

Neighborhood Traffic Calming Part 1 – Overview

by
Bradley William Yarger, P.E.

Traffic complaints are common in neighborhoods as well as on freeways, arterials and collectors (through streets), but they typically differ in scope. Residential streets are different than through streets because residential streets are where we live. Freeways may have 100,000 vehicles per day traveling at 55 MPH, and arterials may have 20,000 vehicles per day traveling at 40 MPH, but residential streets are different. We want low volumes and low speeds because we believe that will make our neighborhoods safer and more enjoyable. While we expect all roads to be safe, more concern is raised about safety in neighborhoods because if a problem can happen once, it can happen to someone we know and love. We don't think much about crashes that happen miles away on some arterial, but when it happens in front of our home, it becomes a concern; and it tends to fall in to the hands of the home owners' association board in terms of complaints.

The complaints tend to take various forms, but they usually boil down to five main issues: too much traffic, too high of speeds, too much congestion, noise and safety. In a way, the first two can be thought of as precursors of the last three. Too much traffic and too high of speeds are relative to the type of road. 55 MPH is fine on the freeway, but not on neighborhood streets. Other people (outsiders!) should be traveling on streets outside the neighborhood; that is why we have freeways, arterials, and collectors. The problem for the board is how to deal with the complaints. Some may ignore the complaints, but there are ways to deal with them. Neighborhood traffic calming has been around for quite a while in various forms, but it has gained momentum over the last few decades. Basically it is a group of roadway design elements that make neighborhood streets more livable by reducing traffic volumes, slowing speeds, and making the roadway area more pedestrian friendly.

The first step is to define the problem. Many times the complaint may be isolated, but not always. It may be obvious, but it needs to be documented and presented to someone that can do something. Keep in mind that the complaint may not always be the same thing as the actual problem.

Typically neighborhood streets are under local government control in some way or another. Neighborhood streets may be privately owned, but the local government still will have some level of control of what can be done. For example, there are state laws that cover motor vehicle operation; while zoning and subdivision control ordinances control what can be done to the street. Most will likely reference state or national guidelines with some minor modifications. In Indiana, traffic control devices must follow the Indiana Manual on Uniform Traffic Control Devices (MUTCD). Most, if not all other states have similar laws. The federal government puts out a MUTCD which states either adopt as theirs, or states like Indiana can adopt their own based on the federal MUTCD. After a problem has been documented, it can be presented to the local government for the next step. Various agencies may be involved including local law enforcement, department of public works, and local planning departments. They may take the complaints and deal with the issues, or have the board hire a consulting traffic engineer to lead the process and work with the board and local government.

Whether a government agency or a consulting traffic engineer does the work, the next step is to define the problems in terms of the three Es: education, enforcement and engineering. This article primarily will deal with the last E, engineering. Data should be collected, preferably for an extended period like a week to determine traffic volumes, speeds and classifications (motorcycle, car, truck, semi, etc.) Other data may be collected as appropriate, such as roadway conditions, traffic control devices, crash data, and occasionally, origin – destination data. Origin – destination data has to do with where vehicles enter, stop, and leave the neighborhood to determine if they are cut-through traffic. Once the data is collected, it can be compared to norms for defining the problem. Defining the problem may take many steps and should be lead by a traffic engineer, either from the local government or a consultant.

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The problem must be defined correctly, or the solution may not address the problem, and could actually create other problems, such as noise, congestion, or simply moving the problem to another neighborhood street.

Too much traffic within a neighborhood typically is a problem with poor design, unrealistic expectations, or cut-through traffic. The poor design problem comes from having one residential street act as a neighborhood collector with too many local streets forced to feed into it. Cul-de-sac streets lower the traffic on their street by forcing all traffic to a neighborhood collector street. Unrealistic expectations occur when those living on the neighborhood collector street think their street should be limited to just their use. Generally a home will generate about 10 one-way trips per day. Condominiums and apartments tend to generate a little less, while large homes with three or four car garages can generate more. A home that is located at the entrance to a neighborhood with 200 houses can expect to see about 2,000 vehicles per day if there is only a single entrance, and a second entrance may not equally split the traffic. If traffic volumes are vastly different than what can be expected from the number of houses, condominiums, or apartments in a neighborhood, the problem is likely cut-through traffic where outsiders (people who don't live or have business in the neighborhood) use the neighborhood streets as if they were arterials and collectors for through trips.

Cut-through traffic can grow over time and need not be fundamentally a problem of the neighborhood design, but actually a problem of the city's through streets being too congested. While the best solution for everyone may be to solve the through street congestion, major roadway improvement projects take time and lots of money. Sometimes they can be solved by a simple measure like signal timing, but normally the cut-through traffic will have to be addressed in the neighborhood until the major street problems can be addressed.

Cut-through traffic can be addressed through measures that make the neighborhood streets less attractive to through traffic, mainly by making the cut-through routes less direct or slower. Some of the changes that can be made to neighborhood streets are:

- Street closures, full or partial
- Abutting one-way blocks
- Diverters, full or partial
- Turn restrictions

Speeding can be address through several other changes to the roadway network, and may in turn reduce the cut-through problem as well. These include:

- Vertical deflections – speed humps (not speed bumps), speed tables, and raised intersections
- Horizontal deflections – traffic circles, chicanes, diverters
- Narrowing – medians, chokers, bulb-outs, landscaping
- Signage and pavement markings (Usually not effective unless there is an active component.)

Traffic calming techniques can improve neighborhood traffic flow by reducing traffic volumes, slowing other traffic, and making the roadway area more pedestrian friendly. The process of collecting complaints, contacting local government, defining the problem and selecting the appropriate treatment is fairly straight forward with the help of a professional engineer with training and experience in traffic engineering.

