Crosswalk Design Guidelines Project

Public meeting: December 8, 2016

Agenda

- Welcome and introductions (20 min.)
- Table activity (45 min.)
- Discussion (45 min.)
- Next steps (10 min.)

Crosswalks are inconsistent

Why?

1. Changing regulations
2. Evolution of design practices
3. Individual variance of traffic engineers
4. Resource limitations

Desired outcomes of project

1. Consistent, recognizable look/feel for all crosswalks throughout Ann Arbor
   - One size will not fit all

2. Help create clear, shared understanding among all crosswalk users

Design guidelines: Source data

1. Prevailing research and best practices
2. National Cooperative Highway Research Program (NCHRP) Report 562
3. North American City Transportation Officials (NACTO) guidelines
4. Examples from peer communities

Draft format: Ann Arbor guidelines

Road type	***Treatment categories***		
	Standard	Standard Plus	High Risk
Local			
Collector			
Arterial ≤ 3 lanes			
Arterial > 3 lanes			

Design guidelines in practice

- Example: State St. between N. & S. University

Design guidelines in practice

- Example: State St. between N. & S. University
  - Road Width: 40’
  - Roadway Speed: 25 mph
  - Yielding Compliance: High
  - Peak Hour: Mid Afternoon
  - Pedestrian Volume: 250 / hour
  - Vehicular Volume: 300 / hour
  - Road Classification: Minor Arterial

Design guidelines in practice

GUIDELINES FOR PEDESTRIAN CROSSING TREATMENTS

This spreadsheet combines Worksheet 1 and Worksheet 2 (Appendix A, pages 69–70) of TCRP Report 112/NCHRP Report 562 (*Improving Pedestrian Safety at Unsignalized Intersections*) into an electronic format. This spreadsheet should be used in conjunction with, and not independent of, Appendix A documentation.

This spreadsheet is still under development, please inform TTI if errors are identified.

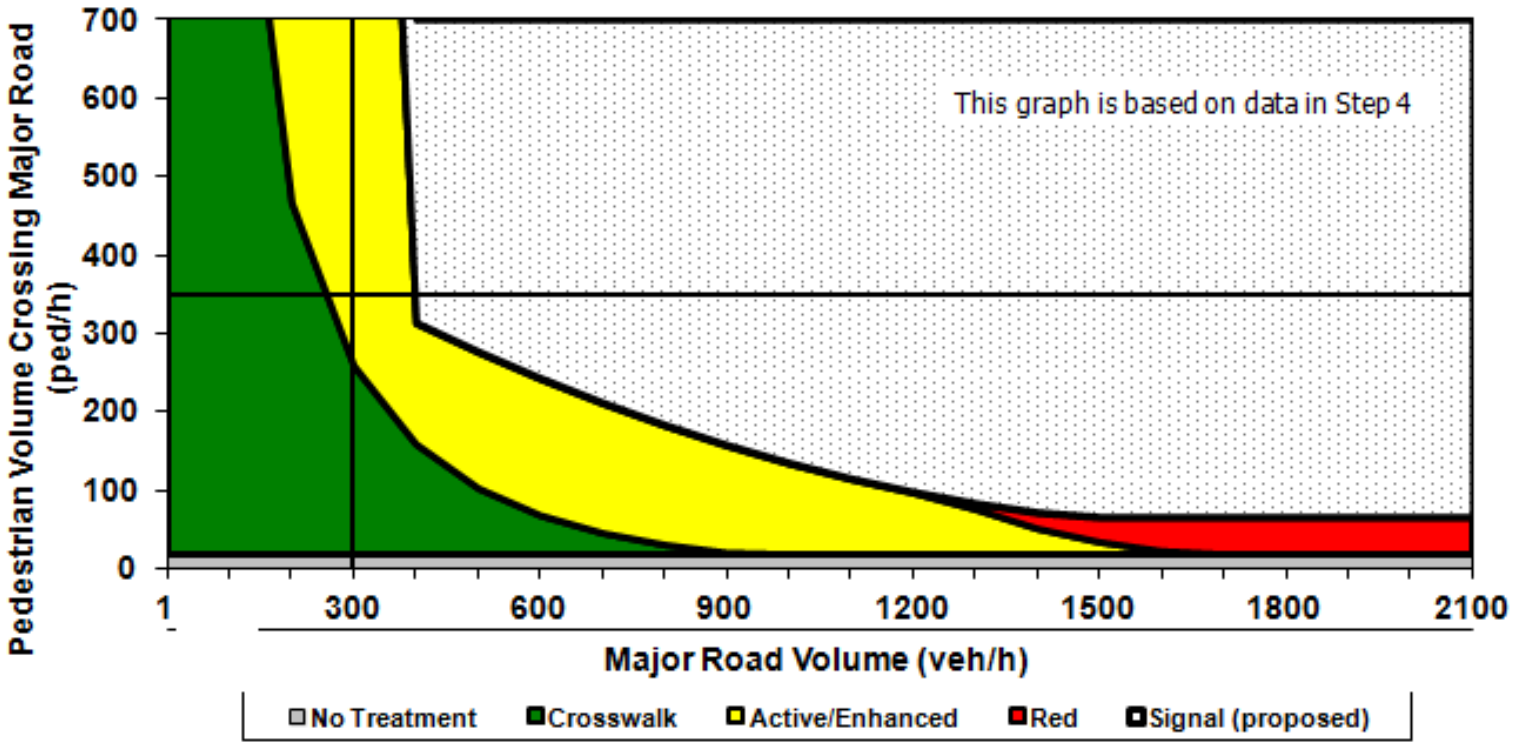
Key

- Blue fields contain descriptive information.
- Green fields are required and must be completed.
- Tan fields are adjustments that are filled out only under certain conditions (follow instructions to the left of the cell).
- Gray fields are automatically calculated and should not be edited.

Analyst and Site Information					
Analyst	CRR	Major Street	State St.		
Analysis Date	December 8, 2016	Minor Street or Location	N. & S. University Ave.		
Data Collection Date	NA	Peak Hour	Mid-Afternoon		
Step 1: Select worksheet:					
Posted or statutory speed limit (or 85th percentile speed) on the major street (mph)				*1a*	25
Is the population of the surrounding area <10,000? (enter *YES* or *NO*)				*1b*	no
Step 2: Does the crossing meet minimum pedestrian volumes to be considered for a traffic control devi					
Peak-hour pedestrian volume (ped/h), V_p				*2a*	350
Result: Go to step 3.					
Step 3: Does the crossing meet the pedestrian warrant for a traffic signal?					
Major road volume, total of both approaches during peak hour (veh/h), V_{maj-s}				*3a*	300
[Calculated automatically] Preliminary (before min. threshold) peak hour pedestrian volume to meet warrant				*3b*	708
[Calculated automatically] Minimum required peak hour pedestrian volume to meet traffic signal warrant				*3c*	708
Is 15th percentile crossing speed of pedestrians less than 3.5 ft/s (1.1 m/s)? (enter *YES* or *NO*)				*3d*	no
If 15th percentile crossing speed of pedestrians is less than 3.5 ft/s (1.1 m/s), then reduce *3c* by up to 50%.		% rate of reduction for *3c* (up to 50%		*3e*	
		Reduced value or *3c*		*3f*	708
Result: The signal warrant is not met. Go to step 4.					
Step 4: Estimate pedestrian delay.					
Pedestrian crossing distance, curb to curb (ft), L				*4a*	40
Pedestrian walking speed (ft/s), S_p (suggested speed = 3.5 ft/s)				*4b*	3
Pedestrian start-up time and end clearance time (s), t_r (suggested start-up time = 3 sec)				*4c*	3
[Calculated automatically] Critical gap required for crossing pedestrian (s), t_c				*4d*	16
Major road volume, total both approaches OR approach being crossed if raised median island is present, during peak hour (veh/h), V_{maj-d}				*4e*	300
Major road flow rate (veh/s), v				*4f*	0.08
Average pedestrian delay (s/person), d_p				*4g*	17
Total pedestrian delay (h), D_p The value in 4h is the calculated estimated delay for all pedestrians crossing th major roadway without a crossing treatment (assumes 0% compliance). If the actual total pedestrian delay has been measured at the site, that value can be entered in 4i to replace the calculated value in 4h.				*4h*	1.7
				4i	

Design guidelines in practice

Step 5: Select treatment based up on total pedestrian delay and expected motorist compliance.		
Expected motorist compliance at pedestrian crossings in region: enter *HIGH for High Compliance* or *LOW for Low Compliance*	5a	high
Treatment Category:	**ACTIVE OR ENHANCED**	



Design guidelines in practice

- Example: State St. between N. & S. University

Street Type	Standard	Design Options	
		Standard+	High Risk Location
Minor & Major Arterials ≤ 3 Lanes	High Visibility Markings	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Rectangular Rapid Flashing Beacon (RRFB)
		R1-6a Signs In-Lane or on Island	Pedestrian Hybrid Beacon (PHB)
		Bright Sides	Pedestrian Signal
		Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach	Lighting Review
		Pedestrian Islands or Bump Outs	
		Lighting Review	

Design guidelines in practice

- Example: State St. between N. & S. University

Table exercise: Introduction

- Improvements have been requested at three mid-block crossings in a fictitious community
- Your objective is to select appropriate crossing treatment(s) for each location
  - Data input complete; category identified
- Total available budget (all 3 locations combined) is $72,000

Table exercise: Assumptions

- None of the 3 locations have ANY treatment; you are starting from scratch
- Engineering analysis is complete, accurate
- Traffic calming (adding stop signs or speed bumps; lowering speed limit) is NOT part of this exercise
- It is NOT possible to exceed the budget

Table exercise: Instructions

1. Conduct a round of introductions
2. Designate a reporter to post your results
3. Review map, data sheets
4. Identify an appropriate treatment(s) for each crosswalk location; place tokens on map
5. Post results on the flip-charts provided

Be prepared to discuss:

- How did you arrive at your decisions?
- What did you learn in the process?

Discussion

What do you observe about the decisions that were made in different groups?

What could we learn from this exercise?

How could/should the results inform the City's process of refining the draft guidelines?

Immediate next steps

- Continue stakeholder engagement
- Refine preliminary guidelines
- Prepare, refine implementation plan

Contact information

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