



RESIDENTIAL TRAFFIC CALMING PROGRAM

CITY OF ALEXANDRIA, KENTUCKY

Prepared For:

Safety & Public Works Departments



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CITY OF ALEXANDRIA

RESIDENTIAL TRAFFIC CALMING PROGRAM

INTRODUCTION

Successful traffic calming programs include the planning process, overall community participation and local authority support. Because residents are the main initiators of traffic calming requests, it is critical that they be part of the process as much as possible. Developing a program early on that addresses neighborhood traffic safety and livability concerns on an area wide basis encourages citizens to become actively involved in the improvement process. In this way, Public Safety & Public Works along with the residents can work together to create safer and more livable neighborhoods throughout Alexandria.

SECTION 1: OBJECTIVES

The objectives of the Residential Traffic Calming Program are to improve the residents' safety and quality of life by:

1. Reducing the average speed of traffic on local neighborhood streets.
2. Minimizing the total amount of vehicular traffic on local neighborhood streets.
3. Encouraging citizens involvement in neighborhood traffic management activities.

SECTION 2: POLICIES

The policies governing the intent and application of this program are:

1. This program is intended to be applied to existing local streets serving predominately single family residential neighborhoods. Through traffic (traffic having no immediate origin or destination in the neighborhood being evaluated) should be routed to the maximum extent possible to the major roadways. The amount of rerouted traffic that is acceptable, as a result of the traffic calming project, should be defined on a project by project basis. Minor collector streets that run through collector streets that run through residential areas may also be considered for limited traffic calming techniques on a case by case basis.



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2. Emergency vehicle access within and through neighborhoods will be carefully considered in the evaluation of traffic management and must be preserved in some reasonable fashion. It is recognized that certain traffic management techniques may result in increased emergency response times to certain streets and neighborhoods, and these impacts must be understood and considered in developing the traffic calming program. The fire department, police department and any other emergency responders will be actively involved in the process and notified of all installations.
 3. Public Works shall employ a variety of traffic calming strategies and techniques to achieve the Residential Traffic Calming Program's objectives. Such traffic calming strategies and techniques shall be planned and designed in conformance with sound engineering and planning practices. Each location will be studied on an individual basis to determine the most appropriate applications for that situation.

SECTION 3: PROCESS AND PROCEDURES

The following process and procedures are considered typical for receiving, responding to and managing residents' requests for residential traffic calming techniques on their street or in their neighborhood. Variations in this process may be approved by the Public Works Director when deemed appropriate due to unique circumstances.

Step 1: Identification of the Problem

A neighborhood representative or citizen contacts the City through the main office or the police department to discuss traffic problems or concerns. The neighborhood representative then completes and submits the Project Application form (found in Appendix A) that outlines the concerns. The application form is then forwarded to the Chief of Police and the Public Works Director who will determine based on the size of the surrounding neighborhood and number of impacted people, if the required numbers of signatures are present.

Step 2: Analysis of Traffic Problem

Police and Public Works will perform any necessary data collection and analysis to assess and quantify the traffic safety condition in the neighborhood. Staff will identify and collect preliminary information from files, data basis and other potentially affected agencies. Data will be collected during timeframes for which the staff believes the traffic volumes truly represent typical situations for the area. In order to gather the most representative data, **collection may be delayed** due to weather, local school schedules or other special events.



While there are no absolute minimum criteria or warrants established for use of traffic calming techniques, staff will refer to the following guidelines when evaluating the magnitude of traffic safety problems and potential for improvement using traffic calming techniques.

A. Minimum Vehicular Volume

Daily traffic volumes greater than 600 vehicles or peak hour volumes greater than 100 vehicles are typically suggested to consider traffic calming efforts on a particular residential street. Traffic volumes on residential streets will determine the appropriate traffic calming measures as follows:

Fewer than 600 vehicles per day and peak hour volume less than 100 vehicles:

- Education
- Enforcement

600-2000 vehicles per day or peak hour volume of greater than or equal to 100 vehicles:

- Education
- Enforcement
- Physical devices

More than 2000 vehicles per day:

- Education
- Increased Traffic Enforcement (speeding citations)
- Less restrictive physical devices only.

B. Speed

Speeding problems typically exist when more than 15% of the traffic stream is traveling more than 10 mph over the posted or statutory speed limit. Speed may also be a problem when the posted speed limit is too high for a particular location. The ideal acceptable and not acceptable traffic speeds on local streets with a 25 mph posted speed limit are as follows:

	Ideal	Acceptable	Not Acceptable
Average Speed – All vehicles (MPH)	25	30	35
85 th Percentile Speed (MPH)	30	35	40
Percent of Vehicles in 10 MPH Pace Speed %	70	60	50



C. Cut Through Traffic

Cut through traffic is typically quantified by estimating actual traffic generation from within the affected area. For local streets, cut through traffic should generally represent at least 25% - 50% of the total daily traffic to justify traffic calming efforts for this reason alone. For minor collector streets, cut through traffic should generally represent at least 50% - 75% of the total daily traffic to justify traffic calming efforts for this reason alone. The amount of cut through traffic that is acceptable shall be made on a project by project basis.

Cut through traffic can be measured through license plate surveys. These surveys are conducted by setting up observation points at each access point entering and exiting a particular section of a street. The license plate numbers and times are recorded for each vehicle passing the observation point. The data from all access points are then compared to determine the number of cut through vehicles during a given period.

D. Accidents

Accident problems are considered significant when there are three or more reported accidents, including pedestrian, bicycle and auto accidents along a residential street or within a neighborhood during a period of twelve consecutive months.

E. Street Grades and Alignments

Traffic calming devices are not typically installed on streets with grades exceeding 8% or where a combination of vertical and horizontal alignment would result in inadequate stopping sight distance for motorists encountering traffic calming devices.

F. Transit, School and Emergency Routes

Extremely restrictive traffic calming devices are not typically installed on a street serving as a designated transit route or primary emergency access route. These routes should be considered for some of the less restrictive traffic calming options. School bus routes should also be considered in the evaluation.

If the analysis described above shows that the location may warrant possible traffic calming techniques, the project will proceed to step 3. If the location does not meet the minimum



requirements and is not a suitable location for traffic calming measures, then the city will inform the neighborhood representative that the request has been denied. At this time, the police department will maintain a copy of the report containing the results of the study to be used in future enforcement efforts.

Step 3: Selection Process

Public Works will prioritize all projects that progress beyond Step 2. The prioritization will be based on a point ranking system as shown in the form in Appendix A. Those projects with the most total points are ranked the highest and will be selected for further action based on budget availability and compatibility with other transportation projects. Projects that are approved for further action will proceed to Step 4.

Step 4: Neighborhood Traffic Team Meeting

Public Works and Police representatives along with any other affected City agency will first meet with the designated neighborhood representative (referred to as the "Traffic Team", typically from two to five persons) to discuss traffic problems and concerns, the potential solutions identified by Public Works and Police, and confirm the affected area to be ultimately petitioned on final Traffic Calming plan recommendations. The "affected area" is generally defined as those streets whose access is substantially dependent upon the streets to be calmed, and any streets expected to receive significant increases in traffic volume or type as a result of the traffic calming installation. The Chief of Police and the Mayor will be responsible for the final approval of the "affected area" to be petitioned.

Step 5: Neighborhood Workshop Meeting

Public Works & Police staff, in conjunction with neighborhood representatives, schedules and holds a meeting (advertized by the neighborhood) for affected area residents to review the issues, the results of the Traffic Team's and staff's preliminary analysis and potential techniques for solutions. The purpose of the workshop is to overview the neighborhood concerns, present and discussion of potential solutions and develop consensus between city and workshop attendees for the strategies and devices that will be recommended to the affected area residents through the petition process. Representatives of other affected agencies such as Fire, Police and Schools should be present at this meeting. In the event that the traffic management plan is revised in this step, Public Works shall review and revise if necessary, the "affected area" identified in Step 4.



Step 6: Petition Process

Neighborhood representatives develop and submit to the City central office a proposed petition attachment that clearly outlines the proposed traffic calming devices. Neighborhood representatives circulate the petition within the identified affected area. The petition must be delivered (in a legally acceptable manner) or offered to all residents (or property owner if vacant) in the affected area. A positive response must be obtained by 67% or more of the total number of properties in the “affected area” to proceed further with traffic calming project and design and implementation. Only one petition vote shall be allowed per property with the exception of duplex dwellings wherein each dwelling unit shall be allowed one vote. Properties with more than two dwelling units will be allowed one vote, typically the property owner. All original petition responses, including those signatures in opposition to the proposal shall be provide to the City central office. A study will be performed by the police department using established criteria for further consideration.

If the petition does not achieve the required level of support from the neighborhood, neighborhood representatives shall meet with staff to evaluate potential revisions to the proposal and a second petition process.

Step 7: Project Design & Implementation

When a traffic calming project has received the necessary petition support, Public Works staff schedules design and implementation of the project within budgetary constraints. All designs shall follow ITE or other national recommended guidelines, if available. Depending upon the number of traffic calming requests received and the available funding for design and construction, a project may be placed on a waiting list and prioritized based on relative need. Any necessary property dedication or landscape maintenance agreement shall be completed prior to a final project design. Any new applications will be reviewed with members of the affected area for their input and will allow them up to 60 days to reply with their comments.

Certain techniques may be installed for a “test period” while others may be installed in a permanent fashion. All installation will be monitored and evaluated by Public Works staff for desired effectiveness.

Step 8: Monitoring & Evaluation

Within sixty to ninety days after installation of the project, Public Works staff will begin evaluation of the project, including resident and motorist reaction, field observation, traffic counts, speed studies and other data collection as needed. If the project has not met its objectives within the monitoring period, staff will notify the neighborhood representatives. The staff and the neighborhood representatives may then consider alternative solutions.



Step 9: Removal of Traffic Calming Project

If Public Works, in consultation with Police, decides that the project should be modified or removed for public health and safety reasons, they shall proceed to remove or modify the installation upon notification to the neighborhood representatives. If the Police and Public Works departments have no concerns with the project but the neighborhood itself decides that the traffic calming devices should be removed or significantly altered, the neighborhood must furnish petitions and signatures of 67% or more of households and businesses in support of the removal or alteration of the project. Final decision is made by the Mayor or the Chief of Police.

NOTE: Residents in the affected areas are involved in these processes throughout all the listed steps, especially where permanent devices are installed. For the residents in affected areas where only temporary devices are installed, the city will notify them in writing 30 days prior to public works re-installing them each year, so as to provide for public input and/or to address any of their concerns.

SECTION 4 – TECHNIQUES & STRATEGIES

Traffic calming techniques generally fall under two categories – physical and psychological. Many traffic calming techniques are designed to physically change the width or alignment of the street while other devices may psychologically cause motorists to drive slower without altering the alignment or other physical aspects of the roadway.

If a motorist can see far into the distance, his or her speed often increases. The interruption of sight lines causes most drivers to slow down. Sight lines can be interrupted by changes in the road direction through using physical techniques such as slow-points and roundabouts. Breaking the road into smaller visual units by changing the surface pavement using techniques such as brick pavers or stamped concrete, may also have the same effect. It also means motorists widen their vision field becoming much more aware of pedestrians and bicyclists. Proper changes in the road design encourage traffic to travel slower, more even pace.

Traffic calming may also be achieved by changing the psychological feel of the street. Streets using different surface types, vertical landscaping or narrowed lanes create the appropriate space for a relaxed, pedestrian-friendly feel. These psychological changes give motorists cues that they are no longer on a major roadway but are in a different environment that is shared with people.

All traffic calming techniques have a limited range of effectiveness. To achieve traffic calming objectives, some techniques need to be placed every few hundred feet. If traffic calming techniques are used too sparsely, traffic may slow close to the installation, but overall speed



along the street will probably not decrease. One technique may be used multiple times or multiple techniques may be used in conjunction with one another. Most techniques will affect emergency service response, traffic noise, air quality, congestion, fuel consumption and many other factors. Some can improve these conditions; others may cause these problems to increase.

Emergency vehicles access and response time must be carefully considered when designing and installing traffic calming devices. Emergency vehicles, particularly ambulances, have more difficulty with “vertical” devices such as speed humps than “horizontal” devices such as neck-downs. Longer fire vehicles and equipment such as ladder trucks may have trouble negotiating “horizontal” devices. Studies have shown that traffic calming devices may slow response time up to 10 seconds per device.

Likewise, bicyclists, pedestrians and other expected street users must be kept in mind when developing a traffic calming strategy, as some devices can obstruct their movement. Many devices can be modified to allow bicyclists and pedestrians to by-pass them. For instance, a diverter can be fitted with a bicycle/pedestrian path to allow for those users’ particular access needs.

A summary of available options for neighborhood traffic calming is provided in Table 1. The options have been structured into four levels. Level 1 is the least restrictive and typically has the lowest cost, while Level 4 is the most restrictive and costly. These options have been chosen for their impact on vehicle speeds and volumes on residential streets. Additional details for each option, including a sketch of the technique as well as its advantages and disadvantages are provided in Appendix b.

All the options shown in Table 1 are eligible for use on residential streets; however, only Level 1 options and some of the Level 2 options are eligible for use on minor collectors.

SECTION 5 – BUDGET & OTHER FUNDING CONSIDERATIONS

Who pays for traffic calming measures to be installed on existing city streets? Roadway changes intended to reduce speeding and/or discourage use by non-local motorists can result in costly construction. The City of Alexandria establishes an annual budget for the Public Works Department responsible for construction and installation of calming devices and measures. Once the budget has been fully encumbered for a given budget year, the following alternatives are left as options for residents who desire traffic calming measures.

- Waiting list (first come, first serve) for next budget year;
- Local assessment;
- Neighborhood association funding;



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- Proportional share assessment of affected residents (cost sharing).

Note: Cost Sharing also will be required in situations where neighborhood residents express a traffic calming preference that is more costly than the most economically feasible traffic calming measure, which deemed acceptable by the Public Works staff. The difference in cost between the recommendation and the residents' preferred alternative will be absorbed by the area residents. Some funding alternatives could be handled through a special tax assessment or by individual contributions by residents in the "affected area".

Likewise, if the staff determines that the street does not meet minimum requirements for the installation of calming devices, and local residents through the petition process express a desire to install them, the responsibility may rest on the residents to find alternative funding sources.

SECTION 6 – TRAFFIC CALMING FEATURES ON NEW STREETS & SUBDIVISIONS

While it should be the goal of good-street and subdivision design to create streets that do not require special traffic calming techniques to achieve acceptable levels of residential quality of life, it is not always possible to do so. Also, with the emergency of "traditional" and "neo-traditional" community design initiatives, many traffic calming features are inherent in their design parameter.

It is recommended that during the design phase of new subdivisions, each street be examined to determine if potential traffic calming techniques may be warranted to reduce potential speeding problems, cut-through traffic volumes, or other safety concerns. The procedure for evaluating a specific street should follow the same criteria as outlined in this program. The only difference for new streets as opposed to existing streets is the criteria such as speed, volume and cut-through traffic should be based on the projected amount for the new streets. These criteria can be sufficiently projected by a traffic engineer based on the location, layout, and the design of the proposed street.



RESIDENTIAL TRAFFIC CALMING PROGRAM
City of Alexandria, Kentucky

Table 1:

LEVEL	TRAFFIC MANAGEMENT OPTION	SAFETY IMPROVEMENT	SPEED REDUCTION	TRAFFIC REDUCTION	EMERGENCY SERVICES	INSTALLATION COSTS
1	Neighborhood Education	Possible	Possible	No	No Effect	\$1,000 - \$5,000 each
1	Traditional Enforcement	Yes (when present)	Yes (when present)	No	No Effect	\$90,000 per year for Officer and Equipment
1	Neighborhood Monitoring Program	Possible	Possible	No	No Effect	\$5,000 - \$10,000 Labor Costs
1	Radar - Speed Monitoring Devices	Yes (when present)	Yes (when present)	No	No Effect	\$5,000 - \$15,000
1	Traffic Calming Signs	Possible	No	Not Alone	No Effect	\$50 - \$75
1	Road Striping	Possible	Possible	No	No Effect	\$1,000 - \$5,000
1	Higher Visibility Crosswalks	YES	Possible	No	No Effect	\$1,000 - \$5,000 each
1	Rumble Stips	Possible	Possible	No	No Effect	\$1,000 - \$5,000 each
2	Commercial Vehicle Restrictions	Yes	No	Yes	No Effect	\$50 - \$75 per sign
2	Textured Pavement	Possible	Possible	No	No Effect	\$5,000 - \$10,000 per location
2	Mid-Block Median	Possible	No	Possible	No Effect	\$50,000 - \$100,000
2	Speed Cushions	Yes	Yes	Possible	Possible Problems	\$2,000 - \$3,000 each location
2	Speed Humps	Yes	Yes	Possible	Possible Problems	\$3,000 - \$5,000 each
2	Raised Crosswalks	Yes	Yes	Possible	Possible Problems	\$3,000 - \$5,000 each
2	Intersection Hump	Yes	Yes	Possible	Possible Problems	\$50,000 - \$100,000 each



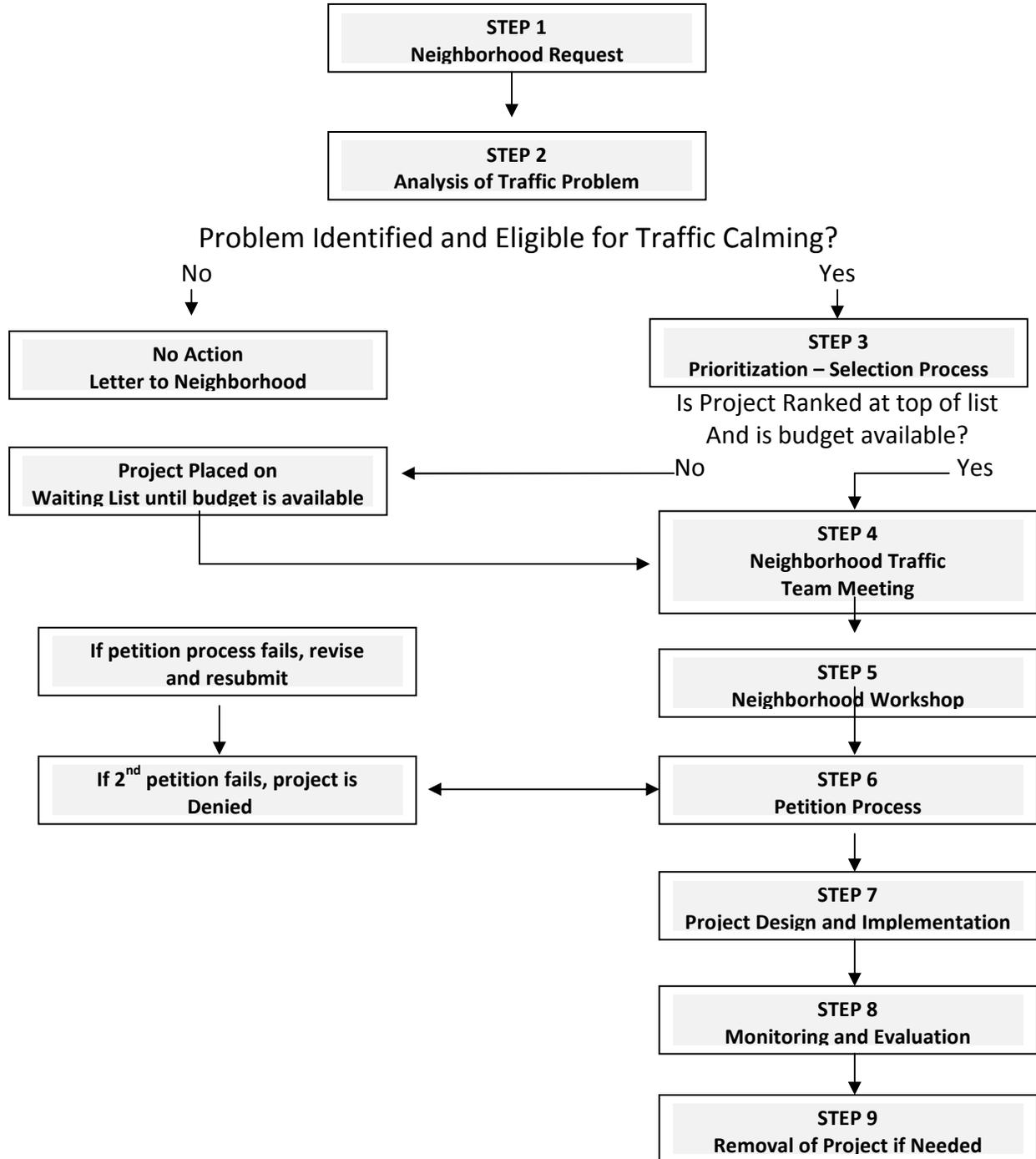
RESIDENTIAL TRAFFIC CALMING PROGRAM
City of Alexandria, Kentucky

Table 1 (Continued)

LEVEL	TRAFFIC MANAGEMENT OPTION	SAFETY IMPROVEMENT	SPEED REDUCTION	TRAFFIC REDUCTION	EMERGENCY SERVICES	INSTALLATION COSTS
3	Traffic Circles	Yes	Yes	Possible	Possible Problems	\$5,000 - \$10,000
3	Deviations / Chicanes	Yes	Yes	Possible	Possible Problems	\$50,000 - \$100,000
3	Lane Narrowing	Possible	Yes	Possible	Possible Problems	\$10,000 - \$30,000
3	Neckdowns	Possible	Yes	Possible	Possible Problems	\$10,000 - \$20,000
4	One-Way-Streets	Yes	No	Possible	Possible Problems	\$5,000 - \$10,000



Traffic Calming Project
Flow Chart





Appendix A: Program Forms

APPENDIX A

RESIDENTIAL TRAFFIC CALMING PROGRAM:

PROGRAM FORMS



RESIDENTIAL TRAFFIC CALMING PROGRAM PROJECT APPLICATION FORM

Contact (Lead) Name: _____

Address: _____

Home Phone: _____ Cell Phone: _____

Email Address: _____

Additional Contacts	Address	Phone
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____

Neighborhood _____ Today's Date _____

Which neighborhood street(s) are of concern?

What traffic problems have you identified are affecting the above streets?

How many households and/or businesses do you expect to be in the "affected area"? _____

Please return the completed application form to:

City of Alexandria
Public Works Department
8236 W. Main St.
Alexandria, KY 41001
(859) 635-4125 Office
(859) 635-4127 Fax

For Official Use Only

Reference Number: _____
Date Preliminary Analysis Completed _____
Date of First Neighborhood Workshop _____
Date of Project Presentation _____
to Neighborhood _____
Date Project Petition Submitted _____
Petition Support: (Support/Oppose) _____
Date of Project Implementation _____
Project Review Date _____

Date Application Received _____
Identified Problems: Exist _____ Perceived _____
Traffic Team Yes _____ No _____
Consensus Reached: Yes _____ No _____
Support _____ Oppose _____
Project Successful: Yes _____ No _____



**RESIDENTIAL TRAFFIC CALMING PROGRAM
PRIORITY POINT RANKING FORM**

STREET: _____
 FROM: _____ TO _____
 STAFF NAME: _____ DATE: _____
 REFERENCE NUMBER: _____

CRITERIA	BASIS FOR POINT ASSIGNMENT	POINTS
Speed	0 to 50 Points: 1 point assigned for every 1 percentage point of vehicles travelling 5 mph over the posted speed lime	
Accidents	0 to 20 Points: 2 points for every reported accident occurring on the project segment during the last 12 months. 3 additional points for each reported accident deemed correctible by traffic calming measures	
Volume	0 to 10 Points: 1 point assigned for every 1,000 vehicles per day	
Schools	0 to 10 Points: 5 points assigned for each posted school zone on the project segment.	
Pedestrian Generators	0 to 15 Points: 5 points assigned for each public facility (such as parks, community centers, etc., that generates a significant number of pedestrians along or crossing the street	
Housing Density	0 to 10 Points: 2 points assigned for every 40 homes per mile of roadway.	
Cut-Through Traffic	0 to 10 Points: Subjective analysis. 10 points assigned for "extremely excessive" amount of cut-through traffic, 5 points for "significant" amount of cut-through traffic and 0 points for no cut-through traffic or not applicable.	
Lack of Sidewalks	0 to 10 Points: 5 points assigned for each side of the street.	
Community Development Issues	0 to 10 Points: 5 points assigned for adjacent new development that will increase traffic volumes, 5 points for presence of street interconnectivity (1 point for each entry/exit connection into the petitioned area)	
Unusual Road Conditions	0 to 5 Points: 5 points assigned for a subjective road condition (such as sight distance problems) that can be improved with traffic calming devices.	
TOTAL POINTS	150 Points Maximum Score	



RESIDENTIAL TRAFFIC CALMING PROGRAM
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