special bench in laboratory conditions on gypsum envelope models using photograms of the study process.

These data confirm the physical nature of the process, established in the course of research in natural conditions.

As a result of the research, a methodology has been formulated for determining the basic parameters of equipment for immersing envelopes.

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SECTION "MINE SURVEYING"

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THE CHOICE OF METHODS FOR OBSERVATION OF ROCKS AND EARTH SURFACE

Using modern instruments for measuring distances, angles and elevations, as well as GPS for coordinating points, methods for observing the movement of rocks and the earth's surface should be improved.

In the current instruction and methodological guidelines for monitoring deformations, the recommended methods for taking measurements and evaluating results are based on the use of linear measurements between benchmarks and determining their altitude from geometric leveling. The resulting line lengths between the benchmarks and their marks allow us to calculate the horizontal and vertical components of the deformations, which are compared with critical values, indicating the presence of a zone of a dangerous effect of underground mining.

It is known that the values characterizing deformations are: shrinkage (η), curvature (k), slope (i), tensile-compression (ε), calculated from changes in elevations and lengths of segments over a certain period.

Today, when a more effective way to determine the position of benchmarks in plan and height is to coordinate them using GPS, the urgent issue is the transition from the critical values η, k, i, ε adopted in the instruction to the critical values and directions of the vectors reference offsets.

At twenty-meter intervals between benchmarks, the critical value is the slope $i=4\cdot10^{-3}$, and the difference in shrinkage at adjacent points is 0.08 m. At a critical value of tension-compression $\varepsilon=2\cdot10^{-3}$, the distance difference between the benchmarks at the initial and current moment is 0.04 m, and at a critical value of curvature $k=2\cdot10^{-3}$, the difference in the slopes of adjacent lines is 0.004. The critical value of shrinkage on the benchmark is 15 mm, corresponds to the previous statements about the difference in precipitation of adjacent benchmarks.

An analysis of these data allows us to conclude that it is possible to determine the critical values of the displacements of the benchmarks in the plan and add them to the current instruction.