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| Appendixes | 2 |
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The dissertation is devoted to the issue of rail traffic safety on the continuous welded rail (CWR) track in the period of increased temperatures. Significant longitudinal stresses in the rails due to increased temperature and dynamic loads from the rolling stock can lead to the buckling of the track and consequently the derailment of the rail vehicle, which is a serious threat to the safety of railway traffic.

The first part of the work presents a literature review on of buckling of the CWR track, with particular emphasis on the buckling in the horizontal direction, and then the goal, thesis and scope of the work. The aim of the work is to develop a comprehensive method of supporting decisions in the maintenance of the railway track in the field of diagnostics and operation of the CWR track during periods of increased temperatures, taking into account the dynamic impact of trains running. The third chapter presents in detail the issues related to thermal stresses in the CWR track.

The further part of the work contains a description of the experimental research carried out, methods of preparation of the tested objects and the measurement methods used. Measurements were made on the section of the CWR track No. 2 of the line No. 002 Warszawa Zachodnia

- Terespol on the Warszawa Centralna - Warszawa Wschodnia route, where there is a very high traffic load of various types of rail vehicles. The tests included the measurement of rails and ambient temperature, longitudinal forces, in both rails simultaneously, both without load and during the passage of rail vehicles. An important element of the tests performed was the preparation of the tested section of the track for the measurement of longitudinal forces. Chapter six presents an overview of stress control methods in the CWR track, which can be used to develop technological designs of stress control in the CWR track. The next chapter presents the method of measuring longitudinal forces in railways of the CWR track with the use of an extensometer, and the obtained measurement results are presented in the dissertation.

Chapter eight presents the author's method of supporting decisions aimed at ensuring the safety of train traffic on the CWR track in the period of increased temperatures. The method was developed on the basis of the author's many years of experience in the construction of CWR tracks in Poland, the analysis of domestic and foreign literature and experimental research carried out for the purposes of this doctoral dissertation. This method can be a practical tool for railway track maintenance services. The last chapter is a summary of the dissertation and contains recommendations for economic practice.