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PROBLEMS IN THE INSPECTION OF USED BUILDINGS ON THE BASIS OF THE CURRENT NORM OF EARTHQUAKE RESISTANCE

Zebuniso Abobakirova Asrorovna, Shodiljon Umarov Abdugofurovich
Ferghana Polytechnic Institute, Ferghana, 86 Ferghana Street, Ferghana 150107, Uzbekistan
z.abobakirova@ferpi.uz, (ORCID 0000-0002-9552-897X)
sh.umarov@ferpi.uz, (ORCID 0000-0003-2265-3232).

Abstract: *In this article, the seismic building codes applied in the last 50 years in the calculation and construction of buildings and structures in the Republic of Uzbekistan have been studied and comparatively studied. Studies have shown that the technical condition of the buildings in operation, the calculation of dynamic soil coefficients and changes to the requirements for buildings are due to the fact that the general classification rules, rules of seismic effects and dynamic properties of building soils, methods for determining calculated seismic loads, circumstances leading to an increase in calculated seismic loads have been studied.*

Key words: *Seismics, buildings, dynamic characteristics, operation, comparative education, Seismic forecast, magnitude, seismic loads.*

INTRODUCTION

Currently, the number of buildings built in our Republic more than 50 years ago and in use is significantly higher. These buildings were built on the basis of now-defunct regulatory documents, were morally outdated, but did not completely lose their seismic strength. Most of these buildings are public schools and preschools.

When comparing the requirements of the regulatory document “construction in earthquake areas” **Building regulatory rules** (BRR)-2.01.03-19, processed by the Ministry of construction and housing and communal services of Uzbekistan, significant differences are identified in the volumetric-plan and constructive solutions of the above buildings. The result of the earthquake, in addition to the victimization of the population, causes serious damage, economic damage to buildings and structures. One of the most pressing problems is ensuring the earthquake stability of buildings and structures and the safety of the population in these areas. Currently, work is being carried out under the Ministry of

Emergency Situations of the Republic of Uzbekistan by the "Seismoprognoz center" to monitor the seismic situation in the Republic of Uzbekistan and neighboring countries. But the practical issues of preventing an earthquake with forecasting remain one of the open problems all over the world to this day, including in our Republic. Therefore, the Prevention of economic damage that can result from checking the technical condition of buildings by ensuring their seismic strength is one of the main solutions in ensuring seismic safety.

Main part. There are different opinions about the distribution of seismogenic zones in Uzbekistan. Seismogenic zones are deities with strong earthquakes. Many years of research show that three floors of seismogenicity have been identified for the territory of Uzbekistan, in which earthquakes with a zone maximum magnitude can occur: Mmax≤7.5 and Imax≤9 points; Mmax≤6.5 and Imax≤8; Mmax≤5.5 and Imax≤7 points, respectively, for the specified smoothness. On the basis of instrumental seismometric calculations at permanent seismic stations, earthquake epicenters receive source material for studying the seismic regime of the existing territory of Uzbekistan[1-7].

As a result of the study of regulatory documents (Building regulations and rules II-A.12-69, BRR II-A.12-69 *, BRR II -7-81 *, BRR 2.03.01-96, BRR 2.03.01-19) problems related to the construction of buildings and structures, the development of seismic zoning maps taking into account local geological conditions, analysis of structures and calculation methods were considered during the pre-independence periods and years of the Republic of Uzbekistan. By comparison, differences were found that could have a significant effect on the latency of determining seismic resistance of structures.

If we consider the standards of developed countries for seismicity, there are about 30 most economically developed countries in the world, we can see that they use their own standards that regulate the Basic Rules of construction in seismic hazardous areas. For example, for Russia and countries close to it, this problem is of vital importance. However, it should be noted that despite the variety of existing building standards, all seismic standards are based on the basic theory of seismic resistance developed at the beginning of the 20th century[1-6].

Also, in 2019, scientists from Uzbekistan, based on the above, seriously revised the regulatory framework “construction in seismic areas” BRR 2.01.03-19 on ensuring the safety of the population living in earthquake-prone ‘ududs.

In Uzbekistan over the past 50 years, the basic standards of construction in seismic wells have been revised several times. I.Table 3.1 provides data on changes in key parameters for detecting project seismic loads in these standards. Old regulatory documents (BRR II-A.12-69 and BRR IIA.12-69*) for areas with seismicity coefficients of 7, 8 and 9 points respectively, the seismicity coefficient is adopted. This is respectively 0.25, 0.05 and 0.1, and the dynamic coefficient is assumed to be the same for all types of grunts. The impact of the grunt composition in the building area was accounted for by changing the seismicity of the building site: in terms of seismic properties, the seismicity of the area for Category II grunts increased by 1 point, and in the case of Category III grunts, the seismicity of the area increased by 1 point. For buildings with a height of more than 5 floors, the seismic load was multiplied by a coefficient of 1+0.1(n-5), but not greater than 1.4; for buildings with large panels and load-bearing walls with monolithic reinforced concrete, this coefficient was determined by the Formula 1+0.006(n-5), but received no more than 1.3.

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Parameters of seismic loads

Norms	Grunt type	seismicity coefficient for seismic regions A, g (ag)			dynamicity coefficient β
		7 points	8 points	9 points	

BRR II-A.12-69 BRRII-A.12-69*	I	0,0125	0,025	0,05	0,8<1/T_i<3,0
	II	0,025	0,05	0,1	
	III	0,05	0,1	0,2	
BRR II -7-81*	I	0,05	0,1	0,2	1/T_i<3,0
	II	0,1	0,2	0,4	1,1/T_i<2,7
	III	0,2	0,4	0,8	1,2/T_i<2,0
BRR 2.03.01-96	I	0,33	0,65	1,30	0,75<T_i<2,0
	II	0,48	0,96	1,92	
	III	0,53	1,07	2,13	
BRR 2.03.01-19	I	0,33	0,65	1,30	0<T_i<2,0
	II	0,48	0,96	1,92	
	III	0,53	1,07	2,13	

BRR II-7-81* at the seismicity coefficient was quadrupled (0.1, 0.2 and 0.4 were taken, respectively, when the seismicity coefficient of the construction zone was equal to 7, 8 and 9 points). In addition, the dynamism factor was increased by 10 percent in seismic properties for Category II grunts and 50 percent for Category III grunts[11-23]. The impact of the construction site grunt conditions is also noted by the change in the seismicity of the construction zone: the seismicity of the area for category I grunts is 1 point, and the seismicity for Category III grunts is 1 point. the field was increased by 1 point. In addition, taking into account the height of the buildings, the coefficient K2 was introduced: K2=1+0.1 (n-5) for buildings with a frame, large block buildings and more than five floors with complex walls; K2=0.9 (n-5) for buildings with large panels and monolithic reinforced concrete buildings, and K2=0.9+0.075 (n-5) for buildings with a height of more than five floors. In BRR 2.01.03-96, the seismicity coefficient was increased by 25% (the seismicity coefficient of the construction area was taken equal to 0.125, 0.25, 0.5, 1.0, respectively, by 7, 8, 9 and 10 points), and the dynamism coefficient was taken equal to 9% for seismic properties for category I grunts, 60% for Category II grunts (I, and dynamic for grunts the coefficient was increased. Category III - by 100% (yaoni is double compared to Category I grunts). The coefficient of accounting for the height of high-rise buildings with a height of more than 5 floors was determined by the formula K2=1+0.06 (p-5) and adopted no more than 2.0. By changing the seismicity of the building area, the impact of the building area's grunt conditions was taken into account: for category I grunts, the seismicity of the building area decreased by 1 point (i.e., the seismic coefficient of the area decreased by twice), for Category II grunts, the seismicity of the building area corresponded to the seismicity of the In BRR 2.01.03-19, seismic loads were practically unchanged compared with BRR 2.01.03-96 (by 7, 8, 9 and 10 points of the construction site, the seismicity coefficient was taken equal to 0.125, 0.25, 0.5 and 1.0, respectively). The impact of the building area grunt was also accounted for by a change in the seismicity of the building area: for category I grunts, the area's seismicity decreased by 1 point (i.e., the area's seismicity decreased by 1 point), for Category II grunts, the building area's seismicity matched the area's seismicity, while for Category III grunts, the

In BRR 2.01.03-96, the seismicity of the construction site for the category I and II grunts was perceived as equal to the seismicity of the region, and in Category III grunts, the seismicity of the construction area increased by one point compared to the seismicity of the region[3-8]. The seismicity coefficient for the 7, 8, 9 and 10-point seismicity of the construction area was 0.125, 0.25, 0.5 and 0.8, respectively). Taking into account the grunt conditions of the construction area, a new coefficient K0 was introduced, according to which the seismicity coefficient of the area should be increased (seismicity is obtained suitably for 7, 8, 9 and 10 points, for grunts of category I: 0.5, 07, 1.0, 1.0 ,for grunts of Category II: 1.0,1, 0 1.0

Comparison of computational seismic loads in accordance with the norms considered above, taking into account the constructive solutions of buildings, shows their small fluctuations; only BRR II-7-81*ni BRR II-A.Compared with 12 -69* increased the load on the frame buildings by almost 1.5 times. Seismic loads of the same size are also recommended in Russian norms. In 2019, the 2.01.03-19 “construction in seismic areas” regulations were introduced in the Republic of Uzbekistan instead of BRR 2.01.03-96 “construction in seismic areas”.

Conclusion. Currently, the great attention paid to the construction of the Republic of Uzbekistan has been transferred to the design of construction structures in the Republic of Uzbekistan taking into account the “construction in seismic regions”of the Republic of Uzbekistan BRR 2.01.03-19, and this norm allows to provide seismic solid buildings with the level of safety of European standards for residents of

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