ITEM # 28
DATE 11-20-07

COUNCIL ACTION FORM

SUBJECT: TRAFFIC ANALYSIS FOR MINNESOTA AVENUE SCHOOL CROSSING

BACKGROUND:

This analysis is part of an ongoing citywide effort between the Ames Community School District, the Ames Police Department, and Public Works to review crossing safety for our school-aged children. It is the intent of staff to have continuous and open communications with administrators from all of the Ames elementary and middle school locations in order to enhance the walk-ability of our Safe Routes to School.

At the July 10, 2007, City Council Meeting, staff presented a report regarding potential pedestrian treatments that could be utilized to enhance safety for those students and residents crossing Ontario Street at Minnesota Avenue. As a result, City Council directed staff to install pavement markings, advanced warning signs, and sidewalk along the east side of Minnesota Avenue prior to the beginning the school year. Staff was also directed to conduct a study to determine whether or not a signalized pedestrian crossing is warranted at this location. During the time this study is conducted, the City of Ames Police Department has staffed this crossing with a temporary crossing guard.

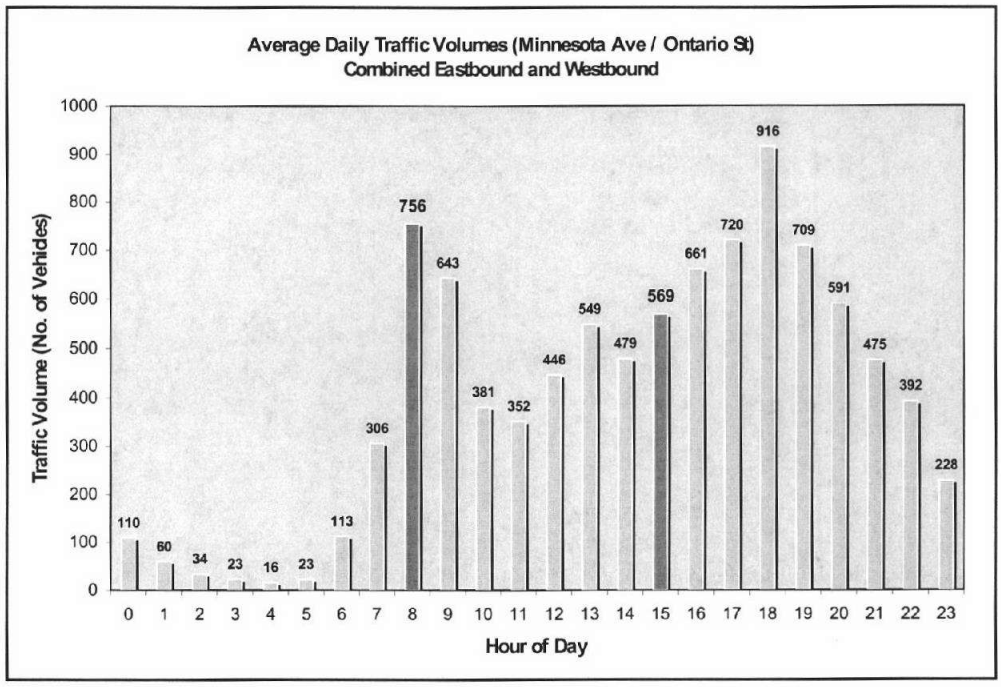
Staff indicated during the July 10, 2007, meeting that a study must be conducted while school is in session in order to accurately assess the nature of combined traffic patterns related to the Ames Community School District, Iowa State University (ISU), and the neighborhood. Therefore, 24-hour data was collected during a representative week in September 2007. The following will summarize the findings of this study and the results of the appropriate traffic signal warrant analysis.

The criterion for crossing guards, adopted by City Council on December 20, 1994, has been used to analyze the Minnesota Avenue crossing is as follows:

1) Vehicular volumes in excess of 500 vehicles per hour (vph)
2) Speed limit of 30 mph or greater on one of two intersecting streets
3) Accident history
4) Minimum number of ten (10) children during both morning and afternoon crossing periods
5) Traffic Signal Warrants 4 & 5, "Pedestrian Volume," and "School Crossing" warrants respectively

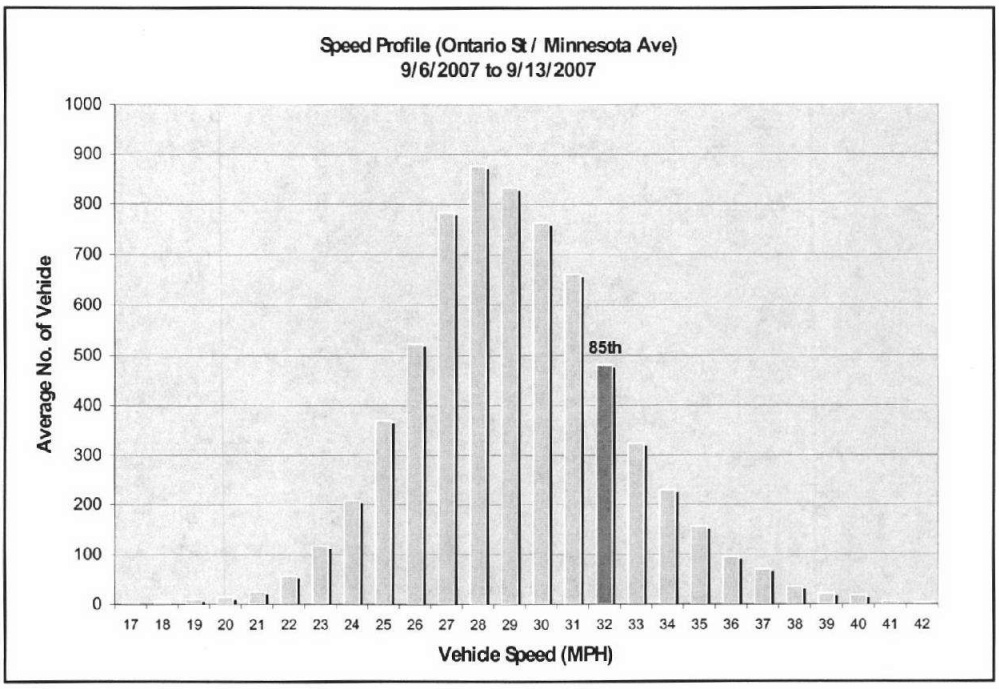
(*Note: Criteria 1 to 4 pertain to crossing guard justification only*)

For criteria one, staff found a weekday average daily traffic for those vehicles traveling in the vicinity of the newly establishing Minnesota Avenue crossing. According to the data, on average, during the morning period (8:00 a.m.) Ontario Street carries 756 vph and during the afternoon period (3:00 p.m.) carries 569 vph. A graph showing 24-hour traffic volumes seen on an average weekday has been provided below.



As seen in the collected data, the minimum threshold of 500 vph has been met in both the morning and afternoon periods.

Criteria 2 looked at the traveling speed of the traffic during these same crossing periods. Staff utilized the 85th-percentile speed rather than the posted speed limit to more accurately describe the speed of vehicles along Ontario Street. It was found that on average the 85th-percentile speed for this crossing is 32 mph. The full speed profile for the data collected has been provided on the following page.



Criteria 3 relates to the accident history in the area around a given crossing. Staff utilized a 500-foot buffer area near the Minnesota Avenue crossing to select all accidents that have occurred in the last ten years (1998 to 2007). It was found that a total of eight (8) accidents happened within 500 feet of the new pedestrian crossing. The breakdown by year is as follows; 1998 (1), 1999 (1), 2000 (3), 2001 (1), 2003 (1), 2004 (1). It should also be noted that none of these accidents involved any personal injuries; none of them involved pedestrians or bicyclists. This data shows that there is not a significant traffic safety issue; the threshold to establish a trend typically is 5 accidents during any 12-month period.

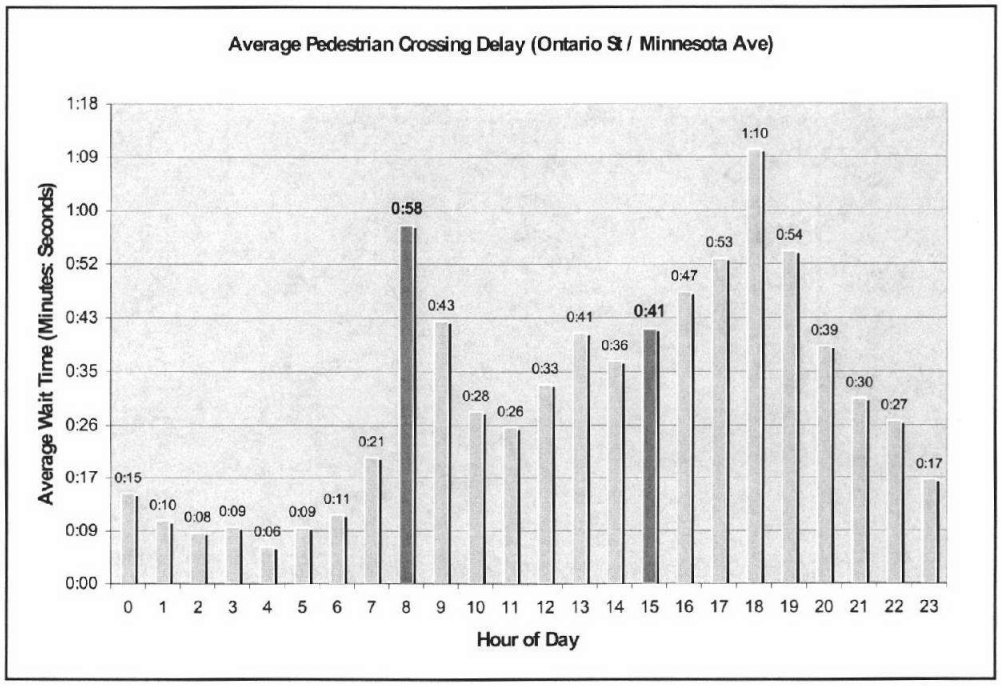
Criteria 4 speaks to the utilization of a given pedestrian crossing; as it relates to the Minnesota Avenue crossing the Police Department has indicated that on average 5 to 8 children are using the crossing during both the morning and afternoon crossing periods. Currently, this does not satisfy the minimum requirement of ten (10) students per crossing period.

The final criteria are the traffic signalization warrants as found in the Manual on Uniform Traffic Control Devices (MUTCD); for this purpose, Warrant 4 and Warrant 5 have been identified.

Warrant 4, "Pedestrian Volume", specifies that "**The pedestrian volume crossing the major street at an intersection or midblock location during an average day is 100 or more for each of any 4 hours or 190 or more during any 1 hour...**" and "**...There are fewer than 60 gaps per hour in the traffic stream of adequate length to allow pedestrians to cross during the same period when the pedestrian volume criterion is satisfied....**" This means that four hours out of a day must have 100 or

more people crossing or at least one hour in which 190 or more people cross, and at the same time people should not wait, on average, any longer that 60 seconds to safely cross the street.

With regard to the Minnesota Avenue crossing, the first part of the criteria as stated above has not been met and the data shows that the average wait time for a gap of adequate length does not exceed the required threshold of 60 seconds during the morning or afternoon crossing periods. The morning crossing period sees on average a wait time of 58 seconds, while the afternoon crossing period sees on average 42 seconds. A chart showing the average wait time by hour of the day has been provided below.



The final traffic signal warrant, Warrant 5: "School Crossing", states that "**The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of school children at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the children are using the crossing is less than the number of minutes in the same period (see Section 7A.03) and there are a minimum of 20 students during the highest crossing hour.**" This means that either the morning or the afternoon crossing period must have at least 20 students in an hour, and at the same period of time the average wait time to cross the street shall not exceed 60 seconds. Using the graph above and the known number of students using the Minnesota Avenue crossing, both criteria in Warrant 5 are not currently met.

The following table has been used to summarize the five criteria used in this study. Two objectives of the study were to determine the need for permanent use of a crossing guard and if a signalized pedestrian crossing is warranted.

Criteria No.	Description	Criteria Met? (Yes / No)
Crossing Guard:		
1	Vehicle Volumes > 500 per hour	Yes
2	Speed Limit > 30 MPH	Yes
3	Accident History > 5 crashes in 12 month period	No
4	Pedestrian Volumes > 10 per crossing period	No
Traffic Signal Warrants:		
5a	Pedestrian Volumes > 100 per hour, for any 4 hours or, > 190 per hour, for any 1 hour period and, Delay > 60 seconds	No
5b	Pedestrian Volumes > 20 per hour, during peak hour and, Delay > 60 seconds	No

While the conclusion of this analysis is that no signal or crossing guard is warranted, it should be noted that the vehicle volume, speed limit and public concern might lead one to consider use of a crossing guard. If that option were selected, this would be the only intersection where the crossing guard is trying to stop this volume of traffic at this speed, without the aid of a stop sign or stop light. In addition, the Crossing Guards positions are increasingly difficult positions to fill. Pedestrian and bike traffic continues to decline and several of the current crossings may not meet these criteria when the annual review is conducted. If the Council chooses to allocate a crossing guard to this location, it will most easily be accomplished by pulling a guard from another location with lower levels of utilization.

A final alternative, which was mentioned in the staff report presented at the July 10, 2007 City Council meeting, is to request that ISU install a sidewalk along the north side of Ontario Street. This would provide an east-west sidewalk connection on the right-of-way contiguous to the ISU farm property; a preliminary cost to install this sidewalk is estimated around $50,000. If installed, this sidewalk section would provide a continuous route along the north side of Ontario Street up to Sawyer School, at which point students could utilize the existing pedestrian signal located in front of the school. The relative dollar costs for these three alternatives are shown below:

Alternatives	One-time Costs	Annual Costs
Crossing guard	-	$3,960
Sidewalk	$50,000	-
New pedestrian signal	$75,000	-

ALTERNATIVES:

1. Direct staff to work with ISU to install sidewalk along the full extent of their farm property located on the north side of Ontario Street.
2. Accept the application of the criteria and direct staff to discontinue the use of a crossing guard at the Minnesota Avenue crossing.
3. Direct staff to establish a crossing guard at the Minnesota Avenue crossing on a permanent basis by reallocating a crossing guard from another location.

MANAGER'S RECOMMENDED ACTION:

The needs at this pedestrian crossing are challenging to address. Clearly a number of school children cross here each day. The preceding analysis, however, shows that this crossing does not meet the City's criteria for a crossing guard or national standards for a pedestrian signal. It is important to note that our Police Department has found it very difficult to attract and retain crossing guards across the City. Furthermore, pulling a permanent guard from a less utilized location to serve at this crossing could pit parents and neighborhoods against each other.

Installing a sidewalk connection from Minnesota Avenue west across the ISU property could link this side of Ontario Street to the existing pedestrian signal by Sawyer School. This alternative would permanently address the need for a safe school route without having to identify a crossing guard for a new location.

For these reasons, and in an effort to address the safety concerns of area residents, it is therefore the recommendation of the City Manager that the City Council adopt Alternative No. 1, thereby directing staff to work with Iowa State University to install sidewalk along the full extent of their farm property located on the north side of Ontario Street. If ISU is able to program the cost for this sidewalk, that will provide a permanent solution to this need. If they cannot, the City can consider this cost during the Capital Improvements Plan process in January. In the mean time, it is recommended that the City Council continue to maintain a guard at this location on a temporary basis.