



Neighborhood Traffic Management Guidelines



Land Use Review Process Guidelines Including Neighborhood Traffic Management

The most opportune time to address neighborhood needs is at the point of development (when the streets are built). Whether it is a residential subdivision, commercial development or a transportation project, incorporating of Neighborhood Traffic Management¹ (NTM) elements into the design, development, and mitigation of the off-site impacts of a project assures that the inventory of neighborhood problems does not grow. To best address this through policy, a two-tiered approach is recommended. The first tier is aimed at new residential development planning and the second tier is focused on mitigating impacts of new land use or transportation development. If in either case it is desired to consider a NTM measure that is not part of the tool box, the applicant (using a registered professional engineer) will be required to provide and certify the appropriate performance and design standards.

Tier 1: Design of New Residential Street System. Any new streets built with development should incorporate NTM in design. An additional level of analysis should be added into the Traffic Impact Analysis guidelines for proposed projects. A map should be prepared that identifies all nearby streets (especially category "C" streets) that the proposed land use action may create or impact. On all projects, any internal street reaching the threshold of 700 vehicles per day will enter the NTM process at Step 6 and demonstrate how speed and volume will be kept at 25 mile per hour to the satisfaction of the City Engineer prior to approval. In project review, this criteria will be evaluated and if adequate measures are not identified, staff can request that the site plan be modified to reflect the future neighborhood needs for NTM measures.

Tier 2: Mitigating the Impact of New Development. All new major land developments will be required to provide information in their Traffic Impact Analysis (TIA) that identifies the potential impact on neighborhoods or local streets. This goes beyond the capacity analysis which is presently conducted. A section would be added to the TIA that assesses the impact of a land use or transportation project on neighborhood routes or local streets (all nearby category "C" streets). The TIA should identify if the project adds more than 25 vehicles per hour (two way - AM, PM and/or retail peak hours) to a street and the street volume is projected to be larger than 700 vehicles per day. An estimate will be made of the potential (in the future at build-out of nearby lands) for a neighborhood or local street to exceed 700 vehicles per day. Determination of potential streets for consideration for each project should be reviewed with city staff prior to submitting the TIA.

¹ The Neighborhood Traffic Management Plan in its entirety is available on request or visit our website at www.cityofcamas.wa.us

Standards for NTM

Implementing NTM measures can impact several stakeholders that use public streets - from utilities to garbage companies, delivery companies to school buses, from emergency services to maintenance, from the postal service to the school district. The needs of all the stakeholders should be considered in any NTM measure. To best address the input of key stakeholders, it is recommended that a series of design standards be developed, reviewed, and approved for inclusion in the *City of Camas Design Standards – Street Design Standards*. This process will allow critical input and review by the stakeholders at one point, rather than having to seek each stakeholder's input for each NTM project that is contemplated.

The benefit of developing design standards is that NTM can be uniformly applied in Camas. The standardization of NTM elements also helps keep the costs down. Most importantly, by going through a process of adopting the design standards with stakeholder input, the potential liability to the City is significantly reduced.

The development of standards can build off experience in Washington and Oregon with NTM and throughout the United States in tailoring a set of standards that meet Camas's needs. As long as the standard of design are adhered to, the stakeholders can be assured of the character and nature of what may impact the street related to their operational needs.

The Manual of Uniform Traffic Control Devices (MUTCD) provides a reference for most traffic signing and striping needs. While MUTCD does not address many of the NTM measures outlined in the tool box, many other cities, and Camas itself, have working design experience with many of the measures. The following standards should be developed for the City of Camas. In some cases, samples from other cities are attached for reference.

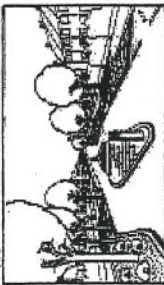
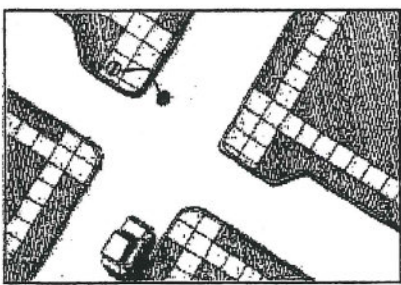
- Medians
- Street Curvature
- Chicane
- Curb Extensions
- Pavement Texture
- Contact Engineering Dept. for Proposal of Other Tools



SAMPLE NTM MEASURES

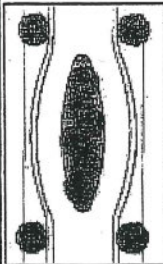
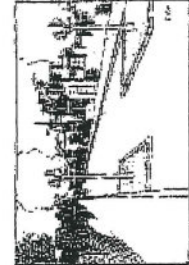


Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
<p>Chicane</p>		<p>Channelization or curb extension that realign the straight path of a street, deflection straight vehicle movement.</p>	<p>Speed reduction (3 - 4 MPH) Low volume reduction and diversion</p>	<p>\$3,000 to \$20,000</p>
<p>Choker (curb extension)</p>		<p>A roadway narrowing. This could be a curb extension at an intersection (also called bulb outs, neckdowns and throating) to reduce the roadway width at a selected location.</p>	<p>Speed reduction (3.3 MPH) Moderate volume reduction and diversion</p>	<p>\$5,000 to \$15,000</p>

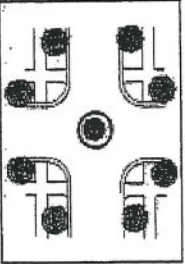




Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Choker (median)		<p>A roadway narrowing. With a median, the narrowing of the roadway comes from placing an island in the middle of the road. Some cities have used large raised pavement markers on the centerline at intersections to reduce speed of turning traffic. Medians can also be used for pedestrian refuge and/or access control to restrict turning movements. For access control it is important that medians are long enough to effectively create right-in/right-out restriction.</p>	<p>Speed reduction (3.3 MPH) Moderate volume reduction and diversion</p>	<p>\$3,000 to \$10,000</p>
Choker (pinch point)		<p>A roadway narrowing. Curb lines are extended into the street area (usually landscaped islands or pedestrian extensions) to narrow the roadway.</p>	<p>Speed reduction (3.3 MPH) Moderate volume reduction and diversion</p>	<p>\$5,000 to \$15,000</p>



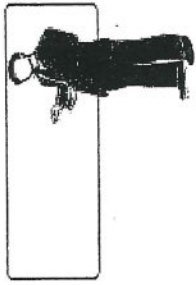


Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Circles		A round island in the middle of an intersection	Speed reduction (5.7 MPH), Low volume reduction and diversion	\$5,000 to \$15,000
Curvilinear		Similar to a chicane but over a longer distance or segment of street. Typically reversing curves designed to 25 MPH speed. Still provides direct connectivity with little out of direction travel.	Speed reduction (similar to chicane) Low volume reduction	Generally designed into original plans.
Diverter		Channelization or islands that restricts movements at an intersection. Typically, allows right turns, not through traffic. There are full and partial diverters depending upon the number of movements restricted or diverted at an intersection.	Minor speed reduction (0.4 MPH) High volume reduction, high diversion impact	\$3,000 to \$15,000



Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Enforcement (selective)		Police issuing tickets to vehicles violating speed zones. Can be effectively combined with other NTM elements such as education, public awareness, speed trailer and signs/banners.	Minor speed reduction documented (2 MPH)	Redirects enforcement resources from other policing activities
Enforcement (automated)		Use of photo or video enforcement to ticket violators of speed zones. Also red light running photo enforcement is being developed. Requires legislative change.	Speed reduction (limited data)	Revenue from tickets can pay for system (depending upon fund allocation). Portland's system does not pay for itself.
Education		Providing training in drivers education, courses for ticketed drivers, mailings (handouts/flyers), public service advertisements	No data on results	\$2,000 to \$50,000/year
Enhance Arterial and Collector Performance/		Providing adequate capacity, spacing and connectivity for	Speed reduction can be moderate - mostly due to	Street Improvements are VERY expensive


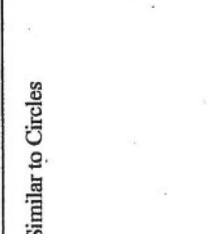
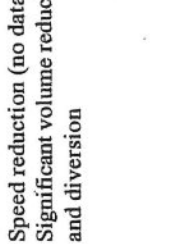


Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Coordinate Signal Timing		<p>arterials and collectors allow longer trips to stay on these facilities and not on neighborhood routes. Coordinated traffic signals can also be effective in keeping through traffic on arterials. In some cases, coordinated signal timing can reduce the amount of green signal time given to side streets. While this can be viewed as an impact to some, it can deter cut through traffic.</p>	<p>removing faster traveling through moving traffic from neighborhood routes.</p> <p>Can significantly reduce volume where congestion exists.</p>	<p>Typically not considered NTM projects</p>
Entry Treatments		<p>Generally use of landscaping and architectural elements at the roadway entrance to a neighborhood. Can include curb extensions and pavement texturing.</p>	<p>Similar to chokers</p>	<p>\$5,000 to \$25,000</p>
Humps		<p>Raising of pavement surface about 3" over about 10 to 20</p>	<p>Speed reduction (7 MPH) Low volume reduction or</p>	<p>\$3,000 to \$5,000</p>

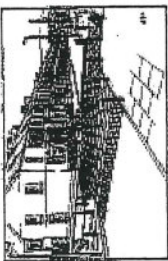

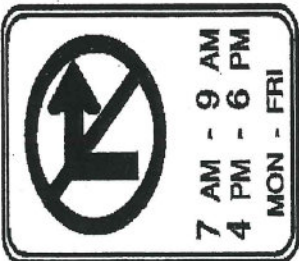


Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Intersection Realignments/ Route Modification		feet (an undulation). Similar to this measure are speed tables, raised pedestrian crossings and raised intersections.	diversion	
One Way Streets		Takes a standard 3 or 4 leg intersection and skews it to deflect traffic while maintaining safe design characteristics. Modify a route to make it less direct.	Similar to Circles	\$4,000 to \$20,000
Pavement Texture		Takes the entry to a neighborhood area and makes the access road one way (typically out). Similar in some respects to a diverter. Can be used in connection with entry treatments.	Speed reduction (no data) Significant volume reduction and diversion	\$5,000 to \$30,000


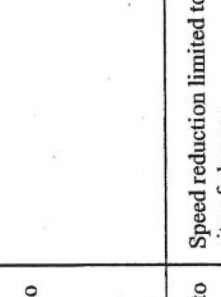


Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
<p>Pavement Markings</p>		<p>surface, create roughness by using raised markers, pavers, colored concrete with patterns. Can be used to emphasize pedestrian crossing location. Sometimes paint is used to create channelization or narrowing.</p>	<p>Limited volume change. Increases driver awareness of changed conditions (entering a neighborhood or pedestrian zone).</p>	<p>\$1,000 to \$15,000</p>
<p>Parking On-street</p>		<p>Many streets less than 32' do not allow parking on one or both sides. By allowing parking, the traveled way is narrowed. Speeds must be slow for safe sight distance.</p>	<p>Speed reduction Limited volume reduction.</p>	<p>\$0 - \$1,000</p>
<p>Part Time Restrictions (PTR)</p>		<p>Use signs to limit vehicle movements during key times (typically school times or peak hours). Can be turn restriction, truck restrictions, through traffic restrictions, etc... Very difficult and expensive to enforce and can have high violation rates.</p>	<p>Moderate speed reduction (if through traffic removed) Moderate volume reduction (if restrictions enforced).</p>	<p>\$500 - \$5000</p>
<p>Public Awareness/Traffic</p>		<p>Campaigns typically</p>	<p>Speed reduction (limited)</p>	<p>\$1,000 to \$30,000 per year</p>

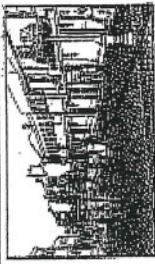



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Measure	Sample	What is it?	What does it do?	How much does it cost?
Watch		<p>organized by agency to involve neighbors. Speed watch can include neighbors using a radar speed measuring device to identify speeders who receive a standard letter. Public awareness can include education activities, but also banners, newsletters, yard signs, web page material, neighborhood organization activities, etc...</p>	<p>data)</p>	
Road Closure		<p>Uses islands or barricades to close the end of a street. Creates a cul-de-sac for vehicles, pedestrians and bicycles can go through. Contrary to emphasis on connectivity.</p>	<p>Speed reduction limited to site of closure. Significant volume reduction and diversion.</p>	<p>\$2,000 - \$15,000</p>
Shared Space		<p>A European concept where there are no curbs in the roadway right-of-way. The</p>	<p>Speed reduction Significant volume reduction and diversion.</p>	<p>\$10,000 - \$50,000</p>

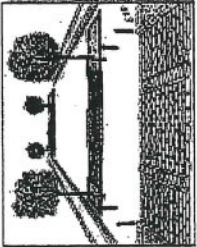
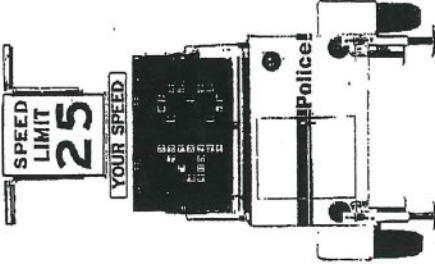


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Measure	Sample	What is it?	What does it do?	How much does it cost?
Short Block Spacing		road area is share among various users, using bollards, chokers and landscape elements to help define vehicle areas.	Limited speed reduction Significant volume reduction if done area wide	Typically part of original design and plans.
Signs		Shorter blocks create more streets with traffic distributed over more streets. The intersections created may require stop signs where warranted.	Speed reduction, however, the effectiveness (if any) diminishes (no data substantiating a benefit)	\$50 - \$500
Speed Cushions		In the past "Slow Children" signs have been used. Yard signs have more recently been used (typically used as part of a public awareness or education program. Possible yard sign idea could include progressing signs that say 1) Did you Know, 2) That your Neighbors think, 3) You drive TOO FAST.	Speed reduction Little volume reduction	\$1,500 - \$3,000


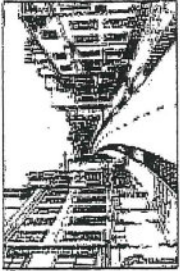


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Speed Trailer		<p>to allow buses or emergency vehicles with larger wheel bases to pass over without impact.</p>	<p>A trailer unit with a reader board that indicates the approaching vehicle speeds. Portable and can be moved from site to site. Can be reinforced with actual police enforcement on a selective basis.</p>	<p>Speed reduction (4.2 MPH) however, reduction occurs only when trailer is present. No volume reduction.</p>
				<p>\$10,000 - \$25,000 + labor</p>

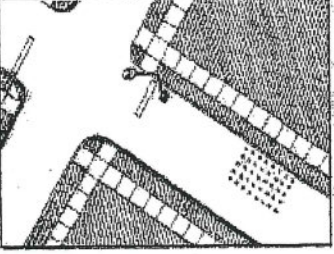



Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
Speed Zone Changes		<p>Typically, for collector and arterial streets, the 85th percentile speed is used as a guide. Past studies have proven that unrealistically low speed zones are ignored by drivers.</p>	<p>Little speed or volume change (without enforcement)</p>	<p>\$20,000 (for signs and studies)</p>
Street Narrowing		<p>Different from chokers in that this would narrow an entire street rather than a point in the street. Street widths between 22 and 32 feet have been considered and used in some cities for specific applications.</p>	<p>Speed reduction (4.5 MPH) Low volume reduction or diversion</p>	<p>Typically done at construction of street or with reconstruction</p>



Sample Neighborhood Traffic Management Measures

Measure	Sample	What is it?	What does it do?	How much does it cost?
<p>Stop Signs</p>		<p>Typically placed at intersections. Warrants determined by MUTCD. Significant research on unwarranted stop signs and their negative impact. MUTCD specifically indicates stop signs are not to be used for speed control. The volume warrant is for 500 vehicles entering the intersections for each of 8 hours.</p>	<p>Mixed findings on speed reduction (some up some down) Low volume reduction and diversion A device for traffic control and safety, generally not NTM</p>	<p>\$250 - \$2,500 (including studies, staff time and installation)</p>
<p>Truck Restrictions</p>		<p>No truck signs are posted at key cut through routes affecting through truck trips not local truck trips.</p>	<p>No speed reduction Significant truck volume reduction (if enforced)</p>	<p>\$ 250 - \$1,000</p>

Source for graphics:

Traffic Calming, American Planning Association, Planning Advisory Service, Report Number 456, July 1995.

Handbook for Walkable Communities, Burden & Wallwork.

Civilised Streets: A Guide to Traffic Calming, Environmental & Transport Planning, Brighton, Great Britain, 1992.

Note: Cost Estimates are in 2000/2001 dollars. Average construction cost inflation per year based on 10-year data is 2-3% per year.