

**CITY OF SHAKOPEE  
STOP SIGN REQUEST**

INTERSECTION LOCATION: \_\_\_\_\_

EXISTING TRAFFIC CONTROL: \_\_\_\_\_

DATE: \_\_\_\_\_

TYPE OF TRAFFIC CONTROL REQUESTED:

ALL WAY OR TWO WAY

REASON FOR THE REQUEST: \_\_\_\_\_  
\_\_\_\_\_

PETITION ATTACHED: YES NO

The petition must be signed by 80% of the households within a 400 foot radius of the intersection.

INSTALLATION REQUESTED BY:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE: \_\_\_\_\_

SIGNED: \_\_\_\_\_

RECEIVED ENGINEERING: \_\_\_\_\_ BY: \_\_\_\_\_

## **STOP SIGN POLICY**

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, unduly 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.)

### 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

### Human Factors:

Human factors are very difficult to define. They can include:

- The age of a driver;
- How a driver responds to certain situations;
- Physical attributes of the driver

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. The human factors are very difficult to define and evaluate as part of the analysis procedure. Therefore, engineering judgement should be utilized when evaluating the human factor of the analysis procedure.

### 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 (MMUTCD), Section 2B-5. 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, 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. A stop sign installation request form is included in Appendix D.

#### Step 2: Data collection

This step in the procedure should be conducted in two phases. The first phase would include collecting the data necessary for the initial evaluation (step 3) and the second phase would be the data collection required for a full intersection control study (Step 4). The data required for each phase is listed below.

##### Phase 1

- Average Daily Traffic Volume data.
- Accident summary.
- Initial site visit.

## Phase 2

- Traffic speed.
- Vehicle classification.
- Pedestrian data
- Intersection topographic information.
- Detailed accident 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 a daily volume of more than 1000 vehicles per day on all combined approaches exists, the intersection is a candidate for an intersection control study **or**,
- B. Accident history: If there are more than two reported accidents 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 city council. A letter to the resident requesting the information, outlining the findings will be sent by the Public Works Director. This letter will include the City's policies for appeal of the engineers 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 follows:

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 accident history indicating a need for control by a stop sign or,

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. An accident 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 500 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 is more than 1000 vehicles per day and the minor street traffic volume is less than 50% of the major street traffic volume.
2. There has been more than two reported accidents, per year in the previous two years or, three reported accidents 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 the A.M. and P.M. peak traffic hours.
4. If the safe stopping sight distance of the minor approach is restricted by less than 300 feet by horizontal and/or vertical roadway alignment or by other permanent obstructions.

If two of the four conditions 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 is more than 1500 vehicles per day and the minor street traffic volume is greater than 750 vehicles per day.
2. There has been more than two reported accidents, per year in the previous two years or, three reported accidents 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 A.M. and P.M. peak traffic hours.
4. If the safe stopping sight distance on the uncontrolled approach is restricted by less than 300 feet by horizontal and/or vertical roadway alignment or other permanent obstructions.
5. If the 85<sup>th</sup> percentile speed in the intersection is greater than 35mph and the highest reported speed with two or more observations is greater than 45mph.

If three 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, 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 Public Works Director. This letter will include the City's policies for appeal of the engineers decision.



