

Schröder
Experts in lightability™

FOCUS

Pedestrian crossings

Life-saving lighting solutions



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A few of our projects





István Laskai
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.

Schröder has developed specific and affordable solutions to improve safety in these spaces where vulnerable users meet vehicles. Because accidents there often have tragic consequences.

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

Our commitment

Together for our Future

Schröder 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 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 PEOPLE

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

Focus areas:

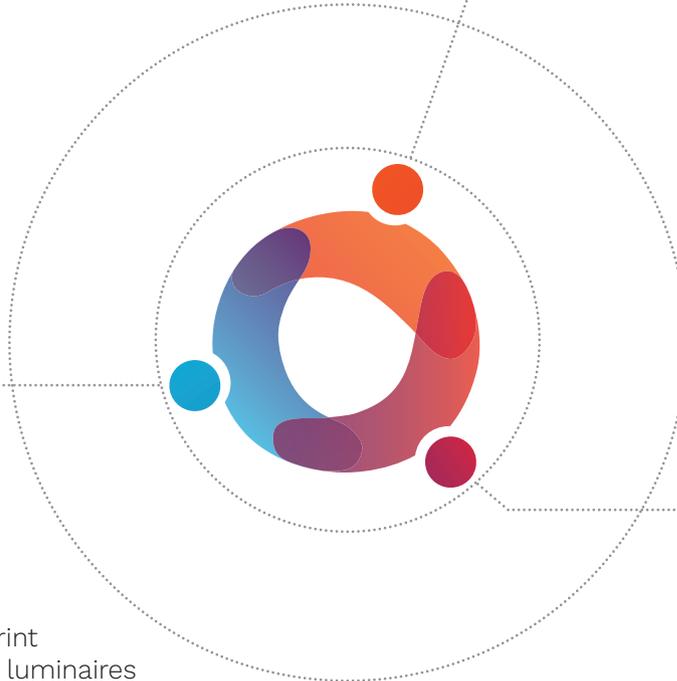
- › Gender diversity
- › Human rights

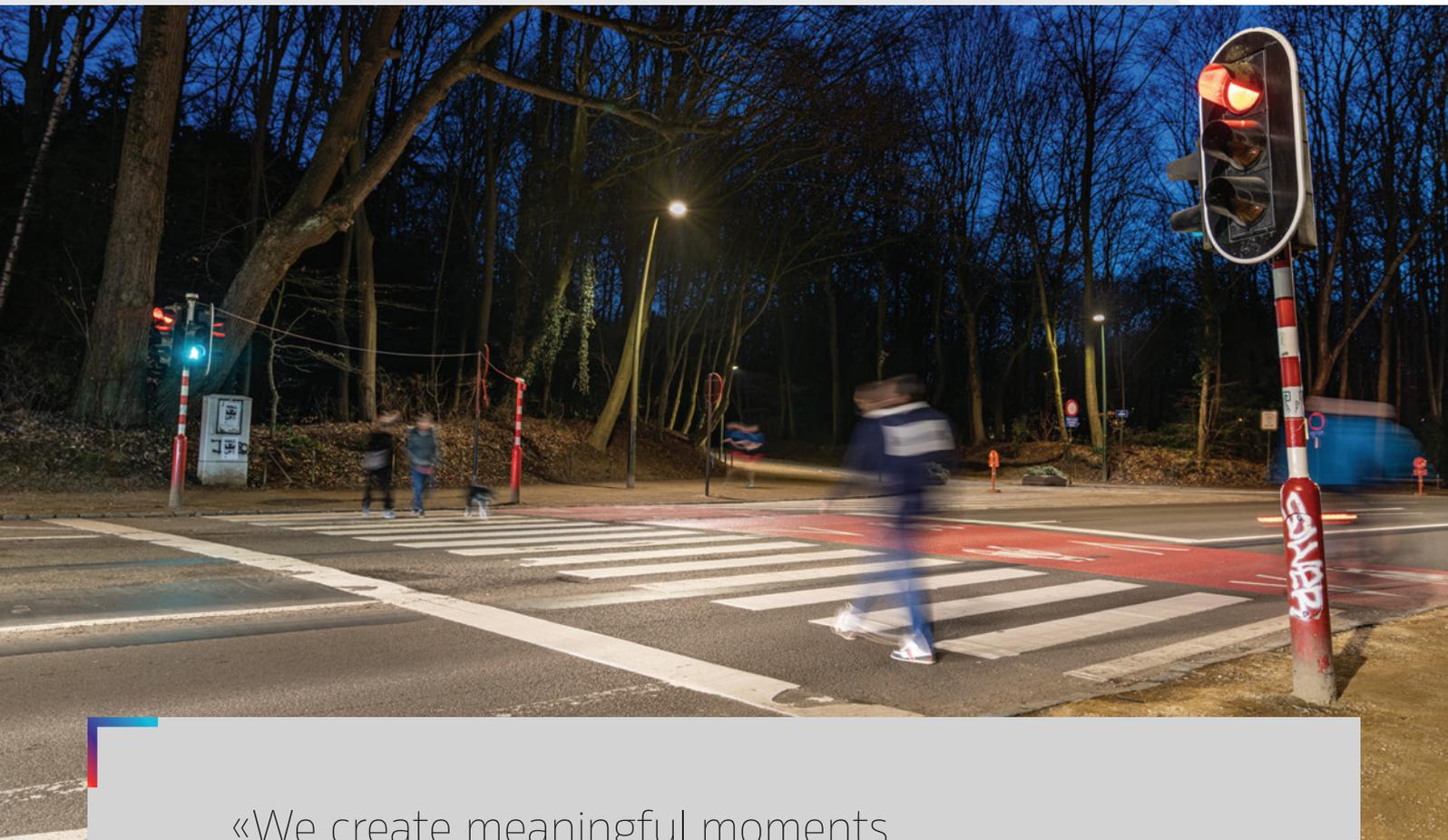
FOR OUR COMMUNITY

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





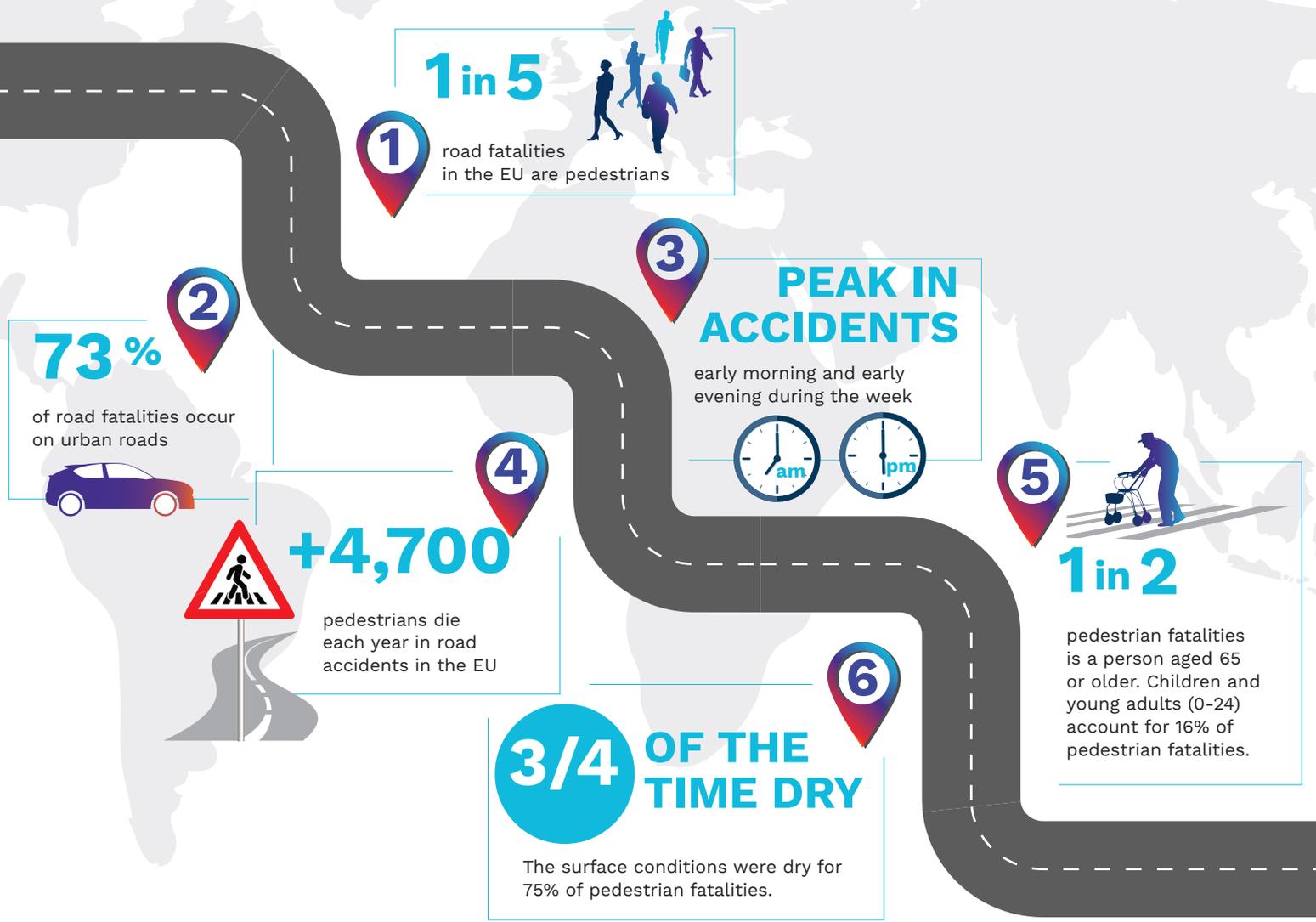
«We create meaningful moments for people in public spaces by making them safe, comfortable and sustainable.»



Nicolas Keutgen
Chief Innovation Officer – Schröder

Facts and figures

Safety remains a major concern for cities



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

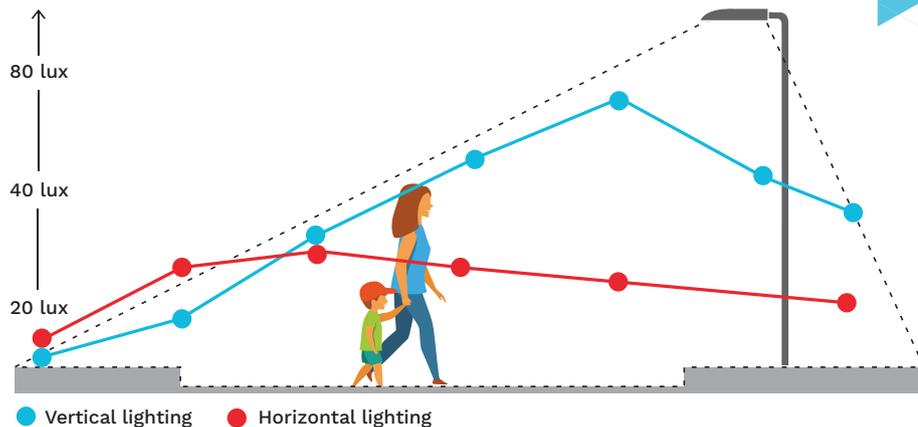
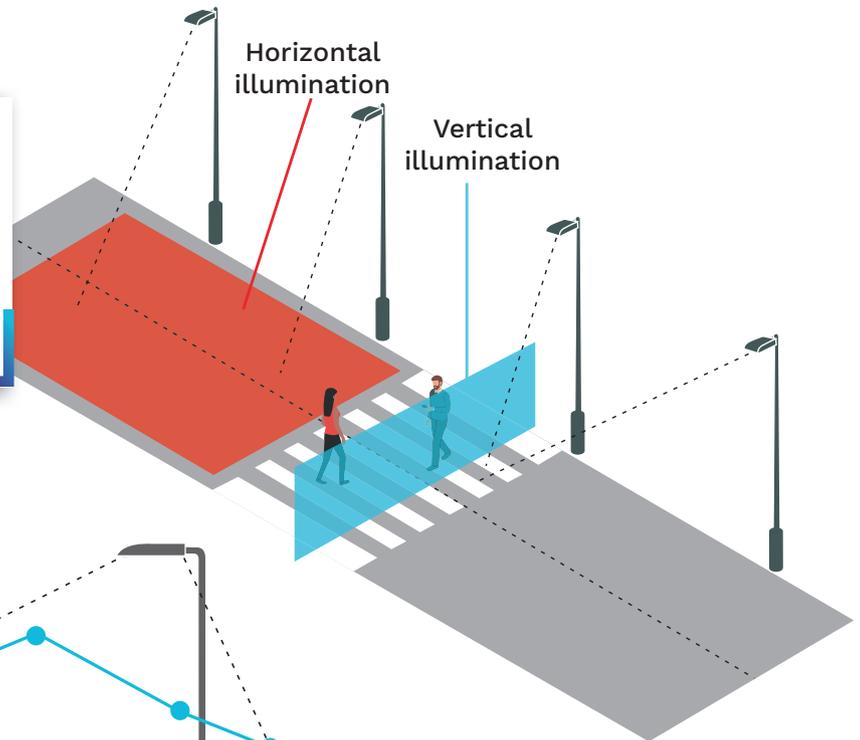


Some key concepts

A few things to know about pedestrian crossings

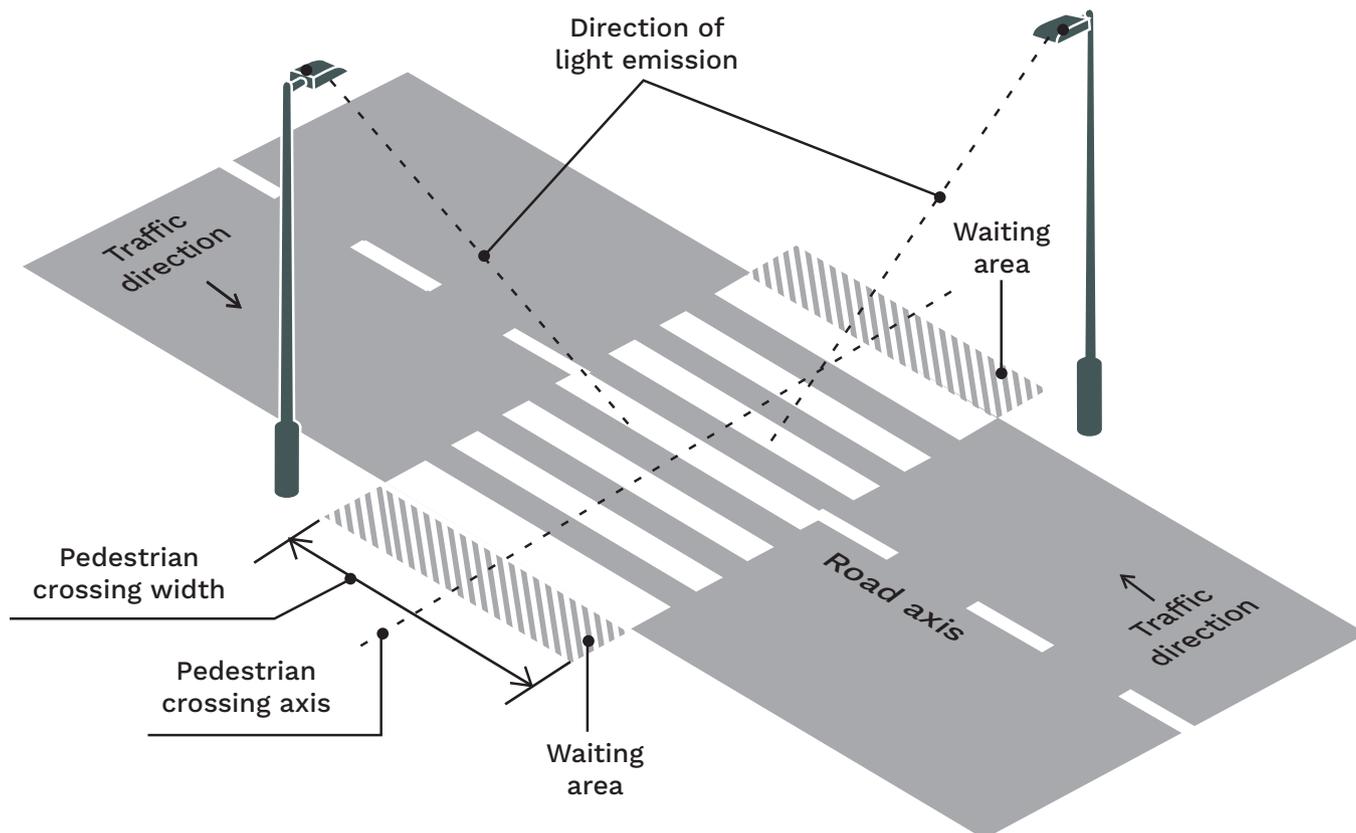
Vertical/horizontal illumination

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



Topography of a pedestrian crossing

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



Some key concepts

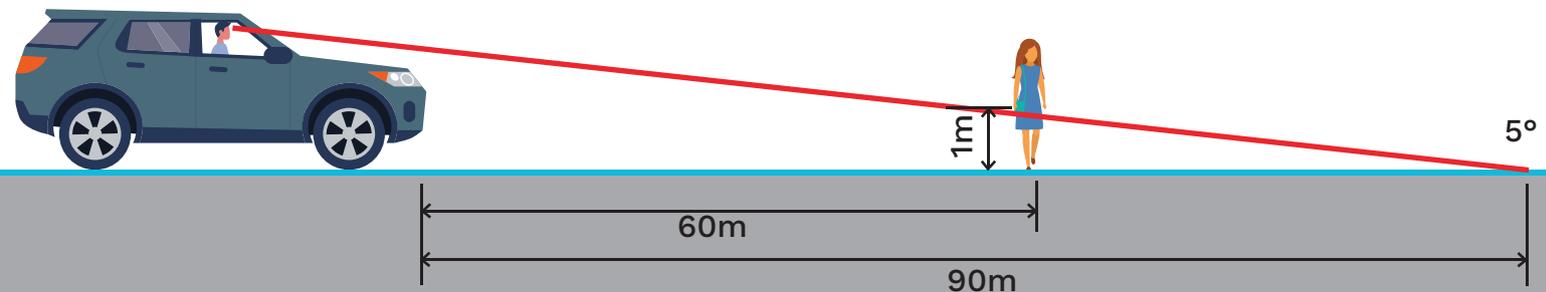
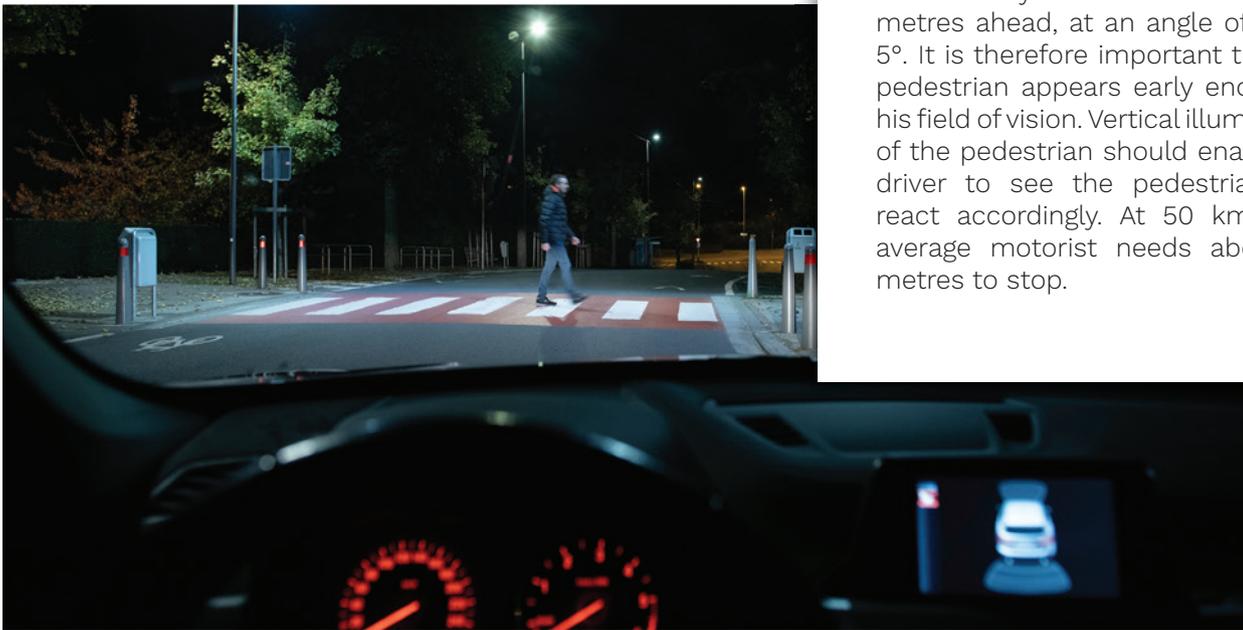
A visible colour contrast

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.



Regulations and standards

What do **the rules** say?



Pedestrian crossings are sections of the road where good interaction between pedestrians and drivers is vital. Adequate 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 different times of the day. It provides the best conditions for drivers to understand the traffic situation and recognise the pedestrian's silhouette, and for pedestrians to be aware of their surroundings, the pedestrian crossings themselves 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 location of the luminaire being on the right or left side of the road and to the traffic direction.

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.

What's next?

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 came 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.

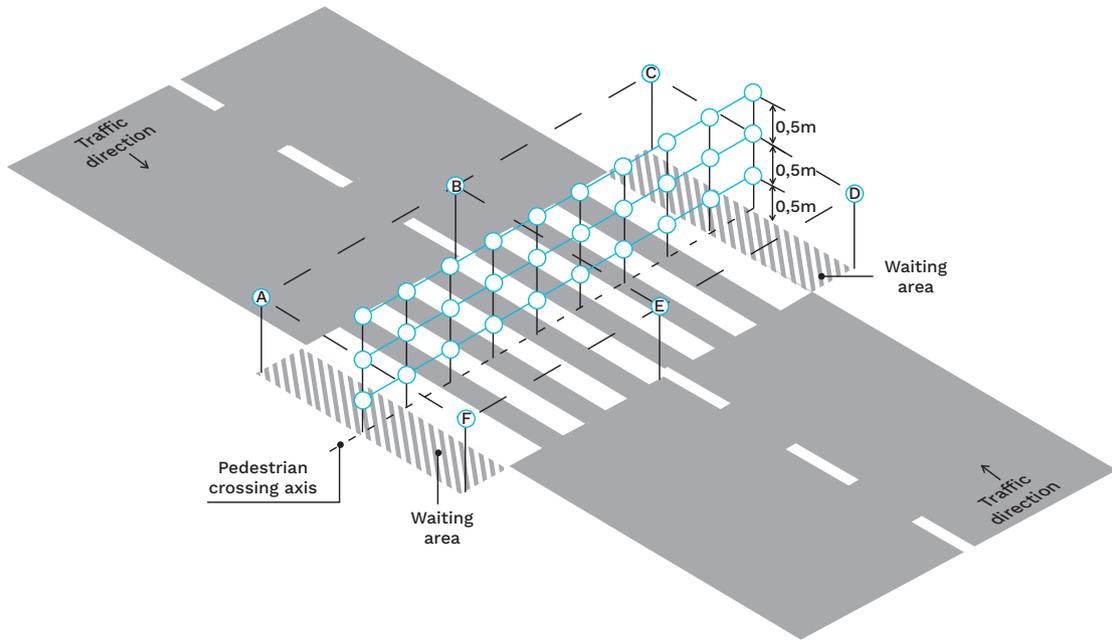
This approach considers the luminance requirements of the road lighting class and the light reflected on pedestrians.

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

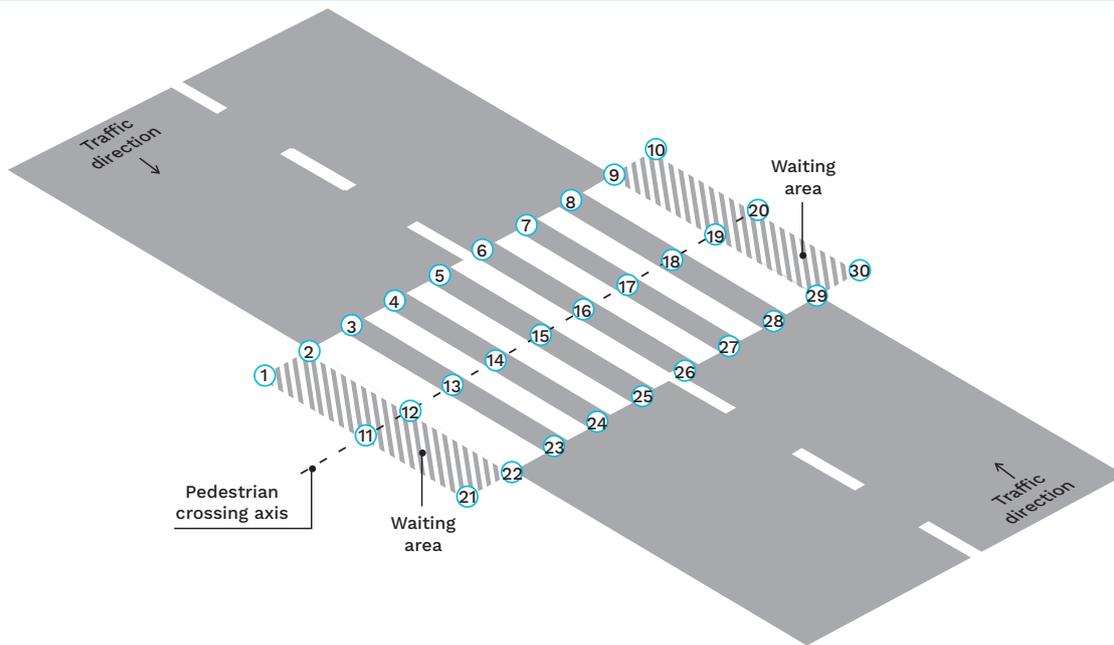
ROAD LIGHTING			PEDESTRIAN CROSSING LIGHTING					
Upstream and downstream of the pedestrian crossing			Planes				Points A, B, C, D, E, F	
M class	Average illuminance (L_{Av})	Average illuminance (E_{Av})	PC class	Average vertical illuminance (E_{vAv})	Vertical uniformity on the object (U_{ov})	Average horizontal illuminance (E_{hAv})	Horizontal uniformity on the object (U_{oh})	Minimum vertical illuminance (E_{vAv})
	cd/m ² (Min)	lx (min)		lx (min)	Min	lx (min)	Min	
M1	2.00	50	Low need for a specific pedestrian crossing solution					
M2	1.50	30	PC1	75	0.35	75	0.4	5.0
M3	1.00	20	PC2	50	0.35	50	0.4	4.0
M4	0.75	15	PC3	35	0.35	35	0.4	4.0
M5	0.50	10	PC4	25	0.35	25	0.4	3.0
M6	0.30	7.5	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

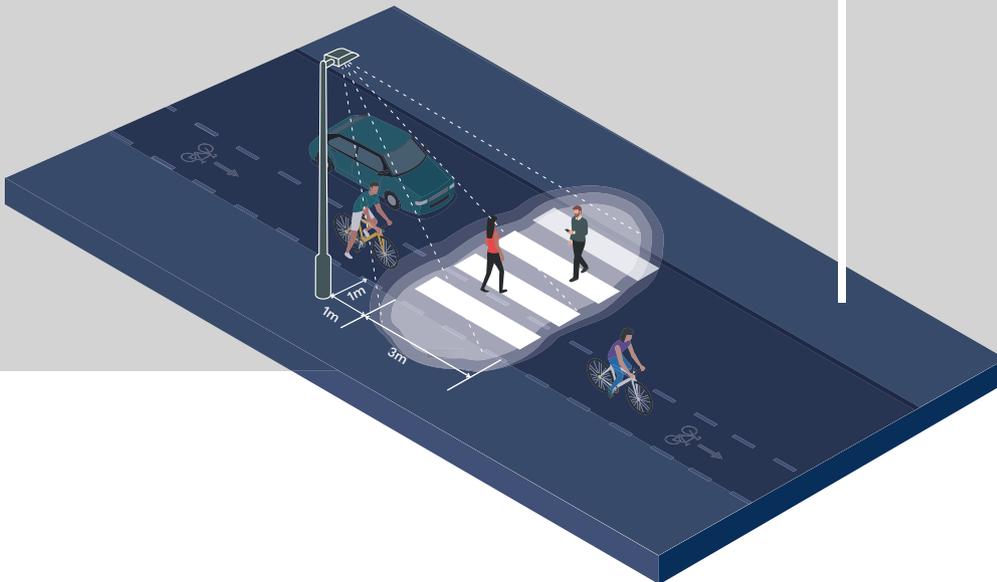


Typical layouts

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.





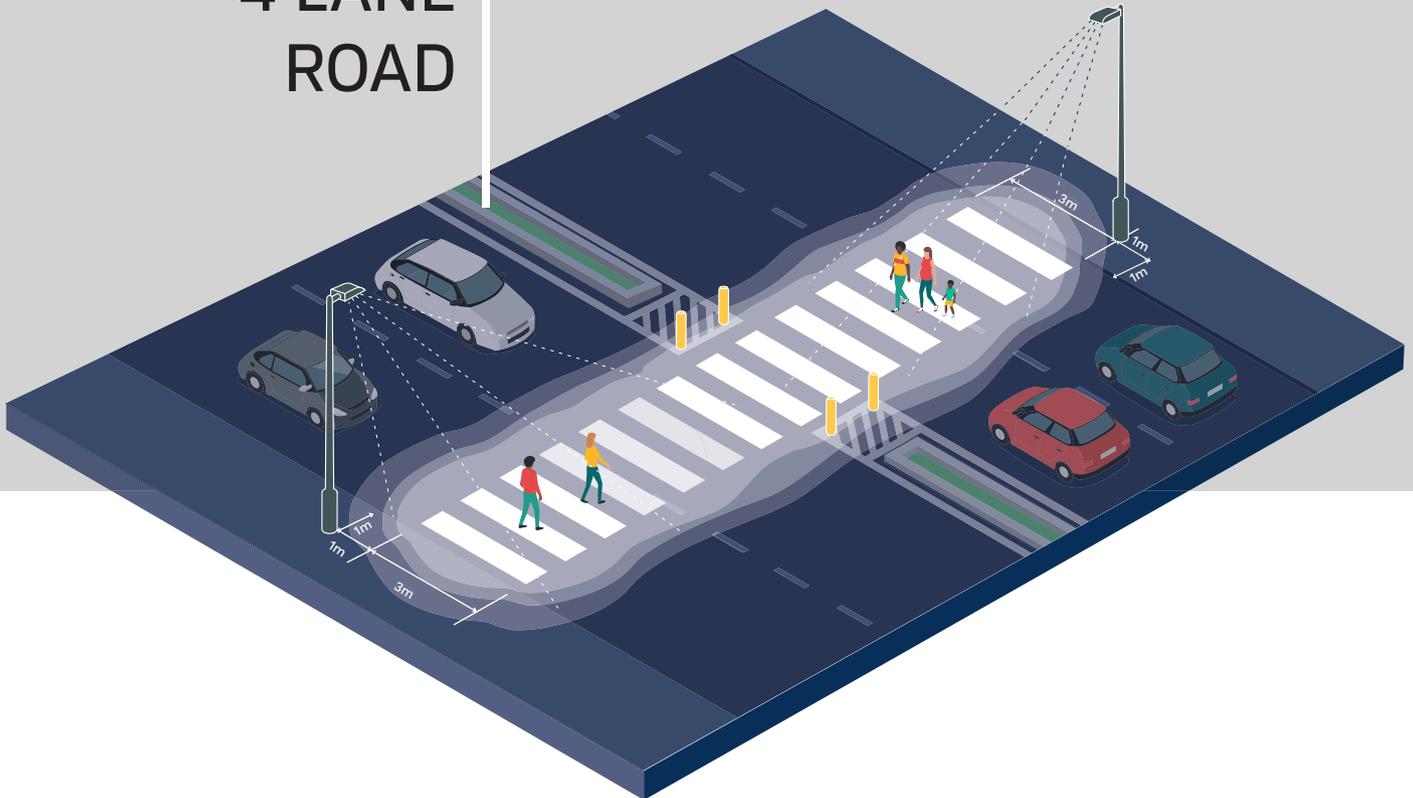
ONE-WAY TRAFFIC - 3 LANE ROAD

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.





Our solutions

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 hazards and avoid accidents is compromised in case of 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.

Schröder 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

Schröder has designed LensoFlex®2 and LensoFlex®4 Zebra optics to meet the challenge of making pedestrian crossings safer while keeping the aesthetic 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.

Our solutions

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





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.

It would be best if you had a bracket of the right length **to position the luminaire correctly and optimise the light distribution on the pedestrian crossing**. With more than 30 ranges of brackets, from a contemporary to a heritage design and adapted to various luminaire mountings, Schröder can surely provide the solution you need.



Our solutions

SHUFFLE: going 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

Control solutions

Schröder EXEDRA remote management system

Schröder 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

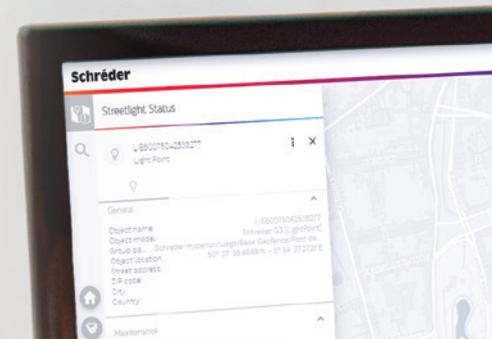
Schröder EXEDRA offers a unique combination of state-of-the-art technology and an **easy-to-use web interface** to control each luminaire at all times through a secure internet connection.

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

Schröder 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, Schröder EXEDRA is a powerful tool for efficiency, rationalisation and decision making.



EXEDRA



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, Schröder 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 provide 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 Schröder 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



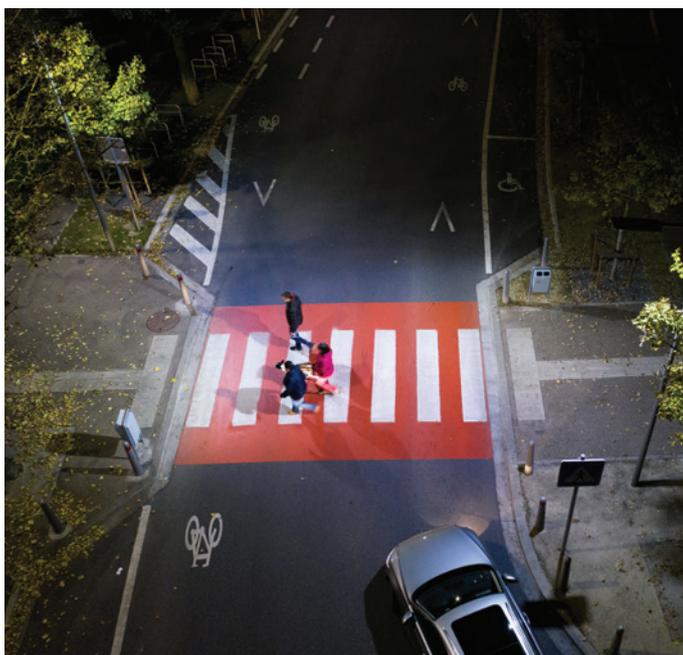
Guadalajara (Spain) - Product: NEOS LED



Alicante (Spain) - Product: AMPERA



Ans (Belgium) - Product: NEOS LED



Liège (Belgium) - Product: PIANO



Germany - Product: TECEO

Schröder

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