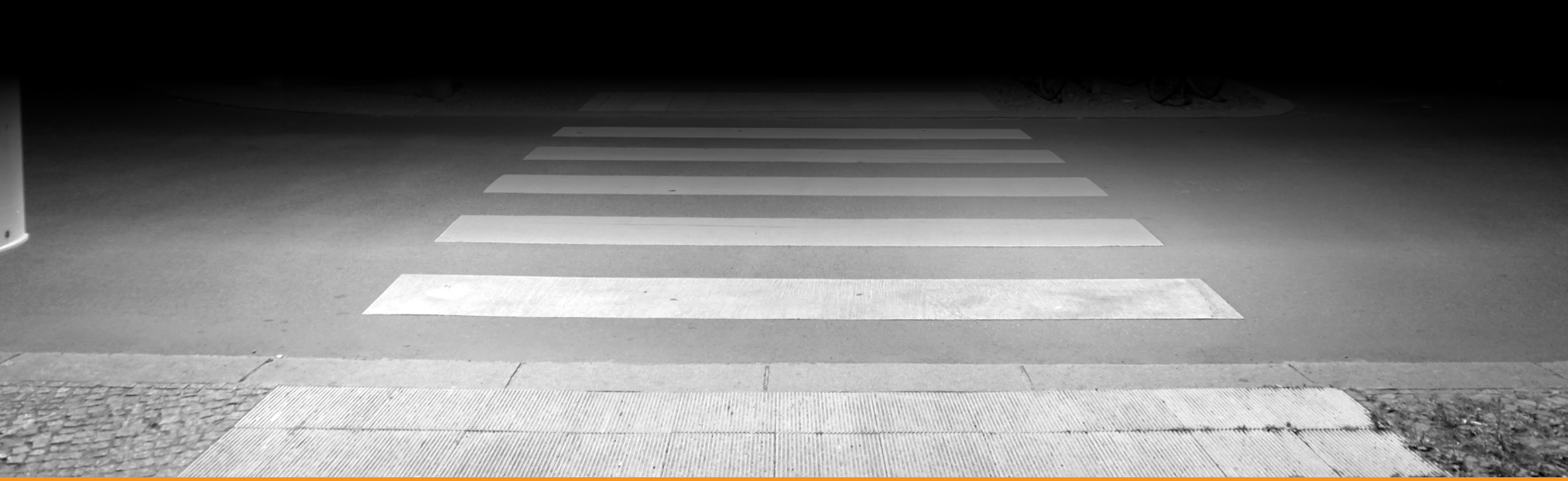
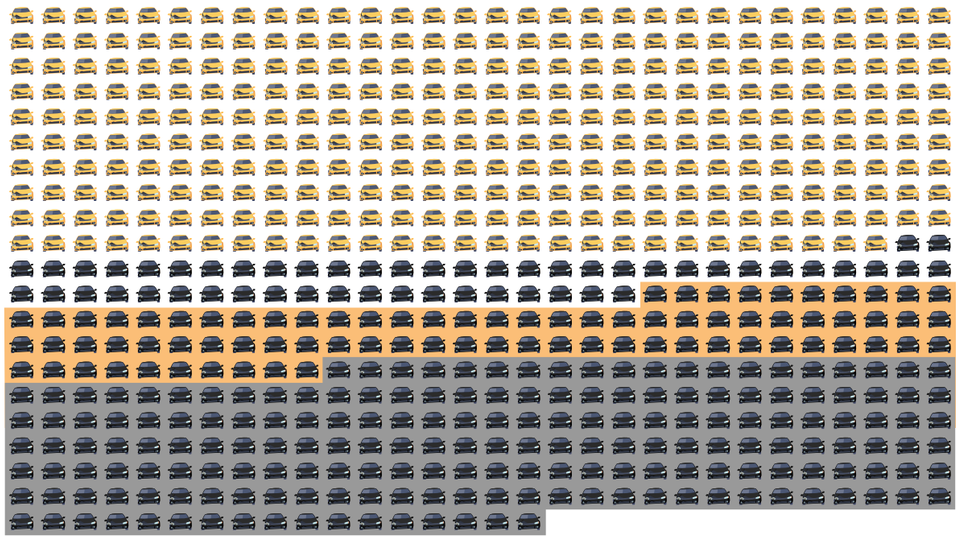
JSF TECHNOLOGIES
SOLAR TRAFFIC SOLUTIONS

Crosswalk & Intersection

OVERHEAD LIGHTING GUIDE



Collisions can happen anywhere and are attributed to a wide variety of causes. A study of 617 pedestrian-vehicle collisions* showed that 51.6% of these collisions happened at night 🚘 and those collisions were evenly distributed between lit and unlit roads.

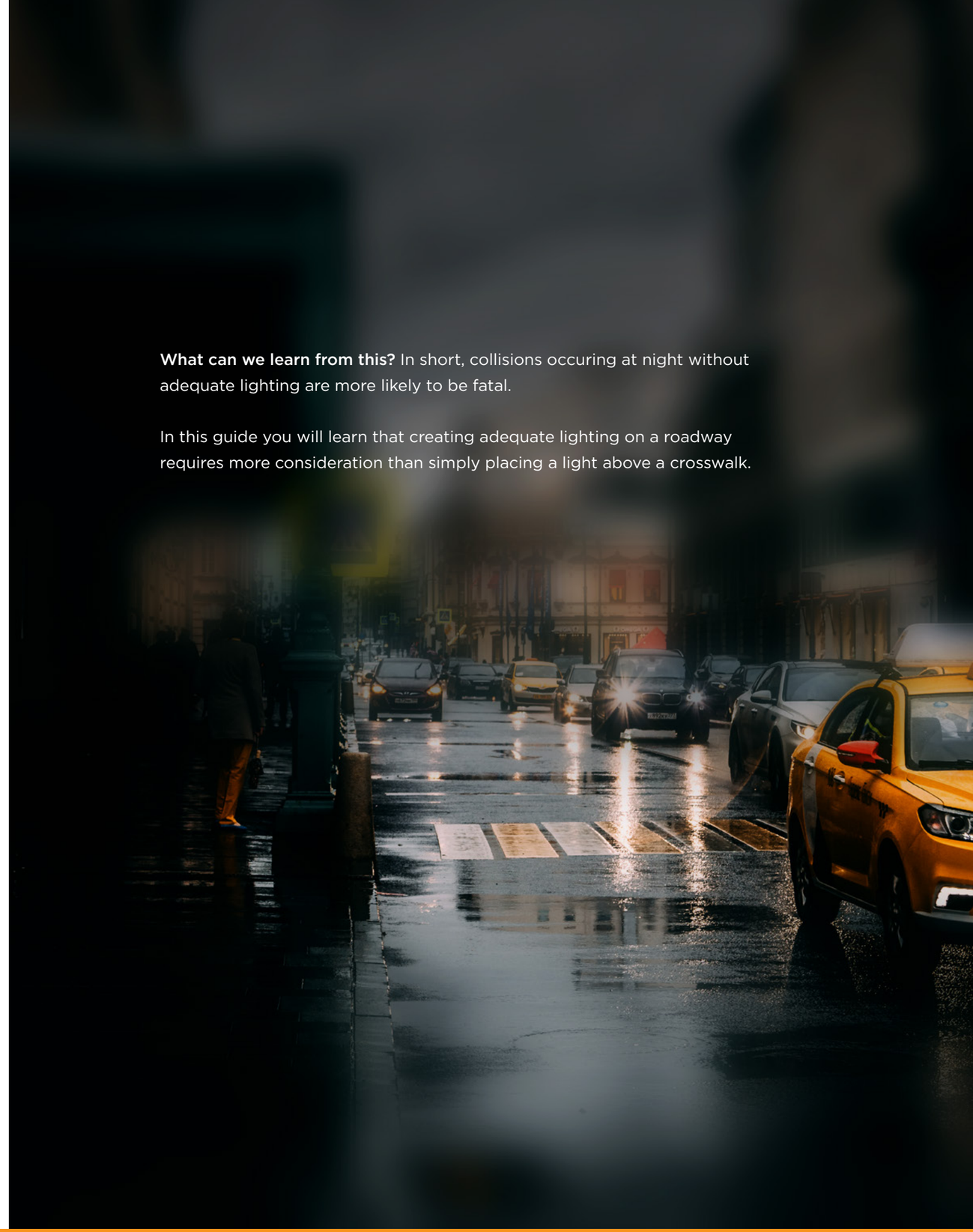


Further breaking down the numbers. In collisions where a fatality occured, 58.6% occured at night on unlit roads with 25.3% at night on lit roads. The pedestrian's lack of visibility as they crossed the road is considered to be the primary cause.

*Informational Report on Lighting Design for Midblock Crosswalks, US Department of Transportation, Federal Highway Administration

What can we learn from this? In short, collisions occuring at night without adequate lighting are more likely to be fatal.

In this guide you will learn that creating adequate lighting on a roadway requires more consideration than simply placing a light above a crosswalk.



VISIBILITY & CONTRAST

When it comes to pedestrian visibility we look at a few key elements; roadway lighting and signalling, vehicle headlamps, pedestrian clothing, and the visual background at that location. All of these elements distill down to one key component; contrast.

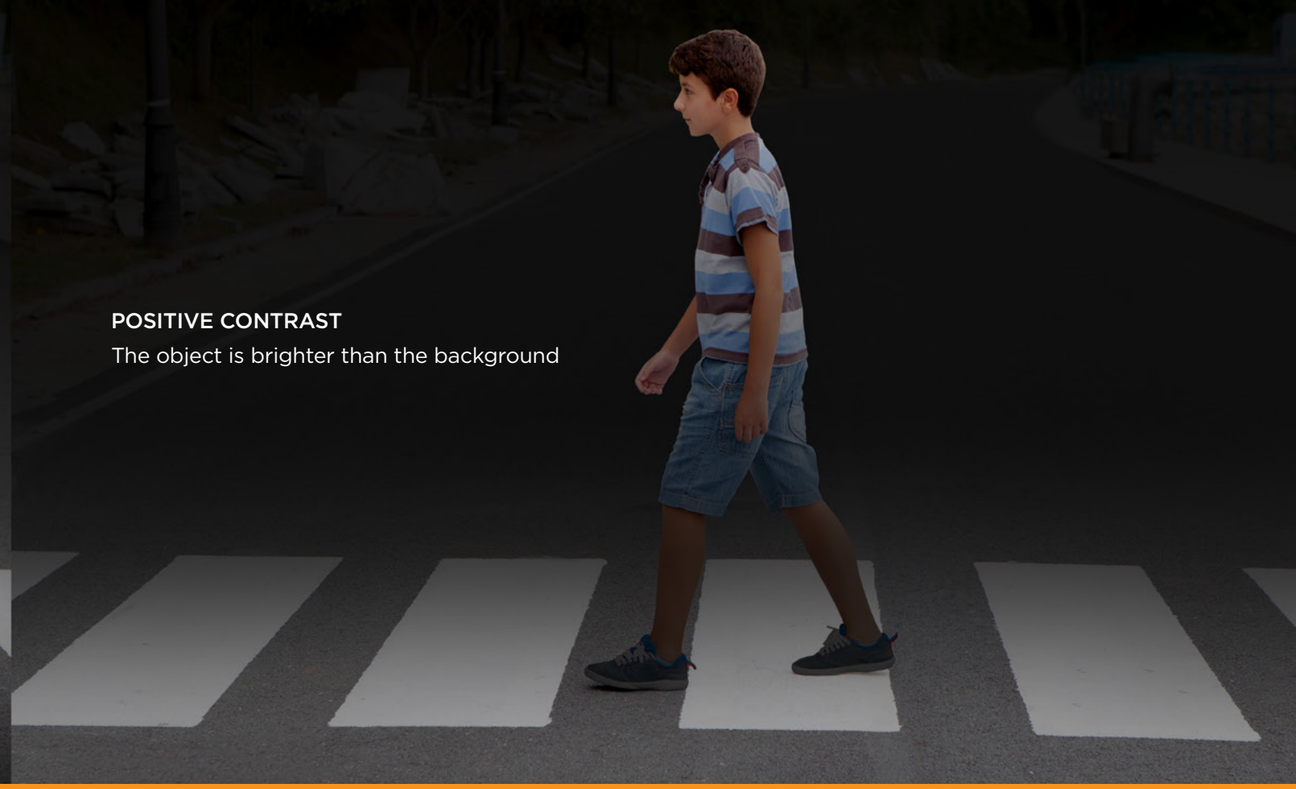
At night, luminance contrast is the only contrast we can affect and the one we use to see pedestrians. In the images below we show the difference between negative and positive luminance contrast.

PEDESTRIAN VISIBILITY: this is the distance at which a driver can see a pedestrian well enough to be able to respond appropriately to the pedestrian's presence.

CONTRAST: there are two types of contrast that we look at; color contrast, which is based on the color difference between an object and its background. More importantly we look at luminance contrast, which is the difference in brightness between an object and its background.

Looking at the below examples comparing positive and negative contrast its obvious positive contrast create far greater visibility of a pedestrian for approaching traffic.

NEGATIVE CONTRAST
The object is darker than the background



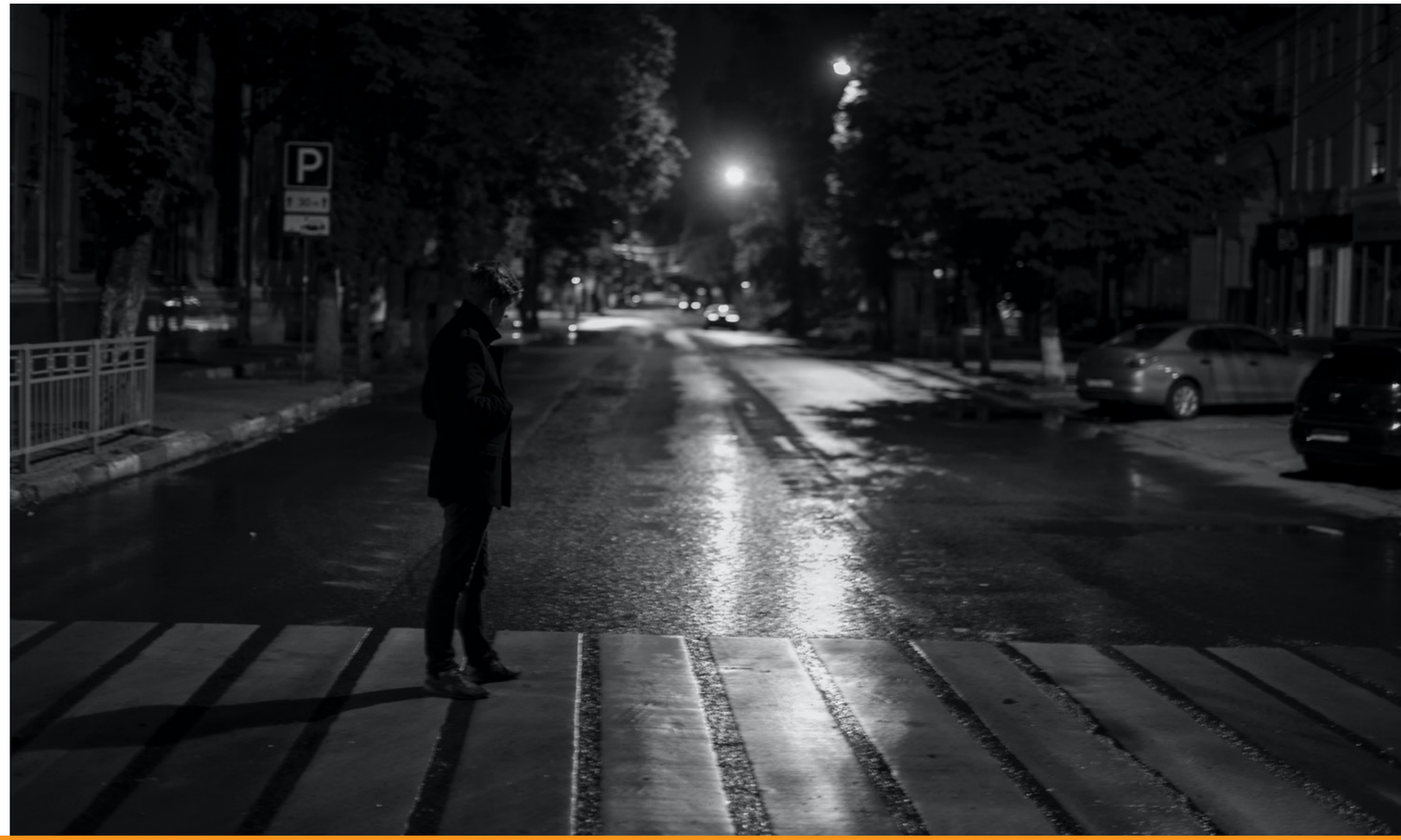
POSITIVE CONTRAST
The object is brighter than the background

VERTICAL LUMINANCE

The goal of any crosswalk lighting system is to create adequate vertical luminance. What is **VERTICAL LUMINANCE?** The lumination on a vertical surface - that vertical surface being our pedestrian. It is calculated with a complicated calculus-laden formula that tells us placement of our lighting in order to create a minimum of 20 lux at a height of 5ft above the road surface.

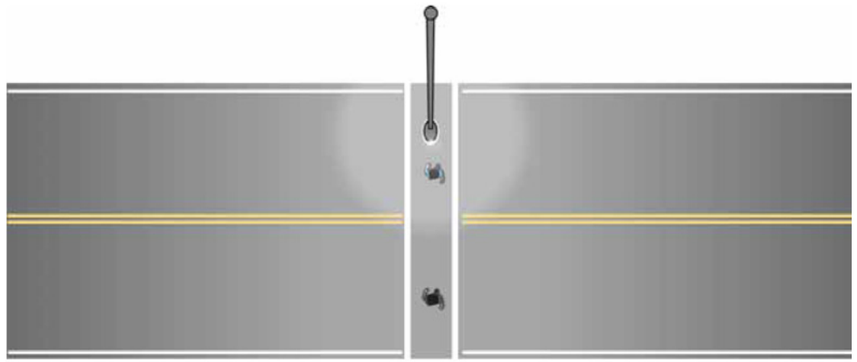
In designing a crosswalk lighting system, selecting an appropriate luminaire and luminaire height are critical. Since the object of interest is vertical, the intensity distribution should have a horizontal component. If all the light from the luminaire is directed downward, the vertical profile of the pedestrian will not be adequately illuminated.

The desired effect of your lighting installation is to achieve 20 lux on the object of interest (typically our pedestrian) across the entire roadway. This enables approaching vehicles to detect a pedestrian before they step into the crosswalk.

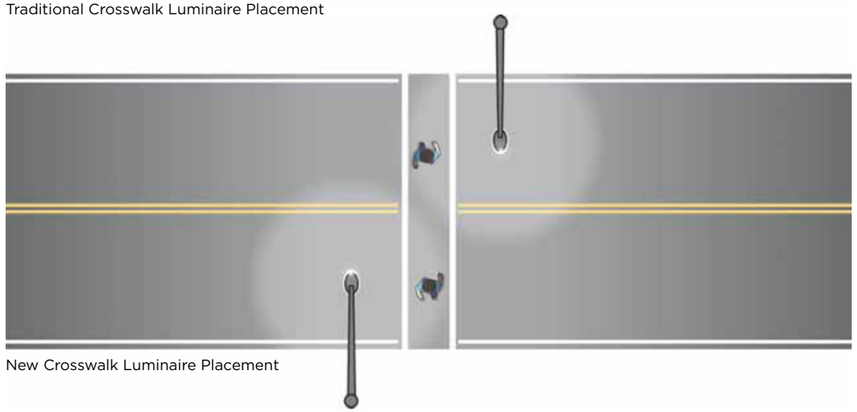


CROSSWALKS

Typically a single luminaire will be installed directly above the crosswalk. While this may provide lots of light on the crosswalk itself it does not provide adequate vertical luminance on the pedestrian.

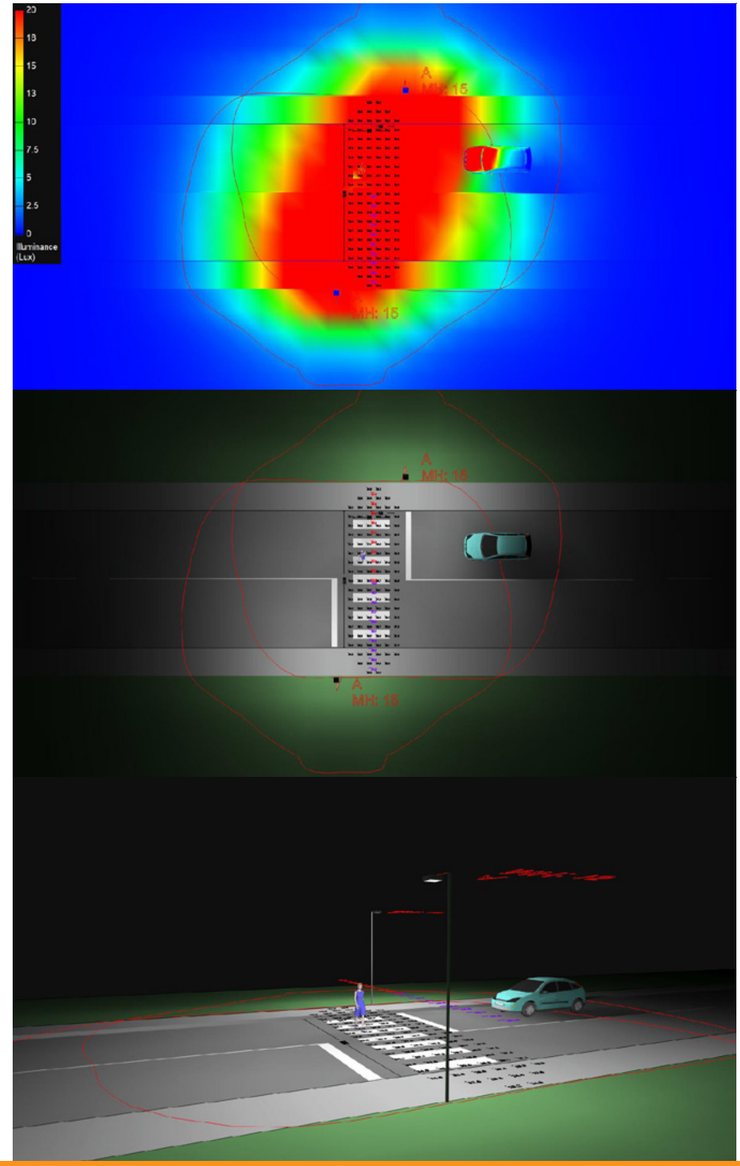


Traditional Crosswalk Luminaire Placement



New Crosswalk Luminaire Placement

We know the minimum vertical illuminance required is 20 lux but with a light directly above the pedestrian (our vertical surface) we are not acheiving sufficient (or any) vertical illuminance. By moving the luminaire at least 3m (10ft) ahead of the crosswalk we can acheive adequate vertical illuminance.



"Historically, the use of silhouette or negative contrast for the detection of a pedestrian was recommended. However, new research is showing positive contrast has many advantages, particularly when considering the reinforcement of positive contrast with headlamps."

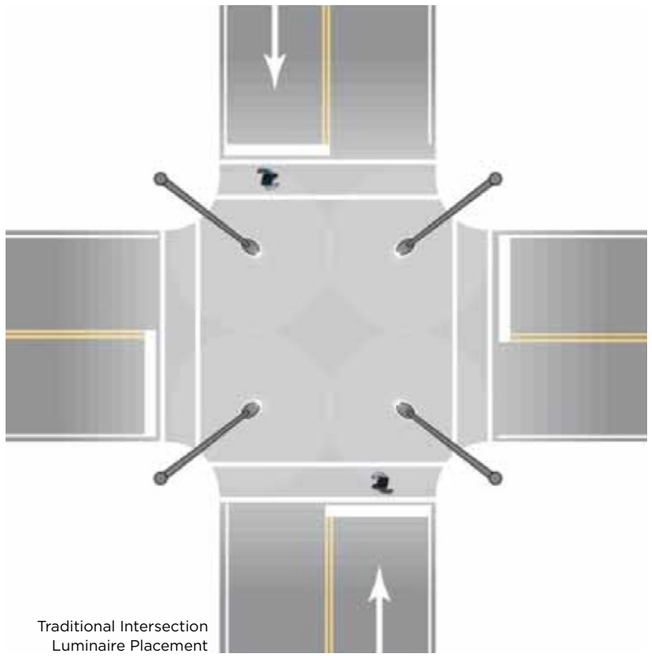
"The vertical illuminance on the pedestrian is increased when the pole is placed in advance of the crosswalk."

Source: ANSI/IES RP-8 18 Design and Maintenance of Roadway and Parking Lot Lighting

INTERSECTIONS

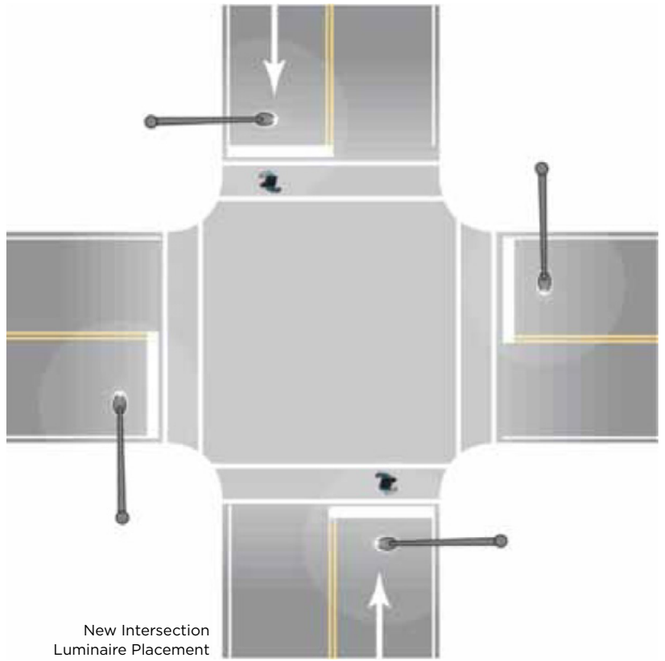
As we've already learned, focusing on high level pavement illumination doesn't create vertical luminance on our pedestrian and may even create negative contrast as the lights are placed behind our pedestrian in relation to the approaching vehicle.

Below, we have an image of a standard intersection lighting setup. As you can see it provides a high level of pavement illumination.



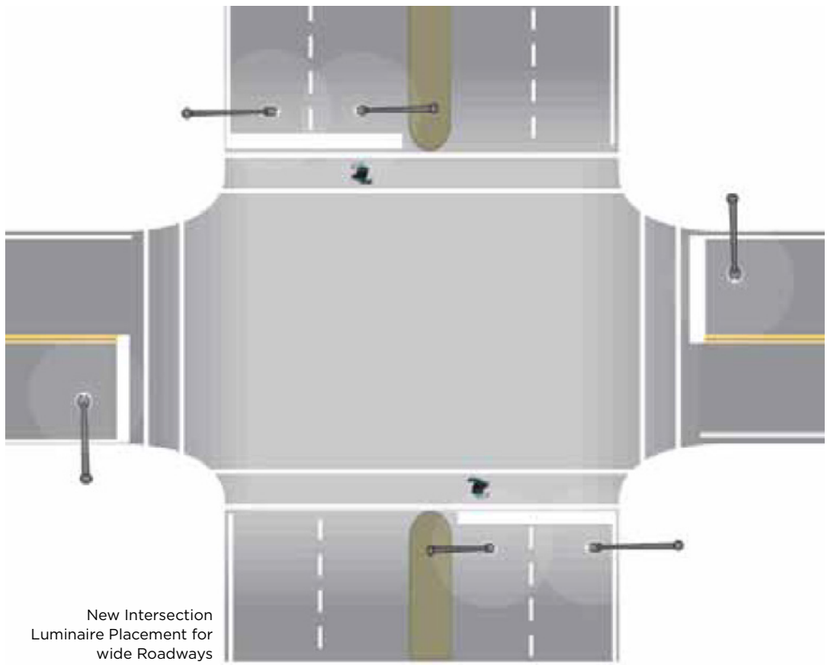
Traditional Intersection Luminaire Placement

By moving the luminaire at least 3m (10ft) ahead of the crosswalk (as below), we can achieve improved vertical luminance and positive contrast of our pedestrian.



New Intersection Luminaire Placement

At wider roadways, we can see how another luminaire being added in the median is required to provide the required amount of illumination across the roadway.

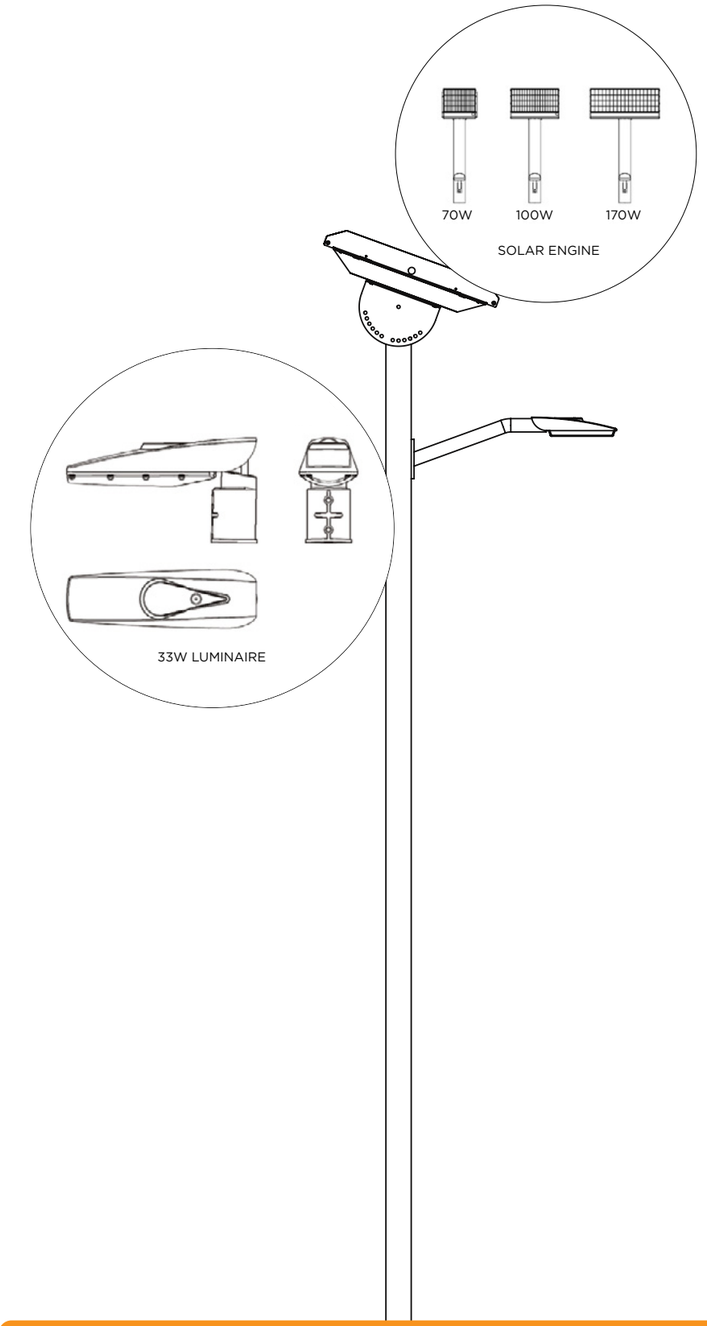


New Intersection Luminaire Placement for wide Roadways

SOLUTIONS

JSF Technologies now offers overhead lighting paired with intelligent traffic beacons. These customizable, solar-powered, and easily installed systems are ideal for mid-block or uncontrolled crosswalks. Pair any AB Series Crosswalk Beacon or LED Sign with recommended Overhead Illumination, to create the ideal Lumiwalk Crosswalk System for your application

LEARN MORE ABOUT LUMIWALK



LEARN MORE ABOUT OVERHEAD ILLUMINATION

lumiwalk

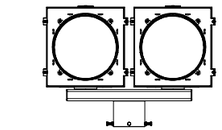
CROSSWALK BEACONS X ILLUMINATION

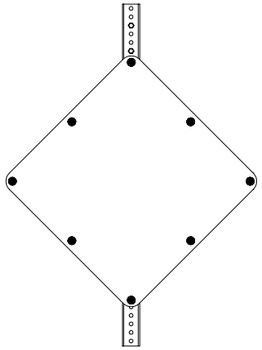
Through select partnerships, JSF Technologies has developed a new standard of advanced intelligent lighting systems. Introducing LumiWalk, a union of our AB Series crosswalk beacons with overhead illumination.

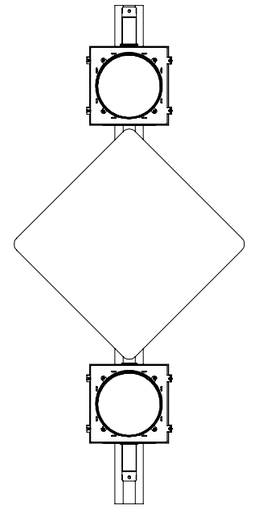
Creating greater visibility of pedestrians with overhead lighting while alerting drivers with pedestrian-activated advanced warning beacons. Greater visibility and safety in one installation.

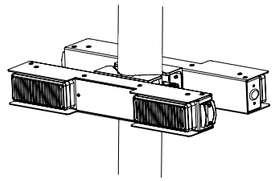
Ideal for any mid-block or uncontrolled crosswalk installation. Select any AB Series Crosswalk Beacon or LED Sign with recommended Overhead Illumination, to create the ideal LumiWalk Crosswalk System for your application.

CONNECT WITH US TODAY


AB-2400


AB-5800


AB-7400


AB-9407

*COMPATIBLE WITH ALL AB SERIES BEACONS

LEARN MORE ABOUT AB SERIES