



# LEADING PEDESTRIAN INTERVAL

A leading pedestrian interval (LPI) is a brief period at the beginning of a signal phase that permits pedestrians to enter the crosswalk before any other traffic is permitted to advance. LPIs improve the visibility of pedestrians by raising their visibility with right and left turning vehicles. Studies show that LPIs reduce pedestrian vehicle collisions by up to 60%

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## USE

- LPIs are appropriate for use on any street type; however, they are typically used at intersections with significant pedestrian volumes and high volumes of conflicting turning vehicles, such as commercial areas and areas of high student concentrations.
- LPIs may also be used on streets approaching a higher volume streets to improve the visibility of pedestrians crossing parallel to high volume, higher-speed streets.

20 A.C. Fayish and Frank Gross, "Safety effectiveness of leading pedestrian intervals evaluated by a before-after study with comparison groups," Transportation Research Record No. 2198 (2010): 15-22

## DESIGN

- Requires the concurrent use of pedestrian signals.
- Shall not be used with leading left turns.
- Must be a minimum of three seconds in duration, but more commonly provide five or more seconds to permit pedestrians to cross at least one lane of vehicle traffic.
- Should be accompanied by audible pedestrian signals for visually impaired pedestrians.

## SPECIAL CONSIDERATIONS

- Restrict "Right on Red" turns at locations where LPIs are used. Right on red turns are generally undesirable at intersections with high and regular pedestrian volumes.
- At locations with extremely high pedestrian volumes, combine the LPI with signal timing that displays the "DON'T WALK" signal for pedestrians even while the green phase is still shown for parallel traveling vehicles. This brief period at the end of the cycle provides an opportunity for vehicles to complete turns after the majority of pedestrians have completed their crossing.
- Combine LPIs with bulb-outs to further increase pedestrian visibility and safety.

- Bicyclists may also benefit from LPIs by clearing an intersection to permit vehicle turns.
- A lagging pedestrian interval option operates similarly to a leading pedestrian interval, except that the pedestrian walk interval starts several seconds after the adjacent through movement phase. This option allows a waiting right-turn queue to clear before the pedestrian walk indication is presented and reduces conflicts with right-turning vehicles. It is applicable to intersections where there is a high right-turn volume and either an exclusive right-turn lane (or lanes) or the two intersecting roads have one-way traffic.
- A pedestrian scramble or Barnes Dance is an exclusive pedestrian phase that allows pedestrians to cross the intersection in any direction and in a diagonal path. It is applicable to intersections where there are extremely high numbers of pedestrians.

## REFERENCES

- MMUTCD, 2011
  - Part 2 Signs: Chapter 2B. Regulatory Signs, Barricades, and Gates [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmutcdpart2b\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmutcdpart2b_2011.pdf)
  - Part 2 Signs: Chapter 2C. Warning Signs [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmutcdpart2c\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmutcdpart2c_2011.pdf)
  - Part 3 Markings: Chapter 3B. Pavement and Curb Markings
  - Section 3B.16: Stop and Yield Lines [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmutcdpart3\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmutcdpart3_2011.pdf)
  - Part 4 Highway Traffic Signals: Traffic Control Signals – General
  - Section 4B.04: Alternatives to Traffic Control Signals [http://mdotcf.state.mi.us/public/tands/Details\\_Web/mmutcdpart4\\_2011.pdf](http://mdotcf.state.mi.us/public/tands/Details_Web/mmutcdpart4_2011.pdf)

## DETAILS

- MDOT Pavement Marking Standards
  - 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)