The Value of Marble in Roman Hispalis: Contextual, Typological and Lithological Analysis of an Assemblage of Large Architectural Elements Recovered at Nº 17 Goyeneta Street (Seville, Spain)

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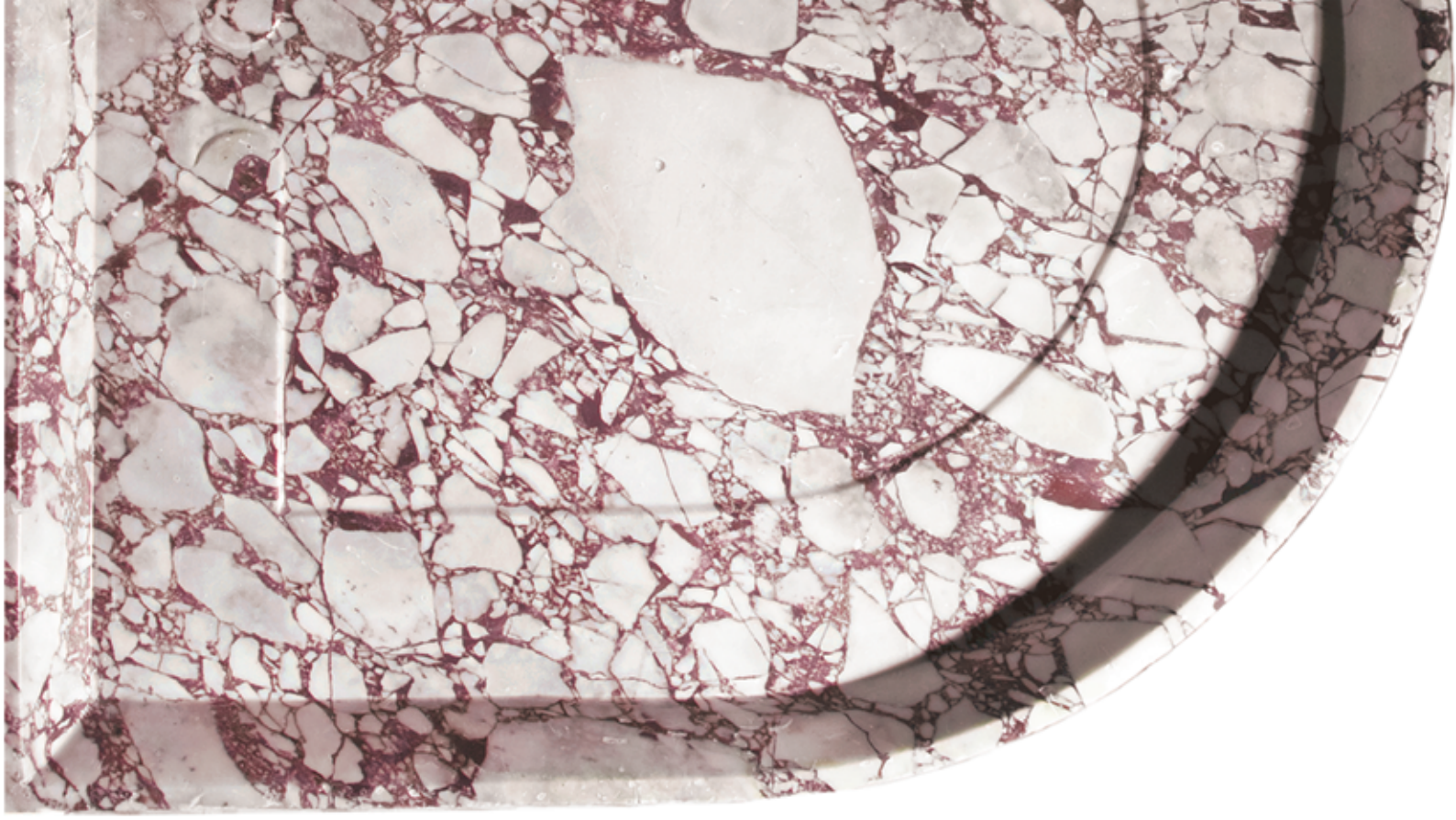

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CONTENT

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THE VALUE OF MARBLE IN ROMAN *HISPALIS*: CONTEXTUAL, TYPOLOGICAL AND LITHOLOGICAL ANALYSIS OF AN ASSEMBLAGE OF LARGE ARCHITECTURAL ELEMENTS RECOVERED AT Nº 17 GOYENETA STREET (SEVILLE, SPAIN)

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[*] PI of *La construcción en el Valle del Guadalquivir en época romana. Tradición e innovación en las soluciones arquitectónicas y los procesos tecnológicos, económicos y productivos* (HAR2015-64392-C4-4-P)

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Abstract

The archaeological excavations carried out at nº 17 Goyeneta Street (Seville, Spain) have provided new insights into the urban layout of Roman *Hispalis* and into the existence of a monumental complex in the northern sector of the city during the 2nd to 4th centuries AD. The contextual and typological study of the assemblage of large architectural elements enables a reconstruction of the building to which they belonged, while the lithological study provides important information on the materials employed in its construction. The visual and petrographic analysis of 13 elements, representative of the typological and lithological diversity of the assemblage, has enabled the identification of 10 different ornamental stones from 7 regional, superregional and foreign quarry districts. The evidence of the use of these materials together in a large public building in the 2nd century AD constitutes a significant contribution to the understanding of the value of marble in the ancient city.

Keywords
Roman *Hispalis*, monumental building, marble identification

Introduction

Despite the large number of preventive archaeological excavations carried out in recent decades in the historical city centre of Seville (Andalusia, Spain), knowledge of Roman *Hispalis* remains very incomplete. Few excavations have successfully reached and documented Roman levels and have generally encountered poorly preserved remains beneath a sequence of intermittent alluvial episodes and intense occupation. General functional areas have, however, been defined (Fig. 1; BELTRÁN, RODRÍGUEZ 2014, pl. III) and recent studies have stressed the great influence of the palaeomorphology of the ancient *Baetis* – the Guadalquivir River – and of the *Lacus Ligustinus* – the gulf that existed in Antiquity between the Atlantic coastal cities of *Onoba* and *Gadir* – in the life and development of the Roman city (BORJA 2014). The historical reconstruction of Roman *Hispalis* must therefore take into consideration the existence of a thriving fluvial and maritime port (ORDÓÑEZ, GONZÁLEZ 2011).

Evidence of the monumental areas of the heart of the Roman city is scarce and generally constituted by *disiecta membra* (for example the remains of Calle Mármoles, MÁRQUEZ 2003; with a review of the recent proposals in GARCÍA VARGAS 2014: 194-195), often integrated in later buildings and uninformative about their original contexts. The assemblage of large architectural elements. recently documented *in situ* during preventive excavations at nº 17 Goyeneta Street, in Seville's historical city centre, is, therefore, quite unique.

The find spot is located within the Northern *intramuros* sector of the Roman city. The structural remains belong to a partially preserved building which, on the basis of its layout and dimensions and the nature of the architectural elements, can best be described as part of a monumental building or complex. Given the scarcity of this type of archaeological find, the structures and

assemblage of architectural elements under study here are particularly relevant for the reconstruction of the spatial and functional organisation of Roman *Hispalis* and provide a rare insight into one of the monumental areas of the city (Fig. 1).

The archaeological excavation of nº 17 Goyeneta Street was not without difficulties due to the complexity of the stratigraphic sequence and the practical complications caused by the high water table. A sequence of intense occupation and use of the area was established, spanning from Roman times to the present day. Table 1 presents an overview of the main characteristics of the phases documented from the late 1st to the 5th century AD.

The earliest documented Roman phase is dated in the late 1st century AD. However, the date and possible function of the structures belonging to this phase are imprecise due to the damage caused by later constructive phases. At an unknown date in the 2nd century AD, a large building was constructed. Two parallel walls, 1.20 m thick, are documented at a distance of approximately 15

Phase	Archaeological description – interpretation
Late 1st century AD	Earliest evidence of occupation of the area Structures of imprecise function
2nd century	Construction of a large building Interpreted as part of a monumental complex
3rd–4th century	Continuance of the building-complex into the 4th century Reuse of some large architectural elements
5th century	Abandonment of the building Shift in the usage of the area

Table 1. Synthesis of the Roman phases documented during the preventive archaeological excavation of nº 17 Goyeneta Street

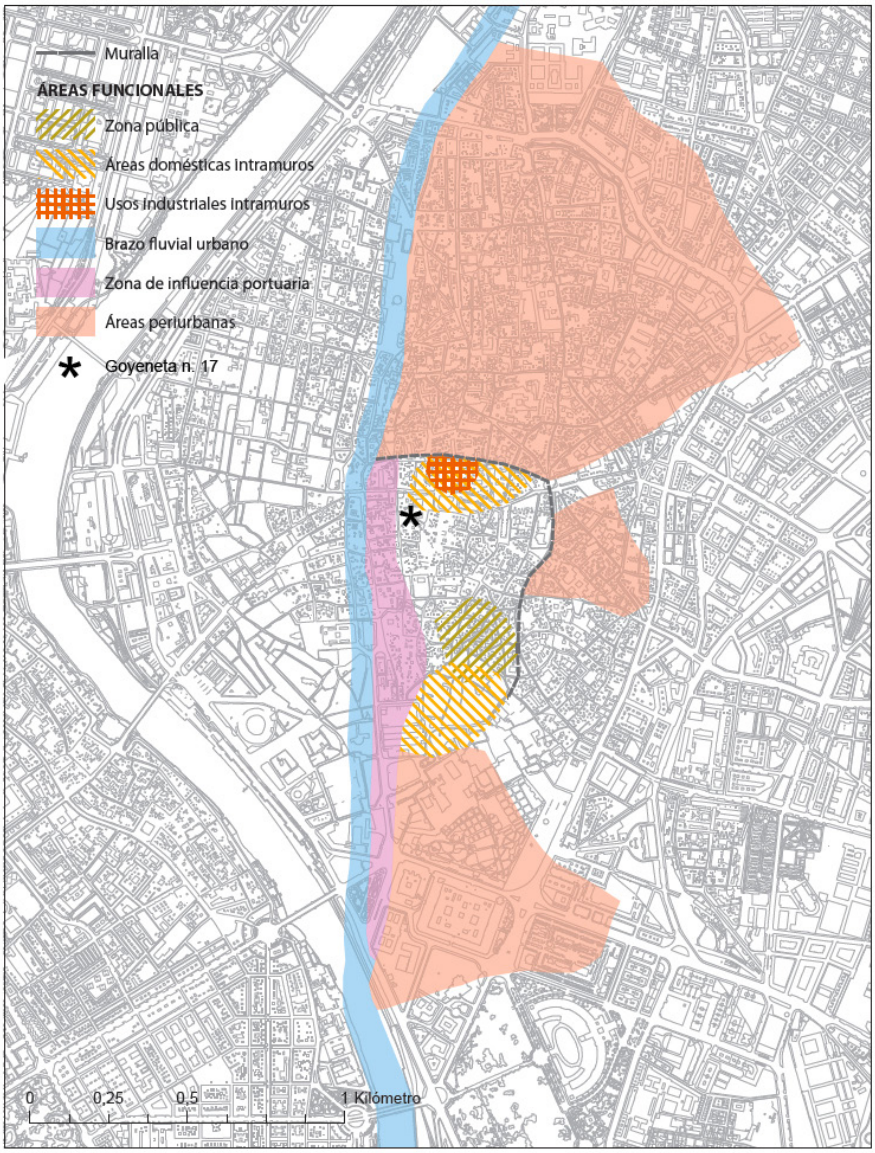


Fig. 1. Map of the functional areas identified in Roman *Hispalis* and the location of nº 17 Goyeneta Street (Seville, Spain)

m. These constitute the outer walls of the building which were lined by a colonnade creating a porch 3 m wide [with white marble pilaster bases, white and pink-white column bases, and column shafts in different coloured stones] opening onto an open air patio [paved with greenish grey and multicolour limestone flagstones] (Figs. 2 and 3).

The continuance of this building, at least structurally if not also functionally, into the 4th century is evidenced by a number of elements documented *in situ*, in positions considered to be consistent with their original function and first use. This is the case of the pilaster bases (327 and 328) preserved in wall 239, a column base (384), a fallen column (383) and the paved stone floor 323. Other elements were found in contexts of reuse yet still within the chronological scope of the building (2nd–4th centuries) and often with physical signs of having been modified and/or downsized in order to be used for new purposes. The abandonment of the building and the shift in the usage of the area in the 5th century AD are consistent with the changes in the patterns of occupation of other urban spaces documented within Roman *Hispalis*. At present, the best documented areas of the Roman city are La Encarnación (AMORES *et al.* 2009; GONZÁLEZ ACUÑA 2011; GARCÍA VARGAS 2014) and Patio de Banderas (TABALES 2015), which may serve as future points of comparative reference, beyond the scope of this paper, for both the functional characterization of the archaeological finds under study here and for the patterns observed in the use of marbles and other decorative stones in different spatial, social and chronological contexts of Roman *Hispalis*.

Materials and methods

A total of 13 architectural elements made out of different varieties of true marble and other coloured stones (*marmora*) were selected for study (Table 2). This selection aimed to be representative of both the typological and the lithological diversity of the overall

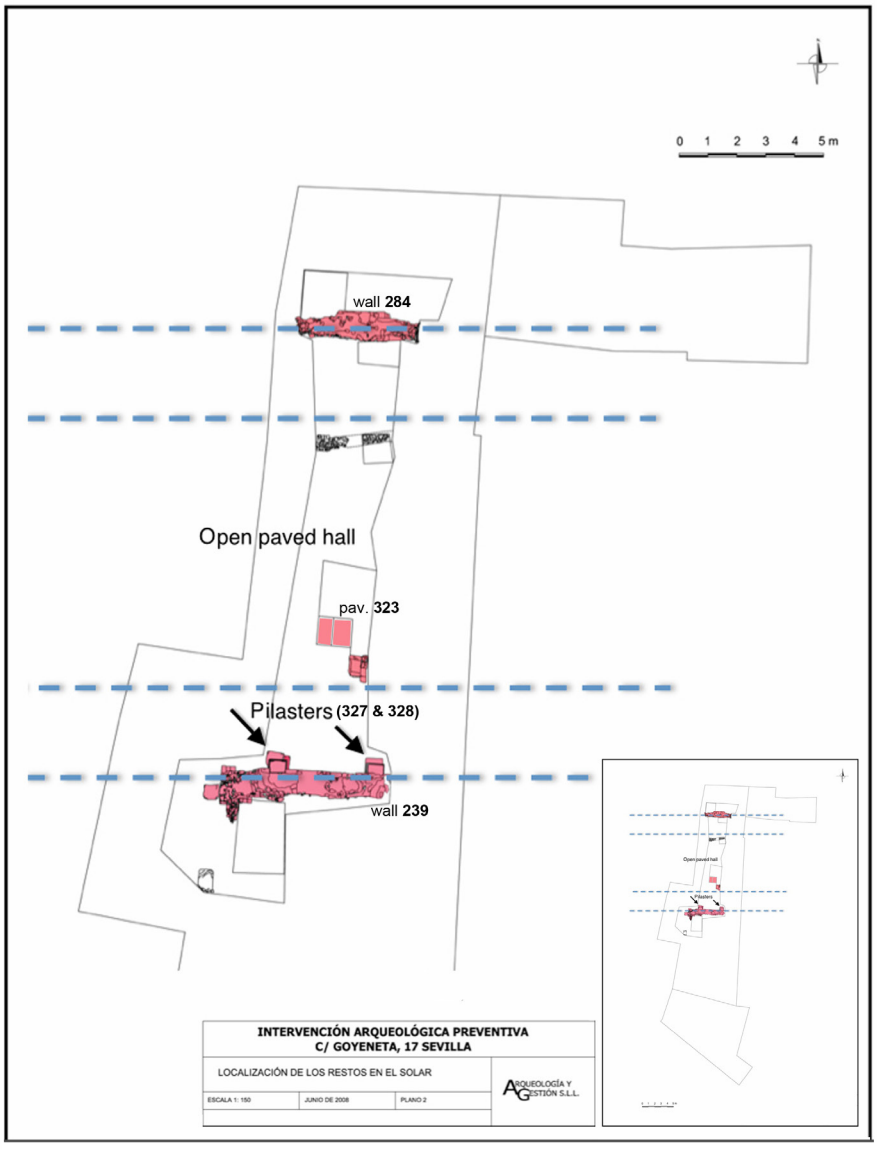


Fig. 2. General plan of the structures belonging to the second phase of the site (2nd century AD) and possible reconstruction of the main walls of the building

Fig. 3.
Detail of the pilasters of the porch documented *in situ* during the excavations

assemblage of large architectural elements recovered during the excavations of the structures best described as part of a monumental building or complex. The pilaster bases 327 and 328, mentioned above, could not be sampled due to their consolidation and sealed packaging in polyurethane, along with the brick wall 239, in view of a rehabilitation project that never took place (Fig. 3). Column 383, also mentioned above, was visually identified as the same material as column 398 (sample G-10) and therefore was not selected for analysis.

Each element was first inventoried and cross-referenced with the information provided by the excavation log (identification, location, spatial and stratigraphic relationships). Each element was then fully described following the standard nomenclature for Roman architectural elements, and measured. Typologically, the architectural elements selected for this study correspond to 4 smooth column shafts with simple imo- and sumoscapo mouldings; 3 attic column bases; 3 pilaster bases with mouldings; and 3 paving slabs.

The detailed macroscopic description of the materials under study is complemented, at this stage of our work, by the petrographic analysis of each lithotype. One to three samples were taken from each element depending of the degree of homogeneity of their material. Thin sections were prepared following the standard procedures for geological materials. Petrographic analysis was carried out using a Leica DMLP polarising optical microscope, with a Leica DFC 280 digital camera, at the Andalusian Institute for Historical Heritage (IAPH).

Both the macroscopic and the petrographic characterisations of the materials under study enabled their comparison with the reference collection of decorative stone materials of the Southwest of the Iberian Peninsula created and expanded during the research projects *Marmora de la Hispania meridional* (HAR2009-11438) (2010-2012) and *Proyecto Marmora* (HAR2013-42078-P) (2014-2016), financed by the competitive research programs of the Spanish government (BELTRÁN *et al.* 2011). Additional literature data was consulted for other geographical regions and for the main Mediterranean white and coloured marble varieties (ANTONELLI, LAZZARINI 2015; GORGONI *et al.* 2002; LAPUENTE *et al.* 2014). The visual and petrographic examination and classification of the materials enabled the identification of 10 lithotypes (Table 3). The coloured *marmora* identified at nº 17 Goyeneta Street are illustrated in Figure 4.

Discussion

Based on the visual and petrographic characteristics of the 10 lithotypes documented in the assemblage of large architectural elements recovered from nº 17 Goyeneta Street, Seville, Spain, and their comparison with the type-materials of known source areas, we have been able to assign a probable provenance to most of the materials present. The identification of well documented marbles (for instance, *Luni*) and other ornamental stones on which we have worked extensively (Almadén de la Plata), as well as visually very characteristic regional materials (the colourful 'Peñaflor' and Sintra limestones) was possible without any great difficulties. The determination of the precise geographical areas of origin of other types may, on the other hand, require further fieldwork and comparative analyses of both regional and Mediterranean reference samples.

Sample (*)	Inventory ID	Basic typological description	Dimensions (cm) in brackets incomplete
G-01	347.1	Plain column shaft	Ø 59-61, length (253)
G-02	348.1	Plain column shaft	Ø 57, length 124
G-04	283.4	Pilaster base	24,5 x 70 x 77
G-06	248.1	Pilaster base	25,5 x 78 x 82
G-07	Floor 323	Paving slab	-
G-08	282.86	Plain column shaft	Ø 50, length (43)
G-09	303.9	Pilaster base	10 x (36,5) x 97
G-10	398.1	Plain column shaft	Ø 42-48, length (222)
G-11	-	Attic column base	Ø 62, plinth 72, height 24
G-13	Floor 323	Paving slab	30 x 81 x 148
G-14	Floor 323	Paving slab	20 x 85 x 130
G-15	-	Attic column base	Ø 69, plinth 80, height 38
G-16	-	Attic column base	Ø 62, plinth 68, height 25,5
(*) Samples G-03, G-05 and G-12 of the correlative series of samples are not included in this study.			

Table 2. Sample list

Marbles	
01. Fine grained white marble	Pilaster bases G-04 and G-06
02. White marble with red hairline veins	Pilaster base G-09
03. Pinkish white marble	Attic column bases G-15 and G-16
04. White and grey veined marble	Column shaft G-08
05. Grey marble	Attic column base G-11
Marmora (Fig. 4)	
06. Multicolour compact microcrystalline limestone	Paving slab G-13
07. Greenish-grey foliated microcrystalline limestone	Paving slabs G-07 and G-14
08. White (clasts) and red (matrix) limestone breccia	Column shaft G-02
09. Fossiliferous crystalline limestone	Column shaft G-10
10. Compact banded crystalline travertine	Column shaft G-01

Table 3. Lithological classification of the materials under study

Lithotype	Provenance
01. Fine grained white marble	Carrara - Luni, Italy
02. White marble with red hairline veins	Almadén de la Plata, Seville province, Spain
03. Pinkish white marble	Almadén de la Plata, Seville province, Spain
04. White and grey veined marble	Almadén de la Plata, Seville province, Spain
05. Grey marble	Almadén de la Plata, Seville province, Spain
06. Multicolour compact microcrystalline limestone	'Peñaflor stone', Seville province, Spain
07. Greenish-grey foliated microcrystalline limestone	'Tarifa stone', Cadiz province, Spain
08. White (clasts) and red (matrix) limestone breccia	Antequera, Malaga province, Spain
09. Fossiliferous crystalline limestone	Sintra, Lisbon region, Portugal
10. Compact banded crystalline travertine	Aïn Tekbalet, Tlemcen province, Algeria

Table 4. Provenance determinations

The provenance determinations of the 10 lithotypes are summarised in Table 4. The lithological and the typological information provided by the archaeological elements under study are presented together in order to highlight the different uses of the different materials within the architectural program. The historical and archaeological implications of the provenance identifications established in this study in the context of Roman *Hispalis* are noted in the conclusions.

01. Fine grained white marble

Marble from Carrara, Italy, was imported from Luni to the Iberian Peninsula from Augustan times onwards (GUTIÉRREZ, RODÀ 2012) and used in a wide range of architectural and epigraphic elements, especially in public contexts. It is widely documented in the cities of the Guadalquivir Valley, for instance at *Italica* (RODRÍGUEZ 2008) and *Astigi* (ORDOÑEZ *et al.* 2015).

Two pilaster bases, samples G-04 and G-06, are identified as white Carrara marble. The two elements share similar dimensions: 24,5 x 70 x 77 cm (G-04) and 25.5 x 78 x 82 cm (G-06). The same material was also identified visually in a pair of twin pilaster bases (inventory ID 327 and 328, with the same dimensions 63 x 57 x 37 cm) discovered in their original position against the brick wall 329 (Fig. 3). Unfortunately, it was not possible to sample these elements, due to their casing in polyurethane. Three identical calcarenite base blocks (inventory ID 336, 341 and 342) for a further three pilasters were documented during the excavation, devoid of their marble elements. Assuming that their pilasters were made of the same marble, an interesting hypothesis emerges regarding the important role of Carrara marble in the architectural program of the porch.

We may note that a fine grained white marble, similar to that of Carrara, was exploited in Antiquity in the Estremoz Anticline, in the Portuguese region of Alentejo (LAPUENTE 1999). A recent overview of the available archaeometric identifications of Portuguese marbles in Baetica (TAYLOR *et al.* 2016) has shown that marbles from Lusitania are in fact quite scarce in Roman *Hispalis*, especially in architectural programs created by matching elements in white marble. Therefore, both the analytical and the archaeological information available for the elements included in this study support their provenance from the Carrara quarries.

02. White marble with red hairline veins

White marble with red hairline veins is one of the most typical varieties of the Almadén de la Plata quarries, located approx. 70 km to the North of Seville. It is identified in sample G-09, a moulded base with a *cyma recta* between two flat fillets. Incomplete, the dimensions of this element are 10 x (36.5) x 97 cm.

03. Pinkish white marble

Another characteristic variety of marble from the quarries of Almadén de la Plata is pinkish white, generally heterogeneous in colour and texture. Recent literature has stressed the existence of some degree of overlap between the physical characteristics of this type and those of visually similar marbles from the Estremoz Anticline

(see, for instance, LAPUENTE *et al*. 2014). In recent years, we have worked extensively on the marbles of the Metamorphic Band of Aracena (BELTRÁN *et al*. 2015) and the Estremoz Anticline, and the quarries of Almadén de la Plata have been the focus of detailed study, including the archaeological description of the ancient quarry works and the archaeometric analysis of a large number of reference samples (TAYLOR 2015), thus providing a strong base for our identifications. In this case, the chromatic, structural, textural and mineralogical parameters in the hand specimens and thin sections of two samples are consistent with the pinkish white marble from Almadén de la Plata. This material is identified in two attic column bases, G-15 (max. 68 cm) and G-16 (max. 80 cm). We may add that the dimensions of these elements match those of the preforms recently documented at the quarry of Los Covachos.

04. White and grey veined marble

A section of a plain column shaft (G-08) corresponds to an intensely banded white and grey marble from the quarries of Almadén de la Plata, possibly from Loma de los Castillejos (ONTIVEROS *et al*. 2012). The diameter of the column from Goyeneta (Ø 47 cm) matches that of the abandoned columns documented *in situ* at this quarry and in its immediate surrounding area (TAYLOR 2015). The length of the columns identified in the quarry district does not exceed 230 cm, thus providing a probable indication for the missing measurement.

05. Grey marble

G-11, an attic column base (max. 72 cm), has been identified as a homogenous grey marble from Almadén de la Plata. While this chromatic variety may be less appealing than other materials in this assemblage, it is noteworthy that this column base is of similar dimensions as those described above in pinkish white marble from the same quarry district. This observation, along with the evidence already discussed in relation to the abandoned preforms at the ancient quarries, appears to indicate some degree of standardization in the products of the Almadén de la Plata district, regardless of the specific chromatic characteristics of the stones (TAYLOR 2015).

06. Multicolour compact microcrystalline limestone (Fig. 4, 06)

Sample G-13 corresponds to a highly ornamental variety of polychrome compact microcrystalline limestone. This type has been identified previously in a number of contexts of the Lower Guadalquivir Valley, from *Corduba* to *Hispalis* (RODRÍGUEZ 2008: 251-253), and has become known as 'Peñaflor stone' (PENSABENE 2013). The origin of the type-name is the modern town of Peñaflor, close to the Roman town of *Celti* (KEAY *et al*. 2000), where the material appears to have first been identified. In Roman archaeological contexts, this material is commonly, but not solely, identified in paving slabs, some of considerable size, that provide an insight into the characteristics of the extraction and distribution of this material. The location of the quarries remains unknown and is the aim of ongoing fieldwork.

07. Greenish-grey foliated microcrystalline limestone (Fig. 4, 07)

A second type of microcrystalline limestone (G-07 & G-14) was used in the stone pavement, alongside the polychrome variety described above. This material displays a homogenous greenish-grey colour and a characteristic foliated structure. It is crossed by occasional straight veins filled with pinkish white calcite. These characteristics match those of the material known regionally as 'Tarifa stone', from the southern tip of the province of Cadiz.

08. White (clasts) and red (matrix) limestone breccia (Fig. 4, 08)

This breccia of white clasts and red matrix is visually very similar to the classical type known as *breccia corallina*, habitually associated with the Bilecik region of Turkey. However, the petrographic characteristics of sample G-02 appear to be different from those of the reference material described by Lazzarini (2002). Sample G-02 displays angular clasts of primarily oolitic white limestone set in an intense red matrix. The clasts are very variable in size (some larger than 20 cm). Based on our present knowledge, this material may be correlated to the brecciated levels of oolitic limestone found in the Subbaetic System of the Baetic Cordillera, and may correspond to the material quarried in Antiquity in the area of Antequera (BELTRÁN *et al*. 2012). This lithotype has been identified in the upper section, including the sumoscapo moulding, of a smooth monolithic column shaft (Ø 56 cm). The most noteworthy feature of this shaft is that it has been recut to a length of 124 cm, creating a flat surface with no evidence of sockets for a possible fixture or assembly.

09. Fossiliferous crystalline limestone (Fig. 4, 09)

The material known in the literature as *lumachella carnina*, originally described as an oriental or Turkish variety (GNOLI 1971: 171-183) and more recently ascribed to an indeterminate origin in the Iberian Peninsula (BORGHINI 2004: 240), has become associated with the Portuguese quarries of Sintra, in the Lisbon region (MAÑAS, FUSCO 2008). Sample G-10 and a second non-analysed column shaft (inventory 383) correspond to this type of fossiliferous crystalline limestone. The columns are cut carefully following the preferred orientation of the sedimentary material. The incomplete length of column 398 is 222 cm. The preliminary petrographic observation suggests that the columns from *Hispalis*

are similar although perhaps less crystalline than the known reference types (RODRÍGUEZ *et al.* 2012: 132-134), which may be due to intraquarry variation. However, the columns are visually a complete match to the variety known as *encarnadão chainette* included in the Catalogue of Portuguese Ornamental Stones (online database of the Portuguese Instituto Nacional de Engenharia, Tecnologia e Inovação, http://rop.lneg.pt/rop).

10. Compact banded crystalline travertine (Fig. 4, 10)

Similar materials are described in the literature as 'calcite alabasters' but we have opted for the term compact banded crystalline travertine. The calcite bands in G-01 are approximately parallel or slightly undulated, generally less than 2 cm but up to 7 cm, and in a wide range of colours (white, cream, pink, yellow, orange), often separated by thin chromatically intense bands. The crystalline texture is variable between bands. The stone is overall very compact despite the banding, but displays some continuous dissolution lines (between bands) along which the stone tends to break. Further analysis is required (including geochemical and isotopic analysis), but this material may have been procured in the region of Tlemcen, Algeria, at the quarries of Aïn Tekbalet (HERRMANN *et al.* 2012). It will be of great interest to follow it up in future work on the patterns of distribution and use

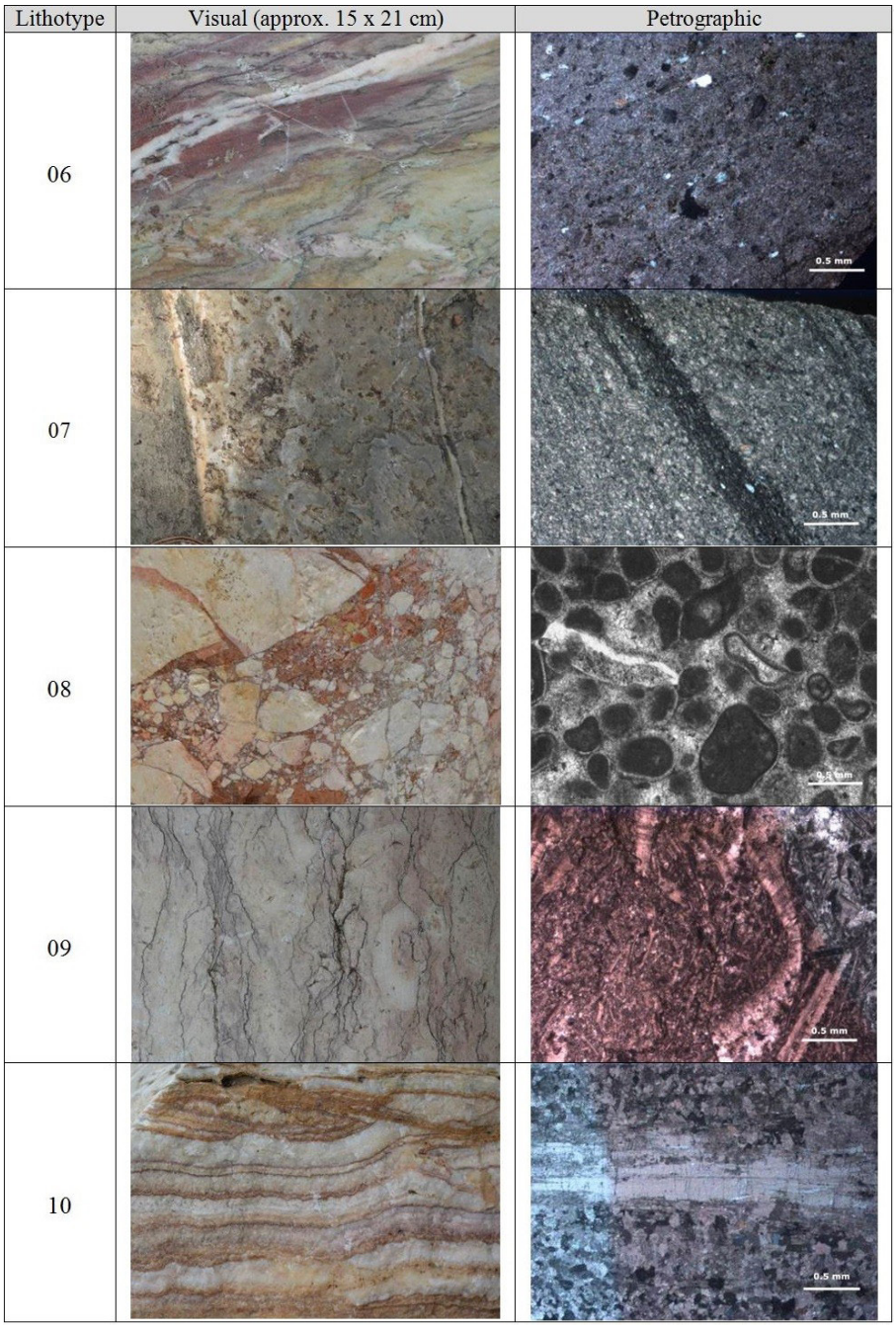
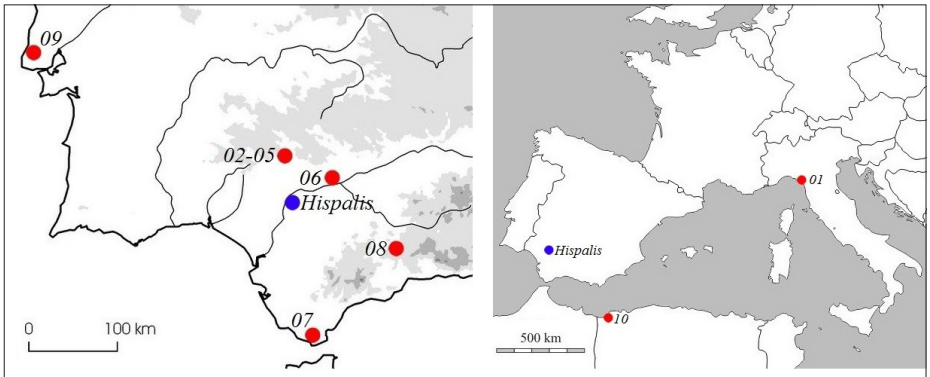


Fig. 4. Visual and petrographic characteristics of the coloured *marmora* documented at nº 17 Goyeneta Street, Seville, Spain



Lithotypes in order of distance from Roman *Hispalis* (approximate shortest route):

02-05	Almadén de la Plata	70 km by land	*09*	Sintra	550 km by sea
06	'Peñaflor stone'	80 km by land or river	*10*	Aïn Tekbalet	650 km by sea
08	Antequera	180 km by land	*01*	*Luni* - Carrara	2.000 km by sea
07	'Tarifa stone'	200 km by land or sea			

Fig. 5.
Distribution map of the lithotypes identified at nº 17 Goyeneta Street (Seville, Spain), in order of distance from Roman *Hispalis*

of this lithotype, as well as on the possible existence of outcrops with similar characteristics in the Baetic Cordillera.

The fragments recovered at nº 17 Goyeneta Street belong to at least two column shafts, judging by the evidence of the imoscapo mouldings. The better preserved shaft displays an incomplete length of 253 cm. Its diameter varies between 62 cm at the imoscapo and 59 cm in the central section of the shaft.

Conclusions

At present, the remains documented at nº 17 Goyeneta Street constitute the most significant assemblage of monumental architectural elements recovered in Roman *Hispalis*. Indeed, the number, the diversity of the lithotypes and, particularly, the monumental dimensions of these elements are not equalled by any of the assemblages documented by any of the preventive archaeological excavations within the historical city centre of Seville, including the nearby 6000 m² site of La Encarnación.

The find spot of this assemblage is located within the Northern sector of the Roman city and indicates the existence of an important monumental complex in this area. The morphology of the building under study - rooms organised around an open central patio monumentalised by large supporting elements – and its location near to the historical margin of the Guadalquivir River, suggests a possible function as part of the infrastructures of the port services and administration. It is interesting to note that many of the structures identified at La Encarnación indicate the existence of a thriving port district in this area of the Roman city in the 2nd century AD (GONZÁLEZ ACUÑA 2011).

The date of the construction of the building and, particularly, its long period of use from the 2nd to the 4th century AD provide two interesting chronological references. The building also underwent remodelling and transformations that affected some of the architectural elements themselves. The sequence documented at nº 17 Goyeneta Street is documented at nearby contexts, including La Encarnación, that reinforce the continuity of the urbanistic development throughout these centuries and the appearance of important changes in the use of this area of the city from the early 5th century onwards (GARCÍA VARGAS 2014). This is the date around which the building under study fell into disuse and may have been partially dismantled, although many of its larger architectural elements were left *in situ*.

The assemblage of large architectural elements analysed in this paper corresponds to 13 individual items belonging to a single building program: 4 smooth column shafts, 3 attic column bases, 3 pilaster bases with mouldings and 3 paving slabs. Within this group we have identified 10 different lithotypes, from 7 different quarry districts, which provided the necessary stones for a monumental and strikingly chromatic architectural program.

Four of these are regional, from within the territory of the Roman province of *Baetica*. Almadén de la Plata is located approximately 55 km from Seville as the crow flies, or 70 km by land. The quarries of 'Peñaflor stone' may be traced to an area at a distance of approximately 65 km as the crow flies, or 80 km by land or river. Antequera, in the hinterland of the present day province of Malaga, is approximately 130 km as the crow flies, 180 km by land or using the *Singilis-Baetis* river system or 370 km by sea from *Malaca*. The distance between Tarifa, on

the southern tip of the Atlantic coastline, near the Strait of Gibraltar, and Roman *Hispalis* is approximately 150 km as the crow flies, and 200 km by land or by sea (Fig. 5).

One of the identified materials can be characterised as superregional, from the quarries of Sintra, located in Roman *Lusitania*, located approximately 350 km as the crow flies, or 550 km by sea, from Seville. The remaining two lithotypes are not from the Iberian Peninsula but from Italy (*Luni*), and most probably Algeria (the banded crystalline travertine from Aïn Tekbalet), and must have arrived at Roman *Hispalis* by sea, either directly from their quarries of origin or redistributed from another centre.

The diversity of lithotypes outlined above indicates the use in Roman *Hispalis* of a wide range of materials from regional, superregional and extra-peninsular quarry areas. The distances from and the means of transportation to *Hispalis* by land, by river and by sea would have been different in each case, as would the characteristics of the systems of exploitation and distribution. However, we may conclude that all of these different materials were present and available in *Hispalis* in the 2nd century AD for the construction of the monumental building identified at nº 17 Goyeneta Street in Seville's historical city centre. The assemblage under study not only provides new data on the monumental areas of the Roman city of Hispalis, located in this case in the Northern intramural sector of the city, but also constitutes an important case study for the reconstruction of the value of regional and imported marbles in the Southwest of Roman Hispania between the 2nd and 4th centuries AD.

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