CITY OF MADISON
TRAFFIC ENGINEERING

ELEMENTARY
SCHOOL CROSSING PROTECTION CRITERIA

~~January 2016~~ December, 2025

Adopted as Policy on August 31, 1976, by Common Council by Amended Resolution #29,540
Amended on September 14, 1976, by Resolution #29,569
Amended on September 28, 1976, by Resolution #29,650
Amended on June 30, 1981, by Resolution #37,137
Amended on July 10, 1990, by Resolution #46,920
Amended on January 5, 2016, by Resolution # RES-16-00032
Amended on DATE, by Resolution # NUMBER

Formatted: Highlight
Formatted: Highlight

By
Traffic Engineering Division
City of Madison, Wisconsin

Introduction

Elementary school-age children are in the process of learning how to safely travel to and from school~~Concern is often expressed regarding the safety of children walking to and from school. During their early years, children are in the process of learning how to safely travel to and from school.~~ . The City of Madison ~~over the years has~~ utilize~~d~~ several safety "tools" to help protect elementary school-age pedestrians, including the use of ~~. School and school crossing locations are identified by uniform street signing and marking at strategic locations.~~ Adult School Crossing Guards ~~have for several decades been used~~ at crosswalks on busy streets where large numbers of children cross.
This document describes how locations are evaluated for the need for an Adult School Crossing Guard where one is not currently placed and for evaluation of existing Adult School Crossing Guard locations for discontinuance.
~~In the early 1960's, the Traffic Engineering Division reviewed the City's school crossing protection policies and investigated what criteria other cities were using to determine whether an adult crossing guard was needed. Criteria thought appropriate for Madison were developed and subsequently accepted as policy by the Common Council.~~

~~In 1975 the Common Council requested a reevaluation of the criteria to determine if it was still applicable. A subcommittee consisting of members of the Common Council, Board of Education, Transportation Commission, Madison Area Safety Council, and Parent Advisory group; persons with expertise in the area of safety engineering; and citizens, conducted an in-depth, lengthy review of the original 1962 criteria and recommended to the Council that only minor revisions be made. The criteria detail a method of analyzing traffic situations to determine the degree of hazard, provide a comparison of school crossings throughout the City, and recommend on the basis of need measures to be taken to reduce the hazards associated with school crossings.~~

~~In 2014 the Pedestrian-Bicycle-Motor Vehicle Commission requested a review of the criteria. In particular, they wanted to compare Madison's criteria for assigning and discontinuing Adult School Crossing Guards with recommendations from the Safe Routes to School movement and from peer communities. This review found that Madison's criteria is still one of the best in the country.~~

~~The Common Council adopted the following criteria (as amended) as a policy guideline in September 1976 and amended it in June 1981, July 1990 and January 2016.~~

~~BACKGROUND: SCHOOL CROSSING HAZARD ANALYSIS TECHNIQUES~~

~~The Institute of Transportation Engineers (ITE) has developed recommended practices for school crossing protection in a step-by-step procedure (developed after the existing Madison method was development). The ITE method is being used by many cities to study whether additional protection is needed at school crossings. The City of Madison recognizes this method as an adequate procedure. However, because factors that the ITE method does not directly consider, such as speed of traffic, safety record of the crossing over the years, sight distance, etc., are felt relevant to the safety of the crossing, the City of Madison uses a more detailed method.~~

~~Both methods consider the availability of gaps in traffic as a crucial factor in analyzing whether a crossing needs additional protection. While the ITE method considers that adequate crossing gaps are available if they occur at least once a minute, the Madison method indicates that safe gaps occurring once every 1 ½ minutes is acceptable for small groups (25-30 children per hour), while more frequent safe crossing gaps (once every 30 seconds) are desirable for larger groups (over 100 children per hour).~~

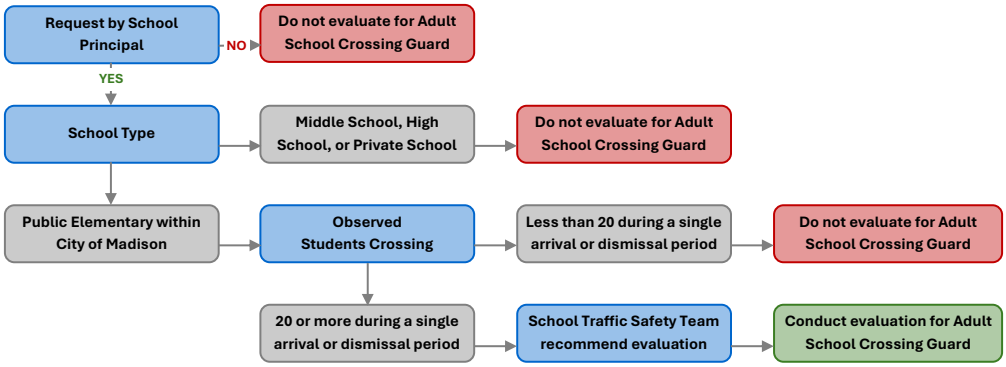
Criteria and Process for Evaluation of New Adult School Crossing Guard Placement

Three basic criteria must be met before evaluating a location for an Adult School Crossing Guard:

1. The request for an Adult School Crossing Guard must be submitted to Traffic Engineering or the School Traffic Safety Team by the school principal.
2. The request must be for a public elementary school located within the City of Madison.
3. A minimum of 20 elementary school students are observed crossing at the location during a single school arrival or dismissal period.

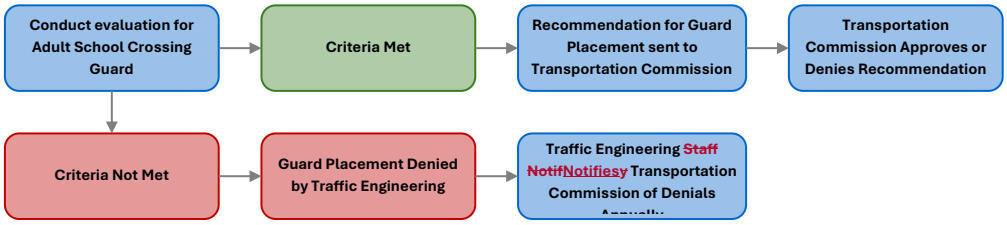
Pedestrian counts are made during the peak school crossing periods (both morning and afternoon). The exact hours counted will vary depending upon school start and dismissal times. Only elementary school children are counted. Crossing by single children may be tallied together, but groups should be noted by a numeral indicating the size of the group. Totals will be made by quarter hours. The count will be conducted on a warm, sunny day, if possible, during the fall or spring of the year. If doubt arises as to the accuracy and validity of the count, a second count will be made and higher count will be used. The wintertime school pedestrian traffic will also be considered, especially in borderline situations.

When the above criteria are met, the School Traffic Safety Team will recommend that Transportation Engineering conduct a full evaluation of the site to determine if an Adult School Crossing Guard is supported. The general process to evaluate requests for an Adult School Crossing Guard is depicted below.



~~The pre-1976 Madison method resulted in more adult guard protection being utilized than would be under the ITE method. Madison residents have accepted, and appear to expect, this higher level of protection. Thus, only minor revisions were made in 1976, 1981 and 1990 to the previous criteria.~~

When a location is recommended for evaluation for an Adult School Crossing Guard, Traffic Engineering staff will gather data to assess the hazard inherent at the location, as depicted in the chart on the following page. The data gathered and the process for scoring the data are described in the following sections. If the criteria are met for placement of an Adult School Crossing Guard, Traffic Engineering Staff will make that recommendation to the Transportation Commission for approval or denial. Traffic Engineering staff will notify the Transportation Commission annually of requests for Adult School Crossing Guards that do not meet the criteria for evaluation.



Criteria and Process for Discontinuance of an Existing Adult School Crossing Guard Assignment

Locations where Adult School Crossing Guards are currently placed will occasionally be evaluated for discontinuance to ensure the efficient use of resources for the Crossing Guard Program. The decision to review an existing Adult School Crossing Guard assignment can be made based on:

- Low numbers of elementary school aged students utilizing the crossing (less than 10/shift over two years);
- Changes to the street design, traffic patterns, or traffic counts that reduce the hazard score at a location below 20 points;
- Changes in school attendance area boundaries such that elementary school students no longer cross a particular street; and/or
- Changes in school busing policies where students who used to walk to school are now bused to school.

Locations where modifications that may improve pedestrian safety have been installed nearby shall be reevaluated within one year of the installation. Pedestrian safety modifications include, but are not limited to, traffic signals, road

diets, pedestrian hybrid beacons, pedestrian refuge islands, raised crosswalks, and rectangular rapid flashing beacons. All crossing guard locations should be evaluated for continued need once every five years or more frequently; need can be demonstrated by a sufficient number of children (10 or more) utilizing the crossing.

If any of the above factors are identified, Traffic Engineering staff will evaluate the location for one year. The evaluation will consist of:

- Crossing Guards will conduct monthly student counts throughout the year.
- Traffic Engineering staff will study the Hazard Evaluation Criteria if the evaluation is based on changes to the street design, traffic patterns, or traffic counts.

Following the evaluation period, Traffic Engineering staff will either recommend the location for discontinuance or to retain the Adult School Crossing Guard. Recommendations for discontinuance will be brought to the School Traffic Safety Team for discussion and then forwarded to the Transportation Commission in late spring or early summer. Traffic Engineering will notify the school's Principal, Parent Teacher Group, area Alder, Neighborhood Association, and Neighborhood Resource Team, where applicable, when a recommendation is made to the Transportation Commission to discontinue an Adult School Crossing Guard assignment. If discontinuance is approved by the Transportation Commission, the Principal, Parent Teacher Group, Alder and Neighborhood Association will again be notified in order to allow time to plan for the change. Locations where Adult School Crossing Guards are discontinued will be added to the Safe Streets Madison project list for consideration of pedestrian safety enhancements.

Hazard ~~THE ADOPTED~~Evaluation C~~RITERIA~~riteria~~, 2016~~

~~The following factors are considered in analyzing school pedestrian crossings:~~

~~is coincidental and~~When the School Traffic Safety Team recommends that a location be evaluated for the placement of a new Adult School Crossing Guard or the discontinuance of an existing location, the factors below will be studied. Traffic-related factors will be measured during the same time periods, but not necessarily the same dates, as the pedestrian counts conducted to recommend study of a location.

~~1. The number of elementary (grades K-5) school children crossing. At an intersection having a major through street and a minor street(s) controlled by "STOP" or "YIELD" signs, the number of elementary school children crossing the major street approach during the peak crossing hour shall be used. When the intersection is signalized, the number of elementary school children in the most heavily used crosswalk during the peak crossing hour shall be used. The total number of elementary school children crossing at an intersection shall be considered under Hazard Rating Factor 5 (Other Factors).~~

~~3.~~1. Vehicle Gap Availability. The criterion for this element shall be the percentage of time during the school crossing period when gaps adequate for a safe crossing are available. The safe crossing time shall be considered as the time necessary for an elementary school child to cross from one refuge point to another (usually from one curb to another) at a walking speed of 3.0 feet per second.

At an intersection having a major through street and a minor street(s) controlled by "STOP" or "YIELD" signs, the gaps in traffic to be considered will be those for the traffic on the major street approaches. At signalized intersections, the gaps to be considered shall be those from turning movements, which conflict with the crosswalk used by the largest group of school children, and the gaps will be computed per hour of "GREEN" time. In this instance, the width of the roadway is equal to one-half of the roadway, since the children are

"protected" on the other half by vehicles waiting for the green light on the cross street (except for right turns on red). Where a major street has a median strip at least ten feet in width, which can afford adequate pedestrian refuge, the major approaches shall be considered as separate one-way streets and the gaps used will be those of the heaviest traveled approach.

Right turns on red that conflict with a crosswalk used by elementary students will be analyzed. There are both benefits and hazards to pedestrians from right turn on red, but if unusual hazards exist from right turns on red, prohibition of such turns will be posted.

~~4.~~2. Speed of Motor Vehicles. The criterion for this element shall be the 85th percentile speed observed on the major approaches. The 85th percentile speed is determined from a speed study~~.~~ , generally taken approximately 250 feet in advance of the crossing~~made with a radar unit~~. It is the speed at which only 15 percent of the motorists were observed traveling faster than, or the speed below which 85 percent of the motorists travel. Speed studies are not necessary where the crossing is at a signalized intersection or where the approach is controlled by a stop sign. Historical speed studies in the area may be sufficient for estimating motor vehicle speeds.

~~5.~~3. Sight Distance. The criterion for this element shall be the ratio of the sight distance of a vehicle driver observing a three-foot high object in the crosswalk to design stopping distance. The following Design stopping distances (wet pavement), as recommended by the American Association of State Highway and Transportation Officials, shall be used:

Design Speed	Design Stopping Sight Distance
< = 25 mph	155 feet
26 – 30 mph	200 feet
31 – 35 mph	250 feet
36 – 40 mph	305 feet
41 – 45 mph	360 feet
46 – 50 mph	425 feet

~~6.~~4. Safety History. The main criterion for this element shall be the number of pedestrian crashes occurring at the study location, involving school children going to or coming from school, during the previous five-year period. For locations where two or more such crashes have occurred, the five-year limit shall not apply. In addition, a history of other crash types that could conflict with pedestrian crossings will be considered, especially if there is a history of crashes at times of the day when elementary school children generally need to cross. However, significant geometric or traffic control changes at the crossing location need to be considered.

~~7.~~5. Other Factors. Certain unique factors may exist at some locations which ~~would tend~~may ~~to~~ increase or decrease the hazard to school-age pedestrians. Such factors may include complex intersection and/or traffic signal design, existence of safer crossings nearby, the age of children crossing, ~~a street which is used extensively by "foreign" traffic,~~ the presence of stopped buses and other obstructions, and the volume of turning traffic not reflected in the gap availability criterion. In addition, the character of the street (i.e., arterial, local, etc.) and the types of traffic (e.g., truck route~~percent and types of trucks~~) will be considered and will be a factor in borderline situations. The uniformity of the hazards throughout the school year, and from morning to evening crossing periods, needs to be considered. Situations where few children desire to walk to school when the temperature drops in the fall need special consideration.

In addition to these factors, physical conditions of the crossing location will be measured or noted, including street width, median width, and length of crosswalk. The street width is the curb-to-curb width or width of paved surface where shoulder construction is used. Where there is considerable skew to the crosswalk or normal crossing path, the length of such crosswalk should be measured. Sight distance is the distance from the crossing at which the driver first receives a continuous view of a three-foot high object. This information is needed for all uncontrolled approaches.

~~THE HAZARD RATING SYSTEM~~Hazard Scoring

Evaluated locations are assigned points for each of the five criteria and a hazard score is assigned to~~Each crossing is analyzed with respect to the above factors. In order to~~ compare the degree of hazard associated with each crossing~~, a relative point (or hazard) rating is assigned to each crossing~~. The hazard ~~rating~~ score is the ~~cumulative~~ total of points assigned to the crossing based on each of the hazard factors. The higher the hazard rating, the more hazardous the crossing is, relatively speaking.

Hazard points ~~will be~~are assigned according to the following schedule:

~~1. SCHOOL CHILDREN CROSSING~~

~~Volume~~	~~Points~~		~~Volume~~	~~Points~~
~~1 – 5~~	~~1~~		~~30 – 34~~	~~10~~
~~6 – 9~~	~~2~~		~~35 – 39~~	~~15~~
~~10 – 14~~	~~3~~		~~40 – 49~~	~~20~~
~~15 – 19~~	~~4~~		~~50 – 74~~	~~30~~
~~20 – 24~~	~~5~~		~~75 & over~~	~~35~~
~~25 – 29~~	~~6~~			

1. VEHICLE GAP AVAILABILITY

% of Time when there are safe gaps	Points
Over 80%	0
70 – 79	4
60 – 69	8
55 – 59	12
50 – 54	16

% of Time when there are safe gaps	Points
45 – 49	20
40 – 44	24
30 – 39	28
20 – 29	32
Less than 20	36

2. VEHICLE SPEEDS

MPH	Points
<= 20	0
21 – 25	1
26 – 30	2
31 – 35	4

MPH	Points
36 – 40	7
41 – 45	11
Over 45	15

3. SIGHT DISTANCE

Ratio	Points
Over 2.0	0
1.5 – 2.0	1
1.0 – 1.5	5
Less than 1.0	

4. SAFETY HISTORY

Crashes	Points
School Crossing Types	

0	0
1	8
Each Additional	20
Other Types	0-5

5. OTHER FACTORS

Factor	Points
~~**Foreign traffic route**~~	~~0 to +5~~
~~**For each approach in excess of four**~~	~~+5~~
Safer crossing within one block of evaluated crossing location	-5
Intersection of two arterial streets	+4
Designated truck route	+5
C~~For c~~omplex signal or crossing design or more than four approaches	+5 to +10
~~For simple signal or crossing design~~	~~-5 to -10~~
~~Safer crossing one block out of way~~	~~-10~~
Stopped buses or other visual obstructions of the crossing	0 to +5
Frequent U-turns or non-typical vehicle movements that may impact safety	0 to +5
Large percentage (50%+) of ~~Grade K and Grade 1~~K-2 students unaccompanied by an adult ~~(over 40%)~~	0 to +5
~~An intersection of two arterial streets where the total weekday traffic approach volume exceeds 25,000 vehicles~~	~~+4~~
Majority of ~~C~~children crossing multiple crosswalks at an intersection	0 to +~~5~~10
~~Stopped buses and other obstructions~~	~~0 to +5~~
~~Volume of turning traffic not reflected in gap availability~~Frequent U-turns ~~or other non-typical movements that may impact safety~~	~~0 to +5~~
~~Observations of the percent and types of trucks during the times when students are using the crossing.~~	
Location is within or serves students who likely live within a City of Madison Equity Area	+5

~~INTERPRETATION OF HAZARD RATING~~ Actions

Based on the assigned hazard score, the following measures may be undertaken:~~Using the hazard rating as a guide, the following measures are appropriate:~~

1. **MARK AS A SCHOOL CROSSING** when the hazard ~~rating~~ score is greater than ~~20~~ 15 at a crossing used by at least 2~~0~~5 elementary school children during the peak crossing hour. The traffic engineer is authorized to mark such a crossing with appropriate warning signs and special crosswalk markings.

~~1. **INSTALL FLASHING BEACONS** if any one of the following conditions is met:~~
   - ~~The 85th percentile speed is in excess of 40 mph, measured at existing school crossing signs, which have been in place at least 30 days.~~
   - ~~The street crossed is a U.S. or State Trunk Highway on which a significant percentage of "foreign" drivers can be expected.~~
   - ~~The ratio of sight distance to safe stopping distance is less than 1.5.~~
   - ~~The hazard rating is greater than 30 at an unguarded location where at least 25 elementary students cross and the available safe crossing gaps are less than 50%.~~

2. **RECOMMEND THE ASSIGNMENT OF AN ADULT SCHOOL CROSSING GUARD** when the hazard rating is greater than 3~~4~~0 ~~points~~ at a crossing used by at least 2~~5~~0 elementary students during the peak crossing hour. All new crossing guard locations shall be considered to be a trial and shall be evaluated during first year and after two years for continuance. ~~If the school has only Grades K-2, then recommend the assignment of an adult guard when the hazard rating is greater than 30 points at a crossing used by at least 15 elementary students during the peak crossing hour.~~

3. **RECOMMEND THE DISCONTINUANCE OF AN ADULT SCHOOL CROSSING ~~ADULT~~ GUARD ~~PROTECTION~~** at a crossing where the hazard rating falls below ~~30~~ 20 ~~points~~ or if the number of school children crossing during the peak crossing hour is less than 10 over the course of two years~~5~~. ~~traffic signals. At the intersection of two arterial streets where the total entering weekday traffic volume exceeds 25,000 vehicles, the total number of students crossing at the intersection will be used to compare to the minimum of 15 students required to retain an adult guard.~~

Locations considered for an adult crossing guard, but not scoring enough hazard points may be reviewed as part of the Safe Streets Madison program for other safety treatments.

~~SCHOOL CROSSING STUDY PROCEDURE~~

~~Requests to study locations for new assignments of Adult School Crossing Guards shall be made by the Elementary School Principal to the School Traffic Safety Team~~Committee. ~~Requests that come in to Traffic Engineering will be referred to the Elementary School Principal to consider forwarding to the School Traffic Safety Team~~Committee. ~~Pedestrian counts are made during the peak school crossing periods (both morning and afternoon). The exact hours counted will vary depending upon school start and dismissal times. Only elementary school children are counted. Crossing by single children may be tallied together, but groups should be noted by a numeral indicating the size of the group. Totals will be made by quarter hours.~~

~~In order to properly evaluate the hazard inherent in a given street crossing used by school children, certain data are necessary concerning the quantity and characteristics of the traffic at the location. The specific field studies include counts of school children crossing, traffic volumes, turning movements, measurement of traffic gaps, vehicle speeds, and physical conditions of the location.~~

~~Pedestrian counts are made during the peak school crossing periods (both morning and afternoon). The exact hours counted will vary depending upon school start and dismissal times. Only elementary school children are counted. Crossing by single children may be tallied together, but groups should be noted by a numeral indicating the size of the group. Totals will be made by quarter hours.~~

~~Vehicular traffic turning movements and traffic gaps will be measured during the same periods as the pedestrian counts. Tabulations by fifteen-minute intervals are desired.~~

~~The count will be conducted on a warm, sunny day, if possible, during the F~~fall or S~~s~~pring of the year. ~~If doubt arises as to the accuracy and validity of the count, a second count will be made and the values resulting in the higher hazard rating will be used. The wintertime school pedestrian traffic will also be considered, especially in borderline situations.~~

~~Spot speeds of traffic approaching on the major approaches to the crossing are measured with a radar speed meter~~will be studied. ~~These speed studies are generally taken approximately 250 feet in advance of the crossing. Speed studies are not necessary where the crossing is at a signalized intersection or where the approach is controlled by a stop sign. Historical speed studies in the area may be sufficient for estimating motor vehicle speeds. The 85th percentile speed on each major approach is desired.~~

~~Physical conditions required include street width, length of crosswalk, and approach sight distance.~~

~~The street width is the curb-to-curb width or width of paved surface where shoulder construction is used. Width of median is also desired. Where there is considerable skew to the crosswalk or normal crossing path, the length of such crosswalk should be measured. Sight distance is the distance from the crossing at which the driver first receives a continuous view of a three-foot high object. This information is needed for all uncontrolled approaches.~~

~~As individual locations are called to the attention of the Traffic Engineering Division by elementary school Principal through the School Traffic Safety Team~~Committee, ~~studies will be made and the indicated measures taken or recommendations will be submitted to the agency responsible.~~

Commented [KCL1]: Section moved and consolidated into *Criteria and Process for Evaluation of New Adult School Crossing Guard Placement* section

~~PROCEDURE TO STUDY THE DISCONTINUANCE OF AN ADULT SCHOOL CROSSING GUARD LOCATION~~

~~Adult School Crossing Guards are employed and supervised by the Madison Police Department. Each year the Adult School Crossing Guards conduct counts at their assigned location in the fall and in the spring. After each count, the Crossing Guard Supervisors and Traffic Engineering staff meet to discuss program operations and to determine if there are any existing locations that should be reviewed for discontinuance. The decision to review an existing Adult School Crossing Guard Assignment can be made based on~~shift ~~changes in school attendance area boundaries such that elementary school students no longer have to cross a particular street, changes in school busing policies where students who used to walk to school are to be bused to school instead, locations where the number of elementary school aged students using the crossing has dropped below the threshold of 15 for several years, or changes in traffic patterns such that the hazard rating at a location might have dropped below the threshold of 30 points.~~

~~The school's Principal and Parent Teacher Group,~~ Neighborhood Resource Team (NRT), where applicable, ~~as well as the area Alder and Neighborhood Association, will be contacted by Traffic Engineering when a determination has been made to study an Adult School Crossing Guard assignment for discontinuance. When the reason for this study is a low number of students using the crossing, the city will offer assistance to help the school community increase the number of elementary school students walking to school and using the crossing in order to retain the Adult School Crossing Guard assignment. The site will be studied for one school year. Traffic Engineering will conduct studies in the fall and spring and work with the school throughout the year if they respond to the offer of assistance. The Crossing Guard Supervisors will have the Crossing Guard do monthly counts to track crossing use throughout the school year.~~

~~When studies are completed, if the staff recommendation, based on these adopted criteria, is to discontinue the Adult School Crossing Guard assignment, this will be forwarded to the Pedestrian Bicycle Motor Vehicle Commission (PBMVC) in late spring or early summer. If changes are recommended and approved by the PBMVC, the school will then have enough time to plan for these over the summer for the start of school the following fall. The Principal, Parent -Teacher Group, Alder and Neighborhood Association will be informed of the results of the study. If there is a recommendation of discontinuance, they will be notified as to when this will be on the Pedestrian-Bicycle-Motor Vehicle Commission's~~ meeting ~~agenda.~~

~~City of Madison~~
~~Traffic Engineering Division~~
~~Approved by the Common Council~~
~~January 2016~~

Commented [KCL2]: Section moved and consolidated into *Criteria and Process for Discontinuance of an Existing Adult School Crossing Guard Assignment* section