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Title:

Evaluation of effectiveness of dedicated lighting solution used at pedestrian crossings

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The subject of the dissertation is to develop a method for assessing the effectiveness of dedicated lighting solutions used at pedestrian crossings in terms of road safety. The subject of the work results from the low level of road safety at night and the need to take into account lighting factors in the activities undertaken to improve road safety.

The study discusses the impact of lighting on the safety of road users at pedestrian crossings not controlled by traffic lights. At the beginning is presented an overview of the formal and legal requirements in the field of lighting and methods of assessing lighting parameters in the context of road safety. The literature review showed that in the area of pedestrian crossings, the problem of the influence of lighting factors on safety remains unrecognized.

The author of the dissertation undertook to determine the relationship between lighting parameters and the number of traffic conflicts. The following thesis was formulated: the positive contrast of a pedestrian's silhouette with the background of the road reduces conflicts in road traffic. The main purpose of the work was to propose a method for assessing the effectiveness of dedicated lighting solutions used at pedestrian crossings.

Based on the performed field tests and data from the road administrator, the correlation coefficient between the selected parameters was determined and the contrast values at pedestrian crossings were determined for various lighting conditions. The obtained results were used to develop a method for assessing the effectiveness of dedicated lighting solutions. The assessment is based on the analysis of the number of traffic conflicts, based on data on lighting conditions and the average speed of vehicles. The method was developed using heuristic methods (fuzzy inference). The inference system was designed based on expert knowledge and own research.

The developed method can be used to assess the legitimacy of using solutions dedicated to pedestrian crossings, as well as help road managers in determining the correct lighting parameters. The proposed method can be used to assess lighting in road safety assessments.

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PRZEWÓDNICZĄCY
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