly Exit Rate	4	40	52	688	496	16	1296
Input Volume	5	32	56	743	535	9	1380
% of Volume	80	125	93	93	93	178	94

5: Main Street & 120 South Performance by movement Interval #4 3:15

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay (hr)	0.0	0.0	0.0	0.5	0.2	0.0	0.8
Total Del/Veh (s)	30.5	6.2	12.1	14.3	7.3	5.6	11.2
Vehicles Entered	1	6	11	128	104	1	251
Vehicles Exited	1	6	10	128	101	1	247
Hourly Exit Rate	4	24	40	512	404	4	988
Input Volume	4	25	37	498	410	8	982
% of Volume	100	96	108	103	99	50	101

5: Main Street & 120 South Performance by movement Entire Run

Movement	EBL	EBR	NBL	NBT	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	0.1	0.0	0.0	0.2	0.2	0.1
Total Delay (hr)	0.0	0.1	0.2	2.1	0.8	0.0	3.2
Total Del/Veh (s)	31.9	6.7	15.1	13.7	6.3	4.6	10.6
Vehicles Entered	4	28	44	546	431	9	1062
Vehicles Exited	4	28	44	547	430	9	1062
Hourly Exit Rate	4	28	44	547	430	9	1062
Input Volume	4	27	42	559	441	8	1082
% of Volume	94	105	105	98	97	109	98

7: Main Street & 100 South Performance by movement Interval #1 2:30

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	3.0	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	0.7	0.0	0.0	0.0	0.0	0.1	0.9
Total Del/Veh (s)	74.4	22.4	1.2	2.0	7.7	4.7	13.8
Vehicles Entered	31	4	99	23	4	74	235
Vehicles Exited	33	4	98	22	4	75	236
Hourly Exit Rate	132	16	392	88	16	300	944
Input Volume	136	20	411	81	16	282	946
% of Volume	97	80	95	109	100	106	100

7: Main Street & 100 South Performance by movement Interval #2 2:45

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	3.2	0.0	0.0	0.5	0.0	0.1
Total Delay (hr)	0.8	0.0	0.0	0.0	0.0	0.1	1.0
Total Del/Veh (s)	80.1	28.8	1.0	1.5	18.9	4.1	15.2
Vehicles Entered	34	6	100	20	3	67	230
Vehicles Exited	34	6	101	21	3	66	231
Hourly Exit Rate	136	24	404	84	12	264	924
Input Volume	136	20	411	81	16	282	946
% of Volume	100	120	98	104	75	94	98

7: Main Street & 100 South Performance by movement Interval #3 3:00

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	3.3	0.0	0.0	0.0	0.0	0.1
Total Delay (hr)	2.1	0.1	0.0	0.0	0.0	0.1	2.4
Total Del/Veh (s)	185.7	83.7	1.1	1.5	18.4	5.1	27.7
Vehicles Entered	36	6	146	24	5	90	307
Vehicles Exited	23	5	144	24	4	91	291
Hourly Exit Rate	92	20	576	96	16	364	1164
Input Volume	136	20	629	101	20	371	1277
% of Volume	68	100	92	95	80	98	91

7: Main Street & 100 South Performance by movement Interval #4 3:15

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	2.9	0.0	0.2	0.1	0.1	0.2
Total Delay (hr)	3.5	0.4	0.0	0.0	0.0	0.1	4.0
Total Del/Veh (s)	254.2	219.6	1.1	1.5	15.0	4.7	54.7
Vehicles Entered	32	5	107	20	4	69	237
Vehicles Exited	38	6	109	21	5	68	247
Hourly Exit Rate	152	24	436	84	20	272	988
Input Volume	136	20	411	81	16	282	946
% of Volume	112	120	106	104	125	96	104

7: Main Street & 100 South Performance by movement Entire Run

Movement	WBL	WBR	NBT	NBR	SBL	SBT	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.2	3.1	0.0	0.1	0.1	0.0	0.1
Total Delay (hr)	7.1	0.6	0.1	0.0	0.1	0.4	8.3
Total Del/Veh (s)	183.6	99.2	1.1	1.7	15.9	4.7	29.5
Vehicles Entered	134	21	452	87	16	300	1010
Vehicles Exited	127	20	452	87	16	300	1002
Hourly Exit Rate	127	20	452	87	16	300	1002
Input Volume	136	20	466	86	17	304	1029
% of Volume	93	100	97	101	94	99	97

Total Zone Performance By Interval

Interval Start	2:30	2:45	3:00	3:15	All
Denied Delay (hr)	0.0	0.0	0.1	0.0	0.2
Denied Del/Veh (s)	0.5	0.5	1.0	0.5	0.6
Total Delay (hr)	1.7	1.8	5.1	5.3	13.9
Total Del/Veh (s)	217.1	212.2	275.9	477.4	669.1
Vehicles Entered	221	230	342	221	1014
Vehicles Exited	10	9	14	7	42
Hourly Exit Rate	40	36	56	28	42
Input Volume	3052	3052	4367	3052	3381
% of Volume	1	1	1	1	1

Intersection: 3: Main Street & School Access, Interval #1

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	66	61	50	30
Average Queue (ft)	41	29	8	6
95th Queue (ft)	75	60	54	38
Link Distance (ft)	402	402	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #2

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	71	52	34	46
Average Queue (ft)	43	25	6	8
95th Queue (ft)	81	58	47	45
Link Distance (ft)	402	402	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #3

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	176	83	343	120
Average Queue (ft)	101	49	109	25
95th Queue (ft)	212	87	450	113
Link Distance (ft)	402	402	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, Interval #4

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	122	53	263	53
Average Queue (ft)	55	30	51	11
95th Queue (ft)	138	59	312	53
Link Distance (ft)	402	402	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Main Street & School Access, All Intervals

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	185	87	387	132
Average Queue (ft)	60	34	43	13
95th Queue (ft)	144	70	271	69
Link Distance (ft)	402	402	1049	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Main Street & 120 South, Interval #1

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	43	81	238	98
Average Queue (ft)	18	36	165	90
95th Queue (ft)	49	99	268	105
Link Distance (ft)	486		303	63
Upstream Blk Time (%)			1	17
Queuing Penalty (veh)			3	70
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		0	18	
Queuing Penalty (veh)		0	7	

Intersection: 5: Main Street & 120 South, Interval #2

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	49	107	257	97
Average Queue (ft)	20	36	142	86
95th Queue (ft)	52	108	266	112
Link Distance (ft)	486		303	63
Upstream Blk Time (%)			0	17
Queuing Penalty (veh)			2	70
Storage Bay Dist (ft)		100		
Storage Blk Time (%)			16	
Queuing Penalty (veh)			6	

Intersection: 5: Main Street & 120 South, Interval #3

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	46	184	332	97
Average Queue (ft)	24	85	255	93
95th Queue (ft)	55	218	362	101
Link Distance (ft)	486		303	63
Upstream Blk Time (%)			7	19
Queuing Penalty (veh)			52	95
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		0	39	
Queuing Penalty (veh)		0	22	

Intersection: 5: Main Street & 120 South, Interval #4

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	38	136	295	101
Average Queue (ft)	18	47	171	92
95th Queue (ft)	49	146	305	106
Link Distance (ft)	486		303	63
Upstream Blk Time (%)			3	20
Queuing Penalty (veh)			14	86
Storage Bay Dist (ft)		100		
Storage Blk Time (%)			25	
Queuing Penalty (veh)			9	

Intersection: 5: Main Street & 120 South, All Intervals

Movement	EB	NB	NB	SB
Directions Served	LR	L	T	TR
Maximum Queue (ft)	60	188	334	103
Average Queue (ft)	20	51	183	90
95th Queue (ft)	51	152	320	108
Link Distance (ft)	486		303	63
Upstream Blk Time (%)			3	18
Queuing Penalty (veh)			18	80
Storage Bay Dist (ft)		100		
Storage Blk Time (%)		0	25	
Queuing Penalty (veh)		0	11	

Intersection: 7: Main Street & 100 South, Interval #1

Movement	WB	WB	NB	SB	SB	B1
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	182	90	87	45	126	32
Average Queue (ft)	118	29	63	10	82	5
95th Queue (ft)	232	108	98	39	143	30
Link Distance (ft)	945		63		69	71
Upstream Blk Time (%)			6	0	9	0
Queuing Penalty (veh)			29	0	26	1
Storage Bay Dist (ft)		50		1		
Storage Blk Time (%)	62	0		2	12	
Queuing Penalty (veh)	12	0		7	2	

Intersection: 7: Main Street & 100 South, Interval #2

Movement	WB	WB	NB	SB	SB	B1
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	193	113	93	41	110	11
Average Queue (ft)	126	37	68	13	55	2
95th Queue (ft)	244	116	102	44	119	20
Link Distance (ft)	945		63		69	71
Upstream Blk Time (%)			5	0	6	0
Queuing Penalty (veh)			26	0	18	0
Storage Bay Dist (ft)		50		1		
Storage Blk Time (%)	66	1		4	11	
Queuing Penalty (veh)	13	2		11	2	

Intersection: 7: Main Street & 100 South, Interval #3

Movement	WB	WB	NB	SB	SB	B1
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	423	110	97	49	137	51
Average Queue (ft)	231	40	74	15	94	13
95th Queue (ft)	457	134	103	47	156	53
Link Distance (ft)	945		63		69	71
Upstream Blk Time (%)			8	0	11	1
Queuing Penalty (veh)			57	0	44	2
Storage Bay Dist (ft)		50		1		
Storage Blk Time (%)	94	2		8	14	
Queuing Penalty (veh)	19	3		27	3	

Intersection: 7: Main Street & 100 South, Interval #4

Movement	WB	WB	NB	SB	SB	B1
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	504	149	93	49	120	23
Average Queue (ft)	407	73	68	15	65	3
95th Queue (ft)	753	193	98	49	126	25
Link Distance (ft)	945		63		69	71
Upstream Blk Time (%)			6	0	7	0
Queuing Penalty (veh)			28	0	19	1
Storage Bay Dist (ft)		50		1		
Storage Blk Time (%)	91	1		6	13	
Queuing Penalty (veh)	18	1		16	2	

Intersection: 7: Main Street & 100 South, All Intervals

Movement	WB	WB	NB	SB	SB	B1
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	525	150	102	64	140	74
Average Queue (ft)	221	45	68	13	74	6
95th Queue (ft)	515	143	101	45	141	34
Link Distance (ft)	945		63		69	71
Upstream Blk Time (%)			6	0	8	0
Queuing Penalty (veh)			35	0	27	1
Storage Bay Dist (ft)		50		1		
Storage Blk Time (%)	78	1		5	12	
Queuing Penalty (veh)	16	2		15	2	

Zone Summary

Zone wide Queuing Penalty, Interval #1: 157
Zone wide Queuing Penalty, Interval #2: 150
Zone wide Queuing Penalty, Interval #3: 325
Zone wide Queuing Penalty, Interval #4: 195
Zone wide Queuing Penalty, All Intervals: 207

SimTraffic Queueing Report

Project: Alpine - Mountainville Academy TS

Analysis: Existing (2018) No-Build

Time Period: Afternoon Peak Hour

95th Percentile Queue Length (feet)

HALES ENGINEERING
Innovative transportation solutions

Project #: UT18-1336

Intersection	EB	NB		SB		WB	
	LR	LT	TR	LT	TR	L	R
120 South & Main Street	50	385	--	--	114	--	--
Main Street & 100 South	--	--	107	160	--	588	150
Main Street & School Access	--	--	734	78	--	129	69