

LINO LAKES TRAFFIC POLICY

PURPOSE

The purpose of this policy is to delineate the City of Lino Lake's processes and procedures for locating and installing traffic devices, to include: signage, pavement markings and traffic calming devices.

POLICY

It is the policy of the City of Lino Lake to follow the guidelines and recommendations contained in the most current approved Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) to make decisions on design, locations, installation and maintenance of signs, pavement markings and traffic calming devices. Minnesota State Statute 169.06, Sub. 3 states, "All traffic control devices erected shall conform to the state manual and specifications."

PROCEDURE

The City Engineer and Public Works Department will have primary responsibility for determining the need for traffic devices on Lino Lake's city streets. All requests received for installation or evaluation of traffic devices, such as, stop signs, crosswalk markings or traffic calming devices, will be routed to the City Engineer or designee for evaluation. The City Engineer or designee will be responsible for providing a written response to individuals whom request evaluation of traffic control devices.

In those instances, in which the evaluation reveals unusual factors or extenuating circumstances to consider, the City Engineer will bring the matter to the Traffic Safety Committee for discussion. A member of the Traffic Safety Committee may also request evaluation or discussion concerning a request for a traffic device.

The City Engineer or designee is responsible for coordinating with state and county agencies when a traffic evaluation request is received regarding a state or county roadway within the city limits.

The following specific guidelines will be followed when evaluating each specific traffic device:

SPEED LIMIT DETERMINATION

The City of Lino Lakes will address speed limit related concerns based upon guidelines from Minnesota Statutes, Minnesota Department of Transportation (MnDOT) policies, Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD), and engineering judgement.

The basis for setting a speed limit follows the Minnesota State Statutes and the MnMUTCD. The following segments of information were taken from the Minnesota Statutes and MnMUTCD, those of which apply to the City of Lino Lakes. A exert from the FHWA discussing best practices is also included showing how engineering studies are used to set new speed limits or change existing ones.

Minnesota Statues:

169.011 DEFINITIONS

Subdivision 64. Residential Roadway

A “residential roadway” is a city street or town road whose length is up to a half-mile.

169.14 SPEED LIMITS, ZONES; RADAR.

Subdivision 1. Duty to drive with due care.

No person shall drive a vehicle on a highway at a speed greater than is reasonable and prudent under the conditions. Every driver is responsible for becoming and remaining aware of the actual and potential hazards then existing on the highway and must use due care in operating a vehicle.

In every event speed shall be so restricted as may be necessary to avoid colliding with any person, vehicle or other conveyance on or entering the highway in compliance with legal requirements and the duty of all persons to use due care.

Subdivision 2. Speed limits.

(a) Where no special hazard exists the following speeds shall be lawful, but any speeds in excess of such limits shall be prima facie evidence that the speed is not reasonable or prudent and that it is unlawful; except that the speed limit within any municipality shall be a maximum limit and any speed in excess thereof shall be unlawful:

(1) 30 miles per hour in an urban district;

(Subdivisions 2.2-2.7 do not apply here, therefore were excluded)

(8) 35 miles per hour in a rural residential district if adopted by the road authority having jurisdiction over the rural residential district.

(c) A speed limit adopted under paragraph (a), clause (8), is not effective unless the road authority has erected signs designating the speed limit and indicating the beginning and end of the rural residential district for the roadway on which the speed limit applies.

MnMUTCD:

2B.13 Speed Limit Sign

A Standard: Speed zones (other than statutory speed limits) shall only be established on the basis of an engineering study that has been performed in accordance with traffic engineering practices.

The engineering study shall include an analysis of the current speed distribution of free-flowing vehicles.

The speed limit (R2-1) sign shall display the limit established by law, ordinance, regulation, or as adopted by the authorized agency based on the engineering study. The speed limits displayed shall be in multiples of 5 mph. Speed Limit signs, indicating speed limits for which posting is required by law, shall be located at the points of change from one speed limit to another.

An Option: Other factors that may be considered when establishing speed limits are the following:

- Road characteristics, shoulder condition, grade, alignment, and sight distance
- The pace speed
- Roadside development (nearby school) and environment
- Parking practices and pedestrian activity (mainly children)
- Reported crash experience for at least a 12-month period

Methods and Practices for Setting Speed Limits: An Informational Report by the FHWA Safety Program:

Most engineering approaches to speed limit setting are based on the 85th percentile speed—the speed at which 85 percent of free-flowing traffic is traveling at or below. The typical procedure is to set the speed limit at or near the 85th percentile speed of free-flow traffic. Adjustments to either increase or decrease the speed limits may be made depending on infrastructure and traffic conditions.

The 85th percentile speed method is also attractive because it reflects the collective judgment of the vast majority of drivers as to a reasonable speed for given traffic and roadway conditions.

This is aligned with the general policy sentiment that laws (i.e., speed limits) should not make people acting reasonably into law-breakers. Setting a speed limit even 5 mph below the 85th percentile speed can make almost half the drivers illegal; setting a speed limit 5 mph above the 85th percentile speed will likely make few additional drivers legal.

Under the operating speed method of setting speed limits, the first approximation of the speed limit is to set the speed limit at the 85th percentile speed. The MnMUTCD recommends that the speed limit be within 5 mph of the 85th percentile speed of free-flowing traffic. The posted speed limit shall be in multiples of 5 mph.

While the MnMUTCD recommends setting the posted speed limits near the 85th percentile speed, and traffic engineers say that agencies are using the 85th percentile speed to set speed limits, the speed limit is often set much lower. At these locations, the 85th percentile operating speeds exceed the posted speed limits; and, in many cases, the 50th percentile operating speed is either near or exceeds that posted speed limit as well. Many agencies deviate from their agency's written guidelines and instead post lower speed limits. According to an ITE Engineering Council Technical Committee survey, these reduced speed limits are often the result of political pressures.

However, it is important to note that setting speed limits lower than 85th percentile speed does not encourage compliance with the posted speed limit.

Speed Limit Implementation:

The City Lino Lakes has established this policy to define the process for setting a speed limit and to what extent they can be modified. To make a request for a speed limit change, one must send a formal written document to the city. The local road authority can either determine the speed limit acceptable, not acceptable, perform an engineering investigation or request the Commissioner of Transportation do a speed study.

Streets that drive relatively similar should be set to the same speed limit for consistency, whether they are 25, 30, 35, or 40 mph. Speed limit evaluations should only take place when specific concerns are raised, and not on a regular basis. When final decisions are made they are not to be requested upon again unless a situation occurs (i.e., a large development is being constructed, or multiple accident occurs). If further monitoring needs to occur on a street, driver feedback signs or physical changes may be considered. Installation of speed limit signs will be considered only in situations where there are documented issues.

Speed Concern Evaluation:

If a speed concern still exists after the determination of the appropriate posted speed limit based on the criteria previously discussed, additional speed mitigation/traffic calming could be considered based on the following guidelines.

Eligibility:

In order for a roadway to be eligible for speed mitigation/traffic calming, it needs to meet the following criteria.

- Classified as a local or collector street
- Length greater than 1,000 feet
- Traffic volumes greater than 1,000 vehicles per day
- Posted speed of 30 mph or less
- Cannot be a cul-de-sac

Evaluation Process:

If the roadway is eligible for speed mitigation/traffic calming, a preliminary study will be conducted using collected data. In analyzing the speed data, the 85th percentile speed of the collected data will be calculated. The 85th percentile speed is defined as the speed at or below which 85 percent of the traffic is moving.

If the 85th percentile speed is greater than 33 mph on a roadway posted at 30 mph, a speed concern would be identified at that location. If the 85th Percentile speed is greater than 33 mph but less than 35 mph, the speed concern will be brought before the City Council to consider the feasibility of low cost measures as a means to calm traffic. Some low cost traffic calming measures include:

- Education
- Lane narrowing (striping or tubular marker island)
- Pavement messages (30 MPH, SLOW, etc.)
- Additional signage
- Speed Awareness Display signs

If the 85th Percentile speed is greater than 35 mph, the speed concern will be brought before the City Council to consider potential engineering solutions as a means to calm traffic. These solutions are typically higher in cost. Examples of possible solutions include:

- Lane narrowing
 - Raised concrete or landscaped island / median
- Curb extensions
 - Mid-block chockers (concrete or planters)
 - Neckdowns (Bump-outs at intersections)
 - Chicanes
- Roundabouts
 - Full size roundabout
 - Mini-roundabout
 - Neighborhood Traffic Circle
- Speed Awareness Display signs
- Raised intersection/crosswalks
- Roadway alignment revisions (adding curves to a straight roadway)

Funding:

Upon the recommendation of City staff and approval by the City Council, the appropriate measures will be implemented by the City once funding is secured. Possible funding sources include:

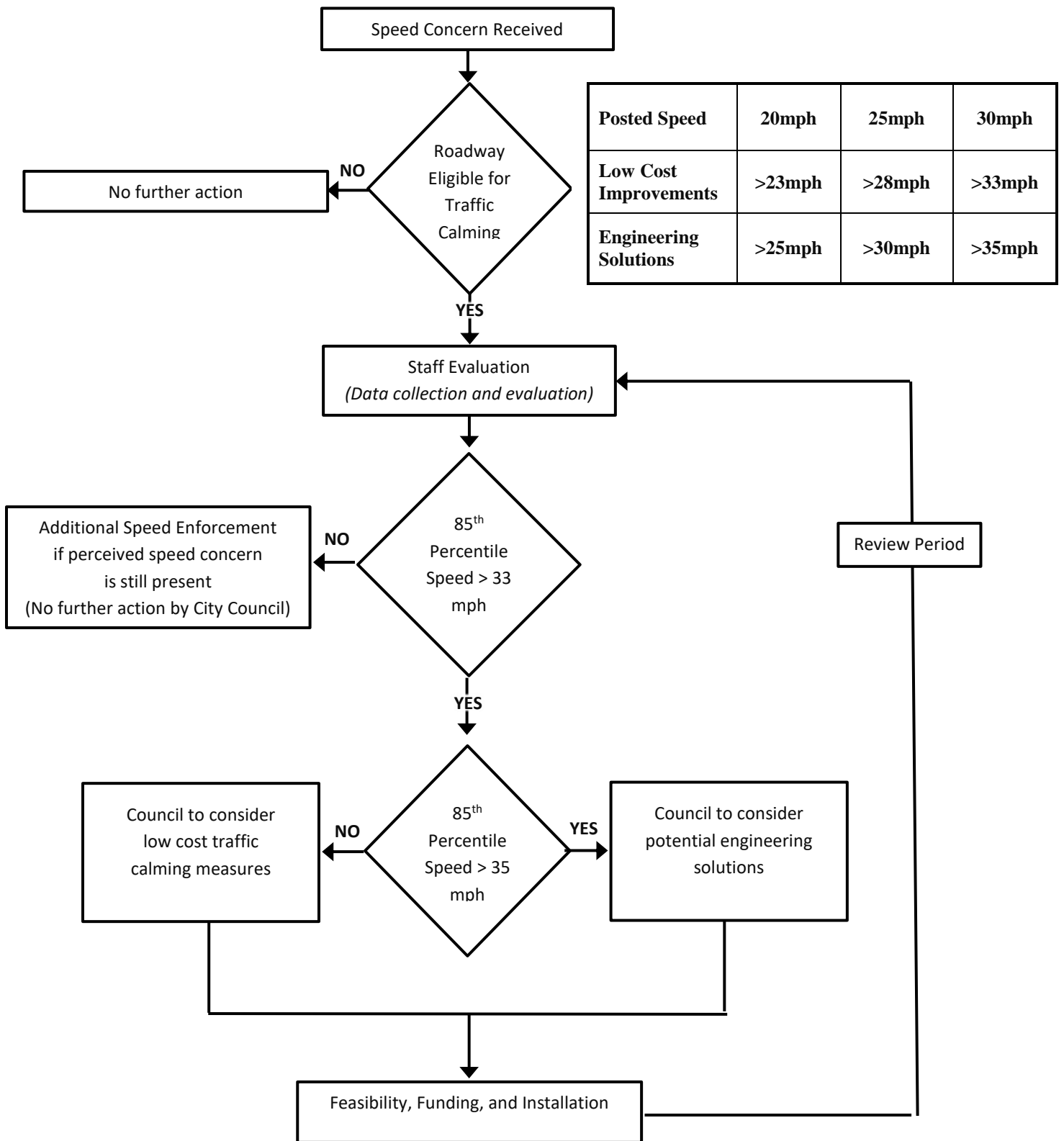
- Inclusion in the City's Capital Improvement Plan (CIP)
- Special request from the City Council
- Assessment process

Review:

Following the installation of the traffic calming measure(s), a review period for up to nine months will be initiated to measure its effectiveness and determine if the objectives were met. At the end of the review period, an evaluation will be conducted based on the following criteria:

Figure 1 represents the decision diagram used in the speed concern evaluation process.

Figure 1 – Speed Concern Evaluation Process



| | | | |
|------------------------------|------------------|------------------|------------------|
| Posted Speed | 20mph | 25mph | 30mph |
| Low Cost Improvements | >23mph | >28mph | >33mph |
| Engineering Solutions | >25mph | >30mph | >35mph |

STOP SIGN INSTALLATION

The traffic control at an intersection is critical to the operation of both intersecting roadways. If incorrect traffic control is installed for the existing traffic conditions and topographic characteristics of the intersection, undue delays and even unnecessary accidents could occur. The traveling public, especially persons not familiar with the area, typically drive based on instinct. Drivers subconsciously evaluate their surroundings to determine if a stop sign or yield sign should or shouldn't be located on an intersection approach. It is very difficult to determine what the correct intersection control should be; however, the following factors should be evaluated when determining intersection control.

Traffic Conditions:

The traffic conditions of an intersection include:

- Traffic approach volume
- Speed of traffic approaching the intersection
- Number of turning vehicles in an intersection
- Vehicle makeup (i.e. trucks, buses, etc.)
- Crash history in the intersection

Topographic Conditions:

The topographic conditions of the intersections are the physical features in the area, including:

- The grade of each approaching roadway
- Location and size of adjacent buildings or structures
- Angle of the intersection
- Geometrics (number of lanes) of the intersection
- If a school, park or major pedestrian generator is located in the area

Based on these conditions and factors, potential intersection control should be evaluated and determined. Several techniques have been developed to determine what type of intersection control is warranted at a specific location. Policies for two-way and all-way stop sign installation are discussed below.

Intersection Control Policies:

When developing policies for two-way and all-way stop sign controlled intersections, the traffic conditions and topographic conditions can be used quite readily in the analysis procedure. Additional, non-technical factors may also be considered during the analysis procedure. Therefore, engineering judgment should be utilized when evaluating the appropriate intersection control.

Analysis Procedure:

The best procedure in evaluating the need and location of two-way or all-way stop sign control can be found in the Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD), Section 2B-5 and 2B-7. Based on those warrants, the following two-way and all-way stop sign installation procedures should be followed:

Step 1: Request for intersection control evaluation

This request can come from either a resident, the City Council, the Traffic Safety Committee, or from staff observation of a particular intersection. If a request is made from a resident, a signed petition of more than 80% of the households within a 300' radius of the intersection, must accompany the request.

Step 2: Data collection

This step in the procedure involves collecting the data necessary to evaluate the proposed intersection control. The data required for each phase is listed below.

- Average Daily Traffic Volume data
- Traffic speed by approach
- Vehicle classification (number of trucks, etc.)
- Pedestrian volumes crossing all approached during peak periods
- Intersection topographic information
- Detailed crash data
- Detailed site visit viewing the intersection operations for the peak hours of a typical day

Step 3: Initial evaluation

An initial evaluation of the intersection should be completed to determine if a detailed intersection control study should be performed. This evaluation is something that can be applied with minimal data (i.e., ADT traffic volumes, accident history and roadway geometrics). This procedure is as follows:

- A. Minimum traffic volume: If the daily (ADT) traffic volume approaches the intersection on each leg adds up to more than 1,000 vehicles in a day, the intersection is a candidate for an intersection control study (EB+WB+NB+SB = 1000+) **or**,
- B. Accident history: If there are more than two reported crashes per year in the previous two years or, three accidents in the previous 12 month period, of a type that is correctable with stop sign control (i.e. right angle or turning in front of another vehicle), an intersection is a candidate for an intersection control study.

If the intersection does not meet these requirements no further study will be completed without direction from the City's Traffic Safety or City Council. A letter to the resident requesting the information, outlining the findings will be sent by the City Engineer. This letter will include the City's policies for appeal of the engineer's decision.

Step 4: Intersection Control Study

If the initial evaluation concludes that an intersection control study is necessary, the following procedures will be followed to determine which type of traffic control is required.

- A. Intersection operation analysis: This would involve analyzing the operation of the intersection using the current version of the Highway Capacity Manual to determine the Level of Service and potential delays on specific approaches. This analysis can be conducted for either a two-way or four-way stop sign controlled intersection.

- B. Collector/Arterial Intersections: The analysis procedure should only be used for the intersections of collector or arterial roadways. The analysis procedures as outlined in the MnMUTCD should be conducted to determine if a two-way or four-way stop signed controlled intersection should be installed. These procedures are as follow:

Two-way stop sign controlled intersection:

1. Intersection of a less important road with a main road where application of the normal right-of-way road is unduly hazardous or,
2. Street entering a through highway or street or,
3. Unsignalized intersection in a signalized area or,
4. A combination of high speed restricted sight distance and serious crash history indicating a need for control by a stop sign.

All-way stop sign control:

1. Where traffic signals are warranted and urgently needed, the all-way stop can be an interim measure or,
2. Crash problem indicating that five or more reported accidents of a type susceptible to correction by a multi-way stop sign installation in a 12-month period or,
3. Minimum traffic volumes:
 - a. A total vehicular volume entering the intersection from approaches must average at least 300 vehicles per hour for any eight hours of an average day and
 - b. The combined vehicular and pedestrian volume from the minor street or highway must average at least 200 units per hour for the same eight hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour but
 - c. When the 85% approach speed of the major street traffic exceeds 40 MPH, the requirements can be reduced to 70%.

- C. Local Street Intersection:

This analysis procedure should only be used for the intersection of two local streets. This analysis uses the data as collected in Step 2 of the stop sign control policies. The analysis procedures, as outlined below, should be conducted to determine if a two-way or four-way stop sign controlled intersection should be installed. The procedures are as follows:

Two-Way Stop Sign Controlled Intersections:

1. If the major street traffic volume approaching the intersection for each leg adds up to more than 1,000 vehicles per day but is less than 1,500 vehicles per day and the minor street traffic volume is less than 50% of the major street traffic volume (500 – 750 vehicles per day).

2. There have been more than two reported crashes, per year in the previous two years or, three reported crashes in the previous year of a type correctable with stop sign installation.
3. The pedestrian volumes across the minor approach (that which would be stopping) is more than 15 pedestrians per hour during peak traffic hours.
4. If the safe stopping sight distance of the minor approach is restricted by less than 100 feet by horizontal and/or vertical roadway alignment or by other permanent obstructions (see figure).

If condition No. 1 and one other condition are met, this intersection would be a candidate for two-way stop sign control.

All-Way Stop Sign Control:

1. If the major street traffic volume approaching the intersection for each leg adds up to more than 1,500 vehicles per day and the minor street traffic volume approaches the intersection for each leg adds up to be greater than 750 vehicles per day.
2. There have been more than two reported crashes, per year in the previous two years or, three reported crashes in the previous year of a type correctable with stop sign installation.
3. If the pedestrian volumes crossing any approach is more than 15 pedestrians per hour during the peak traffic hours.
4. If the safe stopping sight distance on the uncontrolled approach is restricted by less than 100 feet by horizontal and/or vertical roadway alignment or other permanent obstructions.
5. If the 85th percentile speed in the intersection is greater than 35 mph and the highest reported speed with two or more observations is greater than 45 mph.

If condition No. 1 and two other of the five conditions outlined above apply, this intersection is a candidate for all-way stop sign control.

If the intersection meets the requirements, as outlined above, for either a two-way or all-way stop sign control, the intersection is considered a candidate for stop sign control. Based on this analysis and further review by city staff and the Traffic Safety Committee, a recommendation will be made to City Council to either install or not to install the stop sign control.

If the intersection does not meet these requirements no further study would be completed without direction from city council. A letter to the resident requesting the information, outlining the findings will be sent by the City Engineer. This letter will include the City's policies for appeal of the engineer's decision.

WARNING SIGN INSTALLATION

Warning signs are a critical signing element which provides information to the motoring public with respect to potential hazards in and or adjacent to the roadway. These signs include all yellow signs with black lettering as outlined in Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD) Chapter 2C. Some typical signs that fall into this category are pedestrian crossing signs, school crossing signs, playground signs, curve signs, and other signs associated with the geometrics of the roadway.

Warning signs are primarily for the benefit of the driver who is unacquainted with the roadway. It is very important that these signs be placed in areas in which the sign is truly justified so that drivers believe that the condition does exist. The use of warning signs should be kept to a minimum as the unnecessary use of warning signs tends to breed disrespect for all signs. In situations where the condition or activity is seasonal or temporary, the warning sign should be removed or covered when the condition or activity does not exist.

Policies for installation of warning signs are discussed below:

Analysis Procedure:

Step 1: Requests for Warning Signs Evaluations

This request can come from either a resident, the City Council, the Traffic Safety Committee, the school district, or from staff observation of a particular condition. If a request is made from a resident, a signed petition of more than 80% of the households within a 300' radius of the location must accompany the request.

Step 2: Data Collection

This step in the procedure should include collecting available data as listed below:

- Average Daily Traffic Volume
- Accident Summary
- Site Visit
- Pedestrian Traffic Volumes (if applicable)
- Traffic Speeds
- Site Topography

Step 3: Sign Installation Evaluation

An evaluation of the location should be completed to determine if the installation is justified. This procedure for specific types of warning signs is as follows:

1. Crossing Signs (pedestrian, school, etc.)
 - a. Traffic Volume: If a daily traffic volume of a combined 1000 vehicles per day in both directions, exists on the roadway of the crossing or a peak hour volume of a combined 200 vehicles per hour on the crosswalk approaches exist and,
 - b. Crossing Volume: A crossing volume of more than 30 pedestrians per day or 10 pedestrians per peak hour or,
 - c. An 85th percentile speed on the roadway of more than 35 mph and a peak speed of two observations with more than 45 mph or,
 - d. The safe stopping sight distance on the approach to the obstruction is less than 300 feet.

2. Other Warning Geometric Warning Signs (curves, intersections, animal crossings, playground, etc.)

Other warning signs should be placed based on engineering studies and as outlined in the MnMUTCD Chapter 2C and MnDOT Traffic Engineering Manual Chapter 6.

If the warning sign request meets the requirements, as outlined above the sign(s) are considered a candidate installation. Based on this analysis and further review by city staff and the Traffic Safety Committee, a recommendation will be made to City Council to either install or not to install the warning sign(s).

If the requested location does not meet the requirements for installation, a letter to the resident requesting the information, outlining the findings will be sent by the City Engineer. This letter will include the City's policy for appeal of the engineer's decision.

CROSSWALK INSTALLATION

Marked and signed crosswalks are a critical element for the pedestrian network in the City. It is of little use to have a complete sidewalk/pathway system if pedestrians cannot safely and conveniently cross intersecting streets. When determining the need and location of crosswalks several important concepts and issues should be considered. These include:

Creating reasonable expectations where pedestrians may cross a roadway. A crosswalk creates a visible indication for both motorists and pedestrians as to where pedestrians may be expected to cross a roadway.

Knowing when and where crosswalks are appropriate. Some studies have found that **pedestrians may develop a false sense of security** when crossing a street in a marked crosswalk. Other studies have found that motorists are more likely to stop for pedestrians in marked crosswalks, especially where pedestrian right-of-way laws are enforced.

Where crosswalks might be located. Generally marked crosswalks are located at all open legs of signalized intersections. Crossing of roadways should be encouraged at controlled intersections (all-way stop or signalized). They may also be provided at other locations. The Institute of Transportation Engineers recommends that certain conditions may not warrant installation of marked crosswalks, such as where hourly, peak pedestrian volume is very low (less than 25 pedestrian per peak four hours), or when traffic volume is very low (less than 2,000 ADT). At all other locations, or when predominately young, elderly, or handicapped pedestrians may be found, crosswalks may be recommended.

Analysis Procedure:

Step 1: Requests for Crosswalk Installation

This request can come from either a resident, the City Council, the Traffic Safety Committee, the school district, or from staff observation of a particular condition. If a request is made from a resident, a signed petition of more than 80% of the households within a 300' radius of the location must accompany the request.

Step 2: Data Collection

This step in the procedure should include collecting available data as listed below:

- Average Daily Traffic Volume
- Crash Summary
- Site Visit
- Pedestrian Traffic Volumes
- Traffic Speeds
-

Step 3: Crosswalk Installation Evaluation

An evaluation of the location should be completed to determine if the installation is justified based on the following:

1. At uncontrolled intersections, the installation of marked crosswalks should be considered when there is a need. The following indicators of need should be considered when reviewing the proposed installation of a marked crosswalk:
 - a. At least ten (10) pedestrians cross the street during the one-hour period or 30 pedestrians cross during the highest consecutive four-hour periods.
 - b. The crossing is on a direct route to and/or from a significant generator of pedestrian traffic such as, but not limited to, the park, school, community center, commercial district, or transit facility.

- c. During the peak five-minute period of a pedestrian crossing, there are less than five gaps in traffic where a pedestrian has sufficient time to cross the street without impeding approaching vehicles.
2. There are several conditions where placement of marked crosswalks may not make the crossing any safer and other improvements may be required or be considered. Any of the following are indicators of such a condition:
 - a. Daily traffic volume exceeds 15,000 vehicles per day per lane.
 - b. Speed limit greater than 40 mph.
 - c. Site distance of pedestrians by motorists is less than 10 times the speed limit. For example, a 35 mph speed limit, the site distance is less than 350 feet.
3. Marked pedestrian crosswalks may be used to delineate preferred pedestrian paths across roadways under the following conditions:
 - a. At locations with stop signs or traffic signals to direct pedestrians to those crossing locations and to prevent vehicular traffic from blocking the pedestrian path when stopping for a stop sign or red light.
 - b. At nonsignalized street crossing locations in designated school zones. Use of adult crossing guards, school signs and markings, and/or traffic signals with pedestrian signals (when warranted) should be considered in conjunction with the marked crosswalk, as needed.
 - c. At nonsignalized locations where engineering judgment dictates that the number of motor vehicle lanes, pedestrian exposure, average daily traffic (ADT), posted speed limit, and geometry of the location would make the use of specially designated crosswalks desirable for traffic/pedestrian safety and mobility.
4. Marked crosswalks alone (i.e., without traffic-calming treatments, traffic signals and pedestrian signals when warranted, or other substantial crossing improvement) are insufficient and should not be used under the following conditions:
 - a. Where the speed limit exceeds 40 mph.
 - b. On a roadway with four or more lanes without a raised median or crossing island that has (or will soon have) an ADT of 12,000 or greater.
 - c. On a roadway with four or more lanes with a raised median or crossing island that has (or soon will have) an ADT of 15,000 or greater.

If the request meets the requirements, as outlined above the marked crosswalk is considered a candidate installation. Based on this analysis and further review by city staff and the Traffic Safety Committee, a recommendation will be made to City Council to either install or not to install the crosswalk.

If the requested location does not meet the requirements for installation, a letter to the resident requesting the information, outlining the findings will be sent by the City Engineer. This letter will include the City's policy for appeal of the engineer's decision.

TRAFFIC CALMING

The primary goal of the traffic calming program is to have guidelines and set procedures to address neighborhood concerns related to traffic safety and speeds on city streets.

The traffic calming program requires strong community support and participation by affected residents and property owners. It involves a review of the streets crash history, speed data, and traffic volumes. Installation of the traffic calming devices requires specific design criteria and analysis outcomes be satisfied. The traffic calming program provides a structured planning process and is flexible enough to adjust to the challenges of each unique project.

Traffic Calming Objectives:

- Improve safety by reducing vehicle speeds on two-lane city streets.
- Enhance safety for residents, pedestrians, bicyclists, and motorists.
- Maintain / enhance neighborhood livability.

Traffic Calming Guidelines:

- A combination of education, enforcement, and engineering methods will be used in the City's traffic calming program.
- Traffic calming devices will be planned, designed, and used in keeping with sound engineering and planning practices. City staff will recommend the installation of traffic calming devices such as striping, signing, center islands, roundabouts, and other approved traffic calming devices to accomplish the traffic calming program objectives. Installation of traffic calming devices may require the approval of the City Council.
- The installation of traffic calming devices will require strong community support by residents living on the affected street segment. An analysis for the installation of traffic calming devices will be conducted based on accident data, speed data, traffic volumes and standard design criteria. The analysis must document an issue in order to implement a traffic calming device.
- Traffic calming measures on city streets will be installed to reduce traffic speeds. Non-neighborhood or bypass traffic will be encouraged to use major arterial streets. Some diversion from a traffic managed street to an adjacent street will be unavoidable.
- Installation of traffic calming devices will only be considered on two-lane city streets with a posted speed limit of 30 miles per hour or less.
- Emergency vehicle access will be accommodated in all residential traffic calming plans. Traffic calming devices will be installed only with the consent of the Fire and Police departments.
- Reasonable automobile, pedestrian, and bicycle access should be maintained on city streets with traffic calming devices.
- Traffic calming devices will not inhibit or significantly impact transit, waste disposal trucks, and other service vehicles.
- Removal of some on-street parking spaces may be necessary to install certain types of traffic calming devices. The parking needs of residents will be balanced with the neighborhood's desire for the installation of traffic calming devices.

Procedure:

The City of Lino Lakes believes it is important to process requests in a timely manner. The City's program has been streamlined to effectively and efficiently utilize the City's resources while not compromising on the education and citizen participation element. The City's Traffic Calming Program is a structured process that is responsive to the needs of the neighborhood. Please be aware that during the winter months, it may be difficult to collect data that is representative of typical travel conditions. Request received during the winter months will be processed by May 31st.

Initiation:

The first step is the initiation of the process by a citizen's request for speed control along a certain street segment. City staff's current practice is to deal with the request on a direct basis and to respond to the resident within a short time period. This means that instances where the City receives an inquiry about neighborhood traffic issues, staff may respond with traditional studies and actions. This ensures that simple or incidental requests can be addressed by City staff without the necessity of a petition.

Roadway Eligibility:

- Road classification (local or collector)
- Length > 1,000 ft
- Volume > 1,000 vpd
- Posted speed ≤ 30 MPH
- Not a cul-de-sac

Petition No. 1 (neighborhood consensus):

If a street is eligible for traffic calming, City staff will request that resident(s) submit a petition to the City to determine if the concern is widespread and there is consensus among the neighborhood to pursue installation of a traffic calming device(s). City staff will prepare a map defining the households within the affected area. The requester will be asked to circulate and complete a City furnished petition form for residents living within the affected area. Below are the established requirements needed for a successful petition effort.

- 67 percent of the households located in the affected area
- 80 percent of the households on the affected street

Only one vote per residential unit will be counted towards the petition.

Level 1 Analysis:

Staff will identify the issue or problem by collecting the appropriate traffic information, such as but not limited to:

- Crash history
- Speed data collection (speed trailer and/or tube counters)
- Traffic volume (turning movement counts or tube counters)
- Existing traffic control devices
- Type of access points
- Road condition
- Site visit (sight distance measurements / analysis)

Staff will also conduct field observations and review the signing, striping, and traffic control in the area.

The Level 1 speed study will consist of speed data collected by a speed trailer or tube counters. In analyzing the speed data, the Pace of the traffic and the 85th Percentile Speed will be calculated from this data. Pace and 85th Percentile speed are defined as follows:

- Pace – The 10 MPH range of speeds containing the largest number of observations
- 85th Percentile Speed – The speed at or below which 85 percent of the traffic is moving.

Typically, the 85th Percentile Speed is within two miles per hour of the upper limit of the Pace. A normal speed distribution will contain approximately 70% of the sample within the Pace with 15% above and 15% below.

Based on the data collected, a preliminary speeding issue will be identified if:

- The calculated 85th Percentile speed from the Level 1 data is greater than the posted speed.
- More than 15% of the vehicles are traveling faster than the 10 MPH Pace.

NOTE: Federal and State speed limit guidelines define the 85th percentile speed as a “reasonable speed” or the speed in which 85% of motorists travel at or below. Experience has shown that the 85th Percentile Speed most closely provides for a safe and reasonable speed limit. Therefore, it can be expected that on a typical roadway, approximately 15 percent of the vehicles may traveling at speeds greater than the posted speed limit.

If a preliminary speeding issue is identified, City staff will first determine if low cost measures are feasible. If low cost measures are not feasible, the process will skip to the next step. Some low cost measures include:

- Education and enforcement
- Lane narrowing (striping)
- Pavement messages (30 MPH, SLOW)
- Additional signage
- Improve sight lines through tree / branch removal or grading (safety improvement)

If low cost measures are deemed feasible, the appropriate measures will be implemented by the City once funding is secured. Possible funding sources include:

- Inclusion in the City’s Capital Improvement Plan (CIP)
- Special request from the City Council

The City will then monitor the traffic conditions over a 3-month period. After the 3-month period, the City will then collect new speed data. If the analysis indicates a speeding problem still exists, education and enforcement will continue while a Level 2 analysis is conducted.

Level 2 Analysis:

A Level 2 analysis consists of a formal speed study to determine the actual, free flow speed of vehicles on a roadway. A formal speed study differs from tube counts or speed trailer collected data in that recorded speeds reflect how vehicles typically travel along unimpeded sections of the road under free flow conditions. Therefore, not all vehicles have their speeds recorded as with tube counters or speed trailers. Only the lead vehicle in a platoon of vehicles has its speed recorded. This is because the trailing vehicles’ speeds are being metered by the lead vehicle and don’t necessarily reflect free flow conditions.

Collecting speeds in this manner is typically done with a hand held radar unit, giving the operator the discretion of whether or not to include the vehicle's speed based on actual observed free flow conditions. Only those vehicles traveling at free flow speeds are recorded and evaluated.

This method of collecting speed data most closely matches that used to set speed limits. This type of analysis was reserved for this stage in the process due to the increased cost of collecting the data.

From the collected data, the 85th Percentile Speed and the Pace will again be determined and evaluated. For a formal speed study, the City's established threshold for a speeding problem is an 85th percentile speed equal to or greater than 33 miles per hour on a street posted at 30 miles per hour. If the street is deemed to have a speeding problem, the City will begin development of traffic calming alternatives to address the specific situation.

Development / Implementation of Traffic Calming Measure(s):

The City's Traffic Calming Program has defined three standard objectives. These objectives will be included in all traffic calming measure alternatives in addition to any other traffic goals the neighborhood residents may want Staff to consider. These objectives will provide the City staff direction and a standard to measure the success of the calming measure. Staff will include the residents' suggestions in the conceptual plans wherever feasible. If alternative solutions are presented, discussion of the positives and negatives of each alternative will be presented.

Petition No. 2:

Following the selection of a traffic calming measure(s), a second petition describing the proposed improvement will need to be signed by residents living in the affected area. In order for the improvement to proceed, 85 percent of the households in both the affected area and on the affected street need to sign the petition.

Council Approval and Funding of Project:

Upon the recommendation of City staff and approval by the City Council, the traffic calming device(s) will be installed. Funding allocated by the City Council will be based on the cost of the traffic calming device(s). Funding sources may consist of:

- Inclusion in the City's Capital Improvement Plan (CIP)
- Special request from the City Council
- Assessment process

Nine Month Review:

Following the installation of the traffic calming device(s), an evaluation will be conducted for up to nine months to measure its effectiveness and to determine if the objectives were met. The evaluation will be based on the following criteria:

- Speed data will be collected to determine if overall traffic speeds were reduced.
- A review of the accident history will be conducted to identify any adverse impacts the traffic calming devices may have caused. By slowing traffic, eliminating conflicting movements, and sharpening driver attention, installation of traffic calming devices may reduce the number of accidents.

- Fire and Police departments will be consulted to provide input about any impacts they may have experienced. Field observations and or discussions may also be conducted with transit, waste disposal, and other service providers to ensure that services provided to the residents are not significantly impacted.

If the objectives are satisfied as evidenced in the evaluation, no further actions will be taken. If objectives are not met, City staff may prepare alternatives and seek direction from the City Council.

Removal of Traffic Control Measure:

Should the residents desire to remove the alternative traffic calming devices after evaluation results indicate the program objectives were satisfied, 90% of the residents living on the affected street would have to sign a petition for removal. A recommendation by City staff to remove the traffic calming device(s) will require the approval of the City Council. Any associated cost for the removal of the traffic calming device(s) not justified by the project goals and objectives will be fully borne by the residents.