Poplar Bridge Neighborhood Traffic Study
Problem Statement

December 10, 2007

Congestion has encouraged through traffic to abandon the arterial system (defined by West 84th Street on the north, France Avenue on the east, 90th Street/Poplar Bridge Road on the south, and Normandale Boulevard on the west) and seek alternate routes through the neighborhood, raising concerns for pedestrians, motorists and residents. Specifically, the following issues have been identified as priority concerns:

- Left turns entering or exiting the neighborhood from West 84th Street are difficult during peak travel times
- Traffic to/from the Poplar Bridge Elementary School are forced onto residential streets
- Impatient drivers do not come to a full-stop at the stop signs along West 84th Street
- Pedestrians find it difficult or uncomfortable to walk along West 84th Street and to access Poplar Bridge Elementary
- The Normandale Boulevard and France Avenue intersections operate poorly during the morning and evening peak hours, influencing drivers to find alternate routes to avoid the intersections
- Stanley Avenue/Nine Mile Creek Parkway is a heavily traveled route for traffic avoiding West 84th Street and France Avenue, especially during the rush hours.
- Traffic on residential streets tends to drive in excess of the speed limit, especially on Nine Mile Creek Parkway.
- Speeds are a concern on Poplar Bridge Road west of Nine Mile Creek Parkway, and on 90th Street
- Neighborhood residents are concerned that as traffic volumes on the surrounding arterial roadways increase, volume, speed and safety concerns will increase on other local streets as well (Utica Avenue/Toledo Road; Quinn Avenue/86th Street/Poplar Bridge Road)

Poplar Bridge Neighborhood Traffic Study: Study Goals/ Constraints/ Facts/ Evaluation Criteria

DRAFT FOR DISCUSSION ONLY: Study Advisory Committee, December 10, 2007

Study Goals: Goals for potential solutions	Evaluation Criteria: Alternatives* Analysis
Promote appropriate traffic volumes for the classification, capacity and character of residential streets.	• Ability of alternative to carry anticipated traffic volumes and/or redirect traffic volumes to more appropriate roadways.
Promote efficient flow of traffic along higher classification roadways – West 84th Street, France Avenue, Normandale Boulevard, Poplar Bridge Road (east of Normandale Boulevard), and 90th Street.	• Level of service at key intersections. • Travel time estimates.
Promote operational speeds consistent with speed limits	• Ability of alternative to promote speed limit compliance.
Address roadway safety concerns, including: • Stop sign controlled intersections along West 84th Street • Streets adjacent to Poplar Bridge Elementary School	• Ability of alternative to address traffic flow and/or geometric concerns creating problematic conditions.
Promote courteous motorist behavior.	• Ability of alternative to inform motorists of change of character at residential streets.
Promote a safer environment for pedestrians, bicyclists and school-age children.	• Ability to provide trail/sidewalk connections to key destinations in accordance with appropriate standards.
Provide a safer and time-efficient access to/from properties fronting West 84th Street. (others?)	• Ability of alternative to provide sufficient gaps to allow backing onto West 84th from adjoining driveways.
Provide a safer and time-efficient access to/from local streets intersecting West 84th Street. (others?)	• Ability of alternative to provide reasonable levels of delay at side street intersections.
Implement a proposed solution in a reasonable timeframe, or a reasonable cost and limit right-of-way to be acquired.	• Concept-level cost estimate/ timeline for implementation. • Amount of right of way required. • Approvals needed to implement the alternative and anticipated success in securing those approvals.

*An ***Alternative*** is a complete and comprehensive package of improvements/changes to area streets and/or other transportation facilities or surrounding land which attempts to address a majority of the Study Goals.

Arterial Roadway and Intersection Improvements

Alternatives to improve traffic flow during peak conditions were explored for the arterial roadways and intersections. Travel times using the arterial roadways were found to be longer and less predictable than those on residential streets. Improving traffic flow and reducing intersection delays are necessary to reduce travel times via these routes and encourage through traffic to return to the arterial roadway system.

The proposed improvements were focused at the major arterial intersections along the France Avenue and Normandale Boulevard corridors within the study area. A discussion of each of the area improvements are summarized below:

Normandale Boulevard/West 84th Street (consistent with Normadale Lakes)

- Modification of the west approach to provide a triple left-turn lane, two through lanes and a dual right-turn lane.
- Installation of an additional right-turn lane on the east approach to provide a dual right-turn lane.
- Installation of a shared through/right-turn lane on the north approach.

Normandale Boulevard/Poplar Bridge Road

- Installation of a right-turn lane on the north and south approaches.

France Avenue/West 84th Street

- Modification of the west approach to provide an exclusive left-turn lane. The two existing eastbound through lanes would remain. However, the westbound through lanes departing from the intersection would be reduced from two lanes to one, and would widen again west of the intersection. In addition, the installation of an exclusive right-turn lane is recommended on this approach.
- Modification of the east approach to provide an exclusive left-turn lane. The westbound through lanes would be reduced from two lanes to one. In addition, the installation of an exclusive right-turn lane is recommended on this approach.
- Installation of a right-turn lane on the north approach.

France Avenue/West 90th Street

- Modification of the west approach to provide a left-turn lane and a shared through/right-turn lane. The westbound through lanes departing from the intersection would be reduced from two lanes to one.
- Modification of the east approach to provide oneleft-turn lane, one through lane and one exclusive right-turn lane.
- Adjust the signal timing to provide more green time to the north and south approaches, while increasing delay to the east and west approaches.

Poplar Bridge Neighborhood Traffic Study
Study Advisory Committee Meeting #2

Neighborhood Safety Improvement Opportunities

When addressing neighborhood safety improvements, there are three broad approaches that are generally considered:

- Education
- Enforcement, and
- Engineering

Each of these approaches has associated benefits and drawbacks. Of the three approaches, engineered solutions have the added consideration of aesthetic impacts. Some engineered approaches provide the opportunity to incorporate vegetation, which can be viewed as a benefit, while other approaches require additional signage and pavement markings to provide advance notification and clarification to drivers, which may be perceived as a drawback. Engineered solutions must also be respectful of the existing aesthetic and historic qualities of an area.

If an engineered approach is considered, it is important to understand that some engineered approaches are more effective at controlling vehicle speeds, while others are more effective at controlling volumes. When considering methods to control speed, certain techniques are typically more effective than others. Table 1 lists different techniques that are generally used to control speeds in hierarchical order from most to least effective.

Table 1
Hierarchy of Effectiveness – Speed Control Approaches
(Most effective to least effective)

Technique
Combined Application
Vertical Shifts
Horizontal Shifts
Constriction
Enforcement
Signage and Striping

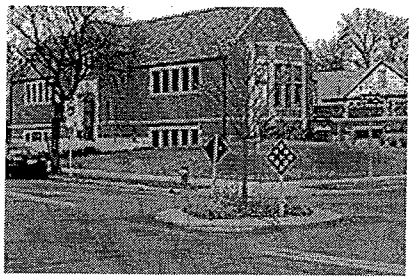
The location of engineered approaches also impact effectiveness. Locating an engineered approach mid-block essentially acts to reduce the block length, reducing the distance drivers can accerate. Locating engineered solutions at intersections do not provide as much benefit in speed reduction because drivers typically need to slow down at intersections to determine if the intersection is clear to move through.

Table 2 lists different techniques that are generally used to address traffic volumes in hierarchical order from most to least effective.

Table 2
Hierarchy of Effectiveness – Traffic Volumes
(Most effective to least effective)

Technique
Physical prohibition of movement
Modified travel path

Constriction of Roadway Width (Reduction of Traffic Speeds)

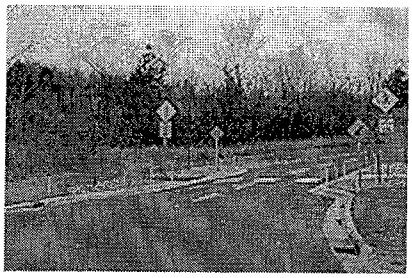


Traffic circle

Raised islands (typical circle diameter of 12 - 16 feet) located in the center of an intersection. Traffic circles require vehicles to deflect around the circle, causing them to reduce speeds as they move around it. This is not a roundabout.

(May not be allowed on MSA Streets)

Advantages	Disadvantages
May reduce speeds	Left turns may be confusing
May reduce traffic volumes	May shift traffic to parallel streets
Self-enforcing	Tend to reduce air quality and increase energy consumption due to acceleration/deceleration
May reduce crashes (depending on crash history)	May increase noise near intersection
	May require parking removal
	Can cause bicycle/auto conflicts



Choker

A physical reduction of road width between intersections through the use of curb extensions. Chokers can be designed to allow one travel lane in each direction or the roadway can be narrowed further to allow travel in only one direction at a time. The primary purpose of this technique is to reduce speeds. It may reduce traffic volumes.

(May not be allowed on MSA Streets)

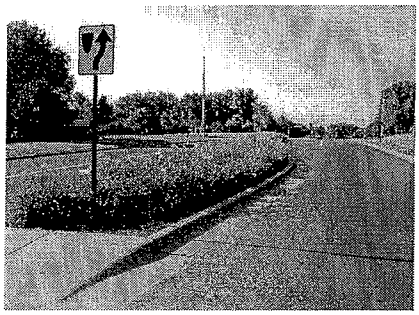
Advantages	Disadvantages
May reduce speeds	May impact drainage
May reduce traffic volumes	May reduce separation for bicycles
Self-enforcing	May shift traffic to parallel streets
	Should not be placed on crest of hill
	Not appropriate on some curves
	May reduce curbside parking available

Center island narrowing

Raised islands located along the centerline of a street that narrow the travel lanes at that location, typically done in conjunction with the elimination of on-street parking. This technique is used to reduce travel speeds by causing drivers to maneuver around the island.

(May not be allowed on MSA Streets)

Advantages	Disadvantages
May prevent passing of turning vehicles	May reduce separation for bicycles and pedestrians
May reduce speeds	May shift traffic to parallel streets
May reduce traffic volumes	May restrict driveway access
Self-enforcing	
Allow pedestrians to cross one-half of street at a time	



Landscaping

Plantings adjacent to roadway or in raised islands that attempt to reduce the spatial volume of the street or to enhance the appearance of the street environment. This technique is used to attempt to reduce speeds.

Vertical Shifts of the Roadway Surface (Reduction of Traffic Speeds)

Speed humps

Rounded, raised pavement placed across roadway. Speed humps are typically 12' long (in the direction of travel), 3" - 4" high, parabolic shaped, with a design speed of 15 - 20 mph. They are usually constructed with tapers at each side to allow unimpeded drainage in the curb gutter. They are most effective if used in a series with appropriate signage. Their primary purpose is to reduce speeds.

(Not Allowed on MSA/Collector Streets)

Advantages

May reduce speeds

May reduce traffic volumes

Does not impact parking

No bicycle/pedestrian restrictions

Self-enforcing

Disadvantages

May increase noise (braking and acceleration)

May impact drainage

Not appropriate for grades greater than 5 percent

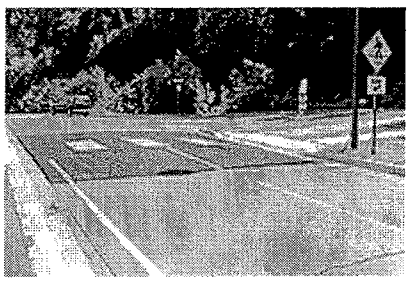
May shift traffic to parallel streets

Tend to reduce air quality and increase energy consumption

May increase speeds between humps

May cause bus passenger discomfort

Not appropriate on some curves



Speed table

Raised, flat-topped pavement that is long enough for the entire wheelbase of a passenger car to rest on top. Speed tables are typically 3" - 4" high, 18-22' long (in the direction of travel), consisting of 6' ramps at each end and a 6-10' flat top and a design speed of 20 - 25 mph. They are usually constructed with tapers at each side to allow unimpeded drainage in the curb gutter. Their primary purpose is to reduce speeds.

(Not Allowed on MSA/Collector Streets)

Advantages

May reduce speeds

May reduce traffic volumes

Less impact than speed humps on long vehicles

Self-enforcing

No bicycle/pedestrian restrictions

Disadvantages

May increase noise (braking acceleration)

May impact drainage

May increase speeds between tables

May shift traffic to other streets

May reduce air quality and increase energy consumption

Raised intersection

Flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section and ramps. Raised intersections typically rise to the sidewalk level. Their primary purpose is to reduce speeds.

(Not Allowed on MSA/Collector Streets)

Advantages

May reduce speeds

May reduce traffic volumes

Does not restrict access

Self-enforcing

Makes entire intersection more pedestrian friendly

Disadvantages

May increase noise (braking and accelerating)

Slows emergency vehicle speeds

May require bollards to define the edge of roadway

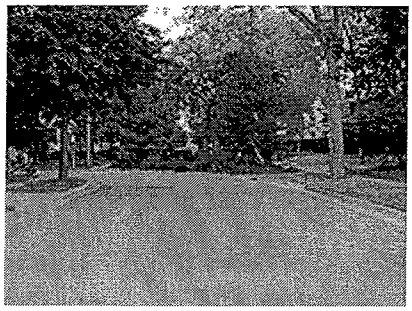
May shift traffic to other streets

Restricts access for transit/bus service

May impact drainage

May reduce air quality and increase energy consumption

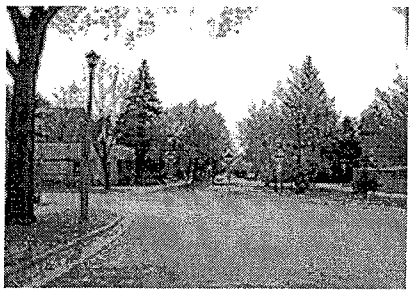
Physical Prohibition of Movement (Reduction of Traffic Volumes)



Diagonal diverter

Barriers placed diagonally across an intersection, blocking through traffic movements. They are usually staggered to create circuitous routes through neighborhoods to reduce traffic volumes.

Advantages	Disadvantages
May reduce speeds	May impact drainage
May reduce traffic volumes	May shift traffic to parallel streets
Bicycles/pedestrians may not be restricted	Tend to reduce air quality and increase energy consumption due to increased travel distance
Self-enforcing	May impact parking



Half closure

Barriers that block travel in one direction for a short distance on an otherwise two-way street, thus only allowing vehicles into or out of the street at that location. Their primary purpose is to reduce traffic volumes.

Advantages	Disadvantages
Allows for movement of emergency vehicles	Parking opportunities may be impacted to permit emergency vehicle access
No noise impacts	May impact transit/bus routes
Reduces traffic volumes	May decrease emergency and maintenance vehicle movement if improperly designed
Can be designed to provide two-way access for bicycles and pedestrians	Reduces access to residents
	Compliance may not be 100%