ELEMENTS OF TRAFFIC CALMING ON THROUGH-PASSES IN CZECH REPUBLIC

Eva Simonova, researcher, Transport Research Centre (CDV)
Líšeňská 33a, 636 00, BRNO, CZECH REPUBLIC
Tel.: +420 5 43215050, Fax: +420 5 43211215, email: simonova@cdv.cz

The main roads in urban areas are the places of great traffic importance and in the same time places where different sort of institutions could be found (city halls, schools, post offices, churches etc.) but also houses, shops, public service utilities and public transport stops. This amount of different functions leads to a great mixture of various interests on the same place at the same time.

Consequences of former strong preference of transit transport are the main problems of through-passes in CR. The main imperfections of the current through-passes are:

- the same or even wider road as in the inter-urban section (according to the current technical standards)
- oversized widths of traffic lines
- narrow or missing sidewalks
- missing paths for cyclists
- large barrier effect of these roads, which has negative effect on pedestrian mobility

These imperfections support the drivers to drive excessively fast at all. The attempt at looking for new progressive solutions led in the second half of nineties Ministry of Transport and Communications to assignment of methodology processing "Guidelines for traffic calming on through-passes ", Czech Technical Guidelines TP 145. This TP 145 was compiled by CDV. The most important outlines of design according to this TP are:

- major emphasis on road traffic safety
- vehicle speed control
- improvement of mobility, especially of vulnerable road users
- reduction of barrier effect of through-passes and facilitation of crossing
- effort to expansion of green areas and verdure whatsoever...

For accomplishing of these principles in projects dealing with roads redesign many road safety measures are available. Among them following are of interest:

Optimization of the lane width - narrowing

Choice of the lane width is important for further disposition of area and thus for other function that relate to life of the community (the cycle path, sidewalk, parking.). The width of lane also influences road traffic safety (wider lane causes higher speed and enhances the risk of accident).

Current widths of lanes in the Czech Republic (which are designed according to valid Czech standards) are in most of the cases oversized. Guidelines TP 145 were based on foreign experience and that is why the lane width is recommended to be shortened by 0,25 – 0,50 m in TP 145. The drainage is also important for the lane width. TP 145 contains criteria to decide when it is possible to make the drainage in half width and when it is possible to leave out the draining strip completely.

CDV (special team) has carried out many speed measurements to evaluate the influence of line-width on drivers behaviour, especially on their speed.

Parking lane

Parking lane has to be subdivided by verdure or street alley. Parking bays are supposed to allow parking of 3 or 4 cars.

It is necessary according to Czech standards to make the parking line 2,75 meters wide. According to new TP 145 it is recommended to design the parking line 2,0 meters wide.

Middle dividing island

Middle dividing islands have great versatility but in the Czech Republic are not appreciated and widespread enough. If used properly these islands have high effectiveness and positive influence on road traffic safety. The following types are the most important:

- Middle dividing island for lowering speed in the entry to the community (gateways)
- Middle dividing island for facilitation of crossing
- Middle dividing island for safety left turns
- Combined use of middle islands for facilitation of crossing and for safe left turns

It is necessary to give priority to physical construction of middle islands over against the horizontal traffic marking. Islands in forms of traffic "shadows" are, from control speed view, almost inefficient prevention from dangerous behavior and possible protection of pedestrians.

A survey done by CDV showed that one-sidedly deflected entry-islands are less effective on speed regulation than the two-sidedly deflected ones.

Designing sidewalk parts – "corner bulges"

It is appropriate to use this measure especially in case of designing sidewalks in intersection areas and also in areas between intersections. This measure prevents vehicles from parking on the sidewalk area and thereby allow better view both for driver and for pedestrians. It also shortens the crossing distance and reduces the vehicle speed. This measure has not been widely implemented in the Czech Republic until now.

Small roundabouts

Small roundabouts are favourite and elegant form when designing an intersection in specific situations. They are useful on the edge of suburbs and also on through-passes. They primarily serve to a reduction of traffic flow speed, an increase of transport flow continuity. They are often used as an alternative instead of light controlled intersections. CDV has carried out a research to evaluate the influence of roundabouts components and their parameters on road safety, especially on speed and accident rate. Regarding the speed, it has been found that roundabouts have strong influence on homogenization of traffic-flow rather than on traffic speed. When evaluating the accident rate and accidents impacts, we use the police reports

and collisional diagrams. Our research has confirmed the known effect on decreasing the accident rate and accidents impacts at most of the roundabouts.

New trends of public bus transport stops order

General tendency of public transport support leads to turning away from bus stop with lay-by._They are substituted by other forms of order – stops on lanes or stop with lay-by. Standing of bus in lane begins to be considered as very effective form of traffic calming. As it can be seen from experience, we can get along without bus stop with lay-by even in cases of relatively high intensities of traffic volume (about 1300 vehicles per hour in both lanes), in case when interval of connections is at least 10 minutes and average period of bus staying on stop does not extend 20-30 seconds. It is important to situate the pedestrian crossing behind the bus stop because this position ensure better intervisibility between drivers of passing vehicles and pedestrians.

Summary

Application of elements stated above leads to increase the road traffic safety. Usage of road safety measures in projects depends on creativeness of designer. The selection of measures is wide and there is many variants existing. These rules have to be respected in the design:

- Adequate area out of road (sidewalk, cycle path, door-yard etc.)
- Clear specified traffic area
- The width of lane is only as much wide as it is necessary for its function
- Design of through-passes reconstruction has to positively motivate drivers to respect speed limits
- Reduction of longwise lines and flatness look that have strong influence on speed
- Support of small roundabouts constructions
- Taking account the road traffic safety and movements of vulnerable roads users
- Support of green area
- Great demand for parking can not be the reason to neglect green areas

Solving the through-passes problems in the Czech Republic is very urgent in these days. Trend of traffic calming even on important roads is clearly evident in foreign countries and the Czech Republic cannot ignore it anymore. Publishing TP 145 "Guidelines for traffic calming on through-passes" tried to contribute in this process.

In practice TP 145 are used mainly in redesign of existing through-passes and they are also great help in redesign of crossroads to roundabouts. Through-passes designed and accomplished according to TP show higher safety level and increase level of living space in cities.

CDV carries out the traffic-engineering survey called BESIDIDO to evaluate more than 200 road safety measures, which have been implemented in our country in last few years. The

evaluation of their effects will be the base for future update of relevant technical standards and guidelines.