

Research study on snowdrifts on I Category state roads

On spots where ground configuration, obstacles and route positions cause wind deceleration snow deposits and snowdrifts are being sculpted. It could be said that snowdrifts are meteorological phenomenon with significant influence on road maintenance, and represent frequent cause of halt in road transport during winter period. Data on the conditions of the occurrence of snowdrifts are important factor in road designing, and timely and reliable meteorological data in exploitation phase enable adequate implementation of necessary activities aimed at ensuring the passability of road infrastructure and traffic safety.

The Public Enterprise "Roads of Serbia", Sector for Strategy, Designing and Development, has initiated preparation of Research study on snowdrifts on I Category state roads in order to improve traffic flow on the state road network in the winter period by application of adequate measures for protection from snowdrifts.

The Study includes table representing sections on first category road network with snowdrifts based on data obtained from PZP authorities from 2007 to 2015. Additional synoptic map provides and overview of endangered sites.

Mechanical, meteorological and thermodynamic analyses have determined the conditions and regularity of snowdrift occurrence, and based on the obtained results the maps showing possible transport of snow by wind force and reallocation for the entire first and second category road network are made. The chapter titled Proposition of protective measures represents the method of forecasting the snowdrift formation depending on road cross-section geometry. Thereafter, the recommendations for diminution of snowdrift formation by adjustment of central line, finish grade and cross-section in road designing phase, as well as proposition of protective measures on already constructed sections are given. Calculations of safety barriers' dimensions and constructive details are elaborated later on in the text. Protective structures (fences and vegetation) proved to be a good method for prevention of snowdrift and glitter ice formations on carriageway, as well as for improvement of visibility on roads. For section of the motorway E-70, Bačka Topola – Feketić, as a case study, the preliminary design for protection from snowdrifts is prepared. Check list form for analysis of locations exposed to snowdrifts is enclosed to the Study.

The Study provides basis for establishment of developed, comprehensive, efficient and effective system for diminution of risk and consequences of snowdrifts, thus contributing to increased traffic safety and general security on state road functioning. There is a plan for preparation of adequate study for second category state roads, and it is proposed that, along with the technical documentation of new road routes, the calculation of height and form of snowdrifts on cross-section newly designed communications should be included. The check lists should help companies in charge of the winter maintenance in registration of micro-locations of this occurrence within sections where snowdrifts could be expected in order to optimize protective measures.

Winter road maintenance indicating prevention of glitter ice occurrence and removal of snow and snowdrifts is very responsible activity involving engagement of significant resources in form of material, workforce, specialized equipment, construction mechanization and accommodation capacity. Integrated with timely and reliable meteorological data on snow fall occurrence, the Research study on snowdrifts could be a useful tool for optimization of activities necessary for enabling passability of road infrastructure and traffic safety.