Identification of potential relationships between road safety and design and operation of roadside elements

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PROGRESS – Provision of Guidelines for Road Side Safety is a project funded within the CEDR 2016 Safety Call, in which the results of a status quo review of available EU roadside safety standards and guidelines are combined with the experiences from National Road Authorities in applying these in the design, operation and maintenance phases of EU high-speed roads (speed limits higher than 70 km/h). A special emphasis is put on the six funding countries (Belgium-Flanders, Ireland, Netherlands, Slovenia, Sweden, and United Kingdom), plus Germany and Portugal, which are included to increase the geographic representation of the results.

Existing safety projects and international literature related to the application of guidelines and standards in the improvement of roadside safety have been analysed in detail, in order to describe and assess their findings and to summarise the potential relationships between the design and operation (including maintenance) of roadside elements and safety. The main conclusion is that the effect of the application of guidelines and standards on roadside safety has not been sufficiently studied or reported in scientific journals both in Europe and in the rest of the world.

Following an examination of current national standards of eight European countries for roadside design, management, maintenance, and operations, a matrix was developed to illustrate the relationship between different roadside design features and road safety elements in general and crashes in particular. This provides a benchmark of roadside safety performance in those eight European countries, namely resulting from a combination of crash data analysis and an examination of roadside severity ratings for countries where these were available (for example, from EuroRap inventories).

Additionally, crash data from the eight participating countries over the past ten years were analysed to determine the extent of the single-vehicle crash problem on their rural roads (both motorways and single carriageway roads with general speed limits above 70 km/h). The analysis defines the scope of the problem and provides a perspective on differences between the participating countries, related to both single-vehicle crashes and the involvement of road workers, during roadside maintenance duties. This qualitative analysis was complemented by fitting crash prediction models to the EuroRap and crash data, which allowed for a thorough quantitative assessment of significant crash risk and severity covariates. In this paper, the outcomes of this assessment are presented, with the results from their combination with the conclusions of the qualitative analyses.