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LEGIONARY FORTRESS AT *NOVAE* IN LOWER *MOESIA*. OLD AND NEW OBSERVATIONS MADE DURING THE RECENT WORK *PER LINEAM MUNITIONUM*

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Abstract: The recent excavation campaigns (2006-2014) along the defences at *Novae* were concentrated on the north, east and south fronts of the fortress. The excavations consisted mostly of completing and recording the old trenches opened still in the 1960s until 1990s by the Polish and Bulgarian teams. New details of the ground plan of the earth-and-timber defensive system of Neronian date (*legio VIII Augusta*) in existence under the Flavians (*legio I Italica*) with an earthen rampart, sloping ramp (*ascensus*), a V-shaped ditch and three interval towers have been detected. The excavated areas have also revealed some components of the Trajanic stone defensive system (two about 10 m long sections of the defensive wall, one corner and five interval towers abutting against the rear side of the northern, eastern and southern curtain walls). The remains of two gates (North Gate – *porta praetoria* and East Gate – *porta principalis dextra*) have been investigated and recorded, too. In the eastern *intervallum* a large water tank discovered in the 1960s by the Bulgarian archaeologists could have been recorded using modern documentation techniques. On the basis of new stratigraphical observations, made mostly in the northern *intervallum*, it is possible to propose not only a modified and more detailed picture of the history of the *Novae* defences but also to reconstruct the entire building process from concept to completion and to understand better subsequent stages of rebuilding. Based on precise measurements and their archaeological interpretation are three-dimensional virtual computer generated visualizations.
Key words: Roman, legionary fortress, defenses, earth-and-timber camp, stone fortress, *Novae*.

Archaeological investigations related to the Neronian earth and timber defences (*legio VIII Augusta*) and late Flavian-Trajanic stone fortifications (*legio I Italica*) of the legionary base at *Novae* (**figs. 1** and **2**) can be divided into two major periods. In the first period (1960-1994) the Polish and Bulgarian teams localized and/or uncovered four entrance gates, three sections of the west, south and east defensive walls, four corner and four interval towers accompanied in some places by late Roman U-shaped towers projecting outwards[1]. The first traces of the earliest earth-and-timber defences (ditch, turf rampart, interval timber tower) were recognized and documented by the author of the present paper in 1981 on the eastern front of the fortress. Further components (seven interval towers, one corner and one gate tower, other sections of the defensive ditch) of the Neronian defences were traced during the excavations carried out in the 1980s and early 1990s by P. Donevski on the east and J. Ziomecki, T. Sarnowski and K. Lewartowski on the west side. The very important results of P. Donevski's excavations are either not available or have not been documented[2]. This situation, the

[1] The results of field investigations were regularly published in the Polish journal *Archeologia* after each excavation campaign or summarized in Bulgarian *Археологически открития и разкопки*. See also Čičikova 1975. 1977. 1980; Sarnowski 1981, 1983, 1984, 1991; Parnicki-Pudełko 1976. 1981. 1990; Donevski 1996, 2015; Zakrzewski 2017. In the present paper the following abbreviations will be applied: ETC = Earth-and-timber camp, SF = Stone fortress.

[2] The only records we have from these excavations are two schematic drawings of cross-sections through the defences of the east and south sides near the Tower 4 and South Gate (Donevski 1996, 202, figs 1 and 2). The

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advancement of excavation methodology and recording techniques, but also the unsatisfactory documentation and publication of earlier research dictated the need to verify previous observations concerning both stone and earth-and-timber fortifications. The second period of investigating the fortifications defending the legionary fortress at *Novae* began in 2005 and ended in 2015. The fieldwork which took place only in the old trenches included on the northern Danube front a small area next to Tower 27, North Gate and the north-east corner, on the eastern side East Gate and Towers 2 and 4 and finally on the southern land front Tower 12. In addition to the standard documentation of the stratigraphy and architectural substance with the use of modern technology, there have been made precise measurements of the camp size and 3D terrain model including also relatively vast area around the camp.

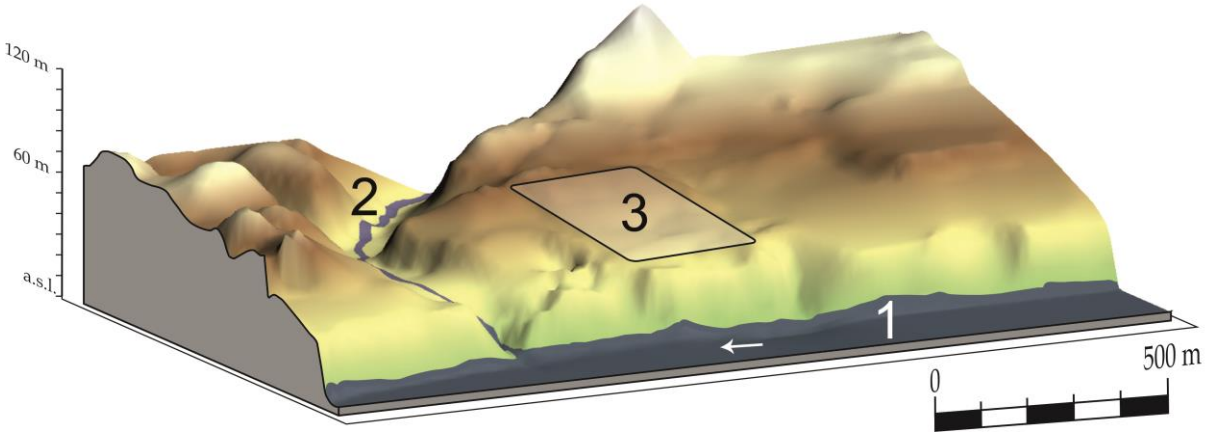

Fig. 1: *Novae*. Legionary fortress and its immediate vicinity. Digital terrain mode (by P. Zakrzewski)
1: Danube, 2: Dermen Dere, 3. Legionary fortress.

The most important questions related to the stone defenses are now answered. The same cannot be said about the earth-and-timber structures which with few exceptions almost exactly underlie their stone successors. On this basis, we can believe that the earth-and-timber camp had almost the same dimensions (365 x 489 m) as the stone fortress (**fig. 2**). The most important components of our current knowledge about the defensive system of the legionary fortress at *Novae* can be summarized as follows.

Earth-and-timber defenses were built from the ground up probably under Nero by the Eighth Augustan legion and replaced by stone fortifications made by the First Italic legion after its arrival (ca. AD 72)[3] probably in the late Flavian and early Trajanic times. The final completion of construction work on stone defences took place under Trajan[4]. The northern side of ETC was somewhat narrower

south-east corner tower and two post pits belonging to the north tower of the East Gate have not been put on the plan. For new detailed plans and sections across the east, north and south defences near the north-east corner and Towers 2, 4, 5, 12 and 27 see Sarnowski *et alii* 2005, 151-152; 2008, 160-162; 2011-2012, 89 and 2016.

3 See Sarnowski *et alii* 2011-2012, 81-83.

4 Trajanic dating of the stone defences at *Novae* is based on a building inscription (IGLN no. 52) found reused in one of the later walls within the West Gate; cf. Sarnowski 1983, 268. According to Gudea 2005, 421 the western interval towers of the legionary fortress at *Novae* were built under Hadrian. This view is unfounded.

than in the SF[5]. Only on this side the interval towers were spaced at intervals which do not correspond to those of the SF[6]. On the other sides the differences in their location were not significant and the length of intervals was approximately from about 27.75 to about 38 m. The timber towers had a rectangular shape (3 x 6 m) and were supported by three round outer posts of 30 cm diameter and three inner ones with square cross section of 30x30 cm (**fig. 3**). The vertical poles were set in large, 2 m deep post pits.

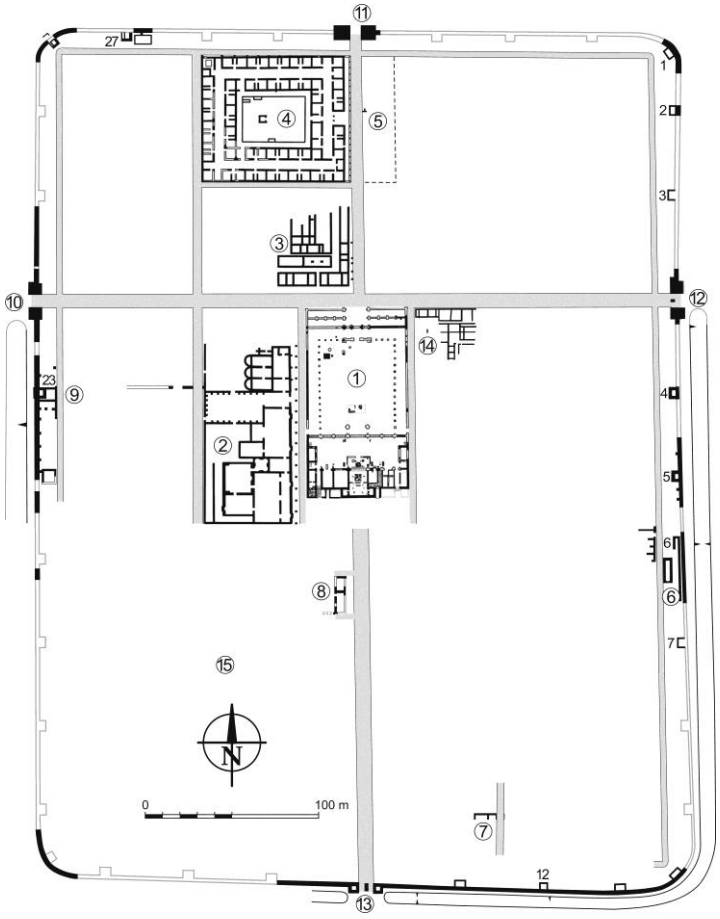

Fig. 2: *Novae*. Legionary fortress in the second and third centuries AD. An outline plan (by T. Sarnowski, J. Kaniszewski, P. Zakrzewski. Based also on detail drawings by M. Lemke and P. Dyczek) 1: Headquarters building (*principia*), 2: Bath house (*thermae*), 3: Officer's house, 4: Hospital (*valetudinarium*), 5: Granaries (*horrea*), 6: Water tank, 7: Cavalry barrack, 8: *Praetorium* (?), 9: *Fabrica* (?), 10: West gate (*porta principalis sinistra*), 11: North gate (*porta praetoria*), 12: East gate (*porta principalis dextra*), 13: South gate (*porta decumana*), 14: Barracks of First Cohort (?), 15: Water pipeline trench (Emergency rescue excavation of 2015). Figures along the curtain wall refer to the numbers of towers.

[5] Around the north-east corner, where before the construction of stone fortifications took place an important landslide of loess escarpment, the earthen rampart of ETC was probably away from the stone wall of about 4 m to the west; cf. Sarnowski *et alii* 2005, 151-152.

[6] The evidence for this comes from the area excavated near Tower 27 (Sarnowski *et alii* 2008, 162-170, figs 10 and 12; Sarnowski *et alii* 2016, fig. 12) and from the north-east corner where the corner of ETC occupied apparently the edge of the escarpment overlooking the Danube to the north and a small ravine running along the eastern side of the camp while the corner of SF was situated about 5 m lower and farther to the east in the direction of the ravine (Sarnowski *et alii* 2005, 151-152). A similar situation occurred probably also in the north-west corner (cf. Parnicki-Pudełko 1976, 182; Parnicki-Pudełko 1990, 38-40).

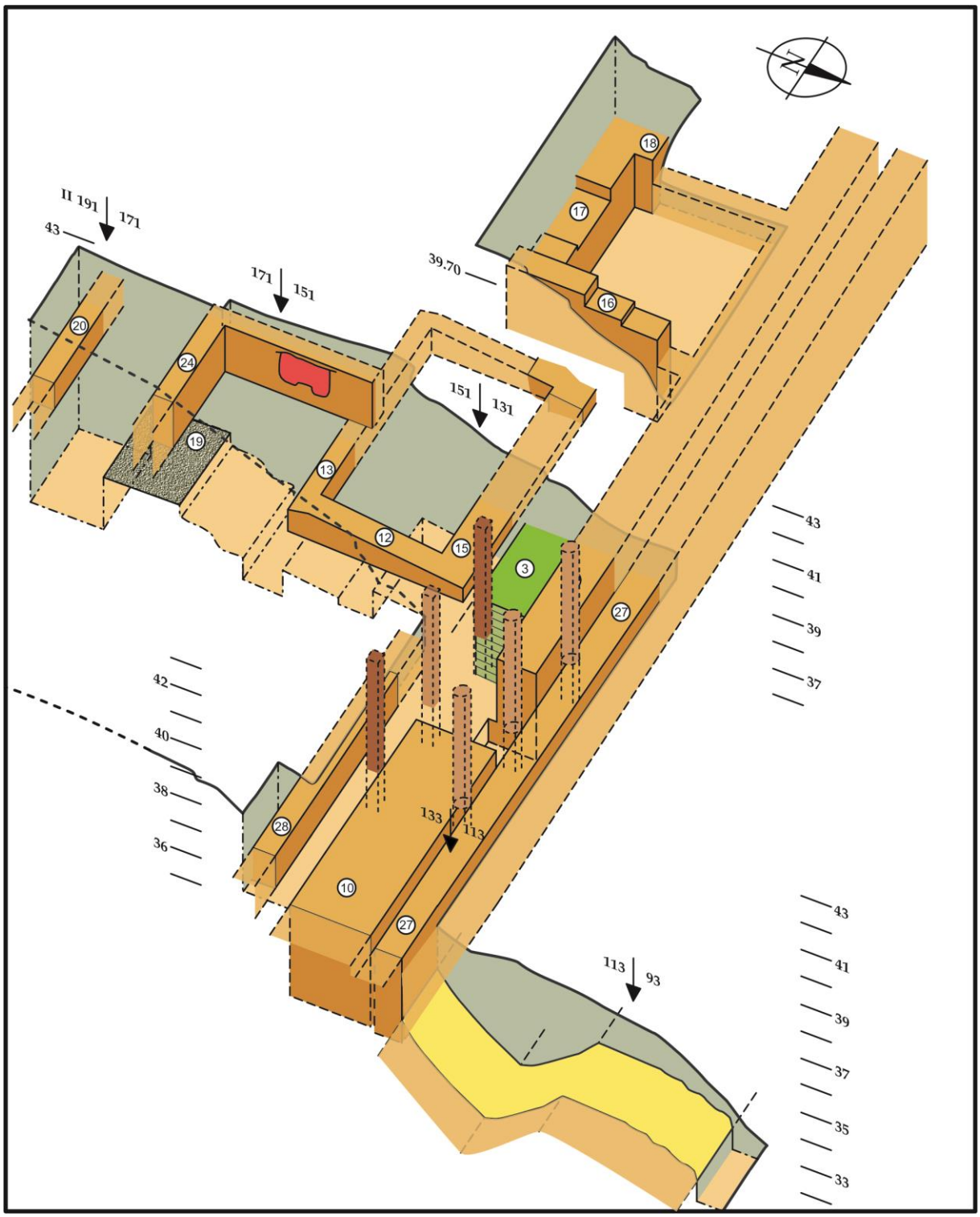

Fig. 3: *Novae*. Northern defensive wall next to the stone tower No 27. Axonometric projection of the excavated area (by B. Matuszewski, J. Kaniszewski, P. Zakrzewski).

With some exceptions, the ETC was surrounded by a single and on certain sections of the defences, vulnerable to enemy action, by a double ditch system[7]. Because of two fairly deep ravines running towards the Danube and inclosing from west and east the northern part of the plateau occupied by the camp, northern sections of the long sides of the camp did not require the presence of defensive ditches. No ditch there was probably also on the southernmost stretch of camp defences on the west side and on the westernmost stretch on the south side[8]. The defense line follows there a pretty high edge of the plateau. In most of the excavated places the depth of the ditch ranged from 1.80 to 2 m and its width from 2.50 to 4.50 m. Only on the eastern front, the most exposed to attack, the inner ditch in front of Tower 6 was 2.90 m deep and 5.50 m wide and the outer ditch was 3.50 m deep and about 3.50 m wide. Over time the ditch on east side filled in with silt and was subsequently re-cut perhaps early under the Flavians as a much shallower, bowl-shaped ditch 1.20 m deep in front of the Tower 6 and 0.60 m deep next to the East Gate.

The next component of earthen defences, the rampart, stood at a not established distance (= berm width) from the inner lip of the ditch[9]. We can only guess that the berm was 0.50 to 1.80 m wide.

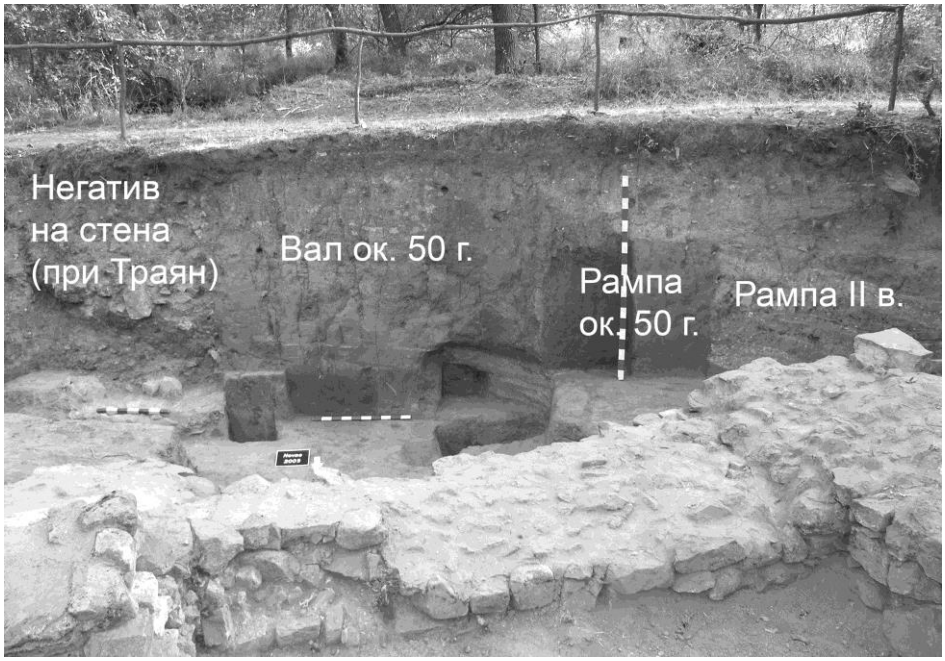

Fig. 4: Novae. Section across the eastern defences to the south of Tower 4 (by T. Sarnowski).

In the best preserved point of the eastern defence line the rampart was about 2.80 m high and this was also the most likely height of the rampart on the other sides of the camp (**fig. 4**). At its base the rampart was at least 3 m wide and the rampart walk had a maximum width of 2.5 m. Positioned parallel to the rampart was a 2.50 m wide, sloping ramp (*ascensus*) leading to the rampart walk (**fig. 5**).

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7 The presence of a V-shaped defensive ditch has been observed along the south side, south of the gates along the long sides of the camp, also on a short section of the eastern front directly north of the gate and to the west of the north gate along the Danube front. Traces of a double ditch system have been detected in front of Tower 6.

8 It is interesting to note, that the ETC at *Novae* was situated quite close to the river bank , but still at such a distance from the Danube escarpment edge that at least one V shaped ditch 4.20 m wide and 2 m deep must have fronted the rampart. See Sarnowski *et alii* 2008, 162, fig. 11. The ditch was not extremely steep sided but still very difficult to get into and out what painfully experienced the author of this paper.

9 It is not possible to recognize exactly how wide the berm was because everywhere is partly occupied by a later Trajanic wall.

Fig. 5. Novae. Neronian ramp (*ascensus*) next to the Tower 27, looking North (by T. Sarnowski).

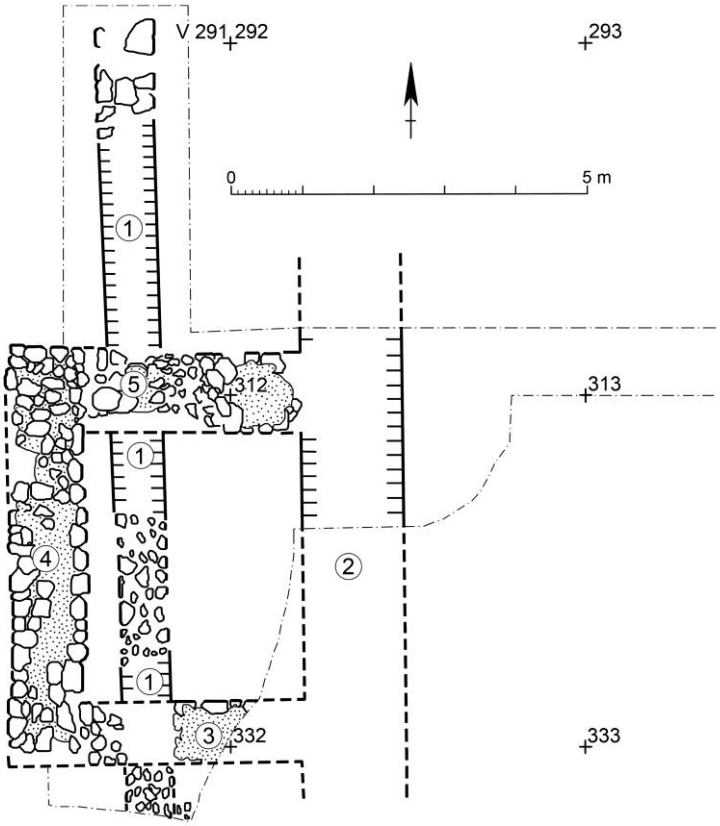

Fig. 6: *Novae*. Tower 2. Detailed plan (by P. Zakrzewski)
1: Sleep wall supporting the inner face of the Neronian rampart,
2: Foundation of the Trajanic curtain wall, 3-5: Walls of Tower 12.

Fig. 7: *Novae*. Tower 12 and Neronian sleep wall, looking North-West (by T. Sarnowski).

The rampart and the ramps were made of the compact loess in alternate, yellowish and dark brownish, 15 cm thick layers topped by sundried bricks. Between the lowest layers in the ramp facing on north side there are thin bands of charcoal showing that a firing technique was used to consolidate the ramp.[10] The rampart and ramps were generally constructed on a levelled virgin soil. However, there is an exception. On the eastern side of the ETC one ramp and two fairly long stretches of rampart had a 0.65 to 0.90 m wide sleeper wall supporting the inner, almost vertical face of these two structures. This partial rampart-footing was made near the Tower 2 of irregular (**figs. 6** and **7**), loess bonded stones and near the Tower 6 of larger stones in white-greyish mortar bonding. Informations about the defences of the ETC deriving especially from its east side allow us to propose a computer-generated visualization of the rampart, tower, ramp and ditches as they might have looked like in the second half of the 1st century AD (**figs. 8** and **9**).[11]

[10] For a similar technique in South-East Dacia see Cantacuzino 1941-1944 (1945), 453 f.; Bogdan-Cătăniciu 1977, 340-342.

[11] See Sarnowski *et alii* 2012, 39.

Fig. 8: Novae. Earth-and-timber defences on the eastern front of the camp. Outer view (Visualization by J. Kaniszewski).

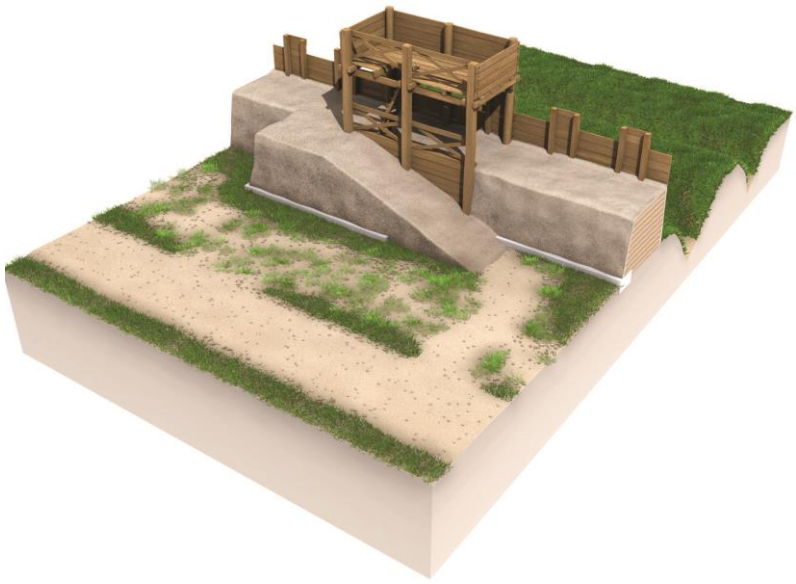

Fig. 9: Novae. Earth-and-timber defences on the eastern front of the camp. Inner view (Visualization by J. Kaniszewski).

Stone defences encircled with their perimeter the entire surface of the fortress of the 1st Italic legion covering in the period from Trajan to the late 3rd century an area of about 18 hectares (**fig. 1**). The rebuilding in stone of the earth-and-timber defences initiated already in the Flavian period was accompanied by large earthworks. They included primarily an about 14 m wide and 4 m deep ditch, which was dug after the Neronian ditches had been filled with loess material won from the cutting back the front slope of the rampart. This defense device has been completed on the east side in front of the tower 6 by an outer ditch 10 meters wide and 3.5 meters deep. As in the ETC no ditches fronted the northern sections of the long sides of the SF, probably also the southernmost stretch of the west side and the westernmost stretch on the south side.

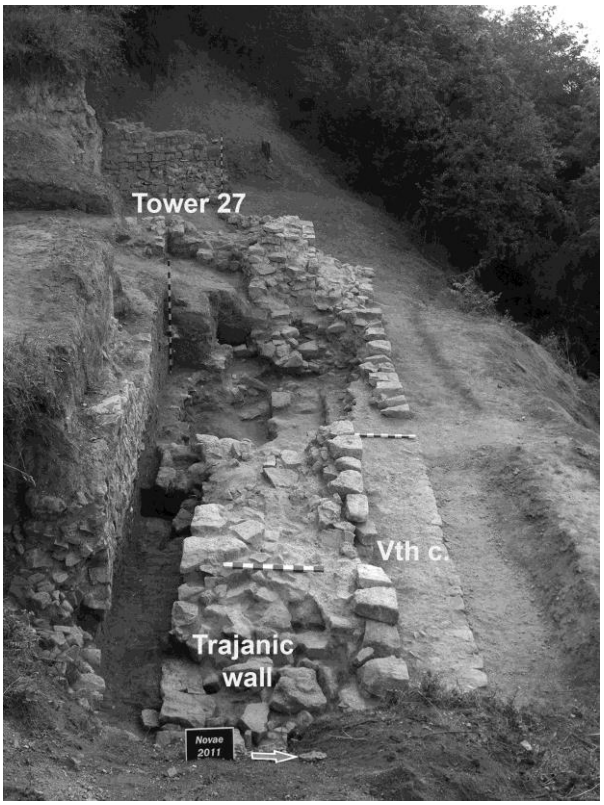

Fig. 10: *Novae*. Northern curtain wall, looking West (by T. Sarnowski).

Fig. 11: *Novae*. North-eastern corner of the fortress (Visualization by J. Kaniszewski).

The masonry curtain wall (**fig. 10**) was built for the most part from 1.30 to 2.20 m thick, cut into the front of the earlier rampart. Where the defensive wall was not accompanied by a trench, the berm width was from 1 to 5.60m. On the northern side, now without a ditch, the curtain wall was raised almost directly in line with the outer edge of the rampart footing, which called for filling the gap between the front slope of the rampart and the inner wall face with stones. The same situation occurred near the north-eastern corner of the fortress (**fig. 11**), where the curtain wall was built at the edge of the escarpment, but at its foot instead of at the top. In some sections the stone wall with its 1.40 m deep foundations was constructed simultaneously with the cross, internal counterfort walls serving to hold back the load of the earthen rampart or to prevent the curtain wall from tipping outward by leaning it back into the retained soil as on the northern side, thus to give greater stability to the new front of the fortress. On the south side the outer part of the rampart was pulled down to a greater extent than elsewhere, probably in order to increase the width of the berm at a dangerously close distance between the wall and the backfilled Neronian trench.[12] The curtain wall was built of coursed rubble and faced with roughly dressed stones (locally quarried sandstone) retaining a core of rubble bonded in the lower parts with sandy orange and in the upper parts with white, strong mortar made of lime mixed with some well-washed river gravel. The ramps leading to the rampart walk remained in the same position by the towers but as a rule now perpendicular to the wall instead of parallel to it as before (**figs. 12** and **13**).

[12] My earlier observation (Sarnowski, T. *et alii* 2012, 44) about the large wall thickness required to compensate for the alleged absence of the rampart is not correct, which is clearly shown in a section documented in 2015 (see T. Dziurdzik: in Sarnowski *et alii* 2016, fig. 10). The wall was thickened only in the 4th century. Despite a severe narrowing of the rampart, to make room for the Trajanic wall, the berm at this point was probably only a little wider than 1 m.

Fig. 12: *Novae*. Stone defences on the eastern front of the fortress. Outer view (Visualization by J. Kaniszewski).

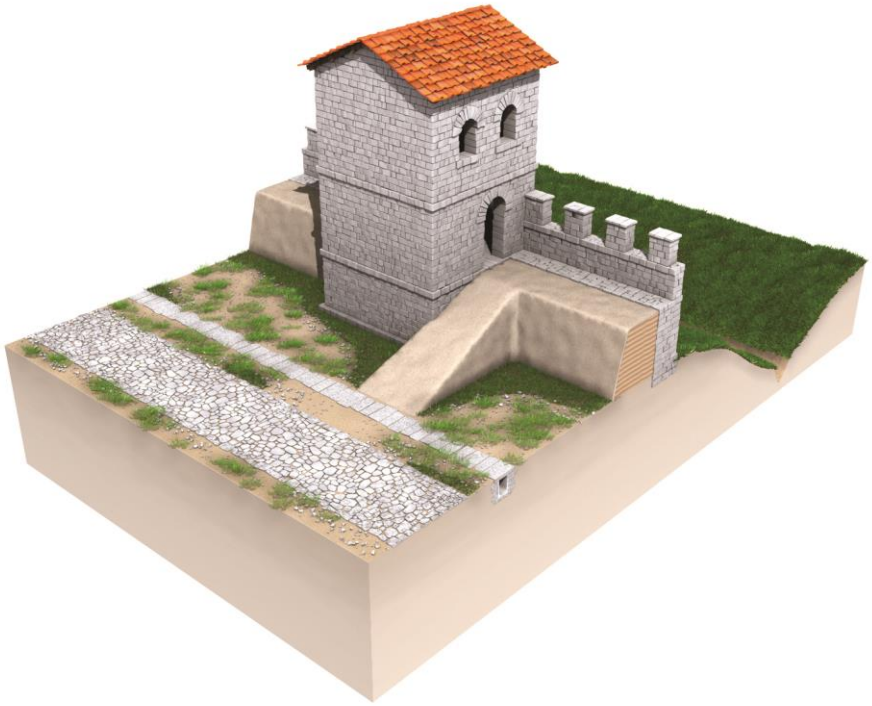

Fig: 13. *Novae*. Stone defences on the eastern front of the fortress. Inner view (Visualization by J. Kaniszewski).

Four corner and 28 interval towers were constructed together with the curtain wall. The dimensions of these rectangular towers ranged from 4.50-7 x 3.80-4.50 m. Four gates of the SF stood in their traditional location at the ends of the main streets[13]. All of them had two rectangular flanking towers, wholly or partly projecting outwards from the curtain wall. Two of them (South and East Gate) and most likely also the third one (West Gate) were double portalled structures. The West Gate and the best preserved South Gate (**fig. 14**) show distinct traces of three building phases (**figs. 15** and **16**). In the third phase dated to mid 4th century the South Gate was provided with strong U-shaped towers (**figs. 17** and **18**). The southern passageways in the East and West Gate were paved at a certain time with very massive, irregular slabs of sandstone that prevented wheeled transport. It is clear, therefore, that the transit traffic across the legionary base was largely limited or even completely eliminated from the fortress. This happened perhaps in the early 3rd century with the construction of the monumental *groma* gate hall at the junction of the two main streets[14]. The transit road traffic was probably directed towards the road bypassing the fortress from the south, traces of which have been detected about 500 m south of the southern defensive wall.

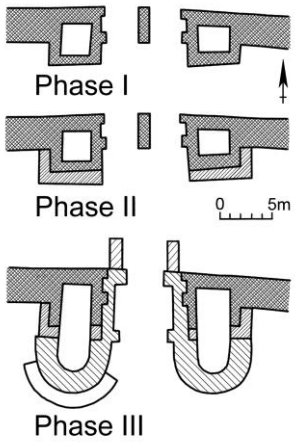

Fig. 14: *Novae*. South gate (*porta decumana*). Plan of three phases (by L. Kovalevskaya based on plan by Sz. Skibiński).

Fig. 15: *Novae*. South gate (*porta decumana*). Phase I. Outer view (Visualization by J. Kaniszewski).

[13] For the latest detailed plans of the East and North Gate see Sarnowski *et alii* 2016 and Zakrzewski 2017.

[14] See Sarnowski 1995.

Fig. 16: *Novae*. South gate (*porta decumana*). Phase I. Inner view (Visualization by J. Kaniszewski).

Fig. 17: *Novae*. South gate (*porta decumana*). Phase III. Outer view (Visualization by J. Kaniszewski).

Fig. 18: *Novae*. South gate (*porta decumana*). Phase III. Inner view (Visualization by J. Kaniszewski).

Since the construction of new walls added in the late 3rd or early 4th century to the east side of the legionary fortress of the Principate Period extending around the so-called Eastern annex the original SF slowly took on a more civil character. Finally it became a western district of the Late Roman and Early Byzantine fortified town. However, we must not forget that some of the earlier buildings, such as the headquarters building (*principia*) continued largely in their military functions until the 30s of the 5th century. While the original eastern wall was gradually dismantled, the remaining three walls were reinforced and furnished with new larger towers protruding outwards. The last building episode related to the earlier legionary defences was in the times of Justinian I, when the western gate was given two massive rectangular towers.

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