Cost of Traffic Calming

SECTION

X

The following cost estimates may be useful in conceptual planning, as they show order-of magnitude differences among measures. Speed tables, for example, are consistently the least expensive option. Costs increase quickly when measures require landscaping, drainage improvements, or land acquisition.

Measure	Sample Cost Estimate
Speed Tables	$2,500.00
Raised Intersections	$12,500.00
Traffic Circles	$10,000.00 to $15,000.00
Chicanes	$14,000.00
Chokers	$7,000.00 to $10,000.00
Center Islands	$8,000.00 to $15,000.00
Median Barriers	$10,000.00 to $20,000.00
Half Closures	$40,000.00
Full Closures	$120,000.00
Diagonal Diverters	$85,000.00

* These numbers have been compiled from examples used by the ITE.

Temporary Measures

If the cost estimates and other varying conditions have led the decision-makers away from permanent measures, it is important to realize that temporary measures will generally not be as attractive as landscaped permanent measures. However, given the right materials, colors and composition, they do not have to alter the aesthetic quality of the neighborhood. Planters used as temporary street closures provide a little greenery as access control. In these types of measures, landscaping should be rated highest.

Even cheaper are landscaped street edges, which soften the appearance of speed tables and other vertical traffic calming measures. Landscaped chicanes, center islands, and traffic circles may create distinctive streetscapes. Landscaping could enhance

the appearance and improve the effectiveness and safety to the measure it is complimenting. In any vertical measure, trees, shrubs, planters, bollards and signage are enough to draw attention to traffic calming measures.

Cost Effectiveness, Sources of Funds

The City believes that selected traffic calming measures should be mocked up on the subject streets before proceeding with permanent improvements, at least until the City has considerable experience with such installations. The trial period will give the City and residents a chance to evaluate the effectiveness of the recommended measures on the subject streets, weigh the effectiveness relative to cost, and evaluate the impact on adjacent streets.

Sources of funds for the improvements will likely include the following:

- DelDOT TEA-21 Enhancement Program
- DelDOT Suburban Street Program
- DelDOT Municipal Street Aid
- WILMAPCO Transportation Improvement Program

Traffic Calming Impacts

Returning to the definition of traffic calming, traffic claming seeks to reduce speeds and volumes of traffic to acceptable levels. Recent examples of traffic calming measures from cities around the United States indicate that some applications have been very effective while others have not. Impacts are highly case-specific, depending on the geometrics and spacing of measures, availability of alternative routes, treatment of other streets in area-wide applications, and many other factors.

Speed Impacts

Traffic engineering represents speed through the 85th percentile speeds. It is not the highest any motorist travels, but it is high enough to represent the probably safe end of the speed distribution. There are three measures of impact – average 85th percentile after traffic calming measure, average absolute change in 85th percentile speed from before to after traffic calming, and average percentage change in 85th percentile speed from before to after. According to the ITE, speed tables have a greater impact on

85th percentile speeds, while raised intersections and circles have the least impact.

Speed impacts of traffic calming measures depend primarily on geometrics and spacing of the calming measure. Geometrics determine the speeds at which motorists will travel through slow points and spacing determines the extent to which motorists speed up between slow points. It is important to not space the measures to far apart, which will allow motorists to gain speeds of the 85th percentile. Not only must speeds be lessened at the calming point, but also along the entire length of the street.

Traffic Volumes

Volume impacts are more complex and case-specific than speed impacts. They depend on the entire street network that could be a part of or the entire street. The availability of alternative routes and application of other measures will have a large impact on volumes, as do the geometrics and spacing of traffic calming measures.

Traffic volumes depend primarily on the split between local and through traffic, as well as trip generation. It is important to understand that traffic calming will not affect the amount of local traffic unless drastic measures are taken, such as road closures. The traffic calming measures that are being discussed for the Old Newark Traffic Study may re-route non-local traffic to major arterials. The traffic calming measures recommended fall into two categories:

1. Those that discourage but still allow through-traffic.
2. Those that do not discourage through-traffic other than to slow it down.

Traffic volumes are based on the amount of alternative routes within a street network. For streets calmed with volume control measures, impacts will be expected to depend on what type of movements are prohibited along a portion of the road or/and at the intersection. For example, a full closure will have the biggest impact because it will not allow through trips while a half closure will allow through traffic one way and only have half the impact.

For roads calmed with speed control measures, volume impacts would be expected to vary with the degree of speed reduction.

Route choices depend on relative travel times and a route that is traffic calmed becomes less attractive.

Accidents

Safety is by far one of the number one reasons communities engage in traffic calming techniques. It is assumed that by slowing down traffic, eliminating conflicting movements, and sharpening driver attention, traffic calming may result in fewer collisions. Seattle, Washington has had success with its traffic calming measures due to many years of emphasis on traffic safety. However, it is difficult to draw concrete conclusions from traffic calming devices regarding collisions. Few studies take into account the number of accidents reported, weather conditions, and traffic diversion. Many traffic calming measures result in some reduction of traffic, however, traffic accidents may migrate to streets without traffic calming measures as motorists are trying to avoid the traffic-calmed streets.

Other Quality of Life Impacts

Studies indicate that lower speeds and volumes after traffic calming encourage walking, biking, and street life. A looming theory is that traffic calming eliminates or lessens negative externalities of motor vehicle use, thus property values will rise in response. On the other side of that, traffic calming measures stigmatize a street, announcing that traffic is a problem, thus causing property values to fall.

Residents are often concerned that vertical measures --tables and textured surfaces -- will raise noise levels in their neighborhoods. However, experience and studies indicate that lower speeds that result from proper design and application of traffic calming measures tend to lower noise levels. Interestingly, since stop signs are viewed as a panacea for traffic problems by many citizens and elected officials this option may be the worst from a noise standpoint. Although deceleration is quiet, acceleration is not. What is not captured by noise studies in the occasional screeching of tires, clunking of cargo, or in a few communities, honking in protest when vertical measures are first installed. This is one advantage of horizontal measures and why the argument for raised intersections is made over mid-block tables. The raised intersections are not directly in front of residences.

Other Measures That Influence Traffic

The City of Newark might consider engaging in a citywide safety education campaign emphasizing to residents:

- *The importance of abiding by speed limits*
- *Newark's determination to enforce the law*

The Newark Police might contact major employers and ask them to spread the word. Transportation companies serving local factories should also take part in the program. Other measures could include:

1. Neighborhood Traffic-Safety Campaigns

Neighborhood traffic-safety campaigns consist of personalized letters or general flyers that are distributed to all residents of a neighborhood and cite statistics of speeding within the neighborhood and appeal for compliance with traffic laws. Transportation companies such as school bus companies serving local school and trucking companies serving local factories, should take part in the program.

2. Radar Speed Display Units

Radar speed display units are rotated from street to street, based on citizen requests. They show drivers their actual speed, thus encouraging compliance with the speed limit. In Newark, the radar speed display unit is a portable trailer equipped with a radar unit that detects the speed of passing vehicles and displays it on a reader board.

3. Neighborhood Speed Watch

Speed watch programs lend residents radar guns and have them record the speed, makes, models and license plate numbers of all vehicles clocked speeding through their neighborhood. The police department then sends warning letters to the owners of offending vehicles reminding them of the posted speed limit in the neighborhood.

4. Centerline and Edgeline Striping

Providing an edgeline, several feet from the pavement edge has the effect of visually narrowing the roadway. A double yellow line striped down the center of a roadway might have a comparable effect, visually limiting drivers to half of the road. The perceived narrowing could cause a modest speed reduction.

5. Transverse Markings

Certain studies have found that a pattern of transverse marking at decreasing intervals across the travel path slows down traffic. The pattern supposedly creates the illusion of increasing speed, thus inducing slower driving.

Recommendations for Further Study

As noted in our initial findings detailed in Section II of this report, Remington & Vernick Engineers believes the impacts of through-traffic on the study area streets must be evaluated. While this topic is beyond the scope of this study, we encourage further investigation of traffic problems within the Old Newark Area.

References

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17	Bellevue, Washington, Page 56, Chapter 3, *Traffic Calming: State of the Practice*, Reid Ewing, Institute of Transportation Engineers, 1999.
18	Figure 4.37, Shark's Tooth. Page 96, Chapter 4, *Traffic Calming: State of the Practice*, Reid Ewing, Institute of Transportation Engineers, 1999.
19	Figure 4.33, Traffic Circle, Eugene, Oregon. Use of Signs from the *Manual on Uniform Traffic Control Devices for Traffic Calming Measures* (Page 92, ITE Manual, 1999)
20	Figure 4.26, Montgomery County, Maryland. Signing and Marking of Center Island Narrowings from the *Manual on Uniform Traffic Control Devices for Traffic Calming Measures* (Page 87, Chapter 4, ITE Manual, 1999)
21	Figure 4.35, One-Lane Chicane, Charlotte, NC. Signing and Marking of Center Island Narrowings from the *Manual on Uniform Traffic Control Devices for Traffic Calming Measures* (Page 94, Chapter 4, ITE Manual, 1999)
22	Figure 4.20, Boca Raton, Florida. Temporary Measures Less Likely to Offend from the *Manual on Uniform Traffic Control Devices for Traffic Calming Measures* (Page 84, Chapter 4, ITE Manual, 1999)