In the article, the author revealed the main types of fortification fortifications of the region, which took place in the 13th-10th centuries. Traced the main trends that characterized the development of defense structures, fortifications of the cities and castles. The influence of the Tatar-Mongol invasion on defense construction in the western lands of the former Kyiv state is analyzed. The general tendencies of the fortification structures, which took place in construction, are highlighted.

**Keywords:** construction, towers, war, tree, castle, Western Ukraine, defense, strategy, fortification, brick.

**Introduction.** In the Middle Ages, the construction of defense structures in Rus was a separate branch of construction. Permanent military clashes between the armies of the feudal lords were a common occurrence. The danger threatened the population of villages and cities not only during the invasion of foreign troops, but also at a time when there was no "official" war, and not only in the border areas, but also in the central parts of the country. That is why, in the Middle Ages, fortifications were of great importance.

**Formulation of the problem.** Considering that the castle complexes of the Western Ukrainian region are a testimony to the centuries-old history of our country and have a significant influence on the formation of historical consciousness of the Ukrainian people, it is considered appropriate to carry out a more detailed study of the stages of the construction of locks in the region.

**Analysis of recent research.** The study of regional features of ancient cities, fortresses and their fortifications was considered in the writings of P. Direnka; I. Kachora; O. Matsyuk; R. Mohiticha; O. Okonchenko; B. Omelechuk; I. Pasternak; R. Stands; L. Sparrow; V. Shisha; P. Rappoport and V. Kostochkin; Z. Fedunik.

**Aim.** On the example of a number of castle complexes, the brickwork of which dates from the XIII-XIV centuries to trace the main trends of fortifications in the region.

**Materials and research results.** Beginning X and especially in the XI century, on the territory of Kievan Rus considerably exacerbates the military situation. At this time, the onset of the Pechenegs intensified; in the southwestern regions of Russia, a threat from the already formed Polish state was threatened, and the attacks of the Baltic, litot-Lithuanian tribes also arose. It was at this time that there were already new opportunities for the construction of fortifications. The sharp social changes that took place in Russia during the marked period led to the emergence of settlement of new types—feudal castles, princely fortresses and cities in the proper sense of the word, that is, settlements in which the dominant role was played not by agriculture, but craft and trade [11, p. 117].

Significant changes in the development of Russian military-engineering art took place in the XIII century. From the beginning of the XIII century. Kammemetry machines for the destruction of fortress walls are becoming popular. Until the middle of the XIII century. these new tactical techniques gradually evolve into a whole system of new tactics of assaulting fortresses. The Mongol invasion drastically changed the whole military-political situation. The Mongols brought with them a carefully designed siege of fortresses to Russia. In general, it was the same tactic that was formed at that time in Russia, but it was supported by the Mongols with the wide use of kammemets. Already from the second half of the 12th century, written sources are increasingly reporting on the "capture" of Russian cities.
through direct assault. Gradually, this technique is becoming more widespread in the XIII century. almost completely displace the tactics of passive siege [10, p. 29]. During the assault, the auxiliary devices begin to be used—grind bundles of bundles of humus, and climb walls with the help of stairways. Kammeretnye cars were located in front of the walls of the besieged city at a distance of 100-150 m, approximately on the range of arrows with arrows. Only at such or less distant stones could damage the walls of the fortress. Starting the siege of the city, the Mongols surrounded him with a palisade to interrupt any link of the city with the outside world, cover their riflemen and prevent the defenses of the defenders. After that, they began to systematically beat stones fromstoneworkers on city walls, to break any plot or at least knock down their wooden logs, took away. When it succeeded, a massive shelling of grass plucked a marked section of the wall with arrows. Defenders who were not laced on the floor could not carry out appropriate shooting. It was on the site where the rifle defense was suppressed, the attackers threw the main forces of assault [13, p. 132-133]. In this way, the Mongols successfully took even the most fortified Russian cities and fortresses.

The use of well-developed assault techniques by the Mongols accelerated the formation of a new defense tactic in Rus and a new military-engineering defense organization. Two regions of Rus were able to recover relatively quickly from the Mongol strike—South-West (Galician-Volyn land) and North (Volodymyr-Suzdal and Novgorod) Rus. It is here that you can trace further ways of development of the Russian military-engineering affairs. In these territories in the second half of the XIII - beginning of the XIV century, are building fortifications of a new type. Stone towers were located inside the city walls, usually closer to the most vulnerable side, which provided a wide and far-flung firing of the surrounding area. This gave the opportunity to shoot at the opponent of guns and bows from above, the towers themselves suffered little from the stroke of rocket-propelled cars. Such towers have been preserved in Kamyansets-Litovsk, Stolpen and Belovin near the town of Kholm.

During the archaeological excavations, foundations of another tower—were found in Chortorisky. All towers differ from each other both by material and form. In Stolpje and Belovina, the towers are made of stone and have a square-shaped shape, the size of the tower in Stolp’e - 5.8 × 6.3 m, in the Bolshoy - 11.8 × 12.4 m. The towers in Kamyansets-Litovsk and Chortoryysk built from a brick, have a round shape in shape, their outer diameter is about 13.6 m. The height of the towers in Stolp’e is 20 m, in Kamyansets-Litovsk—29 m. Each of the aforementioned towers is an analogy of Western European units [4, c . 102-104]. The researchers believe that the towers appeared in Volynia under the influence of military architecture of the western neighbors of Volyn—Poland and Hungary, where the tower-donzhons became widespread at the same time [5; with. 172].

Thus, the construction of Volyn stone towers was carried out in western traditions, which was quite specific for the Russian lands of that period, and was dictated by the new tactical requirements prevailing in Russia. Changes in the tactics of the siege and the defense of the fortresses were reflected in Volyn, not only in the construction of individual towers-donzhons. There was also a new tendency to strengthen the most vulnerable part of the fortress, against which the enemy could put stones. This technique can be seen in Bologn cities in the late XII - early XIII century. Here, part of the perimeter of the fortification could be protected only by a natural obstacle—by the river, and on the other hand they had strengthened defense, which consisted of several lines of shafts and ditches [16, p. 50]. Very clearly the same tendency was felt in Galich, where the defense of a vicious city consists of three parallel ramparts and ditches. It is worth noting that the shafts are artificially spaced, so that between each shaft and the moat behind it is a horizontal platform. Due to this, the total width of the defensive zone—from the beginning of the first (external) ditch to the crest of the third shaft - is 84 m. As noted above, the real range of combat stones did not exceed 100-150 m, and its main task was to destroy the main city wall, standing on third, inner shaft. In this case, stones would have to be installed at a distance of no more than 50-60 m from the first moat. Meanwhile, the defenders of the city could shoot at the enemy and, in the first place, the warriors who served stone mounds through the shelter, located on the first shaft. Thus, the storming men had to shoot at a distance of 150 m while the defenders of the city—doubled a shorter distance [6, p. 49-50]. The strengthening of the floor side of the fortress also manifested itself in the fact that it was here that the towers were usually erected.

A feature of the fortifications of the XIII - the first half of the XIV century, is a differentiated approach of architects to structures in accordance with their place in the system of defense. Shafts and walls, located on the side of rather powerful natural barriers, were small and have the simplest construction. Shafts and walls on the floor side of the floor—are much more powerful and have a more complex and perfect design. Thus, the height of the shafts of Zvenigorod and the Old man - about 8 m. The front slope of the shaft made always steeper—usually not less than 30 ° to the horizon, and the rear slope—more flat. The horizontal platforms on the top of the shaft initially made narrow, as in the shafts of the XI-XII centuries, but later, with the complication of the design of the defensive walls, they reached the width of 8-9 m [3, p. 172].

Earthen embankment shaft very often did not have an internal wooden frame. For application of shafts local soil was used, the advantage was given to the use of the most dense, sometimes pure clay was used as building material, for example the strengthening of the city of Kholm. In the absence of qualitative soil, weaker materials, sometimes even sand, were used. In the regions where the soil was rocky, the shaft was completely poured out of stones. In some cases, the shafts were built with an internal wooden frame. Usually it was a log wall with short transverse cross-
legs, protruding to the rear side. Situated under the crest of the shaft, the wall emerged on its surface [7, p. 84]. This type of frame is a simplified version of the carcase of shafts in the fortresses of the XII century, and is known on examples of fortifications of Zvenigorod, Ruza, Vereya, Galich-Mersky and others like that.

In the XIII century feudal fragmentation in Rus reached the highest point. The territory, once the only, powerful state occupied by feudal principalities, is divided into three major regions: Southern Russia - Middle Dnieper, Western Rus represented by the Galician-Volyn principality, North-Western Rus, whose territory was composed of Novgorod and Pskov lands, and North-Eastern Rus, where the largest and most powerful princesdom of that period stretched - Vladimir-Suzdal [5, p. 74].

The Middle Dnipropetrovsk, as one of the most economically developed regions, was completely decontaminated, resulting in a stone fortification construction here interrupted for several centuries. Western Rus, Galitsko-Volyn land and Northern Rus represented by Volodymyr-Suzdal and Novgorod lands quickly recovered from the onslaught of the Mongols and as a result, it is here that one can trace the further development of Russian defense architecture [2, p. 100-102].

It should be noted that military conflicts with the German, Swedish and Lithuanian troops during the XIII-XIV centuries had a special significance for the development of defense construction, tactics and strategy of the north-western regions of Russia. and formed the foundations of slaughter equipment of the specified period. Like the Mongols, Western European armies actively used siege equipment and a direct storming of fortresses, and this was reflected in the ancient military art. At this time, the passive blockade of the fortresses replaces the direct assault of the fortifications.

Conclusions. Thus, the Tatar invasion in the XIII-XIV centuries contributed to a new stage in the development of fortification technologies. In response to new methods of fighting, tactics and strategies, as well as the previously neglected siege technique - rocket-propelled machines that the Mongols gained during the conquest of China, Russian fortifications are rapidly developing. At this time, special attention is paid to the construction of the first and second lines of fortifications with the aim of pushing the enemy's forces against the walls of the fortresses, thereby reducing the efficiency of the plowing machinery. The internal structures change, the stone fortress walls are erected everywhere, stone towers - donzhons appear for the first time, it is in the western Russian lands. Such a principle of the construction of tower towers was taken by the architects of Western Russia from the neighboring countries - Poland and Hungary. This fact is evidence of the borrowing of certain fortification technologies from Western European countries.

References

Аносова В.С. Розвиток технологій фортифікаційного будівництва на західних землях Київської Русі в період татаро-монгольської навали у XIII-XIV століттях

У статті автор розкриває основні типи фортифікаційних укріплень резону, що мали місце у 13-14 століттях. Простежено основні тенденції, що характеризували розвиток оборонних споруд, укріплень міст та замків. Проаналізовано вплив татаро-монгольської навали на оборону будівництво на західних землях колишньої Київської держави. Висвітлено загальні тенденції фортифікаційних споруд, що мали місце в будівництві.
Ключевые слова: строительство, башни, война, дерево, замок, Западная Украина, оборона, стратегия, фортификация, кирпич.

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