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TRAFFIC CALMING TOOLS

SE CLINTON NEIGHBORHOOD GREENWAY ENHANCEMENT PROJECT

EVALUATION PHASE

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There are two basic types of traffic calming tools: **regulatory** and **physical**.

Regulatory tools change the rules of the road through signing and striping. As such they are often relatively inexpensive to implement, though sometimes need to rely on enhanced enforcement to ensure compliance.

Physical tools may or may not change the rules of the roadway, but primarily change the physical design of the roadway, either in terms of the speed at which one can comfortably drive at ('operational speed') or restrict the use of the street in terms of the turn movements allowed by physically blocking the movement. These tools are usually more expensive and usually have more associated tradeoffs (e.g. reduced local access, parking loss, shifting of traffic volumes to other local streets).

REGULATORY TOOLS

Stops Signs

Stop sign are technically *not* a traffic calming tool, though commonly perceived as providing a traffic calming effect. The primary function of a stop sign is as a safety device- to clarify who has the right-of-way at an intersection.

Project Feasibility/ Effectiveness:

Stop sign placement is dictated by national standards. Most of the local street network around SE Clinton already meets this standard treatment- the 'Denver Stop Pattern', which on any given street alternates the direction that is stopped each block such that you cannot go more than two blocks in any direction without encountering a stop.

Higher priority streets, like collectors and greenways, may take precedence over a regular and continuous stop pattern.

Reduced Speed Limit
State law restricts the speed limit options that can be used in any given street context. The statutory limit for a normal residential street is 25 mph. The only context which allows a lower, 20 mph limit, are school zones and Neighborhood Greenways (provided the volume is less than 2,000 cars/day).

Project Feasibility/ Effectiveness:
Because neither of the above criteria for a 20 mph limit exist for the streets of concern (SE Woodward, Taggart, Brooklyn and 32nd Ave), this tool is not legal, therefore not a feasible option.

Change to One-way Operation
Changing a street from two-way to one-way is a form of regulatory diversion- only one direction of travel is allowed via signage and striping. The best local example of this is the recent change of 34th Ave between Clinton and Division to one-way northbound.[1]

Project Feasibility/ Effectiveness:
Changing 32nd Ave, for instance, to one-way, in order to reduce the volume impact on the section south of Clinton, would require changing it to one-way northbound between Woodward and Division. If it was just on-way northbound south of Clinton, traffic heading southbound from Division would effectively be trapped at Clinton (forced to turn around at an intersection not designed for that). If designed as a one-way northbound all the way to Division, then all the eastbound and westbound traffic on Clinton would be forced to use 32nd Ave north of Clinton. The resulting volume would likely exceed the total volume threshold limit of 1,000 cars/day.

PHYSICAL TOOLS

Speed Bumps
Speed bumps physically reduce the operational speed of a roadway by making it uncomfortable to travel above a certain speed. The length of each bump (14 ft. vs 22 ft.) as well as the spacing between the bumps dictates how much speed reduction is achieved. The amount of speed reduction is also limited to how much the 85th percentile speed of the street is above the target speed (speed limit).
Because speed bumps do very effectively reduce the speeds, when the 85th percentile speed is above the limit, they may

[1] The primary intent of the changes to SE 34th Ave were related to safety, not volume reduction. The street width is 24 ft. The major safety concern is the high volume of bike traffic (34th is a designated, but not fully developed Neighborhood Greenway) conflicting with relatively high car volumes in such a narrow street width.

also reduce non-local traffic volumes since the desirability of the street's use as a cut-through, or alternate local route, is reduced.

Project Feasibility/ Effectiveness:
Because their use in the context of the project are not limited by national standards, and tradeoffs associated with their use are minimal (largely a matter of perception) speed bumps are a feasible option.

However, because 85th percentile speeds on the adjacent streets of concern are, for the most part, already below the 25 mph speed limit, their effectiveness to both lower the 85th percentile speed even further, as well as lower the volume of the street, is anticipated to be limited. Their value is greatest in terms of keeping speed low and thus replicating the improved safety environment of a greenway.

Pinch Points
Pinch points are primarily a speed reduction tool, designed to reduce the operating speed of a roadway by creating artificial constrictions of the roadway width for limited distances, such that only one direction of car travel can pass through it at a time. In essence, they try to replicate a 'queuing street' environment. Queuing streets are narrow two-way streets that are too narrow for two cars to pass by without one car moving out of the travel lane. Commonly there is some parking loss required for installation.

Project Feasibility/Effectiveness:
Pinch points work best on relatively wide streets, where beforehand two cars could comfortably pass each other. Local streets 32 ft. wide and above generally meet this criteria. All of the project streets of concern east of 26th Ave are already queuing streets, at 28 to 30 ft. in width. Many of the streets west of 26th Ave are 36 ft. wide. SE Taggart, however, is 28 ft. in width. While streets with low parking demand also can create a wider effective street width, this is generally not the case with most local streets within the project area. A pinch point at 32nd Ave, south of Clinton, could result in more diverter non-compliance on Clinton (for traffic that wants to circulate within the neighborhood).

Chicanes
Chicanes are primarily a speed reduction tool- another way to reduce the operating speed of a roadway by artificially introducing curves. The main associated tradeoff is on-street parking loss. Construction costs are relatively high.

Project Feasibility/Effectiveness:
Chicanes have application under similar conditions as pinch points, being typically used on streets wider than the ones

that exist near Clinton. Portland does not have much experience with the use of chicanes, making it hard to estimate the effectiveness within the context of the project. Given the potentially significant on-street parking loss, this option may not be acceptable to many residents.

Traffic Diverters

Traffic diverters limit access within a street network by physically preventing certain turn movements. For volume control or reduction they are considered the most effective tool available. However, the potential for associated tradeoffs, primarily in the form of increased volumes on adjacent streets, and adjacent property owner inconvenience, is high. There are several types of diverters, the main differences primarily being the amount of access control (turn restrictions).

Semi-diverters, such as used in the test at 32nd Ave, prevent through movements on the 'main street' (e.g. Clinton) and allow both left and right turns onto the 'side street' (e.g. 32nd Ave). These are the least restrictive type of diverter.

Median diverters, such as currently tested at 17th Ave, prevent through movements, allow only right turns, and allow through movements on the side street (e.g. 17th Ave north and southbound).

Diagonal diverters are similar to median diverters, but also block through movements on the side street.

Project Feasibility/Effectiveness:

Additional diversion on Clinton: Of the two key project objectives on Clinton, auto volume and speed reduction, the volume reduction objective has essentially been achieved with the existing test. In terms of reducing impacts to adjacent local streets, the anticipated changes to traffic volumes on 32nd Ave would probably be significant, but also probably only at the expense of creating new impacts to other north-south streets, depending on where the additional diverter is placed. Most of these north-south streets either east or west of 32nd Ave already have relatively high volumes, compared to 32nd Ave, thus would have a relatively high probability of exceeding the 1,000 car/day threshold.

Adding a diverter to 32nd Ave: the same issues discussed above under changing the roadway to one-way apply. Adding a diverter to the south leg of 32nd Ave at Clinton that blocks southbound access would force all traffic on Clinton to go north to Division- creating a situation that is likely to exceed the 1,000/ day volume threshold for 32nd Ave between Division and Clinton, while southbound traffic from Division would be trapped at Clinton.

Changing the diverter design at 32nd Ave/Clinton to a diagonal: Based on the results of the current test, volume changes on SE 32nd Ave south of Clinton are not anticipated to be significant (~-100 cars/day). Tradeoff includes increased volumes on Clinton (~+200 cars/day), contrary to the Project goals.