

Crosswalk Design Guidelines Update

City of Ann Arbor Transportation Commission

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December 19, 2018

Presentation Outline

- Project History: objectives and process
- Public Engagement: process and findings
- Project timeline
- Overview of guidelines
- Overview of design options

Project Objectives

- Consistent, recognizable look/feel for all crosswalks throughout Ann Arbor
 - One size will not fit all
- Help create clear, shared understanding among all crosswalk users

Project: 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

Public Engagement: Process

Three public meetings

- August 2016
- December 2016
- February 2017

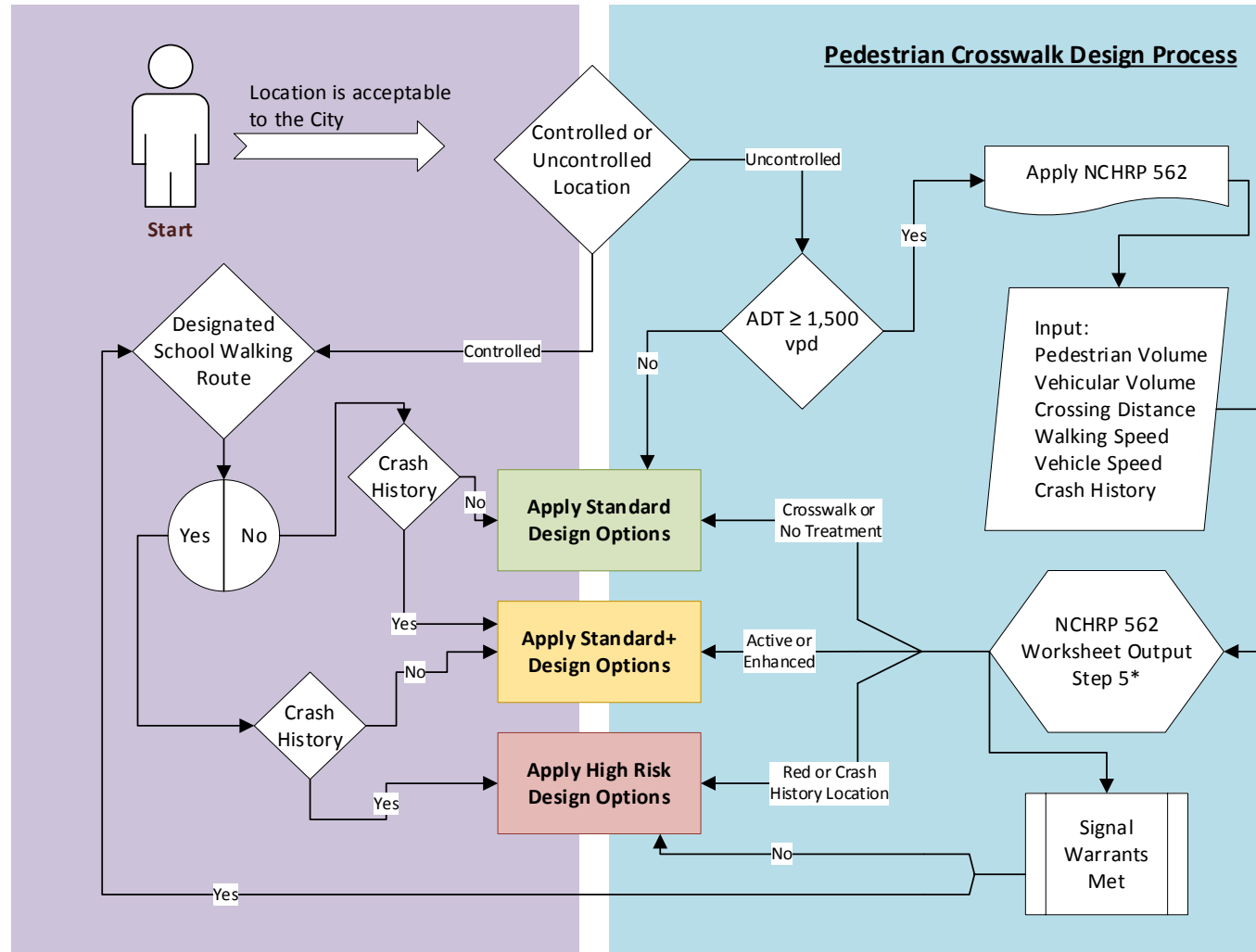
Stakeholder engagement

- University of Michigan
- Washtenaw Biking & Walking Coalition
- Ann Arbor Public Schools
- Internal stakeholders

Public Engagement: Themes

1. Crosswalks throughout the city need to be more consistent
2. The guidelines should be based on best practices, not budget
3. Engineering discretion should be used so that decisions “default up” to more robust treatment
4. Few mid-priced treatments are available
5. Good lighting contributes to crosswalk safety
6. Education and enforcement are essential
7. Crossings near schools should be prioritized

Guidelines: Overview



Guidelines: Process

Start with request:

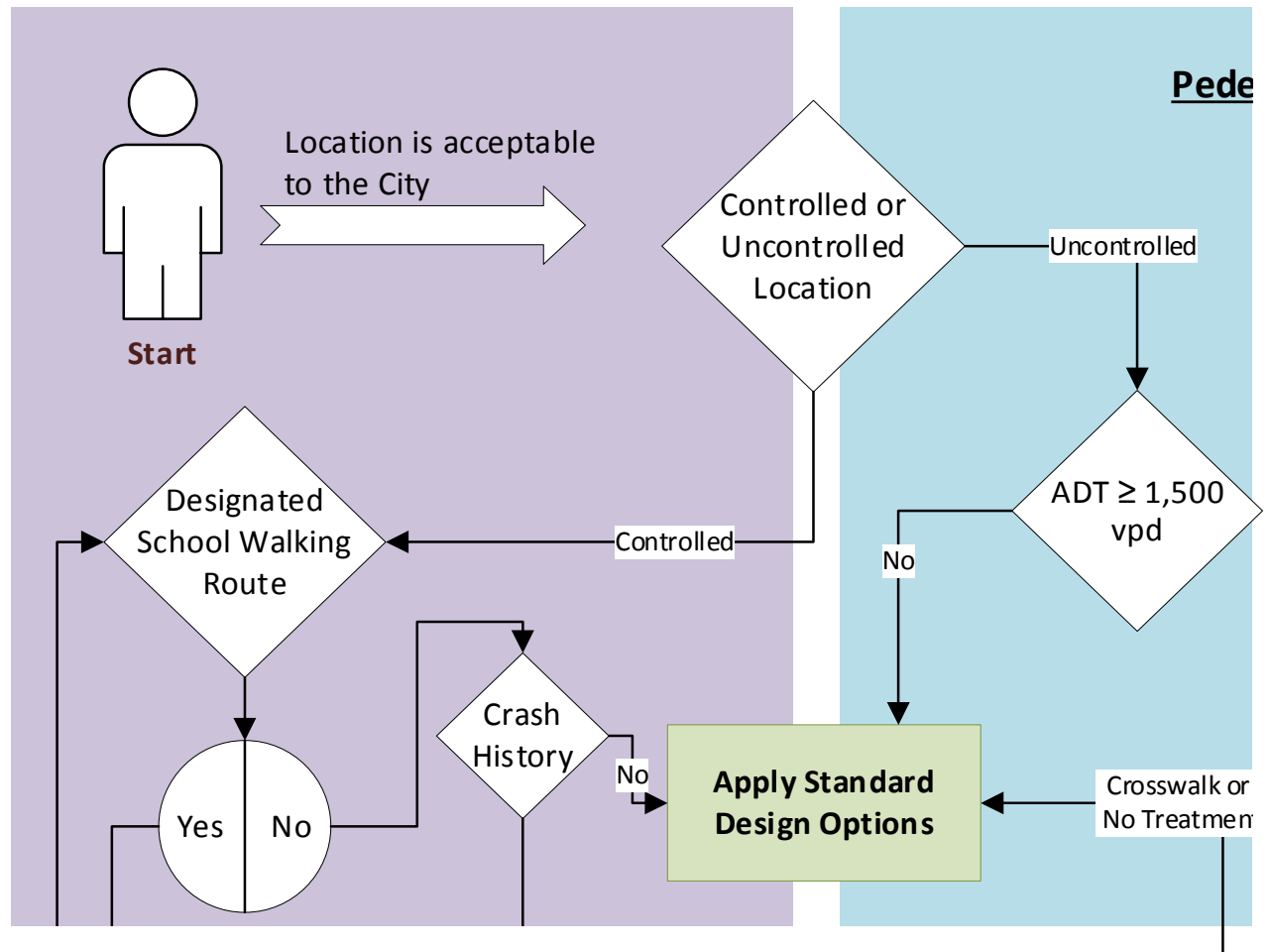
Resident, special
interest group, staff,
etc.

Engineering evaluates
request:

Does it make sense in
the network?
Can a crossing be
feasibly built?

First decision:

Control type



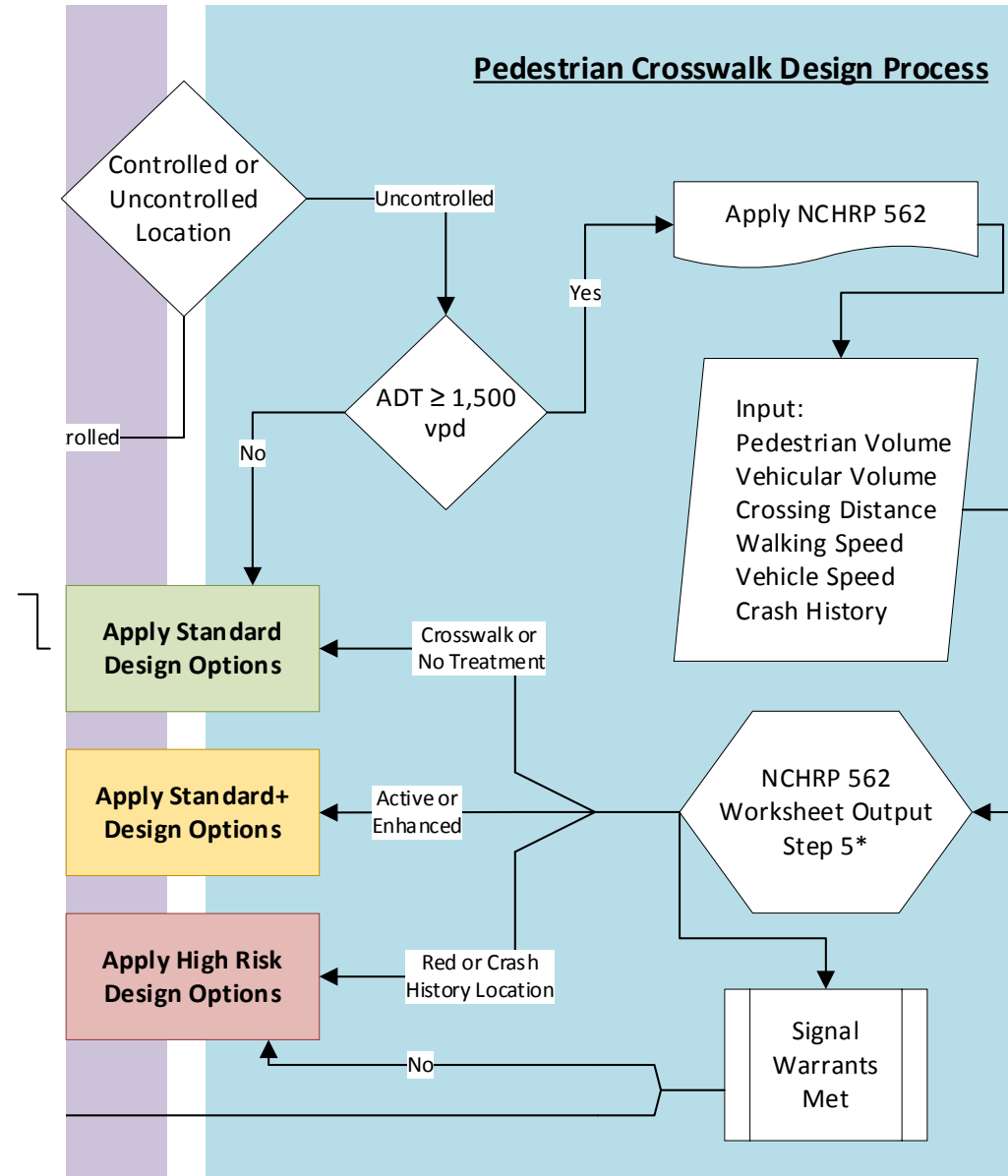
Guidelines: Process

Uncontrolled locations:

Intersection or mid-block
location

Low volume streets (<1,500 vpd)

Automatic Standard design
level



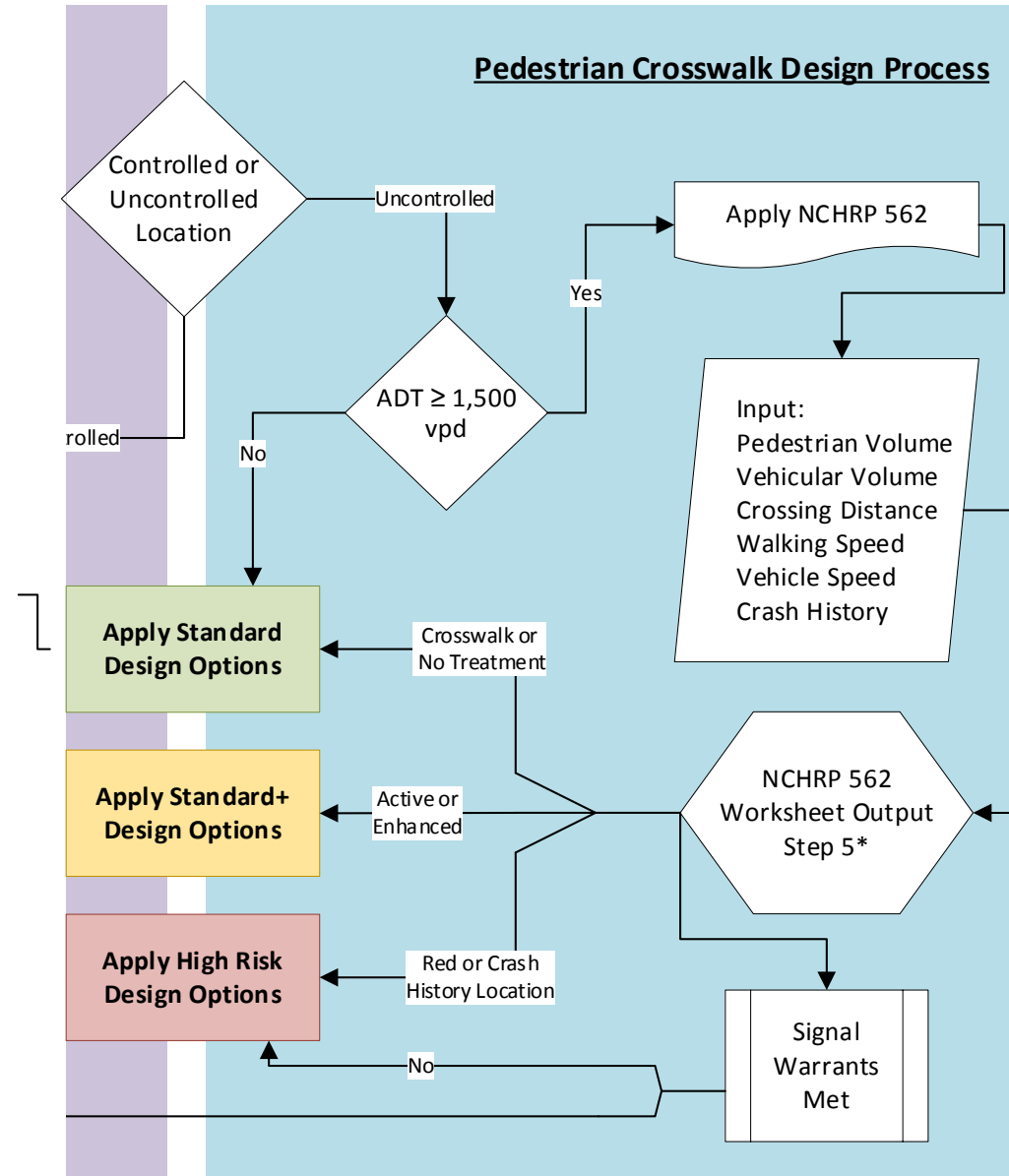
Guidelines: Process

Apply NCHRP 562

Research focused on improving pedestrian safety at uncontrolled crossings.

Spreadsheet tool evaluates signal warrants and estimates pedestrian delay

The tool outputs a treatment category.

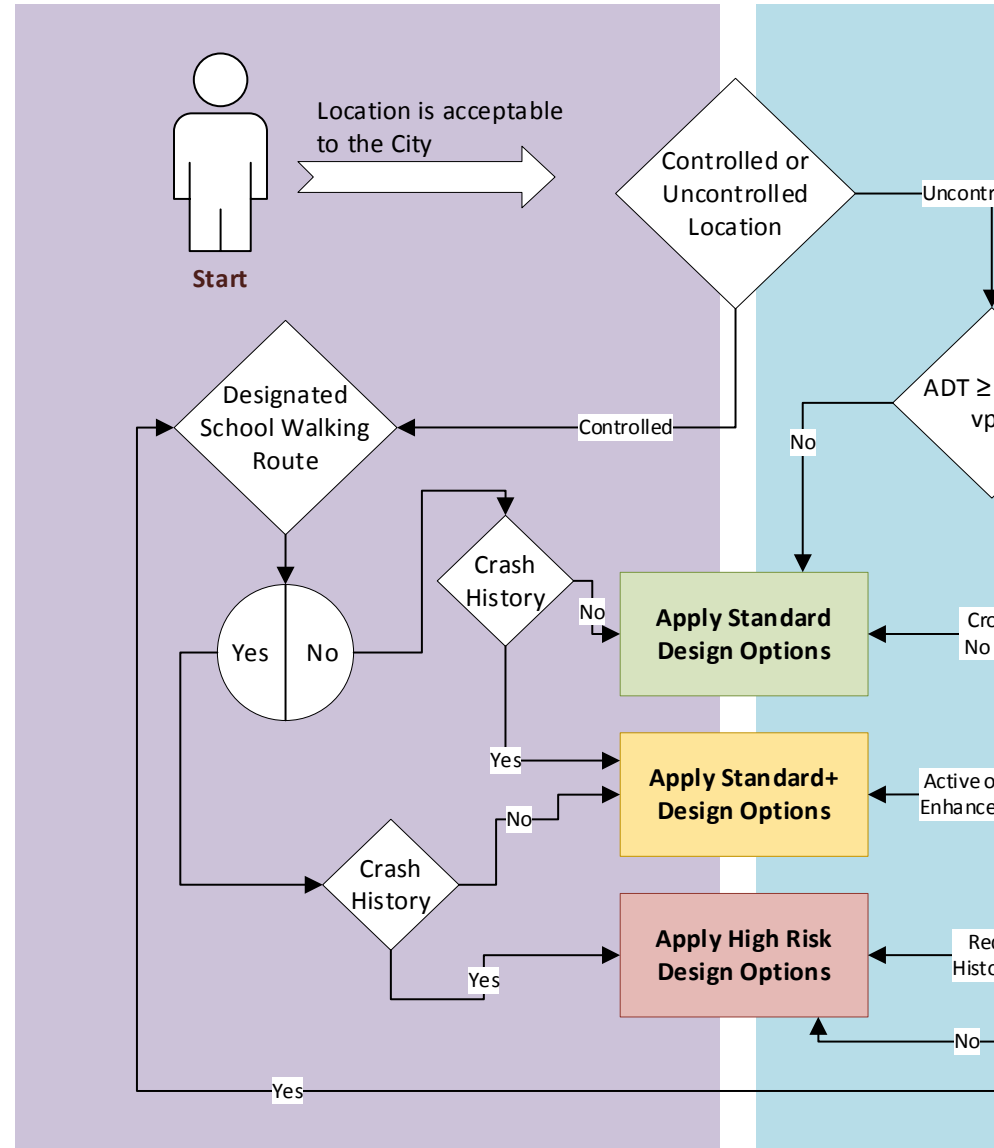


Guidelines: Process

Controlled Locations:

- STOP signs
- Roundabouts
- Traffic Signals

Design category decisions are based on crashes and designated school routes.



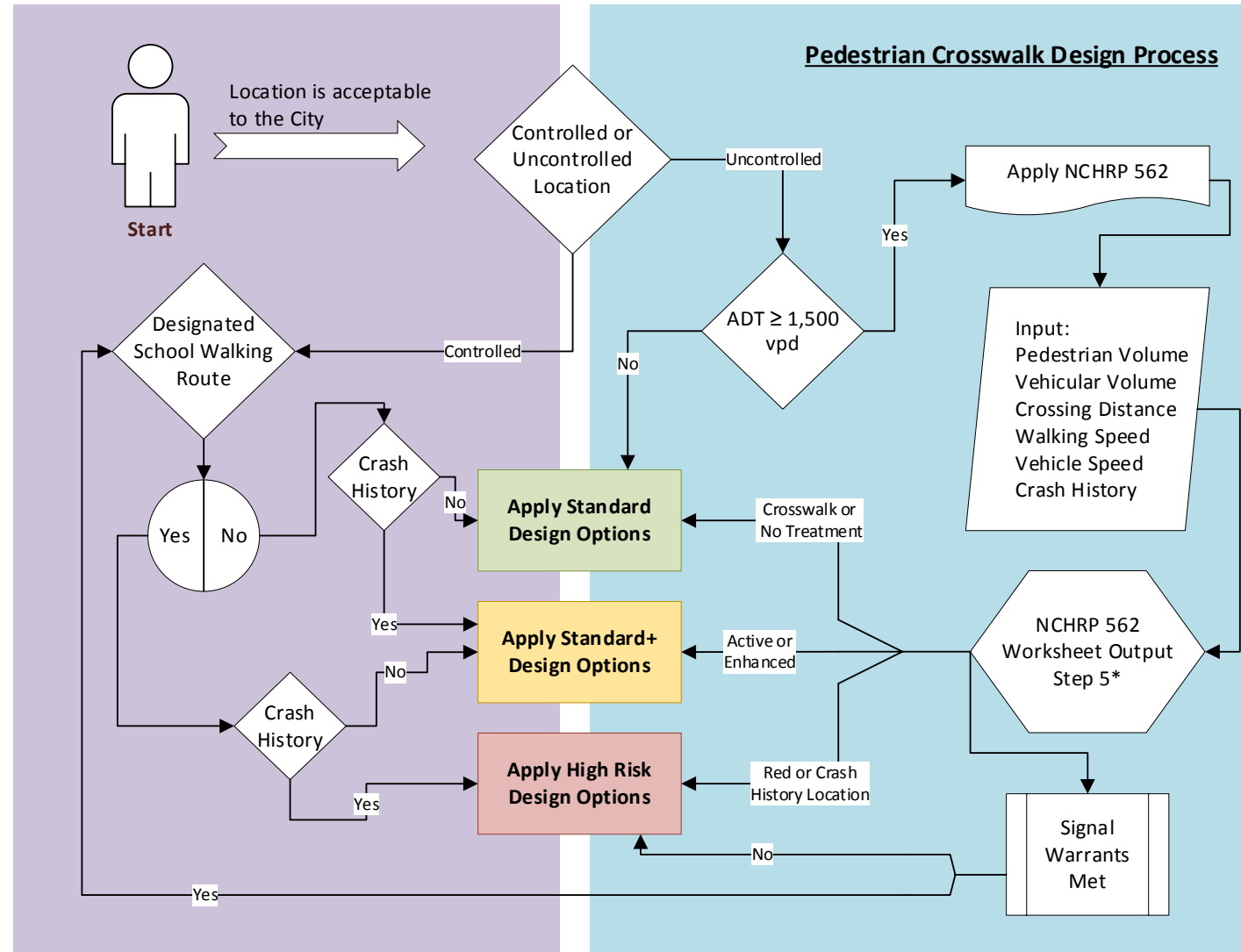
Guidelines: Process

Special Considerations:

Vulnerable road user
groups

Crash History

Identified systemic
design the City is
working to correct.



Design Selection: Uncontrolled

Select devices based on street type and design level.

Items accumulate left to right.

Not all devices will be used in all locations.

Street Type	Uncontrolled Design Options			
	Standard	Standard+	High Risk Location	
Local	Unmarked	Pavement Markings	High Visibility Markings Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	
Collector	High Visibility Markings	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Bright Sides	
			In-Lane Signs (R1-6a)	
			Pedestrian Islands	
			R1-6a Signs on Island	
			Bump Outs	
			Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach	
Minor & Major Arterials ≤ 3 Lanes	High Visibility Markings	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Enhanced Lighting	
			Rectangular Rapid Flashing Beacon (RRFB) - Side Mounted	
			Pedestrian Hybrid Beacon (PHB)	
			Pedestrian Signal	
				In-Lane Signs (R1-6a)
				Pedestrian Islands
				R1-6a Signs on Island
Bump Outs				
Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach				
Minor & Major Arterials ≥ 3 Lanes	High Visibility Markings	In-Lane Signs (R1-6a)	Enhanced Lighting	
	Pedestrian Warning Series (W11-2) or School Warning Series (S1-1)	Pedestrian Islands	Rectangular Rapid Flashing Beacon (RRFB) - Additional Mounting Overhead or on Island	
	Bright Sides	R1-6a Signs on Island	Pedestrian Hybrid Beacon (PHB)	
	Mid-block: Stop Here for Ped. (R1-5b) Signs w/ Stop Bar	Bump Outs	Pedestrian Signal	
		Stop Here for Ped. (R1-5b) Signs w/ Stop Bar on Multilane Approach	Overhead Mounted "Local Law, Stop for Ped" (R1-9a)	

Design Selection: Controlled

Select devices based on street type and design level.

Items accumulate left to right.

Device options are more limited.

Control Type	Street Type	Design Options		
		Standard	Standard+	High Risk Location
Stop Controlled	Local	Unmarked	Pavement Markings	High Visibility Markings
	Collector, Minor Arterial, & Major Arterial	High Visibility Markings	Enhanced High Visibility Marking, e.g. 10' wide crosswalk School Warning Series (S1-1)	Intersection Warning Series Bump Outs
Signalized	All Types	High Visibility Markings	Enhanced High Visibility Marking, e.g. 10' wide crosswalk	Advanced Pedestrian Phase
		Stop Bars		Pedestrian Only Phase
		Count Down Pedestrian Heads		Pedestrian Scramble Phase
Roundabout	Local & Collector: Single Lane	Standard Markings	High Visibility Markings	Stop (Yield) Bars
		R1-6a Signs on Island		Stop Here for Ped. (R1-5b) Signs
		Audible warning strips		Audible warning strips
	Minor Arterial & Major Arterial: Single Lane	High Visibility Markings	Stop (Yield) Bars	Pedestrian Warning Series (W11-2)
		R1-6a Signs on Island	Stop Here for Ped. (R1-5b) Signs	or School Warning Series (S1-1)
	Minor Arterial & Major Arterial: Multi Lane	Audible warning strips		
		High Visibility Markings	Rectangular Rapid Flashing Beacon (RRFB) - Side Mounted	Pedestrian Hybrid Beacon (PHB)
R1-6a Signs on Island				
Audible warning strips				
Stop (Yield) Bars				
Stop Here for Ped. (R1-5b) Signs				

Guidelines: Questions?

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