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Issue 45

Effective Crosswalk Lighting

From the desk of ODOT's Office of Roadway Engineering

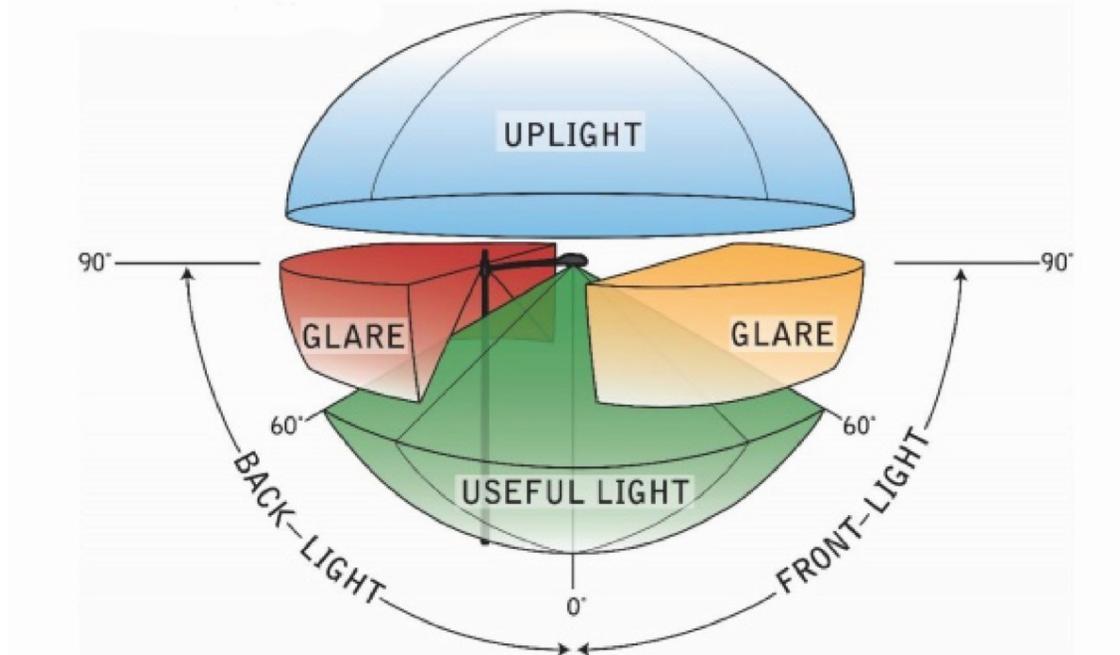
Over the past decade, the Federal Highway Administration (FHWA) has conducted new research looking at lighting options to increase pedestrian safety. Currently three out of four pedestrian fatalities occur at night, with "lack of lighting" cited as a contributing factor.

While safety measures such as reducing speeds and adding Rectangular Rapid Flashing Beacons (RRFBs) do improve the visibility of pedestrians crossing the street, illuminating pedestrians before they enter and while they are in the crosswalk also is extremely important. Here are three important factors to consider when improving pedestrian visibility through lighting.

Choose the Right Fixture

When designing lighting for a crosswalk, it is critical to select an appropriate fixture and install it at a height that provides an effective distribution of light. While a city may have a specific aesthetic style for its light fixtures, that style may not provide the amount of light needed to illuminate a pedestrian.

For example, acorn-style light posts direct light to the sky instead of onto the roadway. Cities should balance their strategies for place-making and pedestrian visibility. In high risk pedestrian areas, cities should select fixtures that better direct lighting down toward the roadway.

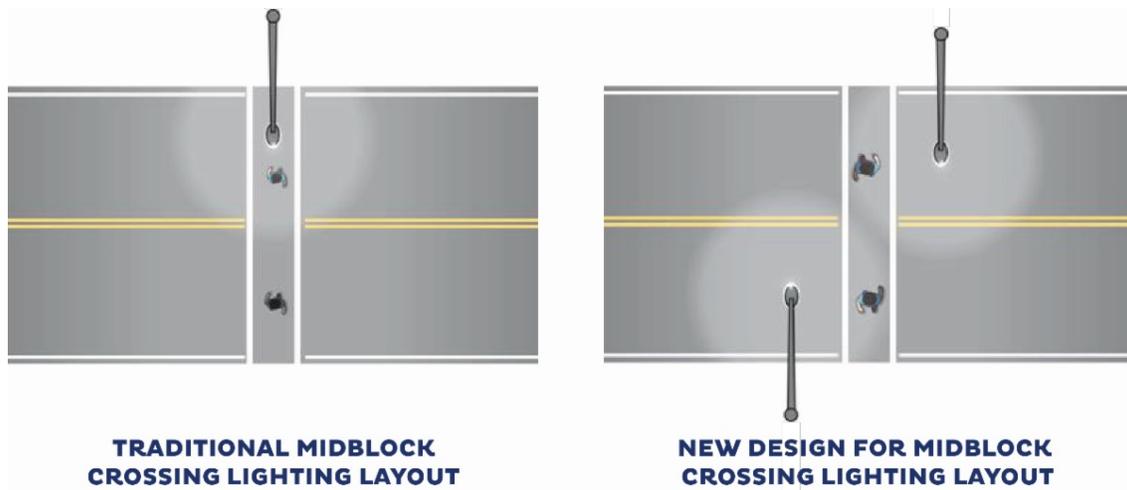


Source: Colorado Department of Transportation, *Lighting Design Guidelines*, page 40

Location, Location, Location

Place light fixtures so that they effectively illuminate people using the crosswalk. It is common to place lighting directly above a crosswalk. However, this traditional design illuminates the pavement of a crosswalk but does little to highlight a person using the crosswalk.

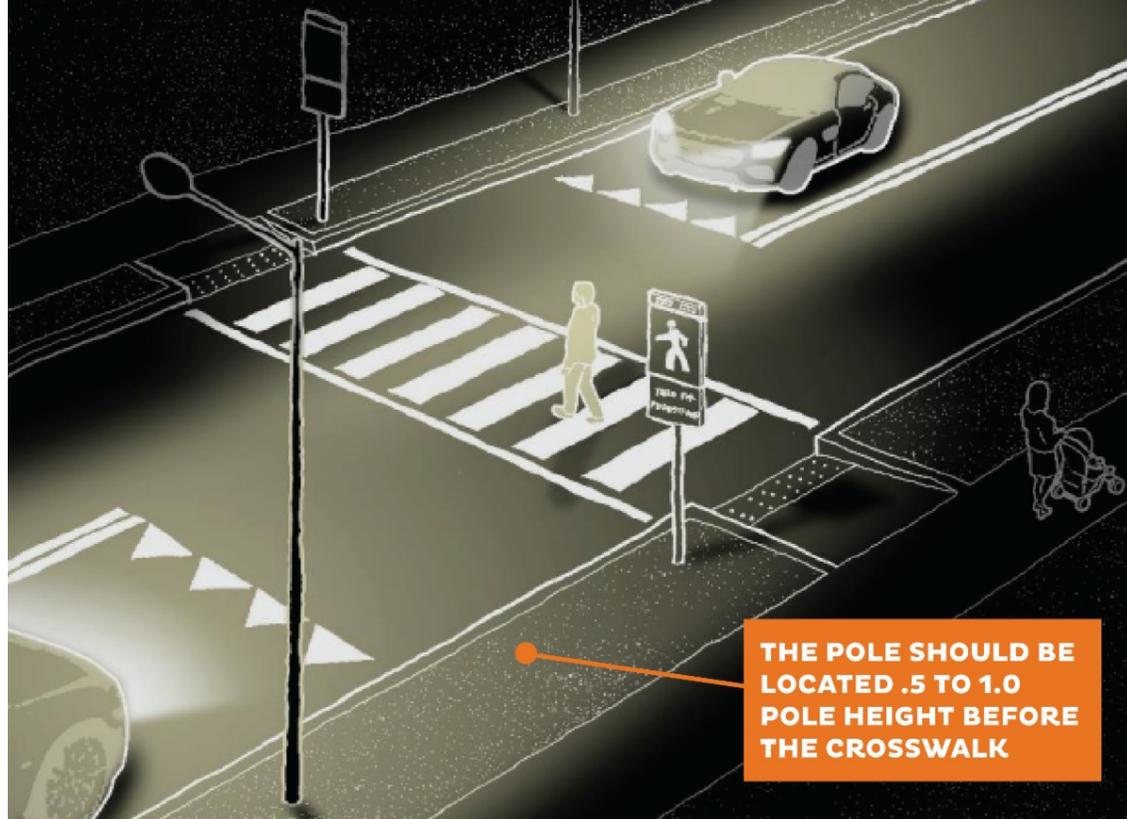
Instead, by placing the light between the crosswalk and an approaching vehicle it creates a “positive contrast” and improves visibility, allowing the driver to detect pedestrians entering the roadway from a safe stopping distance. Lights should be placed one half to a whole pole height before the crosswalk.



**TRADITIONAL MIDBLOCK
CROSSING LIGHTING LAYOUT**

**NEW DESIGN FOR MIDBLOCK
CROSSING LIGHTING LAYOUT**

Source: Federal Highway Administration, *Informational Report on Lighting Design for Midblock Crosswalks*, Report No. FHWA-HRT-08-053, 2008

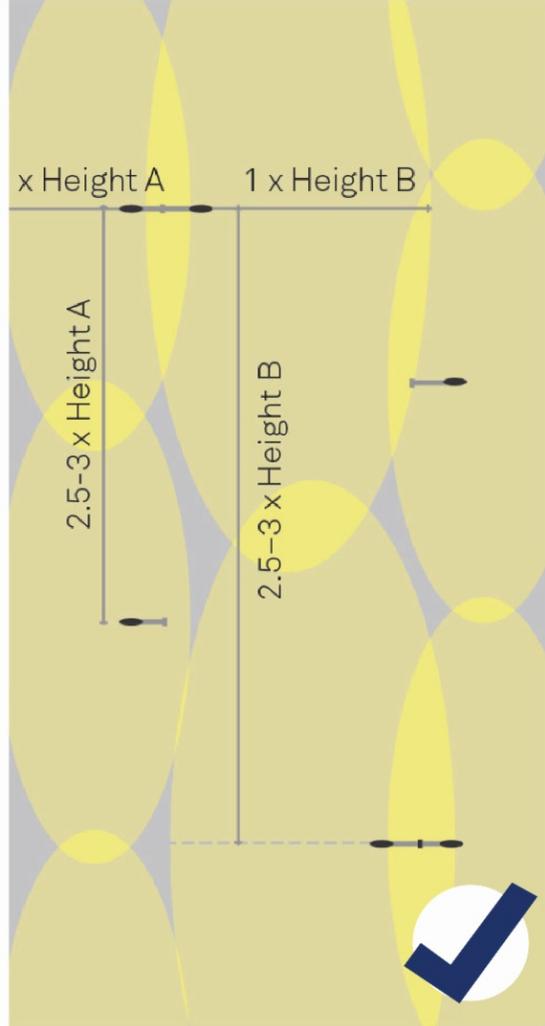
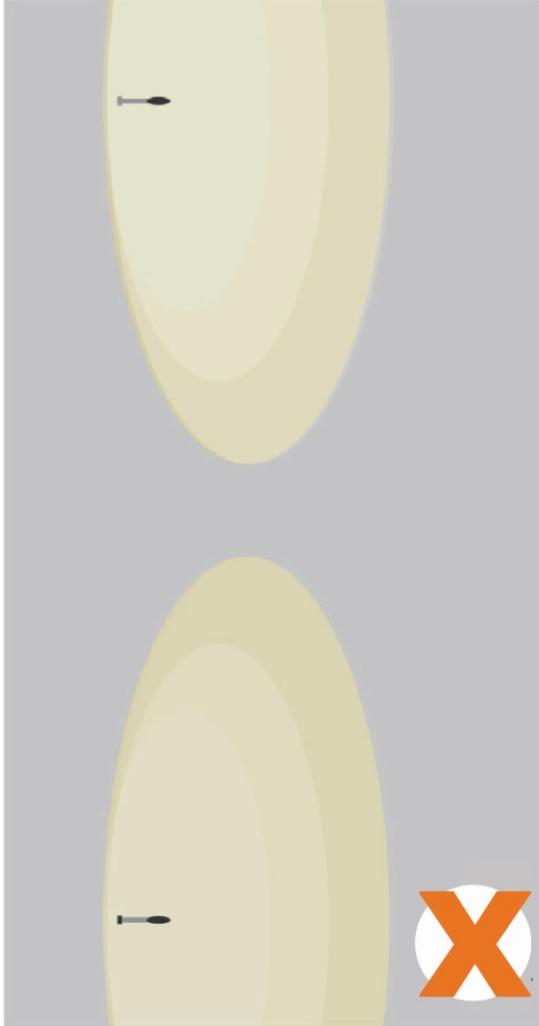


Source: Colorado Department of Transportation, *Lighting Design Guidelines*, page 40

Increase Brightness

A third way to enhance crosswalk safety is by increasing lighting brightness. According to FHWA report PL-01-034, increasing positive contrast crosswalk lighting to 40 lux (4 fc) just at the crosswalk and not the surrounding areas reduces pedestrian crashes by 66%. Where 40 lux is not possible, studies have also found that even 20 lux (2 fc) levels can still have a positive impact on pedestrian safety.

While increasing the crosswalk brightness is important, there is such a thing as over-lighting an area, which can have negative effects. If an area is over lit, it can result in glare and blindness for a driver. Similarly, quickly moving from a bright, well-lit environment to a location with lower lighting levels does not give the driver's eyes enough time to adjust to the lighting changes. Lighting along the roadway should be evenly spaced to avoid pooling and glare.



MEASURE THE WIDTH OF THE STREET AND THE HEIGHT OF THE PROPOSED LIGHT POLES TO DETERMINE THE REQUIRED SPACING OF LIGHTS FOR EVEN COVERAGE. LIGHT POLES THAT ARE SPACED TOO FAR APART RESULT IN DARK AREAS THAT LEAVE STREET USERS FEELING UNSAFE.

Source: Global Designing Cities Initiative, "[Lighting Design Guidance](#)"

There are multiple ways to create adequate roadway lighting for pedestrians. It is important to look at all the options in the context of your specific scenario. Every road crossing is different. Even when two crossings seem to have the same layout, the driver and pedestrian interactions may differ, warranting a different response. It is important to look at each design scenario individually to determine the best configuration option for pedestrian lighting and visibility.

For more questions on pedestrian lighting, please contact ODOT's Jonathan Young at Jonathan.Young@dot.ohio.gov.



Announcements

- The American Academy of Pediatrics Ohio Chapter is accepting

applications for its annual bike helmet giveaway. Apply online by Monday, March 2.

- Be sure to submit your Safe Routes to School applications by 5 PM, Friday, March 6. The application and guidance are online.
- Check this out: Rails to Trails Conservancy conducted a BikeAble study for Cleveland and created a story map outlining Cleveland's active transportation agenda.
- **RESCHEDULED – AT Network Call** The Active Transportation Network call has been rescheduled to Tuesday, March 24 at 10 AM. Register today.

Questions? Feedback?

Drop us a line, bikeohio@dot.ohio.gov



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