Schréder
Experts in lightability™

FOCUS

# Pedestrian crossings

## Life-saving lighting solutions

# Content


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Road Business
Segment Manager

## Pedestrian fatalities are not inevitable

Looking at the statistics, I was horrified to learn how many pedestrians are killed each year in our cities. They are undoubtedly among the most vulnerable road users.

My first question was how this could happen when we have the technology to prevent these tragedies.

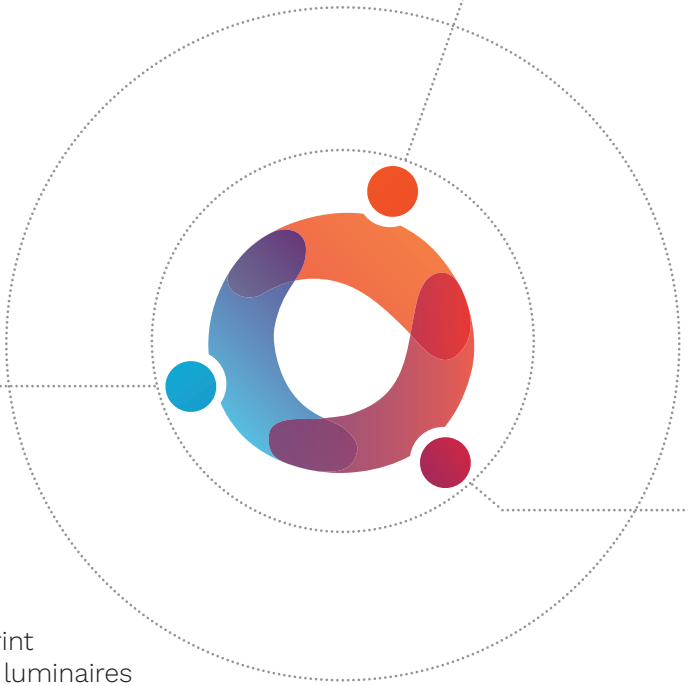
As accidents in spaces where vulnerable users meet vehicles often have tragic consequences, Schréder has developed specific and affordable solutions to improve safety there.

The quality of the lighting of pedestrian crossings is directly related to the level of danger. Together with our stakeholders, we want to support cities in reducing road deaths, and we continue to invest to improve safety for all.

## Together for our Future

Schréder has developed a cohesive, company-wide sustainability strategy called “Together for our Future”. This commitment is structured around three axes encompassing the relevant prioritised UN Sustainable Development Goals (SDGs).

Sustainability is embedded into our strategy, structure, processes and culture. Working this way is the only way forward for truly positive and lasting benefits. Promoting active mobility and safety for all with the best lighting solutions on the market is a way to create sustainable value for communities.



**FOR OUR PEOPLE**

Being responsible for our people by developing human growth through diversity and respect for human rights

Focus areas:
› Gender diversity
› Human rights

**FOR OUR PLANET**

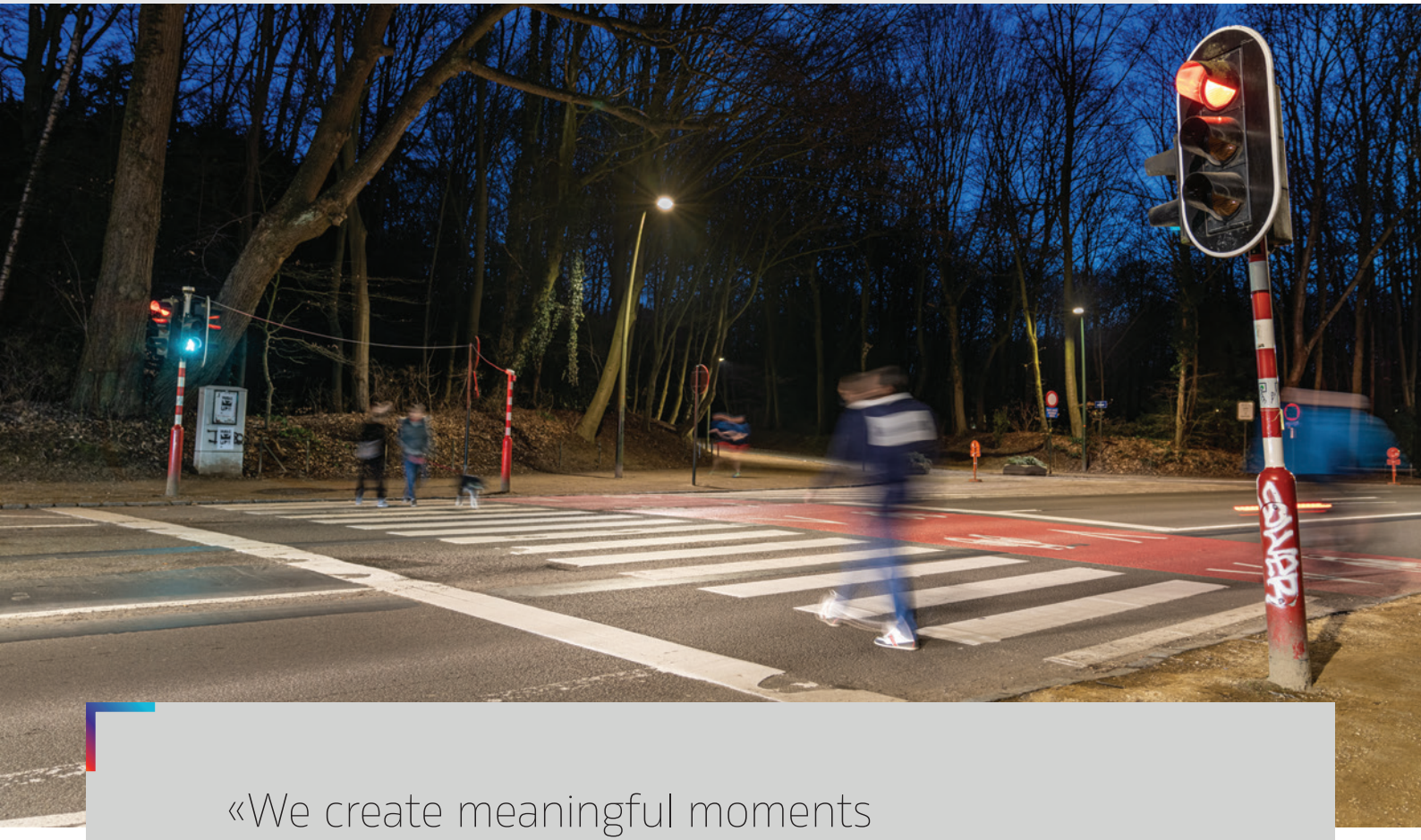
Being responsible for our planet by reducing our own and our customers’ environmental impact

Focus areas:
› Company carbon footprint
› Energy efficiency of our luminaires
› Circular economy

**FOR OUR COMMUNITY**

Being responsible for our community by having a resolutely positive impact on society through our solutions

Focus areas:
› Lighting with a positive social impact
› Respect for fauna and flora ecosystems



«We create meaningful moments for people in public spaces by making them safe, comfortable and sustainable.»

**Nicolas Keutgen**
Chief Innovation Officer – Schréder

# Safety remains **a major concern for cities**

1

**1 in 5**

road fatalities in the EU are pedestrians.

2

**73 %**

of road fatalities occur on urban roads.

3

**PEAK IN ACCIDENTS**

early morning and early evening during the week.

4

**+4,700**

pedestrians die each year in road accidents in the EU.

5

**1 in 2**

pedestrian fatalities is a person aged 65 or older. Children and young adults (0-24) account for 16% of pedestrian fatalities.

6

**3/4 DRY SURFACES**

The road surface was dry for 75% of pedestrian fatalities.

Source: European Road Safety Observatory

# The 5 main **challenges for pedestrian crossings**

## 1 Distinguishing the crossing from its surroundings

## 2 Increasing driver vigilance

## 3 Making pedestrians visible in any conditions

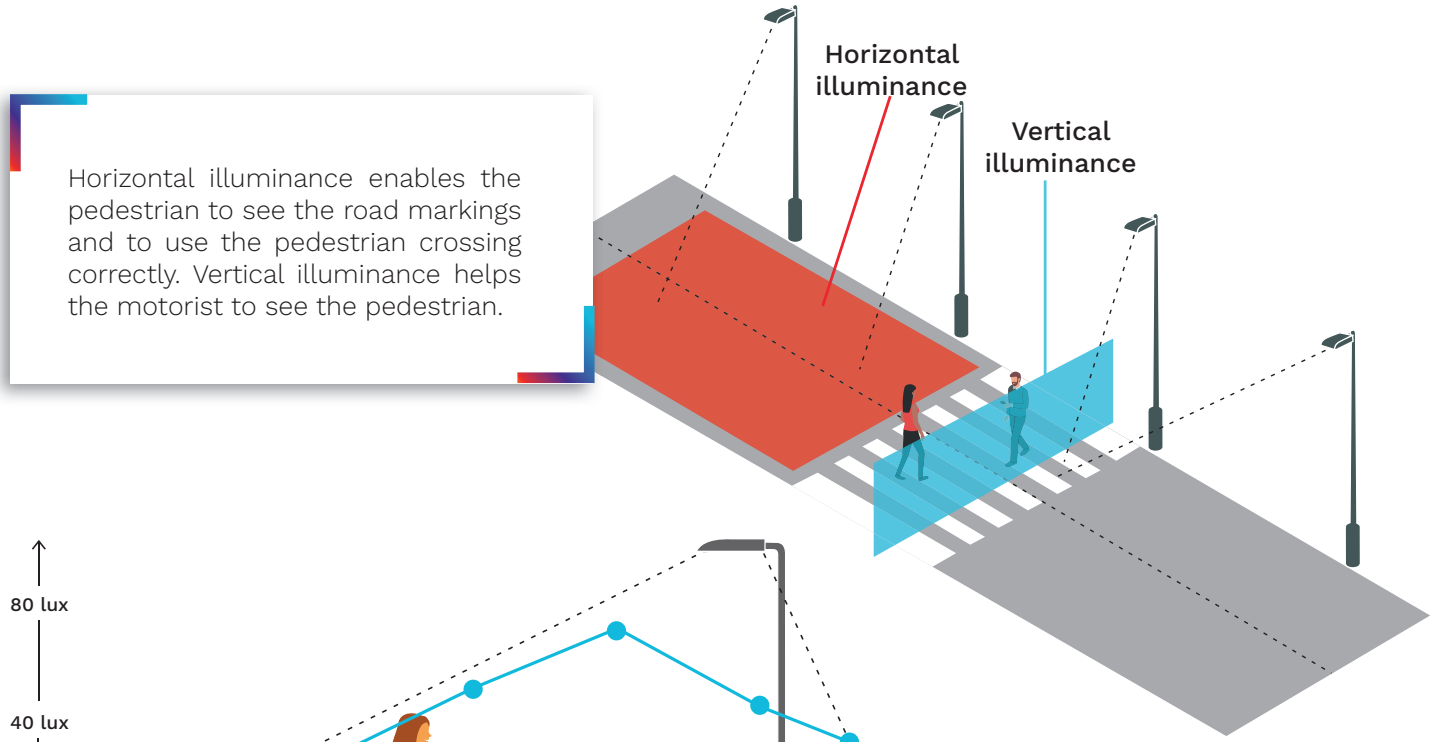
## 4 Encouraging pedestrians to cross the road safely

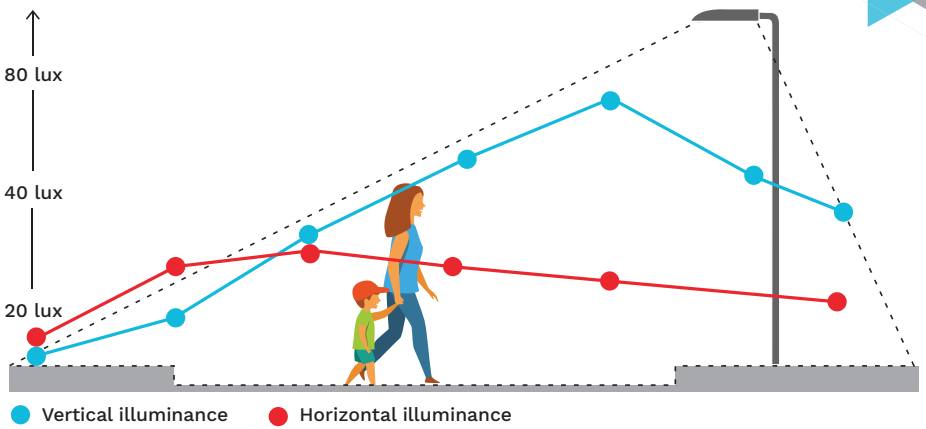
## 5 Minimising glare for drivers and pedestrians

# A few things to know about pedestrian crossings

## Vertical/horizontal illuminance

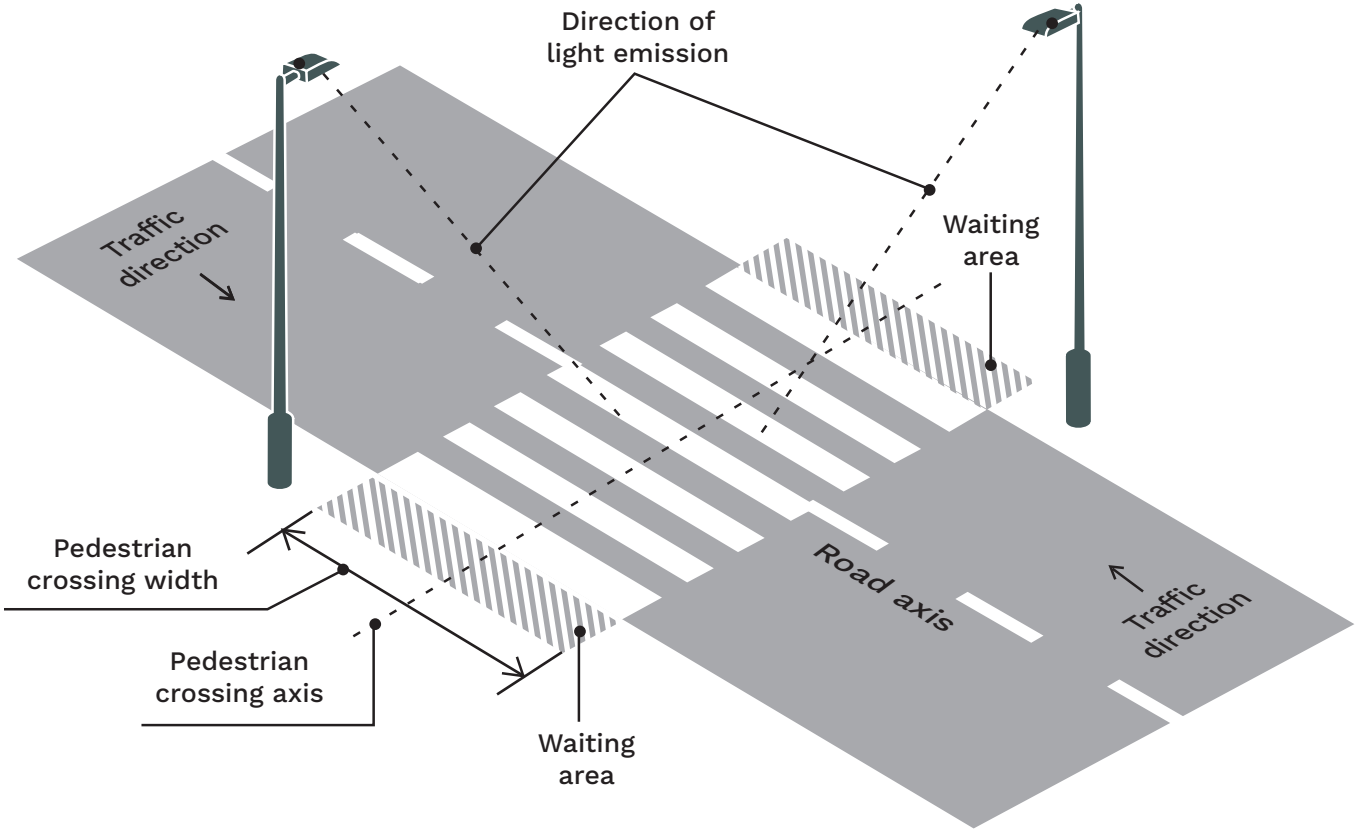
Horizontal illuminance enables the pedestrian to see the road markings and to use the pedestrian crossing correctly. Vertical illuminance helps the motorist to see the pedestrian.



# Topography of a pedestrian crossing

A pedestrian crossing is a limited but highly structured area where standards and customs apply. It is important to understand the topography of this area.

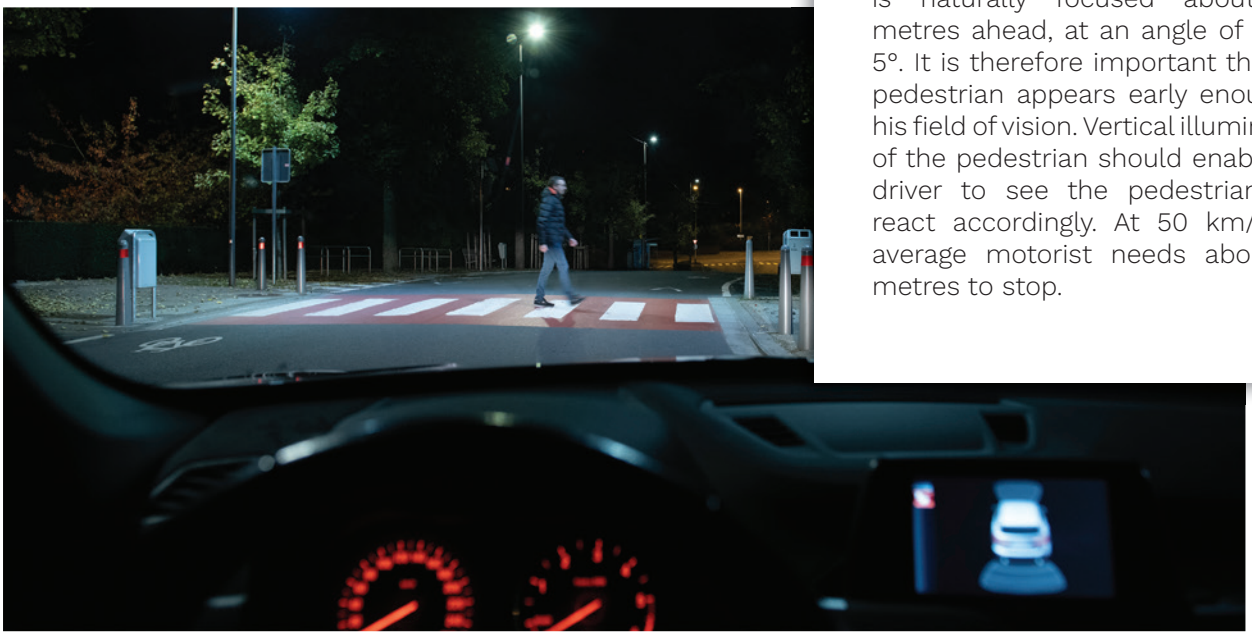


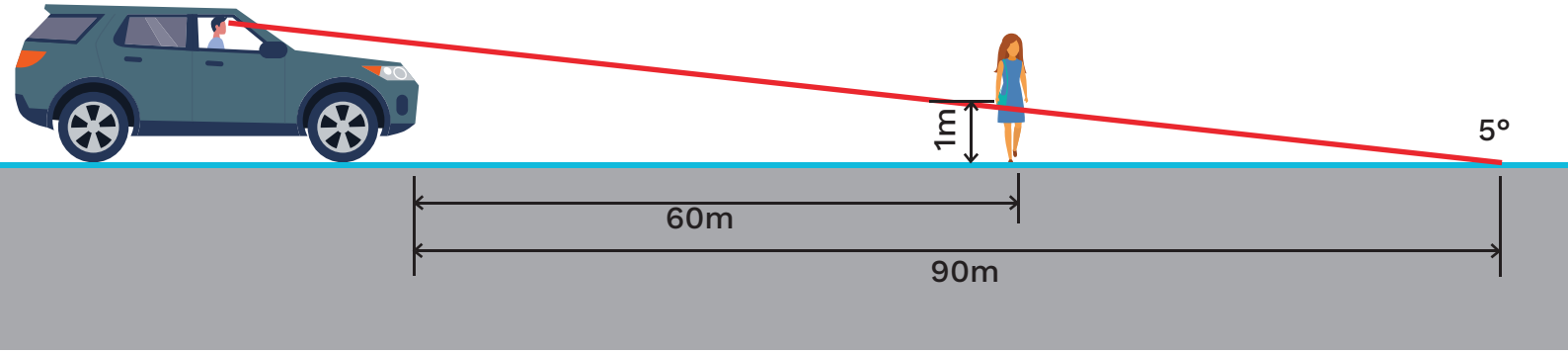
## A visible colour contrast

The contrast created by a different colour temperature from the surrounding road lighting is an effective way to highlight the pedestrian crossing and attract drivers' attention.

## Pedestrian in the driver's eyes

In urban areas, the driver's attention is naturally focused about 100 metres ahead, at an angle of about 5°. It is therefore important that the pedestrian appears early enough in his field of vision. Vertical illumination of the pedestrian should enable the driver to see the pedestrian and react accordingly. At 50 km/h, an average motorist needs about 43 metres to stop.





# What do **the rules** say?

**Pedestrian crossings are sections of the road where good interaction between pedestrians and drivers is vital. The right lighting is essential to create the safest conditions for all.**


Suitable lighting improves safety at pedestrian crossings, which need to be visible in various weather conditions and at all times of the day. It ensures the best conditions for drivers to understand the traffic situation and recognise the pedestrian's silhouette, and makes pedestrians aware of their surroundings, the pedestrian crossing and approaching vehicles.

The CIE gives **recommendations and guidelines** concerning the rules and levels for road lighting (including pedestrian crossings), as well as calculation procedures and methods of measurement. National standardisation bodies then convert these recommendations into **local standards**.

At the international level, there is no harmonised definition for appropriate pedestrian crossing lighting and how to design it. However, existing regulations **generally recommend a high level of contrast**. They emphasise that pedestrians should be distinguished, mainly by the level of light intensity or the colour of the light.

Positive contrast solutions are favoured for pedestrian crossings illuminated by dedicated luminaires with **asymmetrical light distribution**. These luminaires have specific light distributions, adapted to the position of the luminaire, whether it is on the right or left side of the road and the direction of the traffic.

## SOME BASIC PRINCIPLES APPLY GENERALLY:

- The horizontal illuminance on the pedestrian crossing should equal to 3 times the horizontal illuminance of the roadway at the edge of the crossing (but should be less than 4 times greater);

- Horizontal and vertical illuminance calculation zones should extend over the full width of the roadway and the width of the pedestrian crossing, including waiting areas.

# Towards a new **dedicated approach**

A working group including the Foundation for Civil Engineering Development, the Universities of Gdańsk and Warsaw, and the Research Institute of Roads and Bridges recently came up with guidelines for pedestrian crossing lighting(1). This academic work proposes **a specific way to maximise safety for pedestrians**.

They propose introducing **new lighting classes (PC)** for dedicated pedestrian crossing lighting solutions. Their purpose is to create a highly positive contrast for pedestrian silhouettes observed from the driver's perspective.

This approach considers the luminance requirements of the road lighting class and the light reflected on pedestrians.

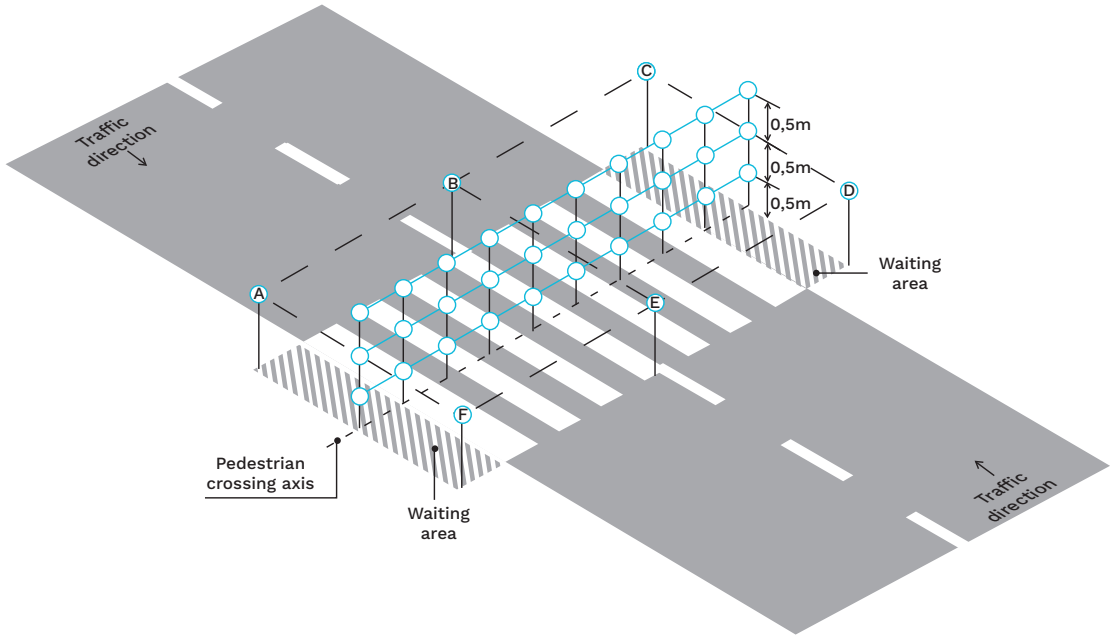
These guidelines are **not yet translated into regulations and standards,** but might be soon, as normalisation bodies are currently busy revising their recommendations.

| ROAD LIGHTING | | |
|---|---|---|
| Before and after the pedestrian crossing | | |
| M class | Average illuminance ($L_{Av}$) | Average illuminance ($E_{Av}$) |
| | cd/m² (Min) | lx (min) |
| M1 | 2.00 | 50 |
| M2 | 1.50 | 30 |
| M3 | 1.00 | 20 |
| M4 | 0.75 | 15 |
| M5 | 0.50 | 10 |
| M6 | 0.30 | 7.5 |

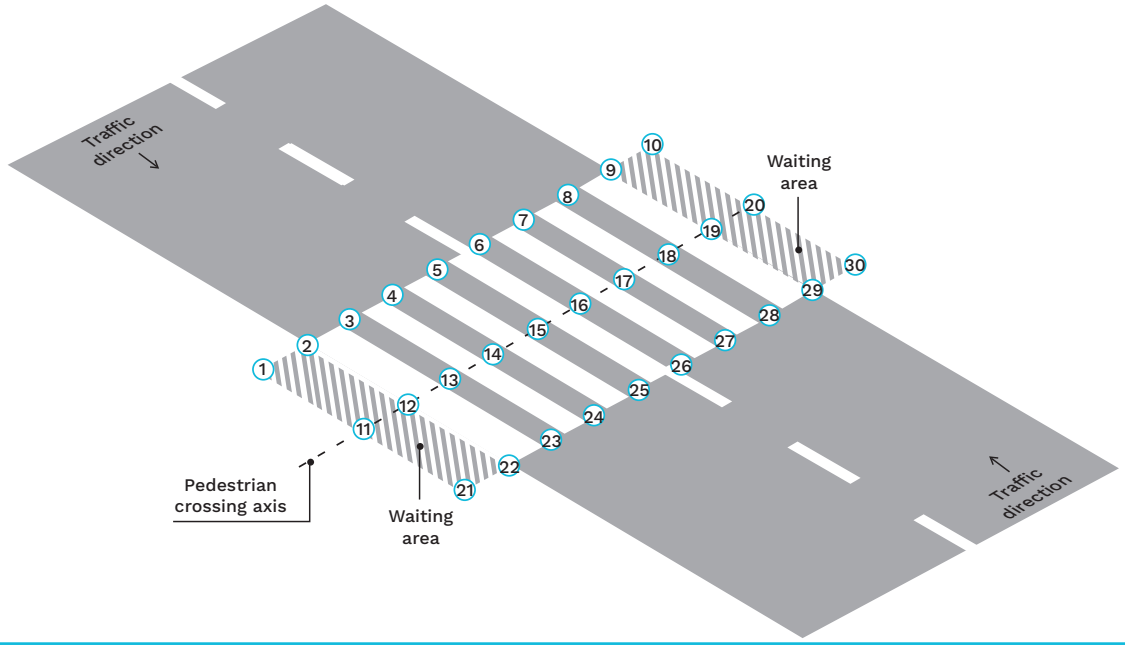
| PEDESTRIAN CROSSING LIGHTING | | | | | |
|---|---|---|---|---|---|
| | Planes | | | | Points A, B, C, D, E, F |
| PC class | Average vertical illuminance ($E_{vAv}$) | Vertical uniformity on the object ($U_{oV}$) | Average horizontal illuminance ($E_{hAv}$) | Horizontal uniformity on the object ($U_{oh}$) | Minimum vertical illuminance ($E_{vAv}$) |
| | lx (min) | Min | lx (min) | Min | lx (min) |
| Low need for a specific pedestrian crossing solution | | | | | |
| PC1 | 75 | 0.35 | 75 | 0.4 | 5.0 |
| PC2 | 50 | 0.35 | 50 | 0.4 | 4.0 |
| PC3 | 35 | 0.35 | 35 | 0.4 | 4.0 |
| PC4 | 25 | 0.35 | 25 | 0.4 | 3.0 |
| PC5 | 15 | 0.35 | 15 | 0.4 | 2.0 |

(1) Guidelines for safe pedestrian traffic organisation - Guidelines for correct pedestrian crossing lighting. Research project from Foundation for Civil Engineering Development, Gdańsk University of Technology and the Research Institute of Roads and Bridges, in partnership with the Warsaw University of Technology.

## VERTICAL ILLUMINATION



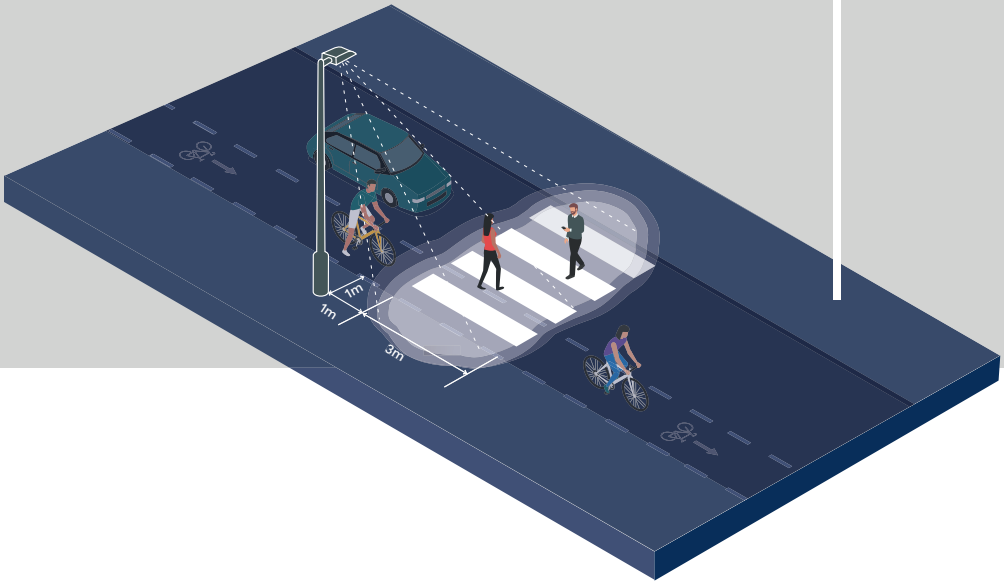

## HORIZONTAL ILLUMINATION



# Maximising **safety and visual comfort**

## ONE-WAY TRAFFIC

A single luminaire is able to light a pedestrian crossing for a one or two lane road, or a wide road including a bicycle track.



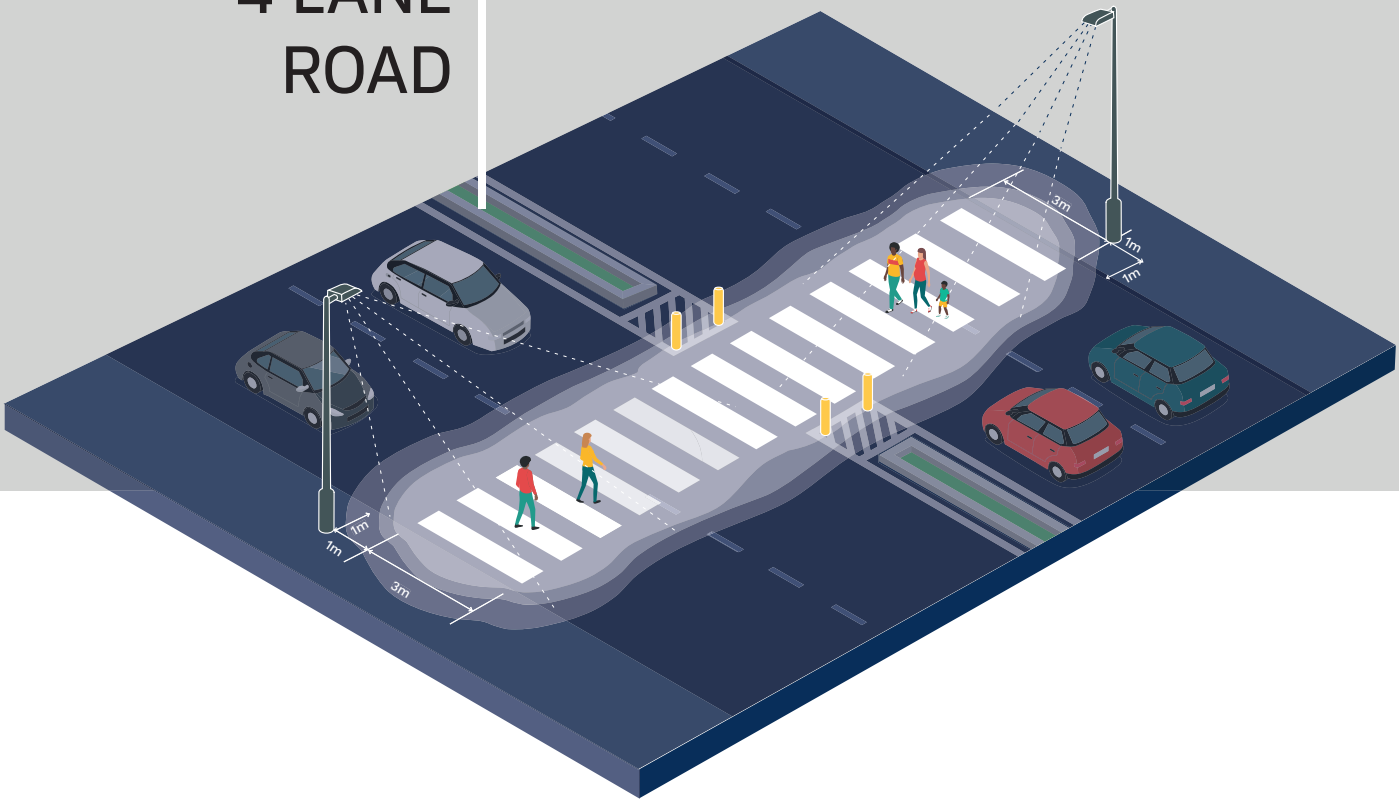

# ONE-WAY TRAFFIC - 3 LANE ROAD

A second luminaire will be necessary on the opposite side of the road.

# Typical layouts

## TWO-WAY TRAFFIC - 4 LANE ROAD

A minimum of 2 luminaires is necessary to create a positive contrast for traffic in both directions.



# Specific **optics** available for a **wide range of luminaires**

**More than half of all fatalities are due to traffic collisions that occur after dark, even though traffic is much lighter at night than during the day.**


With quality lighting, the number of road accidents decreases by an average of about 30%, and by up to three times in the best conditions.

The driver's ability to spot danger and avoid accidents is compromised at poorly lit pedestrian crossings. Proper lighting significantly **improves visibility, increases the driver's field of vision, makes obstacles more visible** and allows them to be detected earlier.

Schréder has a long history of success in improving the safety of pedestrian crossings. Our advanced **LED technology, combined with our state-of-the-art optics** designed specifically for these applications, provides the perfect photometries to help cities reduce the risk of accidents involving motorists and pedestrians.

LENSO FLEX® 2

LENSO FLEX® 4

Schréder has designed LensoFlex®2 and LensoFlex®4 Zebra optics to meet the challenge of making pedestrian crossings safer while keeping the aesthetical consistency for lighting furniture in the urban landscape.

Our dedicated optics provide visual comfort for both motorists and pedestrians to help them share the public space in a safer manner.

The asymmetrical light distributions offer a high vertical illuminance level on the pedestrian from the driver's position.

At the same time, the pedestrian crossing itself receives a high horizontal illuminance level, revealing its position from a good distance.

White light combined with a sharp asymmetrical light distribution provides a very efficient solution for lighting pedestrian crossings.

Our luminaires for pedestrian crossings have a high level of tightness (at least IP 66), in order to maintain the initial performance for as long as possible over the lifetime of the installation.

# Some of our luminaires that **can be used to light pedestrian crossings**


IZYLUM


TECEO


AMPERA


PIANO

NEOS LED

YOA

FLEXIA

## The bracket you need for a perfect result

When the pole is located too far back from the street, post-top mounting is not ideal from a photometrical perspective.

A bracket would be better to **position the luminaire correctly and optimise the light distribution on the pedestrian crossing**. With a wide range of more than 30 brackets, including contemporary and traditional designs, adapted to various luminaire mountings, Schréder can provide the ideal solution for you.

# SHUFFLE:
beyond lighting

The SHUFFLE smart pole offers unique opportunities to **reinforce safety thanks to its modular design that can integrate safety devices** such as CCTV cameras, audible alarms or a panic button. A luminaire mounted on the SHUFFLE pole and fitted with Zebra optics provides the appropriate colour temperature, intensity and light distribution to perfectly illuminate pedestrian crossings.

Luminaire bracket with Ø60mm spigot (for additional luminaire equipped with Zebra optics)

Aiming camera to keep an eye on the area

QuadView for 360° monitoring

Analogue or digital weatherproof speaker for audio messages


One-touch intercom to trigger emergency scenarios

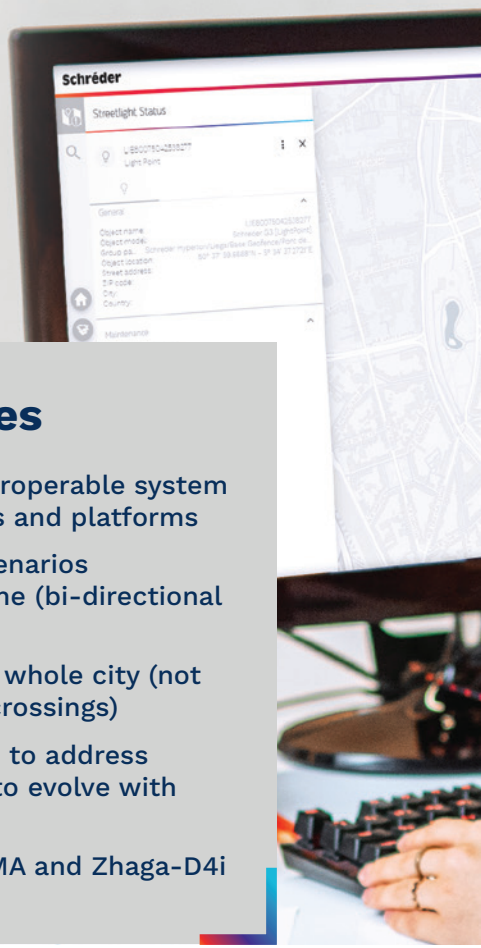
## Schréder EXEDRA remote management system

Schréder EXEDRA is a remote control system for **monitoring, metering and managing a lighting network**. It is a complete solution based on open standards and protocols

Schréder EXEDRA offers a unique combination of state-of-the-art technology and an **easy-to-use web interface** to control each luminaire at all times through a secure internet connection.

With bi-directional communication, the **operating status, energy consumption and possible failures can be monitored**.

Schréder EXEDRA can be combined with a wide range of sensors to create **responsive lighting scenarios**. Through advanced data analytics tools, presented both visually and in reports, Schréder EXEDRA is a powerful tool for efficiency, rationalisation and decision making.




### Key advantages

- Smart, open and interoperable system with 3rd party devices and platforms
- Light-on-demand scenarios upgradable at any time (bi-directional communication)
- Same system for the whole city (not only the pedestrian crossings)
- Futureproof platform to address new challenges and to evolve with technology
- Compatible with NEMA and Zhaga-D4i controllers/sensors

## Real-time adaptation

With EXEDRA, Schréder relies on open standards and protocols to design an architecture able to **interact seamlessly with third-party systems and platforms**. A good example of this is what we offered to the City of Brussels.

We provided them with an innovative smart street lighting system along the 'Bois de la Cambre', a large urban park in the south of the city.

There, **we linked the luminaires to real-time data feeds** in order to maximise safety, comfort and energy savings.

This data was not captured by sensors installed on the luminaires but through online platforms on the Internet. Three types of existing and real-time data were used to trigger scenarios:

- weather;
- traffic;
- location of pedestrian crossings.

The data coming from the third-party platforms enabled the Schréder EXEDRA system to provide the optimal lighting levels at each light point and, if necessary, adapt the lighting every 15 minutes to real-time conditions.

# A few of our projects

Portimao (Portugal) - Product: NEOS LED

Geneva (Switzerland) - Product: AMPERA

Łomża (Poland) - Product: STYLAGE

# A few of our projects

Belgrade (Serbia) - Product: NEOS LED

Guadalajara (Spain) - Product: NEOS LED

Alicante (Spain) - Product: AMPERA


Ans (Belgium) - Product: NEOS LED

Liège (Belgium) - Product: PIANO

Bábolna (Hungary) - Product: TECEO

# Schréder

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