City of Lee's Summit, Missouri
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CITY OF LEE’S SUMMIT:
NEIGHBORHOOD TRAFFIC SAFETY PROGRAM

I. INTRODUCTION

The City of Lee’s Summit's Neighborhood Traffic Safety Program reflects the City's commitment to the safety and livability of its residential neighborhoods. This policy was developed through a joint endeavor by three city departments: Public Works, Police, and Fire. Under this policy, the Traffic Engineering Group of Public Works will work with the Police Department and residents in a unique, cooperative and comprehensive effort to identify traffic problems in their neighborhoods and seek appropriate solutions. Citizen participation is encouraged, as it is an important part of all traffic safety programs. Experience in other cities has shown that traffic safety related initiatives that are implemented without involving the neighborhood are frequently unsuccessful.

The purpose of the Neighborhood Traffic Safety Program is to address neighborhood traffic concerns on residential local and residential collector streets. The goal of the Neighborhood Traffic Safety Program is to promote safe and livable neighborhoods by reducing the negative impact of traffic in residential areas though education, enforcement, and engineering. Although "livable" in terms of a neighborhood does not have a precise definition, a livable neighborhood can be described as having the following characteristics:

- Ability to feel safe and secure when using the street.
- Opportunity to interact with neighbors.
- Ability to experience a sense of home and privacy.
- A sense of community identification.
- Attractive streets.

Action(s) taken to address neighborhood traffic concerns are identified through a Neighborhood Traffic Study that can be initiated through several avenues, including resident request.

II. NEIGHBORHOOD TRAFFIC STUDY

Requests for a Neighborhood Traffic Study may be initiated by any of the following:

- Residents or property owner/neighborhood associations may request a Neighborhood Traffic Study by submitting an application and petition to the Public Works Traffic Engineering Group. Upon receipt of a valid application, staff will prepare a petition for the applicant to distribute that lists the property ownerships facing the street segment(s) on which the application reported areas of concern. A street segment is defined as that part of a street between successive intersecting streets. The petition must be returned with at least fifty percent (50%) support. Petitions will be reviewed by city staff for validity by verifying signatures to property ownership.
- Police Department, Fire Department, schools, or other similar service agencies may request that studies be undertaken to solve a specific concern with respect to traffic and pedestrian safety.
- City staff may initiate a Neighborhood Traffic Study to solve a specific concern with respect to traffic, pedestrian, bicycle safety, or operations. This concern may be identified through data collection and monitoring.
At a minimum the request should identify: the purpose of the study; location; description of the perceived problem (i.e. excessive traffic speed or traffic volume, time of day the problem occurs, where, etc.); and a neighborhood representative (person of contact for the neighborhood). The neighborhood representative may be the applicant or someone designated by the residents to represent the community. This person will also be responsible for the organization of petitions and coordinating neighborhood meetings with the City’s Traffic Engineering Group.

Each request is recorded into the City’s database of traffic requests. Upon receipt of a valid Neighborhood Traffic Study request, City staff will contact the neighborhood representative to arrange a neighborhood meeting where City staff, including a representative of the Police Department (when applicable), and residents can discuss the Neighborhood Traffic Safety Program, boundaries of the impact area, and solicit their input about the submitted request. The impact area includes properties which may be affected by actions taken to mitigate the concerns expressed in the request. Impact areas may include a single street segment or multiple streets depending on the nature of the concern. City staff will attempt to clarify the nature and extent of the perceived problem at this initial public meeting (e.g. excessive speed, high traffic volume, cut-through traffic, and whether the problem is at mid-block or at an intersection).

After discussion with the requested party, additional information and data will be gathered to help recognize the concern, rank the priority in relation to other concerns, and identify what action and treatment(s), if any, should be implemented. Data collected may include street width, street classification, availability of parking, fronting land uses, presence of bicycle or pedestrian routes, sidewalks, locations of parks and schools, vehicular and pedestrian counts, crash records, travel speeds, and other appropriate information to assist in addressing the concern.

When the necessary information and data has been acquired to assess the situation identified in the request and a clear understanding of the concern discussed with the applicant has been established, a Neighborhood Traffic Study will be completed by City staff to determine which course of action or combination of actions should be taken: education, enforcement, and/or engineering. The results and recommendations of the Neighborhood Traffic Study will be presented at another neighborhood meeting to be organized by the neighborhood representative.

One year after the establishment of any safety zone or the installation of physical measures, a follow-up traffic study will be conducted to assess the impact. Depending on the results of this study, additional action may be required in any or all of the three areas. Not all traffic concerns can be mitigated by education, enforcement, engineering, or any combination of the three.

**The Three E's of Neighborhood Traffic Safety**

**Education:** Neighborhood Meetings, Radar Trailer, Radar Loan Program, Message Boards, Neighborhood Newsletters, Informational pamphlets, City Web-Site, Government Access Channel;  
**Enforcement:** Assigned enforcement areas are conducted by all officers of the Traffic Unit, Scheduled return enforcement of completed program areas, Random enforcement of areas with a low volume of violators, Establishment of neighborhood traffic safety zones, Increased traffic fines;  
**Engineering:** Review areas for atypical circumstances, Investigate geometric modifications to the street which may include construction of traffic calming measures presented in the traffic calming toolbox, Appendix B.
III. EDUCATION

Whether the Neighborhood Traffic Study finds a problem exists or not, a neighborhood meeting will be coordinated through the neighborhood representative where City staff has the opportunity to educate the public on neighborhood traffic safety, the Neighborhood Traffic Safety Program, and the results of the Neighborhood Traffic Study. For any case, these actions promote safe and pleasant conditions for all users of local streets.

If the Neighborhood Traffic Study does not identify a problem, City staff will attempt to raise public awareness and convey reasonable traffic expectations in residential neighborhoods through education. The local traffic conditions will be explained to the residents and sources of neighborhood traffic safety information will be presented (city web-site, informational pamphlets, government access channel, etc). Another application into the program for the same area may not be submitted within two years from the date the traffic study was completed, unless the City Traffic Engineer determines there have been significant changes to the transportation system that would impact the recommendation.

If there is an occasional problem that doesn’t warrant enforcement or engineering measures, means of improving neighborhoods by reducing the negative impact of traffic through education will be discussed. Typically, most of the vehicles using residential streets are people who reside in the neighborhood. The City in conjunction with the Police Department will attempt to educate the residents on non-invasive methods of deterring traffic problems within a neighborhood. These methods may include neighborhood traffic safety campaigns, message boards, radar speed display units, and neighborhood speed watch programs. Neighborhood traffic safety campaigns usually consist of personalized letters or general flyers that are distributed to all residents in the neighborhood. The letters and flyers may cite statistics on speeding, cut-through traffic, or other findings summarized in the neighborhood traffic study for the area and appeal for compliance with traffic laws. Message boards may be used to raise driver awareness regarding neighborhood traffic concerns. Radar speed display units can be used to remind drivers that they are speeding, thus encouraging compliance with the speed limit. If an education approach is recommended in the Neighborhood Traffic Study, but not a Neighborhood Traffic Enforcement Zone or engineered treatments, another application into the program for the same area may not be submitted within two years from the date the traffic study was completed, unless the City Traffic Engineer determines there have been significant changes to the transportation system that would impact the recommendation.

If the problem is severe enough that enforcement and/or engineering treatments are recommended, the education techniques described above will still be discussed. The combination of education with enforcement and/or engineering is a benefit to the residents and an important aspect of the program. Since enforcement and engineering treatments may be recommended and not be supported, education could be the only initiative explored.

IV. ENFORCEMENT

Enforcement strategies to relieve traffic concerns validated by the traffic study must be supported by the majority of the residents within the impact area. If the public has indicated a majority interest in enforcement techniques discussed at the neighborhood meeting, City staff may coordinate with the Police Department to pursue increased presence and ticketing in the area.
Assigned enforcement areas are conducted by all officers of the traffic unit with scheduled return enforcement of completed program areas and random enforcement of areas with a low volume of violators.

Some areas where problems persist may be designated Neighborhood Traffic Enforcement Zones by the City and Police Department. These areas have permanently placed signs advising drivers of the area status and increased fines if stopped for traffic violations in that area. To be designated a Neighborhood Traffic Enforcement Zone, the area must be recommended by city staff, the Police Department, and the local residents. The City will contact the designated neighborhood representative and request a petition prior to action. The neighborhood representative must submit a signed petition in favor of designating the area a Neighborhood Traffic Enforcement Zone to the Public Works Traffic Engineering Group. The petition must clearly state what it is for (in favor of Neighborhood Traffic Enforcement Zone for the street(s) “location”) and the petition must be signed by at least 75% of the properties within the impact area. The City will review the petition for validity and check the signatures of the property owners against property ownership records maintained by the County. The petition must be submitted within three months of the petition request or it shall be considered unsuccessful. A Neighborhood Traffic Enforcement Zone may be removed after two years of installation at the request of the Police Department or at the request of a resident within the neighborhood with a resident petition signed by at least 75% of the residents within the original impact area.

Upon any applied enforcement technique or unsuccessful petition, another application to the Neighborhood Traffic Safety Program for the same area can not be submitted within two years from the date the traffic study was completed, unless the City Traffic Engineer determines there have been significant changes to the transportation system that would impact the recommendation.

V. ENGINEERING

TRAFFIC CALMING TREATMENTS

a. Background

If all education and enforcement initiatives are unsuccessful or inappropriate due to the nature of the concern (e.g. cut-through traffic); the use of traffic calming treatments may be considered. Traffic calming is characterized as the combination of mainly physical measures that reduce the negative effects of motor vehicles, alter driver behavior, and improve conditions for non-motorized street users (Institute of Transportation Engineers). It is the retrofitting of physical measures into the roadway to reduce traffic speeds and cut-through traffic, thereby generally making the street environment more safe and pleasant for pedestrians, other drivers, and residents. Traffic calming is not route modification, traffic control devices (notably STOP signs and speed limit signs that require enforcement), and streetscape. By contrast, traffic calming measures are intended to be self-enforcing. Traffic calming, by its nature, will impact neighborhoods and residents within the neighborhood the most. Thus the implementation of any traffic calming treatment without overwhelming local support can have significant backlash. Traffic calming has several significant benefits as well as some drawbacks. Summarized below are a few benefits and disadvantages of traffic calming.
Benefits of Traffic Calming:
- Reducing speeds.
- Reducing volume.
- Reducing collision frequency and severity.
- Increasing the safety for non-motorized users of the street.
- Enhancing the street environment (streetscape).
- Reducing cut-through vehicle traffic.
- Increasing the quality of life.
- Incorporating the preferences and requirements of people using the area along street(s).
- Reducing the negative impacts of vehicles on the environment and the neighborhood.
- Reducing the need for police enforcement, hence reducing costs (cost is quickly offset by the reduced need for police enforcement).

Disadvantages of Traffic Calming:
- Slight increase in emergency response time.
- Vehicles may be damaged and people injured by inappropriate driver behavior (e.g., driving too fast or inattentive).
- Snow removal is more difficult and time consuming.
- Installation cost.
- Additional signs and lighting may be required.
- Increased maintenance, especially where landscaping is included.
- Annoying to some residents (noise and inconvenience).
- Some treatments can restrict resident access.

Traffic calming treatments have been implemented in the United States since the 1980's. In Europe and Australia, some of these same treatments have been used long before the 1970's. Many of the successful traffic calming treatments used are into their second and third generation. There are more than 25 treatments commonly used around the world. Many of these treatments are used in the United States. The most effective traffic calming treatments are those that deflect vehicles vertically, horizontally, or both. Some of the treatments applicable for use in Lee's Summit are shown in the Traffic Calming Toolbox, Appendix B. These techniques range from street chokers, speed humps, and chicanes to traffic circles. City staff may determine to use of one or more of these treatments as a possible solution for traffic concerns. However, the Neighborhood Traffic Study must show there is a need for traffic calming and that the street is suitable for treatment.

b. Qualification

Traffic calming treatments are typically the most expensive means of mitigation and have the most significant impact to residents. For these two reasons, all traffic calming treatments must be overwhelmingly supported by the citizens within the impact area and meet certain qualifications for implementation.

Not all streets are suitable for traffic calming treatments. Suitability is based on speed, volume, street classification, and several other criteria. To be qualified for traffic calming treatments a street must meet the following requirements and score more than 50 points on the point rating system described in Table 1-1 and Table 1-2:

- Streets classified as "local" or “residential collector” by the City of Lee’s Summit.
- No more than 2 travel lanes or 40 foot pavement width.
- Horizontal curve of 300 foot radius or more.
- Vertical curve with adequate stopping sight distance.
- Grade of 8 percent or less.
- Posted speed limit of 30 mph or less.
- No more than 5 percent long wheel-base vehicles.
- Not on primary emergency response route or city bus route (not school buses).

The point criteria for local streets are described in Table 1-1. The point criteria for residential collector streets are described in Table 1-2.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Basis</th>
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<tbody>
<tr>
<td>Speed</td>
<td>4 pts for each mph that the 85th percentile speed over the posted speed limit [(85th percentile speed – posted speed limit) x 4 pts]</td>
</tr>
<tr>
<td>Volume</td>
<td>1 pt for every 50 vehicles of daily traffic [ADT/50]</td>
</tr>
<tr>
<td>Pedestrian Routes/Bikeways</td>
<td>10 pts if no continuous sidewalk on either side of the street and 5 pts if the street is a signed bicycle route.</td>
</tr>
<tr>
<td>Traffic Collisions</td>
<td>3 pts for each preventable collision in a three year period within 1000’ of the project area along the subject street segment (10 pts if a disabling injury collision).</td>
</tr>
<tr>
<td>Pedestrian Generators</td>
<td>3 pts for every school, park, community center, or church located within 1000’ of the project area (10 pts if elementary or middle school).</td>
</tr>
</tbody>
</table>

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<td>Speed</td>
<td>4 pts for each mph that the 85th percentile speed is over the posted speed limit [(85th percentile speed – posted speed limit) x 4 pts]</td>
</tr>
<tr>
<td>Volume</td>
<td>1 pt for every 150 vehicles of daily traffic [ADT/150]</td>
</tr>
<tr>
<td>Pedestrian Routes/Bikeways</td>
<td>15 pts if no continuous sidewalk on either side of the street or 5 pts if there is only sidewalk on one side of the street. And 5 pts if the street is a signed bicycle route.</td>
</tr>
<tr>
<td>Traffic Collisions</td>
<td>2 pts for each preventable collision in a three year period within 1000’ of the project area along the subject street segment (8 pts if a disabling injury collision).</td>
</tr>
<tr>
<td>Pedestrian Generators</td>
<td>3 pts for every school, park, community center, or church located within 500’ of the project area (10 pts if elementary or middle school).</td>
</tr>
<tr>
<td>Residential Density</td>
<td>1 pt for every 50 dwelling units within the impact area.</td>
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</tbody>
</table>

c. Concept

If the residents support the use of traffic calming measures (as indicated at neighborhood meetings), the project meets the requirements for traffic calming, and is recommended by the Traffic Engineering Group through the Neighborhood Traffic Study; a conceptual traffic calming plan will be developed. The conceptual plan will be presented at the second neighborhood meeting to describe/illustrate the recommended treatment(s). The conceptual plan is staff’s recommendation, but should not be considered the only solution nor binding. Upon discussion, residents may desire alternative treatments, modifications to the recommendation, or no improvements at all. Revisions may be made by the City as a result of this meeting and presented in another neighborhood meeting if required.
d. Petition

After the conceptual plan has been established, the City will contact the designated neighborhood representative and request a petition prior to implementation. The neighborhood representative must submit a signed petition in favor of implementing the conceptual traffic calming measure(s) presented in the last neighborhood meeting to the Public Works Traffic Engineering Group. The petition must clearly state what it is for (in favor of implementing/constructing traffic calming measure “type” for the street “location”). The petition must be signed by at least 75% of the properties within the impact area and by each of the property owners immediately adjacent to the proposed measure. For instance, if a speed hump is to be installed in front of a resident’s house, the resident must agree to it. The City will review the petition for validity and check the signatures of the property owners against property ownership records maintained by the County. The petition must be submitted within three months of the petition request or it shall be considered unsuccessful. If the petition is unsuccessful, another application into the program for the same area may not be submitted within two years from the date the traffic study was completed, unless the City Traffic Engineer determines there have been significant changes to the transportation system that would impact the recommendation.

e. Priority

Traffic calming projects are anticipated to be programmed on an annual basis. Programming is based on a ranking system and available funding. The ranking system prioritizes projects based on the rating score received plus points that incorporate funding and time. A project is awarded 2 points for every year, up to 5 years (10 total points) it remains on the project list. If a project is partially or wholly funded by the applicant/neighborhood residents, a point is awarded for each percent of the total estimated project cost funded above 50%, for a maximum 50 points if 100% funded. If a project does not get programmed within 5 years it will be dropped from the system and an application may be resubmitted.

f. Design

The project will be designed according to standard City procedures, generally conforming to practices set forth by the Institute of Transportation Engineers (ITE).

g. Construction

The project will be let, constructed, and inspected following standard City procedures.

h. Modification/Removal

Traffic calming measures may be removed or modified after a three year period for any of the following reasons:

- If unacceptable impacts are identified though a subsequent traffic study.
- Residents request.

If residents of the impact area feel the strategy has not achieved the goals defined in the public process and are significantly dissatisfied, they can submit a petition for modification or removal that has been signed by over 65% of the properties within the defined impact area. Upon receipt of a valid petition the City will develop a proposal (which may include the removal of the
measure or measures) to be presented in a public meeting. After the meeting, the City will request a petition be submitted by the residents within the impact area in favor of the modification/removal proposal to the Public Works Traffic Engineering Group. The petition must clearly state what it is for (in favor of modification/removal of traffic calming measure “type” for the street “location”). The petition must be signed by at least 75% of the properties within the impact area. The City will review the petition for validity and check the signatures of the property owners against property ownership records maintained by the County. The petition must be submitted within three months of the petition request. If the petition is unsuccessful, the request will be dismissed and further application for modification/removal may be initiated after 12 months. If the request is granted, the neighborhood will be responsible for funding the cost to remove or modify the traffic calming measure. When traffic calming measures are removed the area will not be considered for traffic calming for a minimum of five years after removal.
APPENDIX A. Neighborhood Traffic Safety Program Flow Chart

1. Neighborhood Traffic Study Request
   - Initial Neighborhood Meeting

2. Neighborhood Traffic Study Completed
   - After Study Neighborhood Meeting
   - “Education” Initiatives
     - Resident’s Desire to Pursue “Enforcement” & “Engineering”
       - YES
         - “Engineering” Initiatives
           - “Engineering” Qualification
             - YES
               - Conceptual Plan
                 - Neighborhood Meeting
               - Traffic Calming Implementation Petition
                 - NO
                   - Final Design Priority Construction
                   - Project Completed
             - NO
               - Conditional
                 - “Enforcement” Initiatives
                   - YES
                     - 12 Month Evaluation
                       - Post Neighborhood Traffic Study
                         - Project Completed
                   - NO
                     - Project Completed

3. Neighborhood Traffic Enforcement Zone Petition
   - Neighborhood Traffic Enforcement Zone
     - YES
       - “Enforcement” Initiatives
         - NO
           - Project Completed
     - NO
       - Project Completed
## APPENDIX B. TRAFFIC CALMING TOOLBOX

<table>
<thead>
<tr>
<th>Horizontal Deflection</th>
<th>Vertical Deflection</th>
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<tbody>
<tr>
<td>Bulb-Outs</td>
<td>Raised Crosswalks</td>
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<tr>
<td>Center Island Narrowing</td>
<td>Raised Intersections</td>
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<tr>
<td>Chicanes</td>
<td>Speed Humps</td>
</tr>
<tr>
<td>Chokers/Slow Points</td>
<td>Speed Tables</td>
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<tr>
<td>Full Diverter</td>
<td>Speed Cushions</td>
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<tr>
<td>Gateway Treatment</td>
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<tr>
<td>Median Barriers</td>
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<tr>
<td>Oval Median</td>
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<td>Semi-Divers</td>
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<tr>
<td>Traffic Circle</td>
<td></td>
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<tr>
<td>Two-Lane Slow Point</td>
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</tbody>
</table>
**BULB-OUTS**

Description: The lane is narrowed at an intersection or mid-block by extending the curbs on one or both sides of the street toward the center of the roadway or by building detached raised islands to allow for drainage and bike lane passage. May be used in conjunction with striped crosswalks.

Purpose: To slow traffic at intersections and to improve pedestrian safety.

Potential Advantages:
- May reduce vehicle speed.
- May reduce cut-through traffic.
- Reduces crossing distance for pedestrians.
- Minimal impact to emergency vehicles.
- Does not restrict access for residents.
- Can be designed to restrict truck entry.
- Can be aesthetically pleasing (if landscaped).

Potential Disadvantages
- Needs to be designed to accommodate bicyclists.
- Can impact drainage (depending on design and location).
- Curbside parking must be prohibited at the bulb, thus eliminating at least one space at each bulb location.
- Low impact on mid-block speeding.
- Maintenance responsibility, if landscaped.
- Can impede legitimate truck movements.
CENTER ISLAND NARROWING
Description: Constructed or painted islands located before an intersection or mid-block along the centerline of a street.

Purpose: To reduce traffic speed by narrowing the roadway with a median, and to increase pedestrian safety by providing a refuge halfway across the street, so that only one direction of traffic need be crossed at a time.

Potential Advantages:
- May reduce traffic speed.
- Improves pedestrian safety.
- Does not restrict emergency vehicle access.
- Can be aesthetically pleasing (if landscaped).
- Does not restrict access for residents.

Potential Disadvantages:
- Will impact parking.
- May eliminate the possibility of future bike lane installation on street by narrowing the travel lane.
**CHICANES**
Description: Curb extensions or islands that alternate from one side of the street to the other, forming S-shaped curves.

Purpose: To slow vehicle speed mid-block using horizontal deflection.

Potential Advantages:
- May reduce speed.
- Does not restrict access to residents.
- Can be aesthetically pleasing (if landscaped).

Potential Disadvantages:
- May increase conflicts between motor vehicles, bicyclists, and pedestrians.
- May create opportunities for head-on collisions on narrow streets.
- Will slow down emergency vehicles.
- Loss of curbside parking.
CHOKERS/SLOW POINTS
Description: Curb extensions on one or both sides of the street that narrow the street at that location. They may be designed to alter the path of travel or to create single lane, one-way traffic.

Purpose: To reduce vehicle speed mid-block and to increase pedestrian safety.

Potential Advantages:
- Reduces vehicle speed (more effective when used in series).
- Reduced crossing distance for pedestrians thereby increasing pedestrian safety.
- Aesthetically pleasing (if landscaped).
- Provides visual obstruction.
- Minimal impact to emergency vehicles.

Potential Disadvantages:
- May create conflict between opposing drivers.
- May impact emergency response times.
- Reduces curbside parking.
FULL DIVERTER
Description: Barriers placed diagonally across an intersection blocking through movement.

Purpose: To reduce traffic volume.

Potential Advantages:
- Reduces traffic volume.
- Can be designed to preserve emergency vehicle access.
- Can be designed to allow pedestrian and bicycle through-movement.

Potential Disadvantages:
- Can increase trip length.
- Restricts access to residents.
GATEWAY TREATMENT
Description: A short median at the entrance to a residential street.

Purpose: To slow vehicles as they turn into the street and exit the street.

Potential Advantages:
- Reduced entry speed.
- Prevents drivers from forming a second lane and so reduces some cut-through traffic.
- Improved aesthetics if well landscaped and maintained.
- Easier and safer crossings for pedestrians.
- Minimal impact on emergency vehicles.
- Does not restrict resident access.

Potential Disadvantages:
- May require some minor widening on narrower street. Makes turns by service vehicles and emergency vehicles more difficult.
- Maintenance responsibility if landscaped.
MEDIAN BARRIERS
Description: Islands located along the centerline of a street and continuing through an intersection to block through movement across a major street.

Purpose: To prevent cut-through traffic.

Potential Advantages:
- Makes the intersection safer by reducing the number of conflicting turning movements.
- Can be designed to allow through-movement for cyclists.
- Reduces local street volumes.
- Aesthetically pleasing (if landscaped).

Potential Disadvantages:
- May shift traffic to other locations where turn opportunities exist.
- May inconvenience local residents.
- May impact parking on the major street depending on lane width.
- Blocks emergency vehicle access and delays emergency response.
**OVAL MEDIAN**
Description: An oval median with trees located mid-block.

Purpose: To slow vehicles as they pass around the oval median.

Potential Advantages:
- Will reduce vehicle speeds.
- Improved aesthetics if well landscaped and maintained.
- Easier and safer crossings for pedestrians.
- Minimal impact on emergency vehicles.
- Does not affect resident access.

Potential Disadvantages:
- Requires widening of the road into the planter strips.
- Maintenance responsibility if landscaped.
- Loss of on-street paring at and on the approaches to the median.
SEMI-DIVERTERS
Description: Barriers that block travel in one direction for a short distance on otherwise two-way streets.

Purpose: To reduce traffic volume in the diverted direction.

Potential Advantages:
- Restricts movement into a street while maintaining access and movement within the street block for residents.
- Reduces cut-through traffic.
- Self-enforcing.
- Reduces crossing distance for pedestrians.
- Aesthetically pleasing (if landscaped).
- Emergency vehicles can travel in restricted direction.
- Can be designed to provide two-way access for bicycles.

Potential Disadvantages:
- May increase trip length for some residents.
- No impact on vehicle speeds mid-block.
- Restricts access to residents.
TRAFFIC CIRCLE
Description: Islands of varying dimensions placed in intersections around which traffic circulates.

Purpose: To slow vehicle speeds at intersections using horizontal deflection and a visual deterrent to higher speeds.

Potential Advantages:
- Reduces vehicle speeds.
- Improves safety.
- Visually appealing.
- Creates a visual obstruction that deters through traffic.
- Does not restrict access for residents.
Potential Disadvantages:
- Effect on vehicle speed limited to device’s immediate vicinity.
- May increase emergency vehicle response time.
- May limit truck and bus access.
- Maintenance responsibility if landscaped.
- Automobile driver’s lines of sight may be reduced if landscaped.
- May promote deliberate violation of proper movement.
TWO-LANE SLOW POINT
Description: Two triangular islands with angled median in between.

Purpose: To slow vehicles as they pass through the slow point.

Potential Advantages:
- Reduced speeds.
- Improved aesthetics if well landscaped and maintained.
- Easier and safer crossings for pedestrians.
- Minimal impact on emergency vehicles.
- Does not restrict resident access.

Potential Disadvantages:
- Maintenance responsibility if landscaped.
RAISED CROSSWALKS
Description: Raised pavement that can be combined with crosswalk markings and/or signage to provide pedestrians with a level street crossing. May be used mid-block or at intersections.

Purpose: To reduce vehicle speeds mid-block and to improve pedestrian safety.

Potential Advantages:
- May reduce vehicle speeds.
- May improve safety for pedestrians by making them more visible.
- Does not affect resident access.
- Attractive if constructed with pavers.

Potential Disadvantages:
- May impact emergency vehicle response.
- May disrupt drainage depending on design.
- May increase noise.
- May give pedestrians a false sense of security.
RAISED INTERSECTIONS
Description: Flat raised areas covering entire intersections with ramps on all approaches and often with brick or other textured materials on the flat section.

Purpose: To slow vehicle traffic at an intersection.

Potential Advantages:
- Slows vehicles in intersections.
- Highlight intersection.
- Improves pedestrian safety.
- Aesthetically pleasing if well designed.
- Effective speed reduction at intersection.
- Does not restrict resident access.

Potential Disadvantages:
- May increase emergency response time.
- May increase turning difficulty.
- Increases maintenance.
- Impact on speed limited to within approximately 200’ of intersection.
- Far more disruptive on large vehicles.
- May increase noise due to acceleration and braking.
- May disrupt drainage.
SPEED HUMPS
Description: Raised section of pavement across the roadway with curved transitions. Humps are generally 3" to 4" high and extend the width of the road. Impacts on vehicle speed vary with size of device.

Purpose: To reduce vehicle speed.

Potential Advantages:
- Reduces vehicle speed.
- Can reduce vehicular volumes.
- Does not restrict parking.
- Requires minimum maintenance.
- Does not restrict resident access.

Potential Disadvantages:
- May increase emergency response time.
- Increases maintenance.
- Impact on speed limited to within approximately 200’ of treatment.
- Far more disruptive on large vehicles.
- May increase noise due to acceleration and braking.
- May disrupt drainage.
SPEED TABLES
Description: Raised section of pavement across the roadway with curved or ramp transitions and a tabled or flat section in-between. The flat section is often constructed with a brick or textured material. Speed Tables are generally 3” to 4” high and extend the width of the road. A 6’ ramped or curved section is on either side of a tabled 10’ wide area. Impacts on vehicle speed vary with size of device.

Purpose: To reduce vehicle speed.

Potential Advantages:
- Reduces vehicle speed.
- Can reduce vehicular volumes.
- Does not restrict parking.
- Requires minimum maintenance.
- Does not restrict resident access.
- Increased pedestrian awareness.

Potential Disadvantages:
- May increase emergency response time.
- Increases maintenance.
- Impact on speed limited to within approximately 200’ of treatment.
- Far more disruptive on large vehicles.
- May increase noise due to acceleration and braking.
- May disrupt drainage.
SPEED CUSHIONS
Description: Raised sections of pavement across the roadway with curved transitions. Cushions are generally 3.5” high and 10’ to 12’ long spaced for the wheel base of an emergency vehicle to partially straddle the device.

Purpose: To reduce vehicle speed.

Potential Advantages:
- Reduces vehicle speed.
- Can reduce vehicular volumes.
- Does not restrict parking.
- Requires minimum maintenance.
- Does not restrict resident access.
- Minimized impact to emergency vehicles.

Potential Disadvantages:
- Increases maintenance.
- Impact on speed limited to within approximately 200’ of treatment.
- May increase noise due to acceleration and braking.
APPENDIX C. FAQ

What is the effect of traffic calming on property values?

According to a study by the Institute of Transportation Engineers (ITE) "it cannot be demonstrated that installing speed humps will affect property values in any predictable way" (ITE, *The Economic Impact of Speed Humps on Housing Values*, January 2000). In addition, horizontal treatments with landscaping are seen as an asset because of lower speeds and improved aesthetics.

What is the effect of traffic calming on emergency response?

The City, as well as its residents and businesses, place a very high priority on minimizing emergency response times. Emergency response personnel are generally not in favor of vertical deflection treatments because they are required to slow down. Horizontal treatments slow emergency vehicles to a varying degree. Studies show the following average delays to emergency vehicles for certain types of devices:

<table>
<thead>
<tr>
<th>TYPE OF DEVICE</th>
<th>AMBULANCES</th>
<th>FIRE TRUCKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Hump</td>
<td>2.3-9.7 s</td>
<td>3-5 s</td>
</tr>
<tr>
<td>Traffic Circle</td>
<td>Not Available</td>
<td>1.3-10.7 s</td>
</tr>
</tbody>
</table>

Source: City of Portland

What is the effect of traffic calming on adjoining non-project streets?

Diversion of traffic to other streets following the installation of traffic calming treatments can be a positive or a negative result. A positive result involves diversion of traffic to higher order streets that are better able to handle it. Diversion that evens out traffic volumes on parallel streets at the same level in the functional hierarchy without overloading any of them is also acceptable. An unacceptable variety of diversion sends traffic to lower order streets or overloads streets of the same order.

Are there any impacts to transit and utility vehicles?

Some of the traffic calming options could potentially impact bus routes and utility vehicles such as trash trucks. Providers of these services will have to be consulted whenever neighborhoods are considered for traffic calming treatments.

Are there any impacts for other roadway users?

Traffic calming actions must consider other users such that there are no unintended negative safety impacts. Theses users are bicyclists, roller skaters, skateboarders, joggers, pedestrians, etc.
**What about noise?**

The noise resulting from vehicles braking and going over or around traffic calming devices may have an impact on the acceptability of these devices by residents living closest to them. The support of residents living immediately adjacent to locations where physical changes are proposed will be essential to the success of any project.

**Will there be loss of parking?**

It is often necessary to prohibit on-street parking in the immediate vicinity of the traffic control measure in order to accommodate realigned vehicle path or sight distance issues.

**What about visual impacts and aesthetic concerns?**

While some traffic calming devices can have favorable aesthetic impacts, others can be, by their nature, unattractive. Devices such as speed humps and diverters most often pose little opportunity for the incorporation of aesthetics and can have negative visual impacts. Some traffic calming actions require reflective devices, signs and striping which may negatively affect the aesthetics of a neighborhood.

**Will there be an increased maintenance cost?**

City maintenance costs will increase in two areas. Snow removal around the devices will increase cost and service time. In addition, devices such as speed humps will have to be reinstalled each time a residential street is overlaid.

**Will landscaping be included?**

The City will include landscaping in the design (if applicable). Maintenance of the landscaping will become the responsibility of the residents or the home association. Landscaping that is not maintained will be replaced with low or no maintenance items.

**What are the liabilities of traffic calming?**

While members of the public have a right to use public highways without obstruction and interruption, this right is subject to the power of local governments to impose reasonable restrictions for the protection of the public. The legal issues surrounding traffic calming fall into three categories: *statutory authority, constitutionality, and tort liability*. First, the local government must have legal authority to implement a given set of traffic calming measures on a given class of roadways. Second, the local government must respect the constitutional rights of affected landowners and travelers on the roadways. Finally, the local government must take steps to minimize the risk to travelers from the installation of such measures.
**What is the typical cost of each measure?**

The cost will vary and can be influenced by inflation. Below are some typical costs.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Portland, OR</th>
<th>Sarasota, FL</th>
<th>Seattle, WA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed humps</td>
<td>$2,000-$2,500</td>
<td>$2,000</td>
<td>$2,000</td>
</tr>
<tr>
<td>Speed tables</td>
<td>N/A</td>
<td>$2,500</td>
<td>N/A</td>
</tr>
<tr>
<td>Raised intersections</td>
<td>N/A</td>
<td>$12,500</td>
<td>N/A</td>
</tr>
<tr>
<td>Traffic circles</td>
<td>$10,000-15,000</td>
<td>$3,500</td>
<td>$6,000</td>
</tr>
<tr>
<td>Chicanes</td>
<td>N/A</td>
<td>N/A</td>
<td>$14,000</td>
</tr>
<tr>
<td>Chokers</td>
<td>$7,000-$10,000</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Center islands</td>
<td>$8,000-$15,000</td>
<td>$5,000</td>
<td>N/A</td>
</tr>
<tr>
<td>Median barriers</td>
<td>$10,000-$20,000</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Half closures</td>
<td>$40,000</td>
<td>N/A</td>
<td>$35,000</td>
</tr>
<tr>
<td>Diagonal diverters</td>
<td>N/A</td>
<td>N/A</td>
<td>$85,000</td>
</tr>
<tr>
<td>Full closures</td>
<td>N/A</td>
<td>N/A</td>
<td>$120,000</td>
</tr>
</tbody>
</table>

Source: ITE, Traffic Calming State of the Practice, page 58, August 1999

**What is the effect on police enforcement?**

The Police generally support traffic calming measures for their potential to control speeding and reduce collision severity. Engineering measures are self-enforcing, which takes some of the pressure off police officers to enforce traffic laws. Speed humps are referred to as “sleeping policemen” because they quietly enforce speed limits 24 hours a day. The police also support certain measures, those restricting access, for their potential to reduce crime. While traffic calming measures must have some effect on police response times, it does not seem to be an issue. Use of vehicles with small wheelbases and good suspensions makes the difference. New patrol cars can maintain speeds of 25 mph over 12-foot speed humps. The advantage of small wheelbases is also realized on the tight curves of traffic circles and chicanes.