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On the cover: *Late Roman wall, the portion immediately south of the West Gate (Porta Oea) with re-used blocks from first-century mausolea* (Drawing by Francesca Bigi) and *Tombstone of Regina from South Shields (Arbeia)* (Tyne and Wear Archives and Museums / Bridgeman Images).

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TOMMASO ISMAELLI - GIUSEPPE SCARDOZZI -
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The early Byzantine city walls of Hierapolis in Phrygia: demolishing and recycling the Imperial era monuments

Abstract

The study concerns the city walls of Hierapolis in Phrygia (Denizli, Turkey), which were built in the second half of the fourth century AD or at the beginning of the fifth century AD, by systematically recycling architectural blocks from Imperial-era public monuments and funerary edifices. The preserved remains of the fortifications enclose the city along its northern, eastern, and southern sides, leaving out large sectors of the urban area. Within the research activities of the Italian Archaeological Mission, topographical DGPS surveys of the remains were performed and a geodatabase of the re-employed blocks was implemented with three main aims: i) the reconstruction of the building site of the city walls; ii) the identification of the demolished monuments of the Imperial era used as “quarries” and the study of the procurement strategies of stone materials in the early Byzantine Hierapolis; iii) the analysis of the relationship between the large building site of the fortifications and the other coeval construction sites and their impact on the socio-economic life of the city. The research allowed us to trace the development of the building site of the city walls, which, starting from the north, mainly re-employed blocks from the necropoleis, North Theatre, North Agora, and the shops along the *plateia* that were not included in early Byzantine Hierapolis. Moreover, numerous materials from the Gymnasium and other monuments located in the central part of the city but not yet identified on the ground were especially re-used in the eastern and southern sectors of the walls. Lastly, the location of the recycled blocks made it possible to reconstruct the various transportation routes linking the demolished monuments to the different sectors of the city walls.

Introduction

For many years, the city walls of Hierapolis in Phrygia (Pamukkale, Turkey) were one of the city’s least studied monuments, despite the imposing size of the remains.¹ In recent years, the

¹ D’Andria 2003, 115-116; Arthur 2006, 129-131; Castrianni *et al.* 2010; Castrianni 2015; Ismaelli *et al.* 2021. For the monuments of Hierapolis mentioned in this paper, see ScardoZZi 2015; Di Giacomo *et al.* 2018. For recent research and discoveries, see D’Andria *et al.* 2012; D’Andria *et al.* 2016.

research activities of the Italian Archaeological Mission focused on the city's Byzantine phases, partly as a result of the significant discoveries linked to the Sanctuary of St Philip.² In this framework, interest in the profound transformations affecting the urban landscape from the fourth to the sixth centuries AD prompted us to tackle the theme of the fortifications, which were the first to surround the city's urban area.³ The remains of the walls have a total length of 2.1 km and a maximum height of about 8 m (FIG. 1). They are conserved along the northern, eastern, and southern sides of the settlement, while no trace of them is visible on the western side, along the edge of the plateau on which the city stands. Nineteenth-century drawings depict stretches of the walls in this part of Hierapolis, but today this area is covered by the calcareous formations that characterise the site.⁴

Despite the absence of precise epigraphical and stratigraphic data, a series of clues enables us to plausibly date the construction of the walls to the second half of the fourth century AD or no later than the beginning of the fifth century AD. A reliable *terminus post quem* for their dating is the earthquake that struck Hierapolis shortly after the middle of the fourth century AD, not recorded in the literary sources but archaeologically determined first in the North Agora⁵ and subsequently in other parts of the city,⁶ where the collapse of various walls and porticoes was identified and dated according to stratigraphic evidence. The damage resulting from this event enabled the systematic demolition of the structures of the North Agora and their recycling in the city walls. Moreover, a stretch of the fortifications was built directly over the stylobate of the stoa that delimited the square on the south side⁷ (FIG. 2). In addition, the re-use in the city walls of blocks discarded from the restoration works of the Theatre, exactly dated to AD 350–352 by the dedication to Constantius II, provides a further *terminus post quem* for the building of the fortifications.⁸ Furthermore, in the north-eastern stretch of the walls a gate was built for a new road that was planned out of alignment with respect to the Hellenistic-Roman street grid and that led towards the Sanctuary of St Philip, which stood outside the urban area. Here, inside the basilica of the second half of the sixth century AD, the most recent research identified a structure built in the fourth century which served to

The research has been conducted thanks to the generous support of the Italian Archaeological Mission of Hierapolis. The authors would like to express their gratitude to Francesco D'Andria and Grazia Semeraro, the Mission's directors, for their support and suggestions.

² For Hierapolis during the early-Byzantine period and especially on the Sanctuary of St Philip, see D'Andria 2011-2012; D'Andria 2016-2017; D'Andria 2018a; 2018b.

³ On the relationship between the construction of the city walls and the urban development of Hierapolis during the early-Byzantine period, see Scardozi 2015, 48-52. On late-antique fortifications in general, see Intagliata *et al.* 2020, with bibliography.

⁴ de Laborde 1838, pl. XXXII, 68; Trémaux 1858, pl. I; Humann *et al.* 1898, general plan.

⁵ D'Andria 2003, 37, 92, 107. The earthquake that struck Hierapolis and other cities of Phrygia could be related to the seismic swarm of AD 358-365, which is attested also in other regions of the eastern Mediterranean (Guidoboni *et al.* 1994, 254-255, no. 146).

⁶ For example, in the Great Building (Caggia 2007, 290-291), the Nymphaeum of the Tritons (Campagna 2018, 13-16), the Marble Stoa (Ismaelli 2016a, 241), and the Gymnasium (Ismaelli 2016b, 529-532).

⁷ On the demolition of the North Agora during the Byzantine period, see D'Andria 2003, 91-109; Arthur 2006, 109-118. In this sector of the city walls, a clear connection between the collapse of the southern portico, dated by stratigraphy to the mid-fourth century AD, and the construction of the fortifications can be detected. Indeed, the entablature of the stoa is still preserved in a collapsed position just in front of the stylobate on which the city walls are built.

⁸ See below note 34.

monumentalise the tomb attributed to the Apostle.⁹ In addition, studies of the architecture and decoration of the Martyrion suggest that this building may also date from the period between the end of the fourth and the beginning of the fifth centuries AD.¹⁰ The chronology of this first phase of monumentalisation of the Sanctuary of St Philip is a further clue to the dating of the city walls of Hierapolis to the period of instability and uncertainty that characterised the reigns of Valens (AD 364–378), Theodosius I (AD 379–395), and Arcadius (AD 395–408), with the threat of the Goths in the Balkans and the Persians in the East, as well as internal revolts, such as that of Procopius in AD 365–366.¹¹ The construction of the city walls in nearby Laodikeia, Tripolis, Blaundos, and further afield at Aphrodisias are dated to this period on the basis of archaeological and epigraphical evidence.¹² It is important to note that these fortifications share common architectural and technical solutions with the city walls of Hierapolis not only in the recycling of blocks from public and funerary monuments but also in their construction technique, the shape and locations of towers, the relationship with the previous street grid, and the incorporation of pre-existing buildings. Although stratigraphical evidence for a *terminus ad quem* is not available for Hierapolis, the collapse and disuse of the fortifications can be dated to the mid-seventh century AD. This is due to another earthquake that is documented in the excavation of the Nymphaeum of the Tritons, which had been incorporated in the city walls.¹³

The city walls of Hierapolis, which are from 2.35 to 2.55 m thick, are all built with a construction technique characterised by a double curtain composed of large blocks taken from previous structures, laid in accordance with the “dry-stone” technique or using very little mortar, with the space between the curtains filled with small stones.¹⁴ Along the route of the walls there are 21 square towers and 11 gates corresponding to the main roads leading out of the city, respecting the original street grid of the Roman period, except for the above-mentioned Gate of St Philip. The main entrances continued to be those at each end of the *plateia*, monumentalised by pairs of towers.

In the northern sector, which was built using more homogeneous materials, and particularly in the best preserved stretches (B, C, M, and N), the blocks are characterised by a regular technique (FIG. 2). In contrast, the south-eastern sector is highly irregular. Here, the recycling of marble and travertine blocks and architectural elements of various types made it impossible to lay horizontal courses of uniform height, which meant that the builders had to lay rows of smaller blocks in order to ensure that the joins were horizontal or to fill in the gaps. In addition, the slope of the terrain on which the fortifications are built in this area (downwards to the south) must have made it even harder to lay evenly horizontal courses (FIG. 3).

In general, there seems to have been no desire to use even the most elaborate elements with a decorative function, the *spolia* being employed in an almost exclusively functional manner. Therefore, the prevalent strategy of the building of the city walls was the recycling

⁹ D’Andria 2018b, with previous bibliography.

¹⁰ D’Andria, Gümğüm 2010, 96-97; D’Andria 2013, 130-132.

¹¹ Castrianni *et al.* 2010, 96.

¹² On Laodikeia, see Şimşek 2013, 97-105 and 109-112. On Tripolis, see Erdoğan, Çörtük 2009, 114-118, and Duman 2013, 193-195. On Blaundos, see Giese 2006. On Aphrodisias, see De Staebler 2008. For a general overview, see Jacobs 2012, 117-118, tab. 1.

¹³ Campagna 2018, 25-31.

¹⁴ Castrianni *et al.* 2010, 100; Castrianni 2015, 59-60.

of older blocks and not a re-use aimed at enhancing the decorative and symbolic value of the materials.¹⁵ The only two exceptions in this regard are seen in the best conserved gates, such as the one at the north end of the *plateia* and the south-west entrance, through which passed the road to Laodikeia. Specifically, above the northern entrance were four marble blocks discovered in a collapsed position, consisting of modillions decorated on the exposed face with gorgon masks and protomes of panthers and lions (FIG. 4).¹⁶ These are believed to have been incorporated in the outer curtain, in the space between the two towers that flanked the gate (FIG. 5), with an ornamental and perhaps also an apotropaic function. Similarly, on the sides of the South-West Gate, again on the outer curtain, two travertine reliefs with lions, plausibly from the necropoleis, were deliberately selected and re-used facing each other (FIG. 6).¹⁷

The systematic examination and topographical survey of the circuit of the walls, together with the now fairly advanced knowledge of the urban development of Hierapolis, make it possible to determine the criteria and logic that guided the route that the walls would follow. Indeed, much of the northern part of the city, including the large monumental complex of the North Agora and the nearby North Theatre and Baths-Church, lay outside the new walls, as did the northern stretch of the *plateia* with the shops that lined it on either side and the gate built by Sextus Iulius Frontinus, which had marked the entrance to the city throughout the Imperial period. Also outside the walls remained the southern end of the *plateia* with the other monumental gate from the Flavian period, which delimited the urban area to the south.

The route of the walls was conditioned – to varying degrees – by the following factors: 1) the need to include most of the urban area and particularly the *insulae* with dwellings; 2) the need to follow natural boundaries that enhanced the defensive function of the walls, such as the course of the Suini stream to the north and north-east, the crest marking the eastern limit of the city, and the edge of the travertine plateau of Hierapolis to the south and west¹⁸ (FIG. 7); 3) the decision to exclude those sectors of the urban area (the north and south ends, which were the result of the expansion of the first and second centuries AD) that could be defended only by building a much larger circuit; 4) the need to incorporate portions of buildings whose dimensions and structural characteristics meant that they could be adapted to serve as defensive walls, such as the Nymphaeum of the Tritons (FIG. 8), two sides of the southern hall of the Stoa-Basilica (FIG. 9), and perhaps also the western side of the Large Baths.

Specifically, with regard to the theme of re-use-recycling, it is necessary to reflect on the reasons for leaving the northern sector of the city outside the area defended by the Byzantine walls. Located in this large non-residential district were huge monuments used for theatrical and gladiatorial spectacles, physical exercise, and commercial activities. The buildings, which to varying degrees had been damaged by the mid-fourth-century earthquake, largely duplicated, albeit on a larger scale, services and functions already provided by similar complexes in the central area. The decision to leave this area outside the circuit of walls was thus

¹⁵ On the different meaning of *spolia* and the various scenarios between practical recycling and the ideologically determined re-use of older materials, see Frey 2016 and the papers collected in Ng, Swetnam-Burland 2018; Duckworth, Wilson 2020. Economic, technological, and organisational aspects of transformation and the re-use of building sites are also tackled in the contributions published in Piesker, Wulf-Rheidt 2020.

¹⁶ D'Andria 2003, fig. 90; 2018b, 104.

¹⁷ Scardozi 2015, 195.

¹⁸ For the geomorphology of the site, also in relation to the city walls, see Marabini 2015; Marabini, Scardozi 2015, 227-240, 248-251.

conditioned by various factors, such as the non-exclusive nature of their functions and the need to make the settlement siege-resistant. Outside the walls, the sectors closest to the fortifications were thus demolished in order to avoid the presence of tall structures near the walls and to provide a source of building materials for the fortifications and the city's other early Byzantine building sites.¹⁹

In the study of the fortifications of Hierapolis, particular attention was paid to the analysis of the *spolia*.²⁰ The materials used to build the walls mostly consist of parallelepiped travertine blocks. Since it is not possible to determine their exact provenance, these have not been the object of systematic analysis. It was decided instead to focus on the architectural elements in both marble and travertine (more than a thousand in total). These were systematically documented and positioned in a dedicated geodatabase, in order to visualise the distribution of the various types of materials along the route of the fortifications.²¹ These data were combined with art-historical analysis of the architectural elements, possible thanks to our in-depth knowledge of the context of Hierapolis, which in the last few years has benefited considerably from new systematic studies of the city's public buildings.²² The research thus focused on three main inter-connected objectives: 1) reconstruction of the building site of the city walls in terms of its development and organisation of labour; 2) identification of the monuments that were demolished in the same period as this building site was operational, in order to shed light on the procurement strategies of the early Byzantine city; and 3) analysis of the relationship between the large building site of the fortifications and other coeval building sites, in order to understand their impact on the socio-economic life of the city.

The origin of the architectural materials recycled in the building site of the walls

The architectural elements are extremely heterogeneous (FIG. 10) and include above all seating from theatres, architraves, friezes, bases, capitals, columns, cornices, and tympana, made mostly from travertine (54%) and white marble (42%) (FIG. 11), with a few other elements in polychromatic breccias and calcareous alabaster (4%). These architectural elements are found mainly in the eastern and southern stretches of the fortifications, having been used for both the curtain walls and the filling between them. They are generally inserted in the wall without substantial modifications, except for some of the blocks positioned on the outer curtain wall that were deprived of their protruding mouldings (FIG. 12).

The systematic analysis enabled us to recognise numerous clusters of homogeneous materials. These have been traced in some cases to monuments that are already known and in other cases to complexes that have yet to be identified on the ground, whose location can however be approximately determined thanks to the recognition of similar elements found in excavations or during archaeological survey. The following sections present the clusters of materials that are traceable to specific monumental contexts, moving in a clockwise direction

¹⁹ For the same defensive reasons, the funerary buildings of the North-East and East Necropoleis, which were immediately outside the city walls, were systematically demolished.

²⁰ For the catalogue of the marble blocks re-employed in the city walls, see Ismaelli *et al.* 2021.

²¹ Castrianni *et al.* 2010, 104-113.

²² Ismaelli 2009; Romeo *et al.* 2014; Ismaelli, Scardozzi 2016; Ismaelli 2017; Campagna 2018.

from the north, which as will be seen, seems to correspond to the development of the Byzantine building site itself.²³

North Agora

The North Agora, built in the Hadrianic-Antonine period, seems to have contributed significantly to the creation of the nearby northern stretch of the walls, especially in terms of the travertine blocks that were presumably taken from the back walls of the various porticoes that surrounded the square. In contrast, very few marble architectural elements were found in this stretch of the walls: these included a base (no. 1) and an Ionic capital (no. 2) from the *stoa* and a frieze-architrave and a cornice (nos. 3-4) from the Stoa-Basilica (FIG. 13). The latter two pieces were re-used in the inner curtain of the stretch built over the stylobate of the South Stoa of the Agora itself. The base (no. 1) was discovered in the South Byzantine Gate, at a considerable distance from its context of origin, perhaps part of a load that included other materials hypothetically attributable to the North Agora, such as an inscription on the plinth of an equestrian monument dedicated to the emperor Antoninus Pius, discovered in the same gate.²⁴ It is plausible that the bulk of the marble materials was transformed directly into lime in the North Agora, to supply the city's new early Byzantine building projects.²⁵ Part of the materials may also have been recycled in other monuments of the Christian city, as suggested by the discovery in the Stoa-Basilica of an Ionic capital that was being transformed into a Corinthian capital similar to that of the *tribela* of the Martyrion of St Philip.²⁶

The role of the North Agora in supplying material for the building of the walls may have been even greater if we consider a homogeneous series of eight frieze-architraves (nos. 19-26) made of white marble and ghiaccione alabaster, and three white marble cornices (nos. 30-32), all datable to the Hadrianic-Antonine period. In terms of their formal language and structural characteristics, they all can be traced to a single building (FIG. 14). Along the route of the walls, they were discovered in two large clusters, one in the south-western stretch of the fortifications and the other in the eastern sector, south-east of the Theatre. These elements belonged to a façade marked by jutting entablatures resting on single columns, a configuration suitable for the internal decoration of a large room, which can be recognised as the hall, about 28 x 38 m, on the south side of the Stoa-Basilica, whose travertine back walls were incorporated into the eastern portion of stretch C of the Byzantine fortifications.²⁷ This attribution is supported both by the affinity of the formal language with the materials of the Stoa-Basilica and by the discovery of 17 similar frieze-architraves re-used in the early Byzantine *nymphaeum* of the Ploutonion together with three capitals, also clearly from the Stoa-Basilica, and an epigraphic dossier composed of letters by Antoninus Pius, again hypotheti-

²³ The blocks are indicated with the same codes used in Ismaelli *et al.* 2021.

²⁴ Ritti 2017, 423-424.

²⁵ For the various lime kilns discovered in the North Agora, see Silvestrelli 2000, 419; D'Andria 2003, 91-98, 107; Scardozi 2010, 373-374.

²⁶ For the *tribela* in the central room of the Martyrion, see Gümüş 2012, 71-75, figs. 65-66, 160-169.

²⁷ The same hypothesis is suggested in D'Andria 2013, 175, 177. For the hall on the south side of the Stoa-Basilica, see Scardozi 2015, 129.

cally from the North Agora.²⁸ Lastly, perhaps also from the North Agora are the above-mentioned modillions with marble protomes representing Medusas, panthers, and lions, all re-used on the external façade of the nearby North Byzantine Gate.²⁹

North Theatre

The monument which contributed more than any other to the supply of the Byzantine walls of Hierapolis (almost 29% of the total number of catalogued elements) is the North Theatre, built in the second century AD and almost completely demolished after the earthquake of the fourth century AD.³⁰ Traced to this source are 176 travertine seats from the *summa cavea* and 154 marble seats from the *ima cavea* (FIG. 15). The former were recycled in the sector of the walls closest to the Theatre (e.g., stretches C-M, with the greatest concentration in E, F, and H), while those in marble are found in the southern half of the eastern sector of the walls and on the southern side (stretches M-S). It may also be hypothesised that some of the travertine blocks discovered in the north-east stretch of the walls came not just from the seating but also from the imposing *analemmata*, of which today very little remains.

Necropoleis

About 10% of the architectural materials re-used in the walls, all in travertine, were recognised as coming from the necropoleis arranged immediately outside the circuit.³¹ Indeed, associated with funerary contexts were benches, cylindrical altars, tympana and raking cornices, door frames and doors, inscribed wall slabs, and figured reliefs.³² These materials are mainly found in the north-eastern, eastern, and southern sectors of the circuit, above all in the stretches from E to P. This suggests that they originally came from the North-East and East Necropoleis (FIG. 16). This hypothesis is confirmed by the systematic demolition of the funerary buildings closest to the fortifications, seen in the East Necropolis.³³

Theatre

The Theatre in the centre of the city, built in the Augustan period but with the stage building and the *cavea* refurbished in the Severan period, is also the source of a small number of marble elements: two spiral column shafts (nos. 5-6), whose dimensions are compatible with the columns of the second and third orders of the *scaenae frons*, and a strigilated column (no. 7), similar to those of the second order (FIG. 17). The first two pieces were discovered in the south-western corner of the walls, while the third was recycled not far from the Theatre, in the stretch immediately to the south-east of the monument. It is possible that these elements,

²⁸ For the frieze-architraves and capitals, see D'Andria 2013, 159, fig. 2; Panarelli 2018, 328-330, fig. 3. For the imperial letters, see Ritti 2017, 429-452.

²⁹ D'Andria 2003, fig. 90; Barresi 2003, 92-93; Pensabene 2007, 307, 309-310; 2011, 54; D'Andria 2018b, 104.

³⁰ Castrianni *et al.* 2010, 120-123; Scardozi 2012, 229-232.

³¹ Castrianni *et al.* 2010, 119.

³² Other travertine blocks (such as architraves, friezes, cornices, columns, etc.) could be also attributed to domestic buildings of the urban area.

³³ Scardozi 2015, 81.

dated to the Severan phase of the building, were removed but never put back in place (perhaps because they were damaged) during the restoration of the Theatre under Constantius II, which focused precisely on the upper two orders of the *scaenae frons*. The three columns would thus have been available for the building of the walls.³⁴

Sanctuary of Apollo

The Sanctuary of Apollo, the city's main sacred area together with the nearby Ploutonion, is another source of a small number of marble elements: specifically, an Ionic capital (no. 9), perhaps attributable to the *peristasis* of the Julio-Claudian Temple B, and two Corinthian capitals (nos. 8, 10) belonging to the Flavian Upper Portico (FIG. 18). Of these, capitals nos. 8 and 9 were both discovered in the south-western sector, while the other was found in the stretch immediately to the south-east of the Theatre. As will be seen, the early Byzantine period saw the systematic demolition of the Sanctuary, making available a large amount of material for other building sites in the city.

Buildings in the central area

The central area of the city also seems to be the origin of three homogeneous series of marble architectural elements. The first includes eight blocks of friezes with acanthus scrolls, concentrated in a short stretch of the walls lying east/south-east of the Theatre (FIG. 19). They are similar to others from the central area, in particular three (nos. F34, F22, F25) from the sector between the Sanctuary of Apollo and the Theatre and one re-used in the Byzantine structures of the Ploutonion (no. HSN922). The building to which these materials originally belonged can therefore be placed between the two sanctuaries and the Theatre, in an area that has yet to be investigated. On the basis of the craftsmanship of the decorative motifs on the friezes, the monument is datable to either the Antonine or the early Severan period.

A second series includes five cornices with a *sima*, in which the soffit of the geison has a *kyma recta* profile (nos. 41-45), again found in the stretch of the walls east/south-east of the Theatre (FIG. 19). The location of the original monument is suggested by 12 similar pieces discovered re-used in the early Byzantine *nymphaeum* of the Ploutonion (3 items), in the Byzantine deposits of the Sanctuary of Apollo (6 items), and in the area between the two sanctuaries (3 items).³⁵ The chronology of these cornices, dated to the late Antonine and early Severan periods, and the context of discovery of similar blocks in the area between the Sanctuaries and the Theatre are comparable to what was seen with the acanthus friezes discussed above. This might suggest a common origin from a single monument, although in terms of the formal language and the quality of execution the two series of architectural elements have significant differences. Lastly, a third series of materials includes two pseudo-Corinthian capitals (nos. 46-47) re-used in the stretch to the east of the Theatre. These elements have parallels with materials datable to the Julio-Claudian and Flavian periods from the Sanctuary

³⁴ For the restoration works carried out during the reign of Constantius II, see Ismaelli *et al.* 2016, 317-318; Ritti 2017, 586-620.

³⁵ For the blocks discovered in the Byzantine deposits, see Ismaelli 2017, 20, figs. 38-39, 68; D'Andria 2018c, 127, fig. 45.

of Apollo and the Ploutonion, but their exact context of origin is unknown, although it is certainly in the central part of the city.

Gymnasium

The porticoes of the Gymnasium, built in the Julio-Claudian period, are the source of just five architectural elements (nos. 12-16), all found in the stretch of the walls near the Gymnasium itself, west of the South Byzantine Gate (FIG. 17). The construction of the southern stretch of the fortifications certainly had a significant impact on the monument, since they cut across its south-western corner, which therefore at least in this area was demolished (FIG. 20).³⁶ It is striking that despite the proximity of the Gymnasium to the walls, the number of re-used elements taken from this monument is particularly small. Clearly some of the columns and related entablatures were reassembled in the restoration of the second half of the fourth century AD which involved the eastern sector of the south stoa.³⁷ The situation of the other three porticoes remains uncertain. Therefore we wonder if the related marble elements are still in a collapsed position, covered by deposits of limestone, or if they were at least partly transformed into lime for building projects of the Byzantine city.³⁸

The South Frontinus Gate and southern stretch of the plateia

After the southern end of the *plateia* was left outside the early Byzantine fortifications, the shops with Doric façades flanking the street were demolished. From these travertine structures, a large quantity of material was removed and recycled elsewhere (FIG. 21). Clearly recognisable are the frieze-architraves (at least 26 items) used in the southern end of the eastern sector (stretches M-O) and in the southern sector of the walls (stretches S-T).³⁹ It is also possible to attribute to the South Frontinus Gate two marble cornices (nos. 17-18) taken from the entablature above the passageways, one of which was discovered in the nearby South Byzantine Gate and the other further away, to the east of the Theatre, while a block was probably re-employed in the early Byzantine restoration of the Nymphaeum of the Apollo Sanctuary.

Hypothesis concerning the development of the building site, the routes by which materials were transported, and the relationship with other urban building sites of the early Byzantine period

The study of the materials recycled in the early Byzantine walls would not have fulfilled its potential without the recent considerable increase in knowledge of the topographical organisation of Hierapolis, its diachronic transformations, and its architecture. This is due to both targeted research projects and the extensive excavations that were conducted in many areas of

³⁶ Ismaelli 2016b, 529-530.

³⁷ Ismaelli 2016b, 532-536.

³⁸ Other marble column shafts and capitals were re-used in the travertine channels built in the mid-Byzantine period along the southern stretch of the *plateia* (Polito 2016).

³⁹ Only one example was discovered in stretch C, and it could be assigned to the northern sector of the *plateia*.

the city.⁴⁰ In this framework, it is thus possible to propose a series of new observations on the large building site of the walls and the systems of procurement of materials.

In the first place, the overall examination of the data acquired regarding the provenance of the *spolia* enables us to study in greater detail the development of the building site of the fortifications. Although the stratigraphic analysis of the walls did not result in the identification of specific construction sectors, it is plausible, assuming a single unified planning of the circuit, that the execution was subdivided into various lots that operated at the same time along the route. There is evidence to suggest that the building site began on the northern side (stretches A-C). Indeed, as well as incorporating existing structures, the materials used in this sector are more homogeneous in terms of type and were more suitable for the construction of a curtain wall (i.e. almost exclusively parallelepiped travertine blocks). This indicates that the building work began in the sector that was closest to the monumental structures identified as the main sources of recycled blocks, specifically the North Agora and the back walls of its porticoes, applying highly selective criteria in the choice of materials. Broadly, the same situation is seen in the north-eastern sector (stretches D-I), suggesting that the building work proceeded in a clockwise direction. Here too, the selected material consists of travertine blocks, in many cases adapted from the seating of the *summa cavea* of the North Theatre, laid either whole or suitably cut. In this sector we also see the introduction of architectural elements from funerary monuments, perhaps taken from the nearby North-East Necropolis.

The framework changes radically in the eastern sector of the walls (stretches H-P), where in contrast the materials are characterised by extreme heterogeneity. This suggests that sufficient quantities of easily re-usable parallelepiped blocks were no longer available. The materials were thus selected from an assortment of demolition sites, with a large increase in the use of architectural elements in marble. The prevalent type here is marble seating from the *ima cavea* of the North Theatre, whose demolition was clearly almost completed at this time. Furthermore, we recognised architectural elements from the Sanctuary of Apollo (Upper Portico) and other public monuments that are believed to have stood in the central sector of the city and were considered to no longer serve any purpose in the new Christian Hierapolis. In addition, some materials left over from the restoration in AD 350–352 of the *scaenae frons* of the nearby Theatre were also plausibly re-employed. There are also numerous elements in travertine from the funerary monuments of the nearby East Necropolis and, proceeding southwards, from the Doric façades of the *plateia*.

Different again is the situation of the southern stretches (Q-U): in addition to the expected presence of materials taken from contiguous monuments, in this case the façades of the *plateia*, the necropoleis to the south of the city, the South Frontinus Gate, and the Gymnasium (including marble elements originally belonging to the colonnades and perhaps also blocks from the back walls), we see the use of small clusters of *spolia* from more distant contexts, including more marble seats from the North Theatre and architectural elements from the North Agora, as well as materials from various monuments in the central area of the city (the Upper Portico and Temple B of the Sanctuary of Apollo, the Theatre, the Stoa of the Springs, and the above-mentioned public buildings that have not yet been identified on the ground). The heterogeneity of the recycled elements in terms of provenance and type suggests that the southern sector was built in the final phase of the works, combining the materi-

⁴⁰ See above notes 1 and 17.

als available in the immediate surroundings with the leftovers of other demolition sites, even those some distance away.

A further result of the research concerns the relationship between the building site of the Byzantine walls and the other building sites of Hierapolis in the same period. Indeed, the construction of the fortifications took place during a phase of profound transformation of the urban landscape. In addition to the appearance of new Christian religious complexes, such as the Sanctuary of St Philip, the monuments of the Imperial period in the central area of the city, plausibly damaged by the earthquake that occurred in the second half of the fourth century AD, also saw intense building activity, again characterised by extensive recourse to re-used materials. Specifically, in the Sanctuary of Apollo, while the porticoes and Temples B and C were dismantled, sorting some of the materials into well-ordered lots,⁴¹ the upper part of the Nymphaeum was restored with material from various other sites (FIG. 22).⁴² These included blocks with a Doric frieze from the *plateia* and marble pillars with *thyrsi* from the Theatre,⁴³ perhaps discarded during the above-mentioned restoration under Constantius II. The Central Agora saw the restoration of at least the eastern portico, systematically consolidating its foundations and raising the colonnade with the use of frieze-architraves and cornices taken from the Stoa of the Springs.⁴⁴ In Hall H of the Large Baths, a sumptuous new arrangement was executed, re-using along the walls Ionic columns taken from Temple B of the Sanctuary of Apollo (FIG. 23).⁴⁵ In addition, the Ploutonion underwent profound transformation, with the obliteration of the entrance to the sacred cave, and in front of it, the construction of a *nymphaeum* with a two-order façade incorporating figured capitals taken from the façade of the Stoa-Basilica and frieze-architraves attributed to its southern hall (FIG. 24).⁴⁶

From this overall picture it emerges clearly that the monuments that were dismantled to enable construction of the walls were also used as sources of material for the other early Byzantine restoration and refurbishment projects (Table 1). This suggests that in the demolition sites the use of *spolia* was subject to forms of planning (selection and management of the materials, choice of where to use them, etc.) that may have also involved the subdivision of the blocks into lots. Indeed, there is impressive evidence from the excavations in the North Agora to show that the *spolia* were divided among various owners, as suggested by the inscriptions discovered on some of the marble blocks.⁴⁷ The same systematic organisation of the demolition is also indicated by the above-mentioned deposits of marble stored in the area of the Sanctuary of Apollo (FIG. 25).

The discovery of recycled materials along the route of the walls and in the monuments of the central area of the city prompts us to reflect on the pathways, direct and indirect, followed by the carts that transported the blocks. Easily recognisable among the direct routes are those between the North Agora and the northern sector of the walls, and between the North Theatre

⁴¹ For the Byzantine deposits of marble blocks in the Sanctuary of Apollo, see Semeraro 2007, 196; 2012, 298-300; Ismaelli 2017, 12, 16-18.

⁴² Campagna 2018, 578-579.

⁴³ Campagna 2018, 576, fig. 672. A marble cornice from the South Frontinus Gate was found close to the Nymphaeum and could have been re-used in this monument.

⁴⁴ Ismaelli *et al.* 2017, 125-126, 135.

⁴⁵ Sacchi, Bonzano 2012, 327-329.

⁴⁶ D'Andria 2013, 159, fig. 2; Panarelli 2018, 328-330.

⁴⁷ For these inscriptions, see Guizzi *et al.* 2012, 668-669.

and the eastern sector. Specifically, in the latter, it may be supposed that the carts followed a provisional road along the outside of the walls, as suggested by the concentration of the seats in the external curtain. Observation of the distribution of the marble seats taken from this monument shows that these are concentrated in three clear clusters of 25-30 seats on the east side of the circuit and three of 10-15 seats on the south side. These concentrations of homogeneous materials plausibly reflect the arrival of groups of carts from the North Theatre, which alternated with carts from other demolition sites. Other direct routes can be identified between the monuments of the central area of the city and the eastern sector of the walls (stretches M-O), and between the Gymnasium and the shops along the *plateia* and the southern and south-eastern sectors. Similar conclusions can obviously be drawn for the materials taken from the necropoleis.

The reconstruction of the routes taken by individual blocks or those found in small clusters in the southern sector of the walls is more complex. Indeed, in this case we may wonder whether these materials arrived directly from their contexts of origin or were temporarily stored in other areas with a view to their subsequent re-use. The latter hypothesis may be supported by the already described cases of recycling of materials taken from the Stoa-Basilica and its southern hall in the area of the Ploutonion, from where they may have reached the southern stretch of the walls via the *plateia*. This road is also the most likely transport route for materials taken from the monuments of the central area and recycled in the southern sector of the fortifications. In contrast, from the area of the Sanctuary of Apollo, the Ploutonion, and the Theatre, the materials may have reached the south-east sector of the walls using the *stenopoi* that ran in an east-west direction.

In conclusion, the examination of the building site of the walls, the coeval demolition sites, and the routes used to transport the *spolia* vividly illustrates the large scale of the operation to build the fortifications of Hierapolis. Indeed, it may be imagined that this endeavour required careful planning of the route and the procurement strategies of the various sectors, since it entailed the use of an enormous quantity of material, the recruitment of a large number of workers with various skills, and the organisation of an intense traffic of carts along the main roads of the city, which must have continued for many years. The huge impact that the building of the walls had on the city, in addition to the many restoration and refurbishment projects affecting the monuments of the central area in the same period, is thus evident. Taken together, these data thus illustrate the extremely dynamic character of the social context of Hierapolis from the mid fourth to the early fifth centuries AD, a period that saw the beginning of the profound transformation that would determine the urban landscape of the early Byzantine city.

Northern sector (A-C)	
Technique:	Homogeneous (mostly travertine square blocks)
Incorporated buildings:	Nymphaeum of the Tritons, southern hall of the Stoa-Basilica
Sources of materials:	North Agora (mainly walls of porticoes), North Theatre (<i>analemmata</i> walls?)
North-eastern sector (D-I)	
Technique:	Homogeneous (mostly travertine square blocks and seats)
Incorporated buildings:	–
Sources of materials:	North Theatre (<i>summa cavea</i>), North-East Necropolis
Eastern sector (L-P)	
Technique:	Heterogeneous (travertine square blocks and architectural materials in travertine and marble)
Incorporated buildings:	–
Sources of materials:	North Theatre (<i>ima cavea</i>), East Necropolis, Theatre, Sanctuary of Apollo, unknown buildings of the central urban area, southern stretch of the <i>plateia</i> , South Frontinus Gate
Southern sector (Q-U)	
Technique:	Heterogeneous (travertine square blocks and architectural materials in travertine and marble)
Incorporated buildings:	–
Sources of materials:	North Theatre (<i>ima cavea</i>), North Agora, South-East and South-West Necropoleis, Theatre, Sanctuary of Apollo, unknown buildings of the central urban area, Gymnasium, southern stretch of the <i>plateia</i> , South Frontinus Gate

Table 1: Main characteristics of the various sectors of the Byzantine city walls.

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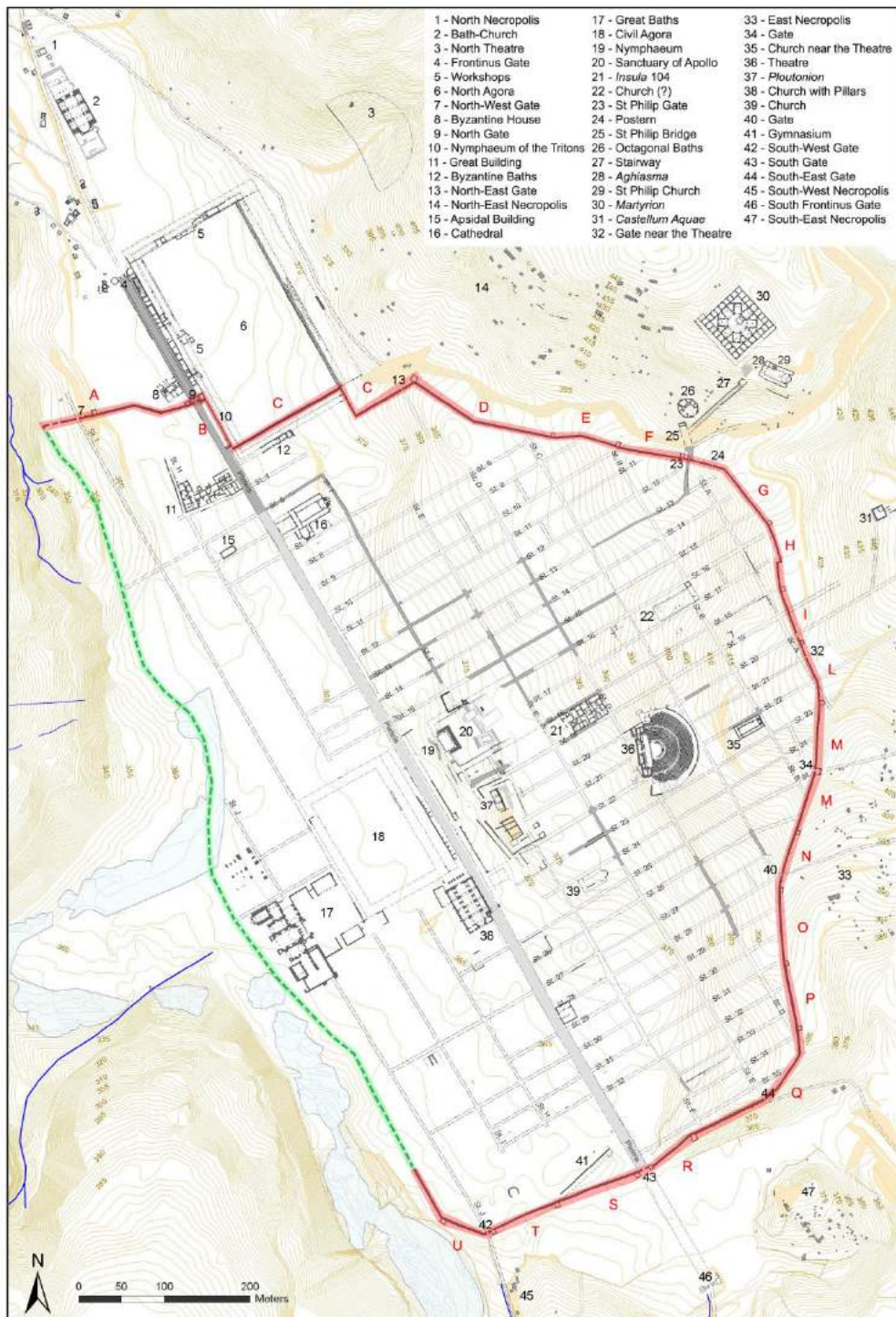


FIG. 1 – General map of Hierapolis during the early Byzantine period (after Scardozzi 2015): in red the preserved stretches of the city walls, in green the hypothetical route of their western side.



FIG. 2 – North Agora, stretch C of the city walls built on the stylobate of the South Stoa (Archive of the Italian Archaeological Mission).



FIG. 3 – Stretch N of the city walls characterised by courses of blocks of different height, built on sloping terrain (Archive of the Italian Archaeological Mission).



FIG. 4 – Modillions decorated with a protome of panther (A-B) and a gorgon mask (C-D) (Archive of the Italian Archaeological Mission).



FIG. 5 – Virtual reconstruction of the North Byzantine Gate, showing the possible position of the blocks with protomes of animals and gorgon masks (virtual reconstruction M. Limoncelli).



FIG. 6 – South-West Byzantine Gate flanked by two funeral reliefs with lions.

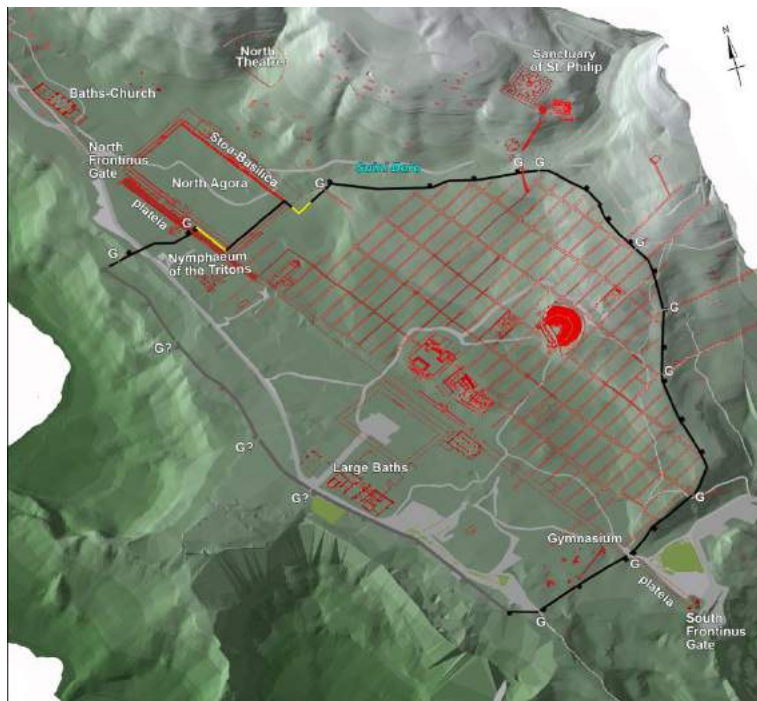


FIG. 7 – Digital Elevation Model of Hierapolis, showing the relationships between the route of the walls and the morphology of the terrain; in yellow the stretches incorporating previous buildings; the letter G indicates the city gates.



FIG. 8 – Aerial view of the North Byzantine Gate and the collapsed rear wall of the Nymphaeum of the Tritons that was incorporated in the fortifications (stretch B).



FIG. 9 – Aerial view of two sides of the south hall of the Stoa-Basilica incorporated in the fortifications (stretch C).



FIG. 10 – Selection of the heterogeneous architectural blocks and sculptures recycled in the city walls.



FIG. 11 – Geodatabase of the city walls of Hierapolis showing the location of the travertine (A) and marble (B) architectural elements re-used in the fortifications. The black numbers correspond to the codes used in the geodatabase.



FIG. 12 – Example of blocks positioned in the outer curtain and deprived of the protruding mouldings (A-B: marble seats of the North Theatre; C-D: travertine frieze-architraves of the *plateia*).



FIG. 13 – Architectural elements of the North Agora re-used in the city wall: their location and possible transport route; the round symbol indicates other early Byzantine areas of re-use.



FIG. 14 – Frieze-architraves and cornices attributed to the south hall of the Stoa-Basilica: their location and possible transport routes; the round symbol indicates other early Byzantine areas of re-use.



FIG. 15 – Travertine (green; A) and marble (red; B-C) seats of the North Theatre re-used in the city walls. The black numbers correspond to the codes used in the geodatabase.

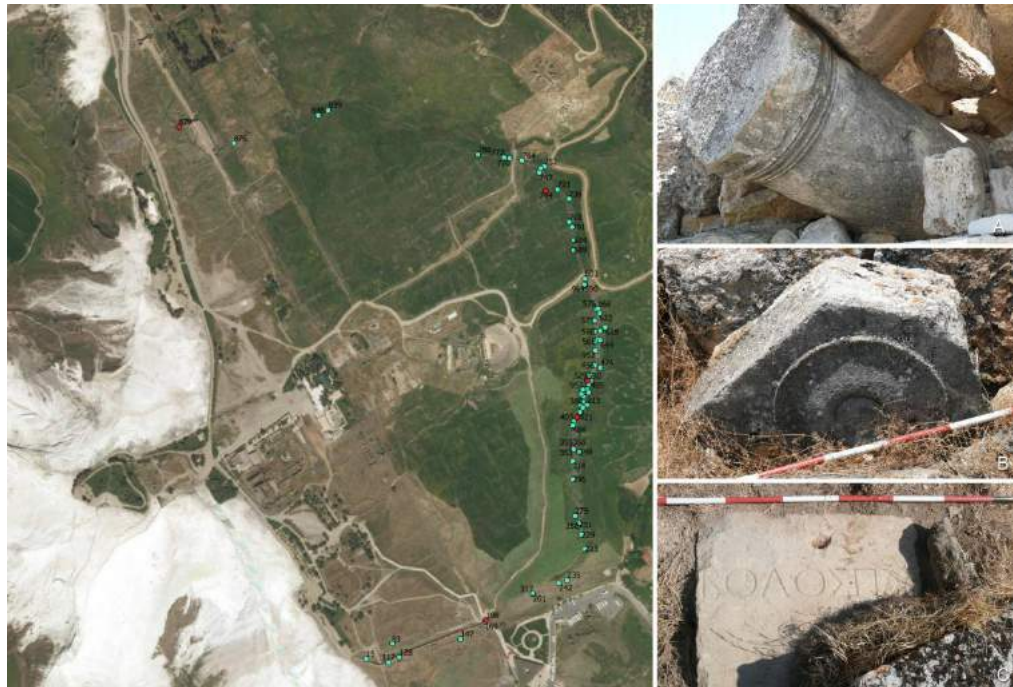


FIG. 16 – Travertine (green) and marble (red) architectural elements belonging to funerary monuments: altar (A), tympanum (B), and inscribed block (C). The black numbers correspond to the codes used in the geodatabase.



FIG. 17 – Architectural elements of the Theatre (red) and the Gymnasium (blue): their location and possible transport routes; the round symbol indicates other early Byzantine areas of re-use.

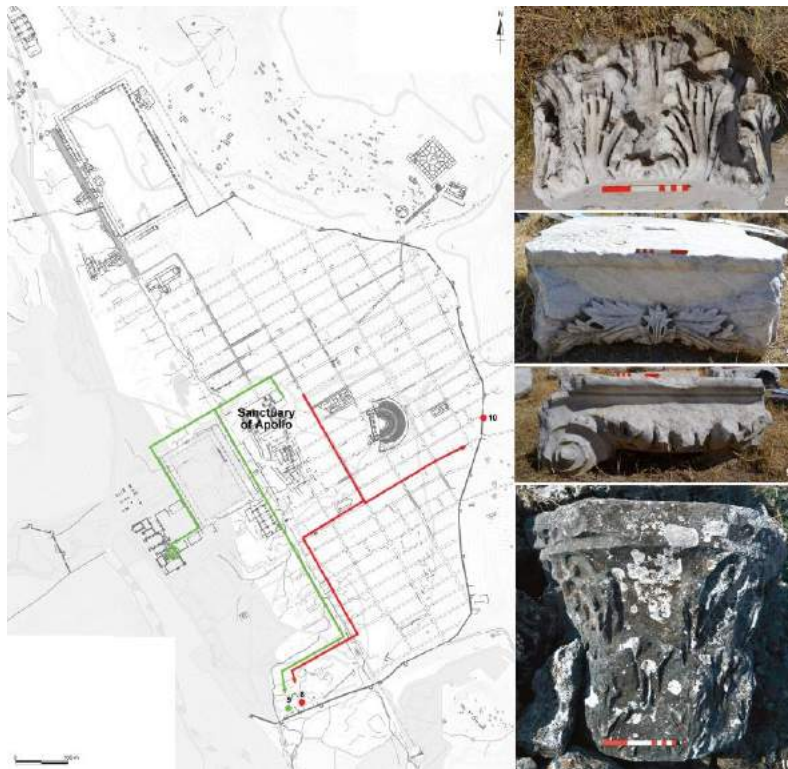


FIG. 18 – Architectural elements from Temple B (green) and the Upper Portico (red) of the Sanctuary of Apollo: their location and possible transport routes.

FIG. 19 – Friezes (red) and cornices (blue) from two monuments located in the central area of Hierapolis and not yet identified on the ground: their location and possible transport routes. Blocks 34, 40, and 41 from the city walls, blocks F22 and B from the Sanctuary of Apollo, blocks HSN922 and A from the Ploutonion.



FIG. 20 – Gymnasium, aerial view of the stylobate of the south portico: the western sector was demolished during the construction of the city walls.



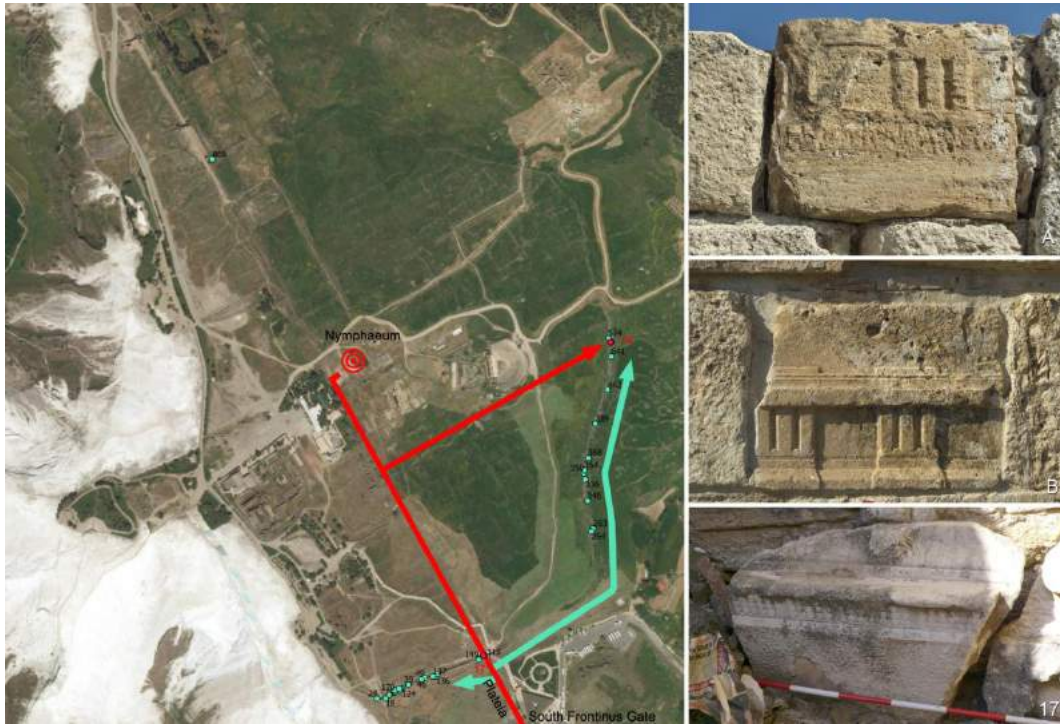


FIG. 21 – Travertine blocks (green) of the Doric façades from the southern stretch of the *plateia* (A-B) and marble cornices of the South Frontinus Gate (red): their location and possible transport routes (17-18). The black numbers correspond to the codes used in the geodatabase.



FIG. 22 – Nymphaeum of the Apollo Sanctuary: view of the main façade (B) and detail of the upper part of the rear wall reconstructed with *spolia* (A).



FIG. 23 – Great Baths, Hall H refurbished with Ionic columns taken from Temple B of the Sanctuary of Apollo.



FIG. 24 – Ploutonion, the Byzantine façade of the *nymphaeum* incorporating frieze-architraves probably from the southern hall of the Stoa-Basilica.



Fig. 25 – Sanctuary of Apollo, Byzantine deposits of architectural materials (A: photo G. Caretoni; B: photo G. Semeraro).

