



INFORMATIONAL MEMORANDUM

TO: **Transportation and Infrastructure Committee**
FROM: **Henry Hash, Public Works Director** *H.H.*
BY: **Cyndy Knighton, Senior Program Manager**
Scott Bates, Traffic Engineering Project Manager
CC: **Mayor Ekberg**
DATE: **August 16, 2019**
SUBJECT: **Neighborhood Traffic Calming Program**
Project No. 80910301
2019 Progress Report

ISSUE

Provide a summary of progress to date for the Neighborhood Traffic Calming Program (NTCP).

BACKGROUND

The NTCP was adopted by Council Resolution (No.1955) at the end of 2018 to address neighborhood concerns with traffic safety. The Council also wanted to ensure that traffic calming safety decisions are based on technical engineering and applied in a uniform and consistent manner. The 2019-2020 budget provides annual funding to implement traffic calming strategies on residential streets and other safety improvements throughout Tukwila. Although some work was accomplished in 2018, this program is taking off and much more has been accomplished in 2019.

DISCUSSION

Staff has collected requests for traffic calming treatments and other improvements in residential areas for many years. Requests for calming treatments and other safety improvements come into staff via a variety of ways:

- Enrollment requests from the City's website
- See-Click-Fix/Tukwila Works
- Email inquiries
- Phone calls
- Face-to-face conversations
- Other Departments, especially Police
- Historical knowledge
- Elected officials

The NTCP is a welcoming program for our community and has already produced positive results to improve safety. When the Council adopted the NTCP, staff had a list of approximately 22 requests. Currently, there are more than 40 individual requests for improvements, and it is not uncommon for new requests to come in weekly.

The NTCP has two levels of calming treatment types to use. Level I treatments are considered passive traffic control and are generally less restrictive than Level II treatments. Level II treatments focus on physical devices which are more costly and restrictive. Due to an increased number of requests today, staff is not strictly following the steps of the NTCP.

In order to begin addressing requests quickly, staff has been installing new permanent speed feedback signs and LED enhanced signs which fall under the Level 1 category of improvements in the NTCP. Additionally, staff has installed many new parking restriction signs at the request of both residents and the Police Department to aid in enforcing parking violators and improve safety. These also fall under the Level 1 category.

The attached map shows the locations where traffic calming treatments have been implemented to date.

Requests have come in for new crosswalks in the vicinity of schools, parks and other high pedestrian generation areas. Crosswalks require engineering study to ensure that they are safely sited, and the City is legally protected. For example, one location, S 144th Street at 37th Avenue S, staff is recommending installation of a Rectangular Rapid Flashing Beacon (RRFB) on the west leg of the intersection's existing crosswalk because of the close proximity to high density residential and the Cascade View Park. A new marked crosswalk is considered a Level 1 treatment, but the RRFB is a Level 2.

KPG has recently been contracted to assist staff with the engineering for crosswalk siting studies, development of general RRFB plans, and other needs that may come up on an on-call basis. It is likely that additional consultants would also be retained for on-call engineering services to support the NTCP program.

The NTCP is a great program that brings staff closer to the community which helps staff understand their needs and issues. In order to keep up with the requests in a timely, professional and safe manner, a more organized, programmatic traffic calming program is needed. To reach this point, dedicated staff are required to provide accurate ranking and studies as well as to install and maintain the additional infrastructure. Additional staffing will move this new program into one that complies fully with the adopted NTCP.

RECOMMENDATION

Information only. Committee is being asked to have the Neighborhood Traffic Calming Program update presented to full Council at the August 26, 2019 Committee of the Whole.

ATTACHMENTS

- Page 8, 2019 CIP
- Resolution No. 1955 – Neighborhood Traffic Calming Program
- Map of 2019 NTCP improvements
- Matrix of Description of Traffic Calming Methods
- Matrix of Traffic Calming Methods – General Overview

CITY OF TUKWILA CAPITAL PROJECT SUMMARY

2019 to 2024

PROJECT: **Traffic Calming/Residential Safety Improvements** Project No. 90210301

DESCRIPTION: Programmatic approach to addressing neighborhood traffic concerns through a variety of methods. Residential street improvements with sidewalks, safety improvements, and bike facilities.

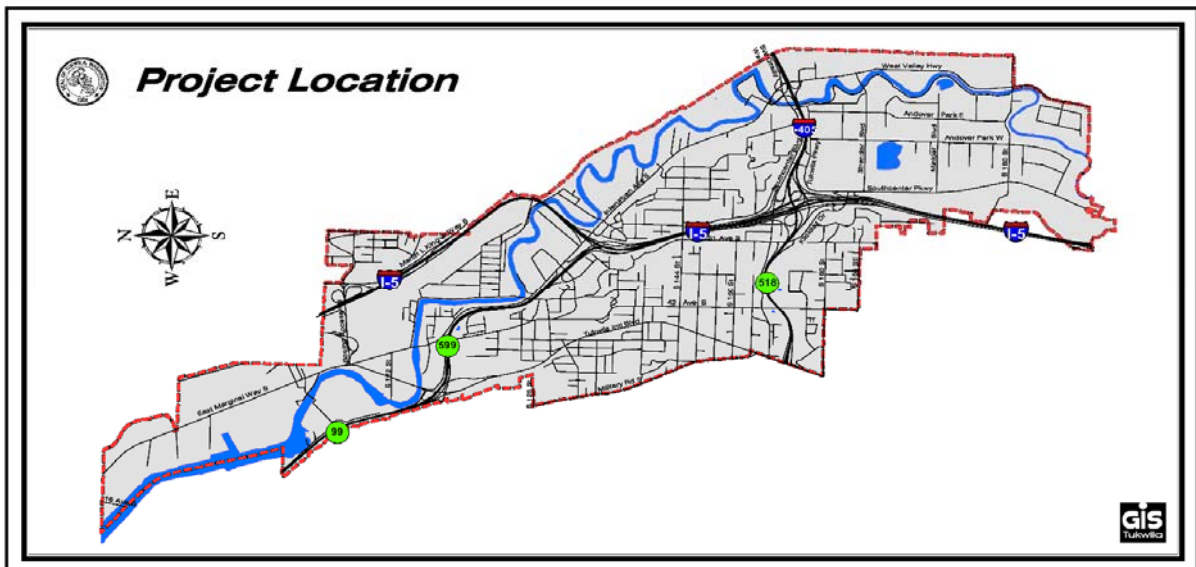
JUSTIFICATION: Neighborhood revitalization by improving residential streets.

STATUS: Future candidates are listed in the citywide comprehensive update and safety-based prioritization of residential street improvements, sidewalks, and bike lanes.

MAINT. IMPACT: Varies, depends on treatment(s) used.

COMMENT: Residential improvements have included 42nd Ave S, 53rd Ave S. Speed cushions installed at S 160th St.

FINANCIAL (in \$000's)	Through 2017	Estimated 2018	2019	2020	2021	2022	2023	2024	BEYOND	TOTAL
EXPENSES										
Design	9		80	80	80	80	80	80	80	569
Land (R/W)										0
Const. Mgmt.										0
Construction	38		320	320	320	320	320	320	320	2,278
TOTAL EXPENSES	47	0	400	400	400	400	400	400	400	2,847
FUND SOURCES										
Awarded Grant										0
Proposed Grant										0
Mitigation Actual										0
Mitigation Expected										0
City Oper. Revenue	47	0	400	400	400	400	400	400	400	2,847
TOTAL SOURCES	47	0	400	400	400	400	400	400	400	2,847





City of Tukwila

Washington

Resolution No. 1955

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, ADOPTING THE "CITY OF TUKWILA NEIGHBORHOOD TRAFFIC CALMING PROGRAM."

WHEREAS, one of the top concerns of Tukwila community members is speeding and other dangers associated with motor vehicles; and

WHEREAS, the City of Tukwila desires to reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users; and

WHEREAS, the adopted Tukwila Comprehensive Plan recommends implementation of a neighborhood traffic calming program in both the Transportation Element and the Residential Neighborhoods Element; and

WHEREAS, the City Council desires to document a transparent, predictable and equitable process for implementing effective traffic calming measures in neighborhoods throughout the City;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, HEREBY RESOLVES AS FOLLOWS:

The "City of Tukwila Neighborhood Traffic Calming Program," as evidenced in Exhibit A, is adopted.

PASSED BY THE CITY COUNCIL OF THE CITY OF TUKWILA, WASHINGTON, at a Special Meeting thereof this 10TH day of December, 2018.

ATTEST/AUTHENTICATED:

Christy O'Flaherty
Christy O'Flaherty, MMC, City Clerk

Verna Seal
Verna Seal, Council President

APPROVED AS TO FORM BY:

Rachel B. Turpin
Rachel B. Turpin, City Attorney

Filed with the City Clerk: 12-5-18
Passed by the City Council: 12-10-18
Resolution Number: 1955

Attachment: Exhibit A – City of Tukwila Neighborhood Traffic Calming Program



**CITY OF TUKWILA
PUBLIC WORKS DEPARTMENT**

**NEIGHBORHOOD TRAFFIC
CALMING PROGRAM**

**Adopted December 10, 2018
By Resolution No. 1955**

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Introduction

Traffic conditions on residential streets greatly affect neighborhood livability. Speeding and unnecessary through-traffic in neighborhoods create safety hazards on residential streets. The City of Tukwila Public Works Department has developed a Neighborhood Traffic Calming Program (NTCP) to guide City staff and inform residents about the procedures for implementing traffic calming on residential streets and collector streets.

The NTCP is designed for local residential streets and collector arterials only. The NTCP does not apply to local or arterial streets in commercial areas or to streets classified as principal or minor arterials.

As defined by the Institute of Transportation Engineers (ITE), traffic calming is the application of measures which can be taken which reduces the negative effects of motor vehicle use, alters driver behavior and improves conditions for non-motorized street users. The City's NTCP outlines a process for staff and residents to carry out a traffic calming program. It provides a way to objectively prioritize traffic calming requests. These procedures incorporate prioritization, planning, evaluation, implementation, and maintenance of the traffic-calming devices in residential areas. It also combines the four E's – Education, Engineering, Enforcement and Emergency Services.

Objectives

The primary goal of the City's NTCP is to improve the livability of the local streets and residential collectors. The City has identified the following objectives:

- Provide alternative solutions to reduce vehicular speeds and accidents on residential streets.
- Endorse safe and pleasant conditions for motorists, bicyclists, pedestrians, and residents of neighborhood streets.
- Provide a means for a collaborative working relationship between City staff and neighborhood residents in development of traffic calming measures.
- Discourage use of residential streets for cut-through vehicular traffic.

Process Steps

Initiating a Request

Request for traffic calming assistance can come from a resident's association or from concerned individuals. Requests can be made in writing by clearly stating the problem and location, accompanied with completed application which is provided by the City. The request can be made by either mailing or emailing the request to the Public Works Department. The request must include a contact name, address, phone number and email.

Staff will then acknowledge the completed application in writing to the resident's association or to the contact person listed in the application. An application fee could be implemented in the future to offset some of the costs involved.

Preliminary Evaluation

Each street in the community is a part of the larger roadway network that connects residents to each other, work, schools, goods, services and the countless destinations to which drivers and pedestrians travel daily. Common issues within neighborhoods include speeding, traffic volumes, and the utilization of neighborhood streets as a cut-through route, among others. In order to ensure that traffic calming concerns are addressed in an equitable manner, staff must assess the situation by reviewing the request and determining if the area qualifies for treatment using set criteria. The primary purpose of a preliminary evaluation is to determine whether the speeding or accident situation is significant enough to warrant further study. At this stage, staff collects data to analyze it to determine whether:

- The roadway is eligible for traffic calming treatment.
 - Only residential streets classified as collector arterial or local access are eligible.
- City recorded data supports the problem identified in the application.
 - Speeding: Traffic counts are taken to determine if 15% of the motorists travel at 5 mph or more above the posted speed limit. This is also referred to as the 85th percentile speed being at or above 5 mph over the speed limit.
 - Volume: Traffic counts also collect the number of daily vehicles on a street. This information is used to determine the best type of solution and is used to rank project priorities.
 - Traffic Accidents: The number of accidents for over a three-year period is collected and studied.

The Public Works Director has the discretion to move an application forward or to address any safety issues discovered outside of the NTCP process.

If the analysis confirms that a traffic problem exists based upon the above criteria, the Public Works Department will conduct a traffic calming study as explained in the following sections and staff calculates the priority score for the street segment using the Priority Worksheet in Appendix C.

A written response back to the contact person with the findings of the preliminary evaluation is generally provided within 60 calendar days of the request.

Solution Alternatives

The solution alternatives are defined into three levels.

No Action

After data collection and analysis is complete, any location not meeting the above criteria will be determined to not be eligible for any NTCP assistance. Staff will inform the applicant in writing that their request does not meet the City criteria for action and the request will be closed.

Level I

The first level improvement for traffic calming that should be considered are passive traffic control treatments, known as Level I. Level I improvements are less restrictive measures, and do not require a vote of the affected residents. The improvements used in Level I include: trimming bushes to allow better sight distance; pavement markings and striping; increased police enforcement; traffic speed display signs; neighborhood awareness campaigns; and education. This reduces the need for installing physical devices on every local street.

If a marked crosswalk is recommended for installation where ADA-compliant ramps do not currently exist, the improvement will be automatically treated as a Level II solution.

Level II

Level II improvements should be considered only after Level I treatments have been in place for a minimum of 6 months and data collection and analysis indicate the problem(s) has not been resolved, or as determined by the Public Works Director. Level II improvements focus on physical devices such as speed cushions, traffic circles, and chicanes to calm traffic. These solution alternatives are much costlier than Level I and are generally permanent. Therefore, a more detailed evaluation is required and approval by key departments and impacted area residents is required before the implementation. The detailed evaluation includes as follows:

- The speed, volume and accident history collected during the preliminary evaluation.
- Collect new traffic speed and volume data and accident history for the past three consecutive years.
- Other factors such as proximity to schools, parks and other pedestrian generators, lack of sidewalks, accessibility, presence of bicycle facilities, and other roadway characteristics.
- Identify users of the affected streets.
- Identify traffic and major pedestrian generators, such as schools, parks and shopping centers.
- Analyze street use with respect to street classification.
- Document any other relative factors.

Process for Qualifying for Level II Treatments

If the traffic problem(s) has not resolved with Level I treatments, an impact area is established by staff after identifying users of the affected street(s), identifying major traffic generators such as schools and parks, analyzing the actual street use with respect to roadway classification, and any other relative factors. The impact area includes the location requesting treatment as well as other streets in the immediate area that could be impacted by Level II treatment installation.

Plan Development

Once an area has been selected for a traffic-calming project, steps need to be taken to determine solutions. The applications are prioritized based on the scores. The highest-ranking applications will be given priority in moving forward into Plan Development, as funding allows.

Since Level I solutions are simpler in scope, the solution formulation process can usually be handled by staff. Public meetings are not usually required, although some type of public communication is beneficial and recommended.

Level II improvements require a more comprehensive plan development due to the higher cost and impact of the actions taken. A public meeting with all affected residents may be held, as determined by the Public Works Director. The initial public meeting will:

- Discuss the steps to develop a traffic-calming plan.
- Gather additional information regarding traffic problems and related neighborhood needs.

A ballot may be provided to each resident, either in person or via the postal service, to vote to indicate support of the NTCP plan. The implementation plan must receive at least 2/3 approval of all residents on the impacted street in order to proceed. In addition to the community support, the approval of the following public officials is required:

- City Police and Fire Departments
- City Council

Once the necessary level of support is documented, projects may be funded and constructed according to their prioritization and as available staffing and budget permits.

In cases where a Level II request does not receive sufficient support, the project is dropped from the list and the next highest ranked project can go through the same process. Residents in an area where a project has been dropped are able to resubmit their request for the following program year.

Project Funding

The number of traffic-calming projects undertaken each year depends on the City's budget and staffing availability. The City Council's Transportation & Infrastructure (or successor) Committee will be kept apprised on projects both proposed and selected on a regular basis, and the City Council will be notified of the NTCP's progress and expenditures at least every six months.

In some cases, landscaping, maintenance and necessary easement dedication may be the responsibility of the residents or the homeowner's association. If this is the case, an agreement must be signed between the City and residents before the project is implemented.

Project Design and Construction

Once traffic-calming treatments have been determined, the City's staff or a consultant develops the detailed plan, based on the study and the residents' input. The traffic calming device will be installed.

In some situations, a test installation may be warranted to assure that the device is both effective and truly desired by the community. In this case, within three to twelve months after installation, staff evaluates how well the test installation performed in terms of the defined problems.

Evaluation

An evaluation shall be conducted between six months to one year after the implementation of any permanent traffic calming devices. Speed, volume and collision data is collected and compared with the data collected before the installation of the traffic-calming device. The data collection should be done at approximately the same time of year as the original data collection.

Re-enrollment

If additional traffic calming treatments become necessary in the future due to changes in traffic patterns unrelated to the NTCP treatments, requests can be made for a new enrollment 12 months or more after the last evaluation period has been completed. The submission will be treated as a new request beginning with preliminary evaluation and will follow the NTCP process. Any future traffic calming treatments will be scored and ranked along with all other active requests and are subject to funding and staffing availability.

Appendices

Appendix A: Definitions of types of streets

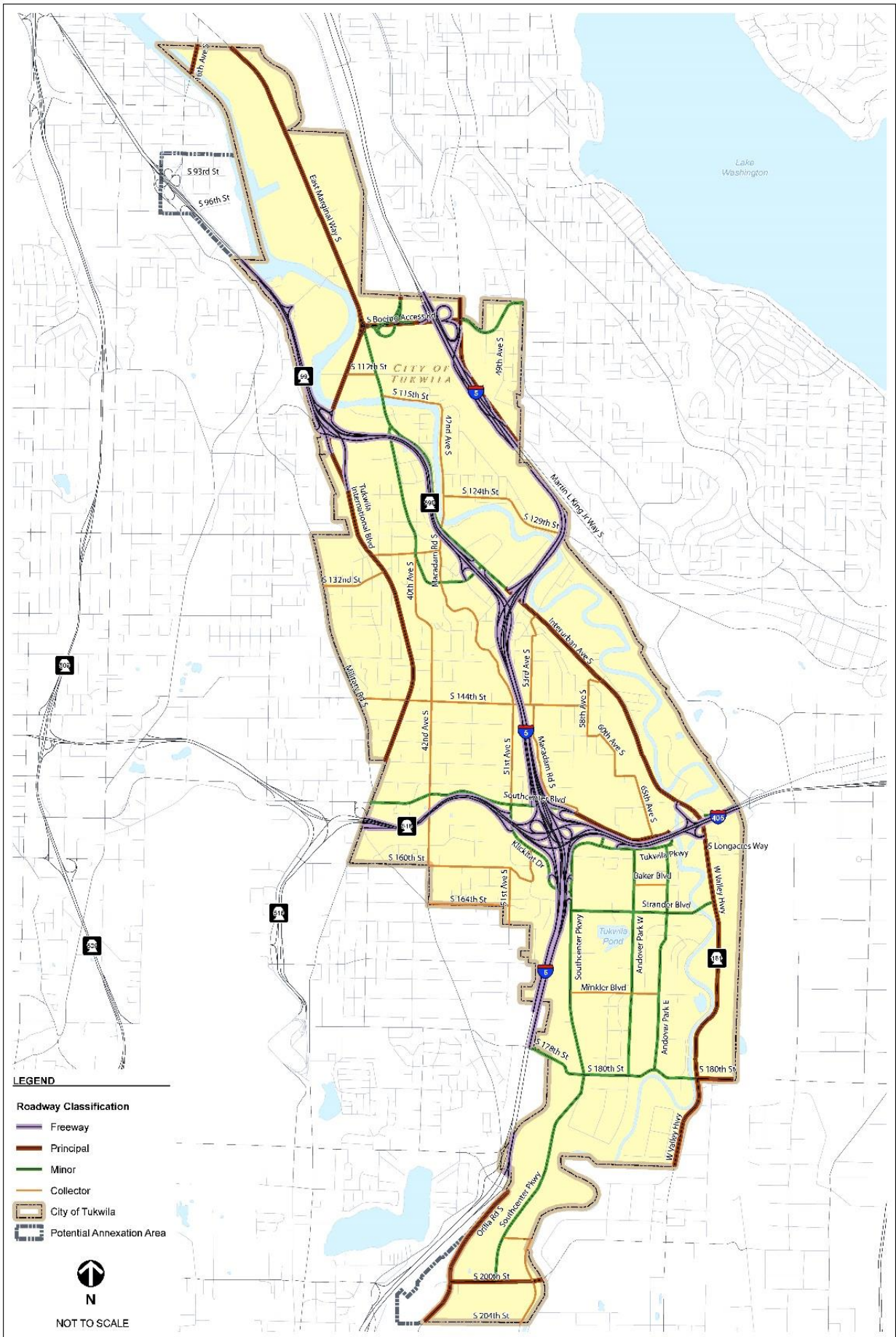
The City's Transportation Element of the Comprehensive Plan defines the street functional classifications. For the sake of this program, only residential local streets and collector arterials are eligible for NTCP treatments. Streets in commercial areas or which are classified as principal or minor arterials are not eligible for treatments under this program. Traffic calming on principal and minor arterials is very different than on residential streets, requiring substantial design, permitting, environmental approval, and budget in order to construct. These calming projects are developed into standalone capital improvement projects.

Local streets (typical speed limit 25 mph) serve local circulation needs for motor vehicles, bicycles, and pedestrian traffic and provide access to residences and some businesses. Local streets are not intended to carry significant volumes of through traffic. Sixty to 80 percent of the roadway network is considered local streets.

Collector arterials (typical speed limit 30-35 mph) are typically streets that provide access between local service streets or from local streets to thorough-fares. Collectors often carry some through traffic. Collectors in residential areas are eligible for NTCP treatments whereas collectors in commercial areas are not. Five to 10 percent of the roadway network is classified as collector arterials.

Minor arterials (typical speed limit 30-40 mph) are streets which are typically wider and may have more lanes than collectors which connect the smaller arterial streets to destinations or to the regional roadway network. Minor arterials carry a large percentage of through traffic as well as traffic from the local area. Ten to 20 percent of the streets in network are minor arterials.

Principal arterials (typical speed limit 35-50 mph) are major streets and highways that provide regional connections between major destinations. Speeds are higher, access and traffic control favors providing fast and smooth movement on the arterial over the lower classified streets. Five to 10 percent of a roadway network is classified as principal arterials.



Appendix B: Priority Ranking Worksheet

Location: _____

Date: _____

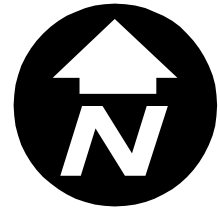
Staff Name: _____

Category	Data	Score
<p>Accidents:</p> <p>Five points for each recorded accident over the past three years. Three additional points will be added for each accident with a recorded injury.</p>		
<p>Volume:</p> <p>Average weekday traffic volume divided by 100, rounded up to the nearest whole number. Maximum of 7 points possible.</p>		
<p>Speed:</p> <p>Five points for every mph greater than 5mph above the posted speed or $(85\text{th percentile speed} - \text{posted speed limit} - 5) \times 5$ points.</p>		
<p>Sidewalks:</p> <p>Five points if there is not a continuous sidewalk on one side of residential streets or both sides of collectors.</p>		
<p>Pedestrian Generators:</p> <p>Five points for every K-12 school on and 2 points for school property within 500 ft of the subject street. Three points for other major pedestrian generator on the subject street. Major pedestrian generators may include parks, community centers, senior housing, or other uses with significant pedestrian traffic.</p>		
Total Points:		



City of Tukwila

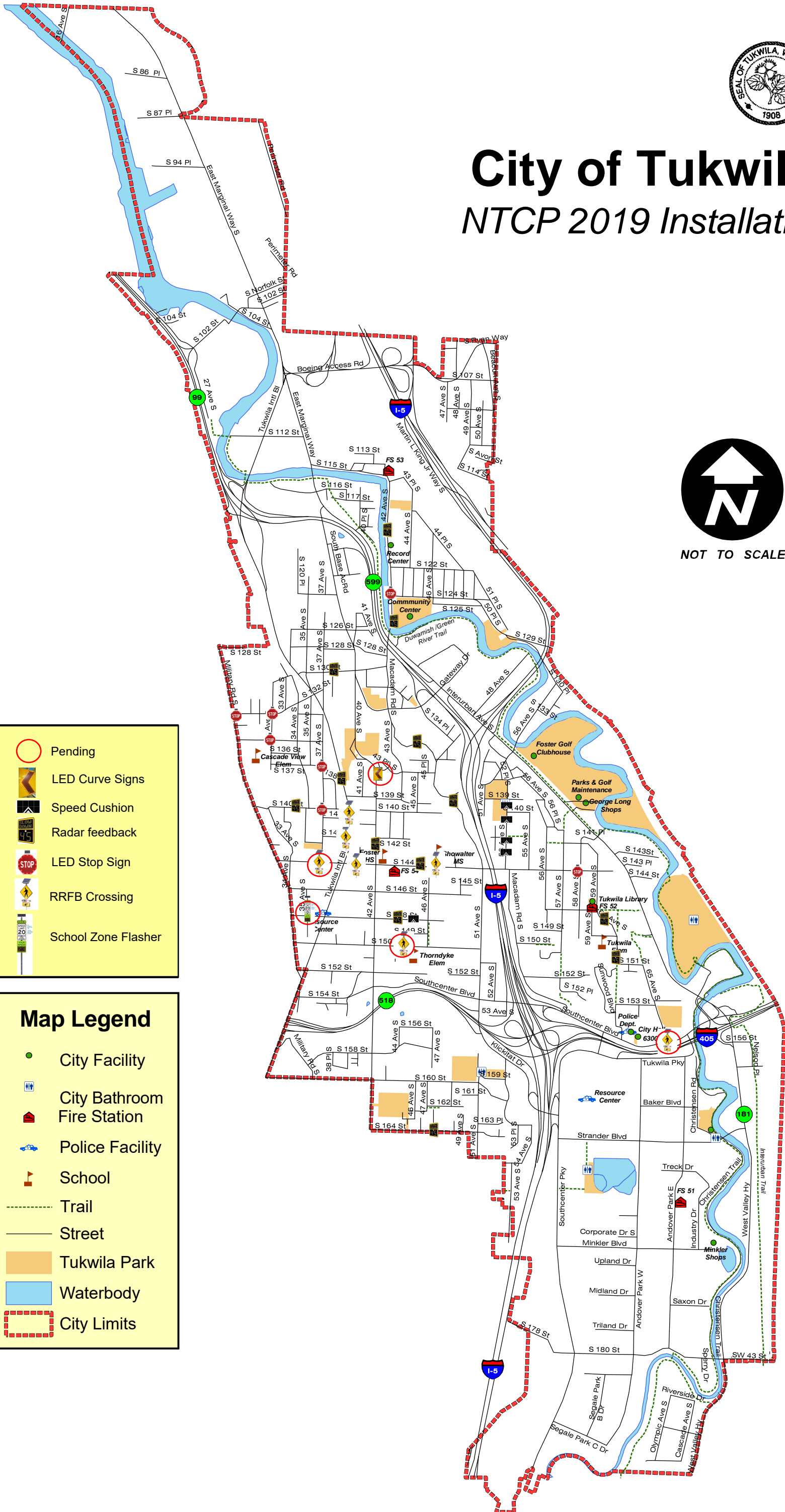
NTCP 2019 Installations



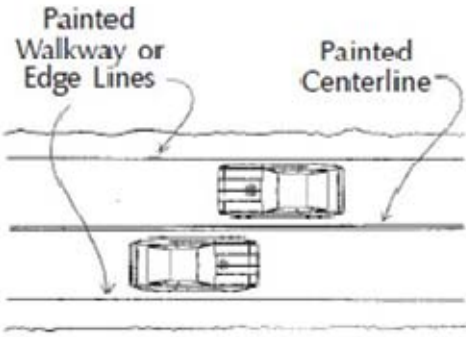
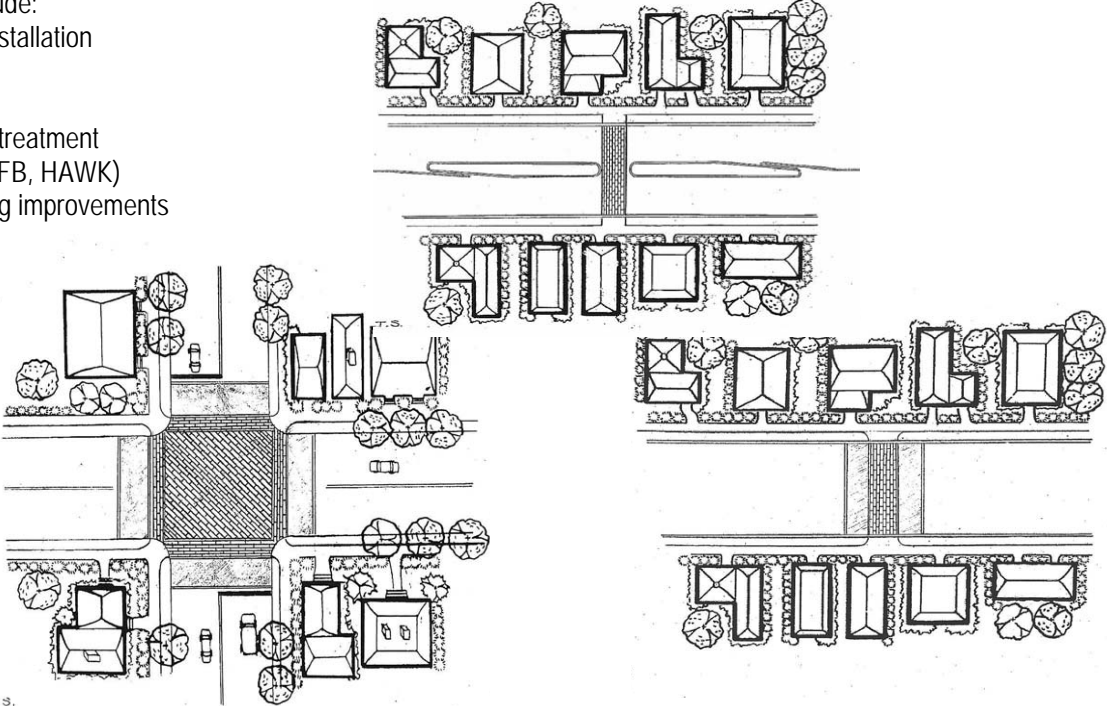
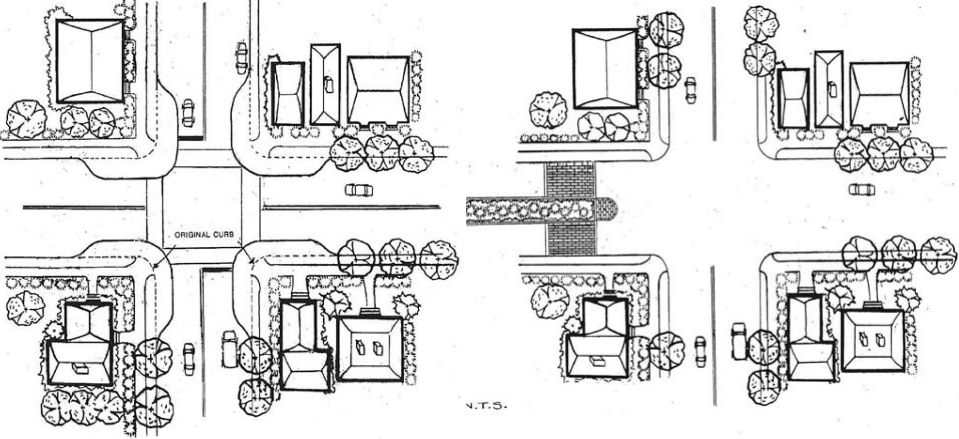
NOT TO SCALE

- Pending
- LED Curve Signs
- Speed Cushion
- Radar feedback
- LED Stop Sign
- RRFB Crossing
- School Zone Flasher

- ### Map Legend
- City Facility
 - City Bathroom
 - Fire Station
 - Police Facility
 - School
 - Trail
 - Street
 - Tukwila Park
 - Waterbody
 - City Limits



Descriptions of Traffic Calming Methods

Method	Description	Cost
Speed Watch Program	<ul style="list-style-type: none"> Residents check out radar gun and gather speed data in spot locations Data gathered is used to validate other speed data Residents learn what certain speeds "feel like" when standing on or near the roadway 	\$
Radar Speed Signs	<ul style="list-style-type: none"> Solar powered signs can be installed permanently or rotated Can be used in conjunction with a target enforcement emphasis -- traffic officers can be found further down the road to provide police back up of the legal speed limit 	\$-\$\$
Targeted Enforcement	<ul style="list-style-type: none"> A progressively stricter enforcement schedule with low thresholds for citations Traffic officers work a select location over a period of time, graduating from marked police cars to ultimately unmarked cars 	\$\$-\$\$\$
Striping	<ul style="list-style-type: none"> Installing center, walkway, and edge line markings to narrow or modify the travel lanes Unique striping in individual cases can be used successfully Striping can include: <ul style="list-style-type: none"> yellow center skip strip white edge lines wording on pavement ped walkways and bike lanes marked crosswalks Applications are determined in each instance and can be modified to fit individual needs Paint cannot be applied year round -- weather dependent installation Striping an unstriped roadway gives the appearance of a narrowed road and assigns where vehicle and pedestrian areas are located 	\$-\$\$
		
Vegetation Trimming	<ul style="list-style-type: none"> City crews will trim vegetation in public right-of-way to improve sight distance at intersections, sign visibility, or general safety Vegetation that is in private property can only be trimmed by city crews if impeding sight distance or creating a safety hazard Property owners are always first encouraged to trim their private plantings 	\$
Improved Signage	<ul style="list-style-type: none"> Signs already in place may be improved by installing larger signs, or LED enhanced signs New signs may be installed as warranted Existing signs may be relocated to provide maximum impact 	\$-\$\$
Traffic Safety Campaign	<ul style="list-style-type: none"> This effort not currently defined by Tukwila Could include development of traffic safety brochures or flyers Could be developed to incorporate local high school education Could be jointly implemented using the PD Sprint program and targeted enforcement 	\$\$-\$\$\$
Multi-way Stop	<ul style="list-style-type: none"> All-way, or multi-way stops are installed at intersections where traffic flows are generally fairly equal on all legs Engineering warrants must be met before installation can occur 	\$-\$\$
Pedestrian Safety Measures	<ul style="list-style-type: none"> Improvements can include: <ul style="list-style-type: none"> Sidewalk or walkway installation Crosswalk installation <ul style="list-style-type: none"> paint textured pavement treatment Pedestrian signals (RRFB, HAWK) Pedestrian scale lighting improvements Pathways Raised crosswalks Mid-block crossings with or without refuge area 	\$\$-\$\$\$
		
Gateway/Entrance Treatment	<ul style="list-style-type: none"> Sometimes called planter islands, these are typically long and narrow islands placed in the middle of roads at intersections On wide streets, curb extensions may be used on both sides of the roadway while still maintaining 2 lanes of roadway width In some cases, pedestrian amenities such as raised crosswalks, decorative pavement, or simple painted crosswalks are also included as part of the treatment May also include additional street lighting for the intersection and decorative entrance signs 	\$\$-\$\$\$
		

Descriptions of Traffic Calming Methods

Method	Description	Cost
Traffic Circle	<ul style="list-style-type: none"> Round islands installed at intersections to force traffic to circle around the island, thus disrupting the flow of traffic Less expensive traffic circles can be painted on the asphalt, marked with raised pavement markers More costly traffic circles are made with curbing and back filled with asphalt The most expensive traffic circle to construct include curbing and removal of existing asphalt from the center. Soil and approved landscaping are installed 	\$\$-\$\$\$
Chicane	<ul style="list-style-type: none"> A series of tight turns in a straight section of road that restricts traffic speeds Fire Code may limit chicanes or any other treatment from narrowing the road to less than 20 feet Chicanes can be made of wooden traffic barricades, curbing with fencing, curbing with asphalt back fill, or curbing with landscaping Can be combined with on-street parking 	\$\$-\$\$\$
Speed Cushion	<ul style="list-style-type: none"> A raised mound across the roadway that reduces speeds as vehicles travel over them To be effective, should be placed 300-500 feet apart and installed in a series of typically at least 2 cushions Not recommended on primary emergency response routes or on major transit routes 	\$\$
Turn Prohibitor: Signing restrictions	<ul style="list-style-type: none"> Signs are placed at intersection to restrict certain turning movements or to only allow a certain movement Restrictions can be all the time or can be during certain times of day only 	\$-\$\$
Turn Prohibitor: Physical deterrent	<ul style="list-style-type: none"> Also known as half or partial closures or diverters Physically directs traffic flow at intersections, prohibiting specific movements Many variations can be implemented, depending on the need of the particular street Can be combined with pedestrian amenities such as textured pavement or raised crosswalks 	\$\$-\$\$\$
Diagonal Road Closure	<ul style="list-style-type: none"> Diagonal road closure completely closes a road to through traffic without completely closing a road Diagonal diverters can be used to fully or partially divert traffic Implementation can be done by using wooden barricades, concrete barricades, curbing, and landscaping Diagonal diverters are not applicable in most places as minimum travel lane widths of 20 feet must still be maintained 	\$-\$\$\$
Street Closure	<ul style="list-style-type: none"> Streets are closed to through traffic by forming a cul-de-sac or hammerhead Additional right-of-way may be necessary to construct the cul-de-sac or hammerhead Street closures are not applicable in most locations 	\$-\$\$\$

Traffic Calming Methods - GENERAL OVERVIEW

Method	Potential Degree of Effectiveness	Advantages	Disadvantages	Volume Reduction	Speed Reduction	Noise & Pollution	Safety	Access Restrictions	Emergency Vehicle Access	Dependence on Police Enforcement	Operation and/or Construction Cost	Maintenance Cost/ Problems
Speed Watch Program	Mild	<ul style="list-style-type: none"> Educates residents on what the legal speed limit "feels" like from a pedestrian stand point. 	<ul style="list-style-type: none"> Does not reduce speeds or volumes. 	No	No	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Radar Speed Trailer	Mild	<ul style="list-style-type: none"> Educates motorists of their current, actual speed of travel Makes motorists aware of the activeness of the community they are driving through. 	<ul style="list-style-type: none"> Only changes behavior in motorists while in place. Some motorists use the reader board to "clock" how fast they can go. 	No	Only when Present	N/A	N/A	N/A	N/A	None to High Can be used in conjunction with target enforcement	Low to Moderate	Low
Target Enforcement	Mild	<ul style="list-style-type: none"> Reduces speeds and raises awareness of drivers. 	<ul style="list-style-type: none"> Effective only when program is ongoing Staffing needs vary based on area specific needs 	Very Slight	Yes	N/A	Possibly Improved	N/A	N/A	High	N/A	N/A
Striping	Mild	<ul style="list-style-type: none"> Does not require infrastructure construction Can promote slower traveling vehicles Best in correcting vehicles traveling in middle of road Can significantly reduce speeds of users 	<ul style="list-style-type: none"> Not commonly used method of speed control Degree of effectiveness may vary substantially 	Unlikely	Possible	N/A	Possibly Improved	None	No Problem	N/A	Low	Low to Moderate
Vegetation Trimming	Mild	<ul style="list-style-type: none"> Increases visibility. 	<ul style="list-style-type: none"> Must be constantly maintained Must be constantly monitored 	No	No	N/A	Improved	N/A	N/A	N/A	Moderate	Moderate
Improved Signage	Mild	<ul style="list-style-type: none"> Corrects sign deficiencies Develop motorist awareness of regulations and restrictions 	<ul style="list-style-type: none"> Requires monitoring and planning to avoid visual clutter Probably not effective to habitual violator 	Unlikely	Unlikely	Increased visual pollution	Possibly Improved	N/A	N/A	Low to Moderate	Low	Low
Traffic Safety Campaign	Mild	<ul style="list-style-type: none"> Raises awareness, cooperation, and appreciation of general motoring public. 	<ul style="list-style-type: none"> City does not currently have a program established Requires development of program and continuation of staffing and program Impact may be reduced when "newness" of program is lost 	No	Possible	N/A	Slight Improvement	N/A	N/A	N/A	Moderate	Low
Multi-way Stop	Mild to Moderate	<ul style="list-style-type: none"> Creates more stopping points for vehicles Addresses concerns at locations with conflict potential 	<ul style="list-style-type: none"> Stop signs that are installed that don't meet engineering warrants are often not obeyed by motorists familiar with the intersection(s) Can reduce pedestrian safety if not correctly installed Should not use Stop signs as speed control: stop signs should be used to define right of way at intersections only 	Slight	Slight	Increased	Mixed	None	No problem	Moderate to High	Low	Low
Gateway/ Entrance Treatment	Moderate	<ul style="list-style-type: none"> Provides visual transition between arterials and residential areas Can improve pedestrian crossing safety on wider streets 	<ul style="list-style-type: none"> Speed change could result in rear-end accidents May move traffic/problem to other roads Neglect of landscaping can become a sight distance problems Neglect of landscaping can become neighborhood "eyesores" Ongoing maintenance costs Definition of who is responsible for maintenance - possible landscape maintenance agreements with residents 	Possible	Slight	No	Possibly Improved	None	No Problem	N/A	Low to Moderate	Low to Moderate/ Possible Vandalism
Pedestrian Safety Measures	Moderate	<ul style="list-style-type: none"> Creates clearly defined areas for pedestrians Provides safer areas for pedestrians 	<ul style="list-style-type: none"> Painted crosswalks could create a false sense of security for pedestrians Pavement markings require additional maintenance. 	No	No	N/A	Mixed	None	No Problem	N/A	Moderate	Moderate

Traffic Calming Methods - GENERAL OVERVIEW

Method	Potential Degree of Effectiveness	Advantages	Disadvantages	Volume Reduction	Speed Reduction	Noise & Pollution	Safety	Access Restrictions	Emergency Vehicle Access	Dependence on Police Enforcement	Operation and/or Construction Cost	Maintenance Cost/Problems
Traffic Circle	Moderate	<ul style="list-style-type: none"> Requires reduction in vehicle speed without use of stop signs Removes conflict potential for many types of accidents 	<ul style="list-style-type: none"> May be restrictive for larger vehicles or vehicles with trailers May move traffic/problem to other roads May require additional lighting May be confusing for left turns May require additional Right-of-way Requires consideration for aesthetics Requires consideration for maintenance of landscaping, if used 	Possible	Likely	No Change	Improved	None	Some Constraint	Low	Moderate	Moderate/Possible Vandalism
Chicane	Moderate	<ul style="list-style-type: none"> Effectively slows motorists traveling through and approaching the treated section Can be designed to improve pedestrian safety. 	<ul style="list-style-type: none"> Moves traffic/problem to other roads May be restrictive for larger vehicles or vehicles with trailers May require additional lighting Can create confrontations between opposing motorists Fire codes requirement must be maintained Requires consideration for aesthetics Requires consideration for maintenance of landscaping, if used 	Yes	Yes	Decrease	Mixed	None	Minor Constraint	N/A	Moderate to High	Moderate to High/Possible Vandalism
Speed Hump	Extreme	<ul style="list-style-type: none"> Reduces speeds of vehicles at and in the vicinity of the bump Can be designed for any speed Better if used in a series of 300 to 500 foot spacing. 	<ul style="list-style-type: none"> Causes increased noise from braking and accelerating vehicles, particularly if there are loose items in the vehicle May move traffic/problem to other roads Causes delays in emergency vehicle response time Not supported by Fire Department Can cause damage to fire trucks during emergency responses 	Possible	Yes	Increase at humps	Improved	None	Minor constraint	Self Enforcing	Moderate	Moderate/impacts street sweeping, snow removal
Turn Prohibitor: Signing restrictions	Moderate	<ul style="list-style-type: none"> Can reduce through traffic. 	<ul style="list-style-type: none"> Moves traffic/problem to other roads Inconveniences local residents in gaining access to their property Becomes an enforcement problem 	Yes	Possible	Decrease	Mixed	Somewhat Restricted	Minor Constraint	Moderate to High	Low	Moderate/Possible Vandalism
Turn Prohibitor: Physical deterrent	Extreme	<ul style="list-style-type: none"> Reduces through traffic. 	<ul style="list-style-type: none"> Moves traffic/problem to other roads Inconveniences local residents in gaining access to their property Can affect emergency vehicle response time Becomes an enforcement problem 	Yes	Likely	Decrease	Improved	Restricted	Some Constraint	Moderate to High	Moderate to High	Moderate/Possible Vandalism
Diagonal Road Closure	Extreme	<ul style="list-style-type: none"> Eliminates through traffic Provides for landscaping Reduces conflicts Increases pedestrian safety. 	<ul style="list-style-type: none"> Not viable in most locations Moves traffic/problem to other roads Inconveniences local residents in gaining access to their property Not generally supported by Fire Department Affects emergency vehicle response time 	Yes	Likely	Decrease	Improved	Left or Right turn only	Some Constraint	Low to High, dependent on features	High	Moderate/Possible Vandalism
Street Closure	Extreme	<ul style="list-style-type: none"> Eliminates through traffic Can reduce speed of remaining traffic Improves safety on the street closed 	<ul style="list-style-type: none"> Reduces accessibility of emergency vehicles Forces the problems onto another street Reduces access to properties by residents 	Yes	Yes	Decrease	Improved	Yes	Some Constraint	Low	Moderate to High	Moderate to High/Possible Vandalism