

## Signalized pedestrian crossings: are they really the safest?

Pedestrian crossings equipped with traffic lights for pedestrians usually are supposed to be safer than those non-signalized.

Indeed, this is true only when the different phases are fine-tuned so that on one side the largest possible number of people can cross safely and on the other side the vehicles have to wait as little as possible.

Therefore the green light phase must last long enough to cross over, the waiting times for pedestrians should be short enough to prevent dangerous behaviour (exceedingly long red light phases for pedestrians waiting to cross).

Moreover, in order to guarantee safe crossing for pedestrians in the transition phase between pedestrian green and red light it would be desirable to provide the following information to pedestrians:

- It is no longer allowed to start crossing,
- The crossing must be cleared

During the 2009 EPCA tests, ACI's inspectors encountered a wide range of solutions to meet these requirements, starting from the number of lamps installed at traffic lights: among the tested cities, the Italian cities (Rome, Milan and Naples) are the only ones to have throughout traffic lights with three colours (green, amber and red). All the other cities have mostly chosen the two colours option (green and red). Both the solutions are envisaged by the Vienna Convention on Road Traffic (1968).

The difference among the solutions adopted in the tested cities causes further confusion among European pedestrians.

In fact, the transition phase between green and red light can be realized according to at least 3 patterns.

While in Barcelona, Brussels, Bucharest, Budapest, Helsinki, Istanbul, Madrid, Oslo, Rotterdam, Seville, Stockholm and Vienna the interval between green and red is made up of a brief phase with flashing green light followed by an "all-red" safety/clearing interval, in Berlin, Belgrade, Bratislava, Copenhagen, Dubrovnik, Frankfurt, Geneva, Linz, London, Ljubljana, Luxembourg, Munich, Paris, Prague and Zagreb there is no such transition: the green light is followed immediately by the red one. In these cases however, pedestrians that have already started to cross over are safe thanks to "all-red" phase allowing no vehicles to transit upon the crossing.

The first solution with a "flashing green" as transition phase seems to be preferable because:

- It gives pedestrians the opportunity to clear the crossing safely ;
- It prevents pedestrians who are about to cross from doing so.

The second situation with no transition phase may cause some trouble not only to foreign tourists who are not used to cross over while the pedestrian lights are red (in the clearing time), but also to elderly pedestrians or those with disabilities, especially when in the middle of the crossing while the red light abruptly appears.

Moreover, in these cases pedestrians get no warning that the traffic light is about to switch to red.

Traffic lights with a "flashing green" as transition phase inform pedestrians that red light is about to come but do not inform pedestrians about the green phase starting time. However, to every rule there are exceptions.

Some new crossings of Istanbul, Ljubljana, Rotterdam and Seville are equipped with red countdown timers warning pedestrians that green light is about to come, encouraging them to keep a safer behaviour waiting for their time. A few crossings of Istanbul and Seville are also equipped with green countdown timers informing pedestrians when red light is about to come. Countdown devices are as simple as efficient. They leave to the pedestrian the decision whether to start or to wait depending also on individual physical conditions; sadly, there are just a few crossings equipped with such devices in the above-mentioned cities. A good solution

adopted in two new crossings of Istanbul is a “flashing red” transition phase: a flashing red sequence prior to steady red warns pedestrians to clear the crossing.

In Rome, Naples and Milan things are different. The transition phase consists there in an amber phase usually lasting long enough to allow a pedestrian walking at the speed of 1 m/s to cross over. Apart from the problems that this solution causes to foreign tourists, it has a number of flaws, especially when the crossing is very wide:

- It does not warn crossing pedestrians of the imminence of the red light
- It leaves pedestrians wanting to cross in doubt whether to start or stop

In fact, pedestrian crossings in Rome and in many Italian cities are often puzzling for pedestrians (not only foreign tourists) who seem to be obviously confused by the long lasting amber phases.

*Red time counter in Istanbul (crossing n. 2)*



*Red time counter in Rotterdam (crossing n. 8)*



Table 1 – Pedestrian traffic lights systems in the surveyed European cities

| City       | Number of colours | Transition phase (Y/N) | Transition/safety phase     | Countdown devices in some new crossings (Y/N) | Type of countdown timer       | Pedestrians informed when green light is about to come | Pedestrians informed when red light is about to come |
|------------|-------------------|------------------------|-----------------------------|---|-------------------------------|--|--|
| Barcelona  | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Berlin     | 2                 | N                      |                             | N   |                               | N  | N  |
| Belgrade   | 2                 | N                      |                             | Y   | Red countdown timer           | Y  | N  |
| Brussels   | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Bratislava | 2                 | N                      |                             | N   |                               | N  | N  |
| Bucharest  | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Budapest   | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Copenhagen | 2                 | N                      |                             | N   |                               | N  | N  |
| Dubrovnik  | 2                 | N                      |                             | N   |                               | N  | N  |
| Frankfurt  | 2                 | N                      |                             | N   |                               | N  | N  |
| Geneve     | 2                 | N                      |                             | N   |                               | N  | N  |
| Helsinki   | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Istanbul   | 2                 | Y                      | Flashing green/Flashing red | Y   | Red and green countdown timer | Y  | Y  |
| Linz       | 2                 | N                      |                             | N   |                               | N  | N  |
| London     | 2                 | N                      |                             | N   |                               | N  | N  |
| Ljubljana  | 2                 | N                      |                             | Y   | Red countdown timer           | Y  | N  |
| Luxembourg | 2                 | N                      |                             | N   |                               | N  | N  |
| Madrid     | 2                 | Y                      | Flashing green              | N   |                               | N  | Y  |
| Milan      | 3                 | Y                      | Yellow                      | N   |                               | N  | Y  |
| Munich     | 2                 | N                      |                             | N   |                               | N  | N  |
| Naples     | 3                 | Y                      | Yellow                      | N   |                               | N  | Y  |
| Oslo       | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Paris      | 2                 | N                      |                             | N   |                               | N  | N  |
| Praha      | 2                 | N                      |                             | N   |                               | N  | N  |
| Rome       | 3                 | Y                      | Yellow                      | N   |                               | Y  | N  |
| Rotterdam  | 2                 | Y                      | Flashing green              | Y   | Red countdown timer           | Y  | Y  |
| Sevilla    | 2                 | Y                      | Flashing green              | Y   | Red and green countdown timer | Y  | Y  |
| Stockholm  | 2                 | Y/N                    | Flashing green              | N   |                               | N  | Y/N  |
| Strasbourg | 2                 | N                      |                             | N   |                               | N  | N  |
| Wien       | 2                 | Y                      | Flashing green              | N   |                               | Y  | Y  |
| Zagreb     | 2                 | N                      |                             | N   |                               | N  | N  |