Item #31

Staff Report

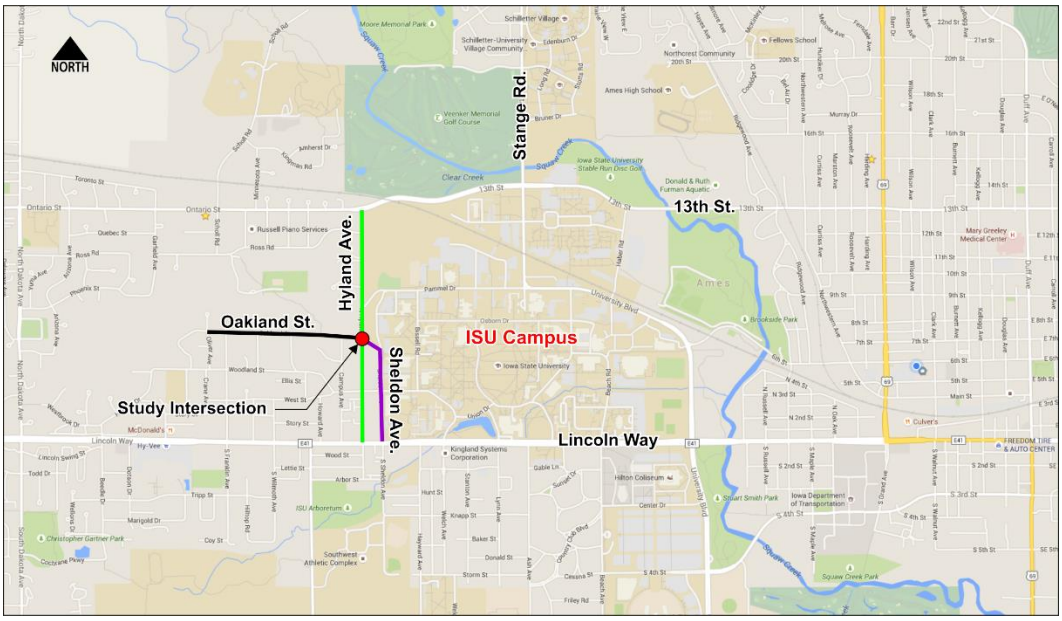
Hyland Avenue and Oakland Street/Sheldon Avenue Crosswalk Traffic Study

August 25, 2015

Background:

The City Council referred a letter from Sue Ravenscroft regarding the pedestrian safety of the east-west crosswalk on the south side of Hyland Avenue and Oakland Street (west)/Sheldon Avenue (east). In response, staff conducted a traffic study including an analysis of speed, volumes, and safety. The following is a summary of the findings of the study and recommendations.

The study intersection is located along the western boundary (Hyland Avenue) of the main Iowa State University campus. Hyland Avenue is classified as a minor arterial, Sheldon Avenue is a collector street, and Oakland Street is a local residential street. Similar to the intersection of Hyland Avenue and West Street, this intersection is used as one of the main walking and bicycling routes into the ISU campus from west Ames.



Speed on Hyland Avenue:

The operational speed of a roadway is analyzed by comparing the "Prevailing Speed" versus that of the Posted Speed Limit. The Prevailing Speed is a combination of the 85th Percentile Speed and the top speed of the Pace. The 85th Percentile Speed is defined as the speed at which 85 percent of the motoring traffic is traveling at or slower. The

Pace is defined as the 10 MPH speed range that contains the highest volume of traffic. Under ideal conditions the Prevailing Speed should be +/- 5 MPH from that of the Posted Speed Limit. It should be noted that the speed limit along Hyland Avenue changes from 25 MPH on the south side of the intersection to 30 MPH north of the intersection.

Northbound was found to have a prevailing speed of 35 MPH, an 85th Percentile speed of 34 MPH, and a Pace from 26 MPH to 35 MPH (see figure 1). This exceeds the ideal of the Prevailing Speed being +/- 5 MPH from that of the Posted Speed Limit. Northbound traffic approaches the intersection of Oakland/Sheldon coming over and down a hill starting approximately at the property of 426 N. Hyland Avenue. This equates to an available sight distance of around 400 feet in advance of the crosswalk. Meaning, under normal breaking conditions a vehicle would have to be traveling faster than 43 MPH before they would be unable to stop in time.

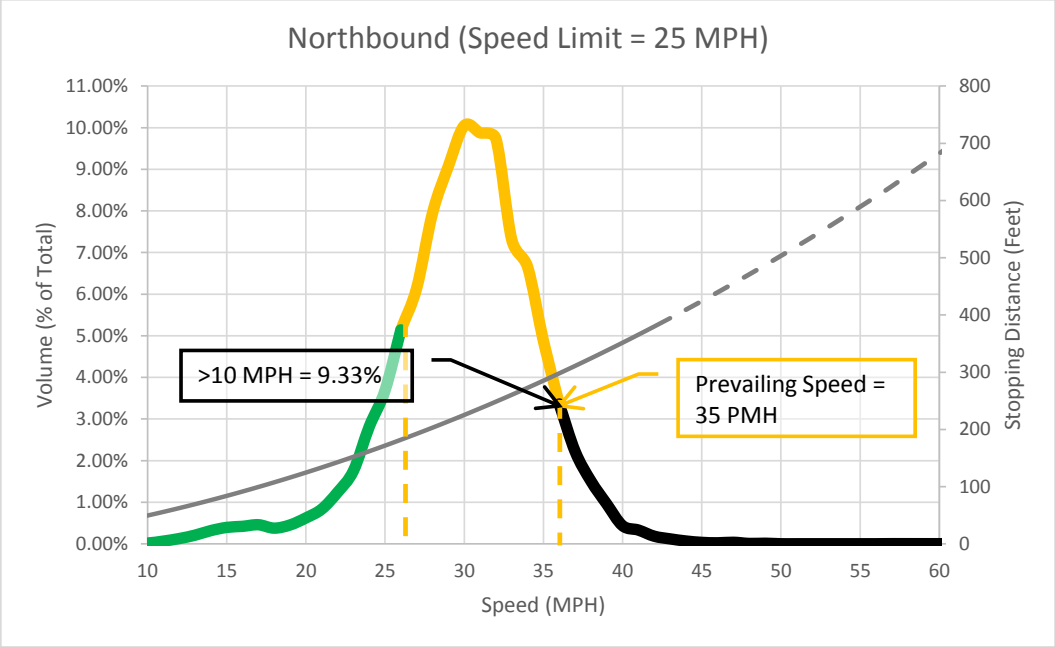


Figure 1

The most concerning issue with northbound traffic is related to the percent of motorists traveling greater than 10 MPH over the posted speed limit. This metric is used during an evaluation of a roadway for traffic calming measures to help slow traffic. Typically, if the percent of motorists traveling 10 MPH over the speed limit is around 5% (or higher) of the distribution, it would be recommended to install some type of physical improvement proportionate to the severity of the speeding observed (speed hump, curb extensions, etc.). However, the challenge exists that many traffic calming methods are not appropriate on higher volume roads such as the case of an arterial streets.

Southbound was found to have a Prevailing Speed of 36 MPH, an 85th Percentile speed of 36 MPH, and a Pace from 27 MPH to 36 MPH (see figure 2). Traffic traveling from the north can see the crosswalk at Oakland/Sheldon well in advance and therefore stopping sight distance is not a significant factor in this direction. Southbound also sees

a much less severe level of speeding as is was found to only have 3.12% traveling greater than 10 MPH over the speed limit.

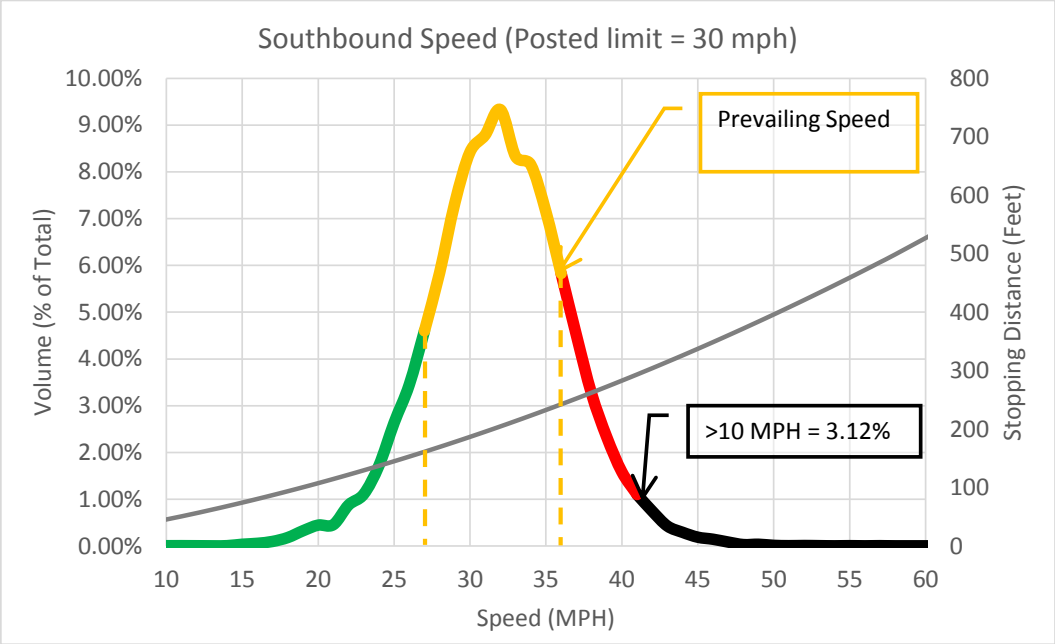


Figure 2

Traffic Volumes - All-Way Stop Evaluation:

At request of the neighborhood, staff evaluated the traffic volumes at the intersection to see if they meet the minimum thresholds to warrant stopping traffic traveling north-south on Hyland Avenue. Currently the intersection of Hyland and Oakland/Sheldon is a two-way stop, stopping east-west traffic. The criteria for changing the intersection to an All-Way Stop condition are found under Chapter 2B of the Manual on Uniform Traffic Control Devices (MUTCD). It states that in order to warrant an All-Way Stop, the combined traffic volumes of the main street (Hyland Avenue) must be 300 vehicles/hour or greater for eight consecutive hours, and at the same time the volumes (including vehicles, bikes, and pedestrians) on the side street (Oakland/Sheldon) must be at least 200 vehicles/hour.

Figure 3 below shows the data collected, which indicates that the All-Way Stop warrant thresholds were not met for any one hour period, let alone for eight consecutive hours.

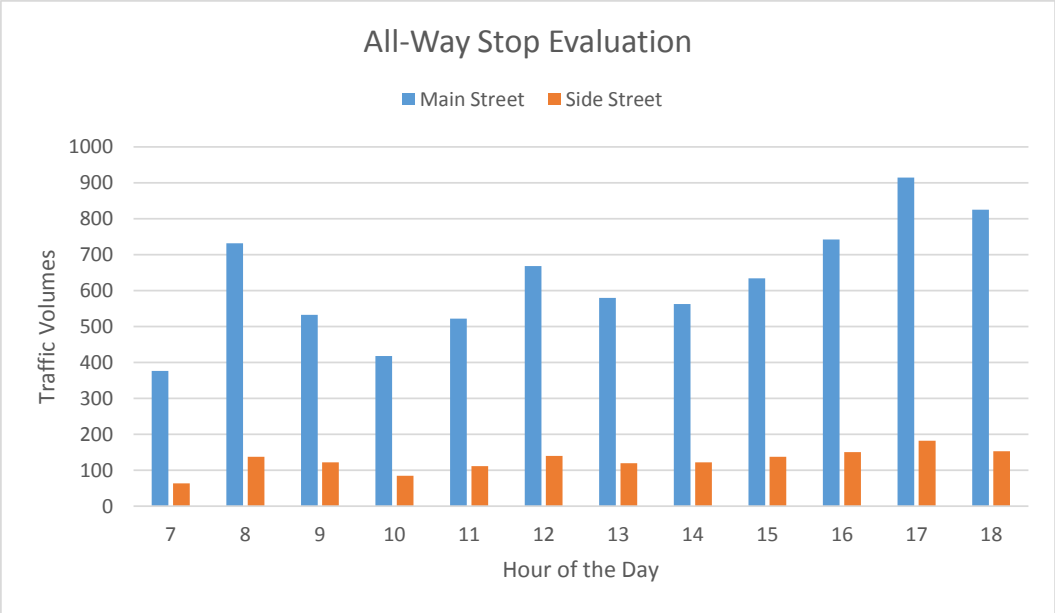


Figure 3

The volume data however does reinforced the fact that this intersection is heavily used as a pedestrian and bicycle connection to the University. Figure 4 shows that the number of bikes and pedestrians using the crosswalk across Hyland Avenue can get as high as approximately 80 per hour during the peak hour.

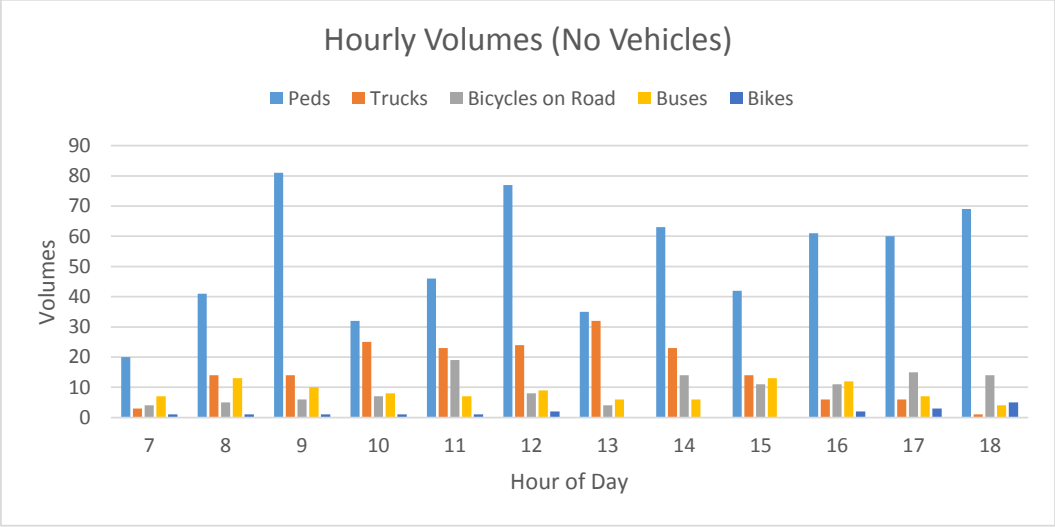


Figure 4

Safety Evaluation of Crash Data:

Staff looked at the most current 10 years of crashes data (2004-2014) for the intersection of Hyland Avenue and Oakland/Sheldon. It was found to have seven (7) crashes in that 10-year period. There were two minor injury crashes (the rest were Property Damage Only crashes), one in 2007 and the other in was in 2009. The 2007 crash involved a southbound vehicle that was turning left from Hyland onto Sheldon in the dark evening hours of November. The driver hit a pedestrian that was in the street at

low speed causing minor injuries to the pedestrian. The 2009 crash only involved the motorist whose vision was obstructed hitting a roadside object causing minor injury to the driver.

Staff Comments and Recommendations:

The evaluation of the data shows that historically there are a very low number of accidents at the intersection of Hyland Avenue and Oakland/Sheldon, especially those involving a pedestrian or bicyclist. However, the data also indicated a concerning amount of motorists exceeding the posted speed limit by greater than 10 MPH in the northbound direction, which at 9% was approximately three times higher than observed on typical streets within Ames.

Staff spoke with Sue Ravenscroft during this study regarding her and other neighborhood member's experiences when crossing Hyland Avenue. Many of them involved distracted drivers who had "close calls" with pedestrians walking to and from campus, which would not have been captured in the crash data. Generally, it appears that vehicles coming over the hill headed northbound are not aware of the pedestrian crossing even though the crosswalk has been painted with high-visibility pavement markings and has pedestrian warning signs in place.

It was suggested during this study that an All-Way Stop be used to mitigate the issues between motorist and pedestrians at the intersection. However, this report has shown that the minimum criteria has not been met, nor is close enough for staff to make a recommendation at this time to install additional Stop Signs. It should be noted that if Stop Signs are installed without meeting the minimums it is likely to frustrate users and produce increasing disrespect of the signs, thereby losing its intended purpose of providing enhanced safety.

It is apparent throughout this study that the greatest area for improvement is in the awareness of the pedestrian using the crosswalk. A recent treatment that appears to provide a significant improvement to pedestrian awareness along arterial streets is the Rectangular Rapid Flashing Beacon (RRFB). This is a push-button activated warning device that uses very bright flashing yellow LEDs to warning motorists that a pedestrian is actively using the crosswalk. This is the same treatment that is being used to help students cross 13th Street to an overflow parking area on the north side of Frederiksen Court Apartments. This is another example of an intersection that was in need on pedestrian enhancements on the edges of ISU campus.

The cost for a RRFB is approximately $10,000 (including all time and materials). City Council could choose to direct staff purchase and install a RRFB for the east-west crosswalk at Hyland Avenue and Oakland/Sheldon. The $10,000 could come from FY 2015-16 Accessibility Enhancement Program. Staff is currently soliciting input regarding possible projects for this first-time program. With direction from the Council, the RRFB for this location would be the first project financed from this new program.

It is the opinion of staff that this would be a great step to improve safety in this area. Staff is also working together with ISU on an ongoing planning effort to improve pedestrian/bicycling connections at the interfaces of Ames and ISU Campus. The RRFB is anticipated to be one of many strategies implemented.