Passed: 9 - 0

ORDINANCE 99-16

TO AMEND TITLE 15 OF THE BLOOMINGTON MUNICIPAL CODE ENTITLED "VEHICLES AND TRAFFIC"
(Adding Chapter 15.26 Establishing the Neighborhood Traffic Safety Program)

WHEREAS, the City of Bloomington places a high value on neighborhood livability; and

WHEREAS, neighborhood traffic conditions can have a significant impact on livability; and

WHEREAS, the City of Bloomington is committed to developing an effective approach to managing neighborhood traffic; and

WHEREAS, Indiana Code 9-21-4-3 authorizes local authorities to place and maintain traffic control devices as they determine necessary to carry out local ordinances or to regulate, warn or guide traffic; and

WHEREAS, the City of Bloomington has developed a Neighborhood Traffic Safety Program in order to guide the decision making process for placement of traffic calming and related traffic control devices in neighborhoods;

NOW, THEREFORE, BE IT HEREBY ORDAINED BY THE COMMON COUNCIL OF THE CITY OF BLOOMINGTON, MONROE COUNTY, INDIANA, THAT:

SECTION 1. The Table of Contents for Title 15 shall be amended to add Chapter 15.26 Neighborhood Traffic Safety Program to the list of chapters.

SECTION 2. Title 15 of the Bloomington Municipal Code, entitled "Vehicles and Traffic," shall be amended by adding Chapter 15.26, entitled "Neighborhood Traffic Safety Program," and that chapter shall read as follows:

Chapter 15.26

NEIGHBORHOOD TRAFFIC SAFETY PROGRAM

Sections:

15.26.010 Definitions
15.26.020 Neighborhood Traffic Safety Program
15.26.030 Utilization of Neighborhood Traffic Safety Program Locations

15.26.010 Definitions. When appearing in this chapter the following phrases shall have the following meanings:

"Traffic calming device" has the meaning set forth at Indiana Code 9-21-4-3(a).

15.26.020 Neighborhood Traffic Safety Program. The Neighborhood Traffic Safety Program developed by the City of Bloomington Engineering Department and the Bicycle and Pedestrian Safety Commission shall be incorporated by reference into this chapter and includes any amendments to the program, as approved by the Common Council by ordinance. Pursuant to I.C. 36-1-5-4, two copies of the Neighborhood Traffic Safety Program shall be available in the City Clerk's office for public inspection.

15.26.030 Utilization of Neighborhood Traffic Safety Program. The City of Bloomington shall follow the policies and procedures set forth in the Neighborhood Traffic Safety Program to determine the appropriate location and construction of traffic calming devices and related traffic control devices in neighborhoods.

15.26.040 Traffic Calming Locations. The locations described in Schedule J-1, attached hereto and made a part hereof, shall have devices installed for the purpose of neighborhood traffic calming.

SECTION 3. Severability. If any sections, sentence or provision of this ordinance, or the application thereof to any person or circumstances shall be declared invalid, such invalidity shall not affect any of the other sections, sentences, provisions, or applications of this ordinance which can be given effect without the invalid provision or application, and to this end the provisions of this ordinance are declared to be severable.

SECTION 4. Enactment. This ordinance shall be in full force and effect from and after its passage by the Common Council of the City of Bloomington and approval of the Mayor.

PASSED AND ADOPTED by the Common Council of the City of Bloomington, Monroe County, Indiana, upon this 2nd day of June, 1999.

TIMOTHY MAYER, President
Bloomington Common Council

ATTEST:

PATRICIA WILLIAMS, Clerk
City of Bloomington

PRESENTED by me to the Mayor of the City of Bloomington, Monroe County, Indiana, upon this 2nd day of June, 1999.

PATRICIA WILLIAMS, Clerk
City of Bloomington

SIGNED and APPROVED by me upon this 2nd day of June, 1999.

JOHN FERNANDEZ, Mayor
City of Bloomington

SYNOPSIS

This ordinance adopts the Neighborhood Traffic Safety Program developed by the Engineering Department and the Bicycle and Pedestrian Safety Commission, thereby setting out standards for the placement of neighborhood traffic calming and related traffic control devices. The program requires approval of a traffic safety plan by the majority of the neighborhood involved, the Common Council, and the Board of Public Works. The ordinance also establishes a schedule of the types and locations of traffic calming devices on city streets.

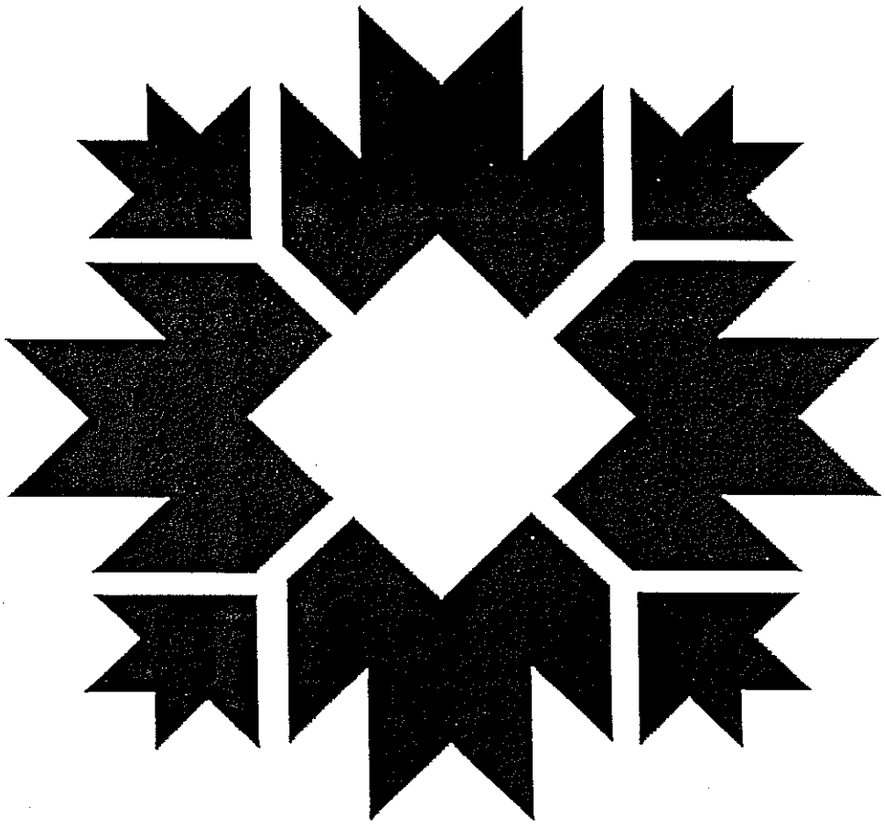
Signed copies to:
BMC File
Clerk
CA/CA

Legal · 5
PED
Engineering

Public Works
Engineering
Bike + Ped commission

Traffic Program attached to Ordinance and also in Ordinance 99-16 Back Up File

NEIGHBORHOOD TRAFFIC SAFETY PROGRAM



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INTRODUCTION:

The City of Bloomington places a high value on neighborhood livability. Although livability can have several definitions, it can be generally thought of as encompassing the following characteristics:

- The ability of residents to feel safe and secure in their neighborhood.
- The opportunity to interact socially with neighbors without distraction or threats.
- The ability to experience a sense of home and privacy.
- A sense of community and neighborhood identity.
- The ability to conveniently, safely and enjoyably walk, bike and take transit.
- The ability of parents to feel that their children's safety is not at risk by playing in the neighborhood.
- A balanced relationship between multiple uses and needs of a neighborhood.

Neighborhood traffic conditions can have a significant impact on these characteristics.

As population and employment in the City of Bloomington and Monroe County continue to grow, Bloomington streets can be expected to experience increased pressure from traffic. One of several goals of the City of Bloomington is to manage this growth to balance our economic, social and environmental health and to maintain a sustainable City. Quality neighborhoods are the fundamental building blocks of a sustainable city, and to maintain this quality, Bloomington neighborhoods should be protected from the negative impacts of traffic.

Neighborhood groups across Bloomington have become increasingly concerned about the effects of traffic on their streets. Restraining traffic has become a common goal of concerned residents. A vision now being promoted for local streets is that motorists should be guests and behave accordingly. Many City streets used to be multi-purpose places which not only provided physical access but also encouraged social links within a community. Now, the balance has changed so that the main function of many streets has become the accommodation of traffic--some of it unrelated to the residents themselves.

At the same time, traditional Traffic Engineering means of controlling traffic--speed zoning, stop signs, traffic signals--have less and less effect in the management of driver behavior. Police enforcement is and will remain an effective tool to reinforce motorist behavior. However, it is recognized that providing an enforcement level that is effective in modifying driver behavior will require a significant commitment of Police resources.

The City of Bloomington is committed to developing an effective approach to managing neighborhood traffic. Neighborhood involvement will be an important component of this approach.

To maximize neighborhood involvement in improving local traffic conditions, the City of Bloomington Bicycle and Pedestrian Safety Committee (BPSC) with assistance from the Public Works, Engineering and Planning Departments has developed a Neighborhood Traffic Safety Program (NTSP) for Bloomington neighborhoods.

Objectives

The following objectives of the NTSP are derived from existing City policies and the mission of the BPSC:

1. Improve neighborhood livability by mitigating the negative impact of vehicular traffic on residential neighborhoods.

2. Promote safe, reasonably convenient, accessible and pleasant conditions for bicyclists, pedestrians, motorists, transit riders and residents on neighborhood streets.

3. Encourage citizen involvement in all phases of Neighborhood Traffic Safety activities.

4. Make efficient use of City and citizen resources and energy.

Policies

The following policies are established as part of the NTSP:

1. Through traffic should be encouraged to use higher classification arterials, as designated in the *Master Thoroughfare Plan* for the *City of Bloomington Comprehensive Plan*.

2. A combination of education, enforcement and engineering methods should be employed. Traffic calming devices should be planned and designed in keeping with sound engineering and planning practices. The City Engineer shall direct the installation of traffic control devices (signs, signals, and pavement markings) as needed to accomplish the project, in compliance with the Bloomington Municipal Code. (Refer to Appendix C for a detailed description of traffic calming devices.)

3. Application of the NTSP shall be limited to local streets and to those neighborhood collector streets that are primarily residential (at least 75 percent of the properties with frontage on the street must be in residential zoning). Traffic safety projects on neighborhood collector streets shall not divert traffic off the project street through the use of traffic diversion devices. As a result of a project on a neighborhood collector, the amount of traffic increase acceptable on a parallel local service street shall not exceed 150 vehicles per day.

4. Reasonable emergency and service vehicle access and circulation should be preserved.

5. NTSP projects should encourage and enhance pedestrian and bicycle mobility and access within and through the neighborhood and enhance access to transit from the neighborhood. Reasonable automobile access should also be maintained.

6. Some traffic may be rerouted from one local service street to another as a result of an NTSP project. The amount of rerouted traffic that is acceptable should be defined on a project-by-project basis by the BPSC and City Engineering staff.

7. To implement the NTSP, certain procedures shall be followed by the Engineering Department in processing traffic safety requests in accordance with applicable codes and related policies and within the limits of available and budgeted resources. At a minimum, the procedures shall provide for submittal of project proposals, citizen participation in plan development and evaluation; communication of any test results and specific findings to area residents, businesses, emergency services and affected neighborhood organizations before installation of permanent traffic calming devices; and appropriate Common Council review.

Procedure/Process

The NTSP provides a mechanism for groups to work with the City to make decisions about how traffic safety techniques might be used to manage traffic in their neighborhood. This section describes in detail the steps involved in participating in the program from the initial application for involvement, to

developing a traffic safety plan, to installing one or more traffic calming devices, to a follow-up evaluation of the plan's success.

The NTSP process is intended to ensure that all neighborhood stakeholders are provided the opportunity to be involved. This ensures that consideration of traffic problems on the study street do not result in the exacerbation of traffic problems on adjacent neighborhood streets and does not eclipse the needs and quality of the neighborhood as a whole. This includes a consideration of the impacts of traffic diversion onto collector and arterial streets.

Step. 1. Apply to Participate

NTSP projects can be requested by neighborhood associations or groups, Common Council members representing a neighborhood, neighborhood business associations or individuals from the neighborhood. It should be noted that although individuals are eligible to apply they are encouraged to work with or form a neighborhood association. Requests for participation in NTSP will be made through the BPSC (application form will be provided by and returned to City Engineering staff).

The petition from a problem street or area must describe the problem (i.e., speeding, inappropriate cut-through, ignoring stop signs, etc.) and request some infrastructure change to reduce the problem. The specific form of the infrastructure change may not be known at this point. The petition must also include signatures from at least 51% of the affected street or area households or businesses. This must include any other street that must use the problem street as its primary access (for example, a dead end street or cul-de-sac off the problem street). Each household or business is entitled to one signature.

Finally, any Common Council member must sign the petition as a sponsor.

Step 2. Engineering Staff Review and Preliminary Data Collection

City Engineering staff will collect preliminary information about current conditions. This will include location, description of the problem and may include preliminary collection of traffic accident data, bicycle volume, pedestrian activity, traffic speed and through traffic. The Engineering Department will verify the percentage of households and businesses on the petition and if the percentage is sufficient, they shall notify the affected safety and emergency services of the initiative. The affected safety and emergency services shall include, but not be limited to, the City Police and Fire Departments and the local ambulance service. This information will be relayed to the BPSC for consideration to decide whether the request will be prioritized for inclusion in the NTSP. Requests are also reviewed for possible solutions. If the preliminary review shows that a hazard to the public exists, the City may address the problem separately from the NTSP.

Step 3. BPSC Review of Engineering Studies and Petitions

The BPSC will review the petition submitted as well as the preliminary data collected by the Engineering Department. At this point, the BPSC will either validate or reject the petition. They will also prioritize the petition with respect to other petitions and available resources within the current funding cycle (detailed in Appendix B). Petition validation is a commitment to try to do something about the problem.

Petitions with the highest priority ranking will continue to the next step.

Step 4. Public Meeting

The BPSC will send notices to all households and businesses within a defined project area to provide background information about the proposed project. The project area depends on the specific project, but

generally includes all properties on the project street, on cross streets up to the next parallel local street (or up to 300 feet from the project street) and on any other street that must use the project street as its primary access. For neighborhood collector streets, the next parallel local street (if one exists within 500 feet of the problem street) will also be included in the notification area. Representatives of the emergency service providers will also receive notification of the meeting. This notice will include an invitation to participate in a public meeting to help exchange ideas, address concerns and discuss possible traffic safety alternatives.

In addition to considering traffic calming and traffic control devices, plans developed in the NTSP will also consider the positive effects of education and enforcement.

Step 5. Preparation of Alternative Designs and Selection of Proposed Plan

The Engineering Department and the BPSC will hold an informal work session to prepare alternatives that address the neighborhood problem. The neighborhood is welcome to participate in this workshop to provide input.

The BPSC will assess the problems and needs of the neighborhood and propose solutions based on citizen input and sound engineering principles. Possible solutions and their impacts will be evaluated with consideration given to:

- Estimated costs vs. potential gain
- Effectiveness
- Pedestrian, bicycle and transit access
- Community wide benefit to bicycles and pedestrians
- Overall public safety
- Positive and negative consequences of traffic division
- Emergency and service vehicle access

The BPSC will identify the preferred alternative and City staff shall prepare a ballot for neighborhood approval.

If it is determined from both the public meeting and an informal work session of the BPSC that traffic safety techniques other than traffic calming devices are the preferred alternative, the proposal may not need to proceed through the additional steps as designated in the NTSP. The City Engineering Department will continue to work with the neighborhood on alternative neighborhood traffic safety techniques.

Step 6. Project Ballot

Local Service Streets:

All of the properties on the project street and on any other street that must use the project street as their primary access are sent notification that a proposed alternative has been selected. This notification will consist of a description of the proposal as well as a confidential mail ballot asking if they are in support of the project. Each household and business is entitled to one response.

To forward a project to Common Council for action, a majority of the eligible households and businesses must respond favorably by ballot. If over 50% of all eligible ballots respond in favor of the project, then it will be forwarded to the Common Council. If, however, less than 50% of all eligible ballots respond in favor of the project, but at least 60% of those returned ballots are in favor of the project, then a second

ballot shall be mailed to those addresses that did not respond to the first ballot. Ballots will be tallied for a period of four weeks from the time of distribution; ballots postmarked after the expiration date of the four-week period will not be tallied.

Neighborhood Collector Streets:

All of the properties on the project street, on cross streets up to the next parallel street (or up to 300 feet from the project street) and on any other street that must use the project street as their primary access are sent notification that a proposed alternative has been selected. This notification will consist of a description of the proposal as well as a confidential mail ballot asking if they are in support of the project. Each household and business is entitled to one response.

To forward a project to Common Council for action, a majority of the eligible households and businesses must respond favorably by ballot. If over 50% of all eligible ballots respond in favor of the project, then it will be forwarded to the Common Council. If, however, less than 50% of all eligible ballots respond in favor of the project, but at least 60% of those returned ballots are in favor of the project, then a second ballot shall be mailed to those addresses that did not respond to the first ballot. Ballots will be tallied for a period of four weeks from the time of distribution; ballots postmarked after the expiration date of the four-week period will not be tallied.

Step 7. Testing and Evaluation of Traffic Calming Device

A test of the traffic calming plan may occasionally be required to determine its effectiveness. If the Engineering Department and BPSC determine that testing is necessary, temporary traffic calming devices shall be installed for a period of at least one month.

Following the test period, data will be collected to evaluate how well the test device has performed in terms of the previously defined problems and objectives. The evaluation includes the project street and other streets impacted by the project and is based on before-and-after speeds and volumes, impacts on emergency and service vehicles or commercial uses, and other evaluation criteria determined by the BPSC. If the evaluation criteria are not met to the satisfaction of the BPSC and City Engineering staff, the traffic plan may be modified and additional testing conducted. If the test installation does not meet the project objectives, the request will need to go back to Step 5 for additional alternatives and neighborhood ballot.

If the City Engineer finds that an unforeseen hazard exists, the test may at any time be revised or discontinued. City Engineering staff will inform the BPSC and the neighborhood of any actions taken to modify or terminate a test.

When testing of traffic calming or traffic control devices is not possible or necessary, the plan will proceed to Step 8.

Step 8. Common Council Action

Based on the project evaluation and a positive ballot, City staff members prepare a report and recommendations for the Bicycle and Pedestrian Safety Commission to forward to the Common Council for action. The report outlines the process followed, includes the project findings, and states the reasons for the recommendations.

If a project does not obtain the required ballot approval, it is not forwarded to the Common Council.

Step 9. Board of Public Works

After the project has been approved by the Common Council, detailed project plans, specifications and estimates will be prepared by City Engineering staff.

Before the project(s) can be constructed by the City's Street Department or let for bidding by construction companies, the project plans and construction fund expenditures must be approved by the Board of Public Works.

If a project is not approved, it will be referred back to the Engineering staff to address the Board's concerns.

Step 10. Construct Permanent Traffic Calming Device(s)

Construction is administered by the City and is generally completed during the following construction season.

Step 11. Maintenance

The City of Bloomington Engineering and Street Departments are responsible for the construction and maintenance of any traffic calming device implemented as part of this program. The Traffic Division is responsible for any traffic signing and pavement marking or delineation. Any trees planted within the right-of-way are the responsibility of the Parks and Recreation Department and any landscaping (not including trees) is the responsibility of the neighborhood association.

Step 12. Follow-up Evaluation

Within six months to one year after construction of an NTSP project, the City may conduct a follow-up evaluation to determine if the project's goals and objectives continue to be met. This evaluation may entail traffic studies of volumes, speeds and accidents as well as public opinion surveys.

APPENDIX A

VISION AND MISSION STATEMENT OF THE CITY OF BLOOMINGTON

THE MISSION OF CITY GOVERNMENT

- QUALITY DELIVERY OF BASIC SERVICES AND PROGRAMS

  Do well those things that municipal government is uniquely expected and able to do - public safety, streets and roads, parks, etc.

- CONTINUOUS GOVERNMENT IMPROVEMENT

  Develop and implement the management and information systems that allow the determination and evaluation of the best practices and methods for the delivery of services and programs.

- PRESERVE AND ENHANCE COMMUNITY CHARACTER

  Maintain, develop and implement policies that foster those aspects of our community spirit and our civic life that, combined, constitute the cherished quality of life that is uniquely Bloomington's.

A VISION OF COMMUNITY

- A SAFE AND CIVIL CITY
- A PLACE OF BEAUTY
- A CAPITAL OF KNOWLEDGE
- A CULTURAL OASIS
- BIG CITY ADVANTAGES, SMALL TOWN FEEL
- NEIGHBORHOODS AS VILLAGES, CONNECTED TO EACH OTHER AND COMMUNITY
- THE FRIENDLIEST TOWN AROUND
- DIFFERENT FOLKS, DIFFERENT STROKES

CIVIC VALUES

- ABOVE ALL, NO VIOLENCE
- KIDS FIRST
- COMPASSION FOR CITIZENS IN CRISIS
- CHARACTER THROUGH DIVERSITY
- DISCOURSE SHOULD BE CIVIL
- AESTHETICS MATTER
- HEARTS AND SOULS NEED NOURISHED TOO

APPENDIX B

POINT ASSIGNMENT FOR RANKING NTSP REQUESTS

	Point assigned
1) Percent of vehicles traveling over the posted speed limit	
low = 33%	1
medium = 33 - 67%	2
high = 68+%	3

A) Cut through traffic versus within (intra?) neighborhood speeding:
Further study? Yes/no

2) Average daily traffic volumes

Local Service Streets	Neighborhood Collector Streets	
low = 1 – 599	low = 500 – 1,499	1
medium = 600 – 1,499	medium = 1,500 – 3,499	2
high = 1,500+	high = 3,500+	3

3) Number of accidents along proposed calming area in 3 year period

low = 1 - 2	1
medium = 3 - 4	2
high = 5+	3

		Yes	No
4) Creation of pedestrian and bicycle networks			
school walk route		1	0
school on proposed traffic calming street	1	0	
designated bicycle route		1	0
route in or to pedestrian area (e.g., park, shopping, etc.)		1	0
proposed calming street has NO sidewalks		1	0
proposed calming area has NO bike lanes		1	0
within walking distance to transit		1	0
5) Scheduled road construction/reconstruction in proposed calming area		2	0

TOTAL POINTS: _____
Priority rank:
Comments and recommendations:

Calculated points are summed and competing projects' point totals are compared. The project with the greater point total moves ahead of those projects with less total points.

APPENDIX C

TRAFFIC CALMING DEVICES

Traffic calming relies upon physical changes to streets to slow motor vehicles or to reduce traffic volumes. These changes are designed to affect drivers' perceptions of the street and to influence driver behavior in a manner that is self-enforcing. Unlike traditional methods of traffic management, traffic calming does not rely primarily upon the threat of police enforcement for its effectiveness. Items which may be considered as traffic calming devices and which may be applied in a NTSP project are shown in Table 2.

1. Street and Lane Narrowing

Motorists tend to drive at speeds they consider safe and reasonable and tend to drive more slowly on narrower roads and traffic lanes than wider ones. Reducing road widths by widening boulevards or sidewalks intermittently or introducing medians can reduce traffic speeds. The judicious placement of parking (protected by curbs and made more visible by landscaping) can achieve the same effect. Road narrowing has the added advantage of reducing the expanse of road to be crossed by pedestrians, thus reducing pedestrian crossing time.

Other criteria to be applied and considered prior to street narrowing include:

- Bicycle Accommodations: On local streets designated as a bike route or serving a significant volume of bicycle traffic, a sufficiently wide bicycle lane should be provided through the narrowed area. Where traffic and/or bicycle volumes are sufficiently low, exclusive bicycle lanes may not be required.

- Snow Removal: The pavement width of streets shall not be narrowed to a point where it becomes an impediment to snow removal.

- Parking Restrictions: In most cases on local access streets, street narrowing will require the prohibition of parking at all times along the street curb the full length of the *narrowed section* plus 20 feet.

- Landscaping: Median landscaping can be selected by neighborhood associations from an approved landscaping materials list provided by the City. Landscaping will be provided and installed by the City and will be maintained by the neighborhood association or landscape volunteer. If the landscaping is not maintained, the median will be topped with concrete or asphalt pavement.

- Median Width/Lane Width: Where medians are used to narrow streets, the medians shall not be constructed at less than four feet in width. Travel lanes shall not be narrowed to a width less than nine feet, exclusive of gutter. Bicycle lanes where required shall be four feet wide exclusive of gutter, unless the gutter is poured integral to the bicycle lane, in which case the bicycle lane will be five feet wide. If parking is allowed, the parking and bicycle lane combination shall be a minimum of 13 feet.

2. Bicycle Lanes

Lane widths available to motorists can be reduced on some streets by the installation of bicycle lanes, either next to the curb (preventing stopping or parking by motor vehicles) or adjacent to parking. The space needed for bicycle lanes introduced on an existing street may reduce the width or number of general traffic lanes or the amount of parking. Bicycle lanes shall be constructed to the standard specifications of the Bloomington Public Works Department

3. Raised Street Sections or Speed Humps

Raised street sections or speed humps can reduce vehicle speeds on local streets. The hump is a raised area, no greater than 3 inches high, extending transversely across the street. For local streets, speed humps typically are constructed with a longitudinal length of 12 feet. If speed humps are determined to be appropriate for neighborhood collector streets, they shall be constructed with a longitudinal length of 22 feet. These longer speed humps may also be considered on local service streets that serve as primary emergency response routes.

Other criteria to be applied prior to installation of speed humps include:

- Signing/Marking: Speed humps are required to be signed with a combination of signs and pavement marking to warn motorists and bicyclists of their presence.

- Traffic Safety and Diversion: Any use of speed humps must take into consideration the impact the installation will have on long-wheel-based vehicles (fire apparatus, ambulances, snow plows and garbage trucks) and the potential to divert traffic to other adjacent streets. Speed humps should only be installed to address documented safety problems or traffic concerns supported by traffic engineering studies.

- Street Width: Speed humps should be used on streets with no more than two travel lanes and less than or equal to 40 feet in width. In addition, the pavement should have good surface and drainage qualities.

- Street Grade: Speed humps should only be considered on streets with grades of 8% or less approaching the hump.

- Street Alignment: Speed humps should not be placed within severe horizontal or vertical curves that might result in substantial horizontal or vertical forces on a vehicle traversing the hump. Humps should be avoided within horizontal curves of less than 300 feet centerline radius and on vertical curves with less than the minimum safe stopping sight distance. If possible, humps should be located on tangent rather than curve sections.

- Sight Distance: Speed humps should generally be installed only where the minimum safe stopping sight distance (as defined in AASHTO's *A Policy on Geometric Design of Streets*) can be provided.

- Traffic Speeds: Speed humps should generally be installed only on streets where the posted or prima facie speed limit is 30 mph or less. Speed humps should be carefully considered on streets where the 85th percentile speed is in excess of 40 mph.

- Traffic Volumes: Speed humps should typically be installed only on streets with 3,000 vehicles per day or less. If considered for streets with higher volume, their use should receive special evaluation.

- Emergency Vehicle Access: Speed humps should not be installed on streets that are defined or used as primary emergency vehicle access routes. If humps are considered on these routes, special care must be taken to ensure reasonable access is provided.

- Transit Routes: Speed humps should generally not be installed along streets with established transit routes. If humps are installed on transit routes, their design should consider the special operational characteristics of these vehicles.

4. Full or Partial Road Closures (Semi-Diverters/Diverters/Cul-de-sac)

Roads can be closed to motor vehicles at intersections, preventing through movement and requiring access to be gained from other streets. Closure should be undertaken in such a way as to avoid simple displacement of traffic to adjacent residential streets. It will usually be possible and desirable to retain pedestrian and bicycle access.

- Partial intersection closures can be achieved by narrowing a street to one lane at an intersection and instituting an entry restriction. Another technique is to introduce a "diagonal diverter" or barrier diagonally across an intersection which forces traffic off a favored short-cut. Gaps can be left to allow access by pedestrians and bicyclists.

- Partial Closures: Partial roadway closures at intersections will require consideration of pedestrian and bicycle access and lane width requirements similar to those defined under Street and Lane Narrowing.

5. Chicanes

Chicanes are a form of curb extension which alternate from one side of the street to the other. The road is in effect narrowed first from one side then the other and finally from the first side again in relatively short succession. Chicanes break up the typically long sight lines along streets and thus combine physical and psychological techniques to reduce speeds.

- Lane Width: Where chicanes are used, the travel lanes shall not be narrowed to a width less than nine feet, exclusive of gutter. Bicycle lanes where required shall be four feet wide exclusive of gutter, unless the gutter is poured integral to the bicycle lane, in which case the bicycle lane will be five feet wide.

- Snow Removal: Chicanes shall be designed to minimize the accumulation of snow piles and trash in the gutter interface between existing curb and gutter and chicane.

- Landscaping: Landscaping will typically consist of grass. Other landscaping may be selected from an approved landscaping list provided by the City. Landscaping may be provided and installed by the City and will be maintained by the Neighborhood Association or landscaping volunteer. Landscaping will not be approved which will obstruct the driver's vision of approaching traffic, pedestrians or bicyclists.

6. Traffic Circles

Traffic circles are circles of varying diameter formed by curbs. Motorists must drive around the circle, or in the case of longer vehicles, drivers may drive slowly onto and over a mountable concrete curb forming the circle. Traffic circles reduce motor vehicle speeds through the intersections, depending on current intersection controls in place.

Other criteria to be applied and considered prior to installation include:

- Design Considerations: For each intersection the size of the circle will vary depending on the circumstances for that specific intersection. In general, the size of the circle will be determined by the geometry of the intersection.

- Where intersecting streets differ significantly in width, it may be more appropriate to design an

elongated "circle" using half circles with tangent sections between them. Smaller circles will be constructed on a case-by-case basis. Normally the circle will be located as close to the middle of the intersection as practical. Under special circumstances, such as being on a Fire Department response route, bus route or due to snow removal accommodations, the size and/or location of the circle will be adjusted to more appropriately meet these special circumstances.

- Design Considerations for "T" Intersections: For "T" type intersections, all of the above design considerations apply. In addition, curb extensions (or curb bulbs) may be included along the top of the "T" at the entrance and exit to the intersection.

- Signage: Appropriate signage for traffic circles will be determined by the City Engineer and may vary based on the location of the circle.

- Channelization: Where curbs do not exist on the corner radii, painted barrier lines, defining the corners, should be installed.

  Yellow retro-reflective lane line markers shall be placed on top of the circle at its outer edge.

- Parking Removal: Normally, parking will not be prohibited in the vicinity of the circle beyond that which is prohibited by the City of Bloomington, ie, "within the intersection" or "within 20 feet of a crosswalk area". However, where special circumstances dictate, such as where the circle is on a response route for the Fire Department or to accommodate snow removal, or in an area where there is an unusually high use by trucks, additional parking may be prohibited as needed.

- Sign Removal: At intersections where circles are to be installed, any previous right-of-way controls may be removed at the time of circle construction completion. However, where special circumstances dictate, the existing traffic control may remain in place or be otherwise modified at the direction of the City Engineer.

- Landscaping: Landscaping will be selected by the neighborhood association or the City Parks and Recreation Department from an approved landscaping materials list provided by the City. Landscaping will be provided and installed by the City and will be maintained by the neighborhood association. If the landscaping is not maintained, the traffic circle will be topped with concrete or asphalt pavement.

  Volunteer Required: Plant material will only be installed at traffic circles where a local resident or neighborhood association has volunteered to maintain the plant material. This maintenance will include watering, weeding and litter pick-up, as needed. All volunteers will be provided with information on maintenance of the plant material and common problems.

  Points at which volunteers will be required: During initial contact, the person or neighborhood association requesting participation in the NTSP will be informed of the need for a volunteer for landscaping. In the notice of the neighborhood meeting, before construction, all residents will be informed of the need for a maintenance volunteer. This will be reiterated at the meeting if no one has volunteered. If no one has volunteered by the time that the circle is constructed, a special letter will be distributed to all residents informing them of the need for a volunteer (Figure 4). A final notice to residents will be included in the cover letter for the "after" survey of the residents.

  Plant Replacement: Where the Public Works Department has had installed plant material in a traffic circle, the Department will replace any plant material which is damaged by traffic or vandalism or which dies due to planting, for a period of one year after the initial planting. If such damage is a

persistent problem, the Department may decide to cover the circle with a concrete or asphalt topping rather than continue to replace plant materials.

Stop Signs

In some instances stop signs can be used as an effective traffic management and safety device. However, stop signs are not used as a traffic calming device within the NTSP.

Stop signs are used to assign right-of-way at an intersection. They are installed at intersections where an accident problem is identified, where unremovable visibility restrictions exist (such as buildings or topography), and/or where volumes are high enough that the normal right-of-way rule is potentially hazardous.

Stop signs are generally not installed to divert traffic or reduce speeding. Studies from other jurisdictions show that such use of stop signs seldom has the desired effect. In fact, the use of stop signs solely to regulate speed typically causes negative traffic safety impacts (non-compliance with the signs and increased accidents as well as mid-block speeding).

NEIGHBORHOOD TRAFFIC SAFETY TECHNIQUES								
DEVICES	SAFETY	SPEED REDUCTION	PEDESTRIAN BICYCLISTS ACCESS	TRAFFIC DIVERSION	NOISE	EXHAUST EMMISSIONS	EMERGENCY SERVICES	ACCEPTABLE FOR TRAFFIC MANAGEMENT
Police Enforcement	Improvement	Depends on Amount	Possible Improvement	No Effect	No Effect	No Effect	No Effect	Yes
Speed Humps	Unknown	Yes	Mixed Results	Possible	Increase	Small Increase	Possible Problem	Yes
Education	Possible Improvement	Possible	Possible Improvement	N.A.	N.A.	N.A.	No Effect	Yes
Entrance Treatments	Possible Improvement	Unlikely	Possible Improvement	Mixed Results	No Effect	No Effect	Possible Problem	Yes
Curb Extensions	Improve Ped. Crossing	Unlikely	Yes	No Effect	No Effect	No Effect	Possible Problem	Yes
Partial diverters/ Diverters/Cul-de-Sec	Possible Improvement	Possible	Possible	Yes	Possible Reduction	No Effect	Possible Problem	Possible
Chicanes	Possible Improvement	Possible	Possible	Possible	No Effect	Small Increase	Possible Problem	Yes
Traffic Circles	Improved	Yes	Possible	Possible	No Effect	No Effect	Possible Problem	Yes
One-way Streets	Possible Improvement	No	Mixed Results	Possible	No Effect	No Effect	Possible Problem	Yes
Median Barrier	Possible Improvement	No	Mixed Results	Possible	No Effect	No Effect	Possible Problem	Yes
Improve Arterial Streets	Possible Improvement	Unlikely	Possible Improvement	Possible Improvement	Possible Improvement	Possible Decrease	No Effect	Limited
Traffic Control Devices: e.g. Prohibitory Signing	Possible Improvement	Unlikely	Possible Improvement	Yes	Possible Improvement	No Effect	No Effect	Possible

Appendix D