



# CROSSWALKS & MIDBLOCK CROSSINGS

Crosswalks are critical components of the street that facilitate a connected and continuous pedestrian network. Crosswalks carry the pedestrian across vehicular and bicycle travel ways.

Crosswalks may occur at intersections or at mid-points along a block. Midblock crossings are crossings that occur between intersections. Crosswalks are generally marked facilities; however, pedestrians are legally permitted to cross at unmarked locations wherever two or more streets intersect.

## USE

- Marked crosswalks should be provided at all significant pedestrian crossing locations such as at major intersections; in the downtown, urban center, and neighborhood business corridors; higher density districts; and near schools, parks, community facilities, or other significant pedestrian generators.
- Marked crosswalks may be located at either signalized intersections or unsignalized (e.g. stop controlled, uncontrolled, or roundabout) crossings; at intersections and/or midblock.
- Marked crosswalks should be considered on streets with traffic volumes above 3,000 Average Daily Traffic (ADT), speed limit higher than 25 mph, or corridors with multiple travel lanes. Lower volume crossings generally remain unmarked. Education is necessary to inform drivers that drivers must yield to pedestrians crossing the street, whether marked or unmarked.
- Midblock crossings should not be used when within 400 feet of a crosswalk at an intersection.

	Neighborhood Residential	Link Residential	Network Residential	Neighborhood Business	Maker/ Industrial	Crosstown Connector	Urban Center	<b>O = OPTIONAL A = ADVISED R = REQUIRED</b>
Neighborhood Residential	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	<b>O</b>	
Link Residential	<b>O</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	<b>A</b>	
Network Residential	<b>O</b>	<b>A</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	
Neighborhood Business	<b>O</b>	<b>A</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	
Maker/ Industrial	<b>O</b>	<b>A</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	
Crosstown Connector	<b>O</b>	<b>A</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	
Urban Center	<b>O</b>	<b>A</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>	

## DESIGN

- Crosswalks shall be as wide as, or wider, than the sidewalks they connect. Sidewalks should be at least six feet wide, and 10 feet is preferred for heavily travelled areas.
- Crosswalks should encompass the desired line of travel observed at a particular location. Sidewalk ramps shall be provided to serve all marked crosswalks.
- Crosswalk markings shall be clear and legible. The standard crosswalk type consists of two parallel lines and is acceptable at most locations. High visibility markings – typically of the “Continental” design – are advised at high volume pedestrian locations, areas of heightened safety concern, or areas with concentrations of more vulnerable pedestrians.
- Marked and unmarked crossings should be adequately lighted to provide safety and visibility for both pedestrians and motorists.
- Crossing distance shall be as short as possible to minimize exposure and risk. Street designers should look for the optimal alignment to reduce risk and exposure distance.
- Continuous crossings in excess of 44 feet in length should be avoided. For crossings greater than 44 feet, consider utilization of pedestrian refuge islands.
- Where pedestrian activity is routine or frequent, pedestrian crossing phases should be included in the traffic signal timing sequences with push buttons added as needed to extend crossing phases.
- Crosswalk surface may be asphalt, concrete or non-slip pavers providing a level surface.
- The MMUTCD provides guidance on the minimum required pedestrian clearance interval, which is the most significant component of overall pedestrian crossing time. In areas with an increased concentration of vulnerable pedestrians, such as along Transit Emphasis corridors and in areas with higher volumes of pedestrians, the minimal clearance interval should be increased to expect and accommodate slower moving pedestrians.
- Crosswalks and midblock crossings at uncontrolled locations without a stop sign or signal control may require special design attention, such as a marked crosswalk, pedestrian crossing signs, and/or parking restrictions to ensure

drivers are able to see pedestrians about to enter the crosswalk. Midblock crossings with trail crossings such as at parks and major facility entrances may require further enhancements such as raised crossings, rapid flashing beacons, pedestrian hybrid beacons, curb extensions, or median refuge islands.

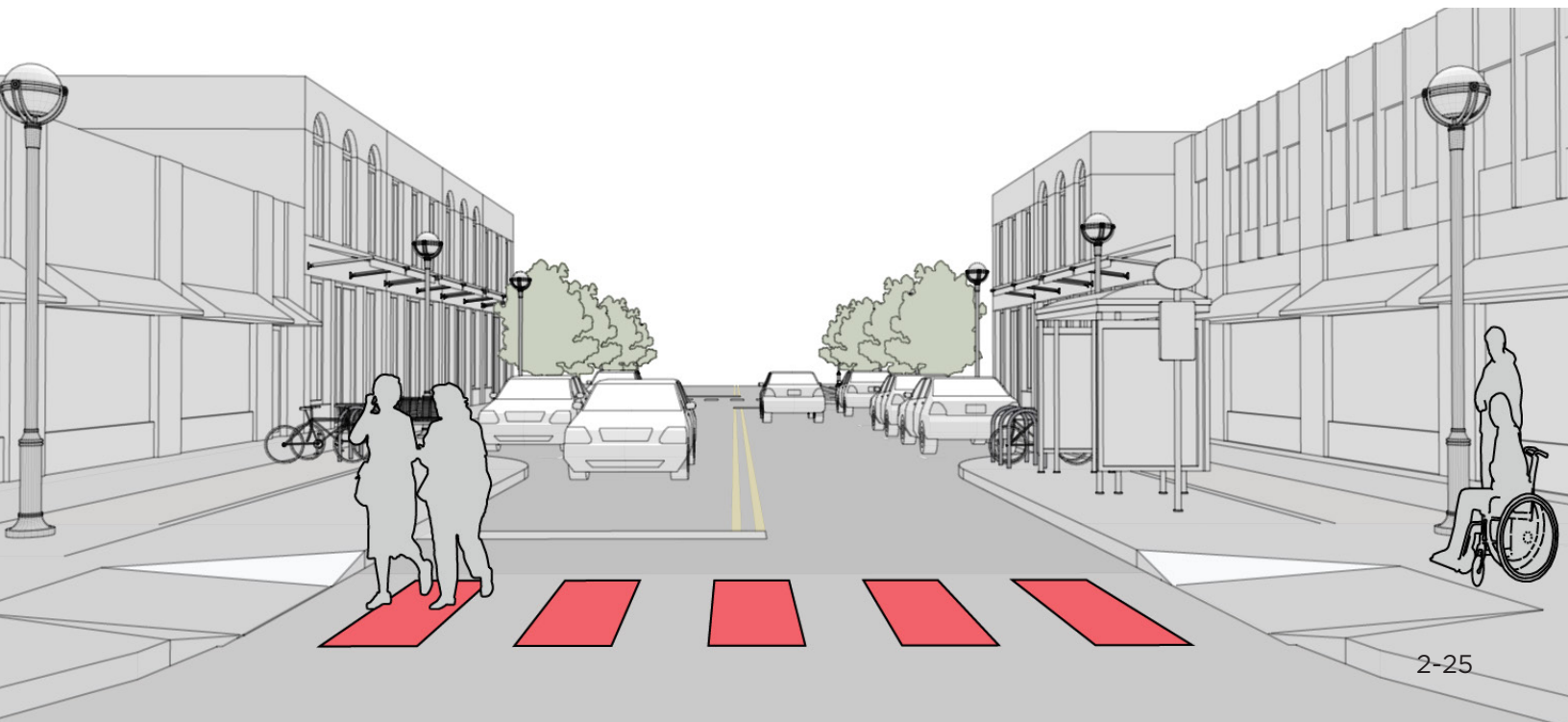
## SPECIAL CONSIDERATIONS

- Raised crosswalks may be used in areas of high pedestrian volumes or locations with demonstrated safety concerns, where vehicle volumes and speeds are generally low. Raised crosswalks elevate the crosswalk slightly above the typical grade of the street, improving visibility.
- Decorative crosswalks may be considered by the city with a maintenance agreement, but are generally discouraged. Decorative crosswalk treatments must be compliant with all current requirements in the MMUTCD or Federal documents. Decorative crosswalks are typically temporary and not for permanent installation.
- Enhanced pedestrian treatments, such as Rapid Flash Rectangular Beacons (RFRBs) or pedestrian-actuated hybrid beacons should be considered only after lesser or more traditional treatments have been used. If warranted, they

may be used at locations with high traffic volumes and travel speeds. Implementation of such devices will need to be based on current standards and research and an engineering study will need to be completed to warrant such treatment.

## OPERATIONS AND MAINTENANCE

- Crosswalk markings may be installed in a slightly staggered pattern to avoid the typical vehicle wheel track, which may help minimize maintenance requirements. Markings may also be inset into the pavement to prevent damage from snow plows.
- Visibility of crosswalks is essential. Crosswalk markings should be refreshed at regular intervals. After street repaving, crosswalks should be remarked as soon as possible.
- Crosswalks must be cleared of snow and ice and remain visible even in wintery conditions. Crosswalk sidewalk ramps must not be blocked by snow, ice, or pools of water.





## REFERENCES

- City of Grand Rapids – Pedestrian Crossing Pavement Marking Policy
- City of Grand Rapids – Mid-Block Crossing Policy (Draft)
- NACTO: Urban Street Design Guide, 2013
- Intersection Design Elements: Crosswalks and Crossings <http://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/>
- AASHTO: Guide for the Planning, Design, and Operation of Pedestrian Facilities, 2004
  - Section 3.3.4: Crosswalks
  - Section 3.4: Midblock Crossings
- ITE Designing Walkable Urban Thoroughfares: A Context Sensitive Approach, 2010
  - Chapter 9. Traveled Way Design Guidelines: Midblock Crossings
  - <http://library.ite.org/pub/e1cff43c-2354-d714-51d9-d82b39d4dbad>
  - Chapter 10. Intersection Design Guidelines: Pedestrian Treatments at Intersections – Crosswalks
  - <http://library.ite.org/pub/e1cff43c-2354-d714-51d9-d82b39d4dbad>
- MMUTCD, 2011
  - Part 2 Signs: Chapter 2B. Regulatory Signs, Barricades, and Gates [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmucdpart2b\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmucdpart2b_2011.pdf)
  - Part 2 Signs: Chapter 2C. Warning Signs [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmucdpart2c\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmucdpart2c_2011.pdf)
  - Part 3 Markings: Chapter 3B. Pavement and Curb Markings
  - Section 3B.18: Crosswalk Markings [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmucdpart3\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmucdpart3_2011.pdf)
  - Part 4 Highway Traffic Signals: Chapter 4F. Pedestrian Hybrid Beacons [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmucdpart4\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmucdpart4_2011.pdf)
- MDOT: Guidance for Installation of Pedestrian Crosswalks on Michigan State Trunkline Highways, 2014 [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_guidance\\_for\\_installation\\_of\\_pedestrian\\_crosswalks\\_on\\_michigan\\_state\\_trunkline\\_highways.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_guidance_for_installation_of_pedestrian_crosswalks_on_michigan_state_trunkline_highways.pdf)
- MDOT Traffic and Safety Notes
- Notes Manual 212B Signs with Rectangular Rapid Flashing Beacons [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_note212b.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_note212b.pdf)
- Notes Manual 401D Uncontrolled Non-Motorized Crosswalks [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_note401d.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_note401d.pdf)

## DETAILS

- City of Grand Rapids Standard Construction Specifications, 1993 Edition
- Standard Details P-24 Traffic Pavement Marking Dimensions
- MDOT Pavement Marking Standards
  - PAVE-900-E Pavement Arrow and Message Details [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_pave-900-e.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_pave-900-e.pdf)
  - PAVE-945-C Intersection, Stop Bar and Crosswalk Markings [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_pave-945-c.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_pave-945-c.pdf)
- MDOT Standard Highway Signs
  - SHS-E01-REG “R” Regulatory Signs [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_signs\\_e01\\_regulatory.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_signs_e01_regulatory.pdf)
  - SHS-E02-WARN “W” Warning Signs [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mdot\\_signs\\_e02\\_warning.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mdot_signs_e02_warning.pdf)

