

**TRANSPORTATION
POLICIES FOR
THE
CITY OF HENDERSON**



Policy # 1 - Speed Zone Policy and Guidelines

Policy # 2 - Multi-way Stop Sign Policy

Policy # 3 - Traffic Calming Policy

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CITY OF HENDERSON SPEED ZONE POLICY AND GUIDELINES

Speed Limit Policy

Speed limits shall be established and posted as necessary for the purpose of providing motorist with the maximum allowable speed by law. Speed limits shall be established in accordance with Division 4 of the City of Henderson Code of Ordinances covering "Motor Vehicles and Traffic" and in accordance with all other local, state and federal requirements and guidelines. Speed limits signs shall display the limit established by law, or regulation, after an engineering and traffic investigation has been made in accordance with established traffic-engineering practices.

Guidelines for Establishing Speed Limits

The City of Henderson's guidelines for the establishment of speed Limits utilizes functional classification and traffic volumes to determine the level of detail needed when conducting an evaluation. The various types of classifications are Major Thoroughfare, Minor Thoroughfare, Collector, Sub-collector, Residential and Local.

The city's zoning map publication will be utilized in the identification of street classifications unless otherwise instructed by Engineering or Planning Staff. There are two types of guidelines within the City of Henderson Speed Zone Policy: "Residential Speed Zone Guidelines" and "Non-Residential Speed Zone Guidelines". The "Residential Speed Zone Guidelines" allow the posting of speed limits below the statutory speed limit of 35 MPH by a neighborhood petition process. The "Non-Residential Speed Zone Guidelines" involves a thorough engineering investigation and does not involve a petition process of any kind.

Residential Speed Zone Guidelines

Residential & Local Streets

When requested to lower the speed limit on a residential or local street the City Staff will:

- Review accident data to check for any apparent accident patterns or problems related to speeding traffic. (If a problem is identified, a petition is not needed. Use the more thorough procedures detailed for the "Non-Residential Speed Zones".)
- If an accident problem is not apparent then, review the street(s) to determine if conditions permit the speed limit reduction. The following factors should be considered:
 - Length of speed zone (Goal of 1/2 or greater and minimum of 1/4 mile).
 - continuity within neighborhood street network
 - must not be a cut-through problem
 - must not be a state system street
- Identify acceptable street(s) and send out a petition along with a flyer or other notification to begin the process to lower the speed limit to 25 mph.

Upon receipt of the completed petition, verify that it contains the owner/occupant's signature of at least 75% of the dwelling units on the street. Once approved by Council, write a work order to install the signs and update the traffic schedule accordingly.

Note: For state system streets, use the guidelines for Non-Residential Speed Zones. For cut-through problems, use the guidelines for sub-collector streets.

Sub-Collector Streets

When requested to lower the speed limit on a sub-collector street the City of Henderson will:

- Review accident data to check for any apparent accident patterns or problems related to speeding traffic. (If a problem is identified, a petition is not needed. Use the more thorough procedures detailed for the "Non-Residential Speed Zones".)
- Identify the streets to be analyzed. (Must not be a state system street)
- Conduct a study to include the collection of speed and volume information and an analysis of all available accident data.
- If the street carries less than 1500 vehicles per day and traffic volumes are expected to remain at this level into the future then treat the street as a residential street.
- If the street carries more than 1500 but less than 2500 vehicles per day, traffic volumes are expected to remain at this level into the future, and the 85th percentile speed is:
 - Equal to or less than 35 mph, then begin petition process for 25 mph.
 - Greater than 35 mph, then provide the police with a copy of the speed study results and begin the petition process to post 35 mph signs.
- If the street carries more than 2500 vehicles per day, traffic volumes are expected to increase above the current level or it is a state system street, then follow the Non-Residential Speed Zone Guidelines.

Upon receipt of the completed petition, verify that it contains the owner/occupant's signature of at least 75% of the dwelling units on the street. Once approved by Council, write the necessary work order to install the signs and update the traffic schedule accordingly.

Non-Residential Speed Zone Guidelines

Major/Minor Thoroughfare & Collector Streets (Also includes state system streets and streets with 2500 vpd or more.)

When requested to lower the speed limit on a major/minor thoroughfare or collector street the City of Henderson will:

- Educate the customer on the function of collectors and thoroughfares and explain how they differ from residential streets. Mail a brochure or other information that describes the establishment of speed limits on major roadways.
- Identify analysis area and determine if a traffic engineering study is appropriate.
- If appropriate, conduct a traffic engineering study considering one or more of the following:
 - Speed & Volume Information
 - Accident Analysis Results
 - Design Speed

- Ball Bank Indicator Survey
- Sight Obstructions
- Street Width
- Presence of Sidewalks
- Street Lighting
- Pavement Markings
- An engineering decision will be made based on the results of the study. Actions may include one or more of the following:
 - Provide police with results of speed study.
 - Post existing speed limit.
 - Post a reduced speed limit.
 - Implement speed watch program.
 - Improve any sub-standard items. (Sight obstructions, lighting, etc.)

Note: No petitions are to be involved with the establishment or posting of speeds on collector and thoroughfare roadways.

CITY OF HENDERSON MULTI-WAY STOP SIGN POLICY 9/04

The City of Henderson receives many requests throughout the year to modify traffic operations along residential streets. Specifically, many residents request the placement of multi-way stop signs. In the past, the COH has found the following:

The guidelines for the placement of multi-way stops as defined in The Manual of Uniform Traffic Control Devices (MUTCD) often require significantly higher traffic volumes than are experienced along typical residential streets in Henderson, however; a new guideline in the MUTCD does allow the placement of multi-way stops along low volume streets to improve traffic operations. City of Henderson has developed guidelines for the placement of multi-way stops along low volume streets

- Multi-way stops may not necessarily reduce overall traffic volumes within a neighborhood area.
- Multi-way stops may not necessarily lower mid-block speeds along a street.
- Multi-way stops may reduce the through traffic volume along a particular residential street.
- Multi-way stops may break up the flow of traffic at an intersection, resulting in lower speeds near the intersection, and thus providing greater decision times to drivers, pedestrians and cyclists.

In an effort to be more flexible and more responsive to citizen's requests for the placement of multi-way stops in residential areas, City of Henderson has developed a "Multi-way Stop Sign Installation Policy." The "City of Henderson Multi-way Stop Sign Installation Policy" is more specifically focused to residential areas than the guidelines identified in the MUTCD. This policy also places an upper limit on traffic volumes that must be present for consideration of a multi-way stop installation under this policy. Those streets that exceed this upper limit will only be considered for multi-way stops under the MUTCD criteria.

"Regulatory and warning signs should be used conservatively because these signs, if used to excess, tend to lose their effectiveness." To this end, City of Henderson has determined that consideration of traffic volumes (to discourage the installation of a multi-way stop at the intersection of a high volume and a low volume street), and stop sign spacing (to prevent excessive stopping along a single street) must be given to potential multi-way stop locations. These considerations are needed in order to preserve the driver compliance and effectiveness of stop signs within the City of Henderson. In all cases, the decision to install or not to install a multi-way stop at an intersection will be made by COH based on Engineering/Police Department investigation and Engineering/Police judgment.

GUIDELINES FOR DETERMINING MULTI-WAY STOP LOCATIONS

The City of Henderson has developed the following guidelines for use in their engineering investigation/judgment to determine where multi-way stops may be appropriate:

PART 1: ALL MAJOR/MINOR THOROUGHFARES, ALL NCDOT MAINTAINED ROADWAYS, AND ALL OTHER INTERSECTIONS WITH AN INTERSECTION AADT > 3,500 VEHICLES PER DAY.

City of Henderson should use the guidelines set forth in current edition of the MUTCD, for all major/minor thoroughfares, NCDOT maintained roadways, and any other intersection with an Average Annual Daily Traffic (AADT) volume in excess of 3,500 vehicles per day. The December 2000 edition of the MUTCD provides the following criteria for these intersections:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. A crash problem, as indicated by 5 or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right- and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:
 - 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day, and
 - 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour, but
 - 3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the above values.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

PART 2: ANY LOCAL AND/OR COLLECTOR STREET MAINTAINED BY THE CITY OF HENDERSON WITH AN AADT < 3,500 VEHICLES PER DAY.

City of Henderson should consider the following guidelines when determining if a multi-way is appropriate at any intersection of local and/or collector streets maintained by the City of Henderson with an intersection AADT of less than 3,500 vehicles per day. Note in the interest of overall public safety City of Henderson may qualify or disqualify any proposed location based on any one, or none of the guidelines listed below. Typically all of the following will be considered before a multi-way stop is installed:

- A. The presence of any non-removable sight obstruction problem at the intersection may necessitate the need to immediately install a multi-way stop.
- B. A speed limit of 25 MPH or 30 MPH must be in place before Multi-way stops will be considered along a non-stop street.
- C. The vehicular volume from either approach on the non-stopped street should not exceed 5 times the vehicular volume from any one approach on the existing stopped street.

- D. To prevent excessive stopping, an existing stop condition should not be located within 2 full block lengths (measured along the same side of the street when an offset or t-intersection is present) of a proposed stop condition. In instances of large block lengths, a proposed stop condition should not be located within 800 feet of an existing stop condition.
- E. The longest leg of the side street, or existing stopped street should extend at least 400 feet from the proposed multi-way intersection.
- F. Geometric design features of the roadway such as horizontal/vertical alignment, on-street parking, street widths, sidewalks, and building setbacks may also be considered.

A positive petition of at least 67% of the property owners/residents along the existing non-stop street (as determined by City of Henderson) may be required, where appropriate. Those who sign the petition must agree to the placement of any needed stop signs, concrete islands, pavement markings, and advance-warning signs as determined by City of Henderson.

Traffic Calming Policy (Existing Neighborhoods)

In order to implement a suggested enhancement, the City will follow a process to ensure that the proposed measures will resolve the issues, are acceptable to the neighborhood, do not create new problems, and to prioritize the needs so that projects are implemented in a fair and equitable manner.

The City will review each request that the neighborhoods submit and will perform a qualitative assessment. The assessment will be done to determine whether traffic calming measures can be affectively applied to the identified problem. If the qualitative assessment determines that the problem may be mitigated by using traffic calming measures, the City will collect and analyze data for the impact area. Requests will be ranked as a high or low priority. In a high priority case the City will first try to mitigate measures that can be implemented with existing resources and personnel.

Process - Any citizen can initiate a request for traffic calming to ensure that there is at least basic support for traffic calming in the area in question, the resident initiating the process will be asked to get the signatures of at least seven (7) other area residents that support the request by using the petition for supplied by the City. The area residents should live on the same street as the citizen initiating the request. The request must be supported by the Neighborhood Homeowners Association if there is one and it is active.

The traffic calming plan shall be developed for entire neighborhoods rather than individual locations to prevent shifting the issue from one location to another within the neighborhood. Examples for when traffic calming can help include speeding, high traffic volumes, vehicular safety concerns, pedestrian safety concerns, noise pollution and vibration.

Upon review and validation of the petition, the City will perform the qualitative assessment. If the qualitative assessment does not support further action, The City will notify the citizen initiating the request and explain why traffic calming will not be considered in/for the identified area.

In the event that traffic calming is supported, the City will collect data. Below is a list of data to be collected and analyzed.

Once the data has been analyzed, the point system will be applied to aid in prioritization.

CRITERIA	POINTS
Traffic Volume (5 points for every 20% of volume that exceeds the expected neighborhood volume)*	
Speed (1 point for every mph that the 85th percentile speed exceeds 25 mph on a local residential street or 35 mph on a residential collector or commercial street)	
Pedestrian/Bicycle Volume (5 points for every 10 peds./cyclists) in the peak hour	
Sidewalks (5 points for no continuous sidewalks on at least one side of the street)	
Crash Frequency (5 points for an injury accident, 1 point for a property damage only accident. (last 3 years)	
Land Use (5 if residential, 2 if commercial)	
Street trees/Streetscaping (5 points for no or few street trees)	
School Route (5 points if the street is on a designated school walk route)	
Bus Stops (1 point for each transit stop and 2 points for each school bus stop on each street)	
Total	

*The expected volume is determined using ITE Trip Generation rates for the neighborhood or area being evaluated.

The above evaluations are each based on a single street. It is the intent of this policy to consider whole neighborhoods for traffic calming rather than treating individual locations. The above evaluations should be performed on every street of concern in the neighborhood. For prioritization purposes, the neighborhood score will be equal to the sum of the score for the highest scoring individual street in the neighborhood and the average of the scores for all of the streets in the neighborhood that were evaluated.

Once all the data outlined above has been rated, the request will be categorized as a low priority or a high priority. Requests scoring less than **30 points** will be automatically considered low priority. This threshold should be adjusted annually as more data is available for setting this threshold. If a request is determined to be a low priority, consideration should still be given to trying to address the issue through simple, alternative traffic calming measures that can be implemented with City forces using available operating funds. These measures are typically low cost yet provide some support to the neighborhood to lessen the apparent problem.

Some alternative measures that may be considered include:

- Increased police enforcement and/or speed displays
- On-street parking
- Signing improvements
- Improvements or revisions to pavement markings, such as crosswalks or edgelines
- Changes to traffic regulations such as speed limits, STOP control or turn prohibitions

It is important that implementation of these alternative measures does not adversely impact adjacent streets or neighborhoods. If the anticipated impacts of a proposed measure cannot be easily identified or if the impacts are expected to extend beyond the study location then the measure should not be considered except in conjunction with a full traffic calming plan. If the issues cannot reasonably be addressed through any of the alternative measures identified above or if alternative methods have already been tried unsuccessfully, then the neighborhood will be considered for a more extensive traffic calming project. All of the traffic calming projects being considered will be prioritized based on their point totals. These projects will be advanced priority order as funds for the planning and design process and construction fund become available.

The City of Henderson will take all of the information that has been gathered and develop a conceptual plan for the implementation of traffic calming measures in the neighborhood. It is critical that appropriate City service departments are included in this development, especially emergency services. The plan will include sketches depicting the proposed installation sites of the preferred calming measures and a plan to evaluate the effects on the neighborhood one year from time of implementation. The City will circulate the conceptual plan for review and comment to the various departments. The City departments that will need to approve the final plan prior to implementation include City of Henderson Engineering, Planning, Street, Police and Fire Departments.

The City of Henderson will consider the various comments received from the other City Departments and revise the conceptual plan accordingly. A preliminary cost estimate will be prepared for the final concept plan.

Final Design and Plan Approval

The revised conceptual neighborhood traffic calming plan will be submitted to all of the appropriate City Departments, as noted above, for review and final approval and presented to the City Council for approval of the plans as well as allocation of funds (if available).

The action plan will also include recommendations for funding the proposed measures. The City has not identified specific funding for traffic calming projects; therefore, if the plan includes measures to be implemented by a contractor the project will likely need to be added to the City's Capital Improvement Program(CIP). The availability of alternative funding, such as contributions from the neighborhood or the willingness of property owners to be assessed an additional tax to pay the cost over a reasonable period of time, should be considered.

Traffic Calming Measures

The traffic calming measures identified here are divided into four categories: Non-Physical, Vertical, Horizontal, and Diversion. Of those categories, the measures in the Non-Physical category are generally ideas that do not alter the physical path of travel. Non-Physical measures also normally do not require significant construction or alteration of the roadway. These measures typically require low cost materials such as line stripping or signing, however, some Non-Physical measures can be costly.

These alternative measures should be considered and tried before implementing more complicated traffic calming measures. The following Non-Physical measures are included in this section:

1. Speed Enforcement
2. Radar Trailers
3. Lane Striping
4. Signage
5. Pavement Marking Legends
6. High Visibility Crosswalks
7. On-Street Parking
8. Raised Pavement Markers
9. Streetscaping
10. Multi-Way Stops
11. Turn Prohibitions & Other Restrictions
12. Gateways/Entryways
13. Colored Pavements

Vertical traffic calming measures provide variations in pavement height and materials that typically cause discomfort to the occupants of vehicles operating in excess of the desired travel speed. These devices do not restrict traffic flow so they are not typically used to mitigate cut-through traffic issues; however, the inconvenience caused by these devices may cause some of the non-local traffic to avoid the area. **Most vertical traffic calming measures are considered undesirable for primary emergency response routes and transit routes.** The following vertical traffic calming measures are included in this section:

14. Textured Pavements
15. Speed Humps
16. Speed Lumps
17. Speed Tables
18. Raised Crosswalks
19. Raised Intersections

Horizontal traffic calming measures use items such as raised islands and traffic circles to eliminate straight-line travel thus forcing most drivers to reduce their speeds. Horizontal measures can also be used to reduce pavement widths to discourage speeding or to restrict passage to a single lane, thereby significantly reducing the capacity of the roadway. The following Horizontal traffic calming measures are included in this section:

20. Traffic Circles
21. Roundabouts
22. Curb Extensions
23. Chicanes
24. Lateral Shifts
25. Neckdowns
26. Realigned Intersections
27. Bulbouts
28. Two Lane Chokers
29. One Lane Chokers

- 30. Center Island Narrowing
- 31. Medians

Diversion measures change the flow of traffic and limit or eliminate certain movements. Diversion measures should only be used as a final option when any of the previously mentioned measures have not yielded the desired results. Even in these cases, Diversion measures should not be considered on primary emergency routes unless provisions can be made to maintain access for emergency vehicles. The following Diversion measures are included in this section:

- 32. Street Closures
- 33. Diagonal Diverters
- 34. Semi-diverters

Roadway Classification

The use of these measures is not only dependent on the issues to be addressed but also on the classification of the facility that the measure will be placed on. For the purposes of this policy, every street will fall into one of four(4) roadway classifications: Thoroughfare, Commercial, Residential Collector, or Local Residential.

Thoroughfares are those streets that are included in the City of Henderson Thoroughfare Plan. This included both Major and Minor Thoroughfares. These are typically streets intended to move large volumes of traffic through the area or between major destinations, such as the CBD, shopping malls or the Convention Center. In general, few traffic calming devices are permitted on thoroughfares. The measures that are allowed will typically be intended to improve safety for the non-motorized uses of the facility, such as cyclists and pedestrians. **Measures to reduce volumes are not appropriate on thoroughfares. Measures to reduce speeds should be used with caution so the capacity of the facility is not impacted.**

Commercial roadways are primarily intended to provide access to adjacent properties in business districts. These streets are characterized by frequent Commercial driveways, heavy peak period traffic volumes, and low pedestrian activity. Daily volumes and travel speeds are typically moderate. Traffic issues on these facilities are generally related to safety and travel speed. Many types of traffic calming measures are permitted on these facilities; however, care must be used to maintain adequate capacity and access for the traffic generated by adjacent land uses.

Residential Collectors are streets through residential areas that serve to connect the Local Residential streets with Thoroughfares. This street is typically characterized by frequent intersections with Local Residential streets. The adjacent land use for these facilities is primarily residential; however, some retail and institutional used are not uncommon. These streets may have frequent residential driveways or may have no driveways at all (reverse frontage). Speeding and cut-through traffic are the typical primary concerns on Residential Collectors. Addressing cut-through traffic issues can be difficult because it is important to maintain adequate capacity and access to fully serve the Local Residential streets that intersect the facility.

Local Residential streets provide access to residential properties. Adjacent properties are typically single family units but may also include multi-family developments. These are the types of streets where

traffic calming is typically most desired; especially if the street includes multiple intersections with other Local Residential streets and a Thoroughfare or Residential Collector. Nearly all traffic calming measures can be considered for this type of facility.

Roadway Uses

In addition to the roadway classification, consideration must be given to the uses of roadway when selecting a traffic calming measure. Specifically, consideration must be given to the use of the facility by emergency response Vehicles, transit vehicles (including school buses) and other heavy vehicles. Consideration must also be given as to who owns the roadway - whether it be the City of Henderson or the State of North Carolina.

Many traffic calming measures can significantly impact emergency response times by forcing emergency vehicles to slow down or physically forcing them to use a less desirable route. Care should be taken to utilize only those measures that have little or no impact on emergency vehicles on primary emergency response routes. The Fire Department typically maintains maps of the primary response routes.

Transit vehicle routes through neighborhoods are often candidates for traffic calming measures due to the increased number of pedestrians and the frequent stopping of transit vehicles. Care must be taken in selecting measures for these streets so impacts to transit operations are minimized. Many traffic calming measures, particularly Vertical measures, can severely impact buses. Even at very low speeds, Vertical measures can cause significant discomfort for bus passengers. Measures that significantly reduce street capacity can cause schedule problems for transit. Also, long wheelbases make it difficult for these vehicles to navigate through some horizontal measures. The types of measures allowed on transit routes should be limited to those with little or no impact to transit bus safety or comfort. The same cannot be said about school bus routes since this would precluded many measures from most streets and because school bus routes often change annually. Impacts to school buses should be considered on the major streets within neighborhoods where school buses have historically operated year after year.

The North Carolina Department of Transportation (NCDOT) maintains many of the streets in Henderson. These streets are primarily multi-lane thoroughfares or controlled access facilities and, therefore, will not generally be considered for traffic calming measures. However it is not unusual for neighborhood traffic calming plans to include some measures on the adjacent or nearby thoroughfares that connect to the neighborhood; therefore, it is necessary for this policy to consider the requirements of the NCDOT. **All construction and maintenance activities on State system streets must be approved by the NDOT and performed in accordance with State standards, policies and guidelines.** The NCDOT does not currently have a traffic calming policy and, generally, will not allow the construction of many types of traffic calming devices on State maintained rights-of-way. Lane widths, curb radii, pavement materials, clear zones, pavement striping and signing must all be compliant with NCDOT standards; therefore, there is little opportunity for traffic calming on State maintained streets. Standard devices that also serve a traffic calming function such as textured and colored pavements, pavement markings, turn prohibitions, signing and landscaping, are allowed on NCDOT rights-of-way, but will require approval from the NCDOT prior to implementation.

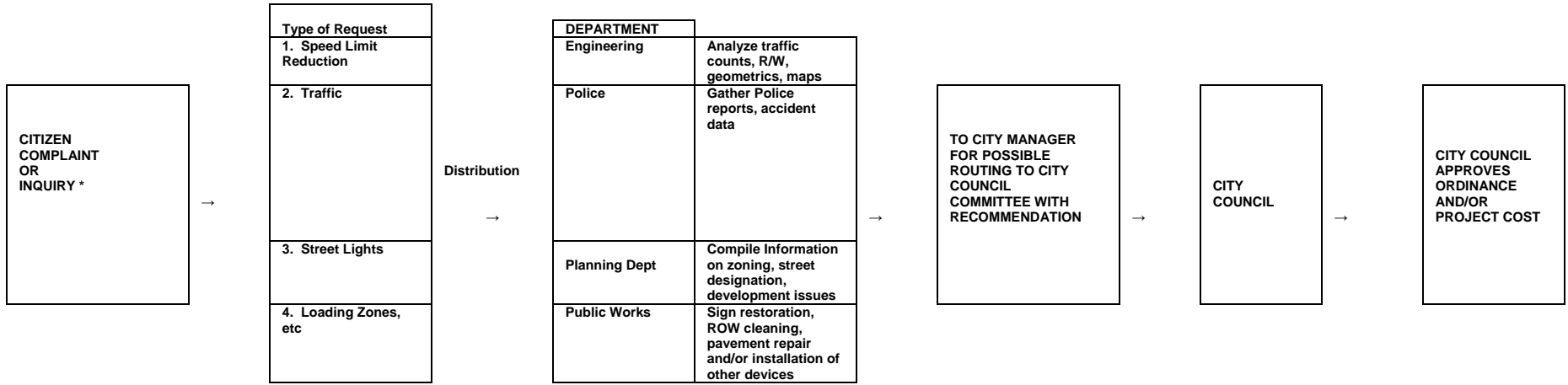
The City Staff may use existing data and/or charts which may be used and relate to their effectiveness at resolving typical traffic calming issues. At the end of this section is a flow chart for the routing of various requests and the Department responsibility for handling such tasks.

Non-Physical Traffic Calming Measures

Non-Physical measures are generally ideas that do not alter the physical path of travel. Non-Physical measures also normally do not require significant construction or alteration of the roadway. These measures do not typically require low cost materials such as line striping or signing; however, some Non-Physical measures can be costly. These measures can usually be implemented by City Staff with Operating Budget funds. The following Non-Physical measures are included in this section:

1. Speed Enforcement
2. Radar trailers
3. Lane Striping
4. Signage
5. Pavement Marking Legends
6. High Visibility Crosswalks
7. On-Street Parking
8. Raised Pavement Markers
9. Streetscaping
10. Multi-Way Stops
11. Turn prohibitions & Other Restrictions
12. Gateways/Entryways
13. Colored Pavements

TRAFFIC CONCERN AND/OR REQUEST FLOW CHART



*CITIZEN COMPLAINT OR INQUIRY IS RECEIVED AND THEN FORWARDED TO APPROPRIATE DEPARTMENTS AS SHOWN ON THE FLOW CHART