

# SAFER TO SCHOOL – the Slovenian approach

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**Abstract.** Considering the EU Road Safety Policy Framework 2021-2030 - Next steps towards "Vision Zero", Slovenian Infrastructure Agency has adopted systematic approach to improve children safety around the schools and on the way to/from school.

To improve the traffic safety of children, the Agency has prepared "SAFER TO SCHOOL guidelines for installing urban equipment and architectural design of traffic areas to improve road safety for school children" in which it suggests how to systematically re-design roads, to be more self-explaining, and to intuitively warn road users of the proximity of the school or school path.

The system was designed considering Human Factors (traffic psychology) in road design, and was previously verified by several monitoring's. By the approach synergies between safety and sustainability measures are established, so children can walk and cycle in safer road environment.

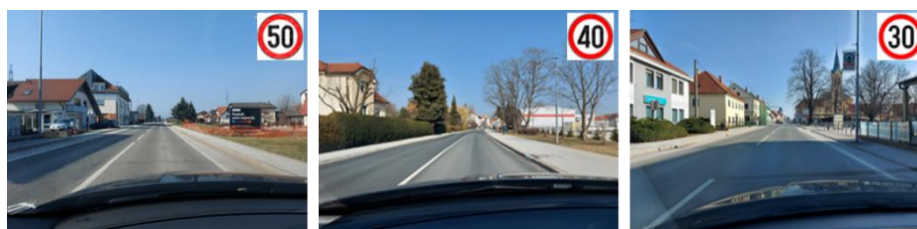
The concept is also a very good contra measure combatting existing issues of inadequate spatial planning, providing safer roads, speeds and road users.

**Keywords:** Traffic Safety, Human Factors, Safer to School.

## 1 Facing challenges

An outdated concept of road planning (land use, spatial planning (urbanism), road access, linear settlements etc.), lead to the issue of inadequate roads functions (functionally and design), and with that poor self-explanatory road design, so drivers tend to subconsciously violate road traffic rules.

Due to above mentioned issues, roads often do not provide proper (intuitive) information, about specific traffic conditions, like presence of schoolchildren on the road, and speed limits. In addition, the dangers indicated by traffic signs are not logical, predictable, understandable and therefore, acceptable by the drivers.



**Fig. 1.** Non self-explanatory road design with different speed limits inside a town

### 1.1 Challenge and opportunity

Slovenian Infrastructure Agency has faced the challenge, and took it as an opportunity to start with the pilot projects and their evaluation and developed systematic approach, a concept based on Human Factors knowledge in road design, to tackle challenges of improper speeds and driving behavior around Schools, by developing guidelines “Safer to School” [7].



Fig. 2. Slovenian approach “Safer and Healthier to School” [1].

Ministry for Infrastructure recognized the benefits of pilot projects and concept “Safer to School” and approached to the amendment of the Roads Act. By adding urban equipment and architectural design of traffic areas in the article of traffic calming devices and measures, it has enable Slovenian Infrastructure Agency to move from pilot projects to systematic approach.

The Agency created an Investment Project Identification Document to ensure for stabile and long term investments for improving School areas in enhancing children safety.

Ministry also supported the Agency with implementation of the concept, starting with ten School areas across Slovenia in ten different Municipalities, where state roads pass by Schools.

**Collaboration with the Municipalities.** To gain wider support and understanding from local community and road users, the Agency collaborated with the Municipalities from the beginning. It was crucial to get firsthand information of the challenges

people, especially schoolchildren, are facing in those areas, so that solutions could be adapted to the respective needs.

After making of project designs, the implementations followed and the project “Safer to School” gain its momentum. User responses were positive and Municipalities saw an opportunity to start with the concept also on municipality roads.

## 2 Safer to School implementation

Thankfully, selected locations were very different regarding road geometry and its elements, traffic volume, traffic safety challenges children are facing etc., and with that, we came to many diverse solutions; upon we could learn and gain needed experience.

We also managed to include some designs in project and implementations in progress (Fig. 3 and 5). Other ten interventions were orientated more towards prompt low cost measures, so that implementation could be finish during summer break and before beginning of a new school year.

In pictures below are just some implemented solutions to give general overview of the concept.



**Fig. 3.** School area with speed limit 50 km/h (added in construction phase).



**Fig. 4.** School area with speed limit 50 km/h (road without middle lane due to its width).





**Fig. 5.** School area with with additional visual road narrowing (added in design scheme).



**Fig. 6.** School area with speed limit 30 km/h.

One of the challenges was also how to mark locations, where only School buses stop, for picking up and dropping off children on the way to/from School. Those locations are not for public transport and can change when children stop going to School or move away, which is why locations are not equipped according to design standard for bus stops. School buses (properly marked for School transport) can stop beside the road using all four flashing lights according to the Road Traffic Rules Act.

That is why system BUSko [3] was developed and verified on several location as appropriate low cost solution. With this approach, we assure waiting area for school-children, so they do not have to stand on the road while waiting for school bus, and with especially designed “school bus stop” sign, driver give proper information of possible presence of children alongside the road.



**Fig. 7.** School bus stop (BUSko), before and after the implementation.

With implemented designs, we managed to slow down drivers and raise their attention. What was previously also proven with pilot projects [1, 2, 3, 4]. In one case we even managed to slow down traffic in such a way that local community waived from the request to implement physical traffic calming device – speed bump. Since the implementation, there were no further complaints or requests for additional measures to reduce traffic speeds or influence driving behavior.

Of course, winter and regular maintenance must not be forgotten, especially when dealing with children safety and promotion of walking to School.



**Fig. 8.** Proper winter maintenance of School path.

## 2.1 Lessons learned

We learned that it is at most important to make designs at the designing stage as detailed as possible. In complicated situations, even simulation (from drivers' point of view) is necessary, to provide a true representation of what the final solution should look like in reality and if it coincides with the imagined solution. Design solutions should not be designed just in the office. Designer (traffic engineer) must carefully inspect the terrain and use Human Factor knowledge / understanding, before going to the drawing board. Designer must also put together detailed requirements of material and equipment, so that there are no doubts in the tender and construction phase.

Construction supervision must be well acquainted with all the solutions, details and requirements and if needed work together with the designer and/or road operator. In case of suspicion about the installed material and equipment, the external control must also be engaged.

During construction, basic demands must be met, in order not to reduce traffic safety in any case (Fig. 9).



**Fig. 9.** Case in which traffic bollards obstruct the view from the side road.

In some cases, we even came to a challenge how to implement road markings due to bad condition of upper layer of the surface, especially for long lasting marking materials with high skid resistance. Sometimes there was also a challenge where to put urban equipment, due to land ownership or specifics in the urban and road environment. Such matters must be foreseen before, at design stage.

Municipalities are becoming increasingly involved in “Safe to School” concept, what is very encouraging. The challenge is, that due to lack of their own cadre of employees, they leave decisions completely up to designers, who are not all properly trained and do not have enough specific professional knowledge. Copy paste solutions are definitely not acceptable, as each location has its own specifics. In addition, decisions are made on local political level to make proposed designs cheaper (less colorful design or equipment and cheaper materials), so solutions they propose are sometimes very unacceptable.

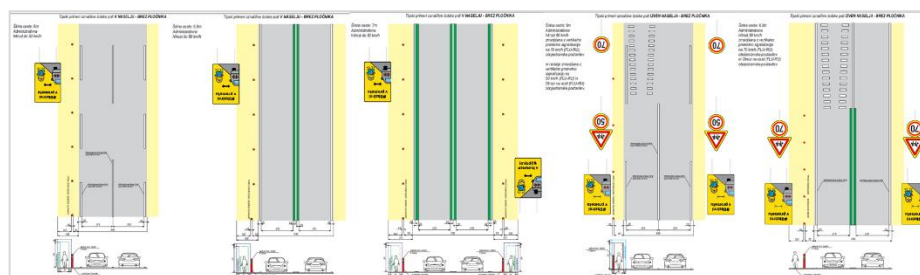
There is still room for improvement, to share experience and knowledge, to communicate, and educate.

**Things to do.** We are still facing challenges for improving access and walkability from dispersed settlements towards bus stops, Schools etc., where side walk is not economically feasible, at least not for a long time, due to many needs. One of the



solutions that is currently in design stage are typical schemes (depending of road width, traffic etc.), to establish uniform solutions across the country.

With this approach, we are aiming to move children walking directly on the edge of the road, away towards the stabilized hard shoulder or embankment.



**Fig. 10.** Case in which traffic bollards obstruct the view from the side road.

With the concept, we are trying to harmonize the solutions involving children on their way to School and around School areas. We believe that with self-explaining road design, we will be able to intuitively provide safer driving (lower speeds and more attentive drivers), and with that increase road safety. Of course, we have still a lot of work to do, and we are well aware that those solutions are not always the solution, and sometimes bigger construction interventions are needed.

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