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#### Dissertationes Archaeologicae ex Instituto Archaeologico Universitatis de Rolando Eötvös nominatae

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## Preliminary report on the excavations of the legionary bath of Brigetio in 2024\*

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**Abstract:** The excavation of the legionary camp at Brigetio began in 2021. Throughout the last four campaigns, 2,200 square meters of the baths were unearthed, which span a total of well over 6,000 square meters. In 2024 the work continued across four surfaces. The excavations

\* The research behind the present paper was supported by the National Research Development and Innovation Office (NKFI K 134522), the National Cultural Fund of Hungary (NKA) and the HUN-REN–ELTE Research Group for Interdisciplinary Archaeology. here shed a light on the size of the bath, which extended westward over a much larger area than previous excavations and radar surveys had suggested. In connection with the heating systems of the baths, two *praefurnia* preserved in excellent condition, along with their two adjoining service rooms, were also unearthed. In the southern section of the baths, three lime slaking pits were discovered, a rare occurrence in military context within the Roman Empire.

Keywords: Roman bath, Brigetio, legionary fortress, limes, Pannonia

#### Introduction

Systematic excavations in the legionary encampment of Brigetio have been carried out since 2015.<sup>1</sup> During this time, minor research projects were conducted in the area of the *principia*. Following this a Late roman aula-type building was excavated in the region of the *praetentura*. Thanks to ge-ophysical surveys, the northern gate of the camp was identified, they also allowed for the findings of smaller excavations, conducted throughout the 20th century to be verified.<sup>2</sup>



Fig. 1. Hypothetical reconstruction of the floor-plan of the bath, based on the excavations and GPR survey.

1 For more details about the latest excavations in the legionary fortress see BARTUS *et al.* 2016; BARTUS *et al.* 2018a; BARTUS *et al.* 2018b; BARTUS *et al.* 2020a; BARTUS *et al.* 2020b; BARTUS *et al.* 2022; BARTUS *et al.* 2023.

<sup>2</sup> BARTUS *et al.* 2020a.

As a result of the geophysical surveys carried out since 2018, detailed information is now available concerning the locations of buildings within the *praetentura*. Prior to the excavations, it was already possible to determine the location of the baths belonging to the military camp, due their visibility on the GPR imagery. The excavation of the baths, located on the western side of *the via praetoria*, began in the summer of 2021.<sup>3</sup>

As a result of the excavations of the past four years, approximately 2,200 square meters of the legionary baths became known to us. A clear distinction can be made between the heated and unheated rooms that were excavated (Fig. 1). However, their exact function cannot yet be determined. This is due to the incomplete knowledge of their lay out, along with the fact that there was rarely an opportunity to identify the vertical walls that bordered these rooms. In many cases only the substructures provided us with detailed information. Several phases of renovation and reconstruction could be observed within the baths. During the first phase of development, the buildings of the baths were constructed on an east–west axis; however, this principle was lost in later phases of rebuilding, which is why it cannot be observed in several parts of the baths.



Fig. 2. Surfaces opened in the last four years of excavations.

<sup>3</sup> BARTUS *et al.* 2022.

A large part of the northern section of the baths came to light throughout the excavations. In the north-western region of the excavated area, the intersection of the bathhouse and the *basilica thermarum* was observed (Surface 2023/1, Fig. 2). This made it clear that the north end of the *basilica* had an apse closure. At the north end a well-preserved cold-water pool was unearthed (Surface 2021/1, Fig. 2), which connected to a room without heating. Several heated quarters were located to the west of this area (Surface 2022/1 and 2023/4, Fig. 2). The pools found within these chambers weren't as well preserved, but in some cases, their outlines could be traced, and several periods of reconstruction were discerned. Four *praefurnia* were found situated in the northern section of the baths, that provided heating to the wing. In the southern section, we excavated a cold-water pool, along with a connecting 4-meter-long lead pipe and drainage channel. To the north of the pool lay an unheated chamber surrounded by several different heated rooms (Surfaces 2022/2 and 2023/2, Fig. 2). Surfaces 2023/3, 2022/3 and 2021/4 were located in the south-western zone of the bathing facilities. This section consisted of heated chambers, where the evidence of intense rebuilding was detected, the entirety of the hypocaustum system was renovated. During the excavation of Surface 2022/3, we unearthed a heated warm-water pool, beneath which a praefurnium opening was revealed.



Fig. 3. Orthophoto of surface 2024/1.

#### Excavations in 2024

During the excavations of 2024, we opened 4 new surfaces in the region of the baths (Fig. 2), bringing the total excavated area to 2200 square meters. Surface 2024/1 connected to Surface 2023/4 from the west. Our objective in excavating this area was to determine the western extent and possible boundary of the baths. Surface 2024/2 joined Surface 2023/4 from the south, while Surface 2024/3 was located to the south of Surface 2024/2, with a 5-meter gap in between. The purpose of opening these surfaces was to gain a better understanding of the internal structure of the heated section of the baths. Surface 2024/4 connected to Surface 2023/2 from the south, allowing the excavated area to encompass the parts of the baths visible on the GPR imagery, including a supposed southern end wall.

#### Surface 2024/1

A wall, oriented on an east-west axis, was observed in the northern half of the surface. It was preserved at greater height than what is typically expected for walls in Brigetio. North of the wall lay a channel running from east to west (Fig. 3.1), along with a lead water pipe which continued into the section wall. As a result, its exact measurements and orientation remain unknown. Other than this, no structure was observed north of the wall. The majority of the surface was covered by a single room equipped with underfloor heating (Fig. 3.2), which extended to the east, past the section border. It cannot yet be determined whether or not it formed a continuous space with the room provided with underfloor heating. However, regarding their layout, the two are surely related. In the north end of the hypocaustum the beginning of apsidal shaped masonry was observed (Fig. 3.3, Fig. 4), matching in size the apse of Surface 2024/2. The two surfaces are separated by an area that is yet to be excavated. Therefore, it is not possible at the present to conclude whether the two hypocausta are separated by a wall running southward from the north. On the inner surface of the apsidal wall, the architectural solutions that were applied during construction were clearly visible, particularly regarding the way that the space for the semi-columns connecting to the hypocaust system was designed. Built into the wall, complete and incomplete square shaped bricks alternated with each other. The semi-circular heating tiles that fit against the wall might have begun at the edges of the complete square shaped bricks that protruded from the surface. The recesses may have been aligned with the incomplete tiles, allowing air to flow from below into the hollow tiles.



Fig. 4. The remained walls of the apsidal shaped masonry on surface 2024/1.

The *hypocaustum* was constructed out of columns, some made with circular bricks and others with square-shaped bricks. In some cases, stone pillars were placed, particularly near the line of the opening of the *praefurnium* (Fig. 3.4). Here the *suspensurae* were arranged in a more dense and less orderly fashion compared to the eastern part of the excavated surface of the room. Among the bricks that formed the columns of the hypocaustum, several bore the stamp of the *legio I Adiutrix*. This however provides us with too broad a chronological window, making them inadequate for precise dating of the structure.<sup>4</sup>



b

а

Fig. 5. a-b - Remains of the *praefurnium* on surface 2024/1, and the ash layers at the end of it.

4 The *legio I Adiutrix* stationed in Brigetio from 97 CE until the end of Roman rule in the 4th century CE, their brickstamps could appear in a too wide timeframe. See BARTUS *et al.* 2023, 636; DOBOSI – BORHY 2022, 141; LŐRINCZ 1975, 349; BARKÓCZI 1951, 19–20.

The *praefurnium* (Fig. 5.a–b) that belonged to the *hypocaustum* was located in the heated room's north-western corner. Underneath the burnt, hardened infill its base was constructed of large stones, the gaps between them filled in with mortar. The sides were created with enormous, roughly chiselled stone slabs. To the north and west of the *praefurnium* opening, a smaller room was observed. (Fig. 3.5) Based on several charred layers and the mixed, ashy infill that accumulated here, this space was most likely used as the *praefurnium*'s service room. In the centre of the room a pile site could be observed, which shows similarities with the service room found in Surface 2022/2.<sup>5</sup> Next to the *hypocaustum*, to the west, the foundations of a wall were detected. The wall was probably dismantled in the roman age, and then later rebuilt (Fig. 3.6). Above it the traces of a wall removal caused by early modern or modern stone quarrying were found. The bottom surface of the *hypocaustum*, coated with mortar, was preserved forming a rim-like shape, allowing for the precise definition of the thickness of the walls erected during the Roman age. Beneath the mortar, a redish flooring or a pavement of an earlier *hypocaustum* could be observed, which belonged to the earlier wall that was dismantled during the roman age (Fig. 6).



Fig. 6. The rim-like shaped mortar and the reddish flooring of an earlier phase underneath.

Along the western section wall ran a north-south oriented reddish gravel wall (Fig. 3.7), which was higher than any other structure previously described on this surface. It is not clearly related to the other structures, although the earlier walls were used in its construction. A little to the west, it aligns with the line of the earlier wall on a north-south axis. It turns to an east-west direction along the southern wall of the surface and exits the excavated area after 2 meters. At the north end of the wall, it appears to turn west.

#### Surface 2024/2

In the western half of Surface 2024/2 the remains of a large room (Fig. 7.1) with *hypocaustum* heating were unearthed. It is possible that this room, joined together with the one excavated in Surface 2024/1 forming single continuous space. We do not have a detailed chronology regarding the date



Fig. 7. Orthophoto of surface 2024/2.

of its construction or possible reconstruction. Among the stamped bricks, the most common are those bearing the name of the *legio I Adiutrix*. A Bommius stamp was also present, found in the rubble infill.<sup>6</sup>

An apse was detected in the northern half of the room (Fig. 7.2). Here the vertical walls, the terrazzo flooring and the floor heating beneath were all preserved in good condition (Fig. 8.a–b). Therefore, the thickness of the in-situ floor could be measured, which was exactly 10 *pollex* (246 mm). The apsidal wall, contrary to the assumption made last year,<sup>7</sup> did not encircle a pool but was part of an alcove.

Since no built structures were present on the floor, the room was most likely furnished by a labrum or another type of movable furnishing fixture. Based on the heating tiles preserved along the wall, we can assume this space had an arched vault.<sup>8</sup>

In the centre of the room, a large section of flooring that had previously caved in was preserved (Fig. 7.3). A thin layer of mortar was visible on its surface, possibly indicating a later walling off of this room, at a time when it was no longer a functioning as a bath. Beneath the floor, the *praefurnium* opening (Fig. 9) that provided heating to the room was preserved *in situ*. The vent begins in a smaller room and heads south, where it branches of into two directions: its western branch leads towards the large, heated room (Fig. 7.1), while the other continues southward. Supposedly this branch provided heat to the southern half of the same room. The placement of the columns of the heating system, at the southern branch is unclear. It is possible that this branch was cut off during a

<sup>6</sup> Bommius stamps were also found in the middle section of the baths in previous years, however they were, only present in rubble, none of them in situ (BARTUS *et al.* 2023, 636).

<sup>7</sup> BARTUS et al. 2023, 634–635.

<sup>8</sup> Jeanloz 2022, 70–72.



**Fig. 8.a–b.** The well-preserved heating system, flooring and walls of the apsidal alcove, with close picture of the heating system under the remained floor.

later renovation. Along the southern section wall, the closely spaced *hypocaustum* columns formed a straight line. To the south of this a mortar coated groove was found (Fig. 7.4). Because a terracotta water supply pipe was uncovered from the rubble present in this area, it is possible that a drainage pipe was installed here during a later renovation.

The structure located to the east of the apsidal alcove (Fig. 7.5) belongs to the room with underfloor heating situated in Surface 2023/4. Based on its shape, although not much of its vertical structure is preserved, we can assume it to be a pool. Its location also supports this theory: along the northern wall of Surface 2023/4 the remains of an extremely poorly preserved warm water pool were

observed.<sup>9</sup> These remains are located exactly opposite of the structure found in 2024, along the north side of the same building. Beside its wall the same type of heating solution was observed (Fig. 10) as in the case of the heated pool situated in the southern part of Surface 2022/3.<sup>10</sup>



Fig. 9. The well preserved *praefurnium* of surface 2024/2.



**Fig. 10.** The heating system in the under structure of the supposed pool on the northern part of surface 2024/2.

- 9 BARTUS et al. 2023, 634, Fig. 8.5.
- 10 BARTUS et al. 2023, 365, Fig. 10.5.

A chamber with a rough gravel floor (Fig. 7.6) was found in the eastern part of Surface 2024/2, this could be the continuation of the corridor-like room previously observed in Surface 2021/2. Together they could have formed a service area in the central section of the baths. From its western end the aforementioned *praefurnium*, opens to the south. Two other openings that could be interpreted as *praefurnia* were also observed in this room. One to the south (Fig. 7.7), the other to the north, the latter falls within the area of Surface 2023/4. In the case of these two openings: the vents and the hard-fired bottom otherwise characteristic of *praefurnia* did not survive. It is possible that the two openings functioned as heating channels rather than as *praefurnia*. The channels and the *praefurnium* found in the western end of the room were constructed in two separate phases of building. During the time that the channels were functional, the subsequent service area could have also been heated, when the channels were closed off, this room may have been used as furnace room. A three-line tile stamp was recovered from the infill of this room, the inscription reads as follows: L]EG I ADIVTR[IX / A]NTO MAX / VAL]ERI CRI AR F. Based on parallels<sup>11</sup> it can be interpreted in the following ways: L]EG I ADIVTR[IX / A]NTO(nius) MAX(imus/iminus/imianus) (centurio?) / VAL]ERI(us) CRI(spus/spinua/spinianus?) AR(carius?) F(isci/ecit?) (Fig. 11).



Fig. 11. Tegula with a three-line stamp.

To the south of the southern channel (Fig. 7.7), a later built room of smaller size can be found (Fig. 7.8). Its walls on the north and the west were built at same time as those of the other room and the large apsidal room. Its east and south walls, however, were clearly a later addition. Here several layers of charcoal and clay were present, similar to the infill layers of the *praefurnium* service rooms. This suggests that during a later period, this small-sized room served as a firing space.

#### Surface 2024/3

The majority of the surface is occupied by a section of a room with *hypocaustum* heating (Fig. 12.1). This is a continuation of the large, heated room (Fig. 7.1) situated in Surface 2024/2. On the eastern side of the surface another heated chamber can be found (Fig. 12.2). Two fragments of *cohors VII Breucorum* stamps were recovered from the room's rubble infill. On one of the fragments the epithet Antoniniana is present, (---] VII BREVCORVM AN[---) suggesting that construction occurred between the reigns of Caracalla and Elagabalus.<sup>12</sup> The *hypocaustum* found in this room, although

its columns are arranged into orderly rows, was constructed in a less precise manner compared to those found in other parts of the baths. In this room, at the intersections of the heating system and the walls, the vertical sections attached to the wall lack the support of semi-columns. The southern wall of these rooms did not survive; however, it's clear outline is provided by the placement of the

<sup>11</sup> CIL III, 011346a-b; Szilágyi 1933, 19. Nr. 108.

<sup>12</sup> LŐRINCZ 1975, 20.

heating columns found in the room to the south of this one (Fig. 12.3). This room is the northern continuation of the one with the renovated *hypocaustum*,<sup>13</sup> previously mentioned when detailing the excavation of Surfaces 2021/4 and 2022/3. Similarly, to the observations made in previous years: the earlier construction period of this room is characterised by the *hypocaustum* built with circular brick columns. Following this a new underfloor heating system was constructed on top of it, by breaking through the previous floor, and filing in the space underneath. This new system consisted of stone columns. None of these columns were uncovered during the excavation of 2024; only the remains of the mortar that held them in place indicate their location.



Fig. 12. Orthophoto of surface 2024/3.

#### Surface 2024/4

Surface 2024/4 encompasses the southernmost sections opened thus far in the area of the baths. In the eastern part of the surface, the *basilica thermarum* (Fig. 13.1) associated with the bath was found, some of its territories were previously observed in Surfaces 2023/1, 2023/2 and 2021/2.<sup>14</sup> The floor-level of the basilica could not be determined in the southern sections mentioned above. However, on its site a small brick grave (Fig. 13.2) had been uncovered, dug in after the use of the basilica, constructed out of four tegulae and covered with two. The grave contained the skeleton of a newborn, only a few days old, buried without any grave goods (Fig. 14). The closing wall that borders the bath and the basilica on the south (Fig. 13.3), runs across the surface in the direction of east to west. South of this, outside of the boundaries of the baths, the road (Fig. 13.4) to the north of the *scamnun tribunorum* was found. The surface of the road had been renewed several times. Layers of gravel and clay were distinguishable from each other, only in the last renewal phase was the road surface covered with larger stones. A drainage channel, part of the road, had been dug between the closing wall of the bath buildings and the road surface, with its sides lined with stone.

In this surface, within the buildings of the bath, a continuous expanse of a yellow clay layers was excavated, its most likely interpretation: a garden. Underneath the level of the garden, three lime

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13 BARTUS et al. 2023, 363–364.
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14 BARTUS et al. 2023, 628–630; BARTUS et al. 2023, 359.





Fig. 13. Orthophoto of surface 2024/4.

slaking pits (Fig. 13.5–7) were uncovered. The middle pool (Fig. 13.6, Fig. 15) was the best preserved of the three, which allowed for the reconstruction of the other two structures. The base of the pool was formed by tegulae, the type typically used for roofing, its sides were also formed by tegulae. The gaps between the tiles were filled in with lime, which waterproofed the pit.<sup>15</sup> The pit preserved in the best condition was placed at the intersection of the southern closing wall of the bath, and the wall separating the bath and the basilica. Between this pool and the one to its west (Fig. 13.5), a single brick was placed at an angle connecting the two like a slide (Fig. 16). This design supposedly allowed the lime, in its pure and liquid state, to trickle down to the next pool, which was positioned at a lower height. The remains of the third pit (Fig. 13.7) were preserved in a worse state than the other two. All that remained were a few bricks, placed vertically along its side. In the centre: there was leftover lime and rubble consisting of broken pieces of brick. In the corner of the best-preserved settling pool, some leftover lime remained. Its surface was level, suggesting it settled there in a liquid state.

#### Numismatic evidence

This year's excavations also yielded a great number of Roman coins that again total about 1000, similarly to the previous campaigns.<sup>16</sup> An innovation was that the coins from intact layers were also cleaned and identified on site so as to facilitate the dating and interpretation of the various parts of the thermae. The earliest coin was minted by Tiberius, which is quite rare in Brigetio.<sup>17</sup> This was followed by a piece of Vespasian and Titus each, and then a handful of 2nd century pieces. More rare are the ones from the first half of the 3rd century namely one each by Severus Alexander, Gordian III and Philip I. The first peak of the coin finds is made up of the lowest quality antoniniani under the sole reign of Gallienus and Claudius II, but the ones of Aurelian and Probus are also not uncommon. The majority of the coins are, unsurprisingly, 4th century bronzes from the Constantinian and Valentinianic era. The bulk



Fig. 14. Small brick grave with the skeleton of a newborn.

sets off after 330, but there are some before that period as well. Most numerous are the ones of Constans, Constantius II, Valentinian I and Valens. 378 also marks the end of the huge coin influx to Pannonia even though the local mints in Siscia and the ripa were still functioning. This is why it was surprising that the latest coin we found this year was issued by Valentinian II (388–392). Over 700 pieces were not identified and await cleaning, but at first glance they do not differ from the rest of the coins that were found in the previous years, i.e., primarily 4th century.

We were quite fortunate again to have found two coin hoards both in the hypocaustum on the western part of the researched area, both with metal detectors but within the layers. The first one

<sup>15</sup> Lime slaking pits of a similar structure can be found at the villa in Brachaud (LOUSTAND 1983, 145–146, 149).

<sup>16 862</sup> pieces were found during the excavations period and further coins during and after the site was covered with earth again.

<sup>17</sup> Bíróné-Sey 1977, 42.





was a small assemblage of only seven pieces that were discovered almost at the bottom of the hypocaustum in a large room on the western part of the thermae (Fig. 3.2, in the south-eastern part of the room.). These were found in close vicinity to each other, because of the loose ash filling of the heating system, it was not possible to preserve them in situ. As opposed to the majority of the coins, these did not contain any 4th century pieces, only *antoniniani* from the sole rule of Gallienus to Probus (260–282). This in turn further strengthens the simultaneous deposition or loss of the pieces. The closing issue is very well preserved, only the silver wash of the surface is missing. This makes the presumption likely that the assemblage was hidden during or not long after the reign of Probus. Since it came from the bottom of the hypocaustum, the initial presumptions are that there were some building activities at the end of the 3rd century, since the hoard could only be deposited to its findspot, when there was no floor above it.



Fig.16. Diagonally placed tile for connecting the two slaking pits, and the remain of lime in the corner of the pit.

The second hoard (Fig. 17) came some 2.5 m southwest from the previous (Fig. 3.2) one but appr. 1.5 m higher in one of the topmost Roman layers, thus not much can be deducted from its stratigraphic position. This came in a lump that was not broken up yet for demonstrational purposes but will happen later during the conservation. Therefore, it is not possible at the present to specify how large the assemblage is, but a fair guess would be around 30 pieces. One coin broke loose from the lump that was emitted by Florianus, who only ruled from July to September of 276. The other pieces visible on the outside of the pile belong to the 320–340s.

The most peculiar coin of the year was a provincial bronze issued by Commodus c. 191-192 AD at Iuliopolis (Bithyina). The obverse depicting of the laureate head of the emperor, while the reverse the busts of the moon god Mên to the right, wearing Phrygian hat decorated with laurel wreath and stars, with crescent behind his shoulders. Its peculiarity lies not only in the good patina and favourable preservation, but also in that Greek coins are rare in Pannonia. Furthermore, according to Roman Provincial Coinage database this is only the seventh example known of this type.<sup>18</sup> The almost twenty provincial Greek medallions found in Brigetio were explained by L. Barkóczi and A. Kerényi with the Parthian campaigns of Septimius Severus, Caracalla, Severus Alexander and Gordian III. These were primarily minted in Byzantium and Perinthus, two big harbours where the troops were shipped across to the Asian side. They argued that these medallions were issued for festivities and "awarded to the victorious soldiers as a prize for their victory, so we can justly regard them as



Fig. 17. The coin hoard still in one piece from the south-western part of the heated room.

military distinctions".<sup>19</sup> However, this can at least be partially rejected, since there were no eastern campaigns of Commodus. This is further strengthened by a recent medallion of Caracalla also from the same thermae in Brigetio that can be dated to c. 209–212, i.e., when he was occupied in Britain.<sup>20</sup> Nonetheless, the scholars were right in assuming that these curious coins got to Brigetio with the soldiers, who most likely kept them as souvenirs.<sup>21</sup>

#### Summary

Although we excavated 2200 square meters of baths, we still cannot definitively determine the specific function of every room. Among the rooms excavated during the 2024 campaign, a clear distinction can be made between the heated and unheated areas. Concerning the chronology of renovations, a significant rebuilding effort, encompassing the renewal of the heating system, was

- 18 https://rpc.ashmus.ox.ac.uk/coins/4/4787 (accessed: 15 October 2024).
- 19 Barkóczi Kerényi 1958, 83–87.
- 20 cn type 8013, in: Corpus Nummorum, https://www.corpus-nummorum.eu/types/8013 (accessed: 16 October 2024).
- 21 For more on the recently discovered Thracian medallions from Brigetio see FEHÉR JUHÁSZ 2021; JUHÁSZ 2024.

observed in the southwest section of the baths. The northern and eastern sections showed no evidence of rebuilding on such a large scale. Several phases of construction were observed in these sections, but there was no contiguous, newly established heated area, like that in the southwest corner. We cannot say with absolute certainty at present whether the northern and eastern sections were still in use following the large-scale rebuilding in the southern section, or if they were no longer a part of the baths during its final period.

During the 2024 excavation, in the newly opened sections in the west (Fig. 2, Surface 2024/1), a room was uncovered that extended beyond the previously supposed western boundary of the baths. Its southern boundary remains uncertain; however, based on the excavated walls, it appears to be comparable in size (in the north–south direction) to the large, heated room neighbouring it.

Regarding the layout of the rooms, the western part of the baths was comprised of three symmetrical (in a north–south direction) rooms. The rooms at the northern and southern ends are smaller in size compared to the central room, which features the apse. The newly uncovered room excavated in 2024, was connected to the later chamber from the west. During later rebuilding, at the time when the hypocaustum was renovated, the southern room was divided into two sections. The interpretation of the layout is made more difficult by the fact that in the Second World War the area located somewhere between Surfaces 2024/1, 2024/2 and 2024/3 was bombed.<sup>22</sup> The traces of this event can be seen above the base of the *hypocaustum*, where no archaeological layers where present, only 2.5 m of topsoil. As a result, it cannot be determined whether the lack of evidence for rebuilding in this section of the baths is due to the absence of any rebuilding or because the bombing destroyed all archaeological remains.

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