Item # 23

Staff Report

UPDATE ON STANGE CRESCENT PEDESTRIAN CROSSING STUDY (NORTHRIDGE PARKWAY AND ASPEN ROAD)

December 22, 2015

BACKGROUND:

The City Council referred a letter from the Somerset Home Owners Association requesting that staff look into improving pedestrian crossing safety at the intersection of Stange Avenue and Northridge Parkway. Though the first and primary focus was on the Northridge Parkway intersection, the study included Aspen Road as it has similar issues. In response, staff began by attending the annual meeting of the Somerset's association to discuss the process and to hear the experiences of the neighborhood. The general consensus at the meeting is that the east-west crosswalks needed to be marked and that depending on the time of day there are factors that cause traffic safety issues for those intersections adjacent to the Crescent Park.

Staff collected data on traffic volumes, traffic speeds, and a crash history for Northridge Parkway and Aspen Road intersections. This data was used to conduct a safety analysis and to evaluate the intersections for traffic control warrants. A brief summary of the findings is shown below.

Traffic Volumes/Mode Split

Data was collected during the month of September while ISU was in session. It was also important that data was collected during a period of warm weather as most of the concerns occur when there is high pedestrian and bicycling activity.

Ranking by Volume	Northridge Pkwy	Aspen Rd	Overall
Cars	83.6%	81.3%	82.5%
SUV's	9.7%	11.6%	10.5%
Pedestrians	*3.0%*	*3.0%*	*3.0%*
Buses	1.1%	1.4%	1.2%
Bicycles on Crosswalk	1.0%	1.1%	1.0%
Single-Unit Trucks	0.8%	0.5%	0.7%
Motorcycles	0.6%	0.5%	0.6%
Bicycles on Road	0.2%	0.3%	0.3%
Articulated Trucks	0.1%	0.2%	0.1%
Daily Traffic =	**11,200**	**9,200**	**20,400**

As shown in the table there are higher than typical pedestrian volumes (~1%) in the area of Crescents Park. The data also showed that there are as high as 40+

pedestrians per hour at its peak, with an average of approximately 10 pedestrians per hour. This is an important metric when comparing it against the volume and behavior of motorized traffic that travels through the area. The main purpose of vehicles traveling on Stange Road (Arterial Street) appears to be commuter traffic, whose focus is on moving through the area as efficiently as possible.

Therefore, based upon those factors it supported the request to install marked crosswalks at Northridge Parkway and Aspen Road intersections. Based on the data that justified this improvement, City staff installed high-visibility pavement markings, as well as advance warning signs with warning signs at each respective crossing. Since that time staff has conducted several field studies to observe how the signs and markings are performing. It appears that there is a significant improvement in drivers' willingness to yield to pedestrians. The improvements also seem to help show pedestrians were they should be walking through the intersection, whereas before pedestrians would often take a more circuitous route in order to seek refuge in the median.

The data collected also provided turning movement counts for both intersections that enabled staff to evaluate traffic control warrants. Data was entered into traffic warrant analysis software in order to determine if any additional traffic control measures should be implemented; specifically, if an all-way stop or traffic signal would be needed. Currently, both intersections are two-way stop controlled, which stops east-west traffic at each respective intersection. **It is notable that neither of the two intersections warrant an all-way stop or traffic signal.** Attached to this report is a summary showing the detailed evaluation of each warrant analysis.

Traffic Speeds (Stange Road)

Another area of concern is related to the speed of traffic entering the Crescent Park area. Many comments from the neighborhood described poor compliance with the posted 25 MPH speed zone. Data was collected to determine the current speed distributions of the traffic both entering and exiting through the area. Attachment 1 shows graphs that compare the distributions, by direction, of speed on Stange Road at Aspen Road and Northridge Parkway.

Generally, the data shows that there is relatively good compliance with the posted speed limit of those vehicles entering Crescent Park area. However, the data does indicate that speeds pick up slightly as vehicles leave the area. The following table summarizes the amount of traffic that is exceeding the posted speed limit by 10 MPH or more:

Stange Rd at:	Entering Traffic	Existing Traffic
Aspen Road	0.24%	7.61%
Northridge Parkway	1.46%	3.22%

The Northridge Parkway intersection is noticeably more consistent in comparison to the Aspen Road intersection**. It should be noted that when this percentage exceeds 5% of the distribution it becomes recommended to apply some sort of traffic calming method to correct the behavior.** It was suggested by members of the Homeowner's Association that the City consider installing dynamic feedback signs similar to those used along North Duff Avenue in the Historical Old Town District. **It has been the experience of the public and staff alike that those treatments appear to make significant improvement along arterial streets where physical improvements cannot be installed.**

Crash History (2005-2015)

In the course of this study staff conducted a thorough review of the crash history for the intersections as well as for the area around Crescent Park. First, the Northridge Parkway intersection consistently averages 1.3 crash per year (14 crashes in 11 years). The crashes did not involve any bicyclists or pedestrians. The crash types include failing to yield from the stops signs, rear-end, and non-collision type accidents. It should be noted that non-collision crashes are typically a single vehicle hitting a roadside feature.

Second, between the intersections around the Crescent Park area there were 3 crashes; 2 in 2007 and 1 in 2014. The types of crashes were side swipes and a non-collision. Crashes were related to the parallel parking stalls and the curvature of the street.

Finally, the Aspen Road intersection has seen one accident in the past 10 years. It was a non-collision crash that occurred in 2009. The police report indicated that the road was covered in ice and the driver lost control of their vehicle. Alcohol was not a factor in the crash.

In general, the crash history does not indicate any significant pattern or type of crash that could be mitigated by any particular engineering solution that maintains the intersections as full-access. Therefore, the crash history was not a factor in developing recommendations reflected in this study.

STAFF RECOMMENDATIONS:

During the course of this study, staff reviewed a past traffic study that was presented to City Council on December 12, 2006. The study looked at these same issues around the Crescent Park area of Stange Road. What is noteworthy for comparative purposes is that there appears to be a 5% increase in operating speeds along Stange Road (an increase of ~1.5 MPH) in comparison with the 2006 data. It was also determined that there has been a 40% increase in traffic over the last 10 years, or approximately 3.4% annual growth rate.

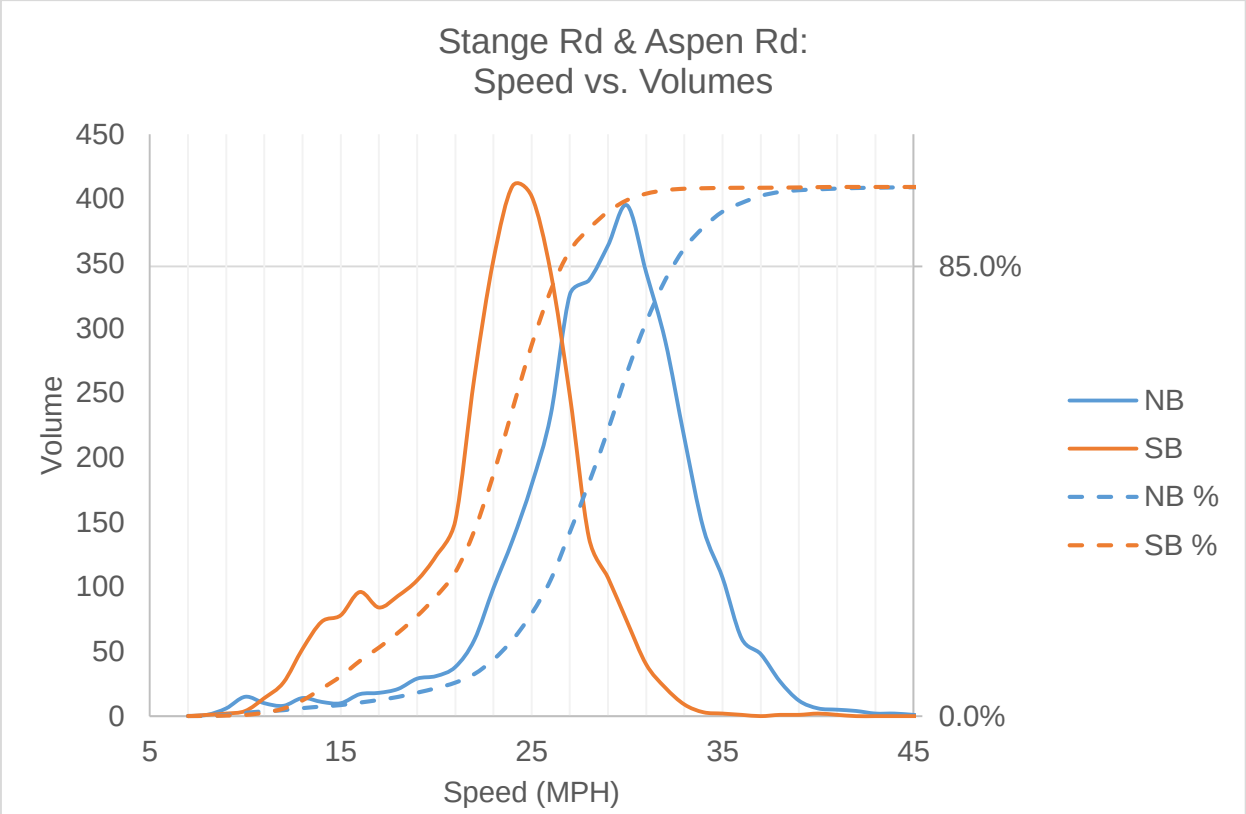
For reference, the 2040 Long Range Transportation Plan documented that Ames experiences an overall annual growth of 0.8%. **Therefore, this area of Ames has seen**

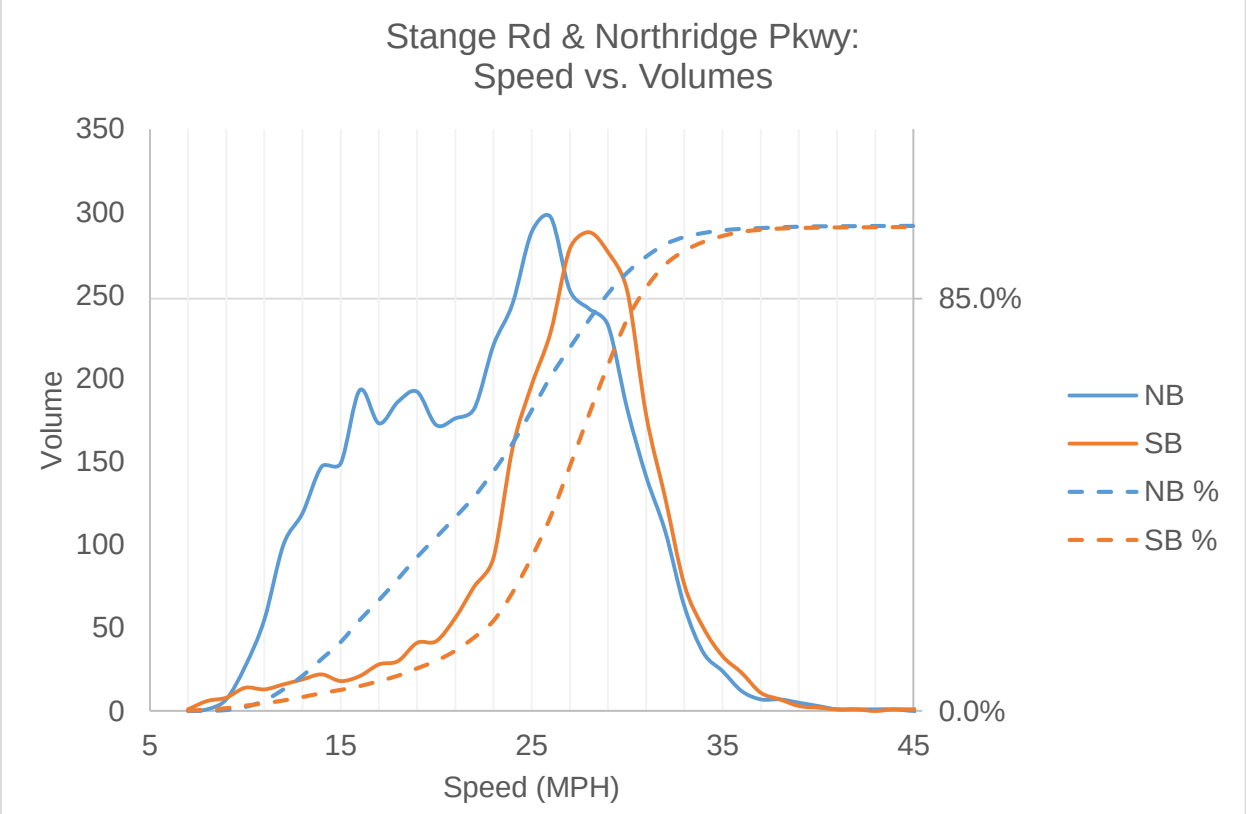
significant growth, which is mainly due to the fact that the remaining vacate properties in Somerset have now been in-filled with new businesses.

The data supports the need for some method to mitigate traffic speeds in order to reduce the inconsistency in northbound-southbound traffic. **Therefore, is it staff's recommendation that a pair of dynamic feedback signs be installed around the Crescent Park of Stange Road.** This solution could be implemented in the short-term that would improve the safety and operations for all users alike. The cost of these two devices will total $10,000. **Staff believes the installation of feedback signs, coupled with the new designated crosswalks and warnings signs, should improve operations and safety in this area in short-term.**

It should be noted that any other improvements to the intersections will require changes that could significantly impact the geometry and/or parking in the area. Therefore, should the operations or safety needs become significantly worse in the future, Staff would recommend a larger study be performed that focuses on how the infrastructure could be reconfigured to address the situation at that time.

Attachment 1





Warrants Summary Report

6: Stange Rd & Aspen Rd

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Aspen Rd
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met	No	0 Hours met (8 required)
Condition A and B M	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 3, Peak Hour		
	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 4, Pedestrian Volume		
	No	
Condition A Met?	No	0 Hours met (4 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 5, School Crossing		
	No	

Warrant 6, Coordinated Signal System

No

Warrant 7, Crash Experience

No

Traffic Volume Condi	No	0 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

Warrant 8, Roadway Network

No

Warrant 9, Intersection Near a Grade Crossing

No

AWSC Warrant, Multiway Stop Application

No

Condition A Met?	No
Condition B Met?	No
Condition C Met?	No

Warrant 1: Eight-hour Vehicular Volume

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name:	Stange Rd
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	0 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
00:00 to 01:00	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:15 to 01:15	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:30 to 01:30	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:45 to 01:45	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

07:00 to 08:00	524		38		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

07:15 to 08:15	554		34		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

07:30 to 08:30	554		36		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

07:45 to 08:45	542		34		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

08:00 to 09:00	523		33		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

08:15 to 09:15	512		32		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

08:30 to 09:30	476		29		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

08:45 to 09:45	**445**		**27**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
09:00 to 10:00	**409**		**27**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
09:15 to 10:15	**378**		**31**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
09:30 to 10:30	**364**		**43**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
09:45 to 10:45	**346**		**39**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
10:00 to 11:00	**356**		**38**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
10:15 to 11:15	**358**		**31**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

10:30 to 11:30	**395**		**27**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
10:45 to 11:45	**454**		**29**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
11:00 to 12:00	**491**		**26**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
11:15 to 12:15	**533**		**26**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
11:30 to 12:30	**520**		**33**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
11:45 to 12:45	**504**		**42**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
12:00 to 13:00	**502**		**46**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

12:15 to 13:15	493		49		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

12:30 to 13:30	493		47		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

12:45 to 13:45	459		40		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

13:00 to 14:00	431		34		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

13:15 to 14:15	405		36		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

13:30 to 14:30	383		36		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

13:45 to 14:45	398		32		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

14:00 to 15:00	**387**		**41**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
14:15 to 15:15	**409**		**38**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
14:30 to 15:30	**432**		**41**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
14:45 to 15:45	**475**		**44**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
15:00 to 16:00	**524**		**44**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
15:15 to 16:15	**595**		**42**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
15:30 to 16:30	**627**		**43**		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

15:45 to 16:45	624		35		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

16:00 to 17:00	655		36		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

16:15 to 17:15	673		43		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

16:30 to 17:30	756		47		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	No				

16:45 to 17:45	802		51		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	No				

17:00 to 18:00	810		47		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	No				

17:15 to 18:15	777		46		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	No				

17:30 to 18:30	698		45		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

17:45 to 18:45	642		47		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

18:00 to 19:00	610		50		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

18:15 to 19:15	572		46		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

18:30 to 19:30	560		46		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

18:45 to 19:45	527		42		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

19:00 to 20:00	474		35		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

19:15 to 20:15	409		30		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

19:30 to 20:30	346		24		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

19:45 to 20:45	310		27		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

20:00 to 21:00	270		28		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

20:15 to 21:15	276		38		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

20:30 to 21:30	258		30		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

20:45 to 21:45	222		26		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

21:00 to 22:00	**202**		**22**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

21:15 to 22:15	**162**		**15**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

21:30 to 22:30	**136**		**10**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

21:45 to 22:45	**127**		**11**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

22:00 to 23:00	**112**		**9**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

22:15 to 23:15	**102**		**6**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

22:30 to 23:30	**95**		**6**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

22:45 to 23:45	77		3		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:00 to 00:00	68		2		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:15 to 00:15	47		1		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:30 to 00:30	25		1		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:45 to 00:45	13		0		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

6: Stange Rd & Aspen Rd

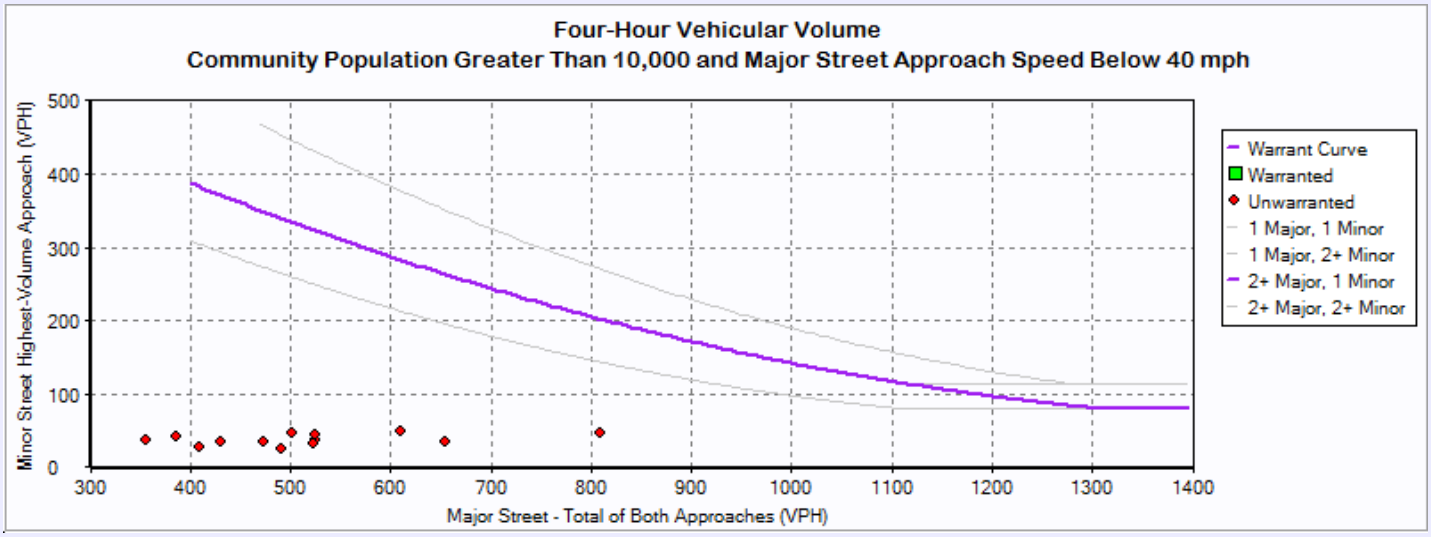
Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Aspen Rd
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

Warrant 2 Met? **No**

Details:

Notes	0 Hours met (4 required)
Low population	No



Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0.00	0.00
01:00:00 - 02:00:00	0.00	0.00
02:00:00 - 03:00:00	0.00	0.00
03:00:00 - 04:00:00	0.00	0.00
04:00:00 - 05:00:00	0.00	0.00
05:00:00 - 06:00:00	0.00	0.00
06:00:00 - 07:00:00	0.00	0.00
07:00:00 - 08:00:00	524.00	38.00
08:00:00 - 09:00:00	523.00	33.00
09:00:00 - 10:00:00	409.00	27.00
10:00:00 - 11:00:00	356.00	38.00
11:00:00 - 12:00:00	491.00	26.00
12:00:00 - 13:00:00	502.00	46.00
13:00:00 - 14:00:00	431.00	34.00
14:00:00 - 15:00:00	387.00	41.00
15:00:00 - 16:00:00	524.00	44.00
16:00:00 - 17:00:00	655.00	36.00
17:00:00 - 18:00:00	810.00	47.00
18:00:00 - 19:00:00	610.00	50.00
19:00:00 - 20:00:00	474.00	35.00
20:00:00 - 21:00:00	270.00	28.00
21:00:00 - 22:00:00	202.00	22.00
22:00:00 - 23:00:00	112.00	9.00
23:00:00 - 00:00:00	68.00	2.00

Warranted Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)

Warrant 3: Peak Hour

6: Stange Rd & Aspen Rd

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Aspen Rd
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

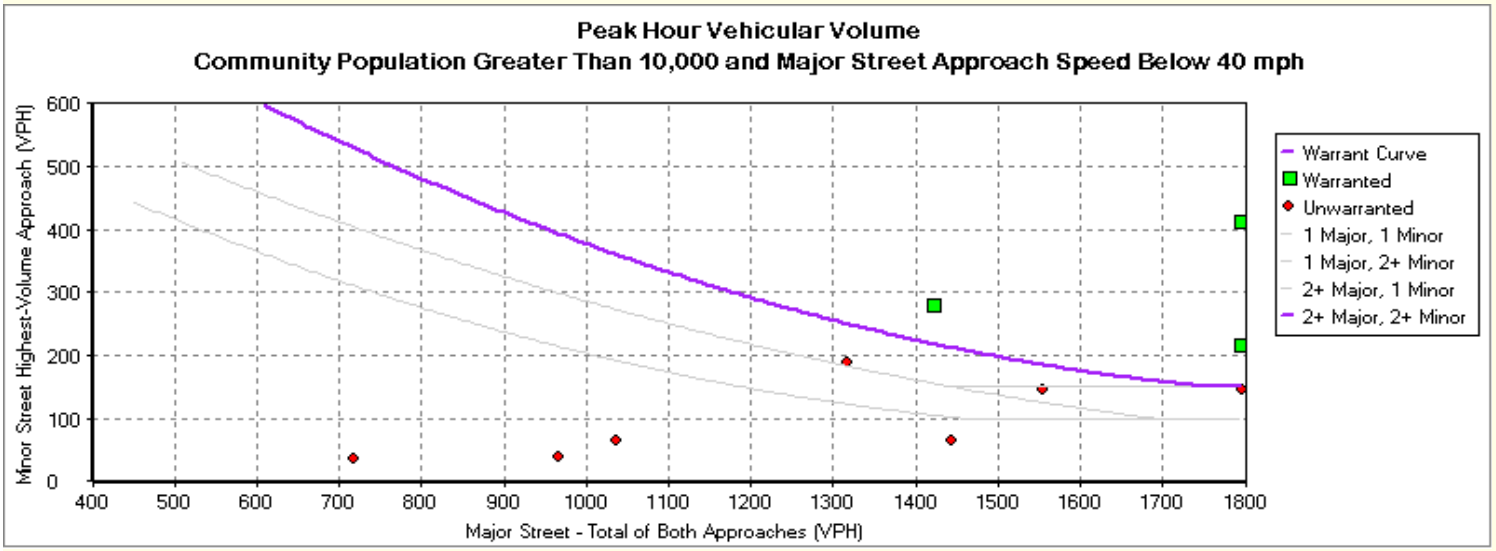
Warrant 3 Met? **No**

Details

Low Population? No

Condition A Met	No	**Condition B Met**	No
Notes	0 Hours met (1 required)	**Notes**	0 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
0:00	0	0
7:00	524	38
8:00	523	33
9:00	409	27
10:00	356	38
11:00	491	26
12:00	502	46
13:00	431	34
14:00	387	41
15:00	524	44
16:00	655	36
17:00	810	47
18:00	610	50
19:00	474	35
20:00	270	28
21:00	202	22
22:00	112	9
23:00	68	2

Warrant 4: Pedestrian Volume

6: Stange Rd & Aspen Rd

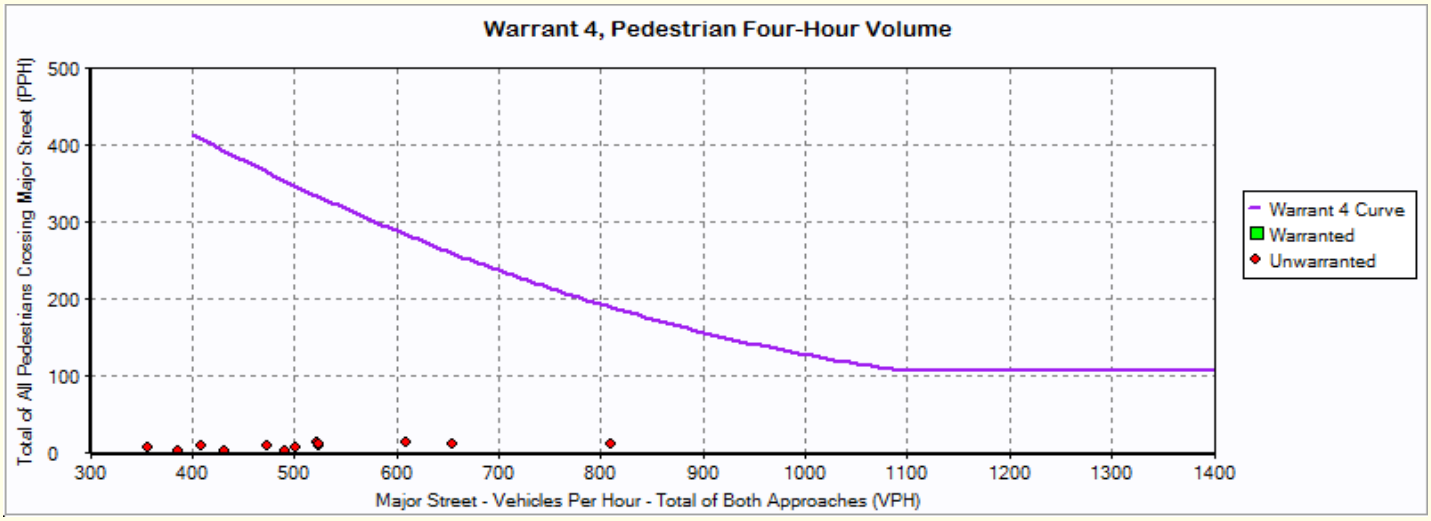
Intersection Information

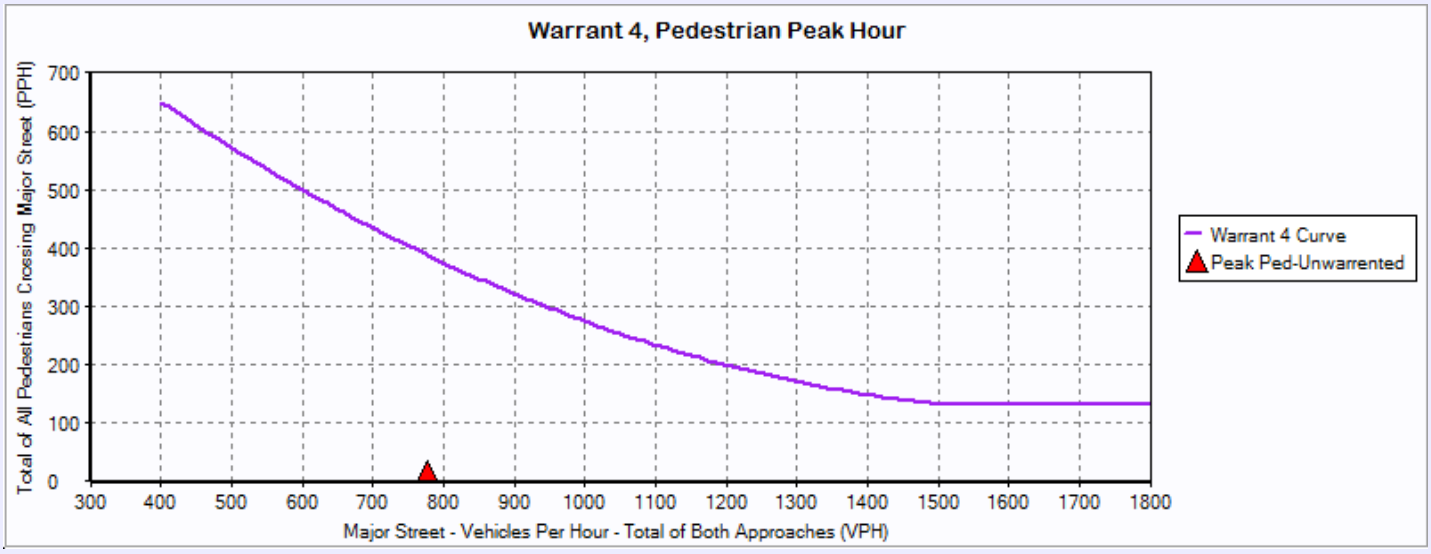
	Major Street	Minor Street
Street Name	Stange Rd	Aspen Rd
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

WARRANT 4 MET ? **No**

Details

Pedestrian Four Hour Volume Warrant Met?	No		
Pedestrian Peak Hour Warrant Met?	No	Notes	0 Hours met (4 required)
Speed Limit or 85th Percentile Speed on Major Street > 35mph, or Intersection lies within an Isolated Community with Population < 10,000?	No		





Warrant 5: School Crossing

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB

WARRANT 5 MET? **No**

Details:

Time Period Interval for Students Crossing (min)	0
Number of Students Crossing in Time Period	0
Number of Adequate Gaps in Time Period	0
Other Remedial Measures Attempted?	No
Adjacent Signal on NB approach?	No
Distance to signal on NB Approach (ft)	-
Adjacent Signal on SB approach?	No
Distance to signal on SB Approach (ft)	-
Will New Signal Restrict Progressive Traffic?	No

Warrant 6: Coordinated Signal System

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB

WARRANT 6 MET? **No**

Details:

Approach Direction & Name	Acceptable Platooning?	Adjacent Coordinating Signal?	Adjacent Intersection Distance
SB Approach (Stange Rd)	Yes	No	N/A
NB Approach (Stange Rd)	Yes	No	N/A
WB Approach (Aspen Rd)	Yes	No	N/A
EB Approach (Aspen Rd)	Yes	No	N/A

Unacceptable Platooning? (At least one approach)	Distance to Closest Signal (Must be N/A or > 1000)
No	N/A

Warrant 7: Crash Experience

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB
Minor Street Direction	EB/WB

WARRANT 7 MET? **No**

Details:

Low Population?	No	Traffic Volume Condition Met?	No
Major Street Speed Limit	25		0 Hours Met (8 Required)
Major Street 85th-% tile Speed	30.00	Ped Volume Condition Met?	No
			0 Hours Met (8 Required)

Qualifying Crashes **0**

Adequate Alternative Trials? No

Hour	Traffic Volumes				Pedestrian Volumes			
	Major Street Vehicles	Minor Street Vehicles	80% Standard Met? A or B		Eastbound Ped Volumes		Westbound Ped Volumes	
			Condition A	Condition B	Peds	> 80?	Peds	> 80?
00:00 to 01:00	0	0	No	No	0	No	0	No
00:15 to 01:15	0	0	No	No	0	No	0	No
00:30 to 01:30	0	0	No	No	0	No	0	No
00:45 to 01:45	0	0	No	No	0	No	0	No
07:00 to 08:00	524	0	No	No	0	No	0	No
07:15 to 08:15	554	0	No	No	0	No	0	No
07:30 to 08:30	554	0	No	No	0	No	0	No
07:45 to 08:45	542	0	No	No	0	No	0	No

08:00 to 09:00	523	0	No	No	0	No	0	No
08:15 to 09:15	512	0	No	No	0	No	0	No
08:30 to 09:30	476	0	No	No	0	No	0	No
08:45 to 09:45	445	0	No	No	0	No	0	No
09:00 to 10:00	409	0	No	No	0	No	0	No
09:15 to 10:15	378	0	No	No	0	No	0	No
09:30 to 10:30	364	0	No	No	0	No	0	No
09:45 to 10:45	346	0	No	No	0	No	0	No
10:00 to 11:00	356	0	No	No	0	No	0	No
10:15 to 11:15	358	0	No	No	0	No	0	No
10:30 to 11:30	395	0	No	No	0	No	0	No
10:45 to 11:45	454	0	No	No	0	No	0	No
11:00 to 12:00	491	0	No	No	0	No	0	No
11:15 to 12:15	533	0	No	No	0	No	0	No
11:30 to 12:30	520	0	No	No	0	No	0	No
11:45 to 12:45	504	0	No	No	0	No	0	No
12:00 to 13:00	502	0	No	No	0	No	0	No
12:15 to 13:15	493	0	No	No	0	No	0	No

12:30 to 13:30	493	0	No	No	0	No	0	No
12:45 to 13:45	459	0	No	No	0	No	0	No
13:00 to 14:00	431	0	No	No	0	No	0	No
13:15 to 14:15	405	0	No	No	0	No	0	No
13:30 to 14:30	383	0	No	No	0	No	0	No
13:45 to 14:45	398	0	No	No	0	No	0	No
14:00 to 15:00	387	0	No	No	0	No	0	No
14:15 to 15:15	409	0	No	No	0	No	0	No
14:30 to 15:30	432	0	No	No	0	No	0	No
14:45 to 15:45	475	0	No	No	0	No	0	No
15:00 to 16:00	524	0	No	No	0	No	0	No
15:15 to 16:15	595	0	No	No	0	No	0	No
15:30 to 16:30	627	0	No	No	0	No	0	No
15:45 to 16:45	624	0	No	No	0	No	0	No
16:00 to 17:00	655	0	No	No	0	No	0	No
16:15 to 17:15	673	0	No	No	0	No	0	No
16:30 to 17:30	756	0	No	No	0	No	0	No
16:45 to 17:45	802	0	No	No	0	No	0	No

17:00 to 18:00	810	0	No	No	0	No	0	No
17:15 to 18:15	777	0	No	No	0	No	0	No
17:30 to 18:30	698	0	No	No	0	No	0	No
17:45 to 18:45	642	0	No	No	0	No	0	No
18:00 to 19:00	610	0	No	No	0	No	0	No
18:15 to 19:15	572	0	No	No	0	No	0	No
18:30 to 19:30	560	0	No	No	0	No	0	No
18:45 to 19:45	527	0	No	No	0	No	0	No
19:00 to 20:00	474	0	No	No	0	No	0	No
19:15 to 20:15	409	0	No	No	0	No	0	No
19:30 to 20:30	346	0	No	No	0	No	0	No
19:45 to 20:45	310	0	No	No	0	No	0	No
20:00 to 21:00	270	0	No	No	0	No	0	No
20:15 to 21:15	276	0	No	No	0	No	0	No
20:30 to 21:30	258	0	No	No	0	No	0	No
20:45 to 21:45	222	0	No	No	0	No	0	No
21:00 to 22:00	202	0	No	No	0	No	0	No
21:15 to 22:15	162	0	No	No	0	No	0	No

21:30 to 22:30	136	0	No	No	0	No	0	No
21:45 to 22:45	127	0	No	No	0	No	0	No
22:00 to 23:00	112	0	No	No	0	No	0	No
22:15 to 23:15	102	0	No	No	0	No	0	No
22:30 to 23:30	95	0	No	No	0	No	0	No
22:45 to 23:45	77	0	No	No	0	No	0	No
23:00 to 00:00	68	0	No	No	0	No	0	No
23:15 to 00:15	47	0	No	No	0	No	0	No
23:30 to 00:30	25	0	No	No	0	No	0	No
23:45 to 00:45	13	0	No	No	0	No	0	No

Warrant 8: Roadway Network

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB
Minor Street Direction	EB/WB

WARRANT 8 MET? (A or B) No

Details:

Growth Rates % (per year)

	NB	SB	EB	WB
L	0.00	0.00	0.00	0.00
T	0.00	0.00	0.00	0.00
R	0.00	0.00	0.00	0.00

Condition A, Total Entering Volume

Existing Peak Hour	903
Years	0.00
Future Peak Hour	903
Warrant 1 in 5 Years?	No
Warrant 2 in 5 Years?	No
Warrant 3 in 5 Years?	No

Condition B, Non-normal Business Day

	Existing	Future
Highest Hour	0	0
Second Highest Hour	0	0
Third Highest Hour	0	0
Fourth Highest Hour	0	0
Fifth Highest Hour	0	0
Yearly Growth Rate (%)	0.00	
Years	0.00	

Condition A Met? No **Condition B Met?** No

Warrant 9: Intersection Near a Grade Crossing

6: Stange Rd & Aspen Rd

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Aspen Rd
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

WARRANT 9 MET ? **No**

Details

Note **No approach with a railroad grade crossing**

Minor street approach having a grade crossing

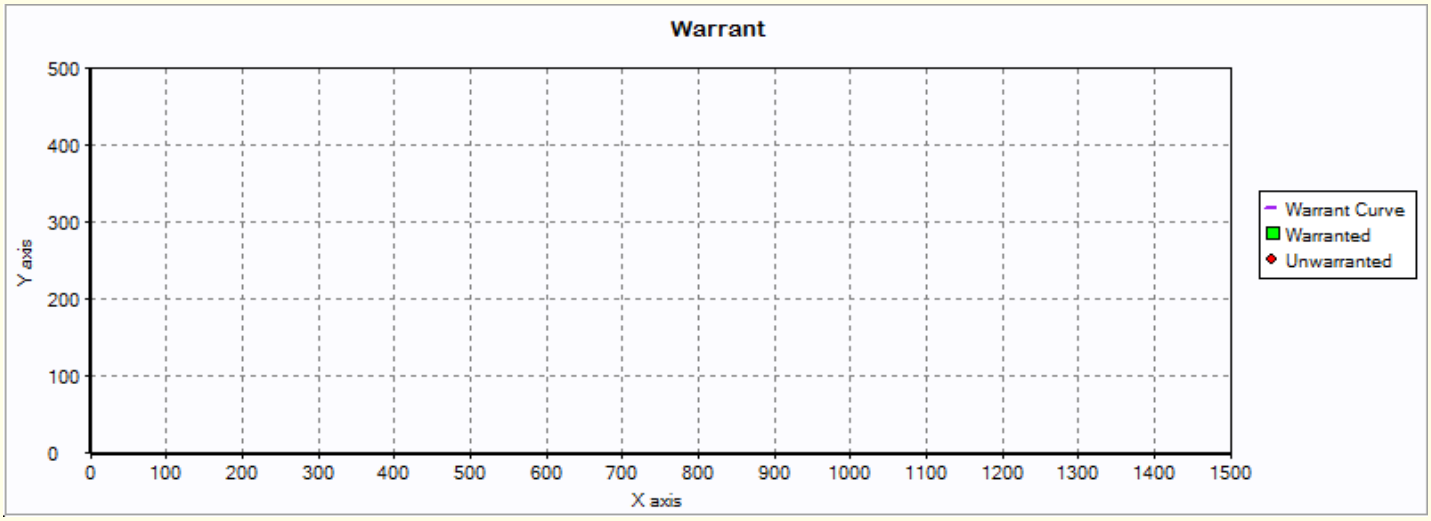
Distance from the center of the track to the stop or yield line — Interpolated

Number of occurences of rail traffic per day — Adjustment Factor

Percentage of high-occupancy buses crossing the track (%) — Adjustment Factor

Percentage of tractor-trailer trucks crossing the track (%) — Adjustment Factor

The rail traffic arrival times are uknown, the highest traffic volume hour of the day is used



Hour	Major Street Total of Both Approaches (vph)	Minor Street Adjusted Volume Crossing Tracks (vph)

All-Way Stop Control Warrant: Multiway Stop Applications

6: Stange Rd & Aspen Rd

Intersection Information

Major Street Name:	Stange Rd
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

AWSC WARRANT MET? **No**

Details:

Condition A Met?	No	Qualifying Crashes	0
Condition B Met?	No	Major Street 85th %-tile Speed	30.00
Condition C Met?	No	Major Street Speed Limit	25

Notes: 0 Hours Met (8 Required)

Hour	Traffic Volumes		Bicycle Volumes		Ped Volumes		Condition C		
	Major Street	Minor Street	North Bound Bicycle Volumes	East Bound Bicycle Volumes	North Bound Ped Volumes	East Bound Ped Volumes	Major Street	Minor Street	
							Veh Vol > 210	Avg(Veh + Ped + Bicycle) > 200	Delay > 30

Warrants Summary Report

5: Stange Rd & Northridge Pkwy

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Northridge Pkwy
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

Warrant	Met?	Notes
Warrant 1, Eight-Hour Vehicular Volume		
	No	
Condition A or B Met	No	1 Hours met (8 required)
Condition A and B M	No	0 Hours met (8 required)
Warrant 2, Four-Hour Vehicular Volume		
	No	0 Hours met (4 required)
Warrant 3, Peak Hour		
	No	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 4, Pedestrian Volume		
	No	
Condition A Met?	No	0 Hours met (4 required)
Condition B Met?	No	0 Hours met (1 required)
Warrant 5, School Crossing		
	No	

Warrant 6, Coordinated Signal System

No

Warrant 7, Crash Experience

No

Traffic Volume Condi	No	2 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)

Warrant 8, Roadway Network

No

Warrant 9, Intersection Near a Grade Crossing

No

AWSC Warrant, Multiway Stop Application

No

Condition A Met?	No
Condition B Met?	No
Condition C Met?	No

Warrant 1: Eight-hour Vehicular Volume

5: Stange Rd & Northridge Pkwy

Intersection Information

Major Street Name:	Stange Rd
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

WARRANT 1 MET? **No**

Details:

Condition A Met?	No	1 Hours met (8 required)
Condition B Met?	No	0 Hours met (8 required)

Hour	Major Street Vehicles (Total of Both Approaches)		High Volume Minor Approach Vehicles		100% Standard Met? Cond. A OR Cond. B		80% Standard Met? Cond. A AND Cond. B	
					Condition A 100% Column	Condition B 100% Column	Condition A 80% Column	Condition B 80% Column
00:00 to 01:00	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:15 to 01:15	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:30 to 01:30	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
00:45 to 01:45	**0**		**0**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

07:00 to 08:00	577		67		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

07:15 to 08:15	609		65		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

07:30 to 08:30	593		62		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

07:45 to 08:45	570		62		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

08:00 to 09:00	555		63		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

08:15 to 09:15	536		69		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

08:30 to 09:30	503		80		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

08:45 to 09:45	485		78		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

09:00 to 10:00	430		72		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

09:15 to 10:15	418		75		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

09:30 to 10:30	408		66		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

09:45 to 10:45	404		70		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

10:00 to 11:00	410		77		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

10:15 to 11:15	421		79		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

10:30 to 11:30	472		81		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

10:45 to 11:45	496		72		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

11:00 to 12:00	521		74		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

11:15 to 12:15	553		84		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

11:30 to 12:30	539		87		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

11:45 to 12:45	594		99		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

12:00 to 13:00	609		104		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

12:15 to 13:15	602		105		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

12:30 to 13:30	582		100		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

12:45 to 13:45	537		109		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

13:00 to 14:00	509		98		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

13:15 to 14:15	493		88		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

13:30 to 14:30	505		90		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

13:45 to 14:45	492		76		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

14:00 to 15:00	**478**		**74**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

14:15 to 15:15	**466**		**74**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

14:30 to 15:30	**460**		**73**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

14:45 to 15:45	**478**		**78**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

15:00 to 16:00	**536**		**79**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

15:15 to 16:15	**583**		**72**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

15:30 to 16:30	**633**		**76**		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

15:45 to 16:45	**697**		**72**		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				
16:00 to 17:00	**758**		**75**		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				
16:15 to 17:15	**811**		**87**		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				
16:30 to 17:30	**882**		**90**		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				
16:45 to 17:45	**902**		**86**		No	Yes*	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	Yes	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				
17:00 to 18:00	**871**		**83**		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				
17:15 to 18:15	**829**		**75**		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				

17:30 to 18:30	759		77		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				

17:45 to 18:45	723		87		No	No	No	Yes
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	Yes	**Volume >= 80% column (60)?**	Yes				

18:00 to 19:00	666		93		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

18:15 to 19:15	647		98		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

18:30 to 19:30	608		92		No	No	No	No
Condition A	Volume >= 100% column (600)?	Yes	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

18:45 to 19:45	553		86		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

19:00 to 20:00	529		86		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

19:15 to 20:15	**480**		**90**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	Yes	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

19:30 to 20:30	**443**		**104**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

19:45 to 20:45	**424**		**95**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

20:00 to 21:00	**391**		**93**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

20:15 to 21:15	**354**		**81**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	Yes				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

20:30 to 21:30	**314**		**66**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

20:45 to 21:45	**271**		**68**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				

21:00 to 22:00	**233**		**62**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				
21:15 to 22:15	**211**		**60**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	Yes				
21:30 to 22:30	**189**		**54**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
21:45 to 22:45	**157**		**45**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
22:00 to 23:00	**143**		**30**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
22:15 to 23:15	**124**		**23**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				
22:30 to 23:30	**104**		**11**		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

22:45 to 23:45	80		8		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:00 to 00:00	66		6		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:15 to 00:15	41		2		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:30 to 00:30	27		1		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

23:45 to 00:45	14		1		No	No	No	No
Condition A	Volume >= 100% column (600)?	No	Volume >= 100% column (900)?	No				
	Volume >= 80% column (480)?	No	Volume >= 80% column (720)?	No				
Condition B	**Volume >= 100% column (900)?**	No	**Volume >= 100% column (75)?**	No				
	Volume >= 80% column (720)?	No	**Volume >= 80% column (60)?**	No				

Warrant 2: Four-hour Vehicular Volume

5: Stange Rd & Northridge Pkwy

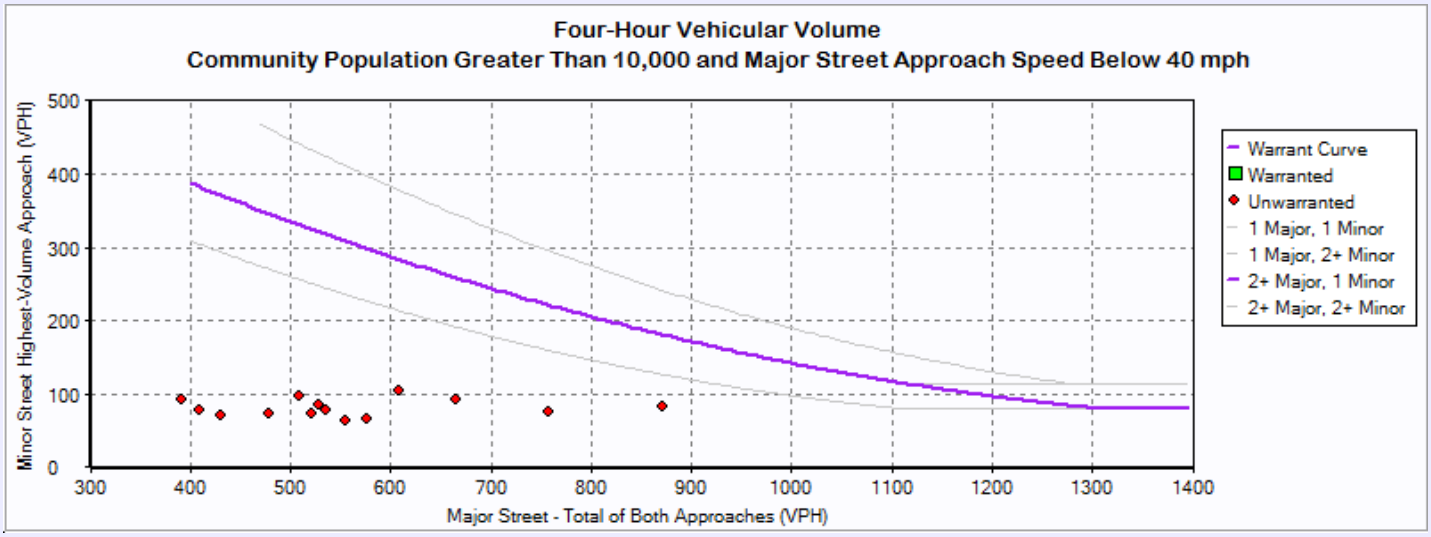
Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Northridge Pkwy
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

Warrant 2 Met? **No**

Details:

Notes	0 Hours met (4 required)
Low population	No



Hourly Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
00:00:00 - 01:00:00	0.00	0.00
01:00:00 - 02:00:00	0.00	0.00
02:00:00 - 03:00:00	0.00	0.00
03:00:00 - 04:00:00	0.00	0.00
04:00:00 - 05:00:00	0.00	0.00
05:00:00 - 06:00:00	0.00	0.00
06:00:00 - 07:00:00	0.00	0.00
07:00:00 - 08:00:00	577.00	67.00
08:00:00 - 09:00:00	555.00	63.00
09:00:00 - 10:00:00	430.00	72.00
10:00:00 - 11:00:00	410.00	77.00
11:00:00 - 12:00:00	521.00	74.00
12:00:00 - 13:00:00	609.00	104.00
13:00:00 - 14:00:00	509.00	98.00
14:00:00 - 15:00:00	478.00	74.00
15:00:00 - 16:00:00	536.00	79.00
16:00:00 - 17:00:00	758.00	75.00
17:00:00 - 18:00:00	871.00	83.00
18:00:00 - 19:00:00	666.00	93.00
19:00:00 - 20:00:00	529.00	86.00
20:00:00 - 21:00:00	391.00	93.00
21:00:00 - 22:00:00	233.00	62.00
22:00:00 - 23:00:00	143.00	30.00
23:00:00 - 00:00:00	66.00	6.00

Warranted Volumes

Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)

Warrant 3: Peak Hour

5: Stange Rd & Northridge Pkwy

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Northridge Pkwy
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

Warrant 3 Met? **No**

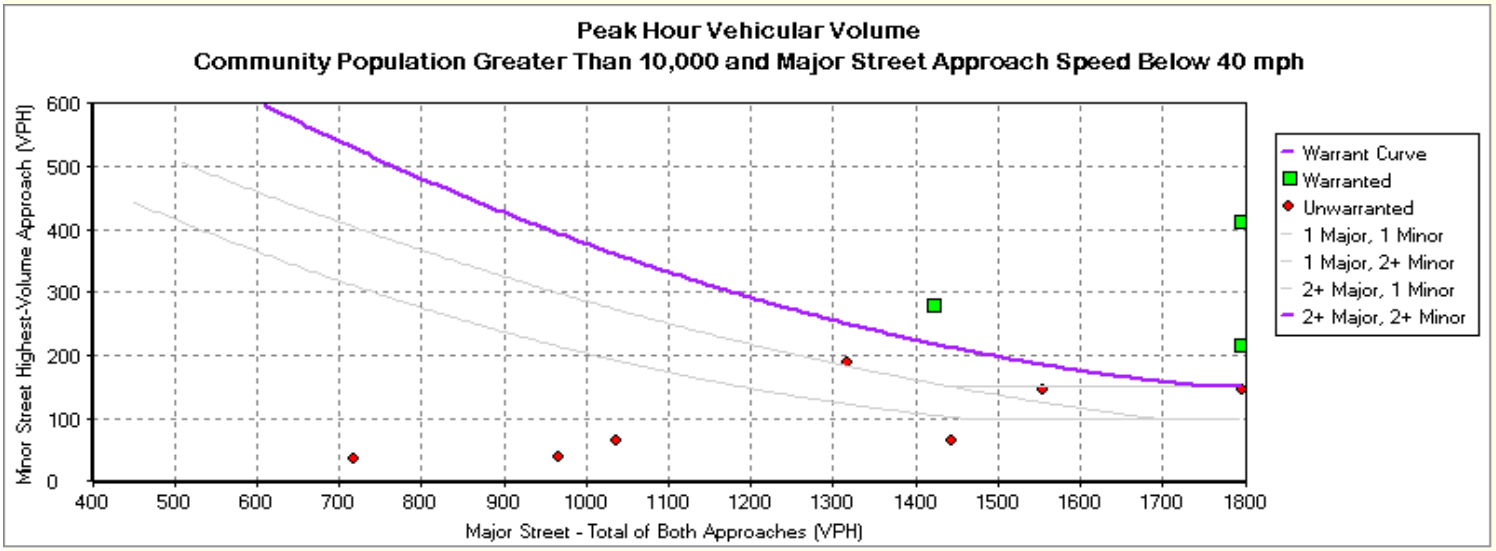
Details

Low Population? No

Condition A Met No — **Condition B Met** No

Notes 0 Hours met (1 required) — **Notes** 0 Hours met (1 required)

Minor Approach Time Delay Condition Met?	Met
Minor Approach Volume Condition Met?	Met
Total Entering Intersection Volume Condition Met?	Not Met



Hour	Major Street Total All Approaches (vph)	Minor Street Highest Volume Approach (vph)
0:00	0	0
7:00	577	67
8:00	555	63
9:00	430	72
10:00	410	77
11:00	521	74
12:00	609	104
13:00	509	98
14:00	478	74
15:00	536	79
16:00	758	75
17:00	871	83
18:00	666	93
19:00	529	86
20:00	391	93
21:00	233	62
22:00	143	30
23:00	66	6

Warrant 4: Pedestrian Volume

5: Stange Rd & Northridge Pkwy

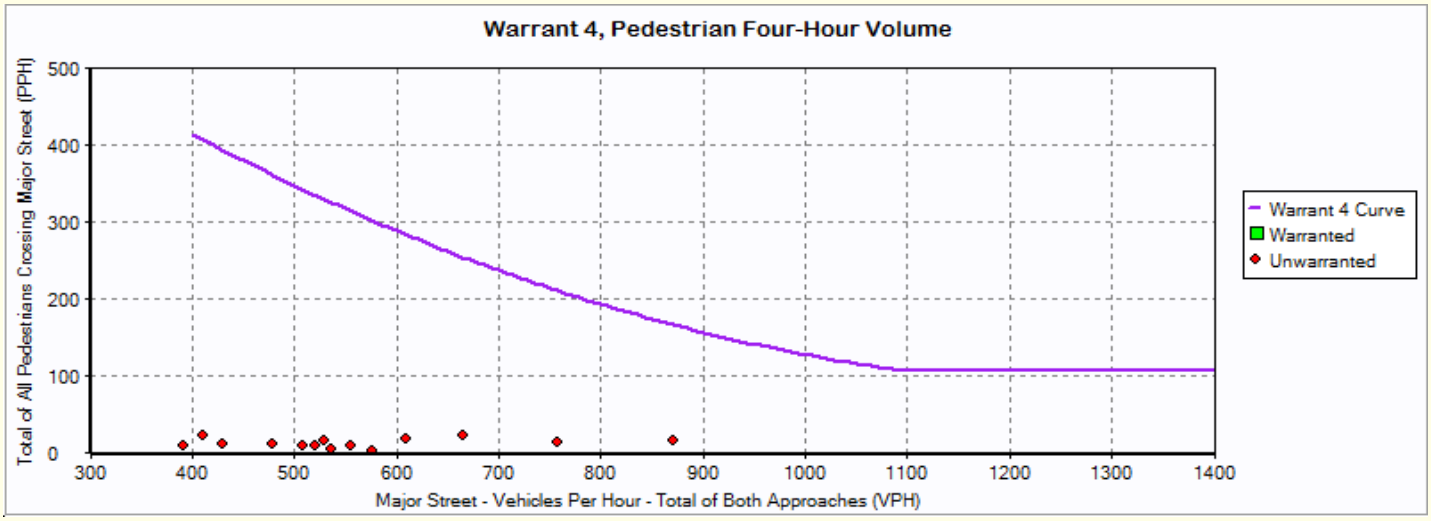
Intersection Information

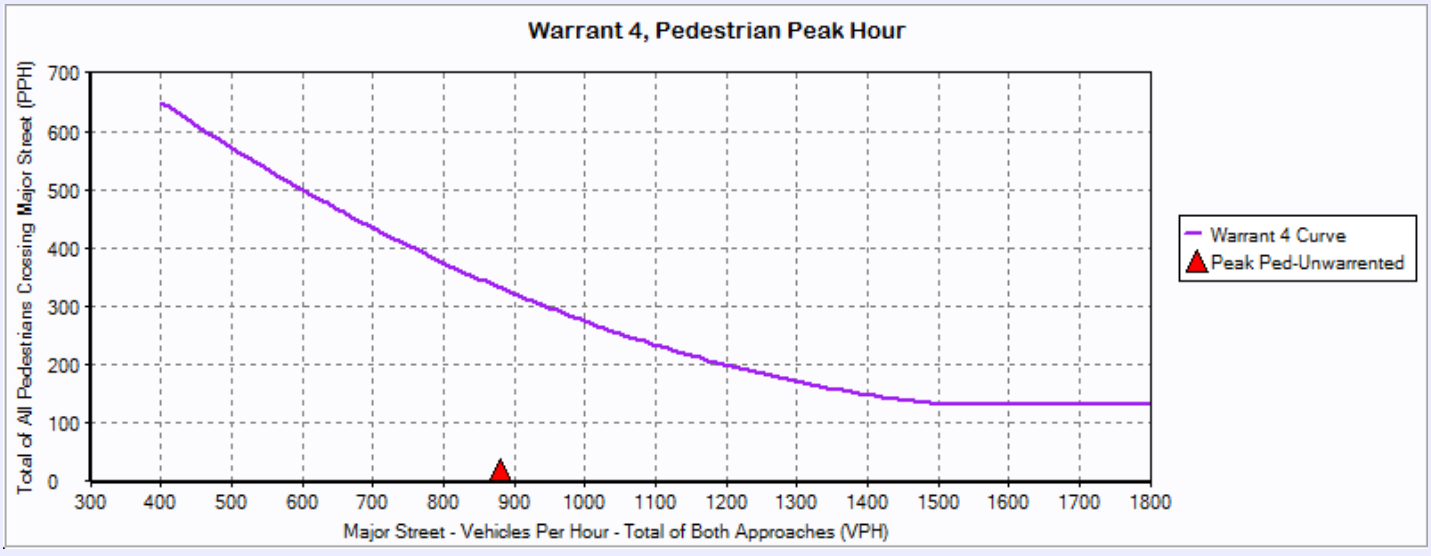
	Major Street	Minor Street
Street Name	Stange Rd	Northridge Pkwy
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

WARRANT 4 MET ? **No**

Details

Pedestrian Four Hour Volume Warrant Met?	No		
Pedestrian Peak Hour Warrant Met?	No	Notes	0 Hours met (4 required)
Speed Limit or 85th Percentile Speed on Major Street > 35mph, or Intersection lies within an Isolated Community with Population < 10,000?	No		





Warrant 5: School Crossing

5: Stange Rd & Northridge

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB

WARRANT 5 MET? **No**

Details:

Time Period Interval for Students Crossing (min)	0
Number of Students Crossing in Time Period	0
Number of Adequate Gaps in Time Period	0
Other Remedial Measures Attempted?	No
Adjacent Signal on NB approach?	No
Distance to signal on NB Approach (ft)	-
Adjacent Signal on SB approach?	No
Distance to signal on SB Approach (ft)	-
Will New Signal Restrict Progressive Traffic?	No

Warrant 6: Coordinated Signal System

5: Stange Rd & Northridge Pkwy

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB

WARRANT 6 MET? No

Details:

Approach Direction & Name	Acceptable Platooning?	Adjacent Coordinating Signal?	Adjacent Intersection Distance
SB Approach (Stange Rd)	Yes	No	N/A
NB Approach (Stange Rd)	Yes	No	N/A
WB Approach (Northridge Pkwy)	Yes	No	N/A
EB Approach (Northridge Pkwy)	Yes	No	N/A

Unacceptable Platooning? (At least one approach)	Distance to Closest Signal (Must be N/A or > 1000)
No	N/A

Warrant 7: Crash Experience

5: Stange Rd & Northridge Pkwy

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB
Minor Street Direction	EB/WB

WARRANT 7 MET? **No**

Details:

Low Population?	No	Traffic Volume Condition Met?	No
Major Street Speed Limit	25		2 Hours Met (8 Required)
Major Street 85th-% tile Speed	31.00	Ped Volume Condition Met?	No
			0 Hours Met (8 Required)

Qualifying Crashes **0**

Adequate Alternative Trials? No

Hour	Traffic Volumes				Pedestrian Volumes			
	Major Street Vehicles	Minor Street Vehicles	80% Standard Met? A or B		Eastbound Ped Volumes		Westbound Ped Volumes	
			Condition A	Condition B	Peds	> 80?	Peds	> 80?
00:00 to 01:00	0	0	No	No	0	No	0	No
00:15 to 01:15	0	0	No	No	0	No	0	No
00:30 to 01:30	0	0	No	No	0	No	0	No
00:45 to 01:45	0	0	No	No	0	No	0	No
07:00 to 08:00	577	0	No	No	0	No	0	No
07:15 to 08:15	609	0	No	No	0	No	0	No
07:30 to 08:30	593	0	No	No	0	No	0	No
07:45 to 08:45	570	0	No	No	0	No	0	No

08:00 to 09:00	555	0	No	No	0	No	0	No
08:15 to 09:15	536	0	No	No	0	No	0	No
08:30 to 09:30	503	0	No	No	0	No	0	No
08:45 to 09:45	485	0	No	No	0	No	0	No
09:00 to 10:00	430	0	No	No	0	No	0	No
09:15 to 10:15	418	0	No	No	0	No	0	No
09:30 to 10:30	408	0	No	No	0	No	0	No
09:45 to 10:45	404	0	No	No	0	No	0	No
10:00 to 11:00	410	0	No	No	0	No	0	No
10:15 to 11:15	421	0	No	No	0	No	0	No
10:30 to 11:30	472	0	No	No	0	No	0	No
10:45 to 11:45	496	0	No	No	0	No	0	No
11:00 to 12:00	521	0	No	No	0	No	0	No
11:15 to 12:15	553	0	No	No	0	No	0	No
11:30 to 12:30	539	0	No	No	0	No	0	No
11:45 to 12:45	594	0	No	No	0	No	0	No
12:00 to 13:00	609	0	No	No	0	No	0	No
12:15 to 13:15	602	0	No	No	0	No	0	No

12:30 to 13:30	582	0	No	No	0	No	0	No
12:45 to 13:45	537	0	No	No	0	No	0	No
13:00 to 14:00	509	0	No	No	0	No	0	No
13:15 to 14:15	493	0	No	No	0	No	0	No
13:30 to 14:30	505	0	No	No	0	No	0	No
13:45 to 14:45	492	0	No	No	0	No	0	No
14:00 to 15:00	478	0	No	No	0	No	0	No
14:15 to 15:15	466	0	No	No	0	No	0	No
14:30 to 15:30	460	0	No	No	0	No	0	No
14:45 to 15:45	478	0	No	No	0	No	0	No
15:00 to 16:00	536	0	No	No	0	No	0	No
15:15 to 16:15	583	0	No	No	0	No	0	No
15:30 to 16:30	633	0	No	No	0	No	0	No
15:45 to 16:45	697	0	No	No	0	No	0	No
16:00 to 17:00	758	0	No	No	0	No	0	No
16:15 to 17:15	811	0	No	No	0	No	0	No
16:30 to 17:30	882	0	No	No	0	No	0	No
16:45 to 17:45	902	0	No	No	0	No	0	No

17:00 to 18:00	871	0	No	No	0	No	0	No
17:15 to 18:15	829	0	No	No	0	No	0	No
17:30 to 18:30	759	0	No	No	0	No	0	No
17:45 to 18:45	723	0	No	No	0	No	0	No
18:00 to 19:00	666	0	No	No	0	No	0	No
18:15 to 19:15	647	0	No	No	0	No	0	No
18:30 to 19:30	608	0	No	No	0	No	0	No
18:45 to 19:45	553	0	No	No	0	No	0	No
19:00 to 20:00	529	0	No	No	0	No	0	No
19:15 to 20:15	480	0	No	No	0	No	0	No
19:30 to 20:30	443	0	No	No	0	No	0	No
19:45 to 20:45	424	0	No	No	0	No	0	No
20:00 to 21:00	391	0	No	No	0	No	0	No
20:15 to 21:15	354	0	No	No	0	No	0	No
20:30 to 21:30	314	0	No	No	0	No	0	No
20:45 to 21:45	271	0	No	No	0	No	0	No
21:00 to 22:00	233	0	No	No	0	No	0	No
21:15 to 22:15	211	0	No	No	0	No	0	No

21:30 to 22:30	189	0	No	No	0	No	0	No
21:45 to 22:45	157	0	No	No	0	No	0	No
22:00 to 23:00	143	0	No	No	0	No	0	No
22:15 to 23:15	124	0	No	No	0	No	0	No
22:30 to 23:30	104	0	No	No	0	No	0	No
22:45 to 23:45	80	0	No	No	0	No	0	No
23:00 to 00:00	66	0	No	No	0	No	0	No
23:15 to 00:15	41	0	No	No	0	No	0	No
23:30 to 00:30	27	0	No	No	0	No	0	No
23:45 to 00:45	14	0	No	No	0	No	0	No

Warrant 8: Roadway Network

5: Stange Rd & Northridge Pkwy

Intersection Information

Major Street Name	Stange Rd
Major Street Direction	NB/SB
Minor Street Direction	EB/WB

WARRANT 8 MET? (A or B) No

Details:

Growth Rates % (per year)

	NB	SB	EB	WB
L	0.00	0.00	0.00	0.00
T	0.00	0.00	0.00	0.00
R	0.00	0.00	0.00	0.00

Condition A, Total Entering Volume

Existing Peak Hour	1,053
Years	0.00
Future Peak Hour	1,053
Warrant 1 in 5 Years?	No
Warrant 2 in 5 Years?	No
Warrant 3 in 5 Years?	No

Condition B, Non-normal Business Day

	Existing	Future
Highest Hour	0	0
Second Highest Hour	0	0
Third Highest Hour	0	0
Fourth Highest Hour	0	0
Fifth Highest Hour	0	0
Yearly Growth Rate (%)	0.00	
Years	0.00	

Condition A Met? No **Condition B Met?** No

Warrant 9: Intersection Near a Grade Crossing

5: Stange Rd & Northridge Pkwy

Intersection Information

	Major Street	Minor Street
Street Name	Stange Rd	Northridge Pkwy
Direction	NB/SB	EB/WB
Number of Lanes	2	1
Approch Speed	25	25

WARRANT 9 MET ? **No**

Details

Note **No approach with a railroad grade crossing**

Minor street approach having a grade crossing

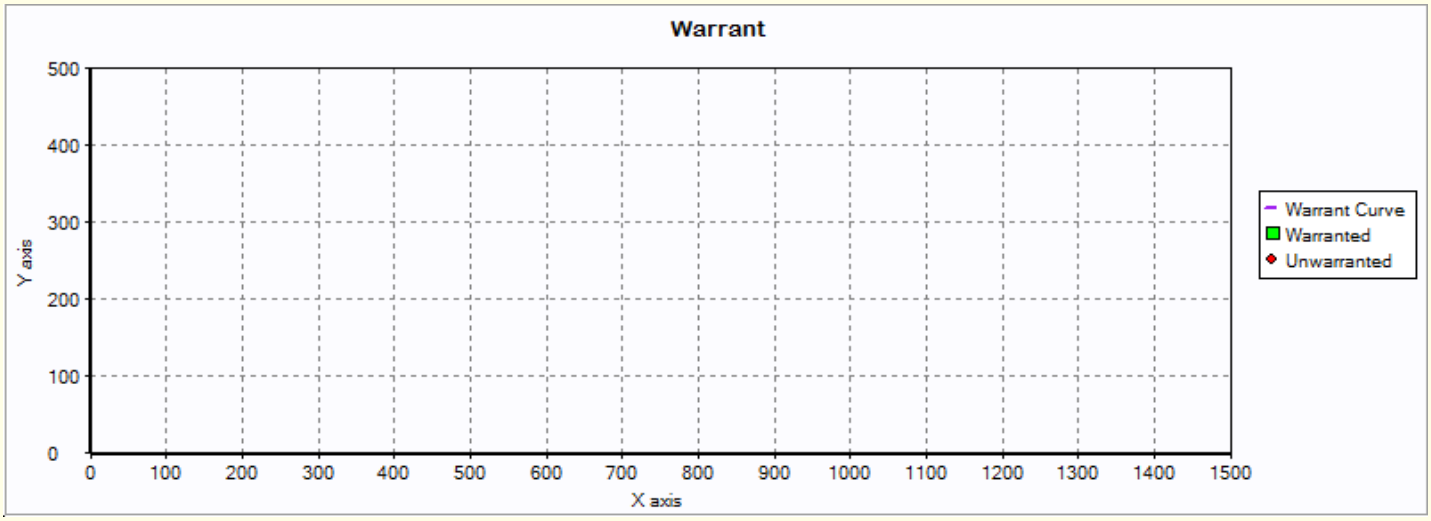
Distance from the center of the track to the stop or yield line — Interpolated

Number of occurences of rail traffic per day — Adjustment Factor

Percentage of high-occupancy buses crossing the track (%) — Adjustment Factor

Percentage of tractor-trailer trucks crossing the track (%) — Adjustment Factor

The rail traffic arrival times are uknown, the highest traffic volume hour of the day is used



Hour	Major Street Total of Both Approaches (vph)	Minor Street Adjusted Volume Crossing Tracks (vph)

All-Way Stop Control Warrant: Multiway Stop Applications

5: Stange Rd & Northridge Pkwy

Intersection Information

Major Street Name:	Stange Rd
Major Street Direction:	NB/SB
Minor Street Direction:	EB/WB

AWSC WARRANT MET? **No**

Details:

Condition A Met?	No	Qualifying Crashes	0
Condition B Met?	No	Major Street 85th %-tile Speed	31.00
Condition C Met?	No	Major Street Speed Limit	25

Notes: 3 Hours Met (8 Required)

Hour	Traffic Volumes		Bicycle Volumes		Ped Volumes		Condition C		
	Major Street	Minor Street	North Bound Bicycle Volumes	East Bound Bicycle Volumes	North Bound Ped Volumes	East Bound Ped Volumes	Major Street: Veh Vol > 210	Minor Street: Avg(Veh + Ped + Bicycle) > 200	Minor Street: Delay > 30
12:00 to 13:00	609	156	0	0	0	0	False	No	Yes
16:45 to 17:45	902	151	0	0	0	0	False	No	Yes
18:00 to 19:00	666	147	0	0	0	0	False	No	Yes