Hellenistic Roof Tiles in Jerusalem

Filip Vukosavović – Anat Cohen-Weinberger – Yuval Gadot
Efrat Bocher – Oscar Bejarano – Yiftah Shalev

Abstract

Sixteen fragments of ceramic roof tiles, dated to the Hellenistic period in the late 2nd century BCE, were uncovered on the western slope of the City of David (Southeastern Ridge) during the Giv'ati Parking Lot excavations between 2017–2022. This is the earliest attestation for the use of roof tiles in the southern Levant, south of Beirut, and so far, it is the only attestation for their use in the region during the Hellenistic period. The petrographic analysis of the fragments shows that the tiles were manufactured with the locally available clay from the Moza Formation and that a specific recipe of raw materials adapted for the tiles was used. We suggest that the roof tiles were intended for the roofing of a building related to the Seleucid presence in the city at the time, the Hakra (Acra) being one such option.

Introduction

Ceramic roof tiles have been an intrinsic part of the Mediterranean architectural milieu ever since they were first introduced in 7th century BCE Greece. The tiles' durability, combined with their exceptional fireproof and waterproof nature, assured their rapid spread and popularity. While their design, shape and size have evolved over the centuries, their use has remained constant. And yet, that usefulness and popularity did not find its parallels everywhere in the ancient Mediterranean basin and especially not in the southern Levant, where their earliest attestation (until the latest discovery) occurred only six hundred years later in the Edomite Petra, and ever since has seen only sporadic use, usually associated with imperial and/or elite construction projects. Therefore, the importance of sixteen roof tiles discovered in Jerusalem and dated to the Hellenistic period cannot be overstated.

The discovery was made between 2017–2022, during the Giv'ati Parking Lot excavation work on the western slope of the City of David (Southeastern Ridge; **fig. 1**), conducted by Y. Shalev and Y. Gadot[1].

1 Renewed excavations at the site were initiated in 2017 (licences G-71/17, G-11/18, G-10/19, G-11/20, G-3/21 and G1/22), directed by Yuval Gadot (Tel Aviv University) and Yiftah Shalev (Israel Antiquities Authority) with Efrat Bocher and Nitsan Shalom (field directors), Oscar Bejarano (area supervisor), Débora Sandhaus (ceramic specialist), Donald T. Ariel and Robert Kool (numismatics) and Vadim Esman (surveying).

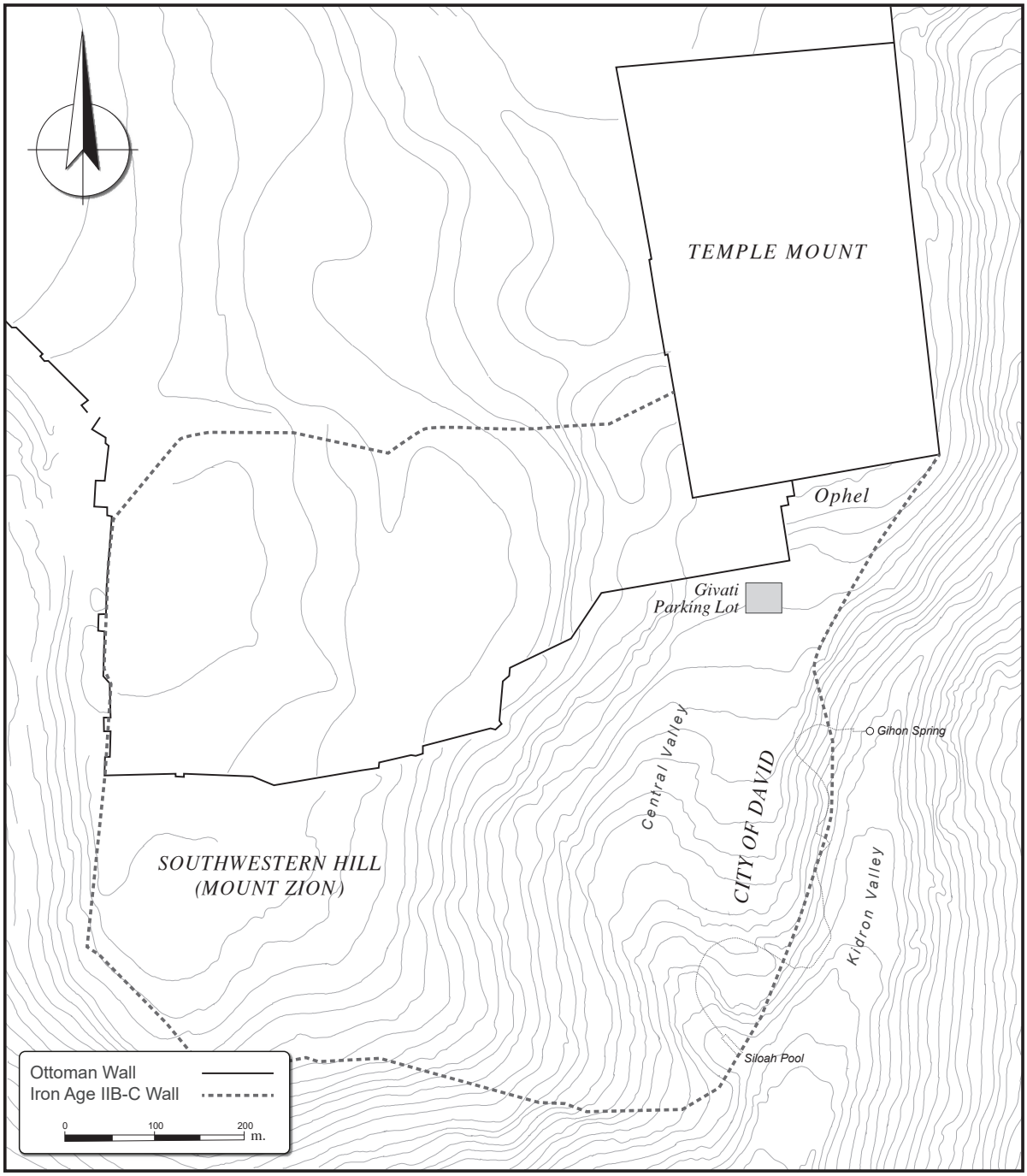

Fig. 1 : Orientation map marking the location of the Giv'ati Parking Lot excavations (prepared by Nitsan Shalom, the Givati Parking Lot Expedition).

In this article we present all the fragments in their archaeological context, their typology, and results of the petrographic analysis. We will then discuss the contribution of the newly presented finds to current understanding of the origin and adoption of roof tiles in the southern Levant[2].

2 We are grateful to Andrea Berlin, Susan Rebecca Martin, Zachi Dvira, Moran Hagbi, Peter Gendelman, Orit Peleg-Barkat, Igor Kreimerman, Alina Yoffe-Pikovsky and Michal Sinowitz for their invaluable help during the work on the article.

Fig. 2 : General plan of the Giv'ati Parking Lot excavation areas (prepared by the Giv'ati Parking Lot Expedition).

The Context

All roof tile-fragments were found in the same context: a massive constructive fill, almost four meters high, composed of a sequence of many overlapping layers of soil, ash and pottery sherds. Four of the roof fragments were found in the western part of the fill (Area 10) which was cut by a late Hasmonaean wall[3], while the rest were uncovered in the fill's eastern part (Area 70 North) (**fig. 2**)[4].

3 Shalev et al. 2021, 31–33.

4 Similar roof tile-fragments might have been also found in the previous excavation at the Giv'ati Parking Lot by D. Ben-Ami and Y. Tchekhanovets, but the finds have not yet been published.

When first exposed in excavations by D. Ben-Ami and Y. Tchekhanovets, this fill was interpreted as part of a Hellenistic fortification structure that comprised a wall, a projecting tower and a series of slanting layers abutting the wall and the tower. The slanting layers were interpreted as a glacis and the excavators proposed to identify these features as elements of the Seleucid Hakra (Acra), the fortress/citadel build by Antiochus IV Epiphanes (175–164 BCE) following his sack of Jerusalem in 168 BCE[5]. Subsequently, when the coins of Antiochus VII Euergetes (nicknamed Sidetes, 138–129/128 BCE)[6] were discovered in the top layer of the glacis, it was suggested that the wall and the tower are original parts of the Seleucid Hakra with the glacis a later Hasmonaean addition[7].

Ensuing excavations by Y. Gadot and Y. Shalev exposed additional parts of the fill and raised further questions regarding the use of the fill as part of the fortification system along with the Hakra's proposed location[8].

Setting aside its original purpose, it is unquestionable that the fill context is well-stratified, undisturbed, and contains only pottery sherds dating to the Late Hellenistic period (with a few Iron Age and Persian sherds in the secondary deposit). Although not all coins from the renewed excavations of the fill have been cleaned and read, those that have are preliminary dated to the late 2nd century BCE at the latest. This coincides with the finds from the same fill excavated by Ben-Ami and Tchekhanovets where, as already mentioned above, a few dozen coins were found, the latest of which are dated to the reign of Antiochus VII[9].

Roof Tiles

Sixteen fragments of roof tiles have been found, all of which are Corinthian-style pan tiles (*tegulae*) – the rectangular type with flat profile and flanges rising horizontally from the edges of the pan (**table 1**; **fig. 3**). Not a single cover tile (imbrex), whether Corinthian faceted or Laconian semi-circular, was uncovered[10].

The fragments are plain, without any visible decoration and tapering. The upper surface of the tiles is smoothed while the lower surface is rougher, with two fragments containing small traces of mortar. A number of fragments contain corners, which are straight without cut-outs. Rather unexpectedly, even though not uncommon, not a single fragment includes a ridge (perpendicular flange) on top of the tile. Two fragments (**fig. 3, 14–15**) contain a slightly elevated edge, which is likely the result of an uneven mold. Alternatively, but less likely especially when compared to available examples, the raised/thickened end may be an underside flange at the lower end of the pan tile[11].

Two groups of tiles can be discerned, based on the fabric's colour and the shape of the flanges: gray-brown tiles, with the flange top slightly rounded; and pinkish tiles, with sharp rectangular flanges. These small differences notwithstanding, pan tiles needed to be of almost identical length and width in order to be properly laid out and interlocked.

5 Ben-Ami – Tchekhanovets 2015; Ben-Ami – Tchekhanovets 2016.

6 Ariel 2019; Ariel 2021.

7 Zilberstein 2021.

8 Shalev et al. 2019; Shalev et al. 2020.

9 Ariel 2021; Zilberstein 2021.

10 For different types of roof tiles see e.g., Wikander 1988; Winter 1990.

11 E.g., Henrickson – Blackman 1999, fig. 3; Clarke 2002, fig. 20; Dolea 2016, fig. 4.

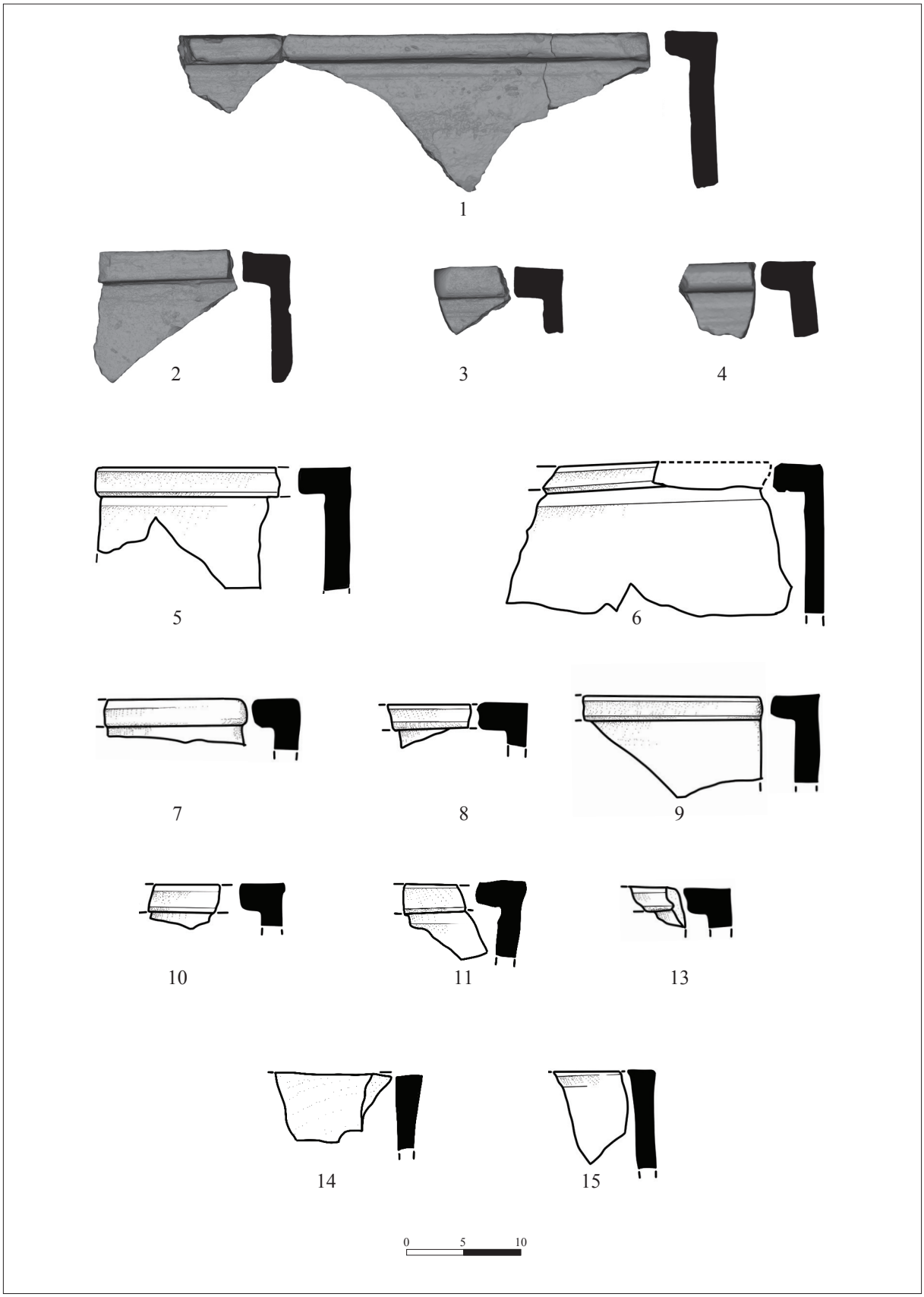

Fig. 3 : Hellenistic roof tiles; the tiles are presented with their catalog number; nos. 12 and 16 are not included (Graphic design: Alina Yoffe-Pikovsky, Ancient Jerusalem Research Center; scans: Argita Gyerman Levanon, Israel Antiquities Authority).

Unfortunately, due to their fragmentary nature, it is impossible to determine the tiles' original size, but we can get a general idea based on a few complete tiles from the wider region: 63 × 50 × 2–2.5 cm at Hellenistic Gordion[12] and 65 × 55 cm at Hellenistic Jebel Khalid[13].

Fragments B.13632 and B.13709 (**fig. 3, 2–3**) do not merge, but since they share almost the same dimensions and colour as well as a very shallow depression along the flange, they could have been part of the same tile or were at least produced in the same mold. Likewise, fragments B.78511, B.78509 and possibly B.78708 (**fig. 3, 6–8**) share the same locus, dimensions and colour and, in addition, they contain small traces of mortar (not B.78708). Fragments B.78930.1, B.78930.2 and B.79017 (**fig. 3, 13–15**) could have also been part of the same tile or were produced in the same mold.

Petrography

Although petrographic studies of pottery from excavations in Jerusalem and its surrounding were intensively conducted, only a few pottery samples from the Hellenistic period were analyzed[14]. In this study, we petrographically analyzed eleven roof tiles in order to identify their provenance (local vs. import). For comparison, we also analyzed five typical Hellenistic jars, which originated from the same massive constructive fill in which the roof tiles were found[15].

Basically, all samples, including the roof tiles and the jars, are made from the same raw material, which is identified as the local clayey unit of the Cenomanian Moza Formation. In details, the raw material is characterized by an optically active matrix. It commonly contains ferruginous silty nodules of Terra Rossa soil, and ferruginous and argillaceous pellets infrequently appear in the matrix (e.g., B.10706; **table 1**). The non-plastic components comprise approximately 20 % of the paste and contain abundant silt to fine sand-size (~20–100 μm) rhombohedral dolomite crystals and sand-sized quartz grains (≤650 μm). The latter grains appear only in the analyzed roof tiles but not in the jars. A few dolostone fragments (≤1 mm), and rarely sand-sized quartz geodes and hornblende grains are also appeared (**figs. 4–5**). The silt-sized fraction (≤50 μm) also contains quartz grains (2–3 %), and rarely feldspar grains and fine foraminifera. In the roof tiles alone, elongated molds of vanished straw are abundant and occasionally are infilled with secondary calcite crystals. The samples of the roof tiles exhibit quantitative variabilities in the quartz-dolomite ratios.

The clayey unit of the Cenomanian Moza Formation is well-known from previous studies[16]. Rhombohedral dolomite crystals are common in the overlying Aminadav Formation and in other Cenomanian units of the Judean Hills[17]. The source of quartz grains is the Israeli coastal dunes. The non-plastic components, i.e., the rhombohedral dolomite crystals and the sand-sized quartz grains, were deliberately added to the paste from which the roof tiles were made and are considered as tempers.

The differences in the dolomite-quartz ratios among the samples of the roof tiles can be due to a non-homogeneous addition of the tempers to the paste by the potters. Alternatively, the difference may stem from deliberate considerations of the potters, who chose slightly different recipes of raw materials for the tiles. Quartz grains have a distinct advantage in increasing the

12 Henrickson – Blackman 1999.

13 Clarke 2002. The average size of Ez-Zantur Type 1 roof tiles at Early Roman Petra was 53 × 41 × 3 cm (Hamari 2017).

14 E.g., Cohen-Weinberger et al. 2020.

15 The analyzed jars: B.79270/1, B.79270/2, B.79270/3 from Locus 7863; B.79269/1, B.79269/2 from Locus 7864.

16 E.g., Cohen-Weinberger – Rosenthal-Heginbottom 2019; Cohen-Weinberger et al. 2020; Cohen-Weinberger et al. 2022.

17 Bentor 1945.

Table 1
Hellenistic roof tiles from the Giv'ati Parking Lot. *The petrographically analyzed roof tiles.

	Basket	Locus	Area	Style/Type	Dimensions (cm)	Notes
1*	10706 + 10628 + 10373	1045 + 1044 + 1030	10	Corinthian Pan	41 × 13.5 × 2.4 Flange 4.8 × 2.4	Pinkish; rectangular flange; includes corner
2*	13632	1234	10	Corinthian Pan	18.3 × 11.5 × 1.7 Flange 4.3 × 2.6	Gray-brown; flange top slightly rounded
3	13709	1241	10	Corinthian Pan	6.8 × 5.8 × 1.7 Flange 4.4 × 2.7	Gray-brown; flange top slightly rounded
4*	14023	1248	10	Corinthian Pan	8.9 × 6.8 × 2.2 Flange 4.8 × 2.5	Gray-brown; flange top slightly rounded
5*	78080	7770	70 North	Corinthian Pan	17.1 × 10.9 × 2.2 Flange 4.7 × 2.3	Pinkish; rectangular flange; includes corner
6*	78511	7806	70 North	Corinthian Pan	26 × 14.5 × 1.8 Flange 4.5 × 2.4	Gray-brown; flange top slightly rounded; traces of mortar on the bottom side
7	78509	7806	70 North	Corinthian Pan	12.8 × 4 × 2 Flange 4.5 × 2.5	Gray-brown; flange top slightly rounded; includes corner and small traces of mortar
8	78708	7806	70 North	Corinthian Pan	8.1 × 3.9 × 1.8 Flange 4.5 × 2.4	Gray-brown; flange top slightly rounded
9*	78579	7810	70 North	Corinthian Pan	15.8 × 8.6 × 2 Flange 4.2 × 2.3	Gray-brown; flange top slightly rounded; includes corner
10*	78754	7816	70 North	Corinthian Pan	6.6 × 3.8 × 1.7 Flange 4 × 2.4	Gray-brown; flange top slightly rounded
11*	79202	7863	70 North	Corinthian Pan	7.7 × 6.5 × 1.8 Flange 4.2 × 2.3	Pinkish, flange top slightly rounded; shallow groove along the flange
12	79171	7864	70 North	Corinthian Pan	10.1 × 8.2 × 2.2	Light pinkish, no flange
13*	78930.1	7842	70 North	Corinthian Pan	4.9 × 3.3 × 1.9 Flange 4.3 × 2.3	Gray-brown; flange top slightly rounded
14*	78930.2	7842	70 North	Corinthian Pan	10 × 6 × 2.3	Gray-brown; includes an edge
15*	79017	7842	70 North	Corinthian Pan	6.5 × 8.2 × 2.1	Gray-brown; includes a slightly raised edge
16	80046	7845	70 North	Corinthian Pan	Flange 13.1 × 4.4 × 2.3	Pinkish, only rectangular flange preserved

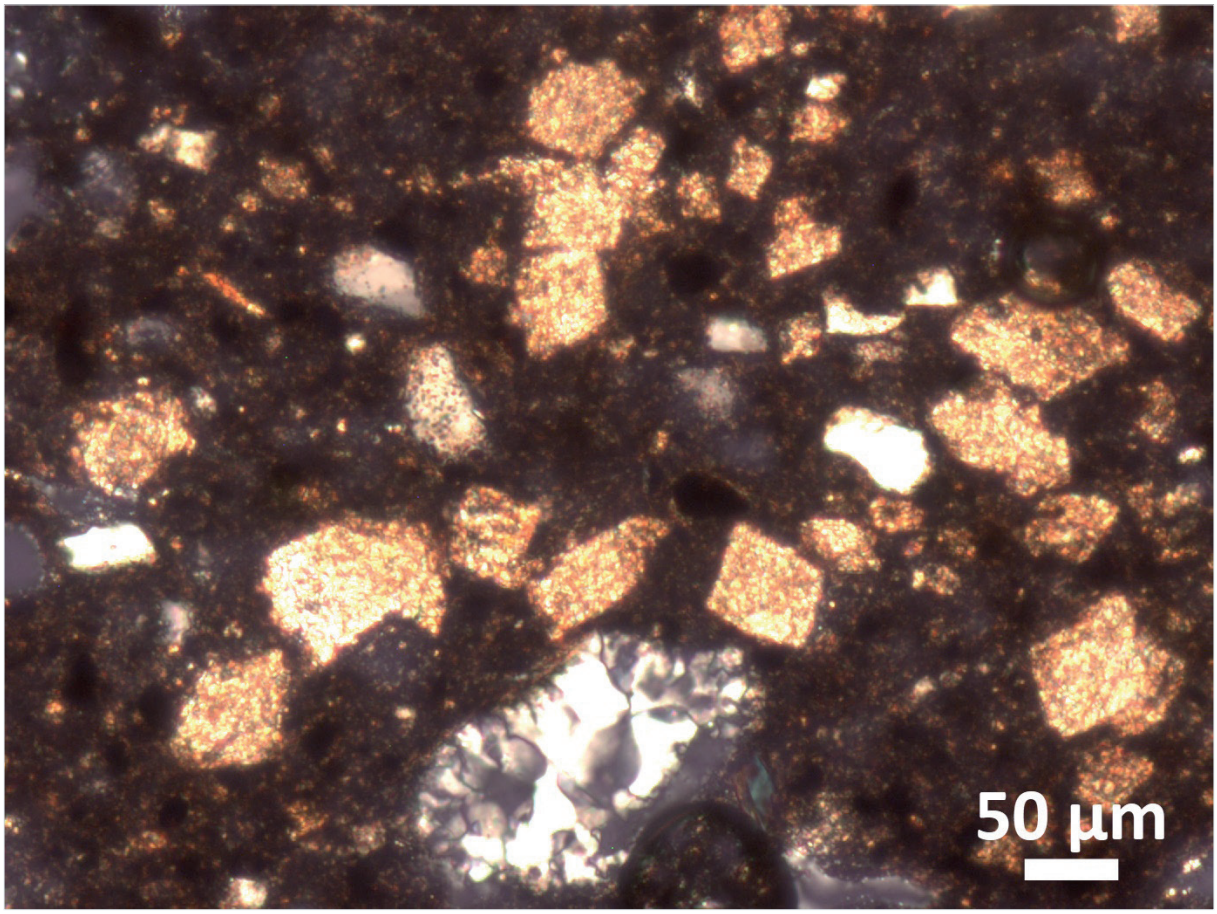

Fig. 4 : Photomicrograph of roof tile B. 78511 (**table 1**, no. 6). Rhombohedral dolomite crystals, quartz geode and silt-sized quartz grains embedded in optically active matrix.

hardness of the material and preventing the propagation of cracks[18], and therefore they are common and desirable ingredients of ceramic building materials such as roof tiles[19]. Sand-sized quartz grains were either naturally appeared within the clay rich sediment used for ceramic building materials or deliberately added during manufacture. The quartz grains for the Hellenistic tiles at Giv'ati were collected at a distance from the site (~60 km) and it seems that their manufacturers had the knowledge and experience in producing building materials. Notably, the raw material of the jars lacks quartz tempers, as there is no justification for this kind of effort to produce local jars. The straw was also deliberately added to the paste and has the advantage of increasing thermal insulation. In summary, the petrographic results indicate that the roof tiles from the Giv'ati Parking Lot were produced locally by expert potters in this industry.

It is important to add that the roof tiles produced by the Legio X Fretensis in Jerusalem are characterized by a unique recipe that includes deliberate addition of coarse quartz grains to a specific marl unit that was quarried from a different geological unit and stratigraphic level of the Moza Formation than the clay unit used for the Hellenistic tiles[20].

18 Ingham 2011, 164; Müller 2017.

19 E.g., Betts 1985, 53. 63; Hayes 1997, 80; Mills 2005; Goldberg 2012; McMish 2012, 281; Craig 2013; Shapiro 2017.

20 Cohen-Weinberger et al. 2020; Cohen-Weinberger et al. 2022.

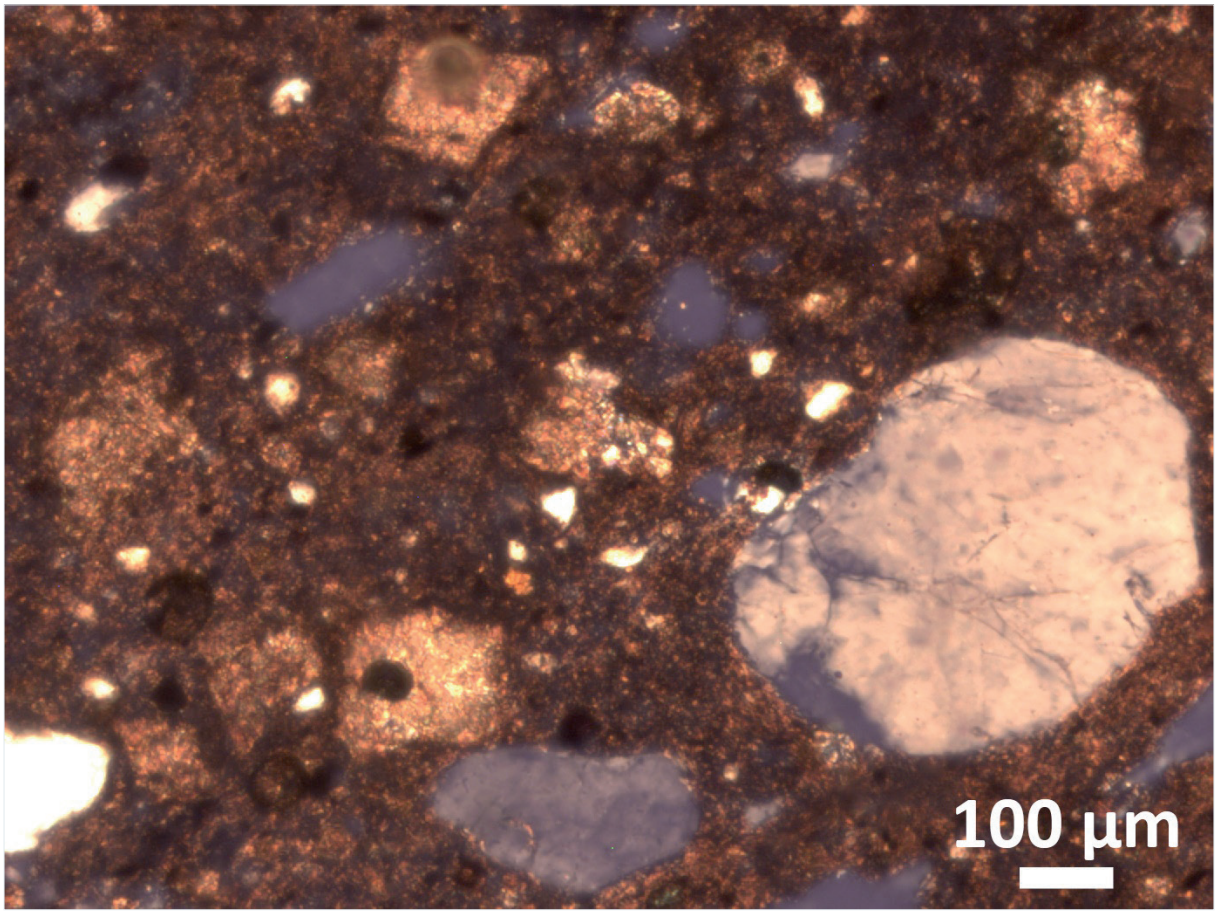

Fig. 5 : Photomicrograph of roof tile B.78080 (**table 1**, no. 5). Rhombohedral dolomite crystals and coarse rounded quartz grains embedded in optically active matrix.

Discussion

As was presented above, recent excavations at the Giv'ati Parking Lot on the western slope of the City of David (Southeastern Ridge) have uncovered the earliest evidence for the use of roof tiles in the southern Levant. In all, sixteen fragments have been uncovered so far, and all were found in the massive fill deposit dated to the Late Hellenistic period in the late 2nd century BCE.

The invention of the ceramic roof tile can be traced back to the first half of the 7th century BCE Greece and the cities of Corinth and Isthmia with the temples of Apollo and Poseidon respectively were the first to be roofed with tiles. By the late 7th century BCE the practice spread throughout the rest of Greece, Sicily and southern and central Italy[21]. In the 6th century BCE, the roof tiles are already well attested in Anatolia[22]. In the northern Levant, the first roof tiles appear in Beirut during the Persian period, 5th–4th centuries BCE[23], with at least four more

21 See e.g., Wikander 1988; Wikander 1990; Winter 1993; Sapirstein 2016.

22 Glendinning 1996.

23 Mills 2005.

sites where the tiles are attested in the Hellenistic period, 3rd–2nd centuries BCE: Antioch on the Orontes[24], Dura Europos[25], Jebel Khalid on the Euphrates[26] and Dar es-Salaam[27].

However, the same cannot be said for the Levantine region south of Beirut. Prior to this publication, no Persian or Hellenistic site in the southern Levant has produced any kind of roof tiles.

Excavations at Tel Dor by E. Stern have unearthed three fragmentary terracottas, each bearing the head of the Gorgon Medusa. Stern interpreted the Gorgons as antefixes decorating the roof of a Greek temple built during the Persian period[28]. However, as correctly argued by R. Martin, the thin concave-shaped back, the absence of any traces of being attached to cover tiles, as well as the complete lack of any other roof tiles at Dor renders Stern's proposal untenable[29]. Instead, Martin interprets these terracottas as Gorgoneia, Gorgon-shaped mask-like objects that fit well within the Phoenician tradition of cult masks.

To date, the earliest attestation of roof tiles in the southern Levant was during the Early Roman/Herodian period (37 BCE – 70 CE) at Petra, where a number of temples and structures were partially or completely roofed[30]. At Sebaste, the Temple of Augustus and the Basilica were roofed with tiles, which the excavators attributed to Herod the Great[31]. However, the excavation report leaves very little doubt that the roof tiles should be dated to around 200 CE, when Septimius Severus rebuilt and reroofed the two structures[32].

There is a visible uptick in the use of roof tiles during the Late Roman period (70–324 CE), due to presence of the Legio X Fretensis in Jerusalem following the First Jewish-Roman War, and they became especially popular and widespread throughout the Byzantine period (324–638 CE)[33]. The use of roof tiles continued in much reduced form during the Umayyad period[34], but soon after they went completely out of use until the 19th century, when the import of

24 Brands 2010.

25 Rostovtzeff 1944.

26 Clarke 2002.

27 Newson et al. 2009.

28 Stern 2010.

29 Martin 2014.

30 Hamari 2017.

31 Reisner et al. 1924.

32 The excavators describe the stratigraphy of roof tiles from two different periods (presumably Herodian and Severan) in the Basilica as follows (Reisner et al. 1924, 218): »In the debris were a number of fragments of terra-cotta roofing. Those belonging to the first period, found in the lowest stratum above the floor, had the shape *a*... The tiles *c* of the second period, found in the upper debris...«. Immediately after that, the excavators continue to describe the restoration work on the Basilica by Septimius Severus: »During the Severan period the Basilica and the Forum were entirely reconstructed. The building, like those on the summit, had apparently been in ruins. Many of the columns had been overthrown, and the pedestals carried away. In the reconstruction new bases were made, some in a crude imitation of the Herodian bases, but the majority were unfinished, or provided with simpler moldings. The variations in height and width were much greater than those of the earlier period, and in some cases in the colonnade the bases were so small that they were raised on a layer of debris and small stones above the original pavement. The interior plan of the Basilica remained much the same«. It is clear therefore that Septimius Severus did not build a new floor as part of his restoration work but continued to use the same one built by Herod. On that account, the terminus post quem for the debris, including the roof tiles that covered the floor, is the restoration work by Septimius Severus.

33 Landgraf 1980; Arubas – Goldfus 1995; Seligman 2015; Arubas – Goldfus 2019; Cohen-Weinberger et al. 2022; Lieberman et al. 2022; Weksler-Bdolah et al. 2022. – The introduction or visible rise in the use of roof tiles due to the legionary conquest is a common manifestation throughout the Roman Empire; see e.g., Kurzman 2006; Mills 2013; Hamari 2011; Hamari 2019, 96 and Cohen-Weinberger et al. 2020, 383.

34 Grabar et al. 1978; Cytryn-Silverman 2009; Damgaard 2011.

Marseilles Roof Tiles to Ottoman Palestine begun and a number of local roof tile factories were established[35].

In order to explain the almost complete absence of roof tiles between the Persian and Early Roman/Herodian periods in the southern Levant, we have to briefly examine several main reasons for the emergence of roof tiles in the first place.

The increased monumentalization of the Greek World in the 7th century BCE, which witnessed construction of much larger religious and public buildings that required a new type of roof, is mentioned by many scholars as the leading impetus for the tiles' development. The second reason often brought up is of environmental and practical nature. The tiles are resistant to fire, which is of essence in temples and in densely built areas. In addition, the tiles are waterproof and can also withstand heavy loads of snow[36].

While the process of urbanization and monumentalization in the southern Levant during the Persian, Hellenistic and Early Roman/Herodian periods is well attested and documented (e.g., Dor, Maresha, Beth Shean-Scythopolis, Caesarea, Gerasa, Sussita, Philadelphia), the roof tiles were clearly not part of that process, as they are not attested in any of the sites[37]. This absence is especially glaring during the Herodian period, since to date no roof tiles were uncovered in any of Herod's construction projects including the Temple Mount[38].

It is quite clear therefore that the monumentalization had very little to no impact on the use of roof tiles[39].

Inevitably, we need to examine the practical and environmental factors as the likely reason for the tiles' almost complete absence.

The weather in the Levant region is hot, dry and arid, with very low precipitation and occasional but rare snow at higher altitudes. Typical Ancient Near Eastern roofs, which were flat and made with wooden beams, branches, reeds, mud and plaster, were well adapted to these environmental conditions[40]. Roof leaks were common and obviously inconvenient (*Proverbs* 19, 13; 27, 15) but quite manageable with annual maintenance. Much more importantly, flat roofs in ancient Israel and in the Ancient Near East had a variety of essential domestic uses: sleeping (*1 Samuel* 9, 26; *2 Kings* 4, 10), produce drying (*Joshua* 2, 6), worship (*2 Kings* 23, 12; *Jeremiah* 19, 13; *Jeremiah* 32, 29; *Zephaniah* 1, 5; *The Acts* 10, 9), mourning (*Isaiah* 15, 3; *Jeremiah* 43, 38), entertainment/leisure (*Judges* 16, 27; *2 Samuel* 11, 2; *1 Samuel* 9, 25; *2 Samuel* 16, 22; *Daniel* 4, 26), safety (*Judges* 9, 51; *Isaiah* 22, 1) and also for sukkah placement (*Nehemiah* 8, 15–16). Living and working on the house roof was so essential and ubiquitous in everyday life that the Deuteronomic Code prescribes building of a parapet, lest somebody falls to death (*Deuteronomy* 22, 8).

The fire-proof nature of roof tiles is often cited as another important reason for their original popularity and rapid spread, yet the fire hazard was another non-factor regarding their use in the southern Levant. As already mentioned above, the flat roofs of the stone and

35 Ayalon 2002; Gordon 2006; Gordon 2013; de Vincenz 2018; Landes-Nagar 2020.

36 See e.g., Wikander 1988; Mills 2015; Hamari 2019.

37 See further Small 1987, 62.

38 We are grateful to Zachi Dvira, who is in charge of the Temple Mount sifting project and to Moran Hagbi for providing us with the information; see further Netzer 2006, 164. 317; Peleg-Barkat 2019, 39. – Hamari 2017, 101 suggests that Herod's monumental projects in Judaea may have influenced the development of monumental architecture in Nabataean Petra. While that may be true, it seems that a different source of inspiration must be sought for the use of roof tiles in Petra.

39 Hamari 2019, 63–64. Unsurprisingly, the same is true for numerous smaller sites – an online search of Hadashot Arkheologiyot published by the Israel Antiquities Authority, which contains hundreds of preliminary and final reports of archaeological excavations in Israel between 2004–2022, has not produced a single hit for roof tiles between the Persian and Early Roman/Herodian periods (for similar results see Hamari 2017, 63).

40 See e.g., King – Stager 2001; Netzer 2006.

mud-brick houses in the Ancient Near East were made from wood, branches and other vegetal materials that were covered with mud and plaster. These perfectly adaptive mud-plastered vegetal roofs had evolved through thousands of years of adaptation to the local environment. They were so effective against the spread of fire that in experiments conducted by I. Kreimerman and R. Shahack-Gross, the roof wouldn't collapse even after continuous addition of fuel to keep the fire burning inside the model house[41].

Evidently, the benefits of highly useful, inexpensive, flat, open, lightweight, and easily constructed and maintained mud-plastered vegetal roofs outweigh by far the need for tiled roofs, and it explains why the roof tiles were unnecessary and therefore almost entirely absent from public and domestic buildings in the southern Levant and, except for a few instances, in the northern Levant as well[42].

Giv'ati roof tiles setting

All the afore stated makes the discovery of the locally produced Hellenistic roof tiles at the Giv'ati Parking Lot that much more exceptional and requires an answer to the most intriguing question about the building that was deemed worthy of such an investment and effort. Our analysis shows that for five hundred years, tiled roofs were not adopted in the southern Levant by any sector of local society: not for domestic buildings, not for monumental public structures; not inland and not along the coast and not even by the elite that were usually more open to Hellenic cultural trends. Hence, the sudden appearance of locally made roof tiles in Jerusalem likely means that they were manufactured and used for the roofing of a building constructed by and for the Seleucid empire on account of their rule in the region at the time. Even though the tiles were found in a fill and so out of their original context, this massive fill was undoubtedly brought from the surrounding area and dumped intentionally in the Giv'ati Parking Lot. It therefore seems safe to assume that although at present there is no clear evidence for such a roof-tiled structure at the Giv'ati Parking Lot, the building itself stood in the vicinity.

One likely candidate is the Seleucid Hakra (Acra). This fortress/citadel was built by Antiochus IV Epiphanies to station a Seleucid garrison, following his sacking of Jerusalem in 168 BCE (*Josephus, Jewish Wars* 12, 5, 4; *1 Maccabees* 1, 35) and likely destroyed by the time of Antiochus VII Sidetes. While the location of this structure is still debatable (see above), the late 2nd century BCE date for the fill seems to post-date the Hakra's destruction. The Hakra was probably built by the Seleucid army – not very different from the heavily fortified Jebel Khalid on Euphrates, though on a larger scale[43] – and therefore it is no wonder construction techniques and materials were used, which were already familiar from Coele-Syria.

While the petrographic analysis has shown that the tiles were produced locally, it is clear that local artisans had no necessary experience in producing them, since the design, production and installation of roof tiles, as well as the construction of proper roof structures, is a complex process that requires skill and expertise[44]. Consequently, there is very little doubt that the roofing of the building at the Giv'ati Parking Lot/Jerusalem required an outside team of experts for the task at hand[45]. The fact that a different paste recipe was used in the tiles' production by adding quartz grains and straw only strengthens this point (see above). Therefore, in all

41 Kreimerman – Shahack-Gross 2019.

42 See further Hamari 2017, 86–87.

43 Clarke et al. 2002; Wright 2011.

44 Henrickson – Blackman 1999; Sapirstein 2009, 198; Tremoleda et al. 2017; for the economic value of roof tiles see Mills 2015. This will change only during the Late Roman period (Lieberman et al. 2022; Weksler-Bdolah et al. 2022).

45 Henrickson – Blackman 1999, 313–317, estimate that a small team of artisans could have fabricated 1,000 cover and 1,000 pan tiles at Hellenistic Gordion in 33 to 53 working days.

probability teams were brought in from Beirut[46] or even Antioch on the Orontes[47], where significant roofing projects were well attested during the Hellenistic period and are related to the development of the Hellenistic polis in the 3rd and 2nd centuries BCE[48].

Due to the proximity to Jerusalem of the readily available clay in the Moza Formation[49], there was no need for the raw material, or the roof tiles themselves to be imported as this would dramatically increase the production cost and would extend the project completion date. The situation was quite opposite in Beirut, for example, where most of the roof tile-supply between the Hellenistic and Byzantine periods came through import, especially from Cilicia[50].

At the same time, we need to gauge the physical scale of the Giv'ati discovery, which is scant at best. The sixteen uncovered fragments are not large enough to make even a single average-sized pan tile. The scarcity of fragments can indicate one of two possibilities: the main body of roof tiles is still to be discovered, or the minute amount is a realistic representation of the situation on the ground. While the former may strengthen the suggestion that the Hakra is not to be found at the Giv'ati Parking Lot[51], the latter may point toward a common manifestation from different archaeological sites, which is a limited use of roof tiles only over specific parts of the building[52].

The final question that needs to be addressed is why, in light of everything presented above, would an effort be made to tile-roof the Hakra (or any other building for that matter), either partially or fully. The tiles were unnecessary, expensive and required a lot of effort and expertise that needed to be imported if not locally available. While no definitive answer can be given, prestige, the sense of power and a desire to impress are certainly some of the options. The tiles were likely there to put an exclamation point on an imposing structure that ultimately managed to survive only three paltry decades[53].

With the disappearance of the Seleucid Empire from the region, the use of the roof tiles disappeared as well since the practice was not adopted by any sector of society. It took another 200 years until another empire reintroduced buildings roofed with tiles into Jerusalem, bringing with them new experts, knowledge and techniques.

46 Mills 2005.

47 Brands 2010.

48 Millar 1987; Butcher 2003, 26–30; Mills 2015.

49 Cohen-Weinberger et al. 2020.

50 Mills 2005, 179–184; Mills 2015.

51 Shalev et al. 2019.

52 See e.g., Hamari 2017.

53 Zilberstein 2021.

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