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## NOVAE DURING THE REIGN OF VALENTINIAN I AND VALENS (364–378)<sup>1</sup>

**Abstract:** The period of Valentinian I and, later, Gratian in the West, and of Valens in the East, ended with the disastrous Battle of Adrianople in 378. However, fourteen years preceding the battle were a period of well-documented investment along the frontiers of the Empire. The results of the building initiatives undertaken by Valentinian in the West are particularly well attested, especially in the Pannonian provinces. The archaeological evidence for construction activity along the frontier of the eastern European provinces ruled by Valens appears considerably more modest, most likely due to the less advanced state of research along this section of the Danube. Nevertheless, the available data allow us to conclude that building works were also carried out along this part of the river.

Novae was one of the most important bases along this section of the frontier. The military continued to play a vital role in Novae during the years 364–378, and imperial authorities placed significant emphasis on ensuring the proper supply of frontier troops. The state of research at Novae is among the most advanced along the Lower Danube. Therefore, it may serve as a point of reference for other forts located along this stretch of the frontier, providing valuable insights into the character and scope of the works undertaken during the reigns of Valentinian and Valens. Certain indications of construction activity have been found in various parts of the site, and their analysis suggests that the focus of these works was primarily on maintaining the existing structures within the walls of the fortress.

**Keywords:** Novae, Late Antiquity, Valens, Valentinian, Roman Army, Moesia Secunda, Diocese of Thrace, Bulgaria, stamped building materials

The period from 364 to 378 CE was marked by the joint rule of Valens in the East, alongside Valentinian and later Gratian in the West. During this time, large-scale construction projects were undertaken along the Empire's borders—new military bases were built, and existing fortifications were repaired and modernized. These efforts began early in the joint reign of the brother emperors, no later than their first or second year, as evidenced by an imperial constitution issued on 19 June 364 or 365.<sup>2</sup> This decree, addressed to Tautomedes, *dux* of the border troops in the province of Dacia Ripensis, obligated him to supervise the construction and repair of watchtowers

<sup>1</sup> This paper presents and expands selected observations from the PhD thesis written and defended by the author in December 2024 at the Faculty of Archaeology, Uni-

versity of Warsaw, under the supervision of Agnieszka Tomas, Associate Professor at the University of Warsaw.

<sup>2</sup> *Cod. Theod.* 15.1.13.

along the frontier section under his command. He was expected to carry it out with the help of the troops under his command and at public expense.

Nevertheless, the building programme of Valentinian and Valens was not limited to watch-towers, as larger bases were also constructed and repaired. The results of this construction policy have been attested archaeologically in many locations; however, they are most prominently documented in the western provinces under Valentinian's rule, particularly along the Pannonian frontier.<sup>3</sup> Due to the less advanced state of research, traces of similar fortification works have been identified less frequently along the Danube section of Valens' realm. Novae (Svištov) in Moesia Secunda, located in present-day Bulgaria, constitutes a significant exception, as the state of research there is considerably more advanced than at other bases along the Lower Danube. Novae was abandoned in the early seventh century<sup>4</sup> and was not subsequently built over or destroyed; thus, it offers an important and comprehensive set of data about Roman activity over the centuries following the establishment of a permanent, long-term garrison in the early 70s.<sup>5</sup> Although large portions of the site still await to be excavated, the findings from research conducted so far provide important insights into the nature of building activity during Valens' reign. Novae was one of the most important military bases along the Lower Danube, which makes these conclusions particularly important for understanding construction efforts along that section of the frontier during this period.

During Late Antiquity, Novae covered approximately 27 hectares, with the Principate-era legionary fortress occupying 17.99 hectares inside the walls,<sup>6</sup> while the eastern extension (the so-called annexe) covered probably slightly less than 9 hectares (Fig. 1).<sup>7</sup> The northern, western, and southern walls of Novae formed three of the original four sides of the legionary fortress, which was characterized by a regularly planned, rectangular layout. The eastern wall was built from scratch during Late Antiquity and its design was partially adapted to the natural topography. It is possible that this wall and the eastern wall of the legionary fortress coexisted for some time, until the earlier structure was dismantled. In my opinion, it is unlikely that the new wall was constructed using stones taken from the dismantled earlier fortification, as this would have caused a dangerous breach in the fortification circuit for an extended period until the new structure was completed.

In the fourth century, Novae remained a base of legio I Italica. According to the *Notitia Dignitatum*, it was the seat of the prefect of the entire legion as well as the prefect of the legion's *pedatura superior*, while the headquarters of the prefect of the *pedatura inferior* was located in Sexaginta Prista.<sup>8</sup> The section of the ancient document dealing with the Lower Danubian provinces was finally compiled around 395; however, it appears to primarily reflect the state of affairs prior to the Battle of Adrianople in 378.<sup>9</sup> Due to military reforms of the late third and early fourth centuries, the size of legions was significantly reduced.<sup>10</sup> Novae was not an exception, as its military garrison in the fourth century was significantly smaller than in the second and third centuries. The *intra muros* urban development of Novae during the reign of Valens and Valentinian reflects the character of the fortress during this period (Fig. 1). While some build-

<sup>3</sup> SOPRONI 1969; FITZ 1976; SOPRONI 1978; SOPRONI 1985; SOPRONI 1989; SOPRONI 1996.

<sup>4</sup> SARNOWSKI *et al.* 2012, p. 27.

<sup>5</sup> LEMKE 2018; TOMAS 2022, p. 10.

<sup>6</sup> SARNOWSKI, KOVALEVSKAJA, KANISZEWSKI 2006, p. 141.

<sup>7</sup> TOMAS 2022, p. 13.

<sup>8</sup> *Not. Dign. Or.* XL 30–32.

<sup>9</sup> BURY 1920, p. 165; JONES 1964, pp. 347–358; HOFFMANN 1969, pp. 516–519; SARNOWSKI 1985a, p. 126;

ZAHARIADE 1988, pp. 26, 185, 192; SARNOWSKI 2007, p. 25; POULTER 2007, p. 33; WIEWIOROWSKI 2007, pp. 207–208; ĐOKIĆ, SAVIĆ 2017, p. 102.

<sup>10</sup> MOMMSEN 1889, pp. 253–257 = MOMMSEN 1910, pp. 261–263; GROSSE 1920, pp. 34, 42, 53; VÁRADY 1961, pp. 358, 369–371; VÁRADY 1963, pp. 391–406; JONES 1964, pp. 680–682; COELLO 1996, pp. 59–60; TREADGOLD 1995, pp. 44–49, 59; ELTON 1996, pp. 89, 99–100; GOLD-SWORTHY 2004, p. 206; SOUTHERN, DIXON 2014, p. 56.

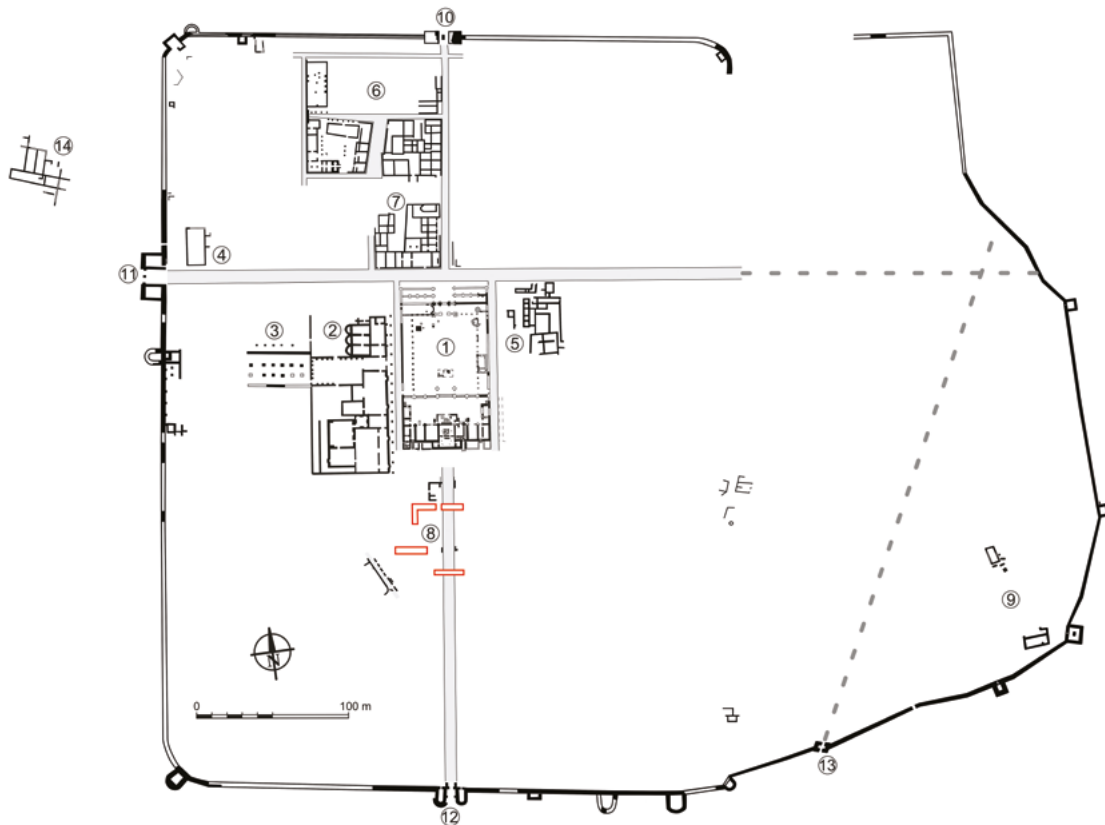


Fig. 1. Novae during the reign of Valentinian and Valens (an outline plan by E. Jęczmienowski, based on a Principate-era plan by T. Sarnowski, J. Kaniszewski, P. Zakrzewski – Sarnowski et alii [kursywa] 2016, p. 178 – and a 5th–6th century outline plan by L. Kovalevskaya, T. Sarnowski – Sarnowski et alii [kursywą] 2012, p. 92, Fig. 1, with detailed plans later added by all expeditions working in Novae).

1: Headquarters building (*principia*), 2: Bath house (*thermae*), 3: Granary (*horreum*), 4: Hall-like building, 5: Residential and economic building, 6: So-called Portico Building and Eastern Villa, 7: Residential building, 8: Currently explored trenches in *retentura*, 9: Economic buildings in annexe, 10: North Gate (*porta praetoria*), 11: West Gate (*porta principalis sinistra*), 12: South Gate (*porta decumana*); 13: Gate-tower; 14: Economic buildings outside the walls. The dashed lines do not indicate streets, but rather axes: the projected axis of the *via principalis* and the axis defined by the orientation of the gate-tower located in the southern part of the annexe

ings seem to have served primarily military and administrative purposes, others were used by civilians for residential and economic activities.

In the western part of Novae, the streets following the two main axes of the legionary fortress remained in use. However, the buildings adjacent to them sometimes differed from the military structures that had occupied this area in the second and third centuries. So far, four buildings from the Principate era that continued to be used in later periods have been discovered along the *via principalis*: a hall-like structure near the West Gate,<sup>11</sup> to the north of this street, as well as a granary (*horreum*),<sup>12</sup> baths (*thermae*),<sup>13</sup> and the headquarters building (*principia*)<sup>14</sup> on the southern side. Additionally, two civilian structures have been identified along the *via principalis*: a building serving both residential and economic purposes to the east of the *principia*,<sup>15</sup>

<sup>11</sup> GENČEVA, ANDREEVA 2021.

<sup>12</sup> According to the excavators, this building previously served as an arsenal and was rebuilt into a granary ca. 335–340 (KLENINA, BIERNACKI 2023, pp. 448–449).

<sup>13</sup> BIERNACKI 2016; JASIEWICZ 2016.

<sup>14</sup> SARNOWSKI 1999; SARNOWSKI et alii 2012, pp. 50–59.

<sup>15</sup> DYCZEK 2018, pp. 58–60, 68.

and another residential building to the north of the headquarters, at the intersection with the *via praetoria*, on its western side. The latter was previously interpreted as a public edifice.<sup>16</sup> Further north of this structure, a complex of several residential and economic buildings was constructed above the ruins of the military hospital. The development of the remaining area within the walls of fourth century Novae remains largely unknown. Only a very small portion within the annexe of the fortress to the east has been excavated. The results suggest that in Late Antiquity this area was occupied by civilians and that economic activity took place there.<sup>17</sup>

### Building activity—archaeological evidence

Unfortunately, archaeological evidence from the fourth century is often ambiguous, making it difficult to precisely date the construction phases of buildings. This issue becomes especially significant when attempting to attribute certain works to a relatively brief period of just fourteen years. So far, no building inscriptions from that period are known from Novae. In fact, only one such piece of epigraphic evidence has been found along the Lower Danube frontier—in Cius (Gârliciu) in Scythia Minor<sup>18</sup>—although building inscriptions from that period are quite well attested in other frontier provinces.<sup>19</sup> The most distinctive remains of Valens' building activity in Novae and, more broadly, in Moesia Secunda are bricks and roof tiles stamped with a distinctive signature—RVMORID (Fig. 2). It is most likely that these stamps refer to Flavius Rumoridus, who served as a *magister militum* in 384 and, probably earlier, as a *dux* of Moesia Secunda during the joint rule of Valens and Valentinian.<sup>20</sup> He thus held a position analogous to that of the aforementioned Tautomedes from Dacia Ripensis, who was obliged to oversee fortification works along the border during the same period. The mention of a provincial *dux* on a stamp is one of the distinctive elements suggesting the production of the bricks during the reign of Valens and Valentinian. Similar bricks bearing the stamps FRIGERIDVSVPDVX are known from Pannonia<sup>21</sup> and are almost certainly linked to Frigeridus, *dux* of Pannonia Valeria, known from Ammianus Marcellinus' *Res Gestae*, where he is mentioned in the context of events from the year 377.<sup>22</sup> The mention of a provincial *dux* on the stamped bricks indicates that he ordered their production and was thus responsible for the construction works, which aligns perfectly with the mentioned imperial constitution. At the same time, we can suppose that these bricks were produced by the border troops under the command of the *dux* and that they were engaged in construction works, as stated in the constitution. A significant clue comes from similarly dated stamped bricks from Dacia Ripensis,<sup>23</sup> which are not only far more numerous, but also frequently bear the name of the

<sup>16</sup> SARNOWSKI *et al.* 2012, p. 92, Fig. 1:7; GENČEVA 1999, pp. 95–96.

<sup>17</sup> TOMAS 2017, p. 57; TOMAS 2019, p. 237; TOMAS 2020, pp. 680–681.

<sup>18</sup> CIL III 6159 = 7494; IGLR 233.

<sup>19</sup> Esztergom (CIL III 3653 = RIU III 771 = AE 1999, 1264; FITZ 1976, p. 49; SOPRONI 1985, pp. 109–110); Visegrád-Lepence (GRÓF, GRÓH 1999; AE 2000, 1223; GRÓF, GRÓH 2001); Visegrád-Steinbruch (RIU III, 804; SOPRONI 1978, p. 53; SOPRONI 1989, pp. 108–109); Esztergom-Hideglelőskereszt (CIL III 10596 = ILS 762 = RIU III 770 = AE 1941, 12; SOPRONI 1978, p. 29; SOPRONI 1985, pp. 107–109; SOPRONI 1989, pp. 105, 108; LE BOHEC 1991, pp. 325–326); Ybbs an der Donau (CIL III 5670a; GASSNER, PÜLZ 2015, p. 192); Etzgen (CIL XIII

11538 = AE 1893, 114 = AE 2002, 1051 = HÄCHLER, NÄF, SCHWARZ 2020, p. 258); Koblenz (CIL XIII 11537 = AE 1908, 142; HÄCHLER, NÄF, SCHWARZ 2020, pp. 256–257); Aswan (AE 1908, 235 = AE 1909, 108 = BERNAND 1990 = AE 1998, 1470; HONZL 2020, pp. 103–104); Umm el-Jimal (three inscriptions: (1) ATALLAH 1996, pp. 19–20; AE 1996, 1613; (2) ATALLAH 1996, pp. 15–17; AE 1996, 1612; SCHARF 2001, p. 191; (3) CIL III 88, SCHARF 2001, p. 190).

<sup>20</sup> SARNOWSKI 1985a, pp. 124–125; IVANOV 2002, pp. 30, 124; OPRIS 2020, pp. 14–15; DUCH 2017, p. 114.

<sup>21</sup> SOPRONI 1978, pp. 31, 65, 72, Taf. 8, 71.

<sup>22</sup> Amm. Marc. 31.7.3–5, 31.9.

<sup>23</sup> SARNOWSKI 1985a, pp. 124–125; VASIĆ 1997, pp. 176–176.



Fig. 2. RVMORID-type stamped brick from Novae (photo by E. Jęczmienowski)

province and the toponyms of fortresses along the border, suggesting that their garrisons could have been responsible for producing the materials.

Therefore, the analysis of building activity from that period at Novae cannot be undertaken without considering the stamped ceramic building materials. However, it is important to keep in mind that bricks and roof tiles were often reused in later periods, so the discovery of such materials produced between 364 and 378 does not necessarily indicate that the construction work was carried out during that time and at the same location where they were found. Nevertheless, in Novae, roof tiles and bricks bearing the stamp RVMORID have been found in multiple locations,<sup>24</sup> and traces of construction activities undertaken during that period have indeed been recorded.

Some of the clearest examples come from the *principia* building, which, during the reign of Valens, still served as the administrative centre of Novae (Fig. 1:1; Fig. 3:1). There were three main phases of its construction: during the reigns of Vespasian, Trajan, and the Severan dynasty in the early third century.<sup>25</sup> The headquarters measured  $58.75 \times 106$  m (approximately 6200 sq. m)<sup>26</sup>, and RVMORID-type stamped bricks were used to construct a hall in the western part of its northern portico.<sup>27</sup> The 129 m<sup>2</sup> building was placed within the intercolumniation, and its precisely built walls (approximately 0.6 m thick) were composed of bricks and stones bonded with clay.<sup>28</sup> The building measured  $19.5 \times 7.7$  m, excluding the apse, which had a radius of 2 m and was built on the eastern side.<sup>29</sup> This structure may have served as a meeting place. It is plausible that the division of the *aedes principiorum* into two sections also occurred during the reign of Emperor Valens.<sup>30</sup> The discovery of a brick marked with a RVMORID-type stamp within one of the adjacent *aeraria* (specifically, the western room, referred to as room Fz)<sup>31</sup> suggests that renovations in that sector of the headquarters were carried out during this period.

<sup>24</sup> DIMITROV *et al.* 1970, p. 66; IVANOV 1997, pp. 560–562; SARNOWSKI 1999, pp. 58–59; VLADKOVA 2003, p. 227; SARNOWSKI *et alii* 2012, p. 52.

<sup>25</sup> SARNOWSKI *et alii* 2012, pp. 50–52.

<sup>26</sup> SARNOWSKI *et alii* 2012, p. 50.

<sup>27</sup> PRESS *et alii* 1992, p. 133; SARNOWSKI 1999, pp. 58–59.

<sup>28</sup> PRESS *et alii* 1991, p. 147.

<sup>29</sup> SARNOWSKI 2001, p. 86, Fig. 6.

<sup>30</sup> SARNOWSKI 1999, pp. 58–59; SARNOWSKI *et alii* 2012, p. 52.

<sup>31</sup> MAJEWSKI *et alii* 1984, p. 125.

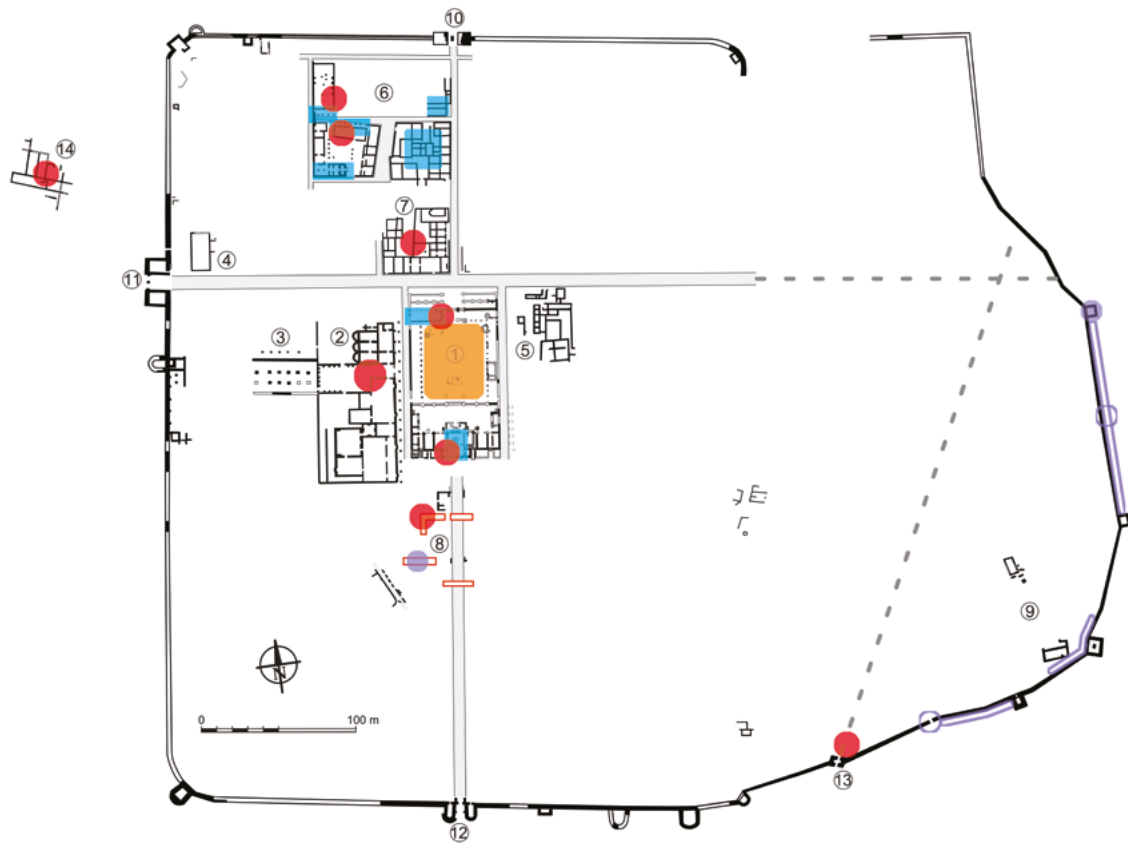


Fig. 3. Novae – Distribution of archaeological evidence (compiled by E. Jęczmienowski, based on the same outline plans as in Fig. 1)

Red: RVMORID-type stamped bricks and tiles

Blue: archaeologically attested building activity, probably dating to the reign of Valentinian and Valens

Orange: courtyard of the *principia*, where *primipilarii* set their dedications

Violet: hoards (filled circles) and constructions along the wall of the annexe (unfilled shapes), probably indicating building works after around 378. Building numbers correspond to those in Fig. 1.

The legionary *thermae* west of the headquarters were still in use during the period in question (Fig. 1:2; Fig. 3:2). The entire complex measured approximately  $55 \times 108$  m (circa 5940 m<sup>2</sup>) and consisted of multiple rooms serving various functions.<sup>32</sup> It was constructed in the first half of the second century, expanded during the Severan period, and partially rebuilt between the reigns of Gordian III and Constantine I.<sup>33</sup> Several bricks stamped with a RVMORID-type mark were discovered west of the *principia*,<sup>34</sup> which may suggest that renovation work was carried out within the legionary *thermae*. Various archaeological finds indicate that the baths ceased to function during the Gothic War of 376–382,<sup>35</sup> only about a decade after the stamped bricks in question were produced. They were found in a secondary context, suggesting that these bricks were likely reused during the construction of the episcopal complex above the ruins of the baths. However, it remains uncertain whether they originated from the demolished *thermae* or other structures.

<sup>32</sup> SARNOWSKI *et alii* 2012, pp. 68–71; BIERNACKI 2016, p. 19.

<sup>33</sup> BIERNACKI 2016, pp. 30–33; JASIEWICZ 2016, pp. 93, 99, 106.

<sup>34</sup> PARNICKI-PUDEŁKO *et alii* 1986, p. 152; MATUSZEWSKA 2013, p. 207; BIERNACKI 2021, p. 86.

<sup>35</sup> SARNOWSKI *et alii* 2012, pp. 67–71, 96; BIERNACKI 2016, p. 32; MIHAYLOV 2016, pp. 122–123; RÓŻYCKI 2016, p. 474.

In comparison to the aforementioned zones within the *latera praetorii*, the development of the area in the excavated part of the left *praetentura* underwent nearly complete reconstruction beginning in the second half of the third century (Fig. 1:6–7; Fig. 3:6–7). Previously, there was a *valetudinarium* in the northern part (built circa 100, it remained operational until the first half of the third century, possibly until around 238, when it was abandoned),<sup>36</sup> and a residence in the *scamna tribunorum* in the southern part (erected in the late second or early third century and destroyed in the second half of the third century).<sup>37</sup> In their place, civilian buildings for residential and economic purposes appeared.

Civilian buildings in the area of the former hospital began to emerge in the 270s.<sup>38</sup> During the reign of Valens, the southern half of this area was occupied by two *villae urbanae*—the so-called Portico Building in the west and, to the east of it, the building known as the Eastern Villa (Fig. 1:6; Fig. 3:6). During the so-called Phase 4, which lasted from around 361 until approximately 378, both buildings were renovated and modernized. The architectural changes within the Portico Building were quite significant, with the most important being the construction of the bath in the southern wing of the complex.<sup>39</sup> A brick impressed with a RVMORID-type stamp was discovered in this villa, which could perhaps be linked to the construction or renovation activities that took place during the mentioned phase of the building.<sup>40</sup> Moreover, it is highly probable that the expansion of the *horreum*, located directly to the north of the Portico Building, can also be dated to the period of Valentinian and Valens. Archaeological evidence suggests that the granary was equipped with a drying room during the same phase in which the villa was refurbished.<sup>41</sup> Another brick stamped with a RVMORID-type mark was discovered near the granary as well<sup>42</sup>—yet another indication that these or other construction activities could have been carried out in the vicinity during the reigns of Valens and Valentinian. Between 361 and 378, some construction works were also carried out in the northeastern quarter of this sector. However, due to its state of preservation, the plan of the building that existed there during this period could only be partially discerned.<sup>43</sup> In earlier phases, a glass workshop was present in that area.

In the area of the former residence in the *scamna tribunorum*, a new building was built during the reign of Constantine I (Fig. 1:7; Fig. 3:7). The structure was likely also residential, although it was once interpreted as some kind of public edifice.<sup>44</sup> Three bricks marked with the RVMORID stamp were also found in this place,<sup>45</sup> so we cannot rule out the possibility that some renovation works were carried out during the reign of Valens, although this remains uncertain.

So far, the excavations within the *retentura* of Novae have not yielded conclusive results regarding the function of the buildings erected there, particularly the possible location of the legate's residence (*praetorium*).<sup>46</sup> Nevertheless, continuity in the development of this area has been observed from the first to at least the fifth century. Within the area excavated to date, a hoard of eleven coins, dating from the reigns of Constantius II to Valentinian I, was discovered inside a foundation trench dug during one of the reconstructions of a very solid wall in that area (Wall No. 3). The dating of these coins may link the burial of the hoard to the dramatic events of circa

<sup>36</sup> DYCZEK 2005, pp. 231–238; DYCZEK 2011, pp. 16, 25; SARNOWSKI *et alii* 2012, p. 59; LEMKE 2015, p. 93.

<sup>37</sup> MILČEVA, GENČEVA 1991, p. 35; GENČEVA 1999, p. 95; SARNOWSKI *et alii* 2012, p. 74.

<sup>38</sup> DYCZEK 2005, pp. 231–238; DYCZEK 2011, pp. 25, 28–37; LEMKE 2015, p. 93.

<sup>39</sup> DYCZEK 2011, p. 33.

<sup>40</sup> MAJEWSKI *et alii* 1968, p. 159, Ryc. 46.

<sup>41</sup> DYCZEK 2011, p. 36.

<sup>42</sup> MAJEWSKI *et alii* 1970, pp. 148, 178, Tabl. X, 4; SARNOWSKI 1985b, p. 50.

<sup>43</sup> DYCZEK 2011, p. 35.

<sup>44</sup> SARNOWSKI *et alii* 2012, p. 92, Fig. 1:7; GENČEVA 1999, pp. 95–96.

<sup>45</sup> IVANOV 2002, pp. 98, 124; IVANOV 2006, p. 176.

<sup>46</sup> A short report presenting the results of the last few excavation seasons will be published by A. Tomas in the upcoming volume of *Arheološki Otkriti i Razkopki* for 2024 and 2025.



378, although it cannot be ruled out that some reconstruction activity took place in this area during the reign of Valens. Another indication supporting a similar dating of certain construction works carried out south of the *principia* may be a brick marked with a RVMORID-type stamp also found in one of trenches dug out in last years (Fig. 1:8; Fig. 3:8).

Compared to the area within the walls, evidence of works carried out along the fortifications during the period in question is considerably scarcer. Despite the lack of clear evidence for modifications to the fortifications during the period of Valens and Valentinian, we cannot rule out the possibility that some renovation work took place but traces of such activities were difficult to detect. A single brick stamped with a RVMORID-type mark, found near the gate-tower in the southeastern section of the Late Antique fortifications of the so-called annexe (Fig. 1:13; Fig. 3:13), may hint at such efforts.<sup>47</sup> Although it is possible that this brick was associated with construction activities in that section of the walls, it remains uncertain whether it was originally used during that period or reused at a later date, after circa 378. The eastern extension of the walls at Novae has been dated by some scholars to the period of the Tetrarchy<sup>48</sup> or first half of the fourth century,<sup>49</sup> however, no clear evidence has yet been found to confirm these dates. At a certain point, the walls of the annexe were reinforced, increasing in thickness from 1.6 m to 3 m, and two additional towers (the second and sixth, counting from the north [Fig. 5]) were constructed. This modification, however, may have taken place after the destruction that Novae suffered around 378.<sup>50</sup> Such a dating is supported by the discovery of a hoard inside one of the towers, consisting of one hundred forty coins minted between 337 and 375.<sup>51</sup>

Construction activities may have taken place outside the walls of Novae during the reign of Valens and Valentinian. Several roof tiles marked with the RVMORID stamp were also discovered not far from the west gate,<sup>52</sup> within the layer of burnt, collapsed roof of a building that served an economic function and was erected on the site of a former villa *extra muros* (Fig. 1:14; Fig. 3:14).<sup>53</sup> However, as this building was ultimately destroyed in the early fifth century, the use of these tiles in the construction of the roof does not necessarily date to the years 364–378 and may instead reflect their reuse during repairs carried out after the Gothic invasions around 378.

### Novae during the reign of Valens and Valentinian—an overview

The near-complete absence of evidence for renovation work on the fortifications suggests that they underwent no substantial modifications during the period in question. The walls, towers, and gates were probably in good condition and likely required only minor repairs, which remain untraceable to us. At least in some places, the ditch from the Principate era remained in use during the fourth century—for example, in the area of the South Gate (one of the new U-shaped external gate towers was even reinforced due to its proximity to the ditch).<sup>54</sup> Yet, merely a few dozen meters east of this gate, the ditch was filled in at the beginning of the fourth century due to its intersection with a newly built, similar external tower.<sup>55</sup> Therefore, the ditch was probably relocated slightly further from the wall in certain areas; however, so far, there is no direct

<sup>47</sup> DIMITROV *et alii* 1970, p. 66; IVANOV 1997, pp. 560–562; IVANOV 2002, p. 117.

<sup>48</sup> ČIČIKOVA 1980, pp. 55–66; PRESS, SARNOWSKI 1987, p. 307; POULTER 1994, p. 145; SARNOWSKI *et alii* 2012, pp. 94–96; LEMKE 2015, p. 94.

<sup>49</sup> KLENINA 2006, pp. 28–29; RÓŻYCKI 2016, p. 471.

<sup>50</sup> ČIČIKOVA 1983, p. 15; SARNOWSKI *et alii* 2012, pp. 94–96; cf. IVANOV 1997, pp. 560–563.

<sup>51</sup> DIMITROV *et alii* 1967a, pp. 78; DIMITROV *et alii* 1967b, p. 117.

<sup>52</sup> VLADKOVA 2003, p. 227; IVANOV 2006, p. 186; VLADKOVA 2021, pp. 55, 78.

<sup>53</sup> VLADKOVA 2003, p. 227.

<sup>54</sup> PARNICKI-PUDELKO 1990, pp. 11, 50; ZAKRZEWSKI 2015, pp. 19–20; SARNOWSKI *et alii* 2016, p. 184, Fig. 9.

<sup>55</sup> SARNOWSKI *et alii* 2016, pp. 183–187.



evidence to prove this. It seems that the fortifications provided defenders with a strong and effective defensive position. The thickness of Novae's walls varied considerably, particularly after the western and southern walls were reinforced in the first decades of the fourth century. The thicknesses of the northern, western, and southern walls measured approximately 1.3 m, 2.4–2.5 m, and 2.9–3.5 m, respectively.<sup>56</sup> The eastern wall was built entirely from scratch during the Late Antique period<sup>57</sup> and, as mentioned above, originally had 1.6 m in thickness.<sup>58</sup> This variation in wall thickness resulted from differences in the natural defensibility of various sections of the fortifications. The northern wall was the least massive, as it was constructed near the high Danube escarpment, where a frontal attack was less likely. This is evidenced by a ditch running along the northern rampart during the Flavian period, which had already been backfilled by around the year 100, when the fortification system was reconstructed in stone.<sup>59</sup> It was deemed unnecessary, probably because the Danube escarpment had shifted further south due to erosion. In contrast, the southern wall was the thickest, as it stood in an open area and faced slightly elevated terrain to the south. Therefore it required additional reinforcement. The eastern wall, in its original form, was not particularly thick, as its layout was designed to take advantage of the natural topography when it was possible.

Analogies with the well-preserved Lower Danubian Tetrarchic walls of the imperial complex at Felix Romuliana I (Gamzigrad),<sup>60</sup> the *quadriburgium* at Castra Martis (Kula, Fig. 4),<sup>61</sup> and the city of Diocletianopolis (Chisaria),<sup>62</sup> which exhibit similar thickness and foundation depth, and their rampart walks levels were registered at heights of 10.4 m, 10 m and 10.5 m respectively, permit a cautious attempt at reconstructing the hypothetical height of the walls at Novae. The most massive sections of the Late Antique fortification walls of Novae (on the western and southern sides of the original legionary fortress) could have reached heights of 10 m or more, up to the level of the rampart walk (or around 12 m or more if battlements are taken into account). The walls were protected by towers which, based on analogies (heights without roofs: Felix Romuliana I – 14.9 m; Castra Martis – 16.3 m; Diocletianopolis – 14.5–15 m),<sup>63</sup> were often 4–6 m higher than the level of the rampart-walk. If the aforementioned analogies were considered relevant for Novae, then the height of the towers could have reached 14 m–16 m. Nevertheless, the estimation of the height of the fortifications at Novae requires further study and abovementioned values should be considered only as maximum possible figures based on analogies. Local factors, such as the quality of masonry (which, in the case of the curtain walls at Novae, was not especially impressive), might have significantly influenced the height. However, according to Dietwulf Baatz, the walls should be at least 7 m high to the level of the rampart walk (9 m including battlements) in order to pose a serious obstacle to an enemy attempting to scale them using ladders.<sup>64</sup> Therefore, the heights of 7 m for the walls (9 m including battlements) and 11–13 m for the towers could perhaps be considered as the minimum.

The towers at Novae were constructed at regular intervals of 28–32 m along the western and southern walls, while along the eastern wall, they were spaced 50–73 m apart. Such distances

<sup>56</sup> ČIČIKOVA 1980, pp. 55–66; PARNICKI-PUDELKO 1990, pp. 14, 36, 38, 45, 54; SARNOWSKI *et alii* 2012, pp. 44, 94–96; SARNOWSKI *et alii* 2016, pp. 184–185, Fig. 10; ZAKRZEWSKI 2015, pp. 18–19, Fig. 8–9; ZAKRZEWSKI 2020, p. 443.

<sup>57</sup> SARNOWSKI *et alii* 2012, pp. 94–96.

<sup>58</sup> ČIČIKOVA 1983, p. 15; SARNOWSKI *et alii* 2012, pp. 94–96. Cf. IVANOV 1997, pp. 560–563.

<sup>59</sup> SARNOWSKI, KOVALEVSKAJA, TOMAS 2010, pp. 167, 170.

<sup>60</sup> ČANAK-MEDIĆ 1978, pp. 38, 55; ČANAK-MEDIĆ, STOJKOVIĆ-PAVELKA 2011, pp. 60–62, 64–66, 74–75.

<sup>61</sup> ATANASOVA 2005, pp. 27–32, 244; BĂJENARU 2010, p. 142.

<sup>62</sup> MADŽAROV 1967, pp. 113–142; MADŽAROV, MADŽAROV 2002, p. 201.

<sup>63</sup> Milutinovac (MILOŠEVIĆ, JEREMIĆ 1986, pp. 249, 256, Fig. 8); Qasr Bshir (KENNEDY 2004, pp. 148–149; CAMPBELL 2009, pp. 58, 60; BĂJENARU 2010, p. 85); Diocletianopolis (MADŽAROV, MADŽAROV 2002, p. 202, Obr. 3–4, 204, Obr. 7, 206, Obr. 11); Felix Romuliana (ČANAK-MEDIĆ, STOJKOVIĆ-PAVELKA 2011, pp. 60–62).

<sup>64</sup> BAATZ 1983, p. 137.



Fig. 4. Remains of the *quadriburgium* in Castra Martis, modern Kula (photo by E. Jęczmienowski)

were rather typical—similar ones were noted in the western provinces of the Empire.<sup>65</sup> A distance of around 30 m reflects the effective shooting range of a bow.<sup>66</sup> In that case, an enemy standing between two towers would always be within range of the defenders manning at least one of them. This could explain why, at some point (probably after circa 378), two additional towers were constructed—without them, the intervals between towers would have ranged from 50 to 129 m and thus created vulnerable gaps in the defensive perimeter. The towers were mostly external and exhibited various layouts—U-shaped along the walls of the former legionary fortress and square along the wall of the annexe—with areas ranging from approximately 31 to 151 m<sup>2</sup> on the outside and 15.5 to 58 m<sup>2</sup> on the inside.<sup>67</sup> The dimensions of such towers would have allowed for the placement of no more than two or three *ballistae* per floor, as these machines needed to be spaced approximately 2.3–3 m apart.<sup>68</sup> The anonymous treatise *De rebus bellicis*, addressed to the emperors of the third quarter of the fourth century (dated to 353–354, 355–360 or 364–375), contains various important information regarding weaponry, combat techniques, as well as the functioning of the border.<sup>69</sup> In this treatise, we find information that projectiles fired by the most powerful machines (*ballista fulminalis*) could reach the opposite bank of the Danube River.<sup>70</sup> Due to the lack of additional context and the considerable variation in the river's width, it is impossible to determine the precise range. However, we may assume that it should be several hundred meters. Although the credibility of *De rebus bellicis* is being questioned—as it may reflect a form of wishful thinking—experimental archaeology suggests that the information regarding the impressive range of the *ballista fulminalis* could be reliable, as the machines' projectiles reportedly reached over 600 m.<sup>71</sup> Nevertheless, scholars estimate that different types of *ballistae* could fire effectively as far as 100–170 m, 300–360 m, or even 460 m,<sup>72</sup> which remains an impressive range. Towers were defended not only by archers and siege engines but also by slingers. The use of slingshots to defend the walls of Novae is well-documented, as a significant number of sling bullets were found inside the tower no. 12.<sup>73</sup> While the maximum range of a slingshot could reach up to 400 meters, its effective range was approximately 100 meters.<sup>74</sup> Apart from

<sup>65</sup> BAATZ 1983, p. 139.

<sup>66</sup> BAATZ 1983, p. 137; ČANAK-MEDIĆ, STOJKOVIĆ-PAVELKA 2011, p. 61.

<sup>67</sup> PARNICKI-PUDEŁKO 1990, pp. 40–42, 89, Fig. 32; SARNOWSKI *et alii* 2016, pp. 184–185, Fig. 10; ZAKRZEWSKI 2020, pp. 103–104, Fig. 3, 4, pp. 111–113, Fig. 12, 15.

<sup>68</sup> APOSTOL 2012, pp. 85, 92, Fig. 7.

<sup>69</sup> SOUTHERN, DIXON 2014, p. 2; MEISSNER 2023, p. 8.

<sup>70</sup> *De rebus bellicis* XVIII 5–6.

<sup>71</sup> MEISSNER 2023, pp. 10–15.

<sup>72</sup> MARSDEN 1969, pp. 90–91; BAATZ 1994; CAMPBELL 2003, pp. 11, 21; APOSTOL 2012, p. 87.

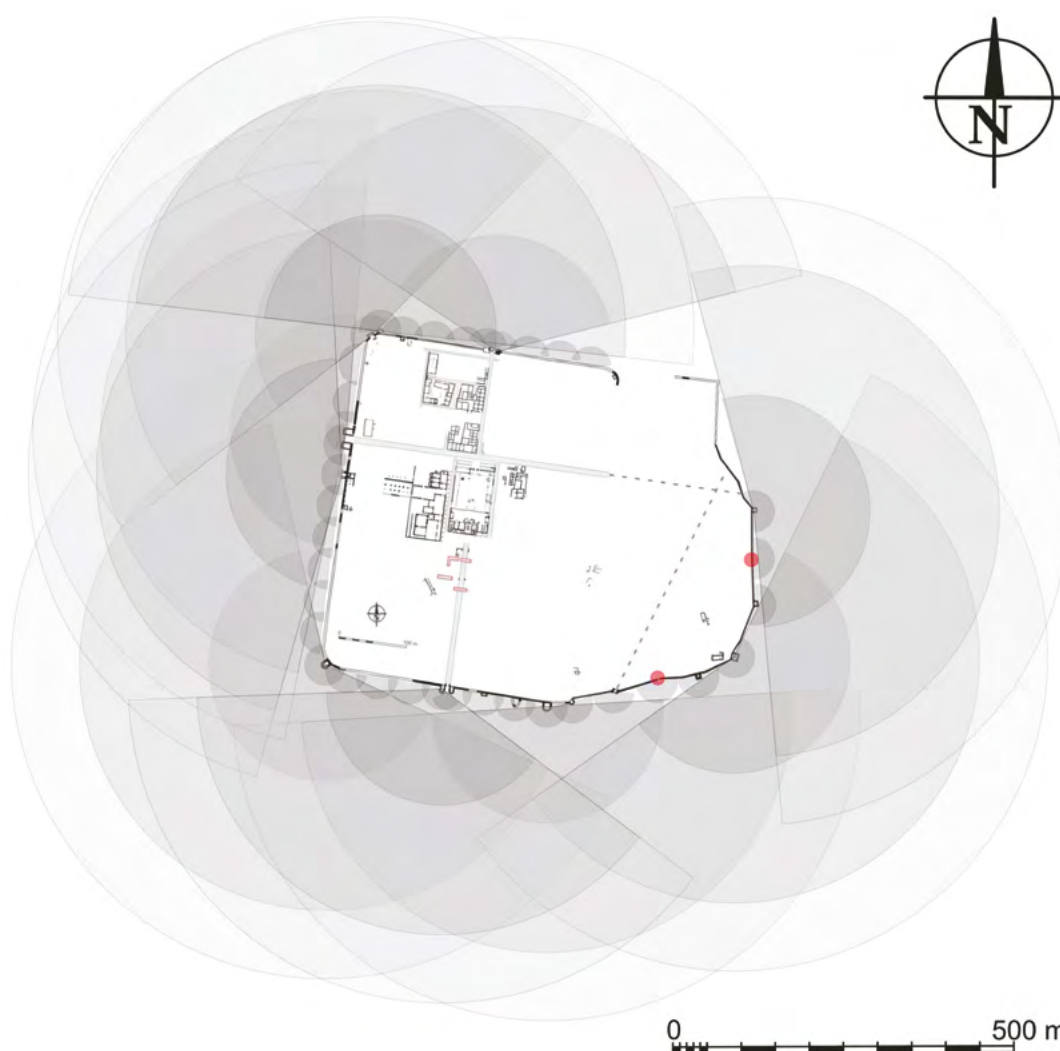


Fig. 5. Novae, simulation of fields of fire from the towers, based on the effective range of bows (30 m) and various types of *ballistae* (170, 360, and 460 m). Red dots mark locations where additional towers were constructed at some point, probably after around 378. To preserve the clarity of the drawing, the *ballistae* simulation was limited to selected towers (compiled by E. Jęczmienowski, based on the same outline plans as in Fig. 1).

sling bullets, a number of stone projectiles were found at Novae, with their diameters ranging from 8 to 32 cm and weighing between 1 and 17 kg.<sup>75</sup> Of course, the heaviest must have been shot, but the lightest ones could have simply been thrown. The arrangement of towers at regular intervals, combined with the effective range of various weapons, transformed the forefield of the fortress into a hazardous area for advancing foes (Fig. 5). Enemies approaching from multiple directions, both near and far from the walls, were vulnerable to attacks.

There were three gates (north, west, and south), each flanked by two towers of similar design to those along the walls (Fig. 1:10–12). These gates maintained their locations from the Principate era. Along the eastern side, there was a gate in the southern part, consisting of a single tower with a passage through it (Fig. 1:13). A postern was constructed through this wall, also on its southern side; however, it was later closed, and a tower was built in its place.<sup>76</sup>

<sup>75</sup> SARNOWSKI *et alii* 2016, pp. 186–187.

<sup>76</sup> BAATZ 1990, pp. 59–67; LAHARNAR 2011, p. 341.

It remains uncertain whether a gate existed in the northern half of the eastern wall (Fig. 1). Such a gate might have been expected along the projected axis of the *via principalis* of the legionary fortress. The street near the Principate-era eastern gate of the fortress continued to be in use during the fourth century, as evidenced by numerous coins found in the area, with the latest minted between 393 and 395.<sup>77</sup> On the one hand, it was a known phenomenon in Late Antiquity to decrease the number of gates to enhance defensive capabilities,<sup>78</sup> but on the other hand, in Novae, the presence of a gate leading east would have considerably facilitated transportation to and from that direction. The results of earlier Bulgarian excavations seem to rule out this hypothesis.<sup>79</sup> Nevertheless, as the excavation of the eastern wall in the 1960s took place at the very beginning of archaeological work at Novae, some elements may have remained unnoticed—perhaps due to excavation techniques and priorities typical of that period.

Traces of building activity from the time of Valens and Valentinian are far more frequent inside the walls of Novae than along the fortifications (Fig. 3; Tab. 1). However, the most distinctive evidence of this activity—the bricks marked with a RVMORID-type stamp—are not particularly numerous. The exact number of such bricks remains uncertain due to the lack of detailed information in some publications. So far, I am aware of only about eighteen RVMORID-type stamped bricks found in Novae. In contrast, in the area of the West Gate, one hundred eighty three bricks were discovered bearing the LEPIFICOR stamp<sup>80</sup>—the most common type of Late Antique stamped brick from Novae—dated to the second decade of the fourth century.<sup>81</sup> These were found almost exclusively along the fortifications. The relatively small number of bricks or roof tiles marked with the RVMORID stamp suggests that construction activity in Novae during the time of Valens and Valentinian was focused not on large scale construction works but mainly on the renovation and maintenance of existing structures. However, in some cases, more significant modifications were introduced—such as in the *principia*. Unfortunately, bricks bearing the RVMORID stamps were often found in secondary contexts, meaning they provide only indirect evidence that renovation work may have been carried out in a particular area during the period in question. Nevertheless, these bricks were found in various locations within Novae. Their distribution across the site suggests that various construction works carried out during the reign of Valentinian and Valens may have been undertaken throughout the entire intramural area.

The scope of works may have been even larger than it appears based on the finds of RVMORID-type stamped bricks, as the reuse of older building materials was quite common in general. Moreover, not all bricks were stamped, but unfortunately, we do not know what percentage bore stamps, whether the stamping process was standardized in any way, or if each brickyard followed its own stamping rules.<sup>82</sup> Perhaps only a few tiles produced during this period were stamped. A discovery from Sexaginta Prista (Ruse), about 50 km down the Danube from Novae, also supports this idea. Only seven stamped roof tiles were found among the ruins of the collapsed roof of the fourth century *principia*, which was repaired during the reign of Valens and Valentinian.<sup>83</sup> Three of them bear the RVMORID-type stamp, while the remaining four are marked with a similarly dated NOVAS stamp—interestingly, a type of stamp so far not attested at Novae.

<sup>75</sup> LEMKE 2013, pp. 357–363.

<sup>76</sup> DIMITROV *et alii* 1967a, p. 78; DIMITROV *et alii* 1967b, p. 117; IVANOV 1997a, p. 563; SARNOWSKI *et alii* 2012, pp. 94–96.

<sup>77</sup> SARNOWSKI *et alii* 2016, p. 182.

<sup>78</sup> See for example: Drobeta (TUDOR 1965) and Čezava-Novae (VASIĆ 1984; VASIĆ 1990).

<sup>79</sup> DIMITROV *et alii* 1974.

<sup>80</sup> SARNOWSKI 1985b, p. 49.

<sup>81</sup> WACHTEL 1982, p. 242, no. 23; SARNOWSKI 1985a, p. 111; SARNOWSKI 2007, p. 26, note 8; VON BÜLOW 2007, p. 463.

<sup>82</sup> BRANDL, FEDERHOFER 2010, pp. 50–51.

<sup>83</sup> VĀRBANOV, DRAGOEV 2007, p. 233.

Tab. 1. Bricks and roof tile marked with the RVMORID stamp. Number of finds and places of their discovery

Place of discovery	Number of brick and roof tiles	Bibliography
Headquarters ( <i>principia</i> )	3	MAJEWSKI <i>et alii</i> 1984, p. 125. PRESS <i>et alii</i> 1992, p. 133. SARNOWSKI 1999, pp. 58–59.
Baths ( <i>thermae</i> )	6	PARNICKI-PUDELKO <i>et alii</i> 1986, p. 152. MATUSZEWSKA 2013, p. 207. BIERNACKI 2021, p. 86.
Left <i>praetentura</i>	5	MAJEWSKI <i>et alii</i> 1968, p. 159, Ryc. 46. MAJEWSKI <i>et alii</i> 1970, pp. 148, 178, Tabl. X, 4. SARNOWSKI 1985b, p. 50. IVANOV 2002, pp. 98, 124.
<i>Retentura</i>	1	unpublished
Fortifications of the annexe	1	DIMITROV <i>et alii</i> 1970, p. 66. IVANOV 1997, pp. 560–562. IVANOV 2002, p. 117.
<i>Extra muros</i> complex near the West Gate	At least 2 <sup>84</sup>	VLADKOVA 2003, p. 227; IVANOV 2006, p. 186; VLADKOVA 2021, pp. 55, 78.
<b>TOTAL</b>	<b>At least 18</b>	

The *intra muros* urban development of Novae during the reign of Valens and Valentinian reflects the dual character of the fortress during this period. The investments in military buildings within the walls during that period show that the army still held a prominent role in Novae. The construction of the hall within headquarters portico and the modifications in the most sacred space of the legionary headquarters suggest that the *principia* continued to play an important role in the second half of the fourth century. This role is further emphasized by a series of fifteen dedications set up in the courtyard of *principia* by civilian *primipilarii* responsible for the transportation of supplies to the border troops from the eastern Mediterranean provinces, a process carried out within the *pastus militum* system. They are dated between 284 and 432.<sup>85</sup> At least one of these inscriptions was set up during the reign of Valens and Valentinian (in 367/368),<sup>86</sup> while the dating of two more to that period is plausible.<sup>87</sup> The placement of these inscriptions suggests that, during the reigns of Valens and Valentinian, Novae was of significant military importance, with imperial authorities placing considerable emphasis on ensuring the proper supply of the frontier troops. Furthermore, as the legio I Italica was based at least at one other location during that period (Sexaginta Prista), Novae, still serving as the seat of the legionary prefect, may have been involved in the logistical redistribution of supplies, with the *principia* building potentially playing a notable role in this process. The placement of the *horreum* not far to the west of the *principia*, and close to the main gate of the fortress, could correspond with this logistical function.<sup>88</sup> The Principate-era hall next to the west gate remained in use during that period, following its reconstruction in the early fourth century.<sup>89</sup> The continuous operation of the legionary bath

<sup>84</sup> Unfortunately, the exact number of stamped roof tiles was not specified; they were merely referred to in the plural form.

<sup>85</sup> SARNOWSKI 2005; ŁAJTAR 2013; SARNOWSKI 2013.

<sup>86</sup> BRESSON, DREW, BEAR ZUCKERMAN 1995, pp. 139–146; IGLNovae 178; ŁAJTAR 2013, p. 110.

<sup>87</sup> AE 2013, 1335 = ŁAJTAR 2013; ŁAJTAR 2021, p. 124.

<sup>88</sup> The excavations in this area are still in progress, and the stamped tiles found there have not yet been published.

<sup>89</sup> LEPIFICOR-type stamped bricks were used in its reconstruction (GENČEVA, ANDREEVA 2021, 617). So far, no RVMORID-type stamped bricks are known from that area.

in this period, and perhaps also some repair works, may underline the status of the military in Novae during that period, although perhaps the civilians could use baths either. An indication of that could be the fact that this complex was transformed into commercial area after baths ceased to function.<sup>90</sup>

Regardless the important military role Novae played, significant parts of land within the fortress walls were occupied by civilian buildings serving various purposes. Evidence of construction activity during this period has been documented within these structures as well, highlighting the prosperity of the civilian population inside the fortress. These civilian buildings replaced earlier military structures after they fell out of use and became redundant due to destruction and changes in Roman military organization, which led to a significant reduction in the size of legions compared to the second and third centuries. The precise location where the troops were garrisoned remains an open question. Bulgarian excavations of the legionary barracks in the 1960s did not yield conclusive results regarding the continuity of their use,<sup>91</sup> while a section of another barrack investigated near the northern wall had already ceased to function by the second half of the third century.<sup>92</sup> Nevertheless, we cannot rule out the possibility that some of the Principate-period barracks were still in use to accommodate the reduced garrison, while the rest were dismantled or adapted for other purposes as they were no longer needed.

## Conclusions

Despite the relative scarcity of evidence, some general conclusions about Novae during the period of Valentinian and Valens can be drawn. There is little doubt that construction works in Novae were undertaken as part of the broader building policy pursued during the reigns of these emperors. While the precise scope of these interventions remains difficult to ascertain, it may be inferred that their primary objective was the upkeep—and possibly the modernization—of structures within the fortress. The absence of archaeological evidence for alterations suggests that the fortifications were well maintained, with no apparent need for substantial repairs or reconstruction in the period preceding the war with the Goths. The reconstructed height of the walls and towers, as well as their distribution, suggests that the fortification system at Novae must have posed a significant challenge to any potential adversary.

The lack of large-scale modifications to the existing structures at Novae, and the focus on their limited modernization and repair, fits well within the broader context of imperial building policy along the Lower Danube during the reign of Valentinian and Valens. Similar works were observed at other existing bases as well, e.g., at the aforementioned Sexaginta Prista, and at Iatrus (Krivina),<sup>93</sup> and Sucidava (Celei).<sup>94</sup> In contrast, works aimed at constructing completely new structures were limited almost exclusively to watchtowers—such as, for example, those at Hajdučka Vodenica,<sup>95</sup> Mihajlovac-Blato,<sup>96</sup> Batin<sup>97</sup> and most probably in the vicinity of Cius (Gârliciu)<sup>98</sup>—which were erected from scratch during that period. These works were intended to increase the density of military posts along the border.

<sup>90</sup> DIMITROV 2013, p. 253; MIHAYLOV 2016, p. 123.

<sup>91</sup> DIMITROV, *et alii* 1974, pp. 149–154.

<sup>92</sup> SARNOWSKI, KOVALEVSKAJA, TOMAS 2010, p. 168.

<sup>93</sup> BÖTTGER *et alii* 1982, p. 238; DÖHLE 1985, pp. 157; BARTOSIEWICZ *et alii* 1995, pp. 18, 29–43, 46, 53; DINČEV 1999, pp. 166–174; VON BÜLOW *et alii* 2007, pp. 32, 120, 313–314, 528; VON BÜLOW 2007, pp. 466, 468, 474; RIZOS 2013, p. 662.

<sup>94</sup> TUDOR 1948, p. 149; TOROPU, TĂTULEA 1987, pp. 83–85; BONDOC 2009, p. 78.

<sup>95</sup> JOVANOVIĆ 1984, p. 329; JEREMIĆ 2007, p. 312.

<sup>96</sup> TOMOVIĆ p. 1986, pp. 404, 412; JEREMIĆ 2007, pp. 312–313.

<sup>97</sup> AE 1999, 1341; STANČEV 1999, pp. 203–205.

<sup>98</sup> ISM V 125; CIL III 6159 = 7494 = IGLR 233; Them. Orat. 10.137; OPRIȘ 2020a, p. 15

The army played a significant role in Novae during this period. Major military buildings continued to be maintained, and imperial authorities placed considerable emphasis on ensuring the proper supply of the frontier troops. At the same time, it seems that civilian structures occupied a notable portion of the space within its walls. The civilian element continued to develop during the period in question, and the non-military residents of Novae modernized and repaired their buildings, which is especially evident in the area of the so-called Portico Building. The history of the legionary baths at Novae seems to reflect the changes of the character of the base in the second half of the fourth century especially well. The complex to the west from *principia* was maintained during the period preceding the Battle of Adrianople, probably even refurbished during the reign of Valentinian and Valens, somehow attesting the dominant significance of military at Novae at that time. This contrasts with the later time, so after ca. 378, when the baths were first abandoned, and especially in the period of the late fourth to the first quarter of the fifth century, when the construction of the first phase of the bishopric complex began in their place,<sup>99</sup> indicating the growing importance of non-military elements. Eventually, the growth of the bishopric complex led to a shift in the administrative centre of Novae from the military *principia*, which also fell out of use in the fifth century, to the emerging episcopal seat.

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Them. Orat.	P. Heather, J. Matthews, <i>The Goths in the Fourth Century (Translated Texts for Historians)</i> , Liverpool 1991.

### Abbreviations

AE	<i>L'Année épigraphique</i> , Paris.
CIL	<i>Corpus Inscriptionum Latinarum</i> , ed. T. Mommsen et al., Berlin 1863–.
IGLNovae	J. KOLENDO, V. BOŽILOVA, <i>Inscriptions Grecques et Latines de Novae (Mésie Inférieure)</i> , Paris 1997.
IGLR	E. POPESCU, <i>Inscripțiile grecești și latine din secolele IV–XIII descoperite în România</i> [Greek and Latin inscriptions from the fourth–thirteenth centuries discovered in Romania], București 1976.
ILSH	DESSAU, <i>Inscriptiones Latinae Selectae</i> , vols I–III, Berlin 1892–1916.
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<sup>99</sup> SARNOWSKI et alii 2012, p. 98; BIERNACKI 2013, p. 33.



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