



SPEED REDUCTION COMMITTEE – ADDITIONAL BACKGROUND MATERIALS

November 3, 2017

The following materials were shared or referenced during the meeting with staff on October 20. Sharing these links electronically for your reference:

- [Ann Arbor City Code: Title 10, Chapter 126, Article 5, Section 10:45 Prima facie limit](#)
- Application sections of Michigan Vehicle Code
 - <http://legislature.mi.gov/doc.aspx?mcl-257-627>
 - <http://legislature.mi.gov/doc.aspx?mcl-257-628>
- Traffic Calming Program
 - [Guidebook](#)
 - [Resolution](#) (Link directs to full minutes from 6-5-2006. Resolution attached.)
 - [Google Map – includes project listing](#)
 - a2gov.org/trafficalming
- [Pedestrian Safety and Access Task Force recommendations](#): Recommendation 5C and 5D

Staff responses to questions raised by Committee members at the October 20 meeting:

1. **What are the current standard design speeds for streets of functional classification?**
 - a. [City of Ann Arbor Design Standards](#) – see page 27.
 - b. [National Functional Classification map](#)
 - c. [Highway Functional Classification Concepts, Criteria and Procedures](#)
2. **What does the design change look like to achieve a change of 5mph in speed reduction?**
 - City staff have limited avenues for implementing speed reduction through design. Very few new streets are being constructed and a limited number of reconstruction projects occur. The largest area of opportunity for staff to affect speed is through changing the width of the traveled way.
 - During construction of a new road speed is controlled by the design speed. Design speed selection dictates items such as horizontal and vertical curve design, taper length in transition areas, and sight distance (clear vision area) requirements. When applied consistently throughout a road design these elements will lead drivers to choose the speed intended.
 - The vast majority of our projects, including reconstruction, are on existing road alignments. Some variables of geometric design can be altered to accommodate changes in design speed. However, these changes need to fit within the existing right-of-way and easily tie back into the adjacent development.
 - The area where City staff are easily able to design speed management into our projects is lane width selection. City staff have been incorporating narrower



lanes into projects for years. An early example of this effort is the first section of Stadium Boulevard to be reconstructed. City staff worked to obtain a design exception from MDOT and were able to provide narrower lanes, bike lanes, and pedestrian refuge islands. The resulting design has been continued down the Stadium Boulevard corridor. Geddes Avenue and Arlington Boulevard are additional examples of lane narrowing provided while working within an established roadway footprint.

3. What is the Transportation Safety Committee working on? Are they planning anything for education?

- The TSC is not currently working on an education plan. Committee members are actively encouraging the school to pursue education opportunities, but the TSC is a bit of a holding pattern until the AAPS hires their new safety coordinator. The individual who will fill this newly created position will be the chair of the TSC.
- The A2 Be Safe campaign is both an internal and external communications/marketing campaign to increase safety and public awareness of safety issues. Staff is utilizing a number of free media tools (social media, resident newsletter, press releases, etc.) as well as paid media (trinkets, radio ads, posters, etc.) in addition to working with [partners](#) in the AAPS and UoM. We are currently updating messaging to correspond to winter activities.

R-257-06-06**SOLUTION TO APPROVE
THE REVISED TRAFFIC CALMING PROGRAM**

Whereas, The City's Traffic Calming Program has been in place since December 1999;

Whereas, On May 7, 2001 by resolution R-176-5-01, the City Council determined that "...the traffic calming program shall be reviewed annually and new policies proposed to maximize the effectiveness of traffic calming procedures and policies...";

Whereas, The Interim Traffic Calming Program was adopted and approved March 21, 2005 by resolution R-80-3-05;

Whereas, Several traffic calming projects were completed in 2005 under the Interim process and the trial was successful;

RESOLVED, That the "A Ten Step Traffic Calming Process" shown as Attachment A replaces the "Design Process" shown in the Amended Attachment A previously approved by the City Council (R-341-8-02);

RESOLVED, That Council authorizes the City Administrator to take necessary administrative actions to implement this resolution.

Submitted by: Public Services

Date: June 5, 2006

As amended on June 5, 2006

**APPROVED
BY ANN ARBOR CITY COUNCIL**

June 5, 2006

**CITY CLERK
ANN ARBOR, MI**

M E M O R A N D U M

TO: Mayor and City Council

FROM: Sue F. McCormick, Public Services Administrator

DATE: June 5, 2006

SUBJECT: Resolution to Approve the Revised Traffic Calming Program

The City of Ann Arbor Traffic Calming Program began in December 1999. As stipulated in the City Council resolution, the program must be updated as needed to meet the current needs. The program was amended in May 2002 and again in March 2005. At that time an "Interim Revised Traffic Calming Program", a ten-step process, was adopted. The process was to be used on new requests in the 2005 season on a trial basis. Following a trial of the Interim Revised Traffic Calming Program it was agreed a new resolution to the City Council would be submitted and the request for a formal adoption of the Revised Traffic Calming Program would be made.

The interim program revisions were intended to simplify the traffic calming process and encourage more resident involvement in the program. The revised process emphasized up-front education, on-site meetings and thorough use of educational materials. Concise, user-friendly, image rich materials to explain the principles and tools of traffic calming support the revised process and create the foundation of a successful program. Gaining support for the implementation of traffic calming devices relies on active communication with residents on how the devices might improve the livability of their neighborhood. The consultant staff has been a key to smoothly handling public participation and providing a neutral party to resolve differences.

Two on-site resident meetings replaced the previous four meeting process. The meetings were all held on site and demonstrated the proposed locations of the devices. The meetings had adequate to good turn out and provided valuable feedback to the design team in pinpointing neighborhood issues.

The trial effort provided the opportunity to observe the revised program in 2005 and it proved to be effective and efficient. Now with the City Council's approval we would like to implement the revised program on a permanent basis, beginning with the new requests for traffic calming in 2006.

Prepared by: Homayoon Pirooz, P.E., Project Management Manager
Reviewed by: Sue F. McCormick, Public Services Administrator
Approved by: Roger W. Fraser, City Administrator

RESOLUTION TO APPROVE
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Whereas, The Interim Traffic Calming Program was adopted and approved March 21, 2005 by resolution R-80-3-05;

Whereas, Several traffic calming projects were completed in 2005 under the Interim process and the trial was successful;

RESOLVED. That Attachment "A", the Revised Traffic Calming Program, be approved for implementation,

RESOLVED, That Council authorizes the City Administrator to take necessary administrative actions to implement this resolution.

Submitted by: Public Services
Date: June 5, 2006

SEE AMENDED RESOLUTION

Attachment A

A Ten Step Traffic Calming Process

1. A petition for traffic calming measures is submitted to the Project Management Unit. The petition must contain, at a minimum, signatures of 30% of the residents with frontage on the street. By signing the petition, a resident is showing support for their street or area to be investigated for potential traffic calming projects.
2. The Project Management will review the location and determine if it meets the qualifications for the traffic calming program (see the last page for qualification requirements).
 - a. If the street or area meets qualifications the process proceeds to step number 3.
 - b. If the street or area fails to meet qualifications, the contact person for the petition receives a letter from the Project Management explaining the reasons why the City cannot continue the project.
3. An informational package is mailed to each household within the project area (a mailing list is prepared to be used throughout the course of the project). The package contains the following:
 - a. Educational material explaining the fundamental principles of traffic calming. This brief and concise informative piece will also describe active traffic calming tools that will be considered as part of the program (see the last page for a list of those tools). Additionally, tools that will not be included in the program are described (i.e., stop signs, speed limit signs, additional enforcement, etc.).
 - b. Residents will be referred to an informative traffic calming presentation on the City's website. Other traffic calming information and links to additional resources will be on the City's website. For those residents without access to the Internet, direction will be given to the Ann Arbor District Library branches for public Internet access. Paper copies will also be available at all library branches and City Hall.
 - c. The City of Ann Arbor traffic calming process explaining the steps and time frame for the project. The importance of their participation in the traffic calming meetings will be emphasized.
 - d. A list and photographs of installed City of Ann Arbor traffic calming projects. Residents will be encouraged to visit these projects to become familiar with various traffic calming tools.
 - e. Voting card including a brief questionnaire asking residents to identify specific conditions on their street: how traffic behaves,

problem intersections, pedestrian and bicyclist conditions, primary routes to school or other important patterns. The voting card will also include the following statement that the resident will be required to initial: "I have received and read the traffic calming informational package". It is acknowledged that those residents who intend to vote "no" on proceeding with the traffic calming program may not take the time to answer the questionnaire or read the educational materials.

4. Area residents use the voting card to indicate if they support their street or area to be investigated for potential traffic calming projects.
 - a. If at least 50% of the returned voting cards are in favor of the investigation the process proceeds to step number 5.
 - b. If fewer than 50% are in favor of the project, the contact person for the petition receives a letter from the Project Management explaining the reasons why the City cannot continue the project.
5. Using the data collected by the City's speed study, and the information collected from the residents during the voting process, an initial plan of traffic calming solutions will be prepared by the Project Management. The initial plan will be developed with input from the AAPD and AAFD, and will be considered a beginning point for discussion with the residents. The plan will be prepared on a City airphoto of the street (with City lot lines and addresses) with moveable acetate overlays of traffic calming tools.
6. Meeting #1 will be held on-site with the residents. The following will occur leading up to and during the meeting:
 - a. An invitation flyer will be sent to each household on the mailing list. The flyer will identify the meeting date and location (a rain date will be given). The flyer will summarize information about conditions on their street received from the residents during the voting process. A date for meeting #2 will also be included on the flyer.
 - b. The meeting will begin by describing the purpose of the meeting, the comments received from the residents, and the traffic calming tools that will be considered as part of the program.
 - c. The initial plan will be presented, with the understanding that the plan can be modified during the course of the meeting.
 - d. The Project Management will walk the length of the area or street with the residents to talk about proposed traffic calming measure locations and any other concerns or issues they might have. The initial plan will be adjusted accordingly and will represent a consensus plan.

7. The Project Management will meet with the AAPD and AAFD to discuss the consensus plan. Modifications will be made to the plan as necessary. A flyer will be sent to each household on the mailing list which summarizes Meeting #1 and includes a consensus initial plan. An invitation to attend Meeting #2 is also included. It is anticipated there will be one month between Meeting #1 and Meeting #2.
8. Meeting #2 will be held on-site with the residents. The following will occur leading up to and during the meeting:
 - a. The Project Management will mark the preferred traffic calming devices on the street prior to meeting #2.
 - b. The Project Management will walk the length of the area or street with the residents to view the temporary traffic calming devices. Adjustments on the plan will be made as necessary.
9. A final package is mailed to each household on the mailing list. The package contains the final plan and a voting card. The voting card is designed to enable residents to vote for all or part of the proposed plan. Each traffic calming device proposed as part of plan will require a “yes” or “no” vote to determine acceptance or disapproval. The voting card may also have room for comments allowing residents to suggest an alternative traffic calming device should they choose to vote “no” on any one device.

The program stipulates that two criteria must be met from this poll to pursue all or part of the project: 60% of the homeowners must respond to the poll (regardless of how they vote) and 60% of the returned poll cards must support all or part of the project. A final tally of the voting cards will indicate which combination of devices the residents support. Final approval is then requested from City Council to build the project.

If the project does not pass, proceed to step number 10.

10. A letter is sent to residents explaining the plan did not pass, but that several suggestions were made by residents to revise the plan. A revised plan is enclosed with the letter along with a voting card asking for residents to vote “yes” or “no” on the revised plan. Suggestions for alternatives are not offered on the second/last voting.

Traffic Calming Qualifications

1. The street must be classified as a local street, per Michigan Highway Law, Public Act 51 of 1951, as amended and as shown on the up to date Certified Act 51 Street Systems Map.
2. The street must be in the City and be paved.
3. The average daily traffic volume must be at least 200 and no more than 4,000.
4. The 85th percentile speed must be at least 5 mph over the legal speed limit, or 30 mph.
5. The street must not be a primary emergency route.
6. Streets used as bus routes by the Ann Arbor Transportation Authority or the Ann Arbor Public Schools must have their input to the plan.
7. The street must not be a designated truck route.
8. A traffic calming project may be initiated by any group of residents or property owners adjacent to a local street, equal to or greater than one average City block (300 feet).

Active Traffic Calming Tools

The following tools have been found to be effective as traffic calming devices, in the order shown. These are the primary tools for the City of Ann Arbor traffic calming program.

1. Speed Humps
2. Raised Crosswalks
3. Raised Intersections
4. Chokers/Neckdowns
5. Residential Scale Traffic Circles

wherever practical, but special attention to drainage should be exercised where values of K in excess of 51 m [167 ft] per percent change in grade are used.

Minimum lengths of vertical curves for flat gradients also are recognized for sag conditions. The values determined for crest conditions appear to be generally suitable for sags. Lengths of sag vertical curves, shown as vertical lines in Figure 3-44, are equal to 0.6 times the design speed in km/h [three times the design speed in mph].

Sag vertical curves shorter than the lengths computed from Table 3-36 may be justified for economic reasons in cases where an existing feature, such as a structure not ready for replacement, controls the vertical profile. In certain cases, ramps may also be designed with shorter sag vertical curves. Fixed-source lighting is desirable in such cases. For street design, some engineers accept design of a sag or crest where A is about 1 percent or less without a length of calculated vertical curve. However, field modifications during construction usually result in constructing the equivalent to a vertical curve, even if short.

Table 3-36. Design Controls for Sag Vertical Curves

Metric				U.S. Customary			
Design Speed (km/h)	Stopping Sight Distance (m)	Rate of Vertical Curvature, K^a		Design Speed (mph)	Stopping Sight Distance (ft)	Rate of Vertical Curvature, K^a	
		Calculated	Design			Calculated	Design
20	20	2.1	3	15	80	9.4	10
30	35	5.1	6	20	115	16.5	17
40	50	8.5	9	25	155	25.5	26
50	65	12.2	13	30	200	36.4	37
60	85	17.3	18	35	250	49.0	49
70	105	22.6	23	40	305	63.4	64
80	130	29.4	30	45	360	78.1	79
90	160	37.6	38	50	425	95.7	96
100	185	44.6	45	55	495	114.9	115
110	220	54.4	55	60	570	135.7	136
120	250	62.8	63	65	645	156.5	157
130	285	72.7	73	70	730	180.3	181
				75	820	205.6	206
				80	910	231.0	231

^a Rate of vertical curvature, K , is the length of curve (m) per percent algebraic difference intersecting grades (A), $K = L/A$.

Sight Distance at Undercrossings

Sight distance on the highway through a grade separation should be at least as long as the minimum stopping sight distance and preferably longer. Design of the vertical alignment is the same as at any other point on the highway except in some cases of sag vertical curves underpassing a structure as illustrated in Figure 3-45. While not a frequent concern, the structure fascia may cut the line of sight and limit the sight distance to less than otherwise is attainable. It is generally practical to provide the minimum length of sag vertical curve at grade separation structures, and even where the recommended grades are exceeded,

coastal, and scenic areas where more than 10 percent of the vehicle volumes are large trucks and recreational vehicles.

The recommended length of turnouts including taper is shown in Table 3-32. Turnouts shorter than 60 m [200 ft] are not recommended even for very low approach speeds. Turnouts longer than 185 m [600 ft] are not recommended for high-speed roads to avoid use of the turnout as a passing lane. The recommended lengths are based on the assumption that slow-moving vehicles enter the turnout at 8 km/h [5 mph] slower than the mean speed of the through traffic. This length allows the entering vehicle to coast to the midpoint of the turnout without braking, and then, if necessary, to brake to a stop using a deceleration rate not exceeding 3 m/s^2 [10 ft/s^2]. The recommended lengths for turnouts include entry and exit tapers. Typical entry and exit taper lengths range from 15 to 30 m [50 to 100 ft] (28, 29).

Table 3-32. Recommended Lengths of Turnouts Including Taper

Metric		U.S. Customary	
Approach Speed (km/h)	Minimum Length (m) ^a	Approach Speed (mph)	Minimum Length (ft) ^a
30	60	20	200
40	60	30	200
50	65	40	300
60	85	45	350
70	105	50	450
80	135	55	550
90	170	60	600
100	185		

^a Maximum length should be 185 m (600 ft) to avoid use of the turnout as a passing lane.

The minimum width of the turnout is 3.6 m [12 ft] with widths of 5 m [16 ft] considered desirable. Turnouts wider than 5 m [16 ft] are not recommended.

A turnout should not be located on or adjacent to a horizontal or vertical curve that limits sight distance in either direction. The available sight distance should be at least 300 m [1,000 ft] on the approach to the turnout.

Proper signing and pavement marking are also needed both to maximize turnout usage and reduce crashes. An edge line marking on the right side of the turnout is desirable to guide drivers, especially in wider turnouts.

Shoulder Driving

In parts of the United States, a long-standing custom has been established for slow-moving vehicles to move to the shoulder when another vehicle approaches from the rear, and then return to the traveled way after that following vehicle has passed. The practice generally occurs where adequate paved shoulders exist and, in effect, these shoulders function as continuous turnouts. This custom is regarded as a courtesy to other drivers needing little or no sacrifice in speed by either driver. While highway agencies may want to permit such use as a means of improving passing opportunities without a major capital investment, they should recognize that in many states shoulder driving is currently prohibited by law. Thus, a highway

Crest v.