TYPES OF DEFORMATIONS OF THE FOUNDATIONS OF BUILDINGS AND STRUCTURES

Adizova Farangiz Nurali kizi
Assistant of the department "Use of land resources of the State cadastre"
Tashkent Institute of Irrigation Engineers of Agricultural Mechanization, National Research University, Bukhara Institute of Natural Resources Management
Salimov Shahzod Odiljon ugli
Student of Geodesy and Geoinformation
Tilyabova Elnora Sherzod kizi
Student of Geodesy and Geoinformation

Annotation: *The article briefly discusses the issues of deformations of the foundations of buildings and structures in modern practice, which occupies the observation of the corresponding deformations, their interactions, the ability of the base, with a variety of soils, as well as highly compressible ones, where it becomes necessary to calculate building structures, where efforts depend on the strength and rigidity of structures. The forecast of the amount of deformation of the foundations at the design stage of the structure and the sediment of the foundations with soil compaction under the influence of loads and resistance, where a fundamental change in its structure and with uniform and uneven precipitation is indicated.*

Keywords: *Deformation of bases, interaction, uniform and uneven precipitation, structures, design calculation, engineering works, technological process.*

A significant place in modern engineering practice is occupied by monitoring deformations of buildings and structures, no construction can do without measuring deformations, during which the construction of larger structures as a result of observation can last the entire period of operation, because their stability and the normal mode of the technological process depend on the magnitude of the deformations occurring, while the complexity and volume of observations The requirements for the accuracy of their production are increasing.

The interaction of the bases of buildings and structures is mainly characterized by two factors: 1. The ability of the base to deform from the load transmitted to it by the structure. 2. The ability of the structure to follow the deformations of the base. Due to the use of various soils as bases, including highly compressible ones, there is a need for appropriate calculations of building structures of buildings and structures that take into account additional loads resulting from uneven precipitation of the bases, and the effort depends on the strength and rigidity of

structures with their additional values. Hence, it can be concluded that the sign of a difference in three types of structures: 1.absolutely rigid structures; (tower, elevator, chimneys, etc.) 2.non-rigid structures where additional stresses do not occur; 3. Relatively rigid structures-which occupy a place between two types, a frame reinforced concrete frame with load-bearing walls and ceilings. The calculation of the foundations of buildings and structures by deformations is a complex stage that requires considering the structural elements of their joint work of a rigid state erected on it. The determination of soil deformations under the influence of external forces is of great importance in the practice of designing buildings and structures. The methods of general elastic deformations of the bases are based on strict solutions of the theory of elasticity for an elastic half-space and for other elastic layers of limited finite thickness that lies on an incompressible base, while the methodically obtained general elastic deformations of the base solutions are also determined for general deformations, a linearly deformable half-space and a linearly deformable layer of limited base thickness. Therefore, the deformation of the bases is characterized by the following types: 1. absolutely sedimentation of a separate foundation; 2. the average precipitation of buildings and structures, which is determined by the absolute precipitation of the corresponding foundations at three points of a solid foundation; 3. The difference in the sediment of two adjacent supports, which characterizes non-rigid structures. 4. The relative deflection attributed to the span of the curved part of the building and structure.

Which are determined by the formula:

$$\frac{f}{L} = \frac{(2S_2 - S_1 - S_3)}{2L}$$

Where: **S1 and S3** – the draft of the ends of the bending section under consideration;

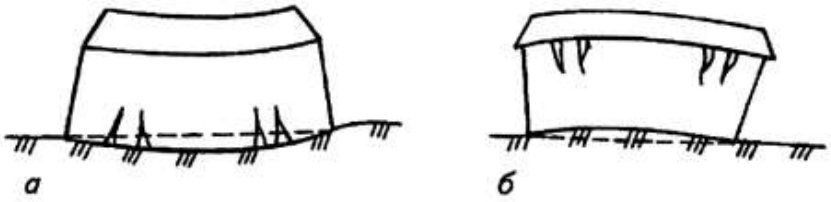
S2 – the highest or lowest precipitation in the same area;

L – distance between points **S1 and S2**

Currently, there are approximate methods for solving problems of joint operation of the foundations of buildings and structures used in designs on compressible soils, including subsidence moments of the foundation. The task of calculating the bases for deformations is to limit the deformations of above-ground structures that occur as a result of soil precipitation, therefore, such limits that consider the appearance of unacceptable cracks and damages in structures, i.e. the structure moves from a rigid position to a flexible position.

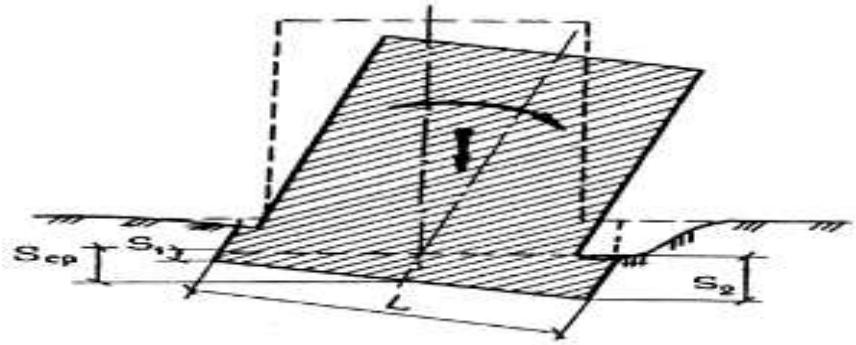
The forecast of the magnitude of deformations of the foundations at the design stage of the structure allows you to choose the most correct design solutions for foundations and aboveground parts of buildings and structures. The precipitation of the foundations has a decisive effect on the strength and stability of underground structures. Sediment is a slow and relatively small deformation that occurs as a

result of compaction of the soil under the influence of loads and resists radical changes in its structure With uniform precipitation of the base, the sole of the foundation is lowered by the same amount at any given time, which do not cause a redistribution of forces in the structures, but complicate normal operation. With uneven precipitation of the base, the sole of the foundation sinks by a different amount, causing a redistribution of forces and deformations in the aboveground parts of buildings and structures, such precipitation worsens the operation of equipment, leads to a change in the stability conditions of buildings and structures, which cause overvoltage in individual structural elements.



Picture:1- Deflection pattern (a) and bending (б) facilities

Deformations of foundations and soils are monitored to check the correctness of design calculations, identify patterns and promptly take measures to eliminate the consequences and prevent dangerous situations, also during the operation of buildings and structures, deformation is monitored according to a calendar plan, systematic measurements are made and recorded in documents. Specialists monitor the condition and temperature of groundwater, soils, meteorological data, changes in construction load and equipment load.



Picture.2 – The roll of the structure

Thus, deformations are monitored from the zero stage of construction and during operation. It is mandatory to monitor the vertical and horizontal displacements of the object before the start of major repairs, before commissioning and when appointing a construction examination.

A significant place in modern engineering practice is occupied by monitoring deformations of buildings and structures, because no construction can do without measuring deformations, and during the construction of larger structures, observations can last the entire period of operation, because their stability and the normal mode of the technological process depend on the magnitude of the

deformations occurring. But at the same time, the complexity and volume of observations, the requirements for the accuracy of their production increase annually.

Depending on the nature of the development of uneven sediments and the rigidity of the structure, deformations and displacements of structures of the following simplest types occur: deflection, bending, skew, roll, twisting, horizontal movements of foundations.

Deformation of buildings

Under the influence of natural phenomena, chemical, mechanical and electrochemical influences, building structures lose the strength necessary for operation. This usually leads to loss of stability, deformation of buildings and weakening of the bearing capacity of building structures. In this regard, it is necessary to regularly carry out preventive monitoring of structures.

The following types of deformations of buildings are distinguished: absolute precipitation of a building; average precipitation of a structure, building or its separate part; roll or skew; relative bending (bending) or deflection.

In the process of conducting geotechnical monitoring of structures, comprehensive monitoring and monitoring of the state of the soil mass under buildings or structures that are in the zone of impact of construction processes is carried out. This is necessary to prevent the process of precipitation of engineering structures and compaction of the massif in the built-up area, in particular, in order to avoid emergency situations under the influence of dynamic negative influences during the construction of structures.

Engineering structures and the earth's surface experience various deformations that occur due to external influences when natural conditions change, and are also a consequence of human activity. Deformations of objects are caused by factors affecting soil softening

Deformation is understood as a change in the shape of an object (here - an engineering structure or the earth's surface). As a result of the constant pressure of a massive structure on the ground, the soil is compressed and the object is displaced in the vertical direction. This displacement is called precipitation.

LITERATURE:

1. В.А.Зурнаджи « Механика грунтов, основания и фундаменты» Москва – 1967год.
2. М.И.Смородинов «Основания и фундаменты» Москва – 1983год.
3. Н.А.Цытович «Механика грунтов» Москва – 1983год.
4. Т.А.Гура «Деформации зданий и сооружений и порядок их выявления» Молодой ученый – 2016год.

5. М.М.Сактович «Технология и организация методов устранения деформации оснований плитного фундамента» Молодой ученый – 2020год.

6. Ю.А.Вильман «Механизированная технология вертикальной планировки и возведение монолитных железобетонных фундаментов зданий» Учебное пособие.

7. С.Г.Безволев «Основания и фундаменты тяжело нагруженных сооружений» 2013год.

8. Д.Д.Баркан «Динамика оснований и фундаментов» М.2015год.

9. Adizova, F. N., Mukhamadov, K. M., & Abdulloyev, Z. T. SS Saidov RESEARCH PARK Page 1 INTERNATIONAL JOURNAL ON ECONOMICS. *FINANCE AND SUSTAINABLE DEVELOPMENT*, 55-59.

10. FN, A. (2022). YER MONITORINGI-ILMIY YO'NALISH SIFATIDA.(KONSEPSIYASI, METODOLOGIYASI, TEXNOLOGIYASI). *PEDAGOG*, *5*(6), 624-629.

11. Adizova, F. N., Mukhamadov, K. M., Abdulloyev, Z. T., & Saidov, S. S. Further Development of Horticulture and Viticulture System in Uzbekistan. *International Journal on Economics, Finance and Sustainable Development*, *4*(5), 55-59.

12. Ахмадов, Б. О., & Пиримов, Ж. Ж. (2020). RESPUBLIKADA KO'CHMAS MULKKA BO'LGAN HUQUQLARNI DAVLAT RO'YXATIGA OLISH TIZIMINI YANADA SODDALASHTIRISH. *ЖУРНАЛ АГРО ПРОЦЕССИНГ*, (SPECIAL ISSUE).