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RELIABLE AND ADEQUATE ENGINEERING SURVEYS FOR CONSTRUCTION: THE RULE OF TWO D

In the article the current state of quality supply of engineering surveys for construction is discussed. The main criteria for improving the design quality of buildings and structures for industrial, civil and other purposes is the reliability and adequacy of the results of engineering-geological surveys. The authors show the examples of inadequate study of engineering-geological conditions in the design of structures that led to emergency situations. Consideration of the reasons of accidents in structures showed that they are caused by lack of research conducted, the underestimation of the complexity of geological conditions. In the process of conducting geotechnical investigations the works were focused directly in the enclosure of a designed building, and the features of geological and hydrogeological conditions of the off-site were much more complex. In the process of construction during the sinking of the pit activation suffusion processes occurred, which led to an accident. Underestimation of the use of these geological funds in this example shows that even in the presence of fund materials, which are currently almost not increased, errors may occur due to the notorious savings for research. The requirements to ensuring the reliability and adequacy of engineering-geological surveys, which the authors call “The Rule of two D” (in Russian — Reliability and Adequacy), lie in the existing legal acts. The practice of fulfilling requirements to a large extend shows that the desire to save money at the stage of design and exploration works results in additional costs for additional design, recovery from accidents and works on a new project. The authors critically evaluated the development of engineering and geotechnical engineering instead of geological survey, which is not methodologically and theoretically substantiated and leads to the excluding from engineering surveys the consideration of the off-site geotechnical conditions directly below the designed structure. The authors give the recommendations for improving the examination quality of the results of surveys and recommendations on obligatory increase of geological funds.

Key words: engineering surveys, construction, engineering-geological surveys, quality, accuracy, sufficiency, engineering-geological conditions, requirements for quality, examination, geological funds.

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