Neighborhood Traffic Management Program

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1.0 Introduction

Concerns about traffic volumes and higher speeds have become important issues throughout the metro area and are having an increasing impact on Local Streets in the City of Roseville. The City of Roseville is continually striving to strengthen and protect its neighborhoods by improving the quality of life. A goal of the Roseville Comprehensive Plan is for the transportation system to address community issues and concerns while maintaining and enhancing neighborhoods, providing connectivity, and the sense of community cohesion.

An established traffic management process:

- Allows the city to better respond to residents and businesses,
- Provides the opportunity for better understanding of the issues, and
- Allows consistent application across the community.

Therefore, for citizens to obtain consideration for the installation of a traffic management strategy on either a street or within a larger neighborhood area they are required to follow a process. The program will ensure that neighborhoods with documented existing, traffic issues and community support for traffic management have access to the neighborhood traffic process. The projects included in the Neighborhood Traffic Management Program depend upon citizen involvement and may vary from year to year based upon citizen participation and available funding. Various terms are used throughout this document, see Appendix A for Definitions.

Purpose

In the City of Roseville, traffic management concerns have historically been handled by the following processes.

- Traffic Safety Committee- An administrative committee established to address routine traffic concerns brought forward by residents and businesses.

- Construction Design Process- When a street is identified for reconstruction, staff conducts a review of existing conditions. This review can include public information meetings that solicit feedback regarding traffic concerns. As a part of this process, staff will study existing concerns and suggest strategies to address these concerns.

The Neighborhood Traffic Management Program is not intended to replace these existing processes. It is intended to add another tool for staff to address concerns that require additional community feedback or financial support to implement.

This document was developed to guide city staff and inform citizens about the processes and procedures for implementing traffic management strategies on Local Streets to address documented existing traffic concerns such as excessive vehicle speeds, high volumes of non-local through traffic, vehicle crashes in neighborhoods, and alleviate conflicts between motorized and non-motorized users. The document includes a summary of the City of Roseville's Policies for the Traffic Management Program, background on the history of traffic management, the City of Roseville's process for implementing strategies, and a toolbox of common traffic management strategies.

The intent of this program is to address existing neighborhood traffic concerns. Expansion of existing streets, construction of new street segments, and streets needed as the result of

redevelopment will not be evaluated in conjunction with the criteria included in the program. These situations will be evaluated independently by the City Council.

2.0 Policies

The Neighborhood Traffic Management Program will be governed by the following policies:

- Identified projects will be evaluated for compatibility with transportation goals in the Roseville Comprehensive Plan, Chapter 5, Transportation.
- Implementation is limited to Local Streets. A Local Street is a street under the jurisdiction of the City of Roseville. Ramsey County and MnDOT roads are excluded from this program.
- Strategies will be funded by a combination of city funds and neighborhood assessments.
- A system-wide approach for neighborhood traffic problems will be used. For each project, city staff will determine a logical project boundary. This is necessary for the approval process and will help ensure that the issue of displacement/ diversion to other Local Streets is addressed.
- Projects will be limited to those Local Streets where the 85% speed exceeds 5 mph above the posted speed limit or where there are other existing factors affecting the livability of the neighborhood. Table 1 describes other factors that can be taken into consideration.
- The proposed strategy should not negatively impact the street's existing traffic capacity, safety, or change the intended function of the road.
- Implementation of traffic management strategies will be in accordance with the procedures set forth in this document, and in keeping with sound engineering practices, as well as be within the city's available financial and staff resources.
- A project on a Municipal State Aid (MSA) road will meet MSA design standards.
- Trucks are allowed on all Local Streets unless otherwise posted (by State law trucks must be allowed on all Municipal State Aid Roads.)
- Implementation of any device will be consistent with the guidelines in the Minnesota Manual on Uniform Traffic Control Devices.
- Implementation of strategies shall be consistent with recommended strategies included in the Mn/DOT Safety Handbook.
- Initial deployments are considered temporary for study purposes and subject to an interim review by City staff prior to permanent installation.

3.0 Traffic Management Background

The United States has used street closures and traffic diverters dating back to the late 1940s and early 1950s, but it was not until the 1970s that Seattle, Washington completed area-wide demonstrations of traffic management strategies. Since then, traffic management has been continually studied and implemented throughout the United States. Strategies include street closures, traffic diverters, speed humps/bumps, signing, increased enforcement and many others, but they all are implemented to accomplish one of the following:

- Modify driver behavior (reduce speed)

- Modify traffic characteristics (reduce volume)
- Improve safety for pedestrian and bicyclists

Traffic management can be simplified as a three step process: (1) identify the nature and extent of existing traffic-related problems on a given street or area (2) select and implement the proper strategy for reducing the identified problem and (3) evaluate effectiveness, accept, modify or revert. The traffic management strategies discussed in this document are solutions to a narrowly defined set of problems and are not universally applicable or effective at solving all problems. A traffic management strategy used in the wrong application will not improve conditions - it will only increase City costs and may even make conditions worse.

Since not all strategies are appropriate for every problem the City has developed a process to identify the appropriate solutions. The process includes identifying the problem, evaluating potential strategies, and implementing appropriate strategies while including public participation and governmental approval. This process is summarized in Section 4.

Many traffic management strategies can be expensive and create inconvenience. A broad base of support is necessary. Poor planning, lack of neighborhood input, and/or support can result in controversy and divide neighborhoods.

The process and strategies included in this document are intended to be used on Local Streets to reduce speeds and volumes. The goal is promote safety for all public right of way users.

4.0 Procedure Summary

A flow chart, Exhibit 1, provides a summary of the procedures for implementing a traffic management strategy on a Local Street. What follows is a summary of the procedure. For a full description of these steps see Section 5.0 Procedure Details.

Step 1 - Study Request (Application)

First citizens must identify candidate streets for traffic management improvement and submit a written request to the City Engineering Division. Any requests for project proposals require a written application with 51% of the Project Neighborhood signing the application. Appendix B provides a sample application.

Step 2 - Preliminary Review and Evaluation

The City Engineering Division will review requests and determine whether they can be handled as part of the administrative traffic engineering procedures, construction design process, or police enforcement function of the City or if they qualify for consideration under the Neighborhood Traffic Management Program.

Step 3 - Data Collection and Traffic Study

If it is determined that the request falls under the Neighborhood Traffic Management Program the City will undertake an engineering study of the street(s) or neighborhood including gathering relevant data of the affected streets.

Step 4 - Develop/ Evaluate Traffic Management Strategies

Based on the traffic study and input from other departments, the City Engineering Division will make a preliminary determination of the need for traffic management strategies and make recommendations as to which strategy would be appropriate.

Step 5 – Receive Neighborhood Feedback

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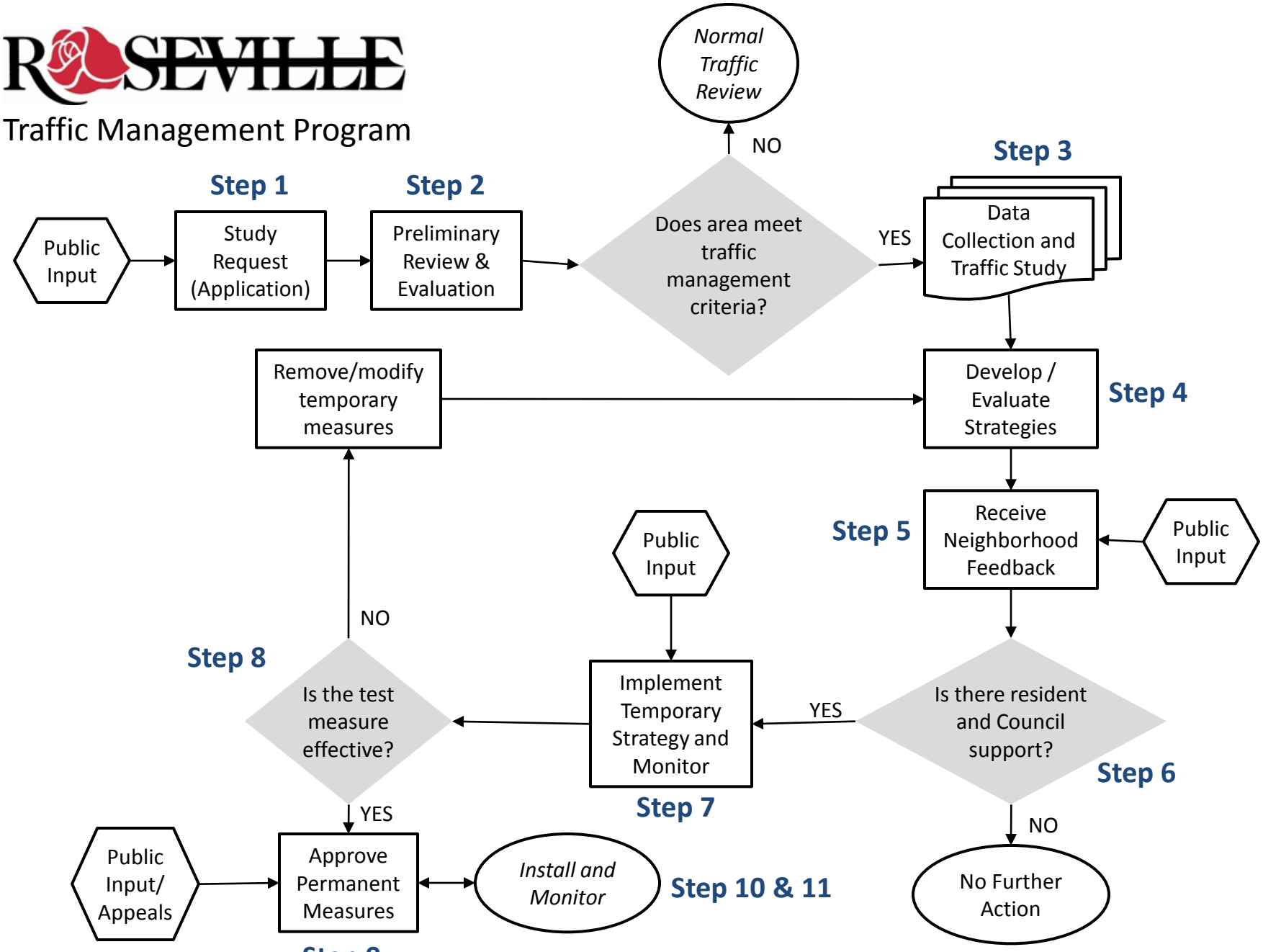


Exhibit 1
Neighborhood Traffic Management Process Flow Chart

A neighborhood meeting will be held, or a summary letter will be sent, to present the conclusions of the traffic study and discuss appropriate next steps in the process. At this time a survey will be sent out to determine neighborhood support for the recommended traffic management strategy and to receive input from affected citizens.

Step 6 - Traffic Management Strategy Recommendation and Approval

The recommended strategy will not be implemented without the support of 65% of the Benefited Area and 51% of the Affected Neighborhood. In addition to neighborhood approval, the City Council must also approve the implementation of the traffic management strategy.

Step 7 - Implement Temporary Strategy and Monitor

If a strategy is approved it may be possible to implement first a temporary strategy. If a temporary measure is used, it will be monitored for a minimum of 3 months to determine its effectiveness.

Step 8 - Strategy Evaluation

Results from the monitoring of the temporary measure will be used to determine if the strategy will be recommended for final approval from the City Council. If the temporary measure is not effective the Engineering Division will revisit the analysis and development of strategies (Steps 3 and 4) or choose to not continue the process.

Step 9 - City Council Action

Based on the strategy evaluation, City staff members will provide a recommendation to the City Council regarding the proposed traffic management strategy.

Step 10 - Design, Final Assessment Roll and Construction

If the project is approved, City staff prepares and recommends the final project as required under authority granted by Minnesota Statute Chapter 429.

Step 11 - Monitoring

Once a traffic management strategy has been implemented the City will continue to conduct periodic monitoring of the site to collect data for future implementation of strategies and to document the effectiveness of the installed strategy. This program and the associated Toolbox may be amended at any time by the City Council.

5.0 Procedure Details

Step 1 - Study Request (Application)

Citizens may identify candidate streets or areas for traffic improvements. The key to any successful traffic management strategy is choosing the most appropriate tool for the specific situation. The requesting neighborhood must identify the specific street or intersection involved, direction of traffic, day of week, time of day and other important data. Some request may be handled by phone or verbally from citizens to City Staff, which could result in increased police enforcement or placement of the City's speed display equipment. Any requests for permanent traffic management strategies require a written application with 51% of the Project Neighborhood signing the application. Appendix B provides a sample application.

Step 2 - Preliminary Review and Evaluation

The City Engineer will review requests to determine whether or not they should be handled as part of the administrative traffic engineering procedures, construction design process, or police

enforcement of the City. Some requests may be able to be handled within the current Capital Improvement Program such as planned infrastructure improvements or reconstructions. In addition, common requests for increased traffic enforcement, and placement of the temporary variable speed display equipment are commonly handled by the City Traffic Safety Committee.

Review of requests will consist of comparing the identified street characteristics with the following initial criteria:

- The street in question must be classified as a Local Street in the City of Roseville (see Appendix C for roadway jurisdiction map).
- The requests must be related to speeding, Excessive Traffic Volumes, crashes, Cut-through Traffic, truck traffic, non-motorized transportation safety or other related impacts on a Local Street.

If it is determined that the request falls under the function of the TMP, then Step 3 will be initiated. If not, the request shall be followed up as appropriate by the City Engineer as part of the Department's normal function, including coordination with the Police, Fire, or Public Works Departments as needed.

Step 3 - Data Collection and Traffic Study

If it is determined that the request falls under the guidelines of the TMP, the City Engineer will conduct an engineering study. The study will include the following actions:

Define Benefited Area/ Affected Area

The definition of the Benefited Area and Affected Area sets up the project boundaries and will be used to determine neighborhood support during the petition process and for the assessment process if a strategy is implemented.

Data Collection

Traffic data collection will include (as appropriate based on identified problem) one or more of the following:

- Traffic volume counts (24 hour counts in 15 minute increments, truck volume counts)
- Non motorized transportation counts
- Speed surveys
- Cut-through Traffic estimates
- Crash information (three years minimum- 5 years recommended)
- Roadway Geometry (sight distance, lane configuration, etc.)
- Land Use Mix (density of residential and presence of sidewalks, pedestrian generators such as schools, parks, bus routes, unique features)

Evaluation of Traffic Data

From the data collected the traffic problems associated with the neighborhood street can be documented. The documentation will be valuable in the development of possible traffic management strategies.

From the data collected the City will also be able to rank the potential projects for further study. Table 1 provides the ranking criteria. This ranking will be beneficial if the number of request submitted is beyond the fiscal and staffing ability of the city. By ranking requests based on the criteria set forth in Table 1, the city can prioritize projects to focus funding accordingly.

TABLE 1: Traffic Management Request Ranking Criteria

Pathway adjacent to Benefited Area (0 to 100 points)	None +100 All of 1 side +50 All of 2 sides +0
Public school yard, parks, playground development adjacent to Benefited Area (0 to 200 points)	None +0 All of 1 side +100 All of 2 sides +200
Residential development adjacent to Benefited Area (0 to100 points)	None +0 All of 1 side +50 All of 2 sides +100
Number of reported correctable crashes based on up to 5 years of available data (0 to 200 points)	20 per crash; maximum of 200 points
Average residential density adjacent to Benefited Area (0 to 50 points)	0 dwelling units per 100 lin. ft. = 0 points 5+ dwellings units per adjacent 100 lin. ft. = 50 points
85^{th} Percentile speeds 5 mph over posted speed limit (0 to 200 points)	Yes - +200 No - +0
Average Daily Traffic Volumes - ADT (0 to 200 points):	ADT divided by 10; maximum 200 points For intersection, street segments or multiple streets, use higher volume street
Percent of potential assessment properties supporting project by petition (180 to 300 points)	3 points per percent; maximum 300 points

Step 4 - Develop/Evaluate Traffic Management Strategies

Using the data collected during the development of the traffic study and applying recognized traffic engineering standards, the City Engineering Division will recommend the use of one or more neighborhood traffic management strategies. A "toolbox" of strategies is included in Section 6.0 of this plan. While it is not inclusive of all strategies, it provides a summary of the most applied and successful strategies as documented in the research summarized in Appendix C. The toolbox includes a brief description of the strategy, its effects on volume, speed, noise, and safety, a discussion of its advantages and disadvantages and design considerations. The following strategies are included in the toolbox:

Traffic Control Devices

- One-Way Streets
- Stop Sign Implementation
- All-Way Stop Sign Implementation
- Parking Restrictions
- Pavement Markings/ Crosswalk Striping
- Speed limits

Roadway Adjustments

- Narrowing Lanes
- Intersection Chokers
- Mid-Block Narrowing
- Chicane
- Sidewalks

Vertical Elements

- Speed Tables
- Raised Crosswalk
- Median Barrier
- Traffic Circle
- Street Closure
- Full/ Diagonal Diverter
- Partial Diverter

Enforcement

- Increased Enforcement
- Variable Speed Display Board

Management Strategy Effectiveness

As stated earlier, traffic management strategies are not universally applicable or effective at solving all problems. The Institute of Transportation Engineers has collected data on the effectiveness of traffic management strategies implemented throughout the United States. Table 2 provides a summary of this data and can be useful in the selection of appropriate traffic management strategy to implement. Along with the information provided in Table 2 on effectiveness, the following are some other effectiveness considerations:

- Traffic control devices, by themselves, are almost never effective at reducing traffic volumes or vehicle speeds.
- Enforcement can be effective if applied regularly and over an extended period of time.
- In most cases, enforcement will result in local citizens being ticketed.
- Roadway adjustments (narrowing) have proven to be moderately effective but at high implementation costs.
- Vertical elements (primarily speed humps/bumps) have proven to be moderately effective but neighborhood acceptance has been mixed.
- The combination of enforcement plus other strategies has proven to be the most effective approach.

The following terms are used in Table 2:

- Poss- it is possible that this strategy will affect the problem.
- Yes- it is expected that this strategy will affect the problem.
- No- this strategy will have no effect on this problem.

TABLE 2 Management Strategy Effectiveness	**Volume Reduction**	**Speed Reduction**	**Safety Improvement**	**Increase in Air / Noise Pollution**	**Emergency Access Issues**	**Access Restriction**	**Increased Maintenance Efforts**	**Cost**
Traffic Control Devices								
One-Way Streets	Poss	No	Poss	No	Poss	No	Poss	Low
Stop Sign Implementation	No	No	No	Yes	Yes	No	No	Low
All-Way Stop Implementation	No	No	Poss	Yes	No	No	No	Low
Parking Restrictions	No	No	Poss	No	No	No	No	Low
Pavement Markings/ Crosswalk Striping	No	No	No	No	No	No	No	Low
Speed limits	No	No	No	No	No	No	No	Low
Roadway Adjustments								
Narrowing lanes	No	Poss	Poss	No	No	No	No	Mid
Intersection Chokers	No	Poss	Yes	No	Poss	No	No	High
Mid-Block Narrowing	No	Poss	Poss	No	No	No	No	Mid
Chicane	Poss	Poss	No	No	No	No	Yes	High
Sidewalks	No	No	Poss	No	No	No	Poss	Mid
Vertical Elements								
Speed Humps/ Tables	Poss	Yes	Poss	Poss	Poss	No	Poss	Mid
Raised Crosswalk	Poss	Yes	Poss	Poss	Poss	No	Poss	Mid
Median Barrier	Yes	Poss	Poss	No	Yes	Yes	Poss	High
Traffic Circle	No	Poss	Poss	No	Poss	No	Yes	High
Street Closure	Yes	Poss	Poss	No	Yes	Yes	Poss	High
Full/ Diagonal Diverter	Poss	Poss	Poss	No	Yes	Yes	Poss	High
Partial Diverter	Poss	Poss	Poss	No	No	Yes	Poss	High
Enforcement								
Increased Enforcement	No	Yes	Poss	No	No	No	No	Mid
Variable Speed Display Board	No	Yes	Poss	No	No	No	No	Low

Cost Estimate and Funding

For the purpose of discussions with affected citizens, a cost estimate will be developed for the recommended strategy. The following cost sharing will occur with an approved traffic management strategy:

- City of Roseville will pay the cost of administrative work, traffic study and data collection.
- If the traffic study requires expertise that is not available in house, the City may need to hire a consultant to complete the traffic study. If this occurs, the cost for the study will be incorporated into the 25/75 cost share described below.
- City of Roseville pays 25% of the construction and installation costs of major strategies while the neighborhood affected will pay 75% of the cost (minor items such as installation of a limited number of signs or painting of crosswalks and other pavement markings would be assumed completely by the City) Construction cost includes direct engineering, legal and project administration.

Costs associated with implementing traffic management strategies vary significantly from just over $250 for installing a speed limit sign to $10,000 or more for a landscaped median construction. Table 3 provides a summary of typical implementation costs for traffic management strategies.

TABLE 3
Typical Costs

Type of Implementation	Unit	Unit Cost (2012)	Maintenance cost
Warning Signs	Per sign	$250	Replace every 10 yrs average
Pavement Markings - Roadway Striping - Crosswalk Striping	 Per linear foot Per crosswalk	 $1 $150	Same Cost every 3 years to refresh paint
Street Lighting	Per fixture	$7,500	$150/ year
Raised Crosswalk	Per crosswalk	$4,000	$500/ year
Speed Humps/ Table	Per table	$5,000	$500/ year
Mid-Block Choker	Per choker	$5,000	$500/ year
Intersection Choker	Per approach	$5,000	$500/ year
Mid-Block Speed Table	Per table	$7,500	$500/ year
Intersection Speed Table	Per intersection	$25,000	$500/ year
Traffic Circle	Per intersection	$15,000	$1,000/ year
Center Island	Per approach	$15,000	$1,000/ year
Half Closures	Per intersection	$40k to $60k	$500/ year
Full Closures	Per intersection	$120,000	$1,000/ year
Sidewalk (6 ft concrete)	Per Foot	$81	$1.10
Trail (8 ft Bituminous)	Per Foot	$70	$1.14

Source: City of Minneapolis & ITE, Traffic Calming - State of the Practice

While the city will cost share only the implementation costs, the consideration of future maintenance costs are also a factor for determining the most appropriate strategy. While the implementation of a traffic sign may appear to be the least expensive option at only $250, the additional per year cost of annual maintenance needs to be considered. A comparison of the annual costs for the most common strategies for speed reduction, increased enforcement and speed humps, is included in Table 3.

Step 5 - Receive Neighborhood Feedback

After the completion of the traffic study and the development and evaluation of potential strategies, the city will either hold a Neighborhood Meeting or distribute a letter to inform the community on the process and results of the traffic study and provide information on the recommended strategies. Based on the engineering study and input from citizens, the city will make a preliminary determination and recommendation for the need of traffic management strategies.

Step 6 - Traffic Management Strategy Recommendation and Approval

Once the traffic study results, management strategies, and cost estimates have been provided to Affected Neighborhood citizens, a survey/petition will be circulated to ascertain whether or not the neighborhood approves of the recommended strategy and are willing to cover the potential costs of implementation.

In order to proceed further with the implementation of the proposed strategy:

- A minimum of 65% of the Benefited Area must be in support.
- A minimum of 51% of the Affected Neighborhood must be in support.
- Each household is entitled to one signature.
- If no response is received from a property, it shall be considered a negative response.

If these thresholds are not met, the request shall be followed up as appropriate by the City Engineer as part of the Department's normal function, including coordination with the Police, Fire, or Public Works Departments as needed.

Once approval is obtained from the neighborhood the strategy will be presented to the City Council for approval.

Step 7 - Implement Temporary Strategy and Monitor

In most cases, the strategy will be implemented with temporary materials and remain in place for approximately three to six months depending on the type of improvement. The strategy will be evaluated to determine if it addresses the identified problems and is consistent with the Neighborhood Traffic Management Program goals. During the test period citizens may provide comments to the City Engineering Division regarding the improvement. At any time during this test phase appeals of the decision for installing the strategy can be submitted and forwarded to the City Engineer.

If it is determined that it is not practical to install a temporary strategy, this step can be eliminated.

Step 8 - Strategy Evaluation

If it is determined that the temporary strategy does not achieve the intended goals of reducing speeds, cut through traffic or other identified problems, the City Engineering Division will review other potential strategies and recommend the elimination of all strategies or test the installation of a different strategy.

When it is determined that a temporary strategy is effective, the City Council will be asked to order the preparation of a Feasibility Report for the installation of a permanent form of the approved traffic management strategy.

Step 9 – City Council Action

Based on the strategy evaluation and survey, City staff members prepare a feasibility report and recommendations for the City Council. The report outlines the process followed, includes the project findings, states the reasons for the recommendations and includes a preliminary assessment roll. The feasibility report and preliminary assessment roll will be presented for a recommendation by the Public Works Environment and Transportation Commission (PWETC) before final action by the City Council. If the feasibility report is adopted and the preliminary assessment roll is approved by the City Council, the project is ordered. If the feasibility report and preliminary assessment roll are not adopted by the Council, the plans and specifications will not be ordered and the project will be terminated. The project will thereafter be removed from the list and the Benefited Area is not allowed to reapply for a same or similar study for five years.

Step 10 – Design, Final Assessment Roll and Construction

Final design and construction supervision are administered by the City and are generally completed within 12 months after final approval and assessment by the City Council. City staff prepares and recommends the final assessment roll as required under authority granted by Minnesota Statute Chapter 429.

Step 11 - Monitoring and Future Actions

The City will conduct periodic monitoring of the fully installed traffic management strategy to determine if the project continues to provide effective improvement to the neighborhood. The monitoring will be conducted at the discretion of the City based on available funding, staffing levels, and resident comments.

If monitoring shows that the implemented strategy fails to achieve the intended goals it may be removed.

Legal Considerations

From the local government perspective, the legal issues surrounding traffic management strategies fall into three categories: statutory authority, constitutionality, and tort liability. First, the local government must have legal authority to implement traffic management strategies on a given roadway (statutory authority). Second, the local government must respect the constitutional rights of affected landowners and travelers on the roadways (constitutionality). And finally, the local government must take steps to minimize the risk to travelers from the installation of traffic management strategies (tort liability). Through documentation of the entire process, including the collection and evaluation of traffic data, the decision process, and interaction with the public, the Roseville Traffic Management Program can minimize potential legal difficulties.

Appeals
Decisions of staff can be appealed to the City Council. The appeals process will follow established City procedures.

Removal
The Traffic Management Program is intended to avoid the costly installation and later costly removal of traffic management strategies. On occasion, however, it may be determined to be desirable to remove a traffic management strategy installed under the Program.

If the removal is City initiated due to safety/ crash/ complaint issues, the removal will be at City expense. If the removal request is at the request of the Benefited Area, the removal will be charged to the property owners in the defined Benefited Area. The request will be processed generally using the same procedures as outlined in this program requiring written request and appropriate neighborhood approval.

6.0 Traffic Management Strategy Toolbox

The following Toolbox provides information on a variety of traffic management strategies. Each strategy includes information on its purpose, its effectiveness for solving different types of traffic problems, and a summary of advantages and disadvantages for implementation. The toolbox has been organized into types of strategy as follows:

Traffic Control Devices - the use of common traffic control devices, such as signing and pavement markings, to solve neighborhood traffic problems. Included in this category are:

- One-Way streets
- Stop Sign Implementation
- All-Way Stop Sign Implementation
- Parking Restrictions
- Pavement Markings/ Crosswalk striping
- Speed Limits

Roadway Adjustments - there are multiple strategies for traffic management that change the appearance of the roadway including:

- Narrowing lanes
- Intersection Chokers
- Mid-Block Narrowing
- Chicane
- Sidewalks

Vertical Elements - introducing vertical elements to the roadway, either as obstacles for vehicles to drive over or around, are common traffic management strategies. These include:

- Speed Humps/ Tables
- Raised Crosswalks
- Median Barrier
- Traffic Circles
- Street Closure
- Full/ Diagonal Diverter
- Partial Diverter

Enforcement - there are two options for using enforcement as a traffic management strategy: increase police enforcement and the use of Variable Speed Display Boards.

One-Way Streets

Purpose

Conversion of two-way streets to one-way operation for purposes of residential street traffic control take three forms:

CASE #1 - Divergent and convergent one-way residential streets to reduce direct through routes impacting the neighborhood.

CASE #2 - Alternating one-way streets throughout a portion of a grid system to gain safety advantages of one-way operations.

CASE #3 - Creating a one-way couplet by paring a residential street with a nearby thru street to create a corridor for thru traffic

R6-1

R6-2

Source: FHWA Manual on Uniform Traffic Control Devices

Effects	
Volumes	Case #1 – reduces traffic volumes where thru traffic is a problem Case #2 – no significant effect on traffic volumes Case #3 – increases volumes on one street and reduces volumes on adjacent streets
Speed	May increase speeds due to improved motorist comfort levels.
Traffic Noise and Air	Minimal effect except in Case #1 which creates longer, circuitous routes for local traffic.
Traffic Safety	One-way streets result in fewer potential conflicting movements, improving safety.
Advantages	• Possible increased parking • Inexpensive to implement • May reduce traffic volumes • May increase roadway capacity
Disadvantages	• May be considered inconvenient for residents • Possible increase in speeds • May increase volumes on other streets
Problems Targeted	• High traffic volumes • High crashes due to conflicting movements
Design	• One way streets can be used in combinations that force turns every few blocks to minimize speeding or cut-through problems

Stop Sign Implementation

Purpose

Regulatory sign that is used to assign right-of way at an intersection. Only recommended for installation if specific guidelines are met in accordance with the Minnesota Manual on Uniform Traffic Control Devices (MnMUTCD). Stop signs should not be used for speed control or volume reduction and should not be installed on the major street unless justified by an engineering report.

R1-1

Source: FHWA Manual on Uniform Traffic Control Devices

Effects	
Volumes	Little or no effect.
Speed	Little or no reduction in speed, speed possibly increases due to drivers speeding up to make up for time lost at the stop sign.
Traffic Noise and Air	Noise is increased near the intersection due to the increase activity of acceleration. Air quality worsens due to deceleration, idling and acceleration.
Traffic Safety	Possible increase in crashes, possibly due to the stop signs being unexpected or deemed unnecessary, therefore encouraging rolling stops or by instilling a false sense of security in crossing motorists and pedestrians.
Advantages	• Inexpensive installation costs (do require continual maintenance costs). • Defines driver's right-of-way. • Increase opportunity for pedestrians to cross the roadway. • May discourage cut-through traffic.
Disadvantages	• Can cause negative traffic safety impacts if sign is not warranted. • May result in mid-block speeding • Increasing levels of intersection control are associated with increased frequency of crashes. • Difficult to enforce full stop control compliance. • Could result in increase in speeds between the signs as drivers try to make up for lost time.
Problems Targeted	• At intersections where right-of-way is confusing.
Design	• Guidelines need to be met as established in the Minnesota Manual on Uniform Traffic Control Devices. • In most cases the street carrying the lowest volumes should be stopped to minimize the number of vehicles stopping.

All-Way Stop Sign Implementation

Purpose

The All-Way STOP condition is primarily intended to address either a higher than expected intersection crash frequency or to be an interim measure at locations that have demonstrated a need for a traffic signal installation, but where the signal cannot be installed in a reasonable period of time. It is a common belief that installing STOP signs on all approaches of an intersection will result in fewer crashes. Research indicates that average crash frequency at All-Way STOP controlled intersection is 50% higher than thru/STOP intersections. Also, there is no evidence to suggest that STOP signs decrease travel speeds.

R1-1

Source: FHWA Manual on Uniform Traffic Control Devices

Effects	
Volumes	Little or no effect.
Speed	Little or no reduction in speed, mid-block speed possibly increase.
Traffic Noise and Air	Little or no effect.
Traffic Safety	In most cases, the installation of an All-Way STOP will increase the frequency of crashes. Only in those rare cases where the number of crashes with the thru/ STOP control is unusually high, is the forecast of safety improvement probable.
Advantages	• Inexpensive installation costs (do require continual maintenance costs). • Defines driver's right-of-way. • Increase opportunity for pedestrians to cross the roadway. • May discourage cut-through traffic.
Disadvantages	• Can cause negative traffic safety impacts if sign is not warranted. • May result in mid-block speeding. • Increasing levels of intersection control are associated with increased frequency of crashes. • Difficult to enforce full stop control compliance. • Could result in increase in speeds between the signs as drivers try to make up for lost time.
Problems Targeted	• Unusual conditions at intersection including crash frequency, turning patterns, delay and pedestrian conflicts.
Design	• Traffic volumes and crash frequency thresholds need to be met as established in the Minnesota Manual on Uniform Traffic Control Devices. •The most effective deployment of the All-Way STOP condition is at intersections where the volume of traffic on the major and minor roads is approximately equal.

Parking Restrictions

Purpose

Parking restrictions can assist in improving residential street safety in two ways:

1) Clearance No Parking Zones to improve sight lines at intersections and crosswalks
2) Extended No Parking Zones to improve visibility of and for pedestrians along the length of the block.

Source: FHWA Manual on Uniform Traffic Control Devices

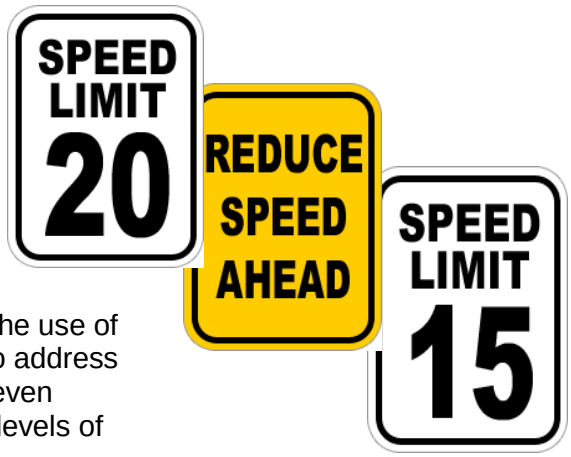
Effects	
Volumes	Little or no effect.
Speed	Minimal changes unless there are extended No Parking Zones that can create the potential for increased speeds.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Increasing sight line distances reduce right angle conflict between vehicles at intersections, alleys and driveways.
Advantages	• Can reduce some types of accidents (late evening hit and run parked vehicle accidents and crashes related to parking maneuvers).
Disadvantages	• In area where on-street parking is at capacity and there is no alternative off street parking additional restriction to parking can be controversial to residents.
Problems Targeted	• Non-Residential parking intrusion.
Design	• Should review the impacts of parking on surrounding streets.

Pavement Markings/ Crosswalk Striping

Purpose
Provide a designated, marked location for pedestrians to cross residential street and make drivers more aware of potential pedestrian conflicts.

Effects	
Volumes	No effect
Speed	No effect
Traffic Noise and Air	No effect
Traffic Safety	Research has shown that marked crosswalks at uncontrolled intersection are unrelated to pedestrian safety.
Advantages	• Reasonably effective at identifying locations with potential pedestrian conflicts. • Helps to concentrate pedestrian activities at specific intersection and on specific legs of intersections.
Disadvantages	• At uncontrolled intersections, appears to create a false sense of security in pedestrians – the 8" white line will stop the oncoming 4,000 pound vehicle. • Costly to maintain. • Not required to establish legal cross-walk locations.
Problems Targeted	• Concentrating pedestrian crossing activities, particularly when combined with other strategies such as advanced warning signs, systems of sidewalks, enforcement, etc.
Design	• Marking cross walks is not necessary to establish legal crossing locations and is unrelated to pedestrian safety. •Marked crosswalks may be part of a program to designate walking routes and concentrate pedestrian crossings when combined with other strategies.

Speed Limits



Purpose

Speed limits are determined by the Minnesota Department of Transportation (consistent with State Statutes) based on an analysis of the actual speed profile of the road. The basic premise of Minnesota's law is that the majority of motorists will pick a safe and reasonable speed given the horizontal and vertical design of the street, locations of driveways, sidewalks, obstructions, and the use of the street by pedestrians. Lowering the speed limit to address speeding in a neighborhood has never proven to be even moderately effective without also including very high levels of enforcement.

Effects	
Volumes	Little or no effect.
Speed	Drivers generally ignore posted speed limits and travel at speeds which the drivers consider reasonable.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Effects of speed limit changes on traffic safety on local residential streets have not been reported. Research suggests that crash frequencies on urban roadways are unrelated to vehicle speeds.
Advantages	• Research indicates that when speed limits are set at or near the 85th percentile speed, roadway crash frequencies are at a minimum.
Disadvantages	• Speed limits on urban roadways are either set by Statute or by MnDOT. • Research indicates that crash frequencies on urban roadways are unrelated to vehicle speeds.
Problems Targeted	• High speeds through residential neighborhood
Design	

Narrowing Lanes

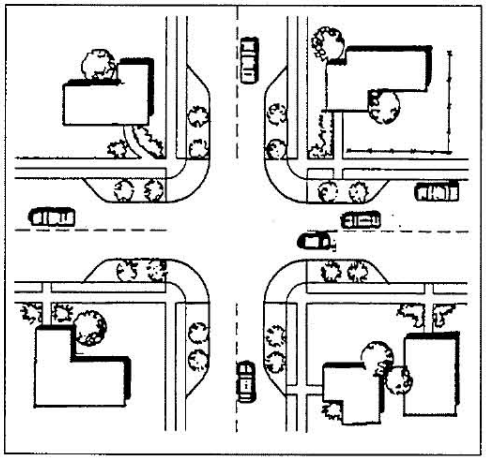
Purpose

The reduction of the typical pavement width along a roadway. The narrowing can be achieved physically by removing part of the pavement surface or by simply using pavement markings to indicate narrow travel lanes.

Effects	
Volumes	Little or no effect.
Speed	Possible reduction in speed.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Potential for improved pedestrian safety due to shorter street crossing times, but at the same time bicycle safety may be compromised by physically removing part of the pavement surface.
Advantages	• Use of pavement markings to narrow street is relatively inexpensive ($0.20 per lineal foot). • Narrowing of street may provide opportunity for street beautification programs.
Disadvantages	• May require the prohibition of on-street parking causing hardship or inconvenience for residents. • May result in shifting volumes to adjacent streets if number of lanes is reduced
Problems Targeted	• Wide residential streets where speed reduction is desired. • Excess street volume on multilane streets.
Design	• Must not create significant impact due to loss of parking.

Intersection Chokers

Purpose
Narrowing of the street at an intersection to constrain the width of the traveled way. They provide shorter pedestrian crossing distances and provide protection to the beginning of a parking lane. The driver also senses the roadway narrowing when approaching one of these measures, which can result in speed reduction and a reminder that the driver is entering a residential area.



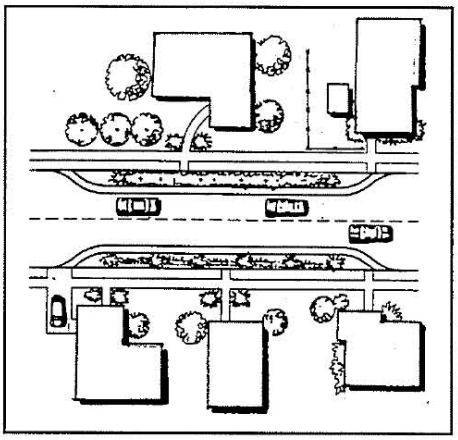
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Little or no effect.
Speed	Minimal changes.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Potential for improved pedestrian safety due to shorter street crossing times, but at the same time bicycle safety may be compromised by physically removing part of the pavement surface.
Advantages	• Good for pedestrians due to shorter crossing distance • Provides space for landscaping and neighborhood “gateway”. • Should not affect emergency response time. • Minimal inconvenience to drivers.
Disadvantages	• May require the prohibition of on-street parking causing hardship or inconvenience for residents. • May cause bicyclists to travel in same traffic lane as vehicles. • May require redesign of drainage system.
Problems Targeted	• Mid- block locations with speeding and/or cut-through traffic
Design	• There must be adequate turning radius for emergency vehicle access especially on narrow streets. • Drainage structures must be relocated to fit into new curb line.

Mid-Block Narrowing

Purpose

Segment(s) of roadway narrowing where curbs are extended toward the center of the roadway on one or both sides of the street to constrain the width of the traveled way. They provide shorter pedestrian crossing distances and provide protection to the beginning of a parking lane. The driver also senses the roadway narrowing when approaching one of these measures, which can result in speed reduction.



Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

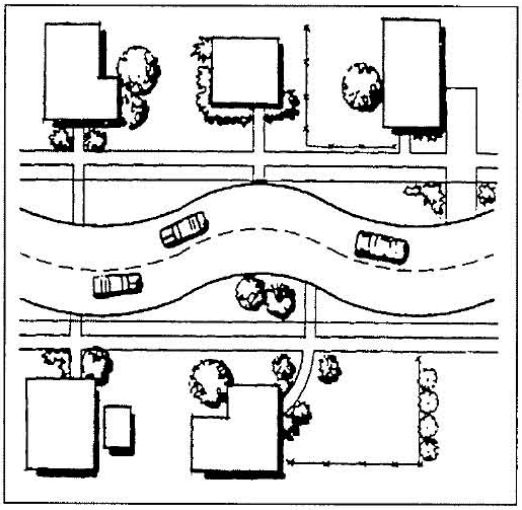
Effects	
Volumes	Little or no effect.
Speed	Minimal changes.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Potential for improved pedestrian safety due to shorter street crossing times, but at the same time bicycle safety may be compromised by physically removing part of the pavement surface.
Advantages	• Good for pedestrians due to shorter crossing distance. • Provides space for landscaping. • Does not affect emergency response time. • Minimal inconvenience to drivers.
Disadvantages	• May require the prohibition of on-street parking causing hardship or inconvenience for residents. • May create drainage issues where curb and gutter exist. • May create diversion for bicyclists.
Problems Targeted	• Mid- block locations with speeding and/or cut-through traffic.
Design	• Must not significantly impede emergency vehicle access. • Drainage structures must be relocated to fit into new curb line.

Chicane

Purpose

Curvilinear reconstruction involving the introduction of curvatures on previously straight alignment. Curvilinear reconstruction can be accomplished in two different ways:

1. Reconstruct the street with a curved centerline alignment and a uniform roadway width.
2. Introduce chokers or other types of barriers on alternate sides of the street to create a serpentine travel path.



Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Possible reduction in volumes.
Speed	Possible reduction in speeds.
Traffic Noise and Air	Little to no effect.
Traffic Safety	Little or no effect.
Advantages	• Possible reduction in volumes and speed. • No restriction in access to residents. • Can be landscaped enhanced. • Less disruptive for emergency vehicles than speed humps.
Disadvantages	• Curbside parking must be prohibited in some locations. • Winter maintenance problems. • Possible impacts to drainage. • High cost of reconstruction.
Problems Targeted	• Excessive speeds.
Design	• Not appropriate for narrow streets (24 feet is appropriate width). • Drainage structures must be relocated to fit into new curb line.

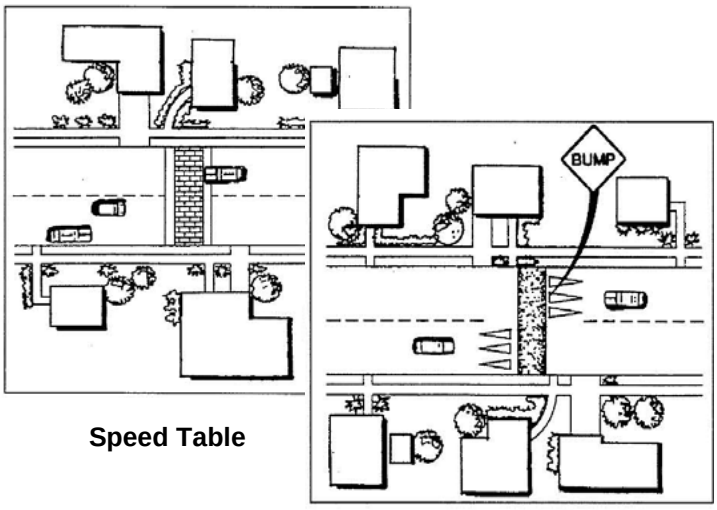
Sidewalks

Purpose
Sidewalks are intended to provide pedestrians with a safe walking location when traffic volumes or vehicle speeds make walking on the street potentially dangerous.

Effects	
Volumes	No Effect.
Speed	No Effect.
Traffic Noise and Air	No Effect.
Traffic Safety	Possible decrease in pedestrian crashes.
Advantages	• Separates pedestrians and vehicles. • Very effective at reducing pedestrian/vehicle conflicts.
Disadvantages	• Moderately costly to implement. • Requires systematic deployment to achieve high levels of effectiveness. •Increased maintenance efforts. • Mixed neighborhood acceptance.
Problems Targeted	• High levels of pedestrian activity, especially at/near pedestrian generators (schools, parks, retail areas, etc).
Design	• Should be installed along all arterials and collectors (because of the traffic volumes and speed) and along residential streets based on providing connections to areas with high levels of pedestrian activity.

Speed Humps/Tables

Purpose
A physical feature (usually made of asphalt or rubber mounds) that are designed to rise above the roadway surface and extend across the roadway perpendicular to the traffic flow. Typically used to reduce vehicle speeds.



Speed Table

Speed Bump

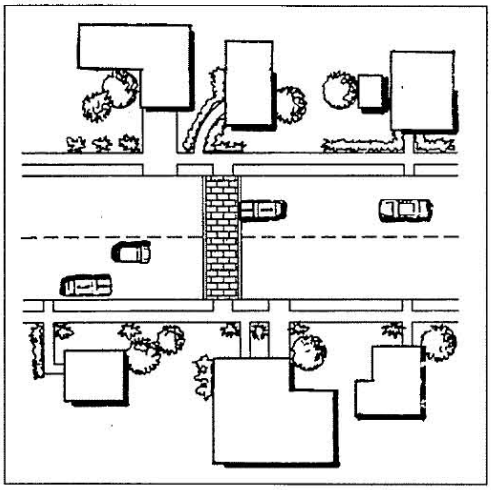
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	May reduce traffic volumes.
Speed	Effective in slowing vehicles traveling at typical residential speeds to approximately 5 to 15 mph depending on type installed at the device – may reduce overall speeds by 5 to 7 mph.
Traffic Noise and Air	May have an increase of noise at the bumps/humps.
Traffic Safety	Traffic safety has not been found to be compromised with these devices. Traffic safety benefits can be gained if speeding is involved.
Advantages	• Reduces speeds. • Usually reduces traffic volumes. • Does not require parking removal or interfere with bicycle/pedestrian traffic.
Disadvantages	• Can potentially increase noise. • Can cause traffic to shift to parallel residential or collector streets. • May decrease emergency vehicles response times.
Problems Targeted	• Excessive speed. • High volumes.
Design	• Speed humps are only effective for 250 feet on either side of the hump. Thus, a neighborhood considering speed hump installation would require two to three installations.

Raised Crosswalk

Purpose

A raised crosswalk is a speed table designed as a pedestrian crossing, usually at mid-block to provide additional warning of a pedestrian crossing



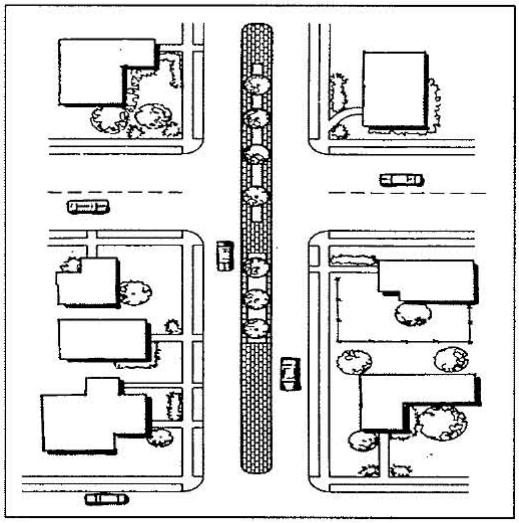
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Possible reduction in traffic volumes.
Speed	Decrease in speed at crosswalk.
Traffic Noise and Air	Possible increase in traffic noise.
Traffic Safety	May increase awareness of pedestrians.
Advantages	• Speed control at pedestrian crossing. • Increases pedestrian visibility and awareness to driver. • May reduce traffic volumes.
Disadvantages	• Possible increase in noise. • Possible diversion of traffic to other streets. • May impact drainage.
Problems Targeted	• High mid-block pedestrian crossing and excessive vehicle speeds.
Design	• Should be placed in mid-block. • Not appropriate for grades greater than 5 percent. • Most common height is between 3 and 4 inches and typically have ramps 6 feet long.

Median Barrier

Purpose

A physical means for preventing left turning traffic on a major street from accessing a local street and through traffic from continuing on that local street. Alternate routes for diverted traffic should be analyzed with regard to traffic carrying capacity and desirability.



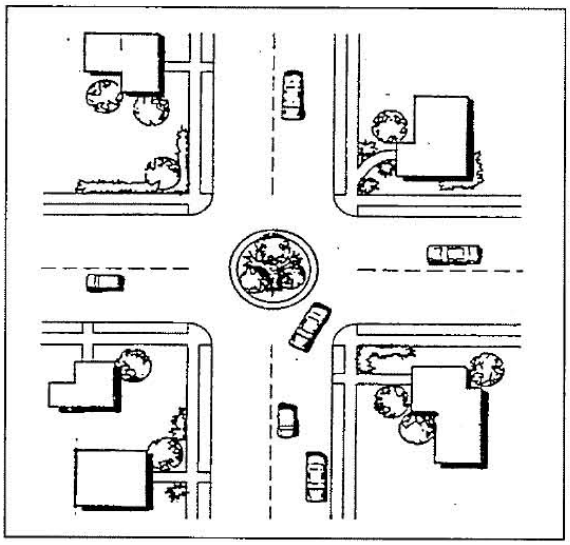
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Vary depending on proportion of traffic that is prohibited by the median barrier.
Speed	Small reduction possible.
Traffic Noise and Air	Little or no effect.
Traffic Safety	May provide some safety benefits for pedestrians as a safety island for crossing the major street.
Advantages	• Assists in pedestrian crossing. • Prevents vehicles from passing vehicles that are turning right. • May improve safety through access limitations. • Visually enhances the street.
Disadvantages	• Diversion of traffic to other locations possible. • Disrupts continuity of local street system. • Landscaped islands require additional maintenance. • Reduction in access for residents.
Problems Targeted	• Cut through traffic. • Vehicle conflicts.
Design	• Must meet drainage requirements. • Must not significantly impede emergency vehicle access.

Traffic Circle

Purpose

A traffic circle is a raised geometric control island, frequently circular, in the center of an intersection of local streets. Typically, traffic circles would be about 20 feet in diameter. Traffic traveling through the intersection must avoid the island affecting the path and speed of the traffic.



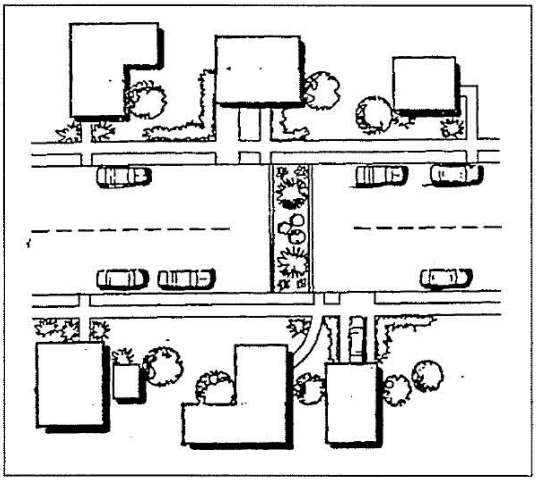
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Little or no effect.
Speed	May reduce speed at intersection.
Traffic Noise and Air	Little or no effect.
Traffic Safety	May decreases vehicle conflicts at intersection.
Advantages	• Reduces speed at intersection approach. • Reduces vehicle conflicts at intersection. • Provides equal access to intersection for all drivers. • Does not restrict access to residents. • Can be landscaped.
Disadvantages	• Some parking restrictions required. • Local experience has found these devices to be ineffective. • Can restrict access for trucks, buses and may increase emergency vehicle response time. • Winter Maintenance.
Problems Targeted	• Excessive speeds. • Crash history at intersection.
Design	• A minimum of 30 feet of curbside parking must be prohibited at each corner of the intersection. • Unsuitable on MSA roads.

Street Closure

Purpose

A street closure, for the purpose of this tool box, is defined as closing a street either at one end or the other, or at a mid block location to eliminate unwanted through traffic.



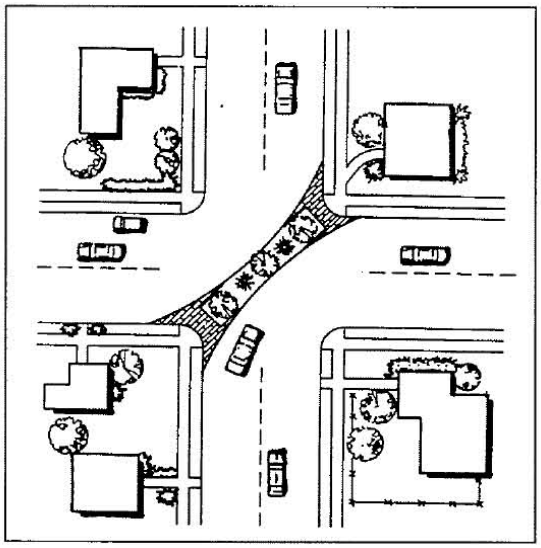
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Reduces through traffic volumes.
Speed	May reduce speed.
Traffic Noise and Air	Little to no effect.
Traffic Safety	May improve safety of street.
Advantages	• Eliminates through traffic. • Possibly reduces speed of remaining vehicles. • Can maintain pedestrian and bike access.
Disadvantages	• Increases emergency vehicle response times. • May cause inconvenience for some residents. • May divert traffic to other streets. • May require additional right-of-way acquisition. • Winter maintenance.
Problems Targeted	• Cut through traffic volumes.
Design	• There needs to be a minimum of 120 foot right-of-way to accommodate the minimum turning radius of 40 feet.

Full / Diagonal Diverter

Purpose

A full diverter, sometimes called a diagonal diverter, is a raised barrier place diagonally across an intersection that physically divides the intersection and forces al traffic to make a sharp turn.



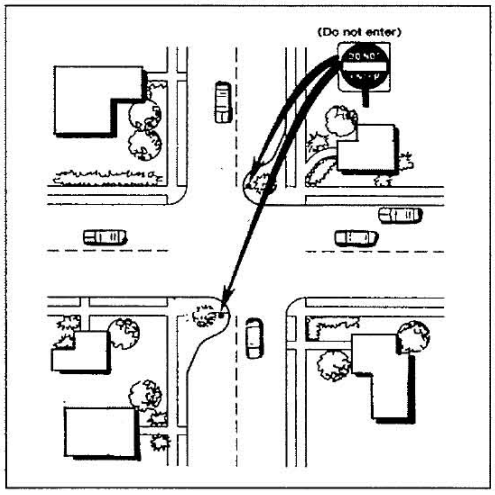
Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	May decrease traffic volumes.
Speed	May reduce speed.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Possible improvement.
Advantages	• Reduces traffic volumes. • Restricts vehicle access while maintaining bicycle and pedestrian access.
Disadvantages	• Prohibits or limits access and movement. • Restricts access for emergency vehicles. • May impact drainage. • May impact parking.
Problems Targeted	• Cut through traffic. • Speed – forces driver to slow to make the turn.
Design	• The curvature of the diverter is dependent on the intersection roadway widths. • Special care needs to be taken with drainage design. • The intent is to divert traffic to arterial and collector streets. • Needs to be good visibility approaching the diverter for drivers to react and navigate the turn safely.

Partial Diverter

Purpose

A partial-diverter is the narrowing of a two way street in order to eliminate one direction of travel. The concept can only be used at an intersection and attempts to reroute traffic attempting to use the protected street onto other roadways.



Source: Institute of Transportation Engineers
Traffic Calming: State of Practice

Effects	
Volumes	Reduces traffic volumes in the eliminated direction.
Speed	Possible speed reduction.
Traffic Noise and Air	Little or no effect.
Traffic Safety	Improved pedestrian crossing.
Advantages	• Allows for movement of emergency vehicles. • Reduces traffic volumes. • Allows two-way traffic on the remainder of the street. • Shorter pedestrian crossing at intersection.
Disadvantages	• Parking may be impacted and reduced. • Interrupts street network connectivity. • Emergency vehicles do have to drive around partial closure with care.
Problems Targeted	• Excessive volumes on residential street.
Design	• Care has to be given in the design to not hinder unnecessarily emergency vehicles due to poor design.

Increased Enforcement

Purpose

The effective use of public safety/police personnel to encourage reduced speeds in residential areas. Enforcement usually involves the use of radar to identify speeders and ticket violators.

Speed Watches rely on neighborhood participation to create awareness and, in turn, help control speeds in neighborhoods.

Effects	
Volumes	Little or no effect.
Speed	Speed reduction as long as enforcement is maintained (the "halo" effect of infrequent enforcement is as little as 1 mile or 4 hours).
Traffic Noise and Air	Little or no effect.
Traffic Safety	May reduce overall crashes if speeds are actually reduced.
Advantages	• Easy to implement. • Effective with repetitive enforcement on a non-routine basis. • Speed Watch programs have been perceived positively by neighborhood, even in areas where significant speed reductions were not measured. These types of programs may make neighborhoods find that they do not actually have a speeding problem.
Disadvantages	• Not self-enforcing; temporary measure, dependent on resources. •Expensive and not always desirable to use police for traffic enforcement due to budget and manpower constraints.
Problems Targeted	• Speeding. • Moving vehicle violations. • Running stop signs.
Design	• The locations of implementation should be clearly identified to minimize the time spent enforcing and maximize the resultant speed reduction. • Actual speed surveys should be used to narrow problem to specific time (day of the week, time of day) and location.

Variable Speed Display Board

Purpose

A portable speed display board wired to a radar provides passing motorists their travel speed along with the speed limit. The display can help raise driver awareness, encourage compliance, and direct driver's attention to the posted speed limit. The purpose is to remind drivers that they are speeding to help encourage compliance.

Effects	
Volumes	Little or no effect
Speed	Lower observed speeds when device is present
Traffic Noise and Air	Little or no effect
Traffic Safety	There is the potential for sudden braking by some motorists.
Advantages	• Portable Display board can be used in various locations enabling residents to borrow and place on their street. • Low cost ($2,000 to $11,500 per unit). • Can be used to target timing and location of police enforcement (if data shows excessive speeds at a certain time).
Disadvantages	• Possible concerns with causing conflict between citizens involved (vigilantism). • May only provide short term effectiveness. • Possible vandalism or could encourage aggressive drivers to see how fast they can go. • Needs power to function. • Requires personnel to move and place unit.
Problems Targeted	• Any location where speeding is a problem or where drivers need to be educated about traffic issues in the area.
Design	• Variety of types of variable speed display boards available – some include traffic counting abilities.

Appendix A: Definitions

Affected Neighborhood - Area for a project that is defined as those residences and businesses along local streets that are positively or negatively impacted by excessive through traffic volumes and speeding, or that may be positively or negatively impacted by proposed traffic management strategy.

Benefited Area- The properties expected to receive the majority of the positive impacts from the proposed traffic management strategy and which are subject to assessment for the cost of installation or removal of a NTMP improvement. (Assessed Area) The typical Benefited Area extends from intersection to intersection, but may be adjusted on a project- by- project basis.

Capital Improvement Plan- or CIP is a five year plan, which identifies capital projects and provides a planning schedule.

Chicane – Mainline deviations to deter the path of travel so that the street is not a straight line (by the installation of offset curb extensions). (Also called: Deviations, serpentines, reversing curves, twists, etc.)

Choker – Physical street narrowing to expand sidewalks and landscaped areas; possibly adding medians, on street parking, etc. (Also called: Pinch points, lane narrowing, midblock narrowing, midblock yield points, constrictions.)

Construction Design Process- When a street is identified for reconstruction, staff conducts a review of existing conditions. This review can include public information meetings that solicit feedback regarding traffic concerns. As a part of this process, staff will study existing concerns and suggest strategies to address these concerns.

Cut-through Traffic – Traffic that intrudes into a residential subdivision to avoid congestion or other problem from an arterial, local collector, or other high level street.

Diagonal Road Closures – A barrier placed diagonally across a four-legged intersection, interrupting traffic flow across the intersection. This type of barrier may be used to create a maze-like effect in a neighborhood. (Also called: Diagonal diverter)

Excessive traffic volumes – Daily traffic on a road that is not attributable to expected volumes of traffic generated by property owners that live on that road. Does not apply to arterials, local collectors or other high level street classifications.

Feasibility Report – A report analyzing the recommended type of construction, the estimated construction cost, estimated engineering cost and the estimated assessment.

Infrastructure – Fixed facilities, such as roadways or railroad tracks; permanent structures.

Local Street – A roadway under the jurisdiction of the City of Roseville.

Median Barriers – Raised island or barrier in the center of the street that serves to segregate traffic.

Municipal State Aid (MSA) Route – A designated City roadway that receives state funds as allocated from the State gas tax for maintenance and construction.

Approximately 20 percent of the City roadways are designated as MSA routes. State of Minnesota rules and standards, in addition to local jurisdiction guidelines, apply to these roadways. MSA streets carry higher volumes of traffic and serve as local collector roads.

Non-Local Traffic – Traffic that does not originate from or is not destined to a location within a neighborhood or area.

Non-motorized Transportation – Bicycling, walking, small wheeled transport (skates, skateboards, push scooters and hand carts) and wheelchair travel.

Partial Street Closure – Physical blockage of one direction of traffic on a two-way street. The open lane of traffic is signed "One way", and traffic from the blocked lane is not allowed to go around the barrier through the open lane. (Half closure.)

Project Neighborhood – Property owners living on Local Streets that request traffic management improvements. Any request for project proposals require a written application with 51% of the Project Neighborhood signing the application. For purposes of application, this includes all property owners abutting the street being requested for study between major intersections. (i.e.: An application for study of Woodhill Drive, between Lexington and Hamline; This segment of road has 18 different property owners. The application must be signed by 10 property owners.)

Radar Speed Display Units – Driver feedback signs that use radar to provide motorists with an instant message, displayed on a reader board, telling them how fast they are driving.

Raised Crosswalk – A speed table designed as a pedestrian crossing, generally used at mid-block locations.

Regulatory Signs – A sign that gives notice to road users of traffic laws or regulations.

Roadway striping – Highlighting various areas of the road to increase the driver's awareness of certain conditions (e.g., edge of road striping to create a narrowing/ slowing effect while defining space for cyclists).

Roundabout – Raised circular areas (similar to medians) placed at intersections. Drivers travel in a counterclockwise direction around the circle. Modern roundabouts are "yield upon entry"; meaning that cars in the circle have the right of way and cars entering the circle must wait to do so until the path is clear. When a roundabout is placed in an intersection, vehicles may not travel in a straight line.

Speed– Speed is defined based on the following classifications:

a) **Advisory Speed** – A recommended speed for all vehicles operating on a section of highway and based on the highway design, operating characteristics, and conditions.
b) **Design Speed** – A selected speed used to determine the various geometric design features of a roadway.
c) **85th-Percentile Speed** – The speed at or below which 85 percent of the motorized vehicles travel.
d) **Posted Speed** – The speed limit determined by law and shown on Speed Limit signs.

e) **Statutory Speed** – A speed limit established by legislative action that typically is applicable for highways with specified design, functional, jurisdictional and/or location characteristic and is not necessarily shown on Speed Limit signs.

Speeding – 85th Percentile speed is at least 5 mph over the posted speed.

Speed Hump –Wave-shaped paved humps in the street. The height of the speed hump determines how fast it may be navigated without causing discomfort to the driver or damage to the vehicle. Discomfort increases as speed over the hump increases. Typically speed humps are placed in a series rather than singularly.

Speed Limit – The maximum (or minimum) speed applicable to a section of highway or roadway as established by law.

Speed Table – Trapezoidal shaped speed humps in the street, similar to speed humps.

Street Closure – Street closed to motor vehicles using planters, bollards, or barriers, etc.

Targeted Police Enforcement – Specific monitoring of speeding and other violations by police due to observed, frequent law disobedience.

Traffic Circle – Circular, raised island placed within the middle of intersections, requiring vehicles to divert around them, potentially forcing drivers to slow down as they traverse around the circle. (Similar to roundabouts- not allowed on MSA streets)

Traffic Management – A combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior and improve conditions for nonmotorized street users. Traffic management involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and cut-through volumes in the interest of street safety, livability and other public purposes. Traffic management strategies are intended to be self-enforcing. Traffic management strategies rely on the laws of physics rather than human psychology to slow down traffic.

Traffic Safety Committee – (City Code Section 601.05) Administrative committee consisting of the City Manager, Director of Public Works, and Chief of Police. The Traffic Safety Committee has the following authority:

a) To investigate and study all matters relating to vehicular traffic conditions including but not limited to parking, speed, traffic control, and traffic safety hazards.
b) To implement and provide for the installation of whatever traffic control devices are necessary to improve and promote traffic safety and properly manage the use of City roads.
c) To study and recommend to other road authorities maintaining roadways within the City corrective measures that may be deemed necessary to address traffic issues that may exist as to those authorities' roads within the City.

Appendix B- Sample Application

ROSEVILLE Traffic Management Strategy Application

The undersigned resident of properties bordering on: _____

Between the intersections of: _____ and _____
Brief Description of Traffic Related Problem:

_____

_____

_____

_____

Hereby request assistance with traffic related problems.
Signatories should understand that the City of Roseville has determined that benefitted residents shall bear 75% of the cost of installing traffic management strategies.

Name	Address (include apt #)	Signature

Appendix C- Roadway Jurisdiction Map

Traffic Management Program
Roadway Jurisdiction Map

- Roseville Roads
- Roseville MSA Routes
- Roseville Nonexisting MSA Routes
- County Roads
- State Roads
- Private Roads

ROSEVILLE

Prepared by:
Engineering Department
July 10, 2012

Data Sources and Contacts:
* Ramsey County GIS Base Map (7/02/12)
* City of Roseville Engineering Department
For further information regarding the contents of this map contact:
City of Roseville, Engineering Department,
2660 Civic Center Drive, Roseville MN

0 500 1000 1500 2000 Feet

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mapdoc: TrafficManagementProgram.mxd
map: TrafficManagementProgram.pdf