

Features and Benefits

- Improves pedestrian visibility.
- Crossing is highly visible.
- Reduces night time accidents.
- No glare to driver.
- Functional or decorative lantern bodies to complement the installation.

With busier roads and higher performance vehicles, it is critical that better passive safety measures for pedestrians are installed.

Although UK road lighting is based on the contrast of the dark silhouette of a vehicle or pedestrian against the luminance from the road surface, the headlamps from a car approaching a crossing progressively destroy this contrast. Most crossing 'improvements' in the past have used PAR38 lamps. These have been fixed to the beacon poles to illuminate pedestrians, but this is at right angles to the driver's line of sight and ineffectual.

The Zebra lantern is a cost effective solution to upgrading the lighting of pedestrian crossings.

The Zebra's Sealsafe optical unit creates an intense semi-cylindrical illumination which, because it is angled from the same general direction as the approaching traffic, highlights the crossing and any pedestrians on it. Glare for drivers and pedestrians is minimised by a system of baffles. Two units are required for each crossing and are installed on opposite sides of the road, staggered towards oncoming traffic.

The feedback from highway users is very positive.



Albany Zebra



Sapphire 2 Zebra



ZX3 Zebra



Saturn Zebra



ZX4 Zebra, Redbridge.



ZX4 Zebra, Ealing.



ZX4 Zebra, Barking.

LIGHTING OF PEDESTRIAN CROSSINGS



Before



After

Conventional wisdom rests on the assumption that silhouette vision may be the best mechanism for the safe lighting of pedestrian crossings. This is only true on dry roads, when car headlamps are not present. This is because, by their nature, car headlamps on a car approaching the crossing negate silhouette vision by providing positive contrast.

An alternative approach is to use special luminaires with an asymmetric distribution that promotes positive contrast. We believe that this is a safer and more effective way of lighting pedestrian crossings.

The Urbis Zebra lantern is designed to light the crossing in positive contrast, ie. to positively illuminate the pedestrians with high levels of vertical illuminance to make them visible to oncoming traffic. It also provides high levels of horizontal illuminance on the crossing carpet to highlight it.

To achieve this, the Urbis Zebra photometry is asymmetric (left-handed or right-handed). The lantern should be positioned before the crossing, with the peak beam directed towards the crossing and away from the driver. For driving on the left of the road as in the UK, this means that left-handed photometry is required for a standard 2 way carriageway.

It is essential that the fitting is placed between the driver and the pedestrian, and that the light is directed away from the driver's vision and towards the pedestrian, otherwise the effect would be to provide glare to the driver and hide the pedestrian from the driver. The light is directed away from the driver by specially designed louvres on the reflector.

The lantern is suitable for mounting at 6 metres to 10 metres.

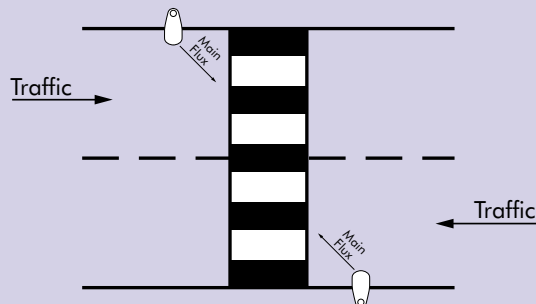
Please contact Urbis Lighting for applications advice and lighting design service.

URBIS ZEBRA LANTERN INFORMATION

The reflector used for the Urbis Zebra lantern has an asymmetric distribution. This means that the peak beam is emitted to the left or right of the lantern as viewed from behind the column, looking towards the road. It is therefore essential to use the correct location relative to the crossing (ie. between the approaching driver and the crossing). There are 3 types of crossing:

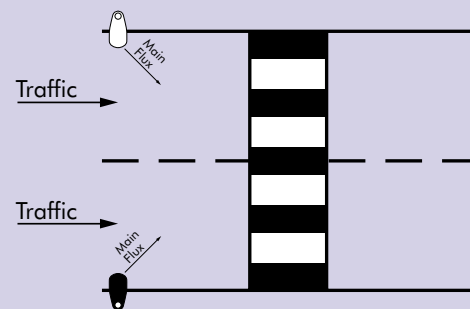
1. Two-way Traffic (for UK)

Use 2 x Left-handed lanterns



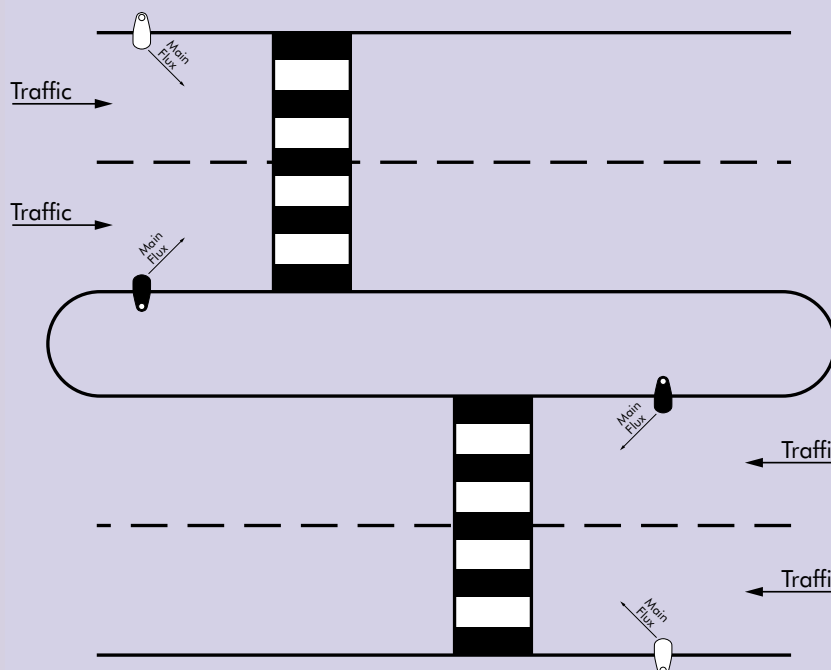
2. One-way Traffic

Use 1 x Left-handed lanterns
and 1 x Right-handed lanterns



3. Dual Carriageway

Use 2 x Left-handed lanterns
and 2 x Right-handed lanterns



Zebra Crossing Key



Typical Horizontal Illuminance Calculation

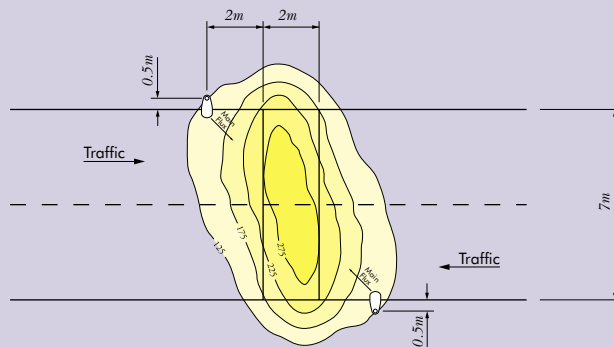
The Urbis Zebra lantern can be fitted with high pressure sodium or metal halide lamps, up to 250 Watts. Although metal halide has a lower efficiency than high pressure sodium, experience has shown that its improved colour rendition renders the pedestrians / crossing more visible. In addition, there is more contrast between the zebra crossing lighting and the ambient lighting thus highlighting still further the bright band of light across the road to the approaching driver.

Zebra Crossing Calculation

Key



Lantern Type	: Urbis ZX3 Zebra Sealsafe Lantern
Ref.	: ZX3IB/250/1451/ZEBRA/LH/952811
Mounting Height	: 6 Metres
Lamp	: 250 Watt Metal Halide
Design Lumens	: 20,000 Lumens
Inclination	: 5° (Post-mounted lantern)
Maintenance Factor	: 0.81 (0.84 Lamp MF x 0.96 Luminaire MF)



Results on Crossing

Illuminance

Emin	= 169.0 lux
Emax	= 295.5 lux
Eav	= 256.4 lux

Uniformity

UO (Emin/Eav)	= 65.9%
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Typical Vertical Illuminance Calculation

Typical installations are shown in these figures.

Both lanterns have left-handed photometry, and are maximising the vertical illuminance on the pedestrian, thereby making him highly visible to oncoming traffic. The fitting provides no glare to drivers in this orientation.

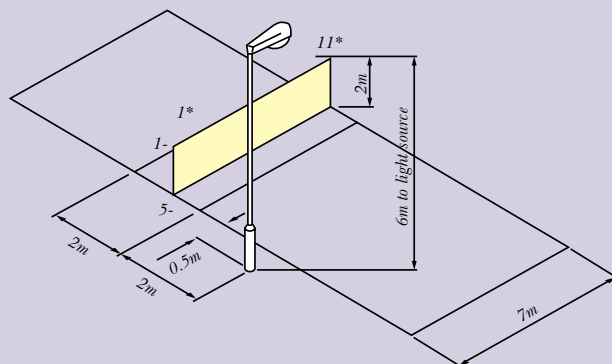
In order to fully utilise the asymmetric distribution of the Zebra lantern, each column should be placed 3 metres from the centre of the carpet for a mounting height of 6 metres (or 3.5 metres for a height of 8 metres). Good vertical illuminance on the pedestrian will be achieved by positioning the lantern optic over the kerb edge, although these will be improved still further by positioning the lantern over the carriageway.

Zebra Crossing Calculation

Spacing between points in X direction:	0.70 m	in Y direction:	0.50 m
Number of calc. points in X direction:	11	in Y direction	5

Level of calculation plane: 0.00 m

Orientation of calculation plane: horizontal



Luminaire Arrangement

No.	Distance	First luminaire			Intensity	Flux	M.F.	Aiming angles		
		X	Y	H	Matrix	(klm)		Azimuth	Inclin.	Rotation
1	0.00	0.00	6.00	3.00	952811	20.00	0.81	85.00	0.00	90.00

Illuminance in the Calculation Field

	1*	2*	3*	4*	5*	6*	7*	8*	9*	10*	11*	
1-	158.7	174.3	173.6	151.4	130.6	103.1	78.0	60.6	46.2	33.1	24.2	← 2m above ground
2-	146.7	161.0	157.7	142.9	125.4	99.4	76.1	60.2	47.9	35.1	26.1	
3-	128.0	138.5	138.3	127.9	113.2	93.0	74.2	56.4	46.5	35.4	26.8	
4-	108.3	115.5	116.1	109.7	98.6	84.0	68.4	55.0	42.5	33.8	26.5	
5-	90.2	95.4	96.1	92.6	84.4	73.1	61.9	50.6	41.3	31.0	25.1	← ground level

Emin	= 24.2 lux	UG (Emin/Emax)	= 13.9%
Emax	= 174.3 lux	UO (Emin/Eav)	= 27.3%
==> Eav	= 88.7 lux	<== Weighted Mean	

Note: Second lantern not shown