City of Hilliard

Neighborhood Traffic Calming Program

Prepared by:

City of Hilliard
Engineering Department

June 30, 2005

Purpose of Program

The purpose of the City of Hilliard Neighborhood Traffic Calming Program is to enhance both the safety and quality of life within residential neighborhoods. This can be achieved through the following means:

- Education: Increase awareness of residents in neighborhoods that there are traffic-related safety concerns such as excessive speeds, non-local (cut-through) traffic, and accidents.

- Enforcement: Encourage compliance with speed limits on local streets through speed-reducing tactics provided by the Hilliard Police Department, which include, but is not limited to, traditional enforcement, the Neighborhood Speed Watch Program, and the use of speed trailers.

- Engineering: Evaluate the affected street for speeding, traffic volume, and accidents to determine if traffic-calming measures are warranted.

Objectives of Program

The City of Hilliard strives to ensure overall safety, protect its neighborhoods, and enhance the quality of life for its residents. Traffic conditions on residential streets certainly affect neighborhood livability. Traffic that is traveling at improper speeds and an excessive amount of non-local traffic that is consistently using residential streets can affect a neighborhood's livability, including pedestrian and bicyclist activities.

However, implementing traffic-calming measures on every street is not always the answer. Each neighborhood may have its own unique set of problems that must be analyzed to identify solutions. Hilliard's neighborhood traffic-calming program was designed to serve as a guide for City staff and residents throughout the traffic-calming study, planning, and implementation processes. The program is only a guideline and, therefore, subject to change. Under this program, staff will work with residents to identify traffic issues in their neighborhoods and seek appropriate solutions.

The goal of the program is to affect driver behavior in order to improve safety and the quality of life for residents, pedestrians, bicyclists, and motorists. This is to be balanced with providing streets that do not hinder quick response time for emergency service vehicles including fire trucks, police cars, and ambulances and streets that are accessible by large vehicles, such as school buses and trucks used for essential City services. Throughout the study process, City staff will work with representatives of neighborhoods, the Hilliard Police Department, the Norwich Township Fire Department, and the Hilliard City School Transportation Department to develop workable solutions to problems identified.

Objectives are as follows:

- Reduce vehicle speeds on residential streets
- Reduce number and severity of accidents
- Discourage non-local, or cut-through, traffic
- Encourage pedestrian and bicycle activities
- Create and/or enhance attractive streetscapes
- Establish clear guidelines of the process and procedures to evaluate traffic calming requests
- Partner with residents for the best overall program for the affected street

Types of Traffic-Calming Devices

There are a variety of traffic-calming devices that can be used to effectively slow traffic in residential areas. Each device is unique and has its own set of advantages and disadvantages. A brief summary and description of acceptable horizontal and vertical traffic-calming devices are provided below.

Horizontal Devices

- **Center Island Narrowing**. A center island narrowing is a raised island located along the centerline of a street that narrows the travel lanes in each location.
- **Chicanes**. Chicanes are curb extensions that alternate from one side of the street to another, forming S-shaped curves.
- **Chokers**. Chokers, or "bump-outs," are curb extensions at mid-block locations that narrow a street by widening the sidewalk or tree lawn area. Chokers also provide shorter crosswalks for pedestrians.
- **Protected Parking**. Protected parking consists of parking spaces and centerline striping used to narrow the perceived roadway width from curb to curb.
- **Traffic Circles**. Traffic circles are raised islands, placed in intersections, around which traffic circulates. Traffic circles used in traffic calming are distinctly different from modern roundabouts, which carry much higher volumes of traffic.

Vertical Devices

- **Speed Humps**. Speed humps are rounded, raised areas placed across the roadway. They are generally 10 feet to 14 feet long (in the direction of travel), making them distinctly different from the shorter "speed bumps" that are used in parking lots.
- **Raised Crosswalks**. Raised crosswalks are flat-topped speed humps, often constructed with brick or textured materials on the flat section, with crosswalk markings and signage to channel pedestrians.

- **Raised Intersections**. Raised intersections are flat, raised areas covering an entire intersection, with ramps on all approaches and often with brick or other textured materials on the flat section.
- **Rumble Strips**. Rumble strips are textured pavement that use stamped pavement or alternate paving materials to create an uneven surface for vehicles to traverse.

Landscaping elements can be incorporated into the use of some of the above-listed traffic calming devices, particularly the horizontal measures, which have the added benefit of street beautification. If it directly pertains to the installation of traffic calming devices, landscaping may be included as part of a neighborhood traffic calming plan, if warranted.

A common request to address speeding in neighborhoods is the installation of STOP signs and "SLOW Children at Play" signs. Use of these signs is not an acceptable or effective means to calm traffic.

Erecting STOP signs to calm traffic can actually create a less desirable situation. STOP signs that are used as a traffic-calming device can cause a high incidence of drivers intentionally violating the stop condition and other traffic-related issues. When vehicles do stop, the speed reduction is often only effective in the immediate area, since motorists will then increase their speed to make up for lost time. This can result in increased mid-block speeds. There is also often an increase in rear-end collisions near the inappropriate STOP sign. In order to avoid the additional stops and starts on streets with these STOP signs, traffic may disperse to adjacent streets, causing increased traffic volumes on these adjacent streets. For these reasons, the City of Hilliard uses STOP signs to improve safety at intersections where vehicular or pedestrian volumes or accidents warrant their installation, not as a means to calm traffic.

National and statewide traffic studies have shown that "SLOW Children at Play" signs are not effective in increasing a driver's attention to the point of reducin g vehicle speeds or reducing pedestrian accidents. In fact, placement of these signs can increase the potential for accidents by conveying to children and parents that the street is a safe place for children to play. Studies have shown that many types of signs attempting to warn of normal conditions in residential areas have failed to achieve the desired safety benefits. If signs encourage parents and children to believe they have an added degree of protection, which the signs do not and cannot provide, a great disservice results. Because of these serious considerations, Federal and State Standards do not recognize, and in fact discourage, the use of "SLOW Children at Play" signs. Specific warning signs for schools, playgrounds, parks and other recreational facilities are available for use where clearly justified. For these reasons, the City of Hilliard will not erect these signs, and the City encourages parents to find alternative areas for children to play, such as a backyard or a local park.

The Process

This program is designed to establish a consistent process to address traffic calming measures in neighborhoods. The process is divided into four steps:

- Step 1 – Education and Enforcement Phase
- Step 2 – Engineering Study Phase
- Step 3 – Engineering Planning Phase
- Step 4 – Implementation Phase

Active participation by one to three neighborhood representatives from the neighborhood being studied is required prior to the beginning of Step 2. The neighborhood representative may be a Homeowner's Associati on officer or any other resident of the neighborhood willing to act as a liaison between the City and the neighborhood. Responsibilities of the neighborhood representative include disseminating information to the neighborhood throughout the study process, being a spokesperson for the neighborhood, and collecting petition signatures. An active neighborhood representative ensures the City that there is support of the neighborhood throughout all phases of the process.

Step 1 – Education and Enforcement Phase

Before requesting the City of Hilliard to commence study of a neighborhood, residents should first pursue neighborhood speed-reduction options with the Hilliard Police Department. Speed reduction options include target enforcement, deployment of the speed trailer, and various education programs designed to slow residents of the neighborhood down. Police enforcement has shown that the frequent offenders of speed limits in neighborhoods are the residents themselves; therefore, these enforcement and education efforts are sometimes quite effective.

If such efforts have not been pursued, the City will advise the requesting applicant of options that they would need to initiate prior to proceeding with Step 2. Once these options have been pursued, and if the City or neighborhood has determined that these options were ineffective, staff will then advise the requesting applicant to proceed with Step 2 of the process.

Step 2 – Engineering Study Phase

(A) **City receives written request**. Any resident of the city may initiate a request for the evaluation for traffic-calming measures. City staff will verify with the Hilliard Police Department that Step 1 has been undertaken and has not been successful.

(B) **Pre-qualification of street**. Traffic calming measures are suitable in residential areas to manage speed, volume, and cut-through traffic. Therefore, characteristics of the streets must be residential in nature. The street pre-qualifications are designed to ensure that the street segment is appropriate for considering traffic

calming. Since some negative impacts can be associated with traffic-calming measures, some restrictions, in the best interest of emergency and transit services, are included on the list of pre-qualifications. Streets should meet the following standards in order to pre-qualify for traffic calming:

(1) The street has a posted speed limit of 25 mph or less;

(2) The street is not classified as a major or minor arterial on the city' s most recent thoroughfare plan;

(3) The street has a right-of-way that is 70 feet wide or less;

(4) The street has a standard curb and gutter cross-section, and/or all drainage and safety concerns can be addressed to the satisfaction of the City Engineer;

(5) The street is at least 1,000 feet in length;

(6) The street is not a cul-de-sac street;

(7) The street is not a loop street within a neighborhood or subdivision;

(8) The street is not a continuation of a County Route;

(9) The street is not along a COTA bus route;

(10) A fire station is not on the street; and

(11) This program applies only to existing streets. It does not apply to future roads or to new subdivision streets under construction.

If the street meets all of the above pre-qualification standards, the request proceeds in the study process. If the street does not meet the above standards, the resident that generated the request will be notified in writing that the study process will not continue further and will be given the reasons why.

(C) **Determination of Study Area**. The City of Hilliard Engineering Department will determine the appropriate study area for the request, taking into consideration subdivision boundaries and alternate travel routes within the subdivision. Determination of an appropriate study area is important because installation of traffic calming devices on one street within a neighborhood can have implications on other through streets within the neighborhood. The study area is generally bounded by the major/minor arterial or network collector street system. The City evaluates entire neighborhoods, or groups of adjacent neighborhoods collectively,

rather than independent streets to avoid simply "moving" a problem to another location within a neighborhood.

(D) **Meeting with Neighborhood Representatives**. After the study area is determined, the resident that submitted the request will be asked to organize the neighborhood representatives. This should include from one to three residents per subdivision, depending on the size of the study area and the number of subdivisions included in the study area. Once the neighborhood representatives are established, a meeting will be scheduled with City staff and the neighborhood representatives to discuss the study, to provide educational materials, and to allow staff to better understand the concerns of the residents. Representatives from the Hilliard Police Department, the Norwich Township Fire Department, and the Hilliard City School Transportation Department may be included in the group as well. *The study will not proceed beyond this point until neighborhood representatives with a willingness to actively participate in the process are established.*

(E) **Affected Street and Affected Area Defined**. Once the street has met the pre-qualification standards and staff has met with the neighborhood representatives to determine if other streets within the study area should be studied, the affected street(s) and affected area(s) will be defined. The City of Hilliard Engineering Department will make such determination.

(F) **Data Collection**. The City of Hilliard Engineering Department will collect volume and speed data on the affected streets. The location(s) of data collection will be determined based on input from the neighborhood representatives and the physical constraints of the affected street in order to provide the best traffic data. Traffic data should not be collected during periods of inclement weather. In order to capture the effect of school-related traffic, attempts should be made to collect traffic data while school is in session.

(G) **Summarization of Results**. The results of the data collection will be summarized in a report prepared by the City of Hilliard Engineering Department. The volume and speed data will be used to determine whether the installation of traffic-calming devices is appropriate on the affected street(s). The affected street will be placed into one of the following three categories based on the 85^{th} percentile speed on the affected street. If 85^{th} percentile speeds are obtained at more than one location on a given roadway, the speeds will be averaged.

- **Unwarranted Street**. Traffic calming measures will not be considered if 85^{th} percentile speeds are less than 30 mph. Streets in this category will not proceed to Step 3 and Step 4 of the study process. Neighborhood representatives may distribute the findings of the study to the residents. No further action on the study will be conducted for a minimum of five years or

unless there is a significant change in existing conditions within the study area.

- **Possibly Warranted Street**. Traffic calming measures may be considered if 85th percentile speeds are between 30 mph and 34.9 mph AND if one of the following situations exists:

    i. An accident history, as determine by the Hilliard Police Department, exists along the affected street.

    ii. A school is located along the affected street or at the terminus of the street adjacent to the study area.

    iii. A public facility that attracts pedestrians, such as active parks, ball fields, or a library, is located along the affected street or at the terminus of the street adjacent to the study area. Public green space that is not used actively by the neighborhood for recreational or public purposes would not qualify as a public facility.

    iv. Volumes on the affected street are greater than 25% more than what would be considered "reasonable" for a collector street serving the neighborhood. The "reasonable threshold" volume is dependent on the size of the neighborhood and how other streets within the neighborhood connect to the affected street and the adjacent arterial street network. "Reasonable threshold" volume is calculated using trip generation rates from the Institute of Transportation Engineers *Trip Generation Manual,* assuming 100% of the homes in the affected area will use the affected street and a lesser percentage of homes located within the study area, but outside the affected area, will use the affected street. The equation used to calculate the "reasonable threshold" volume of traffic on the affected street is provided in Appendix A of this program.

  The Director of Public Safety and the Director of Public Service will determine whether streets in this category will proceed to Step 3 and Step 4 of the study process.

- **Warranted Street**. Traffic calming measures will be considered if 85th percentile speeds are 35 mph or greater. Streets in this category will proceed to Step 3 and Step 4 of the study process.

Step 3 – Engineering Planning Phase

(A) **First Petition Circulation**. In order to inform residents of the possibility that traffic calming devices may be placed in the neighborhood and to get general public consensus before detailed engineering and planning activities commence, the neighborhood representatives will be required to circulate a petition to residents within the study area. Seventy percent (70%) of residents in the affected area and fifty percent (50%) of the residents in the study area, outside the affected area, are required to sign the petition before further work will commence on the study. City staff will provide the neighborhood representatives with a brief written description of what is being considered, a map of the study area with the affected streets highlighted, and signature sheets. Only one signature per household/property owner will be accepted. If a home is leased or rented, only the signature of the owner of the dwelling unit will be accepted. If an apartment complex/building is located within the study area, only the signature of the owner or owner's representative of the apartment complex/building will be accepted for the purposes of achieving the required percentage on the petition. After adequate signatures are obtained, the neighborhood representatives will submit the signature sheet(s) to the City.

(B) **First Petition Signature Validation**. City staff will validate all signatures to verify that there is neighborhood support to evaluate various traffic calming measures to layout/design traffic calming devices on the affected street.

(C) **City Council Authorization and Funding for Study and Design**. City staff will present the findings of the Step 2 – Engineering Study Phase to Hilliard City Council Community Services and Standards Committee and request that legislation be forwarded to City Council to appropriate funds and to authorize the Director of Public Service to enter into a contract with a professional engineering firm to evaluate various traffic calming devices and to design any proposed improvements.

(D) **Traffic Calming Measures Selection Process**. Working with the neighborhood representatives, City staff and the selected consultant will select appropriate types of traffic-calming devices for the street. Unless they are determined to be warranted by the traffic calming evaluation process, stop signs and traffic signals are *not* considered traffic-calming devices. A detailed plan for the proposed traffic calming improvement(s) will be developed.

(E) **Neighborhood Public Meeting**. One neighborhood public meeting will be conducted for the purpose of presenting the detailed traffic-calming plan to the residents and to answer questions about the plan and the study process.

(F) **Second Petition Circulation**. Neighborhood representatives will circulate a petition and the detailed plan for the proposed traffic calming improvement(s) to the residents of the study area. Eighty percent (80%) of residents in the affected area and sixty percent (60%) of the residents in the study area, outside the affected area, are required to sign the petition before the City will proceed to Step 4 – Implementation Phase. Signatures may be obtained as part of the Neighborhood Public Meeting. After adequate signatures are obtained, the neighborhood representatives will submit the signature sheet(s) to the City.

(G) **Second Petition Signature Validation**. City staff will validate all signatures to verify that there is neighborhood support to implement the proposed traffic-calming plan on the affected street(s).

Step 4 – Implementation Phase

(A) **City Council Authorization and Funding for Construction**. City staff will present the plan developed in Step 3 – Engineering Planning Phase to Hilliard City Council Community Services and Standards Committee and request that legislation be forwarded to City Council authorizing the Director of Public Service to include the construction of the traffic-calming plan into the next available street maintenance program or a separately bid construction contract, and to appropriate funds thereto.

(B) **Construction**. The traffic-calming devices will be constructed in accordance with the detailed plans and specifications generated in Step 3 – Engineering Planning Phase.

(C) **Post-Construction Data Collection**. Following the construction and the City's acceptance of the traffic-calming devices, City staff will collect traffic volume and speed data to evaluate the effectiveness of the traffic calming devices. The data will be summarized in a brief report and provided to the neighborhood representatives.

Appendix A - Calculation of the reasonable threshold volume of traffic on the affected street

$V_{threshold} = 1.25 * (T_{affected\ area} + X*T_{study\ area})$
$= 1.25 * [(N_{A.A.Hsehlds} * R) + (X * N_{S.A.Hsehlds} * R)]$

Where $V_{threshold}$ = reasonable threshold volume of traffic on the affected street
$T_{affected\ area}$ = total trips generated by the affected area
X = percentage of trips from the study area expected on the affected street
$T_{study\ area}$ = total trips generated by the study area, excluding the affected area
$N_{A.A.Hsehlds}$ = number of households in the affected area
R = applicable trip generation rate
$N_{S.A.Hsehlds}$ = number of households in the study area, excluding $N_{A.A.Hsehlds}$

Appendix B - Definitions

AFFECTED AREA: The area in which the placement of traffic-calming measures will have an effect. This shall be determined by defining the area significantly affected by street modifications. At a minimum this will include the households, and if applicable, any businesses, or apartment complex/building(s) located on the affected street and any households, and if applicable, any businesses, or apartment complex/building(s) located on cul-de-sacs attached to the affected street.

AFFECTED STREET: The street on which traffic-calming measures are being requested. There may be more than one affected street for a given traffic-calming study.

APARTMENT COMPLEX/BUILDING(S): A building or several buildings containing a room or a suite of rooms equipped for individual living. Generally more than one household occupies each building.

BUSINESS: An industrial or commercial establishment.

CUL-DE-SAC: A street having only one end open to traffic and the other end being permanently terminated with a vehicular turn around provided.

CUT-THROUGH TRAFFIC: Traffic that uses local or residential collector streets to travel through a neighborhood without having an origin or destination within the neighborhood or subdivision.

EIGHTY-FIFTH PERCENTILE SPEED: The speed below which 85 percent of the vehicles travel. The 85^{th} percentile speed usually represents the maximum reasonable speed for the traffic and is often used in determining speed limits.

HOUSEHOLD: A domestic unit consisting of the members of a family who live together along with non-relatives.

LOCAL STREET: A street that provides direct access to abutting land and connects to the residential collector street. These offer the lowest level of mobility and usually contain no bus routes. Service to through-traffic movement usually is deliberately discouraged. Cul-de-sac streets are included in this category.

LOOP STREET: A street that has both of its termini on the same street.

NEIGHBORHOOD REPRESENTATIVE: The person or persons volunteering to act as a liaison between the City and the neighborhood(s) or subdivision(s) during the traffic-calming study process. The neighborhood representative may be a Home Owner's Association officer but is not required to be so. Responsibilities of the neighborhood representative include disseminating information to the neighborhood throughout the study process, being a spokesperson for the neighborhood, and collecting petition signatures.

RESIDENT: One who resides in a particular place permanently or for an extended period.

RESIDENTIAL COLLECTOR STREET: A street that provides both access to individual properties and traffic circulation within residential neighborhoods. This system collects traffic from local streets, penetrating the residential neighborhoods, and disperses it to the network collector or the arterial street system.

TREE LAWN AREA: The area of land, usually containing grass and street trees, located between the back of curb and the sidewalk or bike path.