Method for continuous monitoring of deformations in piled rock mass of rock dump during open-pit mining of mineral deposits involves placing monitoring devices within dump body, recording the condition of dump surface, and transmitting signals regarding the surface condition to monitoring center, as well as assessing the current stability of dump and predicting potential landslides, wherein at least three pickets are installed on dump surface, made of corrosion-resistant material and anchored in the ground. Picket tops are connected by high-strength cables with a low tensile coefficient, and the opposite ends of cables, which are equipped with cable tension sensors with autonomous power sources, are connected to vertices of triangular spatial structure, at the geometric center of which laser emitter is mounted. Triangular spatial structure with laser emitter is positioned above the surface of waste dump using sealed hoisting envelope equipped with a pressure regulation system featuring automatic valve. Laser emitter directs beam vertically downward with a wavelength in the range of 500-550 nanometers. In the area where laser beam strikes, laser light marker detection device is installed, which is synchronized with GPS timer to ensure continuous recording of laser marker's coordinates by detection device and transmission of data to monitoring center. The cable tension values are recorded by all sensors, and the change in cable length and the spatial position of the triangular structure are calculated. The displacement vector of triangular structure in space is determined, the coordinates of laser mark are measured by laser light mark detection device, coordinates are compared with accepted baseline values, the relative displacement of the loose rock mass of the dump in the horizontal and vertical planes is determined, and the amplitude and rate of deformation along the X, Y, and Z axes are calculated. The obtained values are compared with the established thresholds for permissible deformations. If the thresholds are exceeded, alarm signal is generated, sent to control room and operator's mobile interface, and all parameters are archived in monitoring system database. Displace and cable tension parameters are visualized in real time; graphs and alarm signals are displayed on user interface; trends in the change of laser marker coordinates over time are analyzed; and areas of potential dump instability are identified. History of deformation processes linked to geodata is recorded, and the spatial position of the laser emitter is adjusted as dump geometry changes.