

**REPORT TO MAYOR AND COUNCIL****TO THE HONORABLE MAYOR AND COUNCIL:**

DATE: November 17, 2015

**SUBJECT: AUTHORIZE THE INSTALLATION OF ALL-WAY STOP CONTROL AT THE INTERSECTION OF ALMOND AVENUE AND GRANT STREET (GENERAL FUND) AND FINDING SUCH PROJECT CATEGORICALLY EXEMPT UNDER CEQA**

**Report in Brief**

A Pedestrian Safety Study was recently conducted by the City's Transportation Division at the intersection of Almond Avenue and Grant Street (near Queen of All Saints School and Mt. Diablo High School) based on concerns expressed by the community regarding vehicle-pedestrian conflicts on Grant Street at this intersection. Based on this review, staff concluded that all-way STOP signs are justified at the intersection of Almond Avenue and Grant Street to ensure the safety of school children and other pedestrians when crossing Grant Street at this location.

Staff recommends that the City Council adopt Resolution No. 15-3521.2 (Attachment 1) authorizing the installation of All-Way STOP control at the intersection of Almond Avenue and Grant Street for an estimated cost of \$3,000.

**Background**

Traffic consultant Omni-Means was recently hired by the City to review traffic conditions at the intersection of Almond Avenue and Grant Street located north of downtown Concord. Members of the community in this area had expressed concerns regarding the need to control vehicle-pedestrian conflicts when crossing Grant Street at this intersection. This review was aimed at determining whether all-way STOP control is justified at the Almond Avenue/Grant Street intersection. The findings of Omni-Means' review were summarized in a Pedestrian Safety Study (Study) which is included in Attachment 2.

By way of background, the Almond Avenue/Grant Street intersection is a four-leg intersection located adjacent to Queen of All Saints School and Mt. Diablo High School. Almond Avenue extends in an east-west direction providing access to the schools as well as adjacent residential units. Grant Street is oriented in a north-south direction extending from downtown Concord and continuing north of the school properties. The Almond Avenue/Grant Street intersection currently consists of STOP controls for the Almond Avenue approaches, but provides no controls for Grant Street. Yellow striped pedestrian crosswalks are marked across all four approaches, with the crosswalks across Grant Street supplemented with yellow longitudinal (zebra) striping.

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There are concrete sidewalks on both sides of each street, and accessible curb ramps are located on all four corners of the intersection. Street parking is allowed on both streets, except for short sections of curb frontage near the intersection, which are painted red. Almond Avenue and Grant Street provide vehicular and pedestrian access to Queen of All Saints School and Mt. Diablo High School. The latter school has gates which are pulled across Grant Street during school hours (weekdays 8:00 a.m. to 3:00 p.m.), closing Grant Street to vehicle through-trips during these times.

If all-way STOP signs were installed at the Almond Avenue/Grant Street intersection, this traffic control upgrade would require all vehicles to stop when approaching the intersection from any direction. Currently, only vehicles approaching the intersection from Almond Avenue have to stop for pedestrians or vehicles traveling along Grant Street. Grant Street operates freely with no traffic controls.

**California Environmental Quality Act**

Pursuant to CEQA Guidelines Section 15301 (Existing Facilities), the proposed stop signs qualify as a Class 1 Categorical Exemption because the change would be a minor alteration to the City's existing streets involving only a negligible change in the use of the City's existing streets.

**Discussion**

As part of the Study conducted by Omni-Means, traffic volume counts, including pedestrian and bicycle counts, were conducted at the intersection of Almond Avenue and Grant Street during the morning and midday afternoon peak periods of school activity (7:00-9:00 a.m. and 2:00-4:00 p.m.) The counts were conducted on school days and when the nearby Farmer's Market was occurring. Vehicle speed surveys were also conducted on Grant Street approaching the intersection. Additionally, accident history through the previous five calendar years was reviewed.

The all-way STOP control warrant analysis conducted in the Study was based on the latest criteria found in the California Manual on Uniform Traffic Control Devices (CaMUTCD). As stated in the CaMUTCD, *"Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all other road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."*

The intersection was evaluated for all-way STOP control based on CaMUTCD criteria, including reported collisions in a recent 12-month period, minimum traffic volumes entering the intersection, and other engineering judgment considerations taking into account overall pedestrian safety and traffic flow.

**Intersection Conditions**

Almond Avenue and Grant Street have a 25 mph posted speed limit. Radar speed surveys were conducted on Grant Street (uncontrolled approaches) which identified 85<sup>th</sup> percentile speeds of 26 mph

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northbound and 25 mph southbound. The 85<sup>th</sup> percentile speed is the standard measure used in evaluating speeds.

Based on an analysis of the peak hour auto traffic volumes, the intersection does not meet the volume warrant for installation of all-way STOP control. However, additional criteria may be considered, including the need to control pedestrian and vehicle conflicts at locations with high pedestrian volumes.

During the morning and midday afternoon periods, pedestrian volumes increase substantially in the area. The pedestrian volumes primarily consist of high school students walking on both sides of Grant Street and crossing Almond Avenue. There were approximately 200 pedestrian crossings during the AM peak hour (with 400 crossings over the course of two hours) and 275 pedestrian crossings during the midday afternoon peak hour (325 crossings over two hours). Outside of the school peak hours, volumes appear to be substantially lower. However, many of the pedestrians observed in the Study consisted of special needs adults living near the intersection.

There are elementary-age children who are dropped off/picked up in front of Queen of All Saints School at Almond Avenue and Grant Street. (Most of Queen of All Saints School traffic and pedestrian volumes are concentrated at the Almond Avenue/Mt. Diablo Street intersection located west of Grant Street.) There is some drop off/pick up activity associated with the high school near the Almond Avenue/Grant Street intersection. Several vehicles park near the intersection for this purpose, but overall parking demand remains moderate near the intersection, even during the peak periods.

The reported accident history was evaluated for the five year period from January 2010 to the present time as part of the Study. No reported accidents have occurred at the Almond Avenue/Grant Street intersection during this evaluation period.

### Study Findings

The Almond Avenue/Grant Street intersection was evaluated based on the CaMUTCD all-way STOP control warrant analysis. The vehicle and pedestrian volumes collected in the Study were applied against the volume thresholds specified in the CaMUTCD. Based on this analysis, it was found that all-way STOP control is not warranted at this intersection purely on the basis of traffic volumes.

However, the CaMUTCD also provides supplemental criteria when considering all-way STOP control at an intersection. These pertain to potential vehicle-pedestrian conflicts and vehicle circulation through the intersection and are based on engineering judgment.

The Almond Avenue/Grant Street intersection was noted in the Study for its proximity to Queen of All Saints School and Mt. Diablo High School and other pedestrian generating sources. Substantially elevated pedestrian volumes were observed during school traffic peak periods, coupled with vehicular/pedestrian congestion through the intersection during these times.

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The City's Transportation Manager has reviewed the Study findings and determined that the installation of all-way STOP control is justified at this intersection based on the following factors:

- Grant Street and Almond Avenue serve as a route to school for students of Queen of All Saints School and Mt. Diablo High School.
- Pedestrian volumes increase substantially before and after school peak periods (200-300 peak hour crossings).
- Occasional congestion occurs at the intersection when large numbers of pedestrians are crossing.
- Reduced sight distance at the intersection for motorists and pedestrians during the peak 20-30 minutes may increase the potential for pedestrian-vehicle conflicts.
- Pedestrian crossing activity by children and special needs adults also occurs outside of the school peak periods during the day and evening.
- Almond Avenue does not cross Grant Street in a straight line, posing certain limitations to sight distance of vehicles traveling along Grant Street.

With all-way STOP control, the intersection level of service (LOS) operating conditions would still remain optimal (LOS A) during the morning and midday afternoon peak hours. Vehicle queues would be acceptable as well (2-3 vehicles).

If approved by the City Council, this improvement will require all vehicles to stop when approaching the intersection from Almond Avenue or Grant Street.

Installation of all-way STOP control will include a STOP sign for the Grant Street approaches, as well as "ALL WAY" supplemental plaques for all four approaches to the intersection. Additionally, longitudinal (zebra) yellow stripes will be added to the crosswalks crossing the Almond Avenue approaches. Conflicting pavement markings (SLOW SCHOOL XING) and associated warning signs will be removed as appropriate.

Additionally, battery-operated red flashing lights will be installed to warn motorists of the new STOP controls for a period of 30 days on top of the new STOP signs facing Grant Street for nighttime visibility of the signs. The temporary flashing lights will be removed at the conclusion of the 30-day warning period.

The Concord Police Department has been notified of the proposed all-way STOP signs installation at the Almond Avenue/Grant Street intersection.

**Fiscal Impact**

If approved by the City Council, a total of two STOP signs will be installed on Grant Street to bring the intersection of Almond Avenue and Grant Street to all-way STOP control, as specified in this report. Additionally, the City will install new pavement markings and zebra crosswalk stripes and will remove

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existing markings as appropriate. Existing traffic signs near the intersection will be removed or relocated to accommodate the new STOP signs installation on Grant Street.

The total cost for these improvements is estimated at \$3,000. Sufficient funds are available in the City's operating budgets for Transportation Planning and Signs & Markings in FY 2015-16 to cover this cost. These improvements will be implemented by Public Works Maintenance staff upon City Council approval of the proposed STOP signs installation.

**Public Contact**

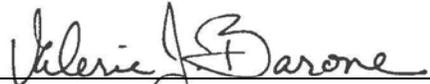
Posting of the Council Agenda provides public notification. Additionally, Transportation Division staff has notified adjacent properties located within the geographic area bounded by Mt. Diablo High School and Bacon Street to the north, East Street to the east, Bonifacio Street to the south, and Mt. Diablo Street to the west. This area extends beyond the 300-foot radius requirement for notification.

The public notice was mailed to 154 residents/property owners to inform them that All-Way STOP sign control was being considered by the City Council at the Almond Avenue/Grant Street intersection. No feedback or comments have been received to date regarding this proposal.

**Recommendation for Action**

Staff recommends that the City Council adopt Resolution No. 15-3521.2 authorizing the installation of All-Way STOP control at the intersection of Almond Avenue and Grant Street for an estimated cost of \$3,000.

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Attachment 1: Proposed Resolution No. 15-3521.2 Amending the Traffic Resolution, Section C, Stop Intersections

Attachment 2: Omni-Means' Pedestrian Safety Study

BEFORE THE CITY COUNCIL OF THE CITY OF CONCORD  
COUNTY OF CONTRA COSTA, STATE OF CALIFORNIA

A Resolution Amending the Traffic Resolution,  
Section C, Stop Intersections

Resolution No. 15-3521.2

WHEREAS, the Transportation Manager has recommended that the Traffic Resolution be amended by adding stop signs at the following intersections:

- 1. Almond Avenue and Grant Street (all-way stop).

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CONCORD DOES  
RESOLVE AS FOLLOWS:

**Section 1.** That pursuant to CEQA Guidelines Section 15301 (Existing Facilities), the proposed stop signs qualify as a Class 1 Categorical Exemption because the change would be a minor alteration to the City’s existing streets involving only a negligible change in the use of the City’s existing streets.

**Section 2.** That the Transportation Manager is authorized and directed to remove and install the appropriate signs and markings to effectuate this resolution.

**Section 3.** This resolution shall become effective immediately upon its passage and adoption.

**PASSED AND ADOPTED** by the City Council of the City of Concord on November 17, 2015, by the following vote:

**AYES:** Councilmembers -

**NOES:** Councilmembers -

**ABSTAIN:** Councilmembers -

**ABSENT:** Councilmembers –

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I HEREBY CERTIFY that the foregoing Resolution No. 15-3521.2 was duly and regularly adopted at a regular meeting of the City Council of the City of Concord on November 17, 2015.

By \_\_\_\_\_  
Joelle Fockler, CMC  
City Clerk

**APPROVED AS TO FORM:**

\_\_\_\_\_  
Brian M. Libow  
Interim City Attorney

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***FINAL REPORT***

**TRAFFIC ANALYSIS REGARDING  
MULTI-WAY STOP CONTROL  
FOR THE**

**ALMOND AVE. / GRANT ST.  
INTERSECTION**

**IN THE CITY OF  
CONCORD, CA**

**October 26, 2015**

Prepared by:

**Omni-Means, Ltd.  
Engineers & Planners  
1901 Olympic Blvd., Suite 120  
Walnut Creek, CA 94596**

*R2094TIA002 / 35-2272-44*



## Introduction

This report summarizes our findings of a focused operations analysis for the Almond Avenue / Grant Street intersection in the City of Concord regarding potential installation of all-way (multi-way) stop controls. The analysis was conducted based on an evaluation of the intersection operation during peak hours of pedestrian and vehicular activity. The following sections describe the data collection and findings regarding potential all-way stop control. Based on our evaluation, the intersection does not meet the volume warrants, but all-way stop control could be considered in order to enhance vehicle right-of-way and pedestrian crossing conditions during peak school periods.

## Existing Intersection / Field Observations

The Almond Avenue / Grant Street intersection is a four-leg intersection located adjacent to the Queen of All Saints School and Mt. Diablo High School properties. Almond Avenue extends in an east-west direction providing access to the schools as well as adjacent residential units. Grant Street is oriented in a north-south direction extending from downtown Concord and continuing north of the school properties. The Almond Avenue/Grant Street intersection currently consists of stop controls for the Almond Avenue approaches (no controls for Grant Street). Yellow striped pedestrian crosswalks are marked across all four approaches, with the crosswalks across Grant Street supplemented with yellow longitudinal striping. There are paved sidewalks on both sides of each street and accessible curb-cutout ramps are located on all four corners of the intersection. Street parking is allowed on both streets, except for short sections of curb frontage near the intersection which are painted red. Almond Avenue and Grant Street provide vehicular and pedestrian access to the Queen of All Saints School and Mt. Diablo High School. Mt. Diablo High School has gates which are pulled across Grant Street during school hours (weekdays 8:00 a.m. to 3:00 p.m.) which prevent vehicle through-trips on Grant Street during these times.

## Data Collection

Traffic volume counts, including pedestrian and bicycle counts, were conducted at the intersection during the a.m. and afternoon peak periods of school activity (7:00-9:00 a.m. and 2:00-4:00 p.m.).<sup>1</sup> The counts were conducted on school days and when the nearby farmers market was occurring. Vehicle speed surveys were also conducted on Grant Street approaching the intersection.

## Multi-Way Stop Control Warrant

The multi-way stop control warrant is based on the latest criteria found in the California Manual on Uniform Traffic Control Devices (CaMUTCD).<sup>2</sup> As stated in the manual, "Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all other road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."

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<sup>1</sup> *Omni-Means Engineers & Planners, Peak period traffic counts at Grant Street & Almond Avenue, October 20-21, 2015.*

<sup>2</sup> *Caltrans, Manual on Uniform Traffic Control Devices (MUTCD), Section 2B.07 Multi-Way Stop Applications, 2014 Edition.*

*Guidance:*

*A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.*

*B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.*

*C. Minimum volumes:*

*1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and*

*2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour;*

*but*

*3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 & 2.*

*D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.*

Other criteria that may be considered in an engineering study include:

*A. The need to control left-turn conflicts;*

*B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes;*

*C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and*

*D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.'*

The study intersection was evaluated for multi-way stop control based on the above criteria and engineering judgment taking into account overall pedestrian safety and traffic flow.

### **Almond Avenue / Grant St. Intersection Conditions**

Almond Avenue and Grant Street have a 25 mph speed limit in the area. Radar speed surveys were conducted on Grant Street (uncontrolled approaches) which identified 85<sup>th</sup> percentile speeds of 26 mph northbound and 25 mph southbound. The 85<sup>th</sup> percentile speed is the standard measure used in evaluating speeds. The speeds are less than 40 mph, therefore no adjustment is made for the MUTCD multi-way stop control volume threshold levels.

Based on an evaluation of the peak hour volumes, the intersection would not meet the volume warrant for installation of all-way stop control. However, additional criteria may be considered, including the need to control pedestrian and vehicle conflicts at locations with high pedestrian volumes.

During the a.m. period and mid-day afternoon period, pedestrian volumes increase substantially. The pedestrian volumes primarily consist of high school students walking on both sides of Grant Street and crossing Almond Avenue. There were approximately 200 pedestrian crossings during the a.m. peak hour (with 400 crossings over the course of two hours) and 275 pedestrian crossings during the afternoon peak hour (325 crossings over two hours). Outside of the school peak hours, volumes appear to be substantially lower. However, several of the pedestrians (approximately 10) consisted of special needs adults living near the intersection.

There are a small number of elementary-age children who are dropped off / picked up in front of the Queen of All Saints Elementary school on Almond Avenue. (Most of the Queen of All Saints school traffic and pedestrian volumes are concentrated at the Almond Avenue/Mt. Diablo Street intersection located west of Grant Street.) There is some drop off / pick up activity associated with the high school near the Almond Avenue/Grant Street intersection. Several cars park near the intersection for this purpose, but overall parking demand remains moderate near this intersection, even during the peak periods. However, at times during the peak 20-30 minutes before and after school, the combination of high pedestrian volumes and vehicle trips to/from the schools results in occasional congestion as motorists yield to the flow of pedestrians.

### **Findings / Recommendations**

The Almond Avenue/Grant Street intersection was evaluated for all-way stop controls based on the MUTCD stop warrant guidelines. The intersection does not qualify for all-way stop control based solely on the volume warrants.

However, the CaMUTCD also provides supplemental criteria when considering all-way stop controls. These pertain to potential vehicle/pedestrian conflicts and vehicle circulation through the intersection and are based more on engineering judgment.

Given the intersection's proximity to two schools, the substantially elevated pedestrian volumes during peak periods, and occasional vehicular/pedestrian congestion through the intersection during these periods, all-way stop control installation could be considered for the intersection based on the following reasons:

- Grant Street and Almond Avenue serve as a route to school for students of Mt. Diablo High School and Queen of All Saints Elementary School.
- Pedestrian volumes increase substantially before and after school peak periods (200-300 peak hour crossings).
- Occasional congestion occurs at the intersection when large numbers of pedestrians are crossing.
- Reduced sight distance at the intersection for motorists and pedestrians during the peak 20-30 minutes may increase the potential for pedestrian/vehicle conflicts.
- Pedestrian crossing activity by children and special needs adults also occurs outside of the school peak periods during the day and evening.

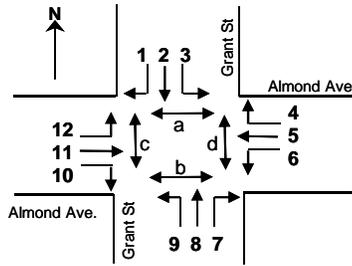
With multi-way stop control, the LOS operating conditions would remain optimal (LOS A) and vehicle queues would be acceptable (2-3 vehicles). (LOS and queuing calculation worksheets are attached.)

Although the Almond Avenue/Grant Street intersection does not meet volume warrants for all-way stop controls, they could still be considered based on the above reasons. Installation of all-way stop control should include a STOP sign (R-1) for both of the Grant Street approaches, as well as "ALL WAY" supplemental plaques (R1-3P) for all four approaches to the intersection. Additionally, longitudinal stripes could be added to the crosswalks crossing the Almond Avenue approaches.

Intersection Volume Worksheet

Grant Street / Almond Avenue

10/20-21/15 Tues.-Wed. (schools in session and farmers market)  
Weather: Clear



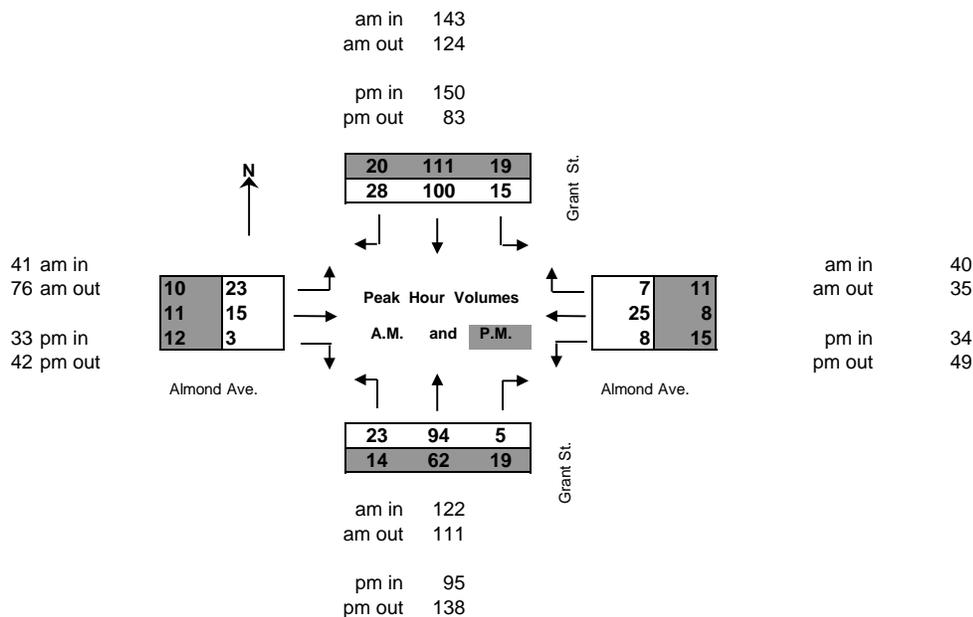
AM Period

	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.
7:00-7:15	3	5	0	1	2	0	1	9	1	1	1	4	28	
7:15-7:30	6	10	1	2	2	1	0	12	1	1	3	7	46	
7:30-7:45	8	14	0	1	3	0	1	16	2	1	2	9	57	
7:45-8:00	11	38	6	3	16	2	4	30	18	1	9	5	143	274
8:00-8:15	3	38	8	1	4	5	0	36	2	0	1	2	100	346
8:15-8:30	1	5	0	1	2	1	5	17	2	0	0	1	35	335
8:30-8:45	1	12	1	1	4	1	6	22	2	0	2	2	54	332
8:45-9:00	1	4	0	0	1	2	1	5	0	0	0	1	15	204
<b>PeakHour:</b>														
7:15-8:15	28	100	15	7	25	8	5	94	23	3	15	23	346	346

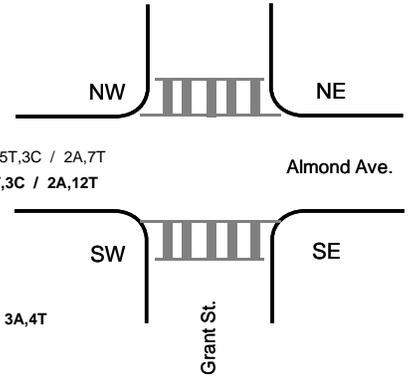
Afternoon Period

	1	2	3	4	5	6	7	8	9	10	11	12	15 MIN.	60 MIN.
2:00-2:15	1	0	1	0	2	0	2	5	0	1	2	1	15	
2:15-2:30	0	3	1	1	1	2	2	1	2	0	0	0	13	
2:30-2:45	2	1	0	0	3	1	4	3	3	0	1	0	18	
2:45-3:00	3	3	1	3	9	1	4	12	7	0	1	1	45	91
3:00-3:15	6	24	5	3	4	5	3	20	3	3	4	2	82	158
3:15-3:30	2	26	2	2	1	4	6	10	2	1	3	2	61	206
3:30-3:45	4	47	6	6	3	5	8	19	7	3	3	3	114	302
3:45-4:00	8	14	6	0	0	1	2	13	2	5	1	3	55	312
<b>PeakHour:</b>														
3:00-4:00	20	111	19	11	8	15	19	62	14	12	11	10	312	312

Gates are used across Grant St. to prevent vehicle through-trips north of Almond Avenue.  
Low pedestrian volumes outside of the school peak hours.  
Most pedestrians are high school students.  
There are 10-15 mid-block crossings on Grant Street north of Almond Avenue.

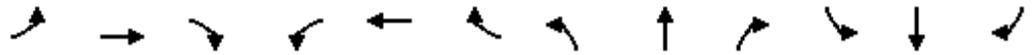


Time	Number of Pedestrians				SUM	Comments: A = Adult, T = Teen, C = Child B= Bike
	NE - SE	NW-SW	NW - NE	SW - SE		
<b>AM</b>						
7:00-7:14	3	4	1	0	8	3T / 4T / 1A / 0
7:15-7:29	10	18	2	2	32	10T / 18T / 2T / 2T
7:30-7:44	17	29	2	3	51	17T / 29T / 1A,1T / 3T
7:45-7:59	48	27	23	9	107	1A,45T,1AB,1TB / 2A,23T,1AB,1TB / 5A,15T,3C / 2A,7T
<b>HRLY TOTAL</b>	<b>78</b>	<b>78</b>	<b>28</b>	<b>14</b>	<b>198</b>	<b>1A,75T,1AB,1TB / 2A,74T,1AB,1TB / 7A,18T,3C / 2A,12T</b>
8:00-8:14	35	63	33	4	135	33T,1AB,1TB / 63T / 33T / 4T
8:15-8:29	12	8	12	1	33	2A,10T / 1A,7T / 5A,6T,1C / 1A
8:30-8:44	4	6	6	0	16	2A,2T / 2A,4T / 4A,2T / 0
8:45-8:59	5	5	0	2	12	1A,3T,1TB / 5T / 0 / 2A
<b>HRLY TOTAL</b>	<b>56</b>	<b>82</b>	<b>51</b>	<b>7</b>	<b>196</b>	<b>5A,48T,1AB,2TB / 3A,79T / 11A,41T1C / 3A,4T</b>
9:00 - 9:14					0	
9:15 - 9:29					0	
9:30 - 9:44					0	
9:45 - 9:59					0	
<b>HRLY TOTAL</b>					<b>0</b>	
<b>Midday</b>						
1:00-1:14					0	
1:15-1:29					0	
1:30-1:44					0	
1:44-1:59					0	
<b>HRLY TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
2:00-2:14	1	5	4	0	10	1A / 5T / 3A,1AB / 0
2:15-2:29	4	0	0	0	4	3A,1T / 0 / 0 / 0
2:30-2:44	11	3	1	2	17	3A,2T / 2A,1AB / 1AB / 1A,1T
2:45-2:59	11	3	8	1	23	3A,8T / 2A,1AB / 3A,5T / 1A
<b>HRLY TOTAL</b>	<b>27</b>	<b>11</b>	<b>13</b>	<b>3</b>	<b>54</b>	<b>10A,11T / 4A,5T,2AB / 6A,5T,2AB / 2A,1T</b>
3:00-3:14	3	7	2	0	12	2A,1T / 1A,6T / 1A,1C / 0
3:15-3:29	67	68	5	8	148	1A,66T / 66T,1AB,1TB / 4T,1AB / 8T
3:30-3:44	29	53	4	2	88	2A,26T,1AB / 53T / 3T,1AB / 1A,1T
3:44-3:59	14	11	0	2	27	2A,12T / 2A,7T,1C,1AB / 0 / 2A
<b>HRLY TOTAL</b>	<b>113</b>	<b>139</b>	<b>11</b>	<b>12</b>	<b>275</b>	<b>7A,105T,1AB / 3A,132T,1C,2AB,1TB / 1A,7T,1C,2AB / 3A,9T</b>
<b>PM</b>						
					0	
					0	
					0	
					0	
<b>HRLY TOTAL</b>					<b>0</b>	
4:00 - 4:14					0	
4:15 - 4:29					0	
4:30 - 4:44					0	
4:45 - 4:59					0	
<b>HRLY TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
5:00p - 5:14					0	
5:15 - 5:29					0	
5:30 - 5:44					0	
5:45 - 5:59					0	
<b>HRLY TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
6:00p - 6:14					0	
6:15 - 6:29					0	
6:30 - 6:44					0	
6:45 - 6:59					0	
<b>HRLY TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>TOTAL</b>	<b>274</b>	<b>310</b>	<b>103</b>	<b>36</b>	<b>723</b>	



HCM Unsignalized Intersection Capacity Analysis  
 1: Almond Ave. & Grant St.

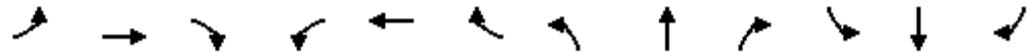
Existing AM Peak Hour  
 With All-Way Stop



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	23	15	3	8	25	7	23	94	5	15	100	28
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	34	22	4	12	37	10	34	138	7	22	147	41
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	60	59	179	210								
Volume Left (vph)	34	12	34	22								
Volume Right (vph)	4	10	7	41								
Hadj (s)	0.10	-0.03	0.05	-0.06								
Departure Headway (s)	5.0	4.8	4.5	4.3								
Degree Utilization, x	0.08	0.08	0.22	0.25								
Capacity (veh/h)	661	677	771	793								
Control Delay (s)	8.4	8.3	8.8	8.8								
Approach Delay (s)	8.4	8.3	8.8	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.7									
HCM Level of Service			A									
Intersection Capacity Utilization			22.7%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 1: Almond Ave. & Grant St.

Existing Afternoon Peak Hour  
 With All-Way Stop



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	10	11	12	15	8	11	14	62	19	19	111	20
Peak Hour Factor	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Hourly flow rate (vph)	15	16	18	22	12	16	21	91	28	28	163	29
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	49	50	140	221								
Volume Left (vph)	15	22	21	28								
Volume Right (vph)	18	16	28	29								
Hadj (s)	-0.12	-0.07	-0.06	-0.02								
Departure Headway (s)	4.6	4.7	4.3	4.3								
Degree Utilization, x	0.06	0.07	0.17	0.26								
Capacity (veh/h)	708	701	801	812								
Control Delay (s)	8.0	8.0	8.2	8.8								
Approach Delay (s)	8.0	8.0	8.2	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
HCM Level of Service			A									
Intersection Capacity Utilization			26.6%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection: 1: Almond Ave. & Grant St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	41	66	76	75
Average Queue (ft)	25	25	41	41
95th Queue (ft)	48	54	65	62
Link Distance (ft)	326	317	272	272
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Almond Ave. & Grant St.

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	49	41	56	71
Average Queue (ft)	22	21	35	40
95th Queue (ft)	48	46	53	61
Link Distance (ft)	326	317	272	272
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0