



## CROSSWALK

The part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the street measured from the curbs, or in the absence of curbs from the edges of the traversable highway.

Any portion of a highway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.

Crosswalks exist at the intersection of roadways regardless of whether they are marked or unmarked.

## CROSSING TYPES

There are four kinds of crosswalks: controlled and uncontrolled, marked and unmarked.

### Controlled

Controlled crosswalks depend on a traffic signal, yield signs or a stop sign, to require motorists to stop for pedestrians.

#### Stop-controlled

STOP controlled crosswalks have STOP signs that require vehicles to stop prior to entering the crosswalk.

#### Signalized

Signal controlled crossings typically occur at intersections but may occur at mid-block locations. These locations control vehicular and pedestrian movements. Signal controlled crossings are characterized by traffic signals that control motorized and non-motorized traffic.



Stop-controlled intersection

### Uncontrolled

Crossing locations without stop signs, yield signs or traffic signals to stop vehicles.

### Marked Crossing

Marked crosswalks use pavement markings on the street to indicate preferred locations for pedestrians to and help motorists identify areas to look for pedestrians. Marked crosswalks may occur at intersections for mid-block locations.

### Unmarked Crossing

All intersections of streets with pedestrian facilities are legally considered to include crosswalks, even when there are no marked crosswalks.



Marked Crossing

### Roundabouts

A roundabout is a type of circular intersection or junction in which road traffic flows almost continuously in one direction around a central island.



### STREET TYPES OR CLASSIFICATIONS

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of traffic service that they are intended to provide. There are three main functional classifications: local, collector, and arterial roads.

All streets and highways are grouped into one of these classes, depending on the character of the traffic (i.e., local or long distance) and the degree of land access that they allow.

#### Local Roads

Local roads primarily provide access to land with little or no through movement. Think of shorter residential streets and small industrial park roads, like Varsity Drive.

#### Collector

Collector streets collect traffic from local streets. Collectors collect traffic from local roads and connect them with arterials. Arlington Boulevard, for example.

#### Arterial

The primary function of an arterial road is to deliver traffic from collector roads to freeways or expressways, and between urban centers at the highest level of service possible. Arterials can be sub-categorized as minor and major.



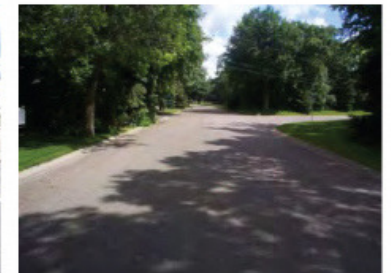
Major Arterial



Minor Arterial



Collector



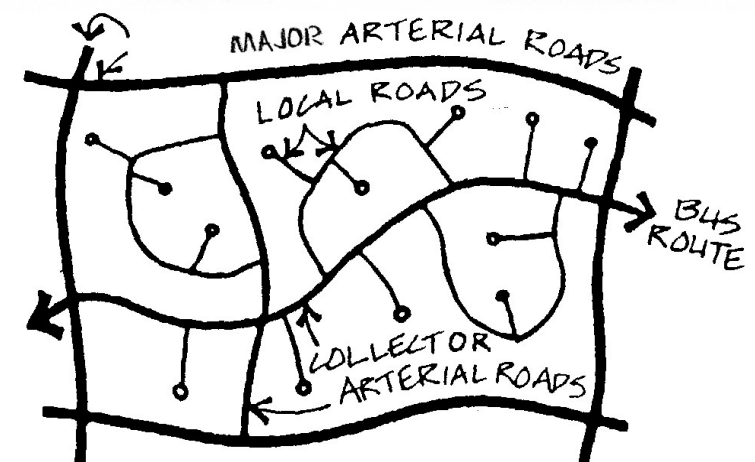
Local Street

#### Minor Arterial

Minor arterials are roadways that provide service for trips of moderate length, serve geographic areas that are smaller than their higher arterial counterparts and offer connectivity to the major arterial system. In an urban context, they interconnect and augment the major arterial system, provide intra-community continuity and may carry local bus routes. Miller Avenue and Scio Church Road are examples of minor arterials.

#### Major Arterial

Major arterials are high traffic capacity roadways, with a focus on through traffic, such as Plymouth Road, Huron Parkway, and Ann Arbor-Saline Road. They connect central business districts, outlying residential areas, major intercity communities, and major suburban centers.



# GLOSSARY

## DESIGN OPTION ELEMENTS

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### CROSSING TREATMENT ELEMENTS: CROSSINGS AND MARKINGS

#### Unmarked Crossing

All intersections of streets are normally considered to represent crosswalks, even when there are no painted crosswalk lines. Unmarked crosswalks are common in Ann Arbor, especially on local streets with low traffic volumes. At these unmarked crosswalks or even at mid-block crossings, pedestrians are legally allowed to cross the street. However the pedestrian will not have the protections of the crosswalk law when crossing outside of a legal crosswalk.



Unmarked Crossing

#### Marked Crossing

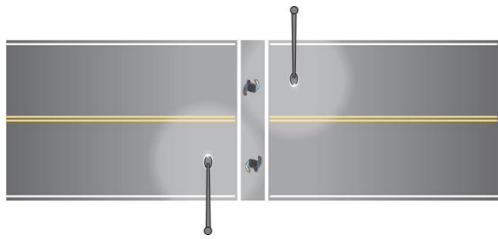
Marked crosswalks guide pedestrians and alert drivers to a crossing location. Crosswalks can be marked with durable high visibility materials.



Traditional crosswalk marking

#### PAVEMENT MARKINGS High Visibility Markings

The 2009 MUTCD allows for two basic types of crosswalk pavement markings, such as (1) traditional parallel lines; or (2) a high-visibility crosswalk pattern, such as a ladder, continental design, or diagonal marking.



Enhanced Lighting

#### Enhanced Lighting

Enhanced lighting are lighting designs that will increase the ability of drivers to detect those pedestrians. Specifically this refers to the inclusion of positive contrast lighting at mid-block crossings.



Stop Bar

#### Stop Bar

Stop bars serve multiple purposes. At an intersection with STOP control, they dictate where a driver should initially stop; this is the place motorists should look for and yield to pedestrians. At mid-block locations they indicate where a driver should stop to yield to a pedestrian using the crossing. Mid-block locations with multiple lanes are the multiple threat locations.



High Visibility Markings

### CROSSING TREATMENT ELEMENTS: SIGNS & HARDSCAPE PEDESTRIAN INFRASTRUCTURE

#### Pedestrian Warning Series (W11-2)

A diamond-shaped sign, which warns drivers to look out for pedestrians.



Pedestrian Warning Sign

#### Stop Here for Pedestrians (R1-5b)

Typically used at mid-block marked crossings, this sign is rectangular and reads, Stop Here on Red.



Stop Here for Pedestrians

#### In-Lane Signs (R1-6a)

In-street crosswalk signs installed at uncontrolled pedestrian crossings to make the crosswalk more visible and increase driver yielding.

They are more likely to be effective on two-lane, low-speed streets than on multi-lane, high-speed streets, and are prohibited by the Manual on Uniform Traffic Control Devices (MUTCD) at signalized intersections.



In-Lane Sign

#### School Warning Series (S1-1)

A pentagonal sign, warning drivers to look out for school children.



School Warning Sign

#### Bright Sides

Bright sides, or post reflectors, are panels of retro reflective material applied to signposts to increase the sign's nighttime visibility.



Bright sides or Post Reflectors

#### Bump Outs

Bump outs are used at some crosswalks to shorten crossing distance, increase pedestrian visibility, and improve safety at a crossing. Bump outs are often used in areas with on street parking. The street narrowing caused by this device can make motorists uncomfortable causing them to choose lower speeds.



Bump Out

#### Pedestrian Islands

A pedestrian island or a refuge island is a protected space placed in the center of the street to facilitate bicycle and pedestrian crossings. The island enables pedestrians to complete a crossing in two distinct stages and allows them to focus on fewer approach lanes at a given time.



Pedestrian Island

### CROSSING TREATMENT ELEMENTS: PEDESTRIAN SIGNALS

#### Rectangular Rapid Flashing Beacon (RRFB)

Rectangular rapid flashing beacons (RRFBs) are active warning devices used to alert motorists of crossing pedestrians at uncontrolled crossings. They remain dark until activated by pedestrians, at which point they emit a bright, rapidly flashing yellow light.



#### Tri-Color Signal

The traditional tri-colored traffic signal can be used at intersections and mid-block crossings, when traffic volumes warrant it.



Tri-color signal

#### Pedestrian Hybrid Beacon (PHB)

The pedestrian hybrid beacon (previously known as the High intensity Activated crossWalk (or HAWK)) is a pedestrian-activated regulatory device located on the roadside or on mast arms over midblock pedestrian crossings. The beacon head consists of two red lenses above a single yellow lens. The beacon head is "dark" until the pedestrian wishes to cross the street. At this point, the pedestrian pushes a button that activates the beacon. After displaying brief flashing and steady yellow intervals (during which cars must stop) the device displays a steady red indication to drivers and a "WALK" indication to pedestrians, allowing them to cross a major roadway while traffic is stopped. After the pedestrian phase ends, the "WALK" indication changes to a flashing orange hand to notify pedestrians the walk phase has ended and not to enter the crossing. The hybrid beacon displays alternating flashing red lights to drivers while pedestrians finish their crossings before once again going dark at the conclusion of the cycle.



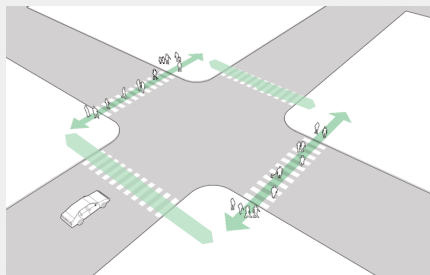
PHB

#### Signal Phase Types: Advanced Pedestrian Phase

Also known as a leading pedestrian interval, an advanced pedestrian phase gives pedestrians an advance walk signal before motorists get a green signal, giving the pedestrian several seconds to start walking in the crosswalk before a concurrent signal is provided to vehicles. This makes pedestrians more visible to motorists and motorists more likely to yield to them. Typical settings provide 3 to 6 seconds of advance walk time.

#### Pedestrian Only Phase

Used in areas with very high pedestrian volumes, this signal stops traffic in all directions to allow pedestrians to cross.



Pedestrian Only Phase

#### Pedestrian Scramble Phase

A pedestrian scramble, also known as a diagonal crossing or Barnes dance, is a pedestrian crossing system that stops all vehicular traffic and allows pedestrians to cross an intersection in every direction, including diagonally, at the same time.



Pedestrian Scramble