Bus humps or virtual bumps or both?

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DESIGN OF BUS HUMPS

Already in 1982, the Swedish Road Safety Office presented guidelines on speed reducing devices including proposed design for roads with bus traffic and other heavy vehicle traffic. However up to now a fully acceptable design of humps on streets with regularly bus traffic does not seem to be available. The effects on bus drivers’ comfort and health when driving over three different types of humps was studied in the Stockholm area, an ergo hump, a hump with level upper surface and a bus cushion (Rosander, Lyckman and Johansson, 2007). Neither of them fulfilled the requirements set by the Swedish Work Environment Authority, but the speed cushion proved to be more comfortable than the other two for bus drivers. All three types of humps had positive effects on vehicle speeds, but the goal associated with traffic calming in Sweden was not reached; the 90-percentile was not below 30 km/h. Perhaps the design and placement of the speed cushion is not optimal. Research by Johansson and Rosander (2007) suggests that bus cushions should be placed at a distance of 8-10 m from the crosswalk to be effective and not as often is the case at a distance of 4-5 m. Telematics and other types of Intelligent Transportation Systems, ITS, seem to be needed to satisfy low speeds and other Pedestrian Quality needs. Intelligent Speed Adaption, ISA has been suggested, but so far political acceptance has not been enough to for a large scale implementation. Therefore more research is needed. A topic for future research is given below.

HOW TO INSURE TRAFFIC SAFETY FOR CHILDREN TRAVELLING TO/FROM SCHOOL

A typical feasible experimental site is a small school situated close to a rural road with high vehicle speeds and a speed limit of say 60 km/h. School children have to cross the road at a marked pedestrian crossing. They also walk along the road both on their way to and from school and at leisure time. It is suggested that variable speed message signs are installed. The signs ought to have an auxiliary fixed “Reduce Speed” sign at a reasonable distance before the pedestrian crossing from both directions. The variable signs should be activated when needed, in principle when school children are present along the road or a pedestrian is to cross at the pedestrian crossing. The signs are activated by means of two different systems. The first is tracing the schoolchildren. All school children have small transmitters (for example in a key ring), sending a signal, which is activating the system, i.e. lowering the speed limit, at a certain distance from the receiver at the pedestrian crossing. The lower speed limit is shown as long as a signal is received from any transmitter. There could be more than one receiver if there is a need to reduce speeds also when school children are approaching other spots. The second system is based on microwave or infrared surveying of a specified area around the pedestrian crossing. When the system detects a movement within the specified area the system is activated and the lower speed limit is shown. Data about when and from where the system was activated is stored. The system is designed so that the strategy from where the sign is activated can be modified to make it possible to survey and optimise the system. When implemented in full scale all stretches in areas with a lot of children and/or senior citizens in the community should be equipped with variable message signs, or other types of Intelligent Transport Systems, activated according to certain algorithms when triggered by pedestrians and cyclists.

CONCLUSIONS

For roads with bus traffic and other heavy-vehicle traffic, guidelines are missing for the design of speed reducing devices and/or Intelligent Traffic Systems to ensure low speeds. Therefore further research is needed. This is an urgent topic as an accident analysis based on a macro study of Sweden suggests that the injury risk in marked, not traffic calmed crosswalks increased by 27% for pedestrians and 19% for cyclists compared to at unmarked locations after the code became stricter at marked crosswalks in Sweden to improve safety and mobility for pedestrians (Johansson, Gårder and Leden, 2004).