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Speed within the functioning of urban environments

The purpose of this sheet is to provide the facts necessary for the satisfactory consideration of the subject of speed in urban areas.

After a few general comments on speed calming and control in towns, this information sheet considers its importance within the functioning of urban environments and risk management.

The decree of 29 November 1990 defines the rules relating to traffic calming and control. More than just a simple regulatory measure (for the general speed limit, change from 60 kph to 50 kph, it is a CONCEPT that defines the link between speed limits, road layout and the social function of the street, with the aim of ensuring the safety of all modes of transport and in particular the most vulnerable road users.

This approach to speed control in towns reflects a desire to increase the credibility, legibility and clarity of speed restrictions for the user. It also simplifies the hierarchy of the road network and ensures greater consistency between the road layout and the posted speed limit.

The main principles of speed calming and control

These are based on changing the «balance of power» between the car and vulnerable users, either by means of specific safety facilities or by adopting different regulatory approaches.

⇨ **50 kph:** corresponds to the general speed limit in built-up areas and is based on a notion of achieving a balance between the expression of social life of the road and its traffic flow performance. The position of road signs EB10 (start of built-up area) and EB20 (end of built-up area) defines the general framework within which this speed limit applies.

⇨ **70 kph:** vehicular traffic predominates over the social life of the road. This speed limit gives greater consistency and legibility to the dense urban area transition and approach zones. This measure is accompanied by rules of use to protect vulnerable modes of transport (see Certu 70 kph section guide).

⇨ **30 kph:** the expression of social life takes precedence over traffic flow

A distinction is made between a 30 kph speed over a limited stretch of road and blanket 30 kph zones.

The latter are not to be confused with a local speed restrictions, but must cover a sufficiently large number or linear length of roads to be credible and represent a geographic unit of urban operation.

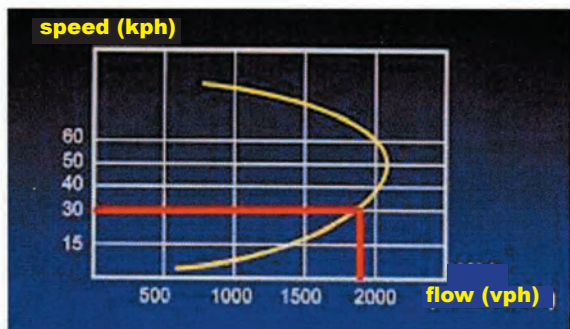
In spaces referred to as «30 kph zones», the regulations controlling the interaction of different kinds of road users is limited. The road network must be organised in such a way that car speeds are properly controlled.

The safety approach is based on managing conflict with minimum risk for the most vulnerable users. In conclusion, it seems important to ensure that the chosen speed limits should always be credible with relation to the characteristics of the road and its environment (places for living, activities, exchanges, vulnerable users, etc.).

The benefits of speed calming

FROM THE POINT OF VIEW OF TRAFFIC FLOW

The graph of traffic flow against speed shows that the optimum traffic capacity threshold of an urban road is reached at a speed of the order of 50 kph. The traffic flow at this speed is approximately 2000 vehicles per hour.



Given that, in urban areas, the rush-hour traffic is of the order of 10% of the daily traffic, this threshold allows a two-way road to accommodate a traffic volume of the order of 40,000 vehicles per day at 50 kph, a level of traffic that is very rarely achieved. Moreover, reducing the speed to 30 kph reduces the capacity by only 10%. It is therefore possible to achieve very high capacities on a two-way single-lane road. It is therefore rarely necessary to widen roads to two lanes in each direction to resolve problems of capacity, a solution that must only be adopted in exceptional circumstances.

To say that a reduction in speed leads to a reduction in capacity is a false argument.

What is more, the time saving attributable to speed is very small, even derisory, as many hazards of urban driving (junction crossings, traffic lights, etc.) mean that the average speed remains low (well below 50 kph).

FROM THE POINT OF VIEW OF SAFETY

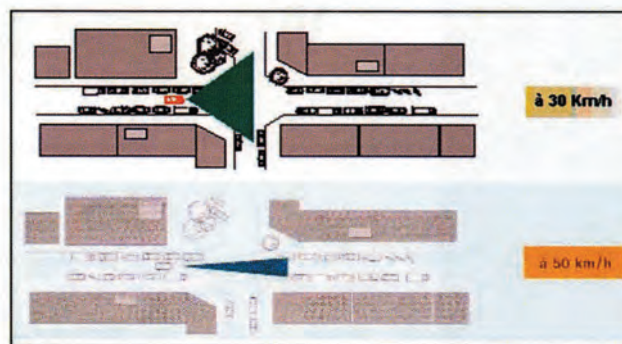
The speed adopted by drivers varies according to lateral and longitudinal safety margins. If the road reservation in an urban area cannot be expanded, the narrower the road, the better the control of speeds and the greater the space available for other users.



FROM THE POINT OF VIEW OF SAFETY

Speed and perception of the environment

Peripheral vision is much relied upon in an urban environment. Peripheral perception reduces with increasing speed.



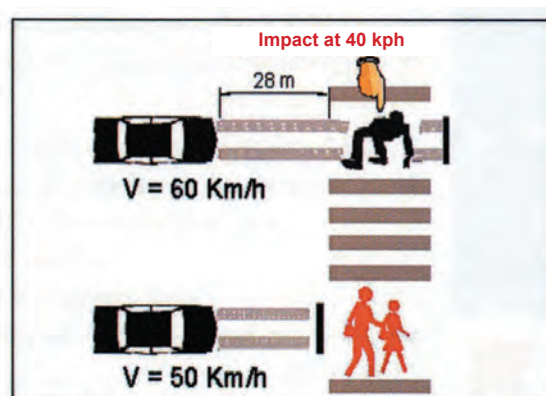
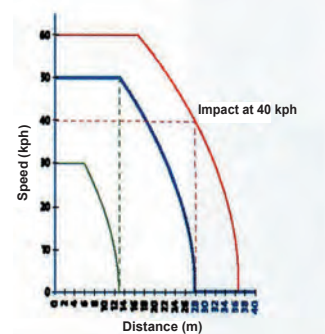
Braking speed and impact avoidance

Stopping distances vary with speed (distance travelled during the reaction time + braking distance). For example: *I am attentive (reaction time 1 s) and a pedestrian crosses the road 28 m ahead of me:*

⇒ **at 50 kph and a distance of 28 m from the pedestrian crossing, I am able to stop safely;**

⇒ **at 60 kph, not only do I not stop, but I hit the pedestrian at 40 kph.**

Furthermore, these stopping distances are doubled when the road is wet; the impact will then be all the more violent if the speeds remain the same.



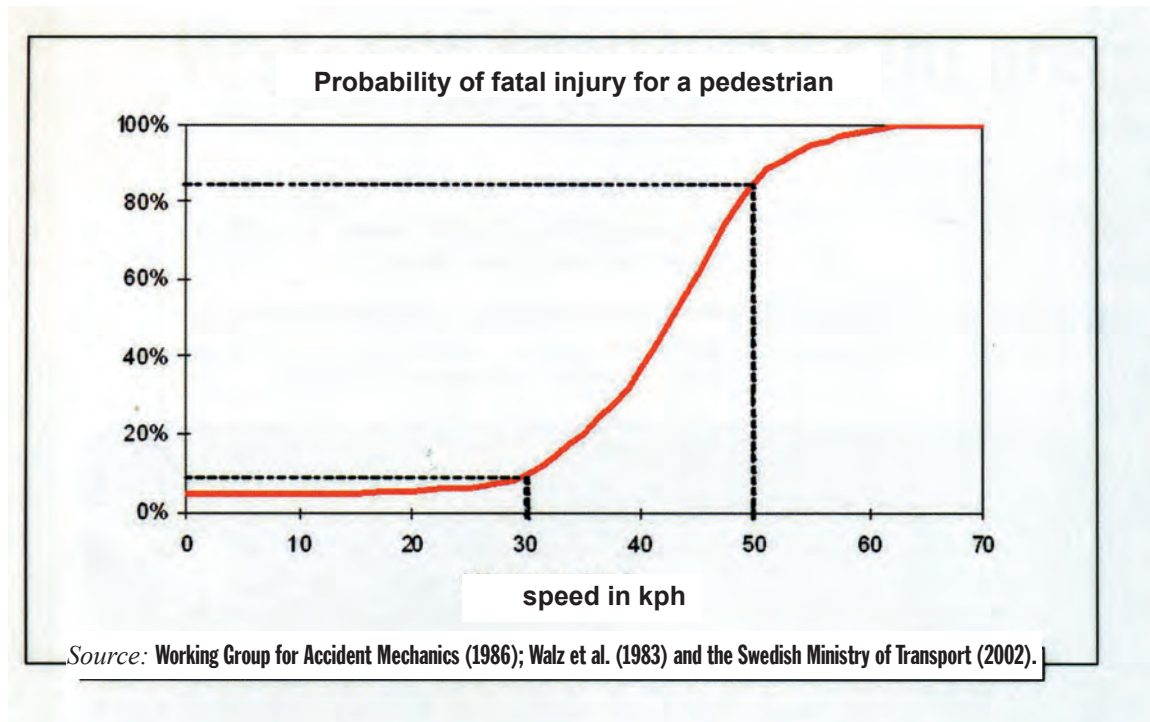
◆ Speed, an aggravating factor

In seeking the minimum risk, the pedestrian is the most exposed.

The international research project on speed management currently being carried out by the joint OECD/CEMT Transport Research Centre has

summarised various findings on the subject to show the physical consequences for a pedestrian of being hit by a light vehicle and the probability of being killed according to the speed of impact.

At 30 kph, the most common injuries are light contusions (source: Garches hospital, department of Professor GOT).



Associated subjects

- 30 kph zones.
- Controlling speeds through design

Bibliographic references

- Connaître la vitesse pour agir sur la sécurité de la circulation en agglomération (Understanding speed with a view to implementing road safety measures in urban areas, Lyon Certu, April 2003.
- L'insécurité routière pour en savoir plus (more detailed information on the lack of safety on the roads), DSCR, 1999.
- Sections 70 en agglomération guide de conception et de recommandations (70 kph zones in metropolitan areas, design guide and recommendations), Lyon Certu, June 1996.

- Guide modération de la vitesse en agglomération recommandations techniques sur la limitation généralisée à 50 km/h. Moderating traffic speeds in urban areas Technical recommendations on the implementation of a standard 50 kph speed limit (obsolete), Bagneux CETUR, May 1992.

- Guide zone 30 méthodologie et recommandations (30 kph Zones» instructional materials case), Bagneux CETUR, May 1992.

- Ville plus sûre, qu'il faut savoir faire et techniques (safer cities, accident free districts: Expertise and technical guidance), Bagneux CETUR, April 1990.

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These sheets can be downloaded from the following websites:

- Certu (<http://www.certu.fr>)
- DSCR road safety «job portal» (<http://securite-routiere.metier.i2>)
- Sétra (intranet: <http://catalogue.setra.i2> and website: <http://catalogue.setra.equipement.gouv.fr>).

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