A STUDY ON THE BUILDING TECHNIQUES AND MATERIALS IN THE LATE ANTIQUE AND BYZANTINE FORTIFICATIONS IN ANATOLIA: ANCYRA AND NICAEA

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ABSTRACT

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This research aims to investigate building techniques and materials in the Late Antique and Byzantine fortifications of Anatolia through the selected case studies of Ancyra/Ankara and Nicaea/Iznik. The majority of Late Antique and Byzantine fortifications in Anatolia are distinguished by ashlar masonry, including quantities of spolia, with alternating courses of brick. The frequent appearance of brick, in combination with more-or-less regularly cut blocks or spolia, in the buildings and fortifications of Anatolia from the Late Roman through to the Byzantine periods (particularly from the ninth century onwards) creates difficulties in offering a precise dating for these structures.

The citadel of Ankara, in terms of construction technique and materials, finds one of its closest parallels in the fortifications of Iznik. The major modification to the walls of Iznik, originally built in the third century AD, is attributed to Michael III, or precisely to the year 858 by the inscriptions. The eighth and ninth century phases of the walls of Iznik are characterized by rich quantities of spolia alternating with bands of brick.

Similarly, the rebuilding of the inner circuit of the Ankara fortifications, built of large blocks of spolia up to a height of eight-to-ten meters, capped above by alternating courses of brick and rubble stone, is attributed to the year 859. The rebuilding of the walls of both Ankara and Iznik were included in a large-scale program of fortification by the Emperor Michael III (842-867). A close examination of these two fortifications will help us understand the development of the variations in ashlar masonry and spolia, in combination with brick, and shed light on dating and restitution issues, assisting in determining appropriate conservation approaches, in other Late Antique and Byzantine fortifications in Anatolia.

Keywords: Late Antique and Byzantine Fortifications, Ancyra, Nicaea, Construction Techniques, Building Materials.

ÖZ

ANADOLU'DAKİ GEÇ ANTİK VE BİZANS DÖNEMİ SURLARININ YAPIM TEKNİĞİ VE MALZEME BAKIMINDAN İNCELENMESİ: ANKARA VE İZNİK

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Bu çalışma Anadolu'da bulunan Geç Antik ve Bizans dönemi surlarını yapım teknikleri ve malzemelerini bakımından Ankara ve Iznik kentleri aracılığıyla incelemeyi amaçlamaktadır. Anadolu'da bulunan Geç Antik ve Bizans dönemi surlarının büyük bir kısmı bol miktarda devşirme malzeme içeren kesme taşların tuğla sıralarıyla birlikte yaptığı almaşık dizilim ile diğerlerinden ayırt edilmektedirler. Kesme blok taşlarla ya da devşirme malzemelerle birlikte tuğla kullanımı Geç Roma döneminden Bizans dönemine kadar (özellikle dokuzuncu yüzyıldan itibaren) Anadolu'nun binalarında ve sur duvarlarında sıklıkla görülmektedir ve bu nedenle bu yapılar için kesin bir tarihleme yapmak zorlaşmaktadır.

Ankara kalesine yapım tekniği ve malzeme bakımından en yakın sur duvarı Iznik surlarıdır. Iznik surları üçüncü yüzyılda inşa edilmiştir ve Michael III döneminde ya da yazıtlarda yazan kesin tarihi ile 858 yılında önemli bir değişim geçirmiştir. Iznik surları sekizinci ve dokuzuncu yüzyıllarda bol miktarda devşirme malzeme ile birlikte tuğla sıralarının almaşık dizilimi ile farklılık göstermektedir.

Benzer bir şekilde, Ankara kalesi iç sur duvarında sekiz ile on metre yüksekliğe kadar devşirme malzemelerin kullanımı ve üst kısımlarında bulunan moloz taş ile tuğla sıralarının almaşık dizilimi ise 859 yılında yapılmış olan bir yeniden inşa dönemine atfedilmektedir. Ankara ve Iznik sur duvarlarının yeniden inşa edilmesi İmparator Michael III tarafından yapılmış olan büyük çaptaki sur çalışmalarına dahil edilmektedir. Bu iki sur duvarının yakından incelenmesi, tuğla ile birlikte devşirme malzeme ve kesme taş kullanımı çeşitliliğinin gelişimini anlamamıza yardımcı olacak, Anadolu'daki diğer Geç Antik ve Bizans dönemi surları için uygun koruma yaklaşımlarının belirlenmesinde ve tarihleme ve restitüsyon konularında ışık tutacaktır.

Anahtar Kelimeler: Geç Antik ve Bizans Dönemi Surları, Ankara, Iznik, Yapım Teknikleri, Yapı Malzemesi.

To my beloved family

and

to all children of the world, whose right to life has been taken away.

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TABLE OF CONTENTS

LIST OF TABLES

TABLES

LIST OF MAPS

MAPS

LIST OF FIGURES

FIGURES

CHAPTER 1

INTRODUCTION

Human beings create the structures that make up architecture to meet their needs for shelter, status and defence in their particular living situation. Thus, the needs of people in ancient times were different from their medieval equivalents and different again from today's society. Despite all these differences and changes, human beings have an inborn instinct to value the architectural reminders of past times. Fortification walls, the particular subject of this thesis, are valued in this way; massive in physical structure, and imbued with memories of traumatic historical events, they have survived over centuries long after they have lost their defensive functions since they have become a part of our cultural heritage. Cultural heritage and cultural significance are two associated terms: "Cultural significance means aesthetic, historic, scientific, social or spiritual value for the past, present or future generations."[1] Late Antique and Byzantine fortifications, which are investigated in this study, are a historic feature of the geographical locality they are located in as they still survive to the present day, and, since fortifications are urban scale buildings, they exist in a close relationship with the urban settlement and topography. As in the case of Nicaea, this mutual relationship between the fortifications and the city they defend has survived to the present day. The *cardo and decumanus*, some of the remnants from the Roman period in the city, is still stand intact within the walls. The fortifications of Ankara, which

[1]The Burra Charter, 1999: 2.1.

comprise a double line of walls girdling the city, comply with, and embellish, the topography of the hill where they are located.

After the division of the Roman Empire (395 AD), the Byzantine Empire (330-1453 AD), known as the Eastern Roman Empire, emerged. Despite the collapse of the Western Roman Empire in 476 AD, the Byzantine Empire continued as a powerful military and political entity between Asia and Europe and, after its eventual demise, left behind a rich cultural heritage. The Roman Emperor Constantine I chose Byzantion (Constantinople-Istanbul) as the capital of the Byzantine Empire in 330 AD. The Byzantine Empire, despite its almost constantly fluctuating borders, remained one of the dominant forces in Anatolia until its final collapse in 1453. Following the siege of Constantinople, and the temporary occupation of the capital city of the empire, by the Crusaders during the 4th Crusade, the Empire of Nicaea (1204-1261) was founded and Nicaea became the capital.

After taking Constantinople back from the Crusaders, the city was re-instated once more as the capital. The Byzantine Empire was finally obliterated by the Ottoman Turks in 1453. Edirne, Bursa, and Söğüt became capital cities of the Ottomans from 1302 to 1453. From 1453 till 1922 Istanbul became the capital of the Ottoman Empire. In 1922, the Ottoman Empire, in turn, finally collapsed, and the Republic of Turkey was declared in 1923. As witnessed by history itself, Anatolia has hosted many significant and deep-rooted civilizations. Therefore, the cultural heritage of Byzantines, the inhabitants of this region for more than a millennium until 1453, are inevitably very significant for us today. However, if the present attitude about this issue could be encapsulated in a single sentence, the statement that "for most historians, Byzantium is an absence" (Cameron, 2006) would not be misleading.[2]

One of the underlying factors paving the way for the selection of the subject of this thesis study is that the Byzantines occupied an important period in the history of Anatolia, a period, which many scholars agree, has been unreasonably neglected. As with many of the other civilizations that have existed in Anatolia, it is the architectural works of Byzantine culture which constitute the bulk of their material legacy to us.

[2] Previously quoted by Serin, 2008: 209.

Considering the general categories of civil architecture, religious architecture, and military architecture, the first one has survived the least. It is safe to say that presently the Byzantine cultural heritage is mainly composed of the work of religious and military architecture. Examples of the civil architecture of the Byzantine period such as city squares, columned streets, and obelisks still remain relatively intact in some cities. Likewise, edifices of religious architecture such as basilicas, monasteries, churches (those converted from pagan temples as well as those built from scratch) and those of military architecture such as the fortifications are monumental architectural works which have survived better and are therefore in a much more observable state.

In the investigation of the Byzantine period and its military architecture, Themes seem an important concept.[3] The history of defensive buildings, which was one of the most basic needs of their period, goes back to very ancient societies and they exhibit many complex and different designs across the world.[4] Castles/fortifications have constituted the basic unit for defensive and military purposes, they also, by virtue of their large scale and durability, became long lasting and highly visible features of major cities.[5] Defence structures form a common need and priority of a society; giving them an enormous significance in terms of their role in reflecting the shared history of the entire society. In addition to that, use of spolia brought from different buildings of a city, often from earlier eras, and even inscriptions, which are valuable historic documents, as building elements in the construction of these defence structures makes fortifications rich historic sources.[6] Although these forms of defence structures are not

[3] The Oxford Dictionary of Byzantium (Kazhdan, 1991: 2034-5) explains the Themes as following: "Theme: term for a military division and for a territorial unit administered by a Strategos who combined both military and civil power. The earliest themes were Armeniakon, Opsikion, Anatolikon and Thrace." The appearance date is estimated to the seventh century.

[4] The first fortification wall which was a 250 km (155 miles) long wall was built by Sumerian King Shulgi in c. 2038 BC not to surround a city but to stop invading Amorites between the Tigris and Euphrates rivers, outside the Sumerian territories (Mark, 2014). http://www.ancient.eu/wall/

[5] The Oxford Dictionary of Byzantium (Foss, 1991: 798-9) explains the fortification as following: "Fortification was a necessary structure, they had an important place in Byzantine period and left a massive class of remains. Characteristic Byzantine fortifications could be found in commercialized cities, thematic cities (Nicaea, Ancyra) and the cities that has connections with land and sea routes. In the seventh century Asia Minor, there is an outburst of fortifications due to the insecurity at that time." Fortification is derived from the Latin word fortis: strong and facere: to make.

[6]The Oxford Dictionary of Byzantium (Johnson and Anthony, 1991: 1939) explains the spolia as following: "Spolia: materials taken over for reuse from other buildings, particularly columns, capitals, and other marble. The use of spolia in construction appeared in the early fourth century and, as the supply of material and means of production diminished, continued throughout the Byzantine period. Earlier structures provided builders with inexpensive, ready-made, and easily reusable material."

needed for military purposes anymore, due to aforementioned reasons, together with other architectural monuments, fortifications constitute a part of cultural heritage. All these aspects contribute to the status of military architecture in providing significant information towards understanding and interpreting Byzantine architecture, masonry techniques, workmanship, materials and even approaches. Among the buildings of the Byzantine period, which disappear day by day, fortifications tend to remain intact and have witnessed the history of civilizations for centuries as they are large scale structures with high durability, resistant to the most massive upheavals and disasters. Therefore, intact Late Antique and Byzantine fortifications built in the cities of Anatolia were chosen as the subject of the investigation. These cities are Nicaea (Iznik) and Ancyra (Ankara). Constantinople (Istanbul), Cotyaeum (Kütahya), Nicomedia (Izmit) and Amorium were selected for the comparative study. The most basic feature shared by the fortifications in these cities is the building technique based on alternating courses or bands of brick and stone and use of spolia. The cities of Ankara and Nicaea are studied thoroughly in two separate chapters. These two cities were exposed to the same threats in the same period (namely Arab and Persian attacks from the East and the Crusades from the West). As the inscriptions located on the walls of these cities confirm, due to the damage inflicted on the walls during these attacks, they had to be extensively repaired during the reign of Emperor Michael III (842-867) by imperial command. These two cities, whose military significance extended to periods before and after the Byzantine Empire, were further strengthened with fortifications by the Byzantines.

The current state of the fortifications in Ankara and Iznik, which were studied in detail within the scope of the thesis work, is dated to the Late Antique and Byzantine periods.[7] First, the general characteristics of the fortifications of these two cities are dealt with and then, by means of a field study which was carried out to analyze the currently intact walls, all walls were documented with respect to identified building techniques and materials. Within the scope of the field study, details, alterations, renovations, destruction and/or repair and maintenance works were investigated. The reasons behind the alterations made to the fortifications, their periods and results have

[7] Foss and Winfield, 1986.

been studied under certain specific categories with the aid of written sources. The towers, one of the main components of the fortifications were investigated individually. The intervals between two towers were considered as the wall unit, and systematic documentation was made during the field study.[8]

When the fortifications of Iznik are compared with those of the other cities in Anatolia, it can be seen that they most closely resemble the fortifications of Istanbul. Although there are ruined and almost indiscernible sections in this elaborately built defence structure due sustained use and continuous interventions during centuries of use, the fortifications of Nicaea still enrich the city's historical significance. It is safe to state that all these renovations and improvements have modified the fortifications and made their original state illegible. Despite all these changes, this largest and best-protected monument from Byzantine Nicaea allows us to trace back all the interventions and the periods it has been subjected to (Foss, 1996b). The main building materials of the fortifications of Iznik are stone, brick, spolia and mortar.[9] Therefore, it is acceptable to suggest that the history of the city was written in 'stone' and therefore relevant in understanding the history of the city, and that the history of its fortifications should be revealed (Foss, 1996b). The same is also true for the fortifications of Ankara. The earliest fortifications of Iznik are dated to the prehistoric periods in the sources on the history of Iznik. However, because of the scarcity of sources and the specific subject of the thesis study, the emphasis will be given on the Late Antiquity and Byzantine period.

The most important value that the citadel of Ankara brings to the city is that it harbours the city's history within its stones (Serin, 2014: 80). Therefore, within the scope of this thesis work, the building techniques and materials of the fortifications of these cities will be studied thoroughly. There will be a comparative study in the fourth chapter where these fortifications will be considered together with similar fortifications of other cities in Anatolia. In addition to documentary and analytical investigation of the current state of these fortifications, historic events, important repairs/interventions and

[8] Towers will be named labelled as T(1,2,3...), and the Walls as W(1, 2, 3...). The numbers used in the entire system belongs to the towers: For instance, T1: The First Tower; W(1-2): The wall section between the first and the second towers.
[9] For a comprehensive source about the use of spolia in fortifications, see: Greenhalgh, 1999.

major collapses will be taken into consideration. Another pervasive concern is that the technique of alternating bands of brick and stone, the minor subject of the thesis work, was prevalent for a long period from the third century to the ninth century, and thus its dating is difficult. Conservation interventions to the fortifications built with this technique resulted in certain negative outcomes. It must be emphasised that when these fortifications, the dating of which is complex, are to be subjected to interventions, this problem has to be considered.

1.1 THE AIM AND SCOPE OF THE THESIS

The aim of this study is to investigate the Late Antique and Byzantine fortifications in Anatolia in terms of building techniques and materials using as examples the fortifications of Ankara and Iznik; both examples were important cities in the Roman, Byzantine, Seljuk and Ottoman periods. Ankara, currently the capital of the Republic of Turkey is still an important city; Iznik, on the other hand, is now a small province of the city of Bursa. The fortifications of Iznik have not been well maintained and are presently dilapidated. The absence of maintenance and investigation seems almost to indicate a presumption by the relevant authorities that the monument is are expected to disappear. Within the scope of this work with the aid of investigations on the building techniques and materials as well as the comparative analyses (comparisons between dated and non-dated sections) these two fortifications, which dated to the Late Antique and Byzantine periods, will be studied.

The use of brick in conjunction with partly cut stone, rubble stone and spolia to form contrasting bands of masonry was a very frequent feature of many buildings and fortification walls in Anatolia from the Later Roman period to Byzantine period.[10] Dating of these buildings is difficult as the technique was widespread over a long period and used in different building types. However, the majority of fortifications dated to the Late Antiquity and Byzantine period include large quantities of spolia. These fortifications can be distinguished from the others with respect to these spolia

[10] Foss and Winfield, 1986; Serin, 2011; 2014.

and alternating courses of more or less cut stone or rubble stone and brick. The fortifications of Ankara and Iznik are very similar in terms of the building technique and materials.

The fortifications of Iznik are distinctive for the sheer quantity of the spolia and alternating bands of brick as a result of the interventions taking place in the eighth and ninth centuries. In the Citadel of Ankara, on the other hand, 8 to 10 m high walls of the inner circuit, which were built using spolia, but mainly consist of alternating courses of rubble stone and brick, are considered as the product of a rebuilding activity taking place in 859. The rebuilding of the fortification walls of Ankara and Iznik are seen as a part of an extensive fortification building activities initiated by the Emperor Michael III (842-867).

A comparative analysis of these two fortifications in conjunction with each other would aid in understanding the development of the variations in the use of brick with spolia, rubble stone and cut stone. The thesis work is aimed to be a step forward in the identification of conservation approaches in compatible with the building techniques and periods as well as on the issues of dating and restitution; initially for these two cities and then subsequently for other Late Antique and Byzantine fortifications in Anatolia.

1.2 DEFINITION OF THE PROBLEM

When considering the conservation of the edifices of Byzantine Period, the cultural heritage to be handed on to future generations seems to be at risk due to particular negative approaches; such as neglecting a period or passing over that period in order to reach a succeeding or preceding period.[11] In fact, currently surviving edifices are abandoned to their fate or even actively demolished either through negligence in establishing the conservation approach, or out of lack of awareness. The significant problems related to the conservation of unearthed artefacts and edifices, currently make the emergence and preservation of further discoveries rather problematic. The cultural heritage left behind by this empire which ruled over Anatolia for almost a

[11] For a comprehensive source and detailed bibliography on negative and positive approaches, see: Serin, 2008.

millennium is now restricted to certain titles. The underground settlements and dwellings in Cappadocia can be the examples for domestic architecture, an infrequent genre of civil architecture in Anatolia. Serin (2008: 212) explains the scarcity of Byzantine civil architecture and the importance of the Citadel of Ankara as following:

> The lack of Byzantine civic monumental architecture is primarily due to the nature of this period, when the greater part of the building types of the Classical period were no longer in use, while very little of Late Antique and Byzantine domestic architecture has survived. Among the examples of non-religious architecture, the citadel of Ankara can be considered in its entirety a better-protected example of the Byzantine defensive heritage; while a Byzantine bath restored and transformed into a local museum at Side is one of the rare examples of this kind.

Mango (1991: 40-41), who scrutinizes the approaches brought for the cultural heritage of Byzantine period, emphasizes that a selection is made even among the building types and states that:

> To an outside observer it may appear that Byzantine architecture consists of nothing but churches and monasteries. He is seldom made aware of the fact that the Byzantines also built houses, palaces, and baths, works of fortification, bridges, aqueducts, and cisterns. Through a combination of historical factors such secular or utilitarian structures have tended to disappear or, if they have survived, have not attracted much attention precisely because they are utilitarian and not "artistic." Handbooks of Byzantine architecture usually mention the abandoned villages of northern Syria, two or three palace buildings of the later Middle Ages (the so-called Tekfur Sarayi of Constantinople, the Lascarid palace of Nymphaeum, and the palace of the Despots at Mistra), the walls of Constantinople, Nicaea, and Thessalonica, and a couple of the more spectacular cisterns of Constantinople, namely the Cisterna Basilica and that of Philoxenos (Binbirdirek). Having done so, they devote 95 percent of their space to the evolution of the church. So exclusive a preoccupation with ecclesiastical architecture needs to be corrected, and it is encouraging to note that the study Byzantine castles and city walls has been started in earnest.

Defence structures are among the non-religious architectural works of the Byzantine period, one of the most important periods in the history of Anatolia. Although these structures are known to belong to the Byzantine period, they remain significantly under-appreciated. The main problem of these structures is related to their building techniques. In other words, the variations of the technique of alternating courses of brick and stone were widespread from at least the third century to the end of the Byzantine Empire, making exact dating very difficult. This situation has negative implications for conservation interventions referenced to the periods/dates of the fortifications. In fact, this lack of certainty complicates, and maybe inhibits, conservation interventions and results in confusion regarding the relationship between the building technique and period.

Dating the Late Antique and Byzantine fortifications in Anatolia, which share their construction techniques and materials in common, especially Iznik and Ankara, to a long period of time, such as from Late Antiquity to the Byzantine period, makes it hard to determine their construction date. Their common features are construction techniques and materials.[12] Another source of vagueness is that these buildings been subject to extensive repairs in certain periods.

1.3 THE METHODOLOGY AND STRUCTURE OF THE THESIS

In this work, in addition to Ankara and Iznik, cities such as Istanbul, Izmit, Kütahya and Amorium will be examined via a comparative study. Distinct from other Byzantine cities, these cities were located in important strategic locations and included fortifications. Today, written and physical evidence on the fortifications of these cities is available. The main structure of the thesis study is formed by these cities, which have certain common features. All of these cities existed in the long interlude between the Late Antiquity and the end of the Byzantine period. Moreover, the building technique that was used in the fortifications of these cities is alternating courses of brick and stone.

[12] Ousterhout, 1999; Foss, 1986; Serin, 2014: 75.

The study comprises four phases: In the first phase, the cities to be studied were selected according to the written and visual evidence obtained from the literature review. Two of these cities were decided on as subjects to be studied comparatively and thoroughly because the written evidence revealed that the fortifications of Iznik and Ankara underwent extensive repairs almost simultaneously (858 and 859, respectively) during the reign of the same emperor. In order to draw relevant parallels in the comparative study, Iznik and Ankara will be studied with the same level of emphasis in the second and the third chapters respectively. In addition to the similarities between the building techniques of the fortifications of these two cities, the use of spolia is also a common feature. Therefore, Ankara and Iznik were selected as the sites for the field study that is the second phase and the first field studies were carried out. The actual data gathered in the field studies and the outcome of the literature review made prior to the field studies, were adjoined and a second and more extensive literature review was made. In order to obtain the required information, additional field studies were initiated. In the third phase, the field study data were analyzed together with the written evidence. When considered necessary, tables and maps were created to classify the data. Finally, the evaluation of literature reviews, field studies and analyses were made. Field studies were configured to facilitate understanding the fortifications of the two cities.

The studies started with Yenişehir Gate of the fortifications of Iznik (on the southern facade) which gives access from Bursa to Iznik. Work were organized in a similar manner to those who had previously studied the fortifications of Iznik in detail. Starting with Yenişehir Gate, in the counter-clockwise direction, the Lefke Gate (in the east), Istanbul Gate (in the north) and Göl Gate (in the west) were investigated. Because the Göl Gate is entirely ruined, the investigation was made on the traces, remains, and pieces of spolia nearby.[13] The Southern Göl Gate, which is one of the intact auxiliary gates, is located between Yenişehir Gate and Göl Gate and was examined as thoroughly as the main gates.

This itinerary of investigation was repeated many times for Iznik. Because the two lines of fortification walls are intact, first the interior and exterior facades of the main

[13] Schneider, 1938; Foss and Winfield, 1986; Foss, 2003.

wall were studied and then both facades of the outer wall were investigated. The studies were elaborated using section and elevation drawings as well as detailed drawings and measurements. Spolia, which was used lavishly in the walls, was also observed scattered around. In addition to Jerphanion (1928) and Foss (1977), primary sources on the fortifications of Ankara, the studies of Serin (2011) as an up-to-date source were prioritized in the literature review. In the Citadel of Ankara, the examination was mainly focused on the inner circuit. During the field studies, the entire inner circuit and the southern facade (where the Hisarkapı is located), the intact part of the outer circuit was investigated. The studies on the inner circuit commenced at the southern facade (where the Zindankapı and Parmakkapı are located), which were emphasized as significant. After the southern facade, the walls and towers on the western facade were documented with respect to their building techniques and materials. Next, the eastern facade and accessible points in the northern facade were investigated.

In the second chapter, Iznik, one of the two cities of the comparative study, with its largely intact fortifications was dealt with. Before concentrating on the fortifications, the history and geography of the city were studied. In order to understand the city of Iznik, which harbours a rich history, information was gathered from oldest available documents. Traveller accounts were referred to; historic and geographical settings related to the fortifications, the most important part of the history of the city, were inquired into. After revealing the role of the fortifications in history, their architectural features were explained. The most detailed part of this chapter is where the fortifications were investigated thoroughly in terms of the building technique and materials. Here documentation of the current state of the fortifications was realized.

In the third chapter, the fortifications of Ankara, one of the Late Antique and Byzantine fortifications that still remain relatively intact, were studied. First, the periods and geographical changes the city has witnessed were described.

As a central settlement, Ankara has been a capital city multiple times since the Roman period. Apart from elaborately built fortifications of the city, the temple of Rome and Augustus, one of the most important edifices of the Roman period, testifies to the significance of Ankara. The existence of a relatively a larger collection of traveller

accounts of the fortifications of Ankara makes these documents valuable sources for the present study. The other Roman and Byzantine structures located in the historic city centre are briefly mentioned. The importance of the citadel is emphasized and subsequently the history and geography of the citadel, followed by an investigation of the building techniques of the fortification walls. Since there are two lines of fortification walls, they were treated separately.

As the subject of inquiry is the inner circuit, the outer circuit was only described briefly, including an explanation of why it has been relegated to secondary importance in this thesis. The use of spolia was also considered in this research on the building techniques of the walls and towers. Of the high fortifications, a height of 8-10 m from the ground was built with spolia while the upper parts were constructed with the alternating courses of brick and stone, which can also be seen in Iznik. In the light of the details of the building technique under particular examination, relevant sources were studied to reveal the date of this building technique. It is possible to date this building technique, which was widespread over a long period, with the aid of inscriptions that exist in the fortifications of Ankara.

The cities studied in the fourth chapter are those with similar fortifications, and thus the potential to enrich the investigation on the fortifications of Iznik and Ankara provided in detail in the previous two chapters. With the aid of the literature review, the fortifications built within the period between Late Antiquity and the Byzantine period, and which exhibit the relevant building technique were identified and taken into consideration. Where thought necessary, tables comprising the period of construction, architectural features, building techniques, materials, use of spolia and the interventions they were undertaken for every city were created and attached in the appendix. The outcomes of the comparisons between these cities will provide information on the common features of their fortifications, which were built within the period between the Late Antiquity and the end of the Byzantine period.

In the conclusion section, the outcomes related below were accomplished with the aid of information on the variations and materials of the technique of alternating courses of brick and stone observed in the fortifications of the cities of Iznik, Ankara, Istanbul, Kütahya, Izmit and Amorium:

- It was revealed that the building techniques and use of spolia in the fortifications that were dated to the Late Antique and Byzantine periods were common.
- This building technique, observed on the studied fortifications, is dated to an extensive period between the third and ninth centuries.
- It was revealed that, apart from a few inscriptions, the information on the building dates and techniques of the fortifications necessary for conservation interventions is lacking.
- Although the walls were constructed in different periods, they were modified, demolished and repaired for various reasons. In the conclusion part, where the interventions made were evaluated, the situations affecting these interventions negatively or positively were taken into consideration.
- As a result, the problems faced with during the conservation interventions made to the Late Antique and Byzantine walls, which were built with the aforementioned technique, and ensuing negative outcomes are studied.
- It was identified that the interventions, which are incompatible with the original state of the fortifications make the chronology of the fortifications unreadable and create significant problems for further conservation work.

1.3.1. Literature Survey

In this respect, the literature review was made in the following order: The history and geography of the primary cities (Ancyra and Nicaea) of the study, as well as those of the other cities that are used in the comparative study were investigated. The historic and geographical features of the fortifications in these cities, as well as the building techniques and materials used in these fortifications were revealed out with the aid of sources varying from the oldest available to the most up-to-date. '*Byzantine Fortifications: An Introduction*' (1986) written by Clive Foss and David Winfield on the Byzantine fortifications in Anatolia provide detailed information on the fortifications of Iznik and Istanbul and include brief descriptions about the fortifications in the other cities. The study made by Foss and Winfield (1986) is considered as an introductory to the further research and at certain points, the information and guidance they presented were followed.

The earliest account that dealt extensively with the fortifications of Iznik is Alfons

Maria Schneider's article that is titled '*The City Walls of Nicaea*' (1938). '*Iznik Throughout History*' (2003) a collection of articles written on Iznik and its fortifications edited by I. Akbaygil, H. İnalcık and O. Aslanapa was used to comprehend all dimensions of Iznik.

The study produced by G. de Jerphanion (1928) was the earliest and most comprehensive study that subjected Citadel of Ankara extensively. It is a fundamental source for almost all of the following studies. Although there are sources on the Citadel and the fortifications of Ankara written in different periods, Clive Foss' article '*Late Antique and Byzantine Ankara*' (1977) about the topography of the Citadel hill and the building techniques of the Late Antique and Byzantine buildings in Ankara and Ufuk Serin's articles *'Late Antique and Byzantine Ankara: Topography and Architecture'* (2011) and '*Byzantine Ankara and Its Lost Cultural Heritage: The Church of 'St. Clement'* (2014) are among the primary sources as they include the most up-to-date information on the issue. In addition to these, E. Mamboury's book '*Ankara Guide Touristique*' (1934) and A. Erzen *İlkçağda Ankara* (1946) were also benefitted.

C. Foss's books '*Survey of Medieval Castles of Anatolia I. Kütahya'* (1985) and '*Survey of Medieval Castles of Anatolia II. Nicomedia* (1996) were used to retrieve information on these two cities, which were selected for the comparative study made in the fourth chapter of the thesis work.

Previous studies on the fortifications of Iznik are as following: Ç. Özmert, '*An Approach Conservation and Rehabilitation of İznik Historical City Walls'* (1988) unpublished Master Dissertation, Faculty of Architecture, Middle East Technical University, Ankara. Previous works on the fortifications of Ankara are as following: Ö. Bakırer *Ankara Kalesi Duvarları Üzerindeki Belge ve Bilgiler* (1998); H. S. Sülüner, '*The Citadel of Ankara: Aspects of Visual Documentation and Analysis Regarding Material Use'*, unpublished PhD Dissertation, Faculty of Architecture, Middle East Technical University, Ankara (2005), L. Bevilacqua *Family Inheritance: Classical Antiquities Reused and Displayed in Byzantine Cities* (2015).

The sources including the historic maps of Iznik are as following: G. de Jerphanion, Sidney Toy, Charles Texier, A. M. Schneider, Mamboury, Clive Foss, C. Vonder Goltz, Karl Baedeker.

1.3.2. Terminology

There are some terms used in this study in the course of examining the building techniques of the Late Antique and Byzantine fortifications in different cities of Anatolia. Before starting further analyses on cities and fortifications, these terms are explained here.

First of all, the main building technique that constitutes the backbone of the thesis study is the technique of alternating courses of brick and stone with spolia. This building technique which is observed in various buildings of the Late Antique and Byzantine periods was frequently used in the fortifications in the same periods. It is composed of rubble or ashlar masonry alternated with courses of brickwork (3 to 6 rows) appearing in the forms of belts or bands on the outer face of the wall. In this system where the stone and brick courses appear on the outside surfaces of a wall section, the core of the wall is built with mortared rubble stone. The belts of brick penetrate through the thickness of the entire wall in this technique of alternating bands of brick and stone. That is, while the bricks seen on the surface of the wall continue through the section, the stones only form an outer skin on the surface. Another commonly used material is spolia which remained from earlier forms of the fortifications or other structures and is being used at least for the second time in the fortification. Spolia are usually used in fortifications up to a certain level from the ground without any alternating courses if brick. Another technique is placing benches, which were retrieved especially from Roman theatres, on the top of the fortification walls. Another important use of spolia is the insertion of the shafts of columns horizontally in wall sections to improve the bond between the outer two wall surfaces. Another element which provides binding between two surfaces is the use of wooden beams. At present, beam holes can be observed on the walls especially below the brick courses. Apart from these uses the, separate or integrated uses of spolia on different levels of fortifications were observed.

The technique of alternating courses of brick and stone, which is a characteristic building technique of the walls of the Byzantine period, resembles the "*almaşık*"

(alternating) masonry technique of Ottoman buildings.[14] However, a distinctive feature of the Ottoman almaşık technique is that the rows of brickwork are superficial and do not continue through the core of the wall. Another important difference is that while there were many variations of the technique of alternating courses of brick and stone, masonry technique does not exhibit such variety. This technique, which has more variations in buildings in Greece, does not vary much in the buildings of Anatolia. As a variation of the technique of alternating courses of brick and stone, the technique of cloisonné is also dated to the Byzantine period. This technique is based on framing a stone vertically and horizontally with one or two rows of brick. Another building technique in question is the technique of recessed brick. This technique which is based on recessing one of the two rows of brick to create an appearance of a thicker line of mortar, is most frequently seen in the towers of the fortifications of Iznik (Map 9).[15]

[14] For detailed information about the *almaşık* technique, see: Batur, 1970: 135-210; Ahunbay, 1988: 531-38

[15] For detailed information on the architectural terms, see: Ousterhout, 1999.

CHAPTER 2

THE WALLS OF IZNIK

In this chapter, the geographical and historical features of Iznik will be described along with an outline of the historical background of Iznik to explain why the geographical territory and the site of the town of Iznik have had such historical significance. To do this, historical and current written sources, travellers' notes, and old photographs have all been used. In the second part of this chapter, the actual Walls of Iznik will be examined using similar sources. Changes in the walls from repairs and interventions resulting from wars and earthquakes throughout history will be closely examined. The main aim of this chapter is to study the building techniques and the materials used for the construction of the City Walls in detail. The City walls will be analysed under three headings, namely: Walls, Towers and Gates. The scope of this study is to develop suggested solutions for the problems of determining the year of the construction and/or years of interventions, and thus to provide information and guidance relating to conservation problems concerning building techniques, building materials, and written sources. At the end of the thesis, a comparative study with the cases of similar cities is provided.

2.1.GENERAL DESCRIPTION OF IZNIK: GEOGRAPHICAL AND HISTORICAL FRAMEWORK

2.1.1. Geographical Considerations

Iznik is about 200 km[16] from Istanbul, which, as Constantinople, had been the capital of the Byzantine Empire for over 1000 years (330-1453) (Figure 2-1). The town of Iznik is situated on the east of Lake Iznik, the fifth biggest natural lake in Turkey with an area of 298km^2 which was listed as a Natural Site in 1990.[17] In Antiquity, viniculture was the main livelihood for settlements on the slopes of the mountains around the Lake, which was called Ascania Limne in the Antiquity (Şahin, 2003: 5).

Figure 2-1: Location of Iznik in Turkey

Lying to the northeast of Brussa (modern Bursa) and distant from all trade roads, the appearance of the present "village" of Iznik shows only traces of its past importance.[18] Schneider (1938: 437) explained the city and its relation with its fortifications as

[16] http://www.kgm.gov.tr/Sayfalar/KGM/SiteTr/Uzakliklar/ilcedenIlceyeMesafe.aspx (last accessed on 16.11.2016)
[17] http://www.iznik.bel.tr/gol.php (last accessed on 16.11.2016)
[18] Schneider, 1938: 437. The author's designation of Iznik as a village can be associated with the conservation of its natural features despite losing its importance as a settlement. Although its being far away modern trade routes, Iznik was always been on an important trade route throughout history.

follows, “It is quite hidden within the ancient circumvallation, and occupies scarcely a third of the former area of the town.”

As can be seen in similar fortifications from the Byzantine period, this fortification wall has the ground plan of an irregular polygon, and it is one of the best preserved Byzantine structures in Anatolia (Figure 2-2, plan) (Schneider, 1938). This irregular plan, observed in some Byzantine fortifications, can be attributed to the fact that they were built along the contours of the hills without any attempts to alter or destroy the topography of their site (Foss, 1996b).

Figure 2-2: Plan of Nicaea (Iznik) (after Schneider, 1938)

In describing the city of Iznik, Schneider (1938: 437) states that Lacus Ascanius (Lake Ascanio) lies to the west, richly well-afforested green plains on the other three sides, and the mountain Elmalı to the northeast. In addition to describing the village and the walls as mesmerizing, the scholar, viewing the city from a small hill 300 metres away to the east of the city, likens it to a shining lake and portrays the town as the lying in

the shade of cypress, oak, walnut and other fruit trees. It has no other significant features except for its substantial and imposing walls that remind us that once it was an important centre. Sadly, now, it is a small, lonely, and neglected town.

French (1967: 68) particularly emphasizes the location of Iznik in the province of Bursa from two perspectives. The first is that it lies on the main route from the coast to the plateau above and also on the coastal route from the Aegean to the Black Sea. In addition, French (1967: 68) describes that Iznik and its surrounding are under the influence of four major climate zones: The Pontic Coast to the east, the Aegean to the west, the Southern Balkans to the north and the Anatolian Plateau to the south. Iznik served as an important city to different societies and empires throughout history due to its strategic location. Its proximity to Istanbul made it a place of refuge during troubled times for the emperors, because, even though it was not the capital, yet it had the capacity to be, at least, a temporary capital. In fact, this is one of the reasons it suffered so much damage. Along with this, it was always overshadowed by a city like Istanbul since its basic function was as an agricultural resource for Constantinople, as can be deduced from the definition statement "The city of Iznik is the vegetable garden of Constantinople" (Angold, 2003: 27).

When Istanbul was the capital of Byzantium (330-1204/1261-1453), because of its military significance, Iznik had different anxieties, although after becoming the capital Iznik itself faced direct attacks. In fact, despite its extremely strategic location, it was always considered as a subservient to Istanbul. This, on the other hand, can be interpreted as; Iznik was as important for the capital as the capital itself because any enemy seeking to conquer Istanbul had first to capture Iznik, which protected the capital and supported in other ways, as it also protected the Bithynia region as well as the capital. Iznik was not only a prize for would be external conquerors but also for people attempting revolts from within the Empire. The city, important for Bithynia region, protected the Anatolian flank of the capital. On the other hand, while we can find information about the people of the city of Adrianopolis (modern Edirne), which was on the European side and which shares some similarities with Iznik, there is no information about the people inhabiting Iznik during that time. As a matter of fact, in

the periods when there were Byzantine Themes[19] (military divisions) it would be logical to expect there should be some mention of the people of Iznik in these documents, since important families and dynasties controlled the themes during this period of Byzantine Themes. However, no information can be gathered, even about the powerful families of that time. For example, Iznik, included in the Opsician Theme, was the centre of this Theme. A very little information about the history of Iznik has survived to our day compared to that of the city of Thessaloniki (modern Selanik), which we know that had many similarities to Iznik.[20] In the following part of this chapter, the history of Iznik will be examined in more details in the light of the major events taking place in the periods covered by its history.

2.1.2 A Brief Historical Framework of Iznik

The city of Iznik was the capital of the Empire of Nicaea during the Byzantine period (1204-1261) and the period of the Anatolian Seljuk Empire (1077-1086). Even afterwards, it still played a significant historical role. As the capital of the aforementioned Empires, located at the midpoint of a strategic military and trading route between the East and the West, accessible by land and sea, so a nodal transport point its importance extended to neighbouring cities. As well as the defensive strength of its fortifications, it was also a religious centre for Christianity from early times with the first Ecumenical Council (AD 325) and the seventh Ecumenical Council (AD 787) gathering here. In addition to its strategic location, it also benefitted from the surrounding fertile land. which has made the city of Iznik exceptionally important since is foundation.

> During the Byzantine period, Iznik became an important religious centre, particularly after Emperor Constantine was converted to Christianity in 313 AD. The first Christian Council, called the great Council of Nicaea, was held in Iznik in 325 AD with the participation more than three hundred bishops coming from different parts of the empire. The Seventh Ecumenical Council

[19] For more information about the Byzantine Theme: p.3.
[20] Bouras, 2002: 509; Bakirtzis, 2003: 40.

> was also convened in Nicaea in 787 to deal with the iconoclastic controversy on the use of icons.[21]

Its splendidly majestic double-row of fortification walls, with the inner wall higher than the outer wall, together with the temperate climate and the lake occupying a quarter of the area of the city constitute the first impressions of Iznik.

The presence of the city on the same site from ancient times up to the present is evident from Prehistoric finds, and the mounds and tumuli surrounding it. While the ancient geographer Strabo states that the city was founded by Antigonius Monophtalmos, one of the commanders of the Macedonian king Alexander the Great, Eyice (1988) from the conclusions of a field survey and his own research, notes that there was an ancient city called Helikare in the region before the migration of the Traks, and this city was Iznik. Strabo's (12.4.6.) description of Iznik in the available earliest source 'Geography' is as follows:[22]

> In the interior of Bithynia are, not only Bithynium, which is situated above Tieium and holds the territory round Salon, where is the best pasturage for cattle and whence comes the Salonian cheese, but also Nicaea, the metropolis of Bithynia, situated on the Askanian Lake, which is surrounded by a plain that is large and very fertile but not at all healthful in the summer.

The geographer (12.4.7.) also notes that "The city is sixteen stadia in circuit and is quadrangular in shape; it is situated in a plain, and has four gates; and its streets are cut at right angles, so that the four gates can be seen from one stone which is set up in the middle of the gymnasium."

The earliest date known for the fortifications of Iznik is the third century BC. Those walls, known to be different from the present ones, Strabo determined as approximately three kilometres length. The geographer also mentions a gymnasium building while describing Iznik during the Hellenistic period. He emphasizes that the fortification walls encircling the city on four sides had four main gates and these can be viewed from the centre of the gymnasium. Schneider (1938) stated that no remnants

[21] http://whc.unesco.org/en/tentativelists/5900/
[22] Jones, 1961.

of the Hellenistic fortifications by Strabo remained it was not known when these fortifications were abandoned, yet he thinks that their abandonment possibly occurred during the early period of the Roman Empire. He bases his theory on the fact that materials from Roman triumphal arches were used in the constructions of the Istanbul and Lefke Gates.

Iznik actually first became the capital city before the Christian era, when the Kingdom of Bithynia captured the city in the third century BC. Gold coins were produced for Iznik during this period and the city was named as a *'Golden City'*.[23] One of the turning points in the history of Iznik was the struggle between the Roman Empire and the Kingdom of Bithynia. Subsequently, it was incorporated into the Roman Empire and received the name Nicaea.

Although there is no information available in detail about Iznik during this period, it is known to have become a place of refuge in times of wars and troubles (it was to become a refuge again later in its history) during the period of Prusias II. After King Prusias II lost the battle against his son, he first took refuge in Iznik before being killed in 149 AD in Nicomedia (Modern Izmit) where he had fled after taking refuge in Iznik.

Nikomedes Eupator, the last king of Bithynia, left his kingdom to Rome in his will after his death. Nikomedia (Izmit) was the capital city of Bithynia, one of the Roman provinces. Iznik was always in competition with Nikomedia. With Nikomedia becoming more important during its period as the capital city and Iznik relegated to the second biggest city.

Şahin (2003) states that Pompeius, a state governor who reformed the governing bodies of cities in the Roman states in Anatolia, introduced the Boule24 System – similar to town council -to those cities including Iznik, and says that Iznik was one of the cities having the greatest extent of rural hinterland in Bithynia.

The earthquake in 123 AD must have damaged the city so severely that the Roman Empire ordered a new fortification wall to be constructed around the city.[25]Afterward,

[23] http://www.bursakulturturizm.gov.tr/ (last accessed 04.11.2016).
[24] Boule: An assembly forming part of city governments in Ancient Greek cities (Kadıoğlu, Görkay and Mitchell, 2011: 275)
[25] Schneider, 1938: 439

Iznik suffered from attacks by the Goth 258 AD.[26] The source of the spolia evident today was probably the Roman period fortifications that no longer exist. The grid plan scheme is one of the most significant pieces of evidence of the existence of Roman rule in the city (Figure 2-3).

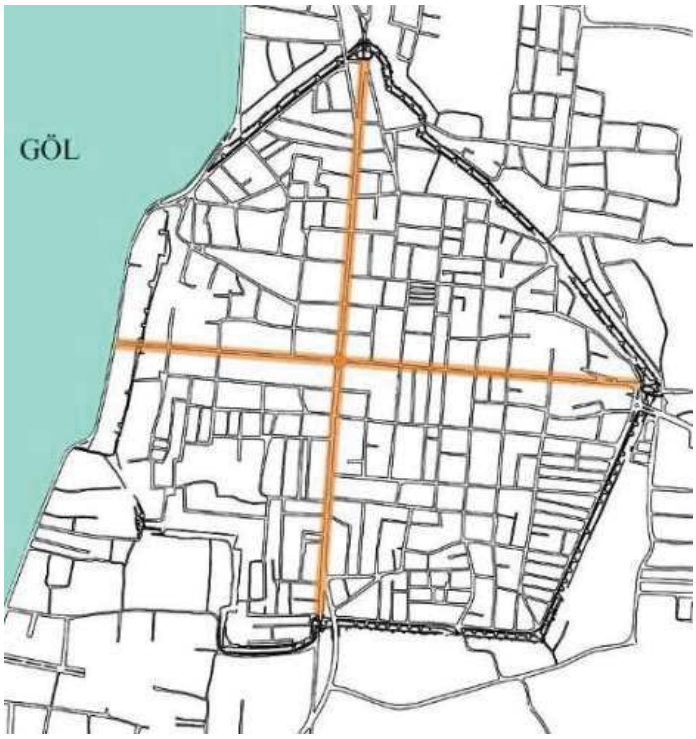

Figure 2-3: Present day Nicaea (Iznik) plan showing grid pattern (2015)[27]

The walls, having experienced the power of Rome, and the resolve of the Byzantines, carry traces from these periods as the most notable monument in the city. Some of the significant events and circumstances during the Byzantine period are related below;

In 325 AD, The Council of Nicaea (The First Ecumenical Council) formulated the Nicene Creed and declared Christianity the religion of the Empire. The first general council of the Christian Church was located in Nicaea with the city of Iznik becoming a religious centre due to the influence of The First Ecumenical Council. After the death of Theodosius I in 395 AD, the Empire split. Three hundred years later, in 717, the

[26] *Ibid.*
[27] The plan was drawn on the map obtained from Iznik Municipality (2015).

second Arab attack on Constantinople occurred. Due to its proximity, Iznik was also affected by each of the successive attacks on Istanbul. The Seventh Ecumenical Council met in 787 (Stathakopoulos, 2014) with the meeting being held in the church of Haghia Sophia (modern Haghia Sophia Museum in Iznik). When Iznik was the capital of Opsician Theme in the seventh century, it also had the status of an important military zone, defending Istanbul against attacks from the east. With the continuation of Arab attacks during the medieval period, Iznik undertook both the role of defence and as a centre for launching counter attacks, and thus became a bastion protecting the Empire. The work of Michael III (842-867), one of the important emperors regarding the Iznik fortifications, is mentioned in more details in the sections of this thesis where walls and towers are discussed.

With the establishment of the Latin Empire in Constantinople (1204) by the Crusaders during the 4th Crusade, the capital of the Byzantine Empire under the rule of Theodore I Lascaris moved to Iznik and the Empire of Nicaea (1204-1261) was established. The Empire which was established by the Lascarid Dynasty in Iznik led to significant cultural, social and economic progress in Iznik. The Lascarid Dynasty emperors of Nicaea were Theodore I Lascaris (1204-1222) the first emperor of Empire of Nicaea (1204-1261), John III Vatatzes (1222-1254), Theodore II Lascaris (1254-1258), John IV Lascaris (1258-1261).

2.1.2.1. Turkish Period in Iznik

Iznik, which was a Byzantine city until 1071, the Battle of Malazgirt (Manzikert), was conquered by Kutalmışoglu Süleyman Shah for strategic reasons during the period when the Seljuk Turks entered Anatolia in the same year. When the Turks overran Anatolia, Süleyman, the Mansur brothers from Kutalmışoğulları Beylik (principality) established their headquarters in Iznik in 1081. Iznik became, once more, a capital city for 16 years. However, although the city of Iznik was also important for Turks after the Byzantine Empire, the city was retaken by the Byzantine Empire once again. However, in 1331, it was lost to the Byzantine Empire for the second time. From then Turkish rule has continued up to the present. The Byzantine Empire was driven by power struggles, providing an opportunity for outside powers. For Turks, Iznik means

the establishment of the first Anatolian Seljuk Empire. It was declared to be the capital city of the Seljuk Empire in 1075. It was the first Turkish capital city in Anatolia, but it was incorporated into Byzantine lands again in 1097. The Ottomans reconquered the city in 1331 during the reign of the Ottoman Emperor Orhan Gazi. It has continued being a part of Turkish land since then.

With the Byzantine Empire weakened by economic, military and political problems, provided an opportunity for the troops led by Osman Gazi, which were was heading towards the east of Bithynia province, to take the city.[28] After Orhan Gazi had taken control of the city, he moved the centre of the Empire to Iznik (1331), which, previously in its history been the capital city of the Byzantine and the Seljuk Empires. After the Ottomans conquered Istanbul, Iznik started to lose its importance (1453). Due to the Greeks invasion (1920) there was significant damage to the monumental structures in Iznik and the city was abandoned by Muslims and Christians alike.

2.2. DESCRIPTION OF THE WALLS OF IZNIK

2.2.1. General Description

The city of Iznik, which was among the most important cities of the Byzantine Empire in Anatolia, became capital of the Empire of Nicaea for a while as a Byzantine successor after the invasion of Constantinople by the Roman Empire (1204-1261). During this period, Iznik became the alternative capital to Constantinople, which had been occupied by the Roman Empire. The city maintained possession of its defensive walls for years, in keeping with being the capital. These defensive fortifications, much of which survive today are still characterized by features of the original structures despite have suffered various interventions in different periods throughout their history. It is not possible to define Iznik without these fortifications surrounding the city, which, in their scale and quality, have made it a dream city beyond the reality (Foss and Winfield, 1986). Schneider (1938) gives the most exact date for the construction of the fortifications, and using the evidence of the metal coins

[28] For detailed information about the battle between Osman Gazi and the Byzantines, see: Inalcık, 2003.

(numismatics) of the period, interprets from the inscription[29]on the Yenişehir Gate that the construction of the fortifications was started during the Gallienus (260-8) period, continued under the reigns of the Macrinus and Quietus (260-1) and completed in the reign of Claudius Gothicus (268-9) (Figure 2-4). The scholar also adds that after this there is a gap in information about the city. According to Schneider (1938) it is not certain whether the standing fortifications are the same ones as the Late Roman fortifications or not. He continues by noting that the demolition date of these fortifications, if they were demolished, or who reconstructed the still standing fortifications, if they were reconstructed remains unknown.

Figure 2-4: The coin of Quietus showing the new fortifications of Iznik (Foss, 2003: 250, fig. 2)

The walls had interventions, repairs, some additions and reconstruction so as to be always able to fulfil their role in protecting the city continuously from ancient times until the Ottoman period. Therefore, while the fortification ensured the continued integrity of the city, they simultaneously underwent major changes. The city of Iznik has additional value beyond the architectural quality of the fortifications. These features are described by Foss (2003: 249). The scholar sees the city walls as a text written on a palimpsest summarizing the entire medieval period of the old city of Nicaea. Regarding the impact of different emperors on the fortification walls, another important approach that should be emphasized, Foss sees the city walls as monuments

[29] C.I.G. 374.8.

that have absorbed and preserved the hopes and aims of all emperors (Foss, 1996b). The walls had a 5 kilometre irregular polygon circumference completely encircling the city during the Roman period, with no need to extend the walls so far today. However, because the internal area inside the walls is not sufficient enough for housing the present population, an extension beyond the walls can be seen, with a significant amount of housing outside the walls (Figure 2-5).

Figure 2-5: Iznik in the early twentieth century (above), in 1975 (below left), in 2016 (below right)[30]

[30] Iznik in the early twentieth century (above) (courtesy of Kadir Balı); Iznik in 1975 (left): http://www.hgk.msb.gov.tr/hava-fotografi-arsiv-bilgi-sistemi; Iznik in 2016 (right): Google earth (last accessed 13.08.2016).

The surviving fortifications of Iznik have preserved their original from to a large extent. The gateways built with huge marble blocks and a large quantity of spolia on the four points of the two main road axes intersecting in the city centre still exist, in addition to the existing settlement; ensuring that the interior divisions follow a grid plan parallel to that two road axes in both directions. Today, there are two parallel walls, usually following each other in the same direction. The walls of Iznik here refer to the walls that are the inner fortification walls facing the city, which were built higher, thicker and stronger than the outer walls. The outer fortification walls were built much later than the inner circuit. The emperor John III Vatatzes (1222-1254), who made the biggest alterations in the walls, had the exterior walls encircling the interior walls constructed in order to protect the interior walls where they deviate from the exterior ones. Likewise, during the same period, John III Vatatzes also had the height of the interior walls increased. It is known that there was an increase of 2.5 meters in the height, giving them a better potential for firepower in resisting attack.

Again, with the raising of the height of the inner walls, the accumulated disadvantages of the raised ground level, which had occurred since the major rebuilding and restructuring in the ninth century were, eliminated (Foss, 2003). Following these changes, the image and appearance were altered, its importance had increased and it developed the characteristics of a big city. To describe the general aspects of the walls, there is a moat running parallel to the two fortifications. A new moat was built in the reign of John III Vatatzes in Iznik because the exterior fortification constructed in the thirteenth century was now outside of the old moat. When the plan of Iznik is studied closely, it can be seen that the towers of the exterior walls were placed to correspond to the towers of the interior walls. As a result of the changes over the years, and since the exterior walls have been more vulnerable to demolition, the towers vary in number. Semi-circular flanking towers provided defence, not only on the exterior walls, but also on the main inner walls in times of wars and trouble. This period is also the period when the inner walls were raised by 2.5 meters. There is neither an inscription on the walls nor information in written sources on when and by whom these changes were made. However, Foss (2003) notes that, Theodore II Lascaris (1254-1258), the son of Emperor John III Vatatzes, acceded to the throne in approximately 1250s, praised Nicaea in his speech to the court in the text where this information is found, and

remarks that while primarily speaking about the walls, Theodore II Lascaris mentioned their durability, size, being compatible, having high and strong towers and being built in the most competent way with the best material. In addition to this, it is clear that, in addition to their defensive role, the walls were also a defining features shaping the characteristics of the city. The structure, much devalued today, added different qualities to the city apart from defence. Foss (2003) thinks that the person mentioned in Theodore II Lascaris's speech was Emperor Vatatzes who had a large impact on the walls and added the exterior walls. Part of Theodore II Lascaris's speech is reproduced here:

> For instance, it (Nicaea) has gained the supreme rank from the almighty hand of God… and has received this strengthening of the walls and towers that it had before through the great deeds of the sublime Emperor, it doubles, its security, walled in with projecting towers and dressing its towers with battlements, adorned with beauty, and firmly fixed with stability. And so by uniting its single strength to that duality of strength from the Emperor – that celebrated vestment around it – it exceeds by far the cities famous of old in the World (Foss, 2003: 259).

As the consequence of the agreement between the Byzantine Emperor and the Mongols, a treaty was signed with the Ottomans led by Osman Bey and the walls were repaired, the height was raised, new small rooms were added in some towers, and the openings were covered. Foss (2003) notes that this intervention to the walls might have been the last repair work and that it was mainly in a rough stone masonry. Iznik surrendered because it was not able to resist a long-lasting siege, and it was incorporated into the Ottoman Empire on March 2, 1331, although there had been no substantial damage to the walls. On becoming an Ottoman city, its name, which had been used for the city since the Antiquity, was changed to 'Iznik' from Nicaea. When looking into the periods one by one, where information on the walls is given or where there are gaps, we see that:

The period of Emperor Zeno was a difficult period in the fifth century (474-491). Iznik has a significant role as it is close to the capital and performs as a 'castle city'. After this period, there are not any descriptions of Iznik walls for almost two hundred years.

No information can be found in the narrative sources, even about known events (Foss, 2003: 260).While the information on one of the important events of seventh century Persian raids and renovation works during the Justiniaus period are given, the situation of the walls is not mentioned.[31]

In the eighth century, Iznik suffered from direct attacks during the period when the Arabs were making their greatest attacks on Istanbul, since Iznik controlled the approaches to the capital and had a good defence system. Iznik subsequently became an ideal place of refuge for emperors who lost Constantinople in battles and again faced Arab assaults because of its role in sheltering the emperors. Another example is that of Artemius's. When Artemius (713-715) was the Emperor, he took refuge in Iznik in 715 when Theodosius III (715-717) besieged Istanbul. However, Foss (2003) adds that there is no information about the city for the period in which the attacks took place, and also adds that an important event took place on the walls 10 years later. The walls had been substantially damaged in attacks by Arab armies twice in the eighth century without managing, however, to take the city. Foss (2003) following the records of the monks, repeats the hypothesis that the situation which helped Iznik to resist its attackers was the images and depictions of the elders of the Church who came to Iznik for the Ecumenical Council I 325 AD. However, he assumes that the real reason for the successful resistance was the formidable nature of the 500-year-old walls. Meanwhile, he points out that in the documents mentioning the siege, the defenders are said to have used the catapults from the walls.

After these Arab attacks, one of the main interventions to the walls was the repairs around the Istanbul Gate during the reign of Leo III (717-741). In certain wall sections, both the walls and towers were covered with spolia of marble blocks which can still be observed today except for the parts that have collapsed. Between the towers T70 and T72 where this intervention occurred has added substantially to the fortification visually.

While speaking of the state of the city in the first century, the geographer Strabo, who is thought to have been the first to describe the city of Iznik, states that the city was surrounded by fortifications. The four gates could be seen from the axis of the two

[31] Foss, 2003.

main roads where the gymnasium was built in the same century as well, similar to the one mentioned at the beginning of the chapter and that the fortification was approximately three thousand metres long (Foss, 1996b).

Foss explains the inconsistency between the characteristics of the fortifications Strabo mentioned and the current fortifications, by stating that fortification wall described by Strabo spoke of completely disappeared except for the triumphal arches of Vespasian and Hadrian and these two form two of the current four gates (Foss, 1996b). The construction of the current fortifications is dated to the third century; a time when Western Anatolia was subject to the depredations of the Goths; so it is feasible that these attacks formed the stimulus for the sudden rush of construction. A great part of the fortifications built during the period of upheaval in Anatolia in the third century were constructed in a hurry with 1.50 m thick walls and were not as strong as the fortifications at Iznik (Foss, 2003: 251). The fortification of Iznik is massively stronger than, and more carefully thought out than many others of the same period. Carefully chosen spolia, brick rows that follow a similar pattern and appearance throughout the walls and the equally strongly built towers are significant characteristics of the Iznik fortifications.

Earthquakes have been important factors in the historical damage that has occurred to the fortifications of Iznik. The fourth century earthquakes, in 358,362 and 368 AD were devastating events. However, it seems that the earthquakes of 358 and 362 were less destructive since the walls were still an effective defence during the revolt of Procopius, a relative of Emperor Julian, in 365 AD. The earthquake of 368 AD is thought to have caused significant damage to the walls, though there is no documentary evidence to support this. Adatepe and Erel (2006) reach the conclusion from their studies of seventeen different earthquakes which affected Iznik between 2100 BC and 1900 AD that there are no traces of any massive earthquake in the Roman, Byzantine, Seljuk and Ottoman periods in Iznik. The study on dating of the deformation observed on the southern walls surrounding Iznik could not be realized because the precise date of the earthquake and the subsequent repair of the walls could not be determined (Figure 2-6). Taking into account all the evaluations, the city plan, which has not changed since the foundation of the city, the still surviving work of ancient times prove

clearly that there was no widespread devastation from any of the earthquakes appearing in the historic periods (Adatepe and Erel, 2006).

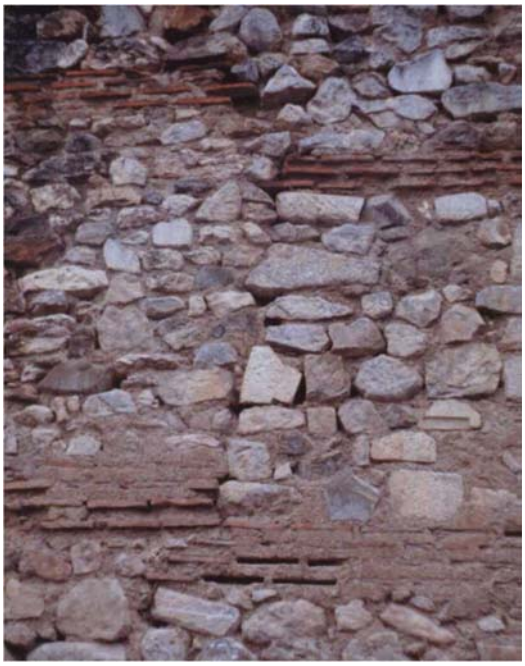

Figure 2-6: The southern facade of Iznik walls, traces of deformation (Adatepe and Arel, 2006)

Another series of historical events possibly linked to damage to the fortifications of Iznik are the Arab attacks. The greatest impact of these attacks was felt in the eighth century. We can state that these attacks severely harmed the walls which, as a result underwent major repairs for the first time in their history.

During the period of Leo III (717-741), extensive repair work was carried out in the area of the Istanbul Gate. Some towers (T70, T71, T72) along the western wing of the Istanbul Gate and the fortification wall constructed between these towers (W69-72)[32] show signs of different techniques from those that predominate throughout the rest of the fortification system. In the intervals between these walls and in the towers, the damaged parts were covered with spolia of marble blocks. Some of the most significant changes are the ones in the tower plans; these changed from a semi-circular to a square

[32] 'T70' means: Seventieth tower; and 'W(70-72)' means: the wall part that is located between T70 and T72.

plan there was a complete change in the nature of the masonry work both in the towers and the walls between them. Column shafts, column bases, and similar architectural elements can be seen in some places. For the column bases, Foss (2003) states that the column bases fulfilled the function of the courses of brickwork in the original wall technique.

Schneider (1938), after gathering information from many sources and confirming it, states that the earthquake in 368 AD caused severe damage in the city, but no information about the subsequent reconstruction of the fortification has been found. The lack of information on this matter continued until 727. The information on the repair related to the fortification is very clear from the mention of extensive repair work in the inscription dated 727 and belonging to the time of Leo III and Constantine V.[33] The first major repair occurred when Leo III (717-741) had walls and towers clad completely with spolia constructed after the Arab attacks.

The importance of Iznik grew when the Arabs overran Ankara and Amorium which were the two important castle cities of the Byzantine Empire under Emperor Michael III. Apart from being an important headquarter during the defence, Iznik was also a factor behind the commencement of Byzantine counter-attacks as the Arab power went into decline. One of the components of this increased power was the improvements in the fortification made by Michael III (842-867) (Foss and Winfield, 1986). At this time, the process of continual renewal and repair adopted some of the new ideas about improving the defensive capacity of fortifications observed in other cities of the period. These changes include increased wall heights, addition of the new towers, and improved defence strategy. When Ankara Castle is examined, similar interventions utilizing the same approaches can be detected. Although the fortification walls of İzmir no longer exist, İzmir Castle shows similar interventions.

As a comparison between these two important interventions, it is seen that the changes made under Michael III have more in common with their originals; while the changes made under Leo III were quite different from the originals. The south-western part of the fortification underwent serious interventions under both of these aforementioned emperors. The use of spolia, rubble stones, and large brickwork courses are among the

[33] For detail of the inscription please see T71 in the Towers part.

important changes observed. With these features, Foss (2003) concludes that this part of the fortification walls shares similarities with the remnants of fortifications at Istanbul and Ankara.

2.2.2. Building Techniques and Materials

In this part of this chapter, examining the information on Iznik fortifications obtained from the field study, will focus on the construction techniques and material usage. The gates, walls, and towers were all studied together so as to provide a more easily understood overview. However, because the gates, walls, and towers employed different construction techniques, they were later studied in separate groups according to their typology. Since the fortifications surround the city, the city could only be accessed through the gates using the roads located just by the gates. Even today, the ancient gateways are the first elements that welcome the people entering the city.[34] The towers studied after the gates have a different construction technique than the walls even though they are integrated with them. The towers are positioned on the walls towards the outside of the city; because the towers differ from the walls in terms of construction techniques, they were studied prior to the walls to make their connection with walls easier to understand. Today, there are two lines of fortifications. Both of the fortifications are well preserved due to the construction technique difference between two fortifications together with the greater height of the main fortification's (inner circuit).[35] Stone and brick are used in alternating bands on the walls of the inner circuit (Map 3). The walls are classified according to the existence of spolia and the changes in the quantity of brick and stone courses (Tables 3-A, 3-B). Because the spolia used in conjunction with alternating courses of brick and stone is mostly found in the lower parts of the walls and towers, they are located behind the inner circuit and cannot be seen from the outside of the city. The outer and inner surfaces of both the inner and outer circuits are studied separately, making it possible

[34] Because Göl gate and the walls around it do not exist today, there is not an entrance through a gate here. But while entering the city from the lakeside, there is a road where the gate used to be, therefore the entrance is again at the same location.

[35] The main fortifications (inner circuit) will be cited as the Iznik fortifications in the following text. A secondary fortification located outside of the inner circuit will be referred to as the outer circuit.

to examine the spolia used on the inner surface. The Cloisonné technique was used as a construction technique both on walls of the inner circuit and the outer circuit (Map 3). In addition to the outer circuit, variations of cloisonné technique can be seen around the Istanbul, Lefke, and Yenişehir gates. The cloisonné technique, which is used more elaborately on the gates, varies with different quantities of brick rows. The field study started with Yenişehir gate providing entrance to the city from the south. Lefke gate, which is located in the eastern part of the fortifications, Istanbul gate located in the north and Göl gate, which does not exist today, in the west followed in order and the gates, towers, and walls (first inner circuit, then outer circuit) were studied subsequently. To identify individual towers, the tower to the east of the Yenişehir gate was taken as the first tower, and named as T1. Using the same system, starting from the same tower, the wall section in between the first and second towers is termed W (1-2) as an abbreviation.

2.2.2.1. Gates

The two main streets of the city, Atatürk Street running in the north-south direction and Kılıçaslan Street in the east-west direction intersect almost at the exact centre of Iznik; where the church of Hagia Sophia still stands (today's Ayasofya Museum) at this intersection (Figure 2-2). Today, the positions of the four gates at the end of these roads are still visible when looked at from this point as in the case of the Gymnasium mentioned by Strabo while describing the city. Although the growth of housing over the years hinders the sight of the gates, these two directions lead exactly to these gates (Figure 2-2). Three of the main gates have survived up to the present. Twelve side (secondary) gates are mentioned in the sources, but only one of them exists today. In studying the gates here, the Yenişehir Gate was taken as the starting point as in the case of the fortification walls. The eastern gate, the Lefke Gate and the northern gate, the Istanbul Gate will be studied moving counter-clockwise. The Göl Gate in the east no longer exists today, but the only surviving side gate, the South Göl Gate, will be studied at the end of this section (Table 1).

On the triumphal arches of the Roman period, to be seen in the Istanbul and Lefke Gates, there is an inscription dedicated to the emperors by Varius Plancus, the

governor in 78-79 AD (Schneider, 1938; Foss, 2003) (Figure: 2-7/8). These two gates probably determined the original boundaries of the city, which have expanded today. It has not been ascertained whether these arched gates were attached to the fortification walls right at the beginning, but there is no possibility of their being attached to them anyway if we accept the hypothesis claiming that this wall line was not constructed until the period of Hadrian when Iznik was reconstructed after the earthquake in 123 AD.[36]

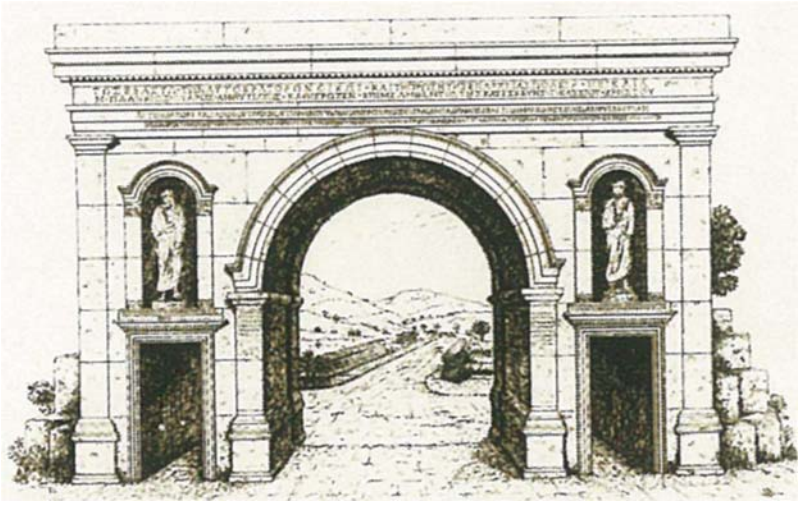

Figure 2-7: The Gate of the Lefke: the reconstruction of the gate from the Roman period (Şahin, 2003)

[36] Schneider, 1938: 249.

Figure 2-8: Lefke gate and the inscription on Lefke gate as seen in 2008 (URL 1)

The weakest parts of the fortifications are the gates. The other surviving three main gates, except for the Göl Gate, were planned with multiple passages (Figure 2-9/c, 2-10, 2-11/a). On either side of each gate along the fortification line there is a circular bastion, built high to improve the defence. Foss (2003: 251) states that these gates, constructed particularly with spolia blocks, were converted from the triumphal arches of the Roman period.[37] These arches had to be the strong points. This double-stage defensive device was planned to block an enemy force that had managed to penetrate the outer gate in a closed courtyard.[38] A similar kind of defence strategy was developed in the oval-shaped courtyard of the Istanbul Gate and square courtyards of the Yenişehir and the Lefke Gates; this strategic plan persisted until the thirteenth century.

There is an elaborately built fifth gate which is less impressive than the three main gates. This gate, called the South Göl Gate (South Lake Gate), situated between the Göl and Yenişehir Gates, lies between the T92 and the T93, in the southwest part of the fortification. Foss (2003: 251) states that there was originally a ditch inside the fortification walls facing to the lake, but there is no trace of it today.

[37] İdil, 1989.
[38] Foss, 2003.

Yenişehir Gate: Some of the most attractive aspects of the Iznik fortifications are the gates constructed with ashlar blocks in the Roman period (c. first century AD). The Yenişehir Gate, situated in the south of the fortification, consists of three parts (Figure 2-9/c). The first gate providing entrance to the city is linked to the outer fortification (Figure 2-9/a). The gateway in between was completely constructed of stone masonry with marble blocks of spolia. It was one of the triumphal arches built in the period when the fortifications were first constructed by the Romans (Figure 2-9/b). While the fortification continues with T1 on its eastern side, on the western side, there is nothing to be seen because of the demolition of the original structures. The gate as a whole is not well preserved with large numbers of damaged spolia blocks lying around it (Figure 2-10). The innermost gate is reached to by crossing the square-shaped courtyard, but we can understand that parts of the structure collapsed after 1938 from the absence of the third stage and the demolition of two of the facades of the square courtyard (Figure 2-9/c). The most splendid spolia were used in the construction of the gates.

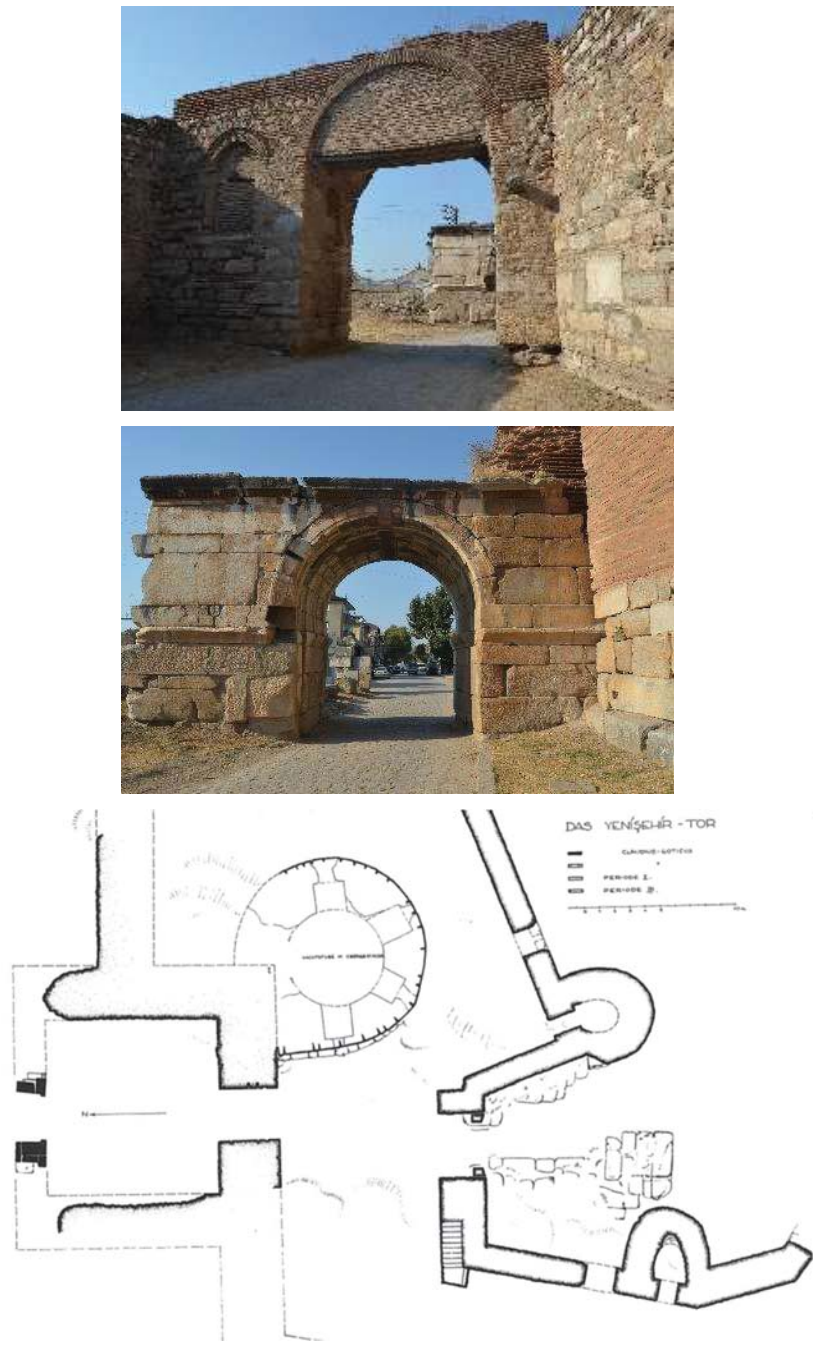

Figure 2-9: a: The first stage of Yenişehir Gate (above left), **b:** The second stage of Yenişehir gate (above right) (author, September 2015), **c:** The plan of Yenişehir Gate (below) (Schneider and Karnapp, 1938)

Figure 2-10: Yenişehir gate as seen from the outside (left above and below) and inside (right above) (courtesy of Kadir Balı)

Lefke Gate: The gate, situated on the east of the city, is referred to as the Suriye (Syria) Gate in some sources.[39] The Lefke Gate and the Istanbul Gate contain plenty of spolia, as in the case of other gates. For these two gates, in addition to the spolia, reliefs are also mentioned in travellers' notes. Some reliefs can still be seen in their original places (Figure 2-11). Many travellers drew the reliefs in details. It was not possible to take photographs of the Lefke gate during the field survey of Iznik due to ongoing restoration works around the area. That is why photos taken in 2008 by Sinan Doğan are used to show this gate (Figure 2-12).

[39] Eyice, 1965.

Figure 2-11: Lefke gate from aerial (left) (courtesy of Kadir Balı), spolia and reliefs on the Lefke gate (right) (author, September 2015)

Figure 2-12: Lefke Gate-inner and outer façade (URL 2)

Istanbul Gate: The Istanbul Gate, one of the two gates that most interested travellers, is at the end of the road connecting the city to Istanbul and it is situated in the north. One of the reasons why it was built so magnificently could be that it was the entrance generally used by people arriving from Istanbul (Figure 2-14). Travellers remarked both on the presence of carefully chosen spolia, and that there were reliefs (Ermiş, 2014). Peyssonel, who visited both Izmit and Iznik in 1745, stated that there were these reliefs, but the figures on them were damaged.[40] In the part of the first stage of the gate from the inner to the outer, there are carvings of masks brought from the theatre (Figure 2-13).

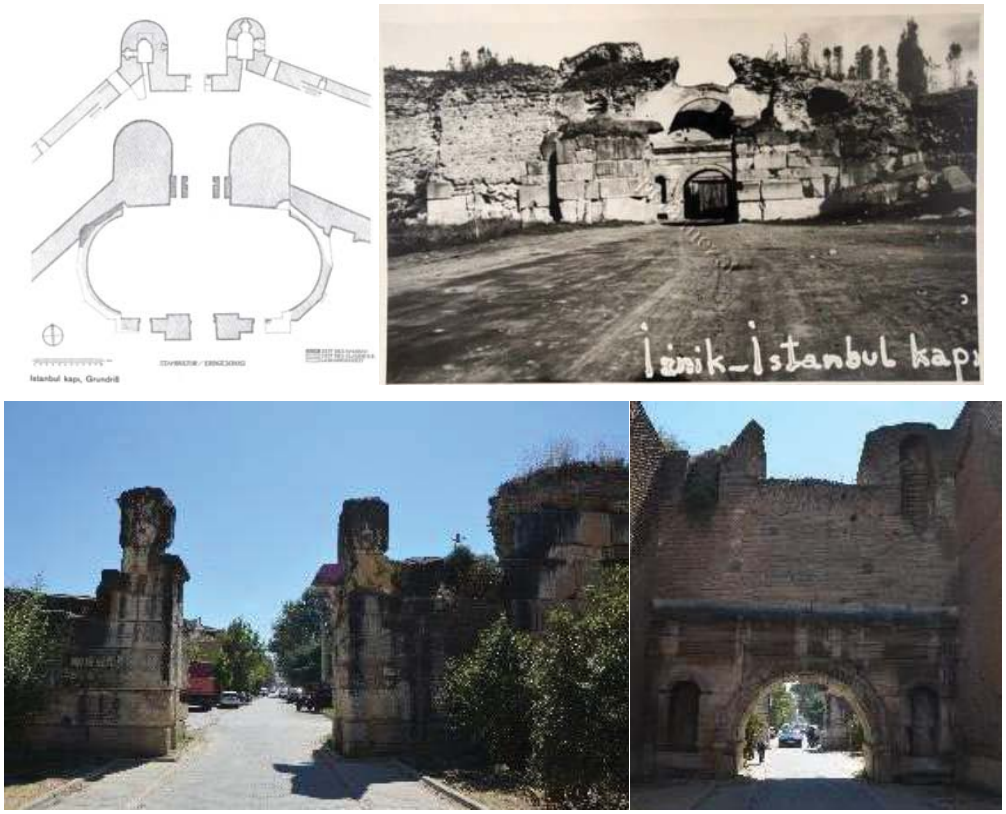

Figure 2-13:a: The plan of Istanbul gate (above left) (Schneider and Karnapp,1938), b: Istanbul gate from inside (above right) (courtesy of Kadir Balı), c: The first stage of Istanbul gate with theatrical mask (below left), d: The second stage of Istanbul gate (below, centre), e: The third stage of Istanbul gate (below right), (c,d,e: author, September 2015).

[40] Ulugün, 2005.

Figure 2- 14: Istanbul gate from the inside of the city (author, 2015 September)

Göl Gate: This gate, facing west, is the main gate of Iznik that faces only onto the lake; it is named after the lake. Sources from travellers provide written information about the Göl Gate, there are, however, no existing drawings of it. Ermiş (2014: 213) states that the traveller Covel, who came to Iznik in 1675, mentioned the gate as the Yalı (waterside) or the Göl (lake) Gate without making any drawings of it, and said it was just built of brick, and comprised a plain arch without decoration. While describing the gate in 1735, Pococke mentions one circular bastion and one octagonal bastion flanking the gate. Today, the tower (bastion), on one side of the point which is thought to be where the gate was, has been completely demolished. On the other side of the gate, there is a ruined circular tower, half of which still is still standing today (Figure 2-15).

Figure 2-15: Tower near Göl Gate (author, September 2015)

2.2.2.2. Towers

The construction techniques and materials featuring in the towers will now be described and the towers examined in detail regarding the known construction dates of the towers and/or the intervention periods in this section (Map 6).

The entrance to Iznik from Bursa is through the Yenişehir Gate. This gate is approximately in the middle of the southern side of the fortification. The tower located on the east side of the Yenişehir Gate is the first tower and will be referred to as T1.

Naming continues anticlockwise after T1, and concludes with T114 as T115 does not exist anymore according to Schneider's numeration. This is the numbering system used during the site survey for this thesis. This is important as it follows the pattern and numbering of previous studies (Figure 2-16).[41]

Figure 2-16: Tower 1 and its relation with Yenişehir Gate (author, September 2015)

[41] See Schneider, 1938; Foss and Winfield, 1986 for further information about the numbering of the towers and walls.

The 5 km of fortification walls were built to a height of 9 m during the period of the city's greatest expansion, but the height of the towers reached up to 13 m, with the period of the Roman Empire seeing the construction of 80 such towers at Iznik.[42] Subsequently, more towers were added as succeeding regimes identified weaknesses in the fortifications. In Schneider's (1938) map, T114 appears as the last one; however, the present number of existing towers is less due to demolition. The exact number of the surviving towers is not known since the parts of the area could not be studied during the site survey because they are surrounded by fields and orchards on both sides.

The measurements performed at certain points to ascertain the distance between towers revealed that this varies from 60 to 80 m today. Foss (2003) mentions the brick bands in the towers going right into the inner parts of the structure as in the case of the walls; something that can still be seen. Schneider (1938) and Foss and Winfield (1986) measured the intervals between the towers at 60 -70m, but provide no information about their height. While Schneider (1938) gives the width of the towers at 9 m; Foss and Winfield (1986) states that the 8-9 m wide semi-circular towers go through to the inside of the walls. The towers were strongly connected to the walls; however, their construction technique is very different. In any case, the use of alternating courses of brick and stone, the general construction technique in the walls, appears only in a few of the towers (Table 2). The dominant material in the towers is brick (Figure 2-16). Thus, the variations of brickwork masonry described in the scope of this study are valid mainly for towers.

The towers are the integral elements of the wall in between, they are semi-circular in plan form, 8-9m in diameter, higher than the walls, and protrude from the outer surface of the fortifications.[43] The inner parts of the towers, constructed on a base of spolia were filled with rubble stonework and mortar. The towers were sometimes built with completely in either brick or blocks of spolia but were sometimes built with alternating courses of brick and stone (Table 2). Apart from the spolia on the ground level of the towers, it also appears frequently elsewhere in the structure (Figure 2-17) (Table 2, 6).

[42] Foss, 2003: 250.
[43] Except the ones added later and constructed with a square plan completely out of spolia stone material.

Figure 2-17: Spolia in the upper chambers of Tower 66 (author, September 2015)

Although we did not have any opportunity to take aerial images of the towers; the descriptions of Foss (2003) for the upper parts of the towers can be observed occasionally from ground level. Foss, states that although many of the original upper parts disappeared during subsequent reconstructions, they had windowless chambers with for storage that were accessible through the pavements of the top parts of the fortification, adding that there are flat roofs on the highest points to accommodate catapults and similar defence weapons (Foss, 2003) (Figure: 2-18).

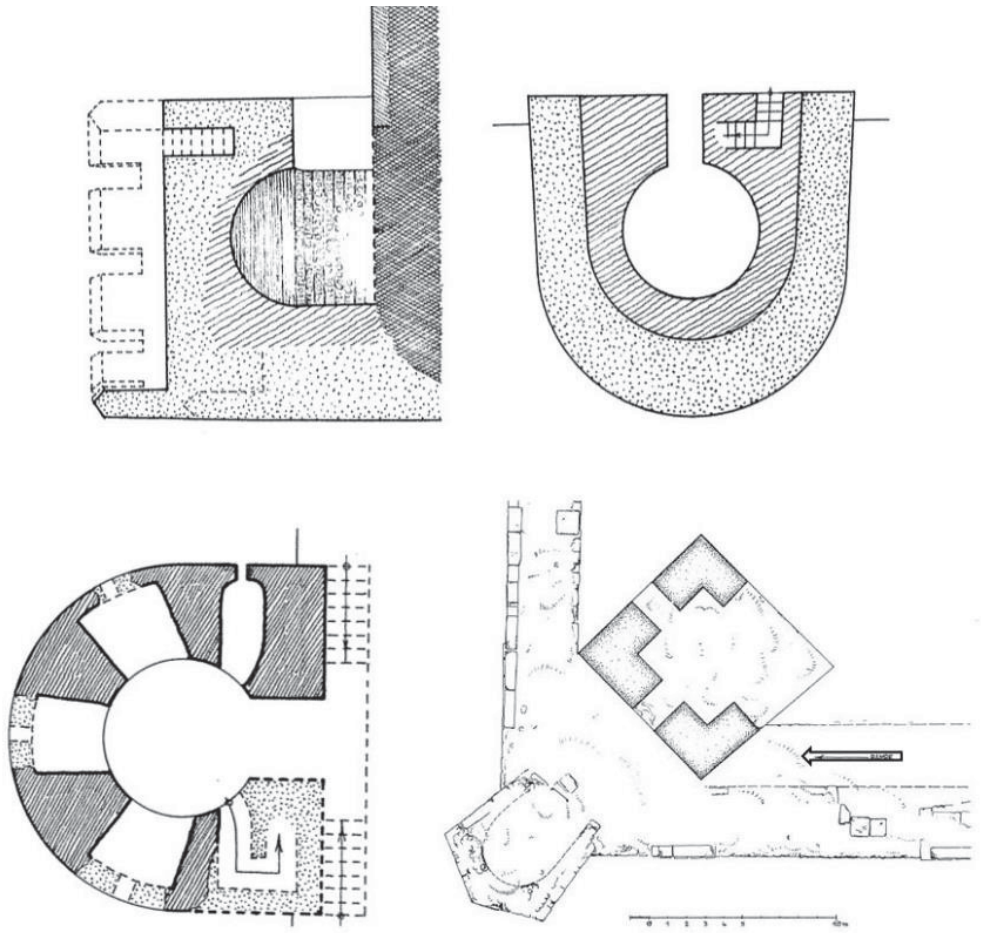

Figure 2-18: Chamber without upper windows (above) and chamber with upper windows (below) (Schneider and Karnapp, 1938)

All of the towers, except the few ones that were inaccessible, were examined in the course of the site survey. Some towers providing crucial information on the construction technique or architectural features have been chosen as examples, and explanations made on the basis of Foss as a source (2003) by taking the construction technique and materials, the construction dates, interventions and their dates into consideration.

T1 (Tower 1) comprises the starting point of the fortification walls for survey purposes and is located to the east of the Yenişehir Gate. The western tower, originally located opposite this tower has been demolished. These two towers sitting on either side of the gate are referred to as 'bastions' in some sources. There are four openings

approximately on the same level in the upper parts of this tower that forms part of the Yenişehir Gate with a base of 4-5 layers of spolia succeeded by brickwork extending to the highest point. Two of these openings are as big as a window opening, whereas the other two are only loopholes. The current tower is not in its original form and has undergone reconstruction (Foss and Winfield, 1986). This reconstructed tower has had some recent interventions. During the site survey in September 2015, the mortar that had been applied around the two larger openings in the upper part of the tower, assessed as incompatible with the original without having the benefit of laboratory analysis, as it was impossible to get samples from the top, the mortar, from its appearance, was presumed to be cement-based mortar.

Foss and Winfield (1986) define T1, and the successive towers with even numbers up to T20 altogether as being in the following: they belong to the [A1][44] group that includes towers built totally in brick and as integral with the walls as they share the same constructional technique of alternating rows of brickwork (Map 8).

They show no evidence of becoming detached from the walls or of collapse which are observed in the other types of towers. At present, T2 and T12 do not exist anymore and T10 has been legally demolished, ruling out any relevant comment on them. However, the brick masonry starts right from the ground level without having any stonework in the foundations of the even-numbered towers that have survived up to the present and provide information about their systems used to construct their foundations. Foss and Winfield (1986) state that these towers underwent considerable changes due to later repairs. It is clear that these towers have preserved their authenticity to a large extent despite all these changes. While spolia constitutes foundations for the odd-numbered towers, the use of brick for the entire structure of the even-numbered towers creates a very important difference. This difference lies primarily in the different date of the constructions of these towers. Obviously, also noted by Foss (2003), the towers added later were not organically connected to the walls themselves. It should also be noted that the ground level rose throughout the centuries (Figure 2-29). However, this difference makes the difference between the old and new tower construction clearly evident. The odd-numbered towers between the

[44] Foss and Winfield, 1986: 118-120.

even-numbered ones are the towers that were added during the period of Michael III (842-867) and the most evident difference is the spolia used in the foundation. The towers that are later additions share another characteristic in having embrasures[45] and/or loopholes. One of the interventions in this wall. known to be significant, belongs to the period of Theodore II Lascaris (1254-1258). Foss states that T7, T9, and T16 were reconstructed during this period and says that T15 is most probably a reconstruction belonging to the same period.[46] When compared with the other towers, the T20, has the greatest diameter stands at the end of this section of wall. It is located approximately in the midpoint between the Yenişehir and the Lefke Gate. One of the reasons of its large dimensions could be due to the added covering of masonry facing added in the intervention during the period of the Emperor John III Vatatzes (1222-1254) (Figure 2-19).

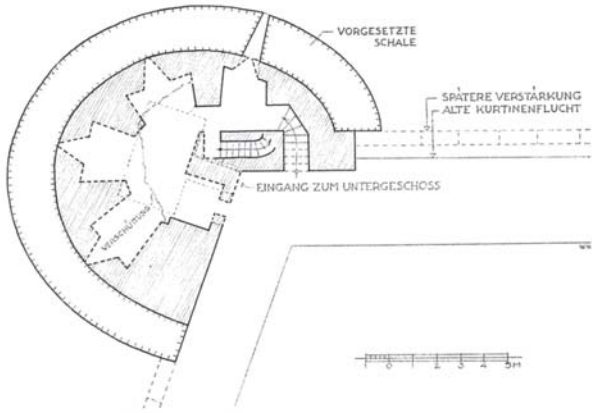

Figure 2-19: The plan of Tower 20 (Schneider and Karnapp, 1938)

T9: Part of the 9th tower comprises work done under Michael III (842-867) and it is, in fact, a part of the first significant change occurring in efforts to reinforce the defence system (Foss, 2003). Because of the infrequency of the towers facing the south and located on the eastern wing of the Yenişehir Gate, in particular, the new towers were added in between and the strength of the defences improved. While the observed

[45] Embrasures are the openings on the fortifications used for firing arrows and attacking men assaulting the walls. Their shape is wider on the inside of the fortifications and narrower on the outer facade.
[46] Foss and Winfield, 1986: 110.

interventions were generally repair and maintenance, floor additions, increasing the height, etc., here new towers were added to improve the strength of this area. It is almost impossible to distinguish the newly added towers from the older ones even today since they were built in a very similar way to the originals. The features such as semi-circular plan, brick facing, same height and width and bases constructed generally with spolia are observed in both the new and the old towers. T9 is different from the other towers because the amount of the spolia used in its base is more abundant than in the others (Figure 2-20).

Figure 2-20: Tower 9 (Foss, 2003: 253, fig. 9)

T19: It is one of the important towers providing historical information. Theodore I Lascaris (1204-1222) settled in Iznik in 1206 and improved the city. Two unusual towers, still observable today, with a square-like rectangular plan built at two different points on the south were constructed under his reign. These two towers are T19 and T106 (Figure 2-21, 2-22). Foss (2003) points out that these two towers were built in the same period. The tops of both towers are entirely brick and there are signs of crosses, friezes, inscriptions with the names of the emperors alongside the loopholes. Another similarity seen in both towers is the presence of the loopholes with chamfers (wider towards the inside of the room) in the upper chambers. These loopholes were designed in a pattern which enabled firing in four directions. A higher level of spolia lower courses than generally seen can be seen. These two towers located widely apart share many similarities and differ substantially from the original towers. Foss (2003) notes that the western tower (T106), which he thinks was named as 'Tower of Babel'

because of its height, was built to replace the tower that is mentioned as the 'Kneeling Tower' in older sources.

Figure 2-21: Tower 19, at southeast corner of fortification (left: Foss, 2003; middle: courtesy of Kadir Balı; right: author, September 2015)

Figure 2-22: Tower 106 the southernmost corner of the walls (left: Foss, 2003); (right: author, September 2015)

T37: The 'recessed brick' technique observed in this tower points to the period when the construction technique of the towers changed.[47] The fortifications suffered severe

[47] This technique has been examined under the heading 'terminology'.

damage in the earthquake in 1065, and this technique is more frequently seen on the eastern side (Figure 2-23) (Map 9).[48]

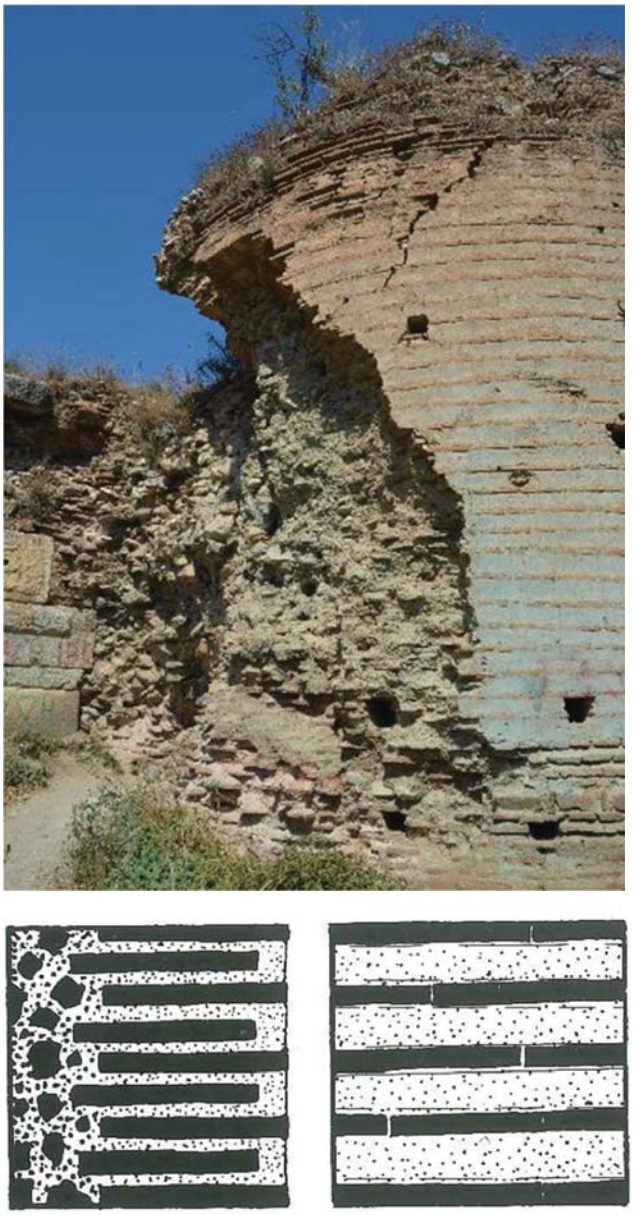

Figure 2-23: Tower 37, with repairs (on left) using wide bands of mortar, made after the earthquake of 1065, original third century masonry on right (author, September 2015); Diagram of the recessed brick technique-wall section and elevation detail (Ousterhout, 1999: 174)

[48] Foss, 2003.

T50: The originally third century structure gave way to this thirteenth century renovated tower. Each of the towers that were located at a distance of 70-80 m away from each other were tightly connected to the main body of the fortification in the first phase. In fact, the brick rows in the towers continue towards the inner parts of the main building. However, as it can be seen in this example, the most frequently observed problem encountered by the builders of the subsequently added towers was their lack of integrity with the main building (Figure 2-24). For this matter, Foss (2003) notes that the design of the towers changed depending on the ground level rise over time and the new towers were not in organic connection in integrity with the fortifications themselves. Although these non-integrated towers negatively affect the connection with the fortifications, in reality this constituted a safety feature since if the tower was undermined and weakened, its potential collapse would not affect the main structure of the fortifications. Storage rooms without windows that would be expected to appear on the upper parts of the tower and flat roofs to locate the defence equipment have disappeared in many towers.

Figure 2-24: Tower 50, original third century construction (Foss, 2003: 251, fig. 4)

T66: The towers that were not semi-circular, and were added later, had new features such as a flat roof for heavy equipment, loopholes that enabled the soldiers to fire for defence from the lower levels as well, windows that facilitated firing from the upper levels and larger rooms than the usual (Foss, 2003) (Figure 2-25).

Figure 2-25: Superstructure of T66, showing the chamber with spolia (author, September 2015)

T71: This tower is known to have been renewed during the Arab attacks in 727. However, there is no information about its original state. Together with this attack, the fortifications underwent major changes for the first time. These fortifications were completely rebuilt using spolia marble material removed from demolished or abandoned buildings; indicating that they belong to different periods (Figure 2-26).

Figure 2-26: Tower 71, built after the Arab attacks of 727, left (Foss, 2003) centre and right (author, September 2015)

This repair is part of the work carried out around the Istanbul Gate under Leo III (717-741). The inscription written for these repairs is on the inner part of the tower, and it is still in situ (Figure 2-27). This inscription is the first source mention repairs to the fortifications: “There, where the insolence of the enemy was shamed by divine help, our Christ loving emperors Leo and Constantine restored the city of Nicaea, raising it by this manifestation of their work and erecting the victorious centenarian tower which the praiseworthy patrician, the curopalates Artavasdos, brought to completion by his zeal.” (Foss, 2003). For the ‘centenarian tower’ mentioned, Foss (2003) states the reason for calling the tower like this is a reference to either the century or the hundred soldiers assigned to the duty of the defence of the tower.

Figure 2-27: Inscription on Tower 71 (author, September 2015)

T79: Except for this tower, it is known that all the towers on the lake side were reconstructed in later periods.[49] The upper structures of T83, W (78-80) and T76 have been dated back to the Comneni period (1081-1185).

T88: For the tower dating back to the late thirteenth century, Foss (2003) notes that it has elaborate brickwork and was most probably built under Andronicus II (1282-

[49] Foss and Winfield, 1986.

1328). Theodore Metochites praises Iznik fortifications under Andronicus II (1282-1338) as follows:[50]

> But what is her own proper crown and first unshakable boundary of her prosperity – who would not be astounded to look upon these walls which draw so much confidence from their construction that the effort of every kind of siege engine against them is no use, but a wholly vain spending of time on the impossible?...But she (Nicaea) relies on herself and her external circuits, so finely constructed that it is at once a pleasure and a marvel to behold their undeceived foresight strength of the whole construction from the arrangement of its materials and such are the towers in it: they strive upward, trusting in their foundations; they stand forward from the continuous line of defense, and met the enemy as champions unwearied and unmoved... So generous is the city that it also places another circuit a little in front of the first; this by itself might have been enough for other towns, taking some difficult ground as an ally… but even in front sight and treasures up for those who unexpectedly fall in.

The repairs that Andronicus II carried out using fine brickwork on the lake shore side of the walls can still be seen. The use of alternating courses of brick and stonework is a technique that is mostly seen in the walls between two towers; however, it is seen in some of the towers on the lakeside, as well. In this tower, construction technique is with alternating courses of brick and stone including spolia (Figure 2-28).

[50] Previously quoted by Foss, 1996b: 175.

Figure 2-28: Tower 88 (author, September 2015)

T97: This tower shows the interventions the walls underwent layer by layer. Foss (2003) dates the coexistence of spolia and brick in the lower part to the ninth century and the brick work above these to the early thirteenth century (Figure 2-29). He assumes that the loophole on the facade is original and this interval belongs to the period of John III Vatatzes (1205).

Figure 2-29: Tower 97 (Foss, 2003)

T106: This tower was built during the strengthening of the fortifications under Theodore I Lascaris (1204-1222), and both the brick and spolia blocks are dominant in its construction. The top part is entirely made of plain brick and shows regular beam holes. The cloisonné technique[51] was used in the lower part. There are two or three rows of brick banding courses approximately in the middle of the spolia section in the lower part that was built higher than the foundations with ordinary blocks of spolia (Figure 2-30).

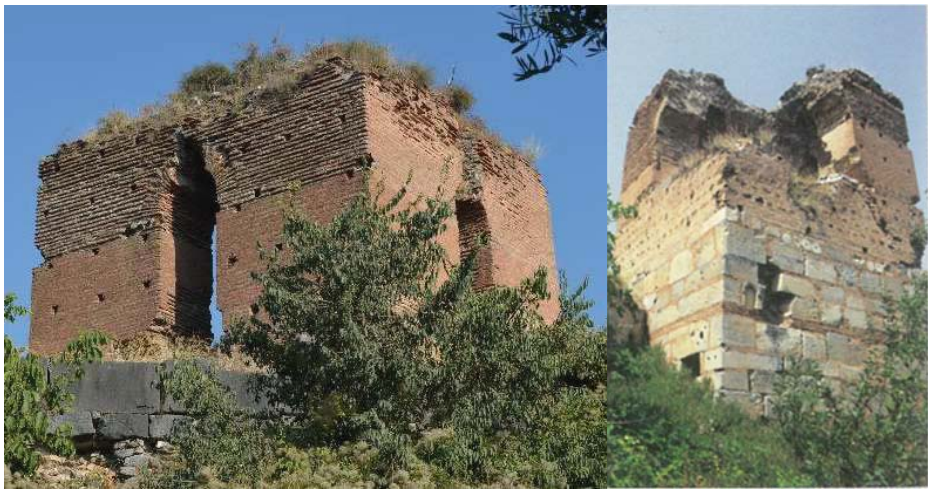

Figure 2-30: Tower 106, inner view, showing the large defense chamber at top (left: author, September 2015); (right: Foss, 2003)

T106b: The two towers that are located at the far south of the fortification were built side by side, and one of them was faced completely with spolia of marble blocks. This tower, mentioned as a 'castle bastion' in some sources, is coded as T106b because it was a later addition to the front of T106 in the area where the outer fortification wall stood. The fortifications make a turn of ninety degrees towards the Yenişehir Gate from this point. The tower was built to replace an older tower known as the 'kneeling down tower' in the sources. Foss (2003) states that it had recessed brick technique in contrast to its totally marble appearance today. This tower, being further out, is lower than the other and it is pentagonal in shape. According to Peyssonel (1745), this tower,

[51] Cloisonné technique is a decorative technique in which small stone blocks are framed by bricks placed vertically and horizontally in single or double courses.

although later built with spolia, like the others, differs from them because it was built using grave stones that were considered to be important monuments of the Seljuk period.[52] Foss (2003) speculates that these stones brought for this tower and added by Alexius I after the first Crusade, belong to a graveyard on the southern side of the fortification walls. For the inscriptions providing information about the history of the earliest Turkish Anatolia, Foss (2003) informs that they are the only epigraphic records of the Sultanate of Iznik (Figure 2-31).

Figure 2-31: Tower 106b (left above: Foss, 2003)(below: author, September 2015), Seljuk tombstones incorporated into Tower 106b (right above: Foss, 2003)

[52] Ulugün, 2005.

As Foss and Winfield (1986) state, the different thickness of the bricks used in the construction of the new towers, mostly seen on the east and south east of the fortification, and the way they are placed demonstrate the differences from the older towers. If we look at the other differences observed in the new towers, particularly their lack of bonding to the original wall, not providing an access for pedestrians and their foundations consisting of spolia are the first features that strike the eye. Foss, who also mentions other differences seen in these new towers, explains that these towers were built 2 m higher than the original ones and he adds that dust and dirt gathered in these towers and that this alteration raised the previous ground level and also indicated great changes in the defensive thinking. With the help of these features, it becomes easy to distinguish the towers added later from the ones built in the earlier periods (Foss and Winfield, 1986).

2.2.2.3. Walls [53]

With a pressing necessity to protect the city, the Roman Empire had a 5-km-long fortification surrounding the whole city built in third century AD. The fortification walls studied in this part of the thesis, is the sections of wall that stand outside the towers of the main fortification built in the Roman period.[54]In this section, the words 'fortification' and 'walls' refer to the inner fortification and its walls which were all built together in the first building phase. This original fortification surrounded the whole city and its completeness was one of the factors that enabled it to provide protection to the city throughout centuries. The fortification walls were built to a height of 9 m and the towers were built higher than that. Schneider's (1938: 438) description of the walls and the towers follows;

> The curtains 3.6 m. thick by 9 m. high, rest generally on a socle of the stone which often bears Roman inscriptions. The towers, which are semi-circular and

[53] The English word 'wall' is derived from the Latin, '*vallus*' meaning 'a stake' or 'post' and designated the wood-stake and earth palisade which formed the outer edge of a fortification. The palisades were in use early on and are mentioned by Homer in the eighth century BC and later by the Greek historian Polybius (c 200-118 BC) and the Chinese historian Sima Qian (145-86 BC) among others. Walls have traditionally been built for defence, privacy, and to protect the people of a certain region from the influence or perceived danger posed by outsiders. http://www.ancient.eu/wall/ by Joshua J. Mark

[54] The outer fortification was built later in thirteenth century under John III Vatatzes (1222-1254). This will be examined in detail in the section 'Outer Fortification'.

9 m. in breadth, are placed at a distance of about 60-70 m. Apart, and are built into the wall; but their outer casing, unlike that of the wall, consists entirely of brickwork.

The thickness and height in the description are very similar to the dimensions of the surviving walls. However, due to demolition and natural collapses, both to the top and outer surface of the wall, the height, and the thickness has not been preserved in all parts, but we can still observe the construction technique with spolia. A more detailed study is needed in order to understand whether these inscriptions on the foundation stones from the Roman times that follow a sequence still exist or not (Figure 2-32).

Figure 2-32: An inscription on the foundation stone (author, September 2015)

When the features of the curtain wall between two towers are examined, they contain bands of brick and stone and constructed with the alternating rows of brickwork and masonry. It is seen in a section of the wall that the walls are generally 4-metres wide. Even though both of the stone and brick rows are visible on the outer surfaces, only the brick rows, which are flat and generally rectangular, go through the entire thickness. Where the facing is stone, the interior is usually a mixture of mortar and rubble stone (Figure 2-33) (Tables 3-A, 3-B).

Figure 2-33: Section of the wall (author, September 2015)

The bricks used in the construction of the walls add strength to the structure. The fact that the height of the walls changed in time and the work techniques used in the interventions did not match with the original walls appears true when the walls mentioned in the sources are compared with the walls today. In addition, even if there are examples of walls that have preserved their original height as they were first built, after deliberate demolition and natural dilapidation, these are very few in number. It is not precisely certain in which part of the fortification there are examples still preserving their original height. Schneider and Karnapp (1938) included the restitution drawings in their studies, which are known to be the oldest study on the fortifications (Figure 2-34). Foss (2003: 250) mentions crenulated wall walks in his description of the walls, but no continuity of any wall walks with loopholes on the highest parts of the fortification has been confirmed. The sources mention the existence of crenulated shields, which are a military feature, and 1,05-1,35-metre-wide stairs to reach those shields; however, there is no trace at present that proves there were stairs (Schneider and Karnapp, 1938: 19) (Figure 2-34).

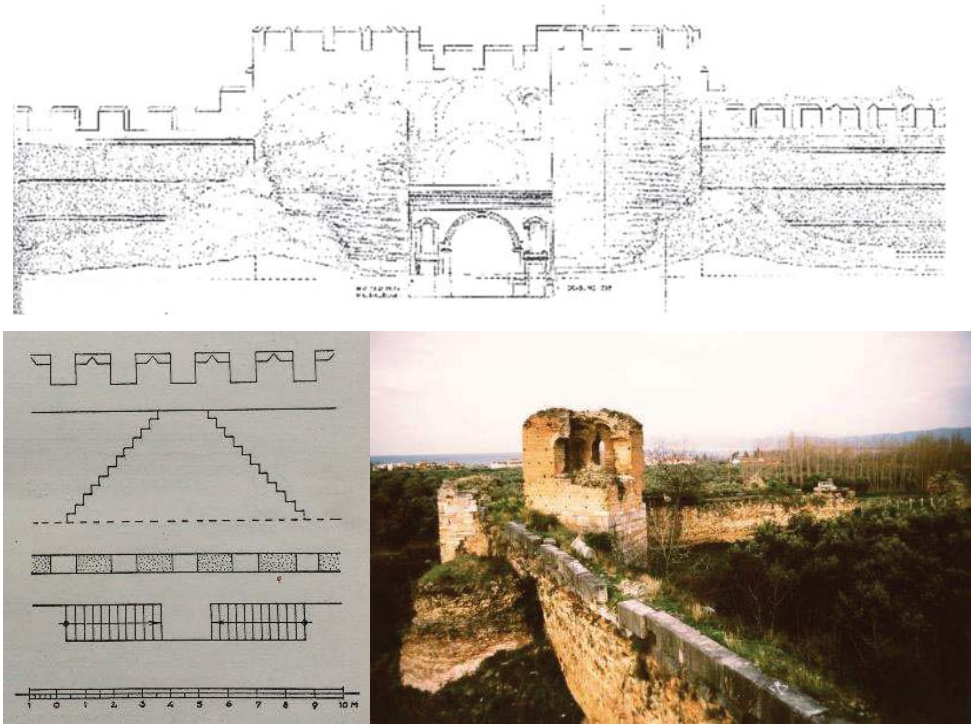

Figure 2-34: View of the crenelated wall walk and Istanbul Gate (Schneider and Karnapp, 1938) (above and below), wall walk, aerial view (courtesy of Kadir Balı-below right)

Firing on the enemy was aided by the walkways protected by crenelated walls surmounting the massive masonry fortification. They were built as a defence strategy, but because they were accessible as sources of building material and there were no wide-scale conservation interventions to protect them most of these parts appear to have been demolished today.

2.2.2.3.1. Building Materials Used in the Construction of the Walls

Bricks, stones, spolia and mortar are the main materials used in the construction of the walls. The stone masonry includes rubble and ashlar stone masonry. Rubble stones were used in the mortar and they composed the core of the wall or the towers. In addition, the surfaces of some walls were built with alternating courses of brick and rubble stone. The ashlar masonry used together with the courses of brick on the facades of the wall was not handled with care everywhere. In some places, fieldstones were

used as part of the masonry with their flat faces outermost. Spolia can be in situ or non situ.[55] Marble ashlar blocks comprise the shafts of the columns and stone blocks known to have been brought from the Roman theatre. All the spolia marble blocks have smooth dressed surfaces. Three different types of mortar were used: coarse mortar for the rubble core of the walls and towers; the mortar on the surface of the walls and the mortar used for the brickwork of the towers (Tables 1, 2, 3-A, 3-B, 4).[56]

Foss (2003) classified the use of stone into six categories. Three of these are neat ashlar spoil, "smallish long blocks" and rough courses which are seen in different points of the fortification. The other three kinds are well-cut stones laid with little or no mortar, neat spolia with wide joints and roughly arranged spolia, and they are mostly observed either in the walls or in the bases of the towers. When a map of the parts where Foss was able to date the stones used in the construction of the fortification is drawn, the third century AD proves to be the earliest period, and the stones on these points are the examples of well-cut stones with little or no mortar used in the bases. The stones dated to third century AD are generally on the southwest of the fortification (Figure 2-43). Another conclusion reached from the map is that the interventions in the eight century were the dominant ones (Map 5). The mostly used stones in the walls of the fortification are rubble stones. There is a large amount of rubble stones with mortar in the inner parts of both the walls and towers. Although cut block stones were generally used in the foundations, sometimes smaller cut stones and rubble stones were used in the higher parts of the walls. Some measurements were taken from different parts of the walls and the size of the rubble stones are approximately within the range of 10-15 cm Since the spolia will be examined under a different heading, the ashlar masonry used in the fortification walls will be described in that section. However, there are also cut stones which are not spolia and were used together with the brick courses on the facades of the walls. The abundant use of cut stone can be seen in the northwest of the

[55]Since we know that the fortification of the Hellenistic period had been demolished, the possibility that some of its stone materials were re-used already is rather high. There are also spolia known to have been brought from other structures and reused in different parts of the fortifications. The spolia used in the gates will be studied under 'Gates' section.

[56]The spolia were observed as marble during the site survey. Even if there are other stones apart from the marble, they are very few. For a comprehensive source on the marble spolia, see: Greenhalgh, 2009.

fortification near the Istanbul Gate. This part is the intervention which occurred under Leo III (717-741).

In many parts of the fortification, there are other spolia, apart from the cut marble blocks taken from other structures with the bases and shafts of columns being clearly visible (Map 11). Spolia carries different messages apart from providing stone to the fortification walls for their construction. The stones of the buildings that were either demolished or abandoned in that area have survived in the walls as a key evidence of former structures.

Bricks and brickwork did not only form a primary construction material for the towers and details of the fortifications, but were also a common material in the walls themselves. On both the inner and outer surfaces of the walls, it was generally used in 4 courses, but the use of brick can be seen in 3 or 5 courses as well in some of the regular features of the walls. According to the measurements of the bricks taken during our field surveys, the bricks are rectangular in section with sides about 33-34 cm long. The thickness of each brick is about 3-4.5 cm at some points, there are also bricks with 5 cm thickness (Figure 2-35). Kahya (1996: 172), who gives detailed information on the measurements of the bricks in the Byzantine period, confirms that the commonest length of the brick in the tower numbered as B.15, in the land fortifications at Istanbul, is in between 32-34 cm and the most common thickness is 4.4 cm Precise measurements of the bricks, one of the mostly used materials in the fortification of Iznik, could provide a connection between the dated fortification and the parts where the construction dates are uncertain.[57] Another detail which can be seen on the bricks are finger marks, with similar finger marks seen at different places, commonly in the brickwork of the towers (Figure: 2-35).

[57] The measurements taken in this study are not detailed enough to cover the whole fortification.

Figure 2-35: Dimensions of the brick and the finger marks on the brick (author, September 2015)

Mortar is one of the basic materials in the fortifications of Iznik. It was mostly used in the inner parts of the walls and the towers with rubble stones. Even though it was used on the facade on some parts of the walls, there was no systematic use of a continuous cover of mortar. On the towers, there is a considerable amount of mortar visible on the surface. As the recessed brick technique is more prevalent in the construction of the towers, the use of mortar is more frequent. Traces of white mortar can be seen on both the fortification and the towers in places. Foss (2003) states that in some parts of the structure, there is one layer of white mortar applied to smooth the surface, perform the usual function of mortar in protecting against the weather, but also to make it more difficult for attackers to get any kind of purchase for hooks or ladders (Figure 2-36).

Figure 2-36: The use of mortar on wall surface (author, September 2015)

2.2.2.3.2. Main Construction Techniques Used in the Walls of Iznik

2.2.2.3.2.1. Alternating Courses of Brick and Stone Technique

Schneider (1938) defines this wall technique as a 'Late Roman Wall technique' since it occurred as a result of the alternating use of courses of stone and courses of brick. He shows that the oldest parts of the walls and the towers were built like this. In 1938, Schneider also notes a similarity that we still observe today: technically, the Iznik fortifications share important similarities with the fortifications of Istanbul. However, there are significant differences, such as the following; while there are square stones that, carefully dressed in the facades of the fortification of Istanbul, the walls in the fortifications of Iznik walls show the use of irregular pieces of rocks, with only the outer surface being dressed.[58] Red coloured infill material was used in some parts of the Iznik fortifications which binds the connecting points of the stones together smoothly and gives a smooth look to the facade. The wall construction technique which is seen throughout on the fortification walls of Iznik is the alternating courses of brick and stone, known to be a typical Byzantine construction technique.[59] The stones, with dressed outer surfaces, were used mostly on the walls and laid in mortar. The most specific feature of this technique is that the brick courses, in contrast to the

[58]Detailed information on the fortifications of Istanbul will be given in Chapter 4.
[59]Ousterhout, 1999: 157-200.

stonework, continue through the entire thickness of the wall to act as a stabilising and bonding layer in the construction.[60]

Mostly, an arrangement of four courses of brick can be observed, but the number can vary between four and six. In other parts of the walls, there are rarely one, two or three rows of bricks (Tables 3-A, 3-B). The most specific shared feature of this technique and the wall which is the topic of our research is that the brick row continues across the entire width of the wall. Of the parts which underwent interventions in this wall technique the map of the sections where the dates of intervention are certain is given by Foss and Winfield (1986) (Map 4).

On the other hand, the case is different in the towers from the walls. The towers were deliberately built in a different way. Even when considering a tower and a fortification known to have been built in the same period as a comparison for study, the towers obviously differ from the walls. In the towers, the mortar includes rubble stones densely used in the inner parts. The outer facing of the towers generally uses the technique where the use of brick is dominant. The courses of stonework were not used in the towers, in contrast to the walls.[61] However, in another construction technique, which is seen commonly in the towers and walls, some brick courses on the facade continue through the core of the wall packed with heavy mortar. That is, in addition to covering of all surfaces with brick, some brick courses continue through the inside of the tower. In the walls, on the other hand, bricks were used only in the forms of bands of bricks which penetrate into the core of the wall. Another feature which should be mentioned about the towers is the spolia used in the foundations and lower parts of the walls of many towers.[62]

This technique, in addition to its use in the construction of fortifications in the Byzantine period, is also present in other public buildings, such as churches, hamams (baths) and similar public buildings as well. This technique, which was dominant when

[60]In Anatolia, after the Byzantine period, walls similar to this pattern were built in the Ottoman period and named “almaşık”. However, the most specific difference is that although the brick rows continued through the wall section in the Byzantine technique, in the examples built in the Ottoman period, the brick rows were used only on the outer parts.
[61]There are few towers with stone and brick bands. However, these are known to have been built later as a result of large scale interventions.
[62]This will be studied in the ‘Towers’ sections.

the fortifications were first built in third century AD, is still dominant and well defined today despite the all interventions made in the intervening years. The Iznik fortifications are one of the rare structural examples which have survived relatively intact in Anatolia and are available to study the aforementioned technique in detail. The fortifications in other cities will be examined regarding this technique in the 4th chapter where a comparative study is made.

2.2.2.3.2.2. Cloisonné Technique

Cloisonné is another construction technique seen in the fortification walls. This technique involves placing bricks horizontally and vertically around the stones (Figure 2-37). This is not a common technique in the inner (main) fortification, but the outer fortification, surrounding the entire inner fortification, was almost completely built using this cloisonné technique (Tables 3-A, 4). The parts visible in the inner (the main) fortification are W (88-89), W (111-112), T37 and T106. Apart from these, the cloisonné technique can also be seen on the three gates, particularly in the structure of the Istanbul Gate (Map 7).

Figure 2-37: Cloisonné technique on Tower 106 (author, September 2015)

2.2.2.3.2.3. Stone Masonry

Stone masonry, which was used to a limited extent in the fortifications and towers is the result of interventions in the eighth century. This technique is a completely different technique from the use of the alternating courses of brick and stone which constitutes the dominant form of construction in the fortifications. The material used in this part of the wall is only well dressed marble blocks and sections of column shafts (Figure 2-38). Both of the materials are thought to be spolia. In the inner parts of the tower walls, the core material is rubble stone bound with mortar. Foss and Winfield (1986: 112) dated the brick and the stone rows seen in some ruined parts of the fortification back to third century AD. Only the outer surfaces of the square towers that were built by converting earlier semi-circular towers have the stone masonry. In these towers, there are passages/gates providing access from the inner parts, like the ones in the semi-circular towers. There is a very clear inscription regarding the date that the wall was built with this technique. It still exists in its original place (on T71).[63] From this inscription it is certain the construction of this wall was carried out in the period of the Emperor Leo III (717-741). Along with the Emperor, Leo's son, Constantine, and Artavasdos who was the general to the Opsician Theme and the son-in-law of the emperor, are also mentioned in this inscription.[64] Foss (1996b) describes the wording of this inscription as a poetic statement and he states that it could be a poem dedicated to the emperor Leo.[65]

[63]However, the inscription is on the verge of falling apart unless an intervention is conducted as soon as possible.
[64]Foss, 2003: 253.
[65] The English translation of the inscription will be included in the analysis of T71 in the 'Towers' section.

Figure 2-38: The core of the T70 (left) and the wall with stone masonry (right) (author, September 2015)

2.2.2.3.3. Analysis of Wall Sections:

W (1-20): This is the wall section that includes approximately half of the fortification and which starts from tower T1 and continues until tower T20, running between the Yenişehir Gate and the Lefke Gate.[16] It is a wall section that includes 20 towers all in a regular line. The towers run eastwards in a line ending at tower T20, which is built at the corner where the fortifications change direction and is relatively larger than the other towers. W(10-11) is a section of the wall known to have existed formerly, but now demolished (Figure 2-39).[66] The most complicated part of this wall is W(19-20). While it is obvious that it underwent a series of interventions, it is impossible to date these (Map 10). The intervention of adding a wall walk and a crenulated balustrade, important changes in the fortifications in eighth century, can be seen in this wall section. However, it is not possible to trace these stones consecutively today. There are some stone blocks around the demolished towers T11 and T12, but it is not certain if these were used as a walkway on the top level of the towers or in the bases of the towers.

[66]Foss and Winfield, 1986.

Figure 2-39: Aerial view of Iznik fortifications from southeast, W(1-10) (courtesy of Kadir Balı)

W (18-20): Foss and Winfield (1986) conclude that the recessed brick technique, seen on top of the wall in between T18 and T20, may provide information about the reconstruction of this wall in the eleventh century, but this information is possibly unreliable (Figure 2-40).

Figure 2-40: Aerial view of Iznik fortifications from southeast, (courtesy of Kadir Balı)

W (21-42): This is the second part of the wall from the Yenişehir Gate to the Lefke Gate. There has been a considerable amount of loss over time in this section of the wall as well. This has made it difficult to trace the integrity of the surviving structure or chart interventions with any certainty. Foss and Winfield (1986) state that there were formerly fewer towers than at present in between T30 and T38. This supposition is also valid for some other points. As with previously discussed sections of wall, numerous and significant interventions were conducted during the period of Michael III (842-867). The newly added towers are easily detected because they are clearly marked out by their spolia based foundations. While T32, T34, and T36 are indicated as new towers, the possibility of repairs to T21 and the T27 are also mentioned.[67]

W (43-66): This comprises the section of wall between the Lefke and Istanbul Gates. On the map drawn by Schneider, most of the wall here is shown as ruined and dilapidated. In this wall section, one of the secondary (now lost) gates, the Topkapı Gate is located. No further information about the demolished gate can be found in the Map of Schneider (1938). The only surviving photograph of this gate is given here in below (Figure 2-41) (original source is unknown).

Figure 2-41: One of the auxiliary gates: the Topkapı Gate (courtesy of Kadir Balı)

[67] *Ibid*.

W (69-72): This consists of the section of wall built to the west of the Istanbul Gate when viewed from the direction of the lake. Today, its link to the Istanbul Gate is obstructed because of the road constructed through it. As previously mentioned in the 'Methodology' section, the numbers in parenthesis are the numbers for the towers. The technique that we will try to explain here is a wall technique used starting from T69 and T70, and continuing up to T72, covering T70, T71 and T72 (Table 3-A). The tower examples in this section are analysed under the heading 'Towers' and the details of the inscription mentioned in T71 is given in the 'Towers' section.

W (89-90): Foss (2003) describes this stone masonry technique, dated by him to the late twelfth century, consisting of a well finished facing employing alternating bands of brick and stonework with brick predominantly used in the repair work (Figure 2-42). He notes that the Byzantine Emperor Manuel Comnenus (1143-1181) set up a castle network of fortresses called Neokastra around Pergamum and had the parts of the fortification on the lake side repaired and he attributes this construction technique to that period.

Figure 2-42: Wall between T88 and T89, with the elaborate brickwork of the late twelfth century (Foss, 2003, fig. 14)

W (90-91): Foss (2003: 250) defines this wall as in the following; “the walls derived their strength from a massive core of mortared rubble, interrupted at regular wide intervals by bands of flat square Roman bricks, laid four deep, that ran through their entire width.” (Figure 2-43).

Figure 2-43: Wall of the third century, between T90 and T91 (Foss, 2003, fig. 19)

W (96-97): This part of the wall is described by Foss (2003) as the part where the height was raised by 2.5m under John III Vatatzes (1222-1254) while the reconstructed part is attributable to Theodore II Lascaris (1254-1258) (Figure 2-44). The scholar notes that the increased height enhanced the firepower of the defenders and compensated for the increase in ground level after the last serious repair in ninth century.

Figure 2-44: Wall between T96 and T97 (Foss, 2003, fig. 20)

W (107-108): The most significant feature the walls and the towers share in common is the use of a dense mortar filled with rubble stones in the inner parts and an outer surface consisting of rubble stone and brick. The period when many of the stone blocks were gathered and brought from the theatre was under Leo III (717-741) (Figure 2-45). These blocks, which we know had been previously used, not only raised the height of the top level of the fortifications, but also enabled a walkway to be constructed along the top of the wall. Foss (1996b) argues that this reinforcing work occurring under Leo III (717-741) and other additional reinforcing work, increased both the military significance of Iznik and the political power of the region of which it was the capital city.

Figure 2-45: Wall with the traces of added balustrade of Leo III (author, September 2015)

W (111-112): As it is seen in this wall detail, which belongs to the period of Theodore Lascaris (1204-1222), the cloisonné technique was used up to a certain height. The higher parts have more irregular numbers of brick courses which seem to indicate the repair and maintenance work of a later period (Figure 2-46). According to Foss (2003: 258): "Walls and towers alike were covered with a shelter coat of white mortar that provided a smooth surface to keep out rainwater and prevent attackers from gaining a hold for their hooks or ladders". Besides, since this is a very prevalent restoration application in Turkey, it is probable that it was made in a recent period (Figure 5-2).

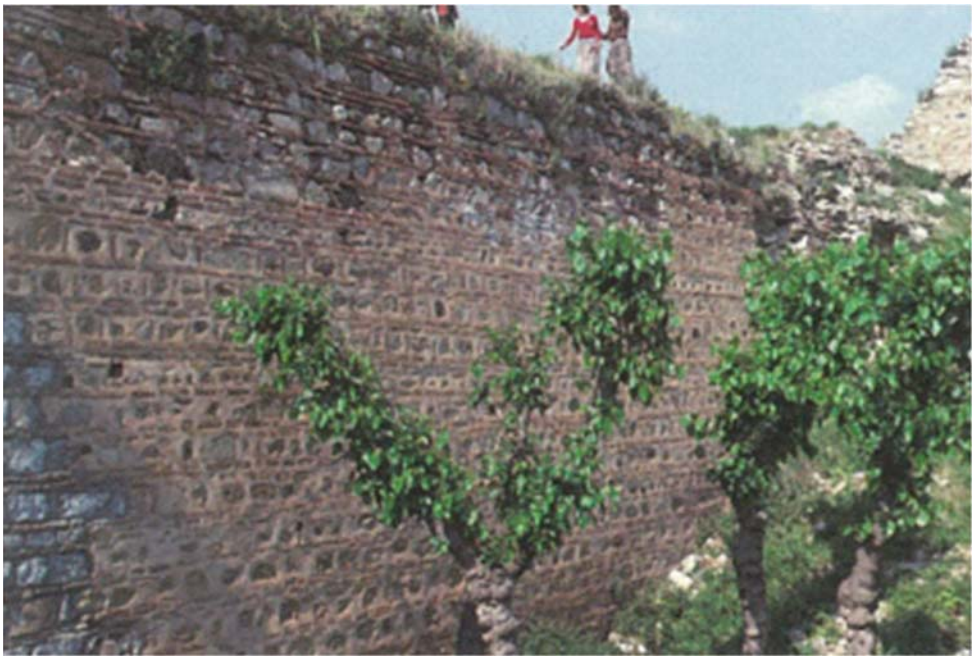

Figure 2-46: Wall of Theodore Lascaris (1204-1222) between T111 and T112, with decorative brickwork and extensive use of mortar on the outer surface of the wall (Foss, 2003, fig. 18)

The construction of the outer circuit is dated about thousand years later than that of the inner circuit. It was part of the work done under Emperor John III Vatatzes, in approximately the mid-thirteenth century, and comprises one of the most important alterations in the fortifications. It underwent some further interventions later on. The most significant differences that distinguish them from the inner circuit are; lower height and narrower width, different proportion of the quantities of brick rows/stone rows, the use of rubble stone through the fortifications and the lack of spolia (Figure 2-47).

As mentioned above, examination of the construction technique indicates that the proportions of stone-brick rows are different from the inner walls; the use of a single row of brick followed by a stone row can be seen, marking a difference from the main fortification. There is an unelaborated and less detailed use of materials (Table 4).

Figure 2-47: Outer wall (circuit) (author, September 2015)

T115a: T115a is one of the most important elements of Yenişehir Gate and the first tower of the still standing outer wall (Figure 2-48). A large amount of spolia and rubble stones are used in the lower part of the tower. A roughly made example of cloisonné appears as a single row. The upper part is completely faced with brick. While the wooden beam holes are located at the lower part of the brick courses in the walls, they can be found in the upper part of the towers (Table 4).

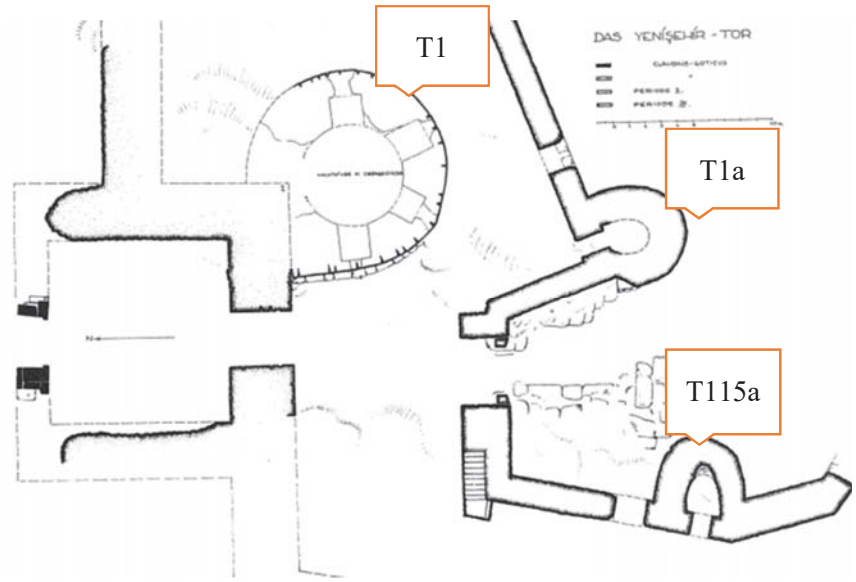

Figure 2-48: Location of T115a on the plan of Yenişehir Gate (Schneider, 1938)

Although spolia is found on the walls around the gate, an unordered cloisonné technique with three-five rows of bricks can also be seen in the lower parts. In addition, on the upper parts, the cloisonné technique is seen with two or three rows, along with unordered courses of brickwork. As mentioned before, the height of the inner walls was increased when new outer walls were added in the thirteenth century. With the rise in height, two-storey chambers and flat roofs were added to the towers. The alterations in both the walls and towers were connected to each other and facilitated firing on attackers in cases of defence. Foss (2003), notes that the addition of the moat and second wall were the changes that made the Iznik fortifications more similar to the Istanbul fortifications. Moreover, he adds that this change was not coincidental for the capital Nicaea.

2.2.3. Chronological Issues

In this part, dating problems of the existing fortifications and accordingly, problems caused by conservation interventions will be examined in the light of the research on construction techniques and materials along with the written sources and data collected in the field study.

Because of large variations in construction techniques, the inadequacy of written sources, and lack of integrated dating on the walls, there are numerous approaches to the conservation interventions.

The aim of this section is to study the complexity of the interventions in parallel with the construction techniques and materials by combining the studies on the Iznik fortifications and the current state of the fortifications. In the light of the collected information, the interventions were mapped in terms of their period or date with the aim of providing guidance for future interventions (Map 12).

When looking at the general documented history of the Iznik fortifications we find it mentioned in the third century BC, yet no material evidence from this period can be found today. The fortifications that have kept their overall form up to the current time are dated to the third century AD and all of the dating events mentioned subsequently

are to clarify the time after third century AD. The fortifications that have existed for more than thousand years have been the continual subject of wars and struggle. Accordingly, they underwent interventions either before wars in preparation, or after wars to repair damage. Sometimes the entire fortifications have faced new modifications and additions, or wall sections have undergone repairs throughout their history. Sometimes only the height was increased, sometimes fortifications were restructured by facing with the use of spolia which caused a change in the appearance. Iznik was always been a nodal point for either attackers or defenders in times of war; it was the refuge of choice for emperors having to flee the capital at Constantinople, a first objective for any planned attack on Istanbul from the east, and the victim of numerous earthquakes. Thus, it was inevitably the subject of many structural interventions to its fortifications, it is uncertain even today whether those interventions are compatible with the originals or not. Moreover, the integrity of the interventions with the fortifications is arguable as well. The main lack in this respect is information on the dates and locations of the additions, alterations, repairs, and maintenance works. In addition, there is also insufficient definite knowledge about which parts have survived until today with their original features and from which century. According to Foss and Winfield (1986), Iznik has not been publicized to the extent it deserves and in the way it should be and his works will be the preliminary source for the further and more detailed researches that will follow on this subject.

Ousterhout (1999), who discusses Byzantine wall construction in detail, discusses the variations of the technique where brick and stone used together, also known as ‘the alternating courses of brick and stone technique’ and notes that there are variable numbers of brick-stone rows. He explains the relationship between this and their date thus: in this wall technique that has many variations, one or more rows of brick can be followed by one or more courses of stonework. Accordingly, these varying number of rows, wide or narrow bands can be formed. The author states that the formation of a chronological parameter relating the various patterns to definite dates is not possible (Map 10).

The large number and variations in different construction techniques in Iznik and the age of fortifications, exceeding 1800 years, make it difficult to distinguish similar fortification sections built in different periods (Map 1, 2). In addition, it is even more

difficult to make an inference without any written source that refers to the interventions and their dates on certain points. Comparing to the other cities with similar fortifications, Iznik has fewer written historical sources. Even though it has been an important city throughout history, it escaped mention in any sources in some periods.

Foss and Winfield (1986) state that, in this uncertainty, precautions should be taken to avoid the mistakes in case of a need for reconstruction of the fortifications. He explains this with two examples; firstly, the reconstructions in the fortifications from earlier periods have been obscured, while later periods' interventions are more prominent. As an example, he gives the relocation of blocks brought from the theatre for use in the wall walkway around the entire fortifications in the eighth century, yet today, it can only be seen clearly on the east side. The second example is the process of dilapidation caused by nature and men, seen especially on the upper parts of the fortifications, followed by being left neglected. This means that the traces of defence techniques from earlier times and many reconstructions have been lost.

When the Iznik fortifications are considered, there are two main elements that can give chronological information; construction technique and one of the materials used: mortar. Mortar is an important component of the conservation works because it provides chronological information. The information on the time when the mortar was made can be achieved through laboratory analyses. But it is outside the scope of this study to determine the dates of each part of such a large structure. Foss and Winfield (1986) emphasize that definite information can only be obtained through written sources and inscriptions; but these do not give information on the entire fortification and are very few in quantity. When the map that gives information on inscriptions about wall sections is examined, it can be seen that the information provided is insufficient. Foss and Winfield (1986) claim that the important dating of the fortifications can be achieved through a work with necessary details and by using the written sources as references.

In the case of insufficiency of written sources, construction techniques and materials of the fortifications can be used for dating. As for the Iznik fortifications, when the towers are taken as separate elements, and attention is focused on the towers, their architecture, construction technique and material show significant differences;

- There is a small number of towers that have the same architectural plan: among a hundred towers, the number of towers with the square/rectangular plan is fewer than ten.
- With the exception of four towers which are completely made of stone blocks, the construction technique employed in all the other towers consists of brick facing on top of a core made of rubble stone mixed with mortar. In another two towers, in addition to the brickwork they show the technique where one row of brick and one row of stone are used alternately.

It is known that there are eight inscriptions containing information about works on fortifications, but only four of their locations are known (Table 5). Moreover, none of them are in their original place. An important repair is mentioned in the inscription located on T71, both the name of the emperor who had the work done and the date of the work can be learned from the inscription.[68] Those inscriptions, providing information unavailable through written sources, show that the fortifications carry their history on themselves. Moreover, they give the general historical information of the period. However, the number of inscriptions available today is woefully insufficient to specify or date repair interventions on the entire fortification. The comparison of construction techniques between the dated and undated sections of the walls is not sufficient to understand the intervention periods or the construction dates of the fortifications. For this reason, it is not possible to determine the periods of the still standing fortifications solely through their construction technique.

[68] For more information on the inscriptions see the towers section of this chapter.

CHAPTER 3

THE WALLS OF ANKARA

The Late Antique and Byzantine fortifications of Ankara, which have survived without serious damage until the present will be examined in this section of the thesis. First, the historical and geographical features of Ankara, once the capital city of Galatia in the Roman period, will be reviewed. Written historical and current sources on the history of Ankara, old photographs and travellers' notes will be used to provide material for the study. In the second part, the history of the fortifications of Ankara will be covered in detail, and the walls will be examined with reference to the techniques and materials used in their construction by means of present day observations and site analysis. Along with the Iznik fortifications, studied in the second part of the thesis, this section will focus on the changes the walls have gone through due to repairs and interventions, and the disasters, both natural and man-made, that damaged the walls and made interventions necessary.

The construction techniques and the materials used in the walls will be studied in detail. The fortifications will be examined under the headings: 'Walls and Towers' and 'Gates' in turn. The dating problems associated with the Iznik and Ankara Walls that were examined in detail will be discussed and suggestions made for the conservation problems that have arisen as a result of the uncertainty. The reasons for selecting the Ankara Walls as a comparative study will be explained at the end of this section and in the last part of the thesis.

3.1. GENERAL DESCRIPTION OF ANKARA: GEOGRAPHICAL AND HISTORICAL FRAMEWORK

In this part, both the geographical features and the historical context of Ankara from the earliest periods up to the present will be analysed one by one. These two aspects can be summarised in one sentence as follows: 'In the middle of the barren Anatolian steppe, Ancyra first became an important ideological centre in the state of Galatia of the Roman Empire, and later the capital city of the newly founded Republic of Turkey on 23 October 1923 (Güven, 1998).

3.1.1. Geographical Considerations

Ankara, which has been the capital city of the Republic of Turkey since 1923, is sited in the Central Anatolian Region (Figure 3-1) surrounded with the deep valleys that are a typical feature of the Anatolian plateau. The city is situated on a series of hills, varying in altitude from 1000-1200 m (Mamboury, 1934). Kinneir (1818) in his travels to Ankara in 1813-14 noted that the city is surrounded by mountain ranges on the north and on the east, and that it is built on small hills. Its location at the intersection of the military and the trade routes that existed in the middle of the Anatolian Plateau during Late Antiquity gave the city a prominent role in the history of the region (Foss, 1977; Serin, 2011). The cities of Constantinople, Nicomedia, Nicaea and Ancyra are known to have been the main way points on the road to the east from Europe; a route traversing Thrace, Bithynia and Galatia before reaching Syria.[69] In the Late Roman period (fourth century) when the emperors had their capital in Antioch, the army and court, on leaving Constantinople, reached Antioch via Ancyra and Tarsus (Foss, 1977; Serin, 2011). Serin also states that the route was also used by pilgrims as a result of the spread of Christianity; factors, which taken together, account for the frequent mention of the city in different Late Antique sources.

Its central position, bordered by the provinces of Paphlagonia and Bithynia in the north, Asia and Phrygia in the west, Lycaonia, Pisidia, Isaura and Pamphylia in the

[69] Serin, 2011: 1257. For the routes see also Foss, 1977.

south and Cappadocia and Armenia Minor in the east, made the province of Galatia and its capital Ankara pivotal features in the Roman Empire (Güven,1998) (Figure 3-2).

When considering the position and the importance of the city of Ancyra in Galatia, Güven (1998), emphasizes that although the history of Ancyra dates back to the Prehistoric period there is almost no mention of Ancyra in the sources until the period of Alexander the Great.

Figure 3-1: The map of Ankara (Google earth, 20.10.2016)

Figure 3-2: Galatia in the Roman period (Güven. 1998: fig. 5)

The geographical importance of Ankara is emphasized in the Encyclopaedia of Islam: Ankara was established as an important centre because of its local topographic features and its dominant position regarding the routes across Anatolia. The local topography of Ankara made it an attractive place for a settlement for inhabitants of the region[70]. Due to this strong topographical position that could be easily fortified, Ankara was a significant settlement site from the prehistoric through the medieval period. The old lava hill where the Ankara Citadel is situated is separated from its surroundings by the narrow valley of the river, Bentderesi. This meant, an approaching enemy could be seen from afar, and the local topography made strengthening the citadel relatively easy. Thus, the Ankara Citadel became a crucial strongpoint in military history.

Mamboury (1934:14-45), who termed the settlement area going down to the plain from three sides of the citadel as the *'old city'*, described the old city of being built entirely of andesite and basalt rock, which were also the primary construction materials for the citadel above. Except for the areas of exposed basalt, andesite and tuff blocks, the land was suitable for agriculture and livestock breeding.[71] Ankara has plentiful sources of good water and its topography enables the productive use of these. These sources include the Çubuk Stream, the İncesu Stream that emerges from Lake Mogan and Lake Eymir and the Kayaş Stream, which has its source in the Hasanoğlu Plain. According to Mamboury (1934), despite having so many water sources, the climate of long summers and high temperatures causes problems with evaporation and makes agriculture problematic.

3.1.2. A Brief History of the City of Ankara

Written information on the early periods of the history of Ankara relies heavily on *Description of Greece*, written by the famous geographer and traveller Pausanias in the second century AD. Pausanias (1-2, 1.4.5) mentions Ankara as follows:[72]

[70] Darkot, 1991: vol. 6, 437-452.
[71] Mamboury (1934) explains in detail the possible origins of the stone used in the constructions in Ankara.
[72] Jones, 1918.

> The greater number of the Gauls crossed over to Asia by ship and plundered its coasts. Sometime after, the inhabitants of Pergamus that was called of old Teuthrania drove the Gauls into it from the sea. Now this people occupied the country on the farther side of the river Sangarius capturing Ancyra, a city ofthe Phrygians, which Midas son of Gordius had founded in former time. And the anchor, which Midas found, 20 was even as late as my time in the sanctuary of Zeus, as well as a spring called the Spring of Midas, water from which they say Midas mixed with wine to capture Silenus. Well then, the Pergameni took Ancyra and Pessinus which lies under Mount Agdistis, where they say that Attis lies buried.

Texier (1839)who had travelled many parts of Anatolia, published his observations, made drawings and took detailed notes about Ankara on his first visit to Turkey in 1833-1837 (Figure 3-3).[73] Texier (1839) mentioned that Ankara was situated on top of a high rock plateau which stretched from the east to the west and that the surroundings of this huge volcanic rock were very steep. He also mentioned that the main fortress was sited on the top of this steep rock and that the walls reached to the middle of the high ground. After a certain period, the Romans during the war against Mithridates, conquered the city later the emperor Pompey gave this country, which also included Ankara to his ally Dejotare, and thus, the Tetrarchy Galatia appeared in history (Texier, 1839).

Mitchell (2011) mentions that the archaeological evidence suggests an important settlement in Ankara during the early Phrygian period and says that it may have been as large as Gordion. He states that no archaeological remains from the Classical and the Hellenistic periods survive, but he adds that Ancyra was a fortified citadel of the Galatians during the Hellenistic period (275-25 BC).[74]

Serin (2011) notes that Ankara became a capital city when the province of Galatia was absorbed into the Roman Empire during the period of Augustus (25 BC); following

[73] Charles Texier was also a historian, an archaeologist, an architect and a writer. The sketches of travellers regarding Ankara that have survived will be included at the end of this chapter. For a modern study about the travellers, see: Sülüner, 2014.
[74] Also see: Uğurlu-Cooke, 2006

this, the temple dedicated to the goddess Rome and Emperor Augustus (hereafter the temple of Augustus) was constructed.[75]

Erzen (1946) notes that immediately Galatia had been conquered by the Romans, Ankara was designated as the capital because of its geographical and military importance. However, along with this, she points out that despite the fact that the cities of Nicomedia (Izmit) and Pergamon (Bergama) are known to have previously become the capital cities of the kingdoms of Bithynia and Bergama after these provinces were incorporated into the Roman Empire. It is not known whether Ankara was a capital city or not during the period of the Kingdom of Galatia. Erzen bases the assertion that the Romans immediately made Ankara the capital upon inscriptions and the coins produced from the period of the Emperor Tiberius (42 BC-AD 37) until the period of the emperor Saloninus (AD 242-260).[76] It is known that the Emperor Augustus (27 BC-AD 14) undertook the organization and construction of the city of Ankara. Erzen states that the area covered by the city reached its greatest extent in the second century AD, supporting this statement with the fact that most of the existing inscriptions belong to the aforementioned century and that the second century was the most prosperous and the brightest era of the city in many other aspects as well. He states that the city, however, fell into decline in the third century, and the construction of a fortification around the city became a necessity. This issue is mentioned in the entire inscription as follows: "He had all the city walls constructed right from the base to the top during the attacks of the barbarians and the decline of the economy and he accomplished his duty of Bulograf insightfully and properly -the glorious capital Ankara celebrates him as the protector and the rescuer of the people (Demos) in accordance with the concurrent resolution of the parliament (Bule) and the people (Demos)." [77]

When the construction work on for Ankara implemented during the Roman period is studied carefully, the third century fortifications have an important place among them. Serin (2011) emphasizes that most of the public and private buildings, including the Late Roman city walls, were constructed in the late third century and early fourth century. Some of these (theatre, amphitheatre and several temples) were still used in

[75] For a detailed information on historical sources, see Foss 1977; Mitchell, 1995; Serin 2011.
[76] See Erzen, 1946: 53 for more detailed sources on the inscription and coins.
[77] CIG 4015. IGR 206 (cited by Erzen 1946: 61).

Late Antiquity.[78] Kadıoğlu and Görkay (2011), who studied the second and third century structures in Ankara as epigraphic and archaeological remains, state that some archaeological finds unearthed in different parts of the city are the remains of fortifications belonging to the third century.[79] Görkay (2011) states that two of the inscriptions giving information about Late Antique Ankara are about the earliest period fortification structures and the other two were associated with the fortification by implication.[80] These two inscriptions (No: 289; 290) which include information helping us to date the fortification more than simply informing us about the past were catalogued by Bosch (1967). The inscription numbered 289 dates the time of the construction of the fortification to the period when the barbarian attacks occurred.[81] With the help of this inscription, it can be understood that the fortification was entirely constructed during these attacks by a civil servant/founder whose name has not survived.[82] Görkay joins the statement in the other, second, inscription related to the fortification '*some parts of the fortification were completed by a governor whose name was unknown'* with the previous inscription and says that the construction may have been started by a civil servant/founder and finished by a governor.[83] Bosch (1967) associated the structure mentioned in the other three parts of the inscription, '*the structure that was built with the help of people who do good things for the city',* with the city fortifications.

Görkay (2011) also notes that, although it is not certain if the walls that are mentioned in the statement '*The city of Ankyra is becoming famous for its fortification walls'* in the book of poetry written by Diogenes Akrites in the tenth-eleventh centuries, are the third century AD walls or not; it is possible that the third century AD walls existed at that time. However, he notes that these aforementioned walls are most likely the walls and their extensions (that will be studied in details in this chapter) that still exist and

[78] See Foss 1977: 60-61 for a complete list of these structures.
[79] See Kadıoğlu and Görkay, 2011 for detailed information on other structures mentioned as second century and third century construction works; See Görkay, 2011 for details of the inscriptions that were studied for the third century Roman Period fortification.
[80]Bosch, 1967: 351, no:289 and no:290 are the inscriptions about the early period fortification structure. Bosch, 1967: 255, no: 292 and no:293 are the inscriptions that were associated with the fortification based on interpretation. For more details on this, see Mitchell *et al*., 1982; Mitchell, 1995; Foss, 1977.
[81]Bosch, 1967: 351; Foss, 1977: 32; Kadıoğlu and Görkay, 2011: 205, Mitchell and French, 2012.
[82]Bosch 1967; Kadıoğlu and Görkay, 2011.
[83]*Ibid.* (no: 290). The inscription numbered 290 consists of 4 pieces (290, 291, 292, 293).

that are dated back to the seventh century. Dating the earliest period of a still existing and/or a previously existing fortification is a controversial issue.

The surviving notes of some travellers' from Antiquity provide information om this issue. The notes of Strabo (12.5.2), for instance, state:

> The Trocmi, then, possess these parts, but the Tectosages the parts near Greater Phrygia in the neighbourhood of Pessinus and Orcaorci. To the Tectosages belonged the fortress Ancyra, which bore the same name as the Phrygian town situated toward Lydia in the neighbourhood of Blaudus. And the Tolistobogii border on the Bithynians and Phrygia " Epictetus," as it is called.

Ankara is mentioned both as a city and a fortification in Strabo's description; proving that the city had also a fortification in the earlier periods, and in his description it is clearly stated that there were construction phases of the walls belonging to much earlier periods than the third century AD walls.[84] Görkay (2011) notes that the area where the present fortification stands today could be an inner fortification which was an improved version of the fortification constructed according to the system in the Galatian period of Ankara mentioned in Strabo's notes. He cites the similarity between the inner circuit system that still exists and that is dated back to the seventh century, and the fortification system described by the Greek engineer and writer, Philo (third century BC). On the other hand, the Polish traveller, Simeon (seventeenth century), says '*Ankara is a city which is surrounded by three rows of fortification walls'* when referring to the fortifications of Ankara that are said to have been constructed against the Celali riots during the Ottoman Period. It is stated that these three rows of walls surrounded the lower city of seventeenth century Ankara and most of the older Roman city that was no longer visible.[85]

Kadıoğlu and Görkay (2011) wrote another study concentrating on the monumental buildings in the historic centre of Ankara together with the finds discovered in archaeological excavations. The authors describe the remains of ancient buildings discovered in foundation excavations of modern buildings, following the excavations

[84] Görkay, 2011: 206. Also see for more details: Strabo (4.1.13); (12.5.2); Jones, 1961.
[85] *Ibid*. Some parts of these fortification walls are seen in some sources about Ankara in the Republic Period, see: Mamboury, 1934.

in the Roman Baths started in 1925, which no longer survived, or which were only partly documented or covered either very briefly in scientific publications or remained unpublished. It is stated that, between 1982 and 1986 the ancient theatre of the city, and in 1995 the street constituting the main thoroughfare along the north-south axis (most probably the *cardo maximus*) were uncovered through these excavations. The *cardo maximus* was dated to the period between the first century BC and first century AD based on the findings of archaeological excavations. Later it was dated to the early Byzantine period (the fifth to sixth century AD) on the basis of the stylistic comparison between the opus sectile pavement found in the *stoa* of the street with examples from other ancient cities in Anatolia together with the coins found (Anastasius 491-518 AD) beneath the pavement. The Temple of Augustus which is dated to the first century AD is an important ancient building in the city and has a prominent place due to the Res Gestae inscription it bears, not only in the history of Ankara but also in world history. So far, no other inscription has been found covering the deeds of the Emperor Augustus, founder of the Roman Empire. The elaborately carved andesite blocks visible in some of the walls of the ancient theatre, which is one of the Roman era buildings, are dated to the Early Imperial period. Apart from that, while the ostentatious works of sculpture point to the reign of Hadrian, the orchestra of the theatre was transformed into a pond in the third century AD. The opus sectile pavement in the orchestra indicates that building activities in the theatre continued until the early Byzantine period (fifth to sixth centuries AD). As a result of reconstruction work carried out because the seating benches, discovered by field surveys performed by Kadıoğlu and Görkay in 2000, were different from the stones used in the Roman Theatre, it was revealed that the benches belonged to a stadion. It was also discovered that some of the pieces of these benches were reused for a second time in the fortifications of the third century AD. As a result of this study, it was suggested that the stadion of ancient Ankara was located to the south of the Roman Baths and its architectural elements were reused in the fortifications built as a protection against Gothic invasions (296 AD). Kadıoğlu and Görkay (2011) identify a building as a nymphaeum (monumental fountain), which can be included among the buildings of the Augustan Period from the elaborate stone carving and connection details of the blocks etc.

Kadıoğlu and Görkay (2011: 536) classify buildings such as the Roman city walls of the third century AD, columned street, great baths (Caracalla 212-217), minor bath, bath at the Ulus Business Centre/palatium, Roman dam and the Column of Julian (?) as products of building activities between the second and third centuries AD, based on the epigraphic and archaeological evidence. The conclusion that the city fortifications were built as a protective measure against the Gothic invasions in the third century AD is based on the epigraphic sources.

Texier (1839) states that in the time of St. Paul, who resided in Ephesus and travelled in Asia Minor to spread Christianity, the Galatians were the community most eager to convert Christianity and they established the Church of Ankara. Texier adds that the elders of this church participated in the Nicaea and Chalcedon Councils and two major councils assembled in Ankara, the capital of Galatia, in 314 and 358. The third council of Ankara, which gathered in 357 to combat the Arian heresy, was not mentioned.

Serin (2011: 1259) states that in the fourth century, when Ankara was the Archbishopric of the Province of Galatia, three ecclesiastical councils convened in the city. These were the orthodox plenary Synod of Ankara in 314, the semi-Arian synod of 358 and the Arian Synod of 375. In addition, Ankara was represented by Bishop Marcellus, who was one of the prominent religious figures of the fourth century, in the Council of Nicaea in 325 (Foss, 1977; Serin, 2011).

Serin (2011) provides information that Libanius, the famous rhetorician of Antioch, describes Ankara of the fourth century as a city administered by the Pagan aristocracy and where the Christian nobility is infrequent, and states that the Emperor Julian, who is known for his policies regarding the revival of Paganism, enacted new laws to this end. For instance, he convinced local administrators to complete the work from the previous period before starting any new public works except for temples. However, the author thinks that this situation changed in the fifth century, Christianity has already become established in the early fifth century and many churches and monasteries as well as convents were built in the fifth and sixth centuries.

Another important period in the history of Ankara is the era between the seventh and ninth centuries when the city was threatened by the Arab and Persian invasions. The Arabs tried to dominate the history of Ankara for a long time. Ankara was captured by

the Sassanian King Khosro II in 630 (İdil, 1997). The city, occupied by the Persians at the beginning of the seventh century, continued to be a target for Persian and Arab armies until the ninth century. Serin (2011) states that the city was governed by a military administration and became the capital of Bucellarian Theme, one of the Byzantine themes in Anatolia.[86] Moreover, the author adds that Ancyra was exposed to drastic transformations in this period and shrank in size to a hill protected by fortification walls, something confirmed by written, archaeological and monumental records. Foss (1977), who emphasises that the eastern boundary of Ankara changed radically throughout the eighth century, states that the Arabs became a major threat when they laid siege to Constantinople between 674 and 678, and for second time in 717 and 718. Following the Battle of Manzikert in 1071, the Turks quickly spread through Anatolia. Some citadels in the rural areas became Turkicized and successor Emperor Alexius Comnenus launched an expedition into central Anatolia (Foss, 1977).

Foss (1977) talking about the last events in Byzantine Ankara, states that within the ten years of wars and conflicts that followed the Battle of Manzikert, Turkish troops captured the city and in 1101, a Crusader army crossed Anatolia, reached the city, and encountered the Turks. Crusaders captured the city but were defeated in Iconium while moving towards Paphlagonia (Pontus-Bithynia regions). The main concerns of the Byzantine Empire lay in the south and west rather than central Anatolia, so Imperial troops could not be spared to spend much time in the castle, which was under the enemy siege. Moreover, Foss (1977: 83) mentions that Ankara was probably captured by the Seljuk forces and became a Turkish city thereafter.

[86] For a comprehensive source on this issue, see: Pertusi, 1952.

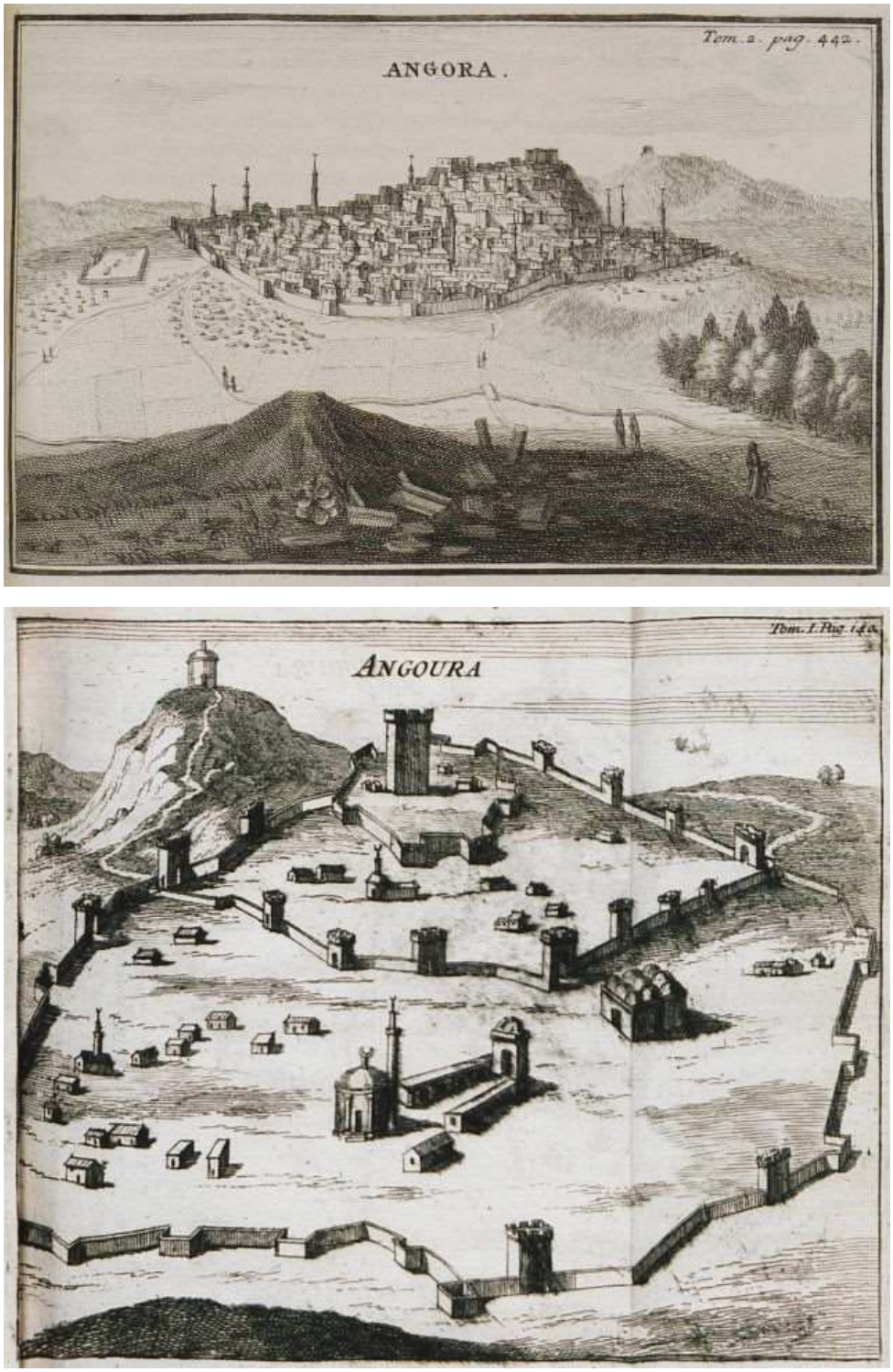

Figure 3-3: View of Ankara (above-Tournefort, 1717) (URL 3)(below-Lucas, 1712) (URL 4)

3.2. DESCRIPTION OF THE WALLS OF ANKARA

In this part of the third chapter, the fortifications of Ankara will be examined. First, the historical and geographical features of the fortifications will be studied and then the construction techniques and materials will be dealt with in detail. The most important written sources on the fortifications of Ankara will be used, starting from the earliest source available up to the present day. The oldest and most extensive study on the Citadel of Ankara was made by G. de Jerphanion. Another important source that focuses on Byzantine Ankara and the Citadel of Ankara is by Foss (1977). As an important city throughout history, Ankara a city frequently visited by travellers to Anatolia as well and because the Citadel is an example of monumental architecture, the accounts and drawings of those travellers have also been examined. In the second part, the information obtained from field surveys and written and photographic documentation will be combined in examining the fortifications in terms of construction techniques and materials. The ideological and practical significance of the spolia will be mentioned, in addition to their use as a building material (Figure 3-18). In the final part, basic issues concerning dating the fortifications of Ankara will be examined in conjunction with a discussion about whether the construction techniques and different periods should be taken into consideration in conservation works in the light of the data obtained.

3.2.1. General Description

It is known that the ancient city of Ancyra, the centre of which was located in the modern Ulus district, first emerged as a Phrygian city in the eighth century BC and has functioned as a capital city three times in existence until the modern Republic of Turkey.[87] Kadıoğlu and Görkay (2011), state that the fortifications dating to the third century AD were constructed against the Goth invasions and existed prior to the

[87]Kadıoğlu and Görkay, 2011: 538.

Byzantine period fortifications, something confirmed by the archaeological and epigraphical sources.[88]

The initial archaeological evidence for this was discovered during excavation for a building foundation in 1980s, but not identified as a fortification at that time. Later on, in the 1990s, some remains of the fortifications were unearthed close by and the first examinations were conducted by experts from the Ankara Museum of Anatolian Civilizations (Kadıoğlu and Görkay, 2011). Kadıoğlu and Görkay, who mention that the greater part of this fortification was built with spolia blocks removed from ancient city buildings, state that only a small part of it is now visible in the basement of a commercial building to the southwest of the Roman Baths.

Kinneir (1818), who travelled in Turkey between 1813 and 1814, describes the Citadel, which is dated to the seventh century AD, as being located on a high hill top which had steep cliffs on three sides, similar to the Edinburgh Castle. Today both citadels look alike in terms of their positioning.

The choice of location can be understood by the existence of certain Late Antiquity defence structures, which were still intact even in the Byzantine period; confirmed by mention during the Crusades. Their siting, irrespective of any unknown previous use, was on a major transportation route, convenient for commerce, industry or agriculture and which had natural defensive advantages and a water resource made them preferred over alternatives.[89]

Foss and Winfield (1986: 15-17) categorize the selection of sites where fortifications were built under three headings: "The first type of natural site that was often chosen was the spur or shoulder jutting out from a range of hills since this provided natural defences on three sides, and left only the narrow neck adjoining the main range as a weak natural point that could be strengthened by ditching." Existence of a water source nearby was an asset as it would facilitate access to water. Some Byzantine spur-sites are: Kastamonu, Amasya, Niksar, Tokat, Koyulhisar (in Sivas), Seleucia, Antioch, Saone and Sheizar. ''The second obvious natural site is the isolated crag and hilltop.''

[88] *Ibid.* p.538.
[89] Foss and Winfield, 1986.

The examples: Ankara, Kütahya, Afyonkarahisar, Şebinkarahisar and Kalecik (a Byzantine castle to the north of Ankara) fall into the second category of the Byzantine fortifications. "A third type of natural defensive site is the triangular form. This is sometimes formed from the spur of a hill, as at Antioch, Salonica, Amasya and Mistra, and sometimes the apex rises to an independent hilltop, as at Zenobia."

Apart from the selection of site, the layers of fortifications and use of concentric walls as a method of defence were explained by Sir Charles Oman:

> The essential features of Byzantine military architecture were the erection of double and triple defences round the core of the fortress, and the careful provision of towers set at intervals in the 'curtain' of the walls. Both were new ideas to the Crusaders whose notion of a fortress was nothing more than a keep surrounded by a plain outer curtain not strengthened with towers.[90]

Ankara was invaded by the Sasanians, occupied and devastated and some parts of it were set on fire in 622 (Jerphanion, 1913; Foss, 1977; Eyice 1992). As a result of these events, according to Foss (1977) and Eyice (1992), the city contracted into the inner castle. To be able to have better defence and to improve the citadel, the buildings from previous periods were demolished regardless of their value to provide building materials for new fortifications. Eyice also adds that, by the seventh century, the Sasanian threat had passed but soon replaced by Arabic raids and so that Ankara became a major command centre for the Byzantines.[91] Of the two lines of fortification walls which provide protection to Ankara, the first, or external walls, were reinforced with towers built at 40 m intervals; while the second wall was strengthened with pentagonal towers built more frequently at 20 m intervals.[92] Foss (1977) who states that the inner citadel was built entirely with spolia, adds that it was 8 m to 10 m high (Table 8).[93] Jerphanion (1913), Foss (1977) and Eyice (1992) mention that engraved stone blocks removed from the buildings and graves of Antiquity can be seen in the walls. Finely dressed stone blocks, mouldings, bases of columns and statues, inscribed

[90] This sources could not be reached therefore it could not be used directly. (Previously quoted by Foss and Winfield, 1986: 12).
[91] Eyice, 1992: 254.
[92] *Ibid.* p. 257.
[93] Jerphanion, 1913; Eyice, 1992.

altars and stelae, relief friezes, ceiling coverings, and pierced stone blocks are all important spolia on the fortification walls.[94]

The walls, confirmed as the Byzantine walls by many scholars and experts, are almost intact (Map 13). The present Citadel of Ankara is comprised of two lines of fortification walls. The inner line is the upper walls which were enhanced with pentagonal towers. These higher walls form the entire inner wall circuit and will be called the inner circuit in this study. The inner circuit is laid out on an almost rectangular ground plan (Map 13). Of the bastions; Akkale is located in the north-east and Şarkkale in the south-east. Parmakkapı and Zindankapı are located in the inner circuit on the southern façade (Map 14). These gates are positioned orthogonally to each other and between them there is a square courtyard. Another gate of the inner circuit, still currently in use, is the Gençkapı, located on the western facade. The marble work used in the gates is as imposing and fine as those used in towers and other more visible parts of the walls. A similar use of marble can be seen in the fortifications of Nicaea; there are even triumphal arches built entirely with marble in Nicaea. That these marble blocks used in both cities had been removed from earlier buildings is confirmed by the marks of lewis holes and dovetail clamps on the blocks.

The second fortification walls are the lower walls built on the lower levels of the slopes of the hill; these will be termed the outer circuit in this study. Unlike those in the inner circuit, the towers in the outer circuit are roughly square in plan. The outer circuit does not have a geometric plan; rather it seems to be laid out on a plan complying with the topography. The walls and towers are located intermittently in the western and southern directions. Hisarkapı, used as the main entrance to the citadel, is located on the southern facade of the outer circuit (Figure 3-4).

[94] Detailed information about Ankara Citadel: Jerphanion (1913). For the spolia in the Citadel, see: Foss, 1977; Foss and Winfield, 1986; Eyice, 1992: 257; Serin, 2011.

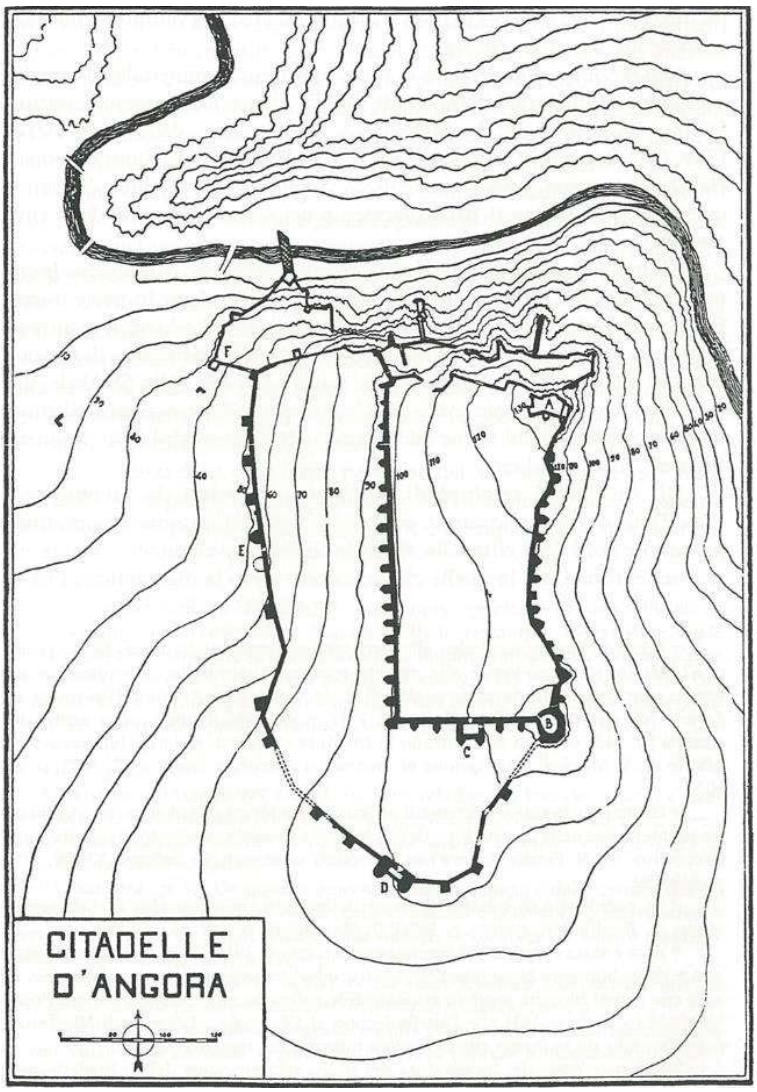

Figure 3-4: Plan of Ankara Citadel (G. de Jerphanion, 1928: pl. LXXXII)

Mamboury (1934) notes that the fire in 1917 fire burned down an area of approximately 30.000 m2, starting from the high outer circuit located on the west hill towards the city centre. In addition, Mamboury (1934) notes that despite the speed and extent of reconstruction work in the city, the area affected by the fire could still be distinguished (Figure 3-5).

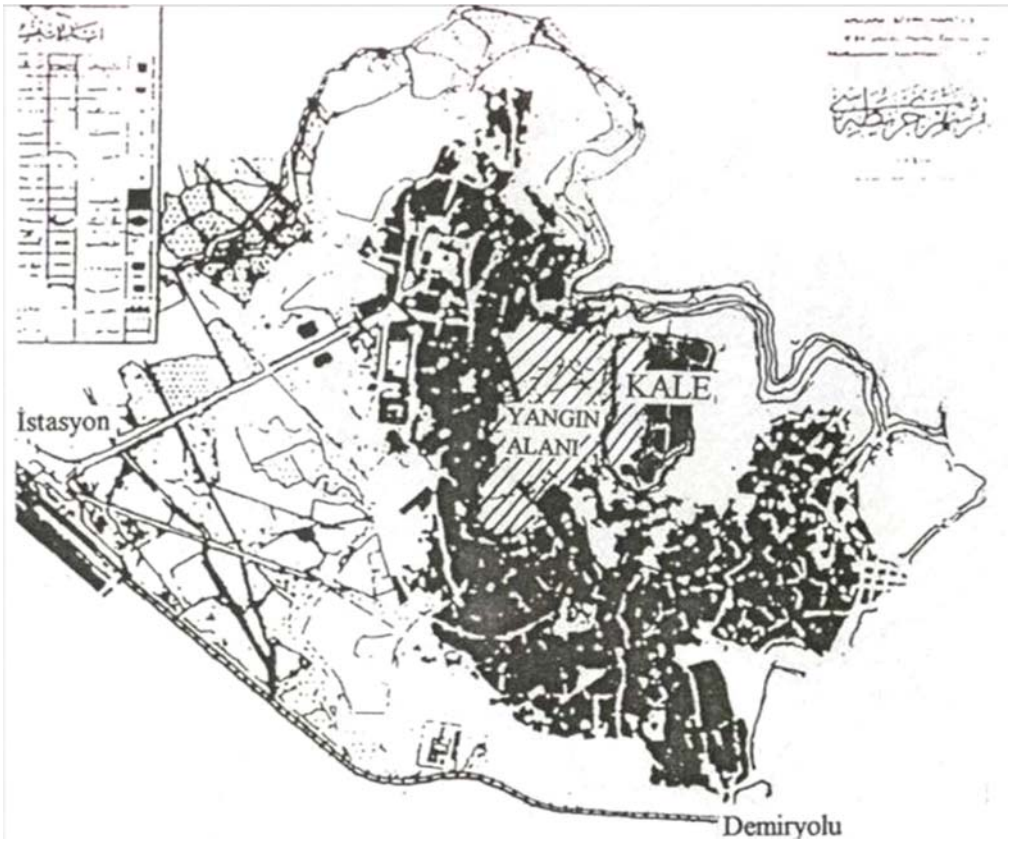

Figure 3-5: The area of the 1917 fire and Ankara Citadel (Aktüre, 2001: 64)

The fortification walls of Ankara occupy a prominent place among the surviving monumental buildings from the Late Antique and Byzantine Periods. They are among the few buildings from these periods that have remained intact. The prominent buildings from Roman and Byzantine Periods located in Ulus district of Altındağ Province, the historic core of Ankara are the Roman Theatre, the temple/church of Augustus, the Column of Julinaus, the Roman Baths, the Church of St. Clement and the Byzantine fortifications. In addition to these, French (2003) and Serin (2011) point out wall sections located in certain places, the streets and stoa near to the Roman Baths, paved streets and the Bentderesi as evidence from Roman and Byzantine Ankara (Figure 3-6).

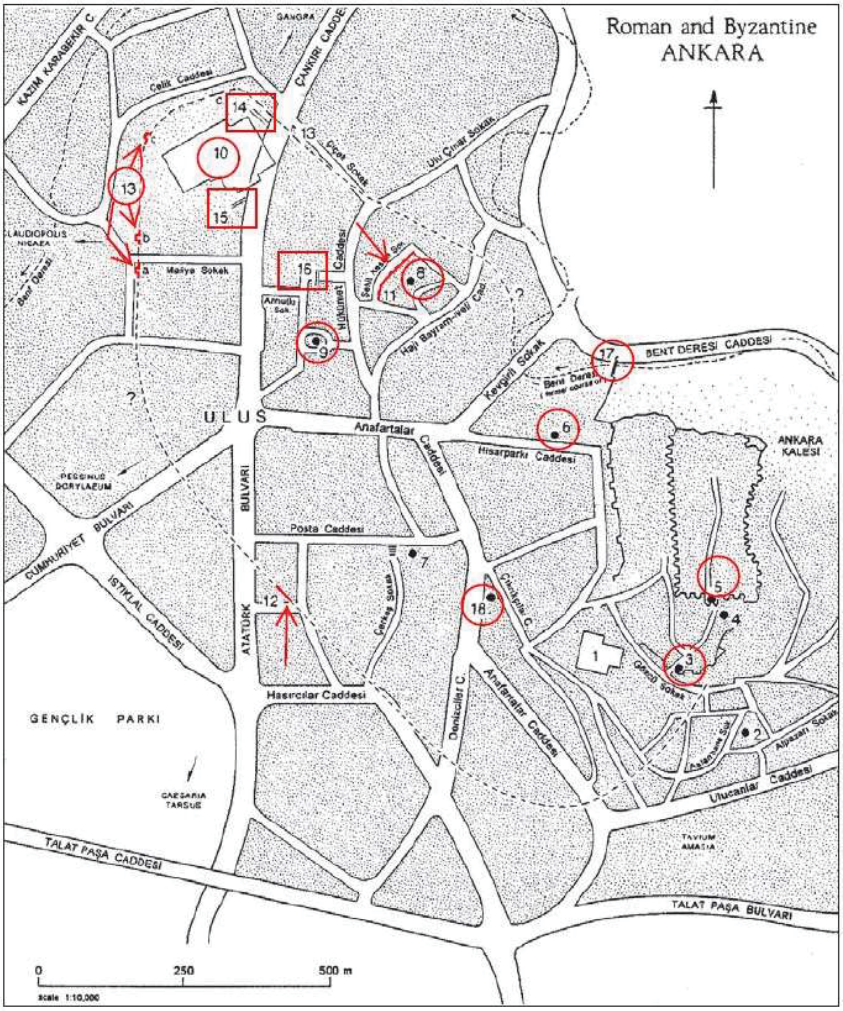

Figure 3-6: Map of Roman and Byzantine Ankara, surviving evidence (after French, 2003, fig. 3)

3. Byzantine citadel, outer circuit, main gate; **5.** Byzantine citadel, inner circuit, main gate; **6.** Roman theatre: **8.** Hacıbayram Square, with the namesake mosque and temple/church of Augustus; **9.** So-called column of 'Julian'; **10.** Roman baths; **11.** Şehit Keskin street, possible line of a defence wall; **12.** Section of a defence wall (probably third-century city walls); **13.** Sections of a defence wall (probably third-century city walls): (a) 1985 (b) 2003 (c) Akok excavations; **14.** Street and stoa near the roman baths; **15.** Paved street (now re-buried); **16.** Paved street; **17.** Bent Deresi, now lost dam (?); **18.** Church of St. Clement (after Serin, 2011, fig. 1).

In the Court Records (Şeriye Sicilleri) and traveller accounts there is documentary evidence of a third line of walls being built as a protection against Celali riots in the sixteenth century.[95] While Evliya Çelebi speaks of four gates in the third fortification walls in the second volume of his *Seyahatname*, traveller Lucas (1712) mentions seven major and five minor gates. However, the third line of walls is impossible to study since nothing remains of it. In this study, the inner circuit that remained intact from the Late Antique and Byzantine periods will be dealt with.

It was stated that the initial date of construction and plan of the citadel of Ankara is unknown, however it existed during the Galatian Campaign of Romans in the second century BC and the Tectosages took shelter there (Erzen, 1946: 46, 94). The Tectosages were a Galatian tribe who came from Europe to Anatolian around 278-277 BC and made Ankara their capital city (İdil, 1997).

All Anatolian cities started to be exposed to the raids of the Persians and other barbarian tribes after the Emperors Severus Alexander (AD 222-235) and Valerian (AD 253-260) lost battles against the Persians, and the Citadel either underwent major repair or was rebuilt entirely (Erzen, 1946). Based on the inscriptions, the author states that the city was faced with a dire threat and was reorganized in the second half of the third century.[96] Erzen also states that the inscriptions on the architrave and frieze fragments of spolia reveal their origins in prominent buildings, but it is hard to determine the character of those buildings since so much has been lost or misplaced (Map 15). İdil (1997) mentions that the Emperor Caracalla (211-217) ordered repairs to the citadel walls and commissioned the construction of a bath beside the Citadel in the early third century AD. Due to the major upheavals besetting the Roman Empire in the second half of the third century, the development of the city lost momentum and a new era for Ankara started (İdil, 1997).

Foss (1977) divides the period of 800 years starting from the reign of the Emperor Diocletian (284-305 BC) to Ankara's capture by the Seljuk Turks into two main periods: Late Antiquity, and Byzantine. In this division, the era from Diocletian to the Byzantine Emperor Heraclius (610-641) was called the Late Antique period and the

[95] For further information on the third fortification wall see: Ergenç, 1980; Eyice, 1972.
[96] *CIG* 4015.

era from Heraclius to the Turkish conquest was termed Byzantine. The event marking the dividing line between them is the capture and sack of Ankara by the Sasanian Persians in 622. Ankara lived in peace under the Byzantine control until the seventh century. According to Foss (1977: 29) prior to this event, the city was a large and well developed metropolis with many monumental public buildings. In the aftermath, the city was left in ruins and only scattered settlements outside the great wall persisted on the acropolis hill where the main settlement was located (Foss, 1977: 29). The author suggests that although the period after this major devastation seems vague, it can be revealed through the materials at hand.

Throughout the eighth century, Ankara lived under continual threats from the east. The Arabs posed an important threat to Ankara, as well as other Anatolian cities, when they besieged Constantinople twice between 674 and 678 and between 717 and 718. The second Arab siege between 717 and 718 was broken by the Emperor Leo III. The inner circuit of the Citadel of Ankara is dated to the first half or the middle of the seventh century.[97]

Following the next wave of Arab invasions starting in 838, Al-Mu'tasim (833-842) occupied Ankara in 839 (İdil, 1997). The Byzantine Emperor Michael III (842-867) ordered the repair of the walls damaged during the Arab invasions (of 838) in 859 (Foss, 1977: 79; Serin, 2011: 1272; İdil, 1997). On the basis of the inscriptions, the construction of the south western bastion, which is known as Şarkkale, and the outer circuit and restoration of inner circuit are dated to 859, that is the reign of the Emperor Michael III (842-867) and *spatharocandidatus* (future emperor) Basil I (867–886) (Serin, 1998; 2011; 2014). This is confirmed by the inscriptions.[98]

As elaborated in the historical sources, the capture of Ancyra, considered the most powerful defence point in Byzantine Anatolia besides Amorium, by Arab forces in 838, led to widespread devastation. This devastation led Emperor Michael III (842-

[97]Jerphanion, 1928, 208-14; Foss, 1977a, 1975; Serin, 2011.

[98] For the inscriptions documenting the construction of the citadel of Ankara, see: Jerphanion, 1928: 228-93; Grégoire, 1929-1930; French, 2003: 197; Mamboury, 1934: 146-52. Foss and Winfield, 1986: 143 dates the construction of the outer circuit to the reign of Nikephoros I (802-811). For comparison, see: Jerphanion 1928: 214. For strength and significance of the Citadel of Ankara, see: Lawrence, 1983. For the Citadel of Ankara after Jerphanion and the problem of its conservation, see: Serin, 1998; for a more comprehensive bibliography on this issue, see: Serin, 2011.

867), who was called μέγας βασιλεύς, to order rebuilding of the fortification walls and most probably the entire city (Serin: 2011: 1272). “In fact, the Emperor Michael III is referred as πολιστής ‘the founder of the city’ in the inscription carved on three long blocks on the upper part of the wall to the right of the southern gate (Demirkapı) of the inner circuit” (Serin, 2011: 1273) (Figure 3-7).

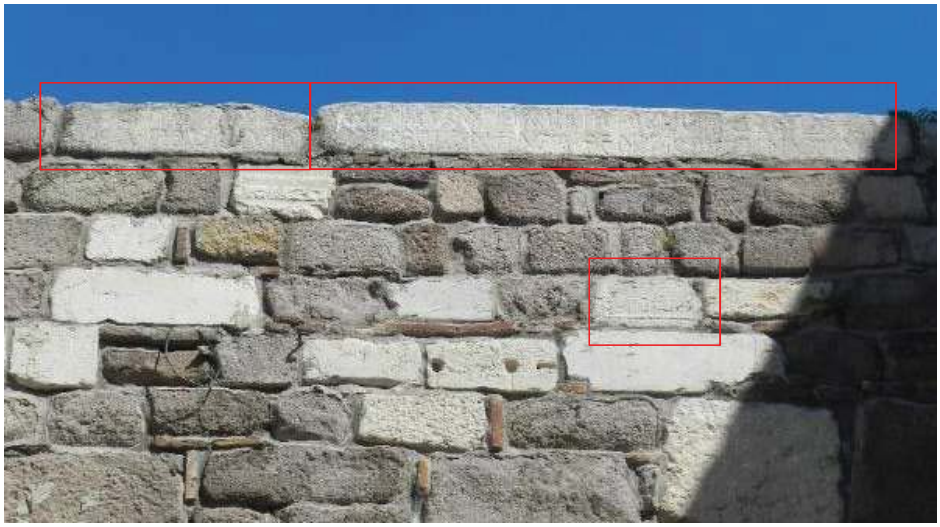

Figure 3-7: Inscriptions about Michael III (author, September 2016)

The Seljuk ruler Alparslan defeated the Byzantine army in the Battle of Manzikert between 1071 and 1074, and conquered Ankara. However, the city was recaptured in 1101 during the Crusades and continued to serve as a citadel on the eastern border of the Byzantine Empire for a period (İdil, 1997). İdil states that Kılıçarslan conquered the city in 1169 and united the Anatolian Seljuk State. Later on, the city was reorganized in the reign of Alaeddin Keykubat (1219-1237) during the golden age of the Seljuks. He adds that Keyhusrev ordered repairs to the citadel in 1250 (İdil, 1997) (Figure 3-8).

Figure 3-8: Inscription containing Seljuk period interventions (Serin, 1998: Pl. VI-b)

3.2.2. Building Techniques and Materials

Foss (1977) who states that Ankara is still dominated by medieval pentagonal towers located on the hill over the city centre, emphasizes that the fortification walls, which he considers as the most splendid examples of the Byzantine buildings in the city, might be an outcome of the reorganization in the Byzantine army in the seventh century. The author describes the walls as following: there are two parts of the fortification walls; the outer circuit composed of square towers at 40m intervals and the inner circuit, which watches saliently over the city like the prow of a ship. The inner circuit covers an area of 350mx150m and when the outer circuit is added, the total enclosed area is significant. Large blocks removed from ancient monumental buildings were used in the lower part of the inner circuit up until the level of 8 to 10 m. The upper parts were built with brick (Figure 3-9). The core of the wall consists of mortared rubble. The towers of the outer circuit were built in a similar, but less organized, manner.

Figure 3-9: West facade of the inner fortifications (author, September 2015; 2016)

The main access is from the south and interiors of both lines of walls are accessible. In addition, strong bastions were added to the south-eastern corner and to the highest point of the hill in the northeast in order to dominate the city from the east and the west. The bastions mentioned by the author are Akkale and Şarkkale, which are still standing but have undergone numerous alterations (Figure 3-10) (Map 16).

Figure 3-10: Akkale (above) and Şarkkale (below) as seen in 2015-2016 (author)

There is a plentiful and an almost continuous use of spolia in entire towers and walls of the inner circuit (Figure 3-18). The differences between the inner and outer circuits of fortifications have already been referred to. Here, the differences in the plans of the towers, and in the material selected and its quality are examined. The spolia used in the inner circuit are very imposing as if they were carefully selected. While spolia were used up to a certain level (8-10 m), the use of brick and rubble stone on the upper parts of the inner circuit creates a different appearance. In this technique, used especially in the western facade of the inner circuit, the bricks were laid at least in four courses. In Nicaea, on the other hand, the number of the rows of bricks is more consistent and varies from four to six. The number of courses of stones between the layers of brickwork is fewer in Ankara compared to Nicaea. Nevertheless, the construction technique is basically the same. In the walls of Nicaea, the spolia blocks were only used until a lower level and alternating courses of brick and stonework begin at about 1 m. Above ground level. The inner circuit of Ankara citadel displays certain

inconsistencies within itself. The quality of spolia used, especially in the western part of the citadel, is higher than in other parts. Great care was taken in the construction of the gateways, especially in the southern façade. Since Zindankapı and Parmakkapı were the weak points of defence, they were strengthened with towers decorated entirely with spolia (Figure 3-18).

Another important detail that can be observed in the walls of Ankara is the brick decoration typical of the Byzantine period. There are currently visible three different examples of these motives used on higher levels of the towers (Figure 3-17).

3.2.2.1. Gates

Like the other Byzantine fortifications in Anatolia, the gates of the fortifications of Ankara were built most elaborately and splendidly with spolia. Since there are two lines of fortification walls, the gates on the outer circuit will be described first, followed by those on the inner circuit. Hisarkapı, which is the main entrance to the Citadel, is located on the southern facade of outer circuit. There are high circular towers on both sides of Hisarkapı (Figure 3-11/12/13)[99]. Another gate of the outer circuit is Dışkapı which is located on the western facade.

[99] For detailed information on gates of Byzantine City Walls and reused materials, see: Bevilacqua, 2015.

Figure 3-11: Hisarkapı before restoration work (author, September 2015)

Figure 3-12: Hisarkapı during restoration work (author, September 2016)

Figure 3-13: Hisarkapı in the 1920s (left) (Günel and Kılcı, 2015); the inscription on the main gate (Hisarkapı) (author, September 2016)

On the inner circuit of the Citadel there are the Zindankapı and Gençkapı gates which are still in use. Zindankapı and Parmakkapı are located on the southern facade of the inner circuit at a most remarkable spot (Figure 3-14/15). Gençkapı is located on the western facade of the inner circuit between the 12th and the 13th towers (Figure 3-16).

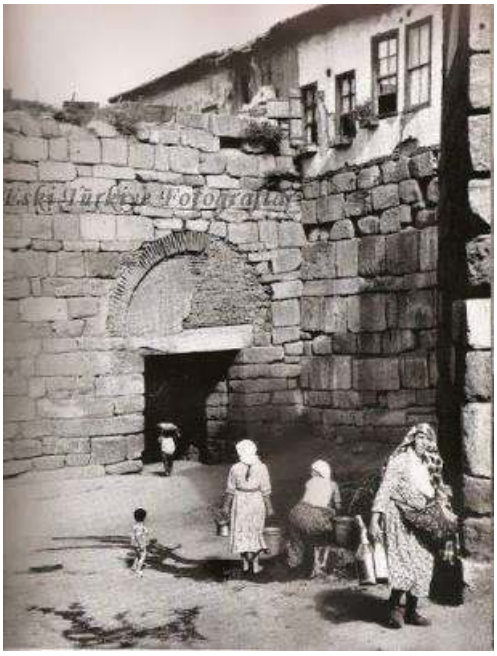

Figure 3-14: Inner circuit second gate (Parmakkapı) in 1957 (URL 5)

Figure 3-15: Parmakkapı and Zindankapı (author, September 2015)

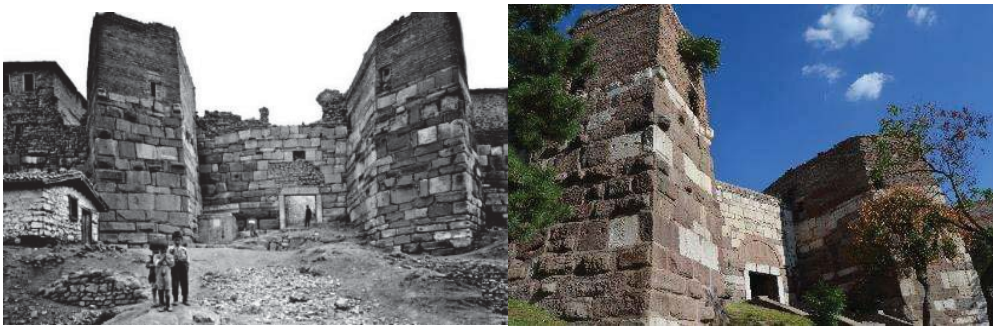

Figure 3-16: Ankara Citadel, the view from Ulus in 1900 - Gençkapı (left) (URL 6), Gençkapı in 2015 (right) (author)

3.2.2.2. Walls and Towers

The formation of *kastra*, the abandonment or demolition of monuments, and even the decline of entire urban areas have been generally attributed, at least until the recent past, to the Persian and Arab invasions which are supposed to have 'devastated' Asia Minor from the seventh to the ninth century (Serin, 2011: 1270). Serin (2011) agrees that these invasions caused disruptions and a decline in urban life but she considers that it could be misleading to attribute radical transformations and the total disappearance of cities only to this factor solely on the basis of archaeological evidence in the absence of written sources.[100] The author thinks that certain individual cases like Ankara constitute acceptable cases when supported by written and archaeological evidence (Serin, 2011). In this regard, the author states that the form of the fortification walls of Ankara provide a statement on the survival of Byzantine cities and provide valuable information on historic events at individual sites. The assumption that a fortified city was necessarily a sign of decline must be relinquished (Serin, 2011: 1270). The construction of defensive walls could be evidence for the vitality of a city that could at least respond positively to a crisis or conflict.[101]

The Citadel of Ankara is composed of two lines of fortification walls which, although similar in terms of building technique and materials, are different in terms of form and logistics; while the inner circuit is laid on a regular rectangular plan, the outer circuit

[100] For more detailed information: Foss, 1975: 721-747; Serin, 2004: 202-205.
[101] Gregory, 1982: 56; Serin, 2011: 1271.

is less regular and surrounds the inner circuit on the southern and western sides (Serin, 2011). There are pentagonal towers on the inner circuit where the walls are 14-16m high. One of the most distinguishing features of the walls of Ankara is the spolia. Continuous use of spolia can be observed, especially in the towers and walls on the southern and western facades of the inner circuit. In addition to inscriptions which comprise a source of historical information as written sources, marble stone blocks, fragments of statues and architectural elements, altar parts, pierced blocks belonging to the Roman water system also provide information about the buildings from which they were removed.[102] Serin (2011) notes that since the square shaped pierced blocks, creating a decorative effect, originally belonging to the water system of Roman Ankara are located frequently in the eastern part of the inner circuit, the water must have been brought from a hill to the east of the city in Roman times.[103] The technique of the alternate use of brick and stone with spolia, which can be seen in the fortifications of Ankara, is dated to the reign of the emperor Michael III (842-867), with the three brick decorations that can be seen on the two of the towers being a feature of the Byzantine period (Figure 3-16) (Table 7).[104]

[102] For documentation of the building materials and spolia in the Citadel of Ankara, see: Sülüner, 2005.
[103] Kaytan (2008), who worked on the water system of Roman Ankara, studies the water system thoroughly. For a comprehensive source on this issue, see: Fıratlı, 1951.
[104] For more information, see: Serin, 2014.

Figure 3-17: Alternating rows of brick and rubble stone with brick decoration typically of the Byzantine period (author, September 2016).

The lack of studies on archaeological and physical evidence concerning Ankara is exacerbated by a similar lack of interests shown in the written sources after the final defeat of the Arabs in the ninth century (Foss, 1977; Serin, 2011). The archaeological record of Byzantine Ankara is small, as with many other cities of Asia Minor, but the city walls, the greatest Byzantine monument, have always been of interest, and a source of evidence (Foss, 1977). Serin (2011: 1280) gives a comprehensive explanation of the Citadel of Ankara and use of spolia, one of its most important features, as follows:

> This complex structure, with its position, layout, logistic concept, and construction technique and materials, mirrors not only the history and topographical transformation of Ancyra in the Byzantine Middle Ages, but also emerges, with the different phases of *spolia* incorporated in its walls, as a mnemonic setting, where the city's history from Antiquity up to Ottoman times can be read in stone. Historical written sources, if any, may not always be very inspiring on their own for the identification and positioning of a building, or buildings, if not supported with physical and visual evidence. The now – almost completely – lost classical and Early Christian archaeological heritage of Ankara would thus have left little tangible evidence, if not recycled and recovered within the citadel walls.

Spolia, one of the basic elements used in the Citadel of Ankara have a greater importance than ordinary building stone. Every one of the spolia used in almost all the walls of the citadel is a source of information. The use of spolia, a wide spread building technique in the Byzantine Period, is visible, to a greater or lesser extent, in the fortifications of all the cities that have been examined. Ankara displays an almost excessive use of spolia, almost as if the Citadel could not have been constructed without the spolia. The towers, covered entirely with spolia, located in the southern facade of the inner circuit are good examples of this situation (Figure 3-17). Spolia, which were used in-situ or non-situ, provide information about buildings which had disappeared in the Roman and Byzantine periods and sometimes from even earlier. Serin (2014: 80) explains that the building elements from dismantled buildings, although dispossessed of their original place or architectural integrity, have survived until the present by what amounted to the conservation approaches of their period, Late Antiquity and Middle Ages. Quite apart from any negative or positive connotations ascribed to the practice of the "reuse of building materials"; this was a part of a conservation approach in Late Antiquity, which was documented and supported by Roman laws (Cod. Iust. 8,10,16; Cod. Theod. 15,1,19). According to this approach, buildings could be disassembled in order to conserve the architectural heritage and physical memory of the city within the framework of a structural 'recycling' policy, and the Roman laws supported this recycling only if the dismembered components of dilapidated monuments or their architectural elements were used in other public

buildings in the same city, and the removal and reuse of dismembered (*disiecta membra*) building elements remained within the city borders (Serin, 2014: 80).

Figure 3-18: Ankara Citadel, Inner Circuit, extensive use of spolia (September 2015-16, author)

3.2.3. Chronological Issues

Serin (2014: 74) notes that the use of building techniques as the sole criterion in dating buildings is not appropriate. The scholars (Foss, 1977; Foss and Winfield, 1986; Serin 2011; 2014) who studied Byzantine period buildings and fortifications of both Nicaea and/or Ancyra, where the construction technique with alternating courses of brick and stone was used, consider that this technique was prevalent in different types of buildings (such as churches, fortifications) and especially in the fortifications of Late Antiquity from the third century AD onwards. However, scholars who investigated Byzantine buildings in Anatolia mention that the rubble stone masonry technique, in which the alternating brick rows are used with abundant spolia, was reused frequently in the buildings and fortification walls of Anatolia (Ankara, Iznik, Kütahya). In particular, starting from the ninth century, reuse is seen frequently.[105] Consequently, Serin (2014) states that the variations of this technique was current for a long period in Ankara, from at least the third to the ninth century, as can be seen in the Roman baths built in the reign of Caracalla, the Church of St. Clement and in the inner circuit of the Citadel of Ankara, which is dated to the ninth century in its major phase of reconstruction (Figure 3-17/18).

This technique of laying rubble stone and brick in alternating courses, very common in Late Antiquity, is also observable in the fortifications of Constantinople, Nicaea and Antioch (Serin, 2011). Foss considers that the use of regular dressed stone masonry and spolia with brick continued in the fortification walls (Ancyra, Nicaea, Cotyaeum) and buildings to the ninth century and afterwards. It is emphasized that dating the fortification walls only on the basis of the formal features could be misleading as the walls and towers exhibit variations in terms of form, construction technique and material and physical appearance and display radically different appearances from one region to another.[106]

[105] Serin, 2014. For the detailed information on this issue, see: Foss, 1982: 182; 1985: 82, 92; Foss and Winfield, 1986: 129, 162-3.
[106] For further information: Foss and Winfield, 1986: 129, 162.

CHAPTER 4

COMPARATIVE ANALYSES WITH LATE ANTIQUE AND BYZANTINE FORTIFICATIONS IN ANATOLIA

In this chapter, the aim is to examine the fortifications that were built, or reconstructed, especially during the Antiquity and Byzantine period, in parallel with a comparative study regarding their construction techniques and materials. The question of whether there is a connection between the dates of construction, the reason and strategic thinking underlying the construction, and the historical periods of these fortifications will be investigated in the light of data obtained through analyses of the construction techniques and materials. In this study, the Anatolian cities such as Constantinople (Istanbul), Nicomedia (Izmit), Cotyaeum (Kütahya), and Amorium, which were known to have been fortified since the Antiquity and continued to use these fortifications for defensive and protection purposes at least until the Byzantine period, are discussed to make comparative analyses with the fortifications of Ancyra (Ankara) and Nicaea (Iznik) (Figure 4-1). The sources on the fortifications, which are investigated within the scope of this thesis, were written separately for every fortification and thus independent from each other. In this chapter, the fortifications of the four cities, which are dated to the Late Antique and Byzantine periods, will be examined together. In the second and third chapters of this thesis, the cities of Iznik and Ankara were studied in detail, taking their similar and parallel features into consideration; therefore, other cities, which may possess parallel features with Iznik and Ankara, will be compared in detail. At the end of the chapter, an evaluation concerning common conclusions for all of the mentioned cities will be made.

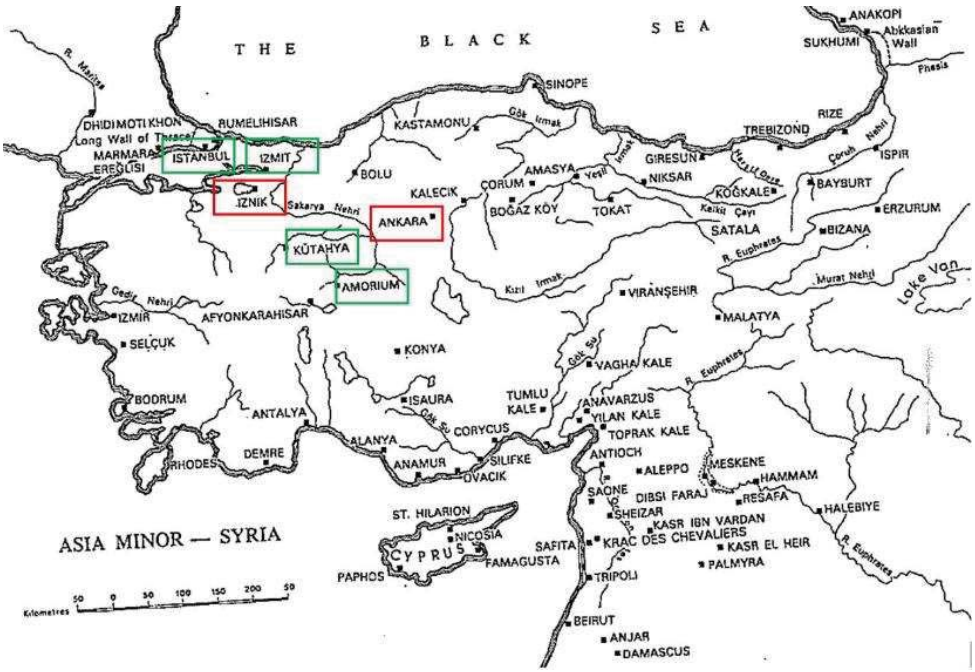

Figure 4-1: Anatolian towns that Byzantine period where fortifications were examined (after Foss and Winfield, 1986: 205)

4.1. CONSTANTINOPLE– ISTANBUL

Constantinople (330-1204/1261-1453), which was the capital of the Byzantine Empire, was founded by Emperor Constantine the Great. Constantine enlarged the Greco-Roman city of Byzantion and built a crosswall in the fourth century. Nothing remains from this wall presently.[107] After the reign of Constantine, because the city expanded toward the west, a new circuit of walls, known as the Theodosian walls, was built during the reign of the Theodosius II (408-450) (Figure 4-2). The Theodosian walls will be analyzed here because they were built with the technique of alternating courses of brick and stone technique, which is observed in the fortifications of the Late Antique and Byzantine periods and are dated to the fifth century.

The triumphal arch, known as the Golden Gate, marks the start of the city. The fortifications of Istanbul constructed in the mid-fifth century in the form that still

[107]About this period and the remains of the wall, see: Bardill, 2012.

survives, are the largest fortifications in Anatolia (Foss and Winfield, 1986). The fortifications are divided into two distinct parts; sea walls; and the part examined in this study, the land walls. Foss and Winfield (1986) note that despite numerous interventions, the fortifications maintained their original basic form, which was adapted to the changes in evolving defence systems. Therefore, the variations in the construction techniques and details seen in these fortifications are those common to the Byzantine period.[108]

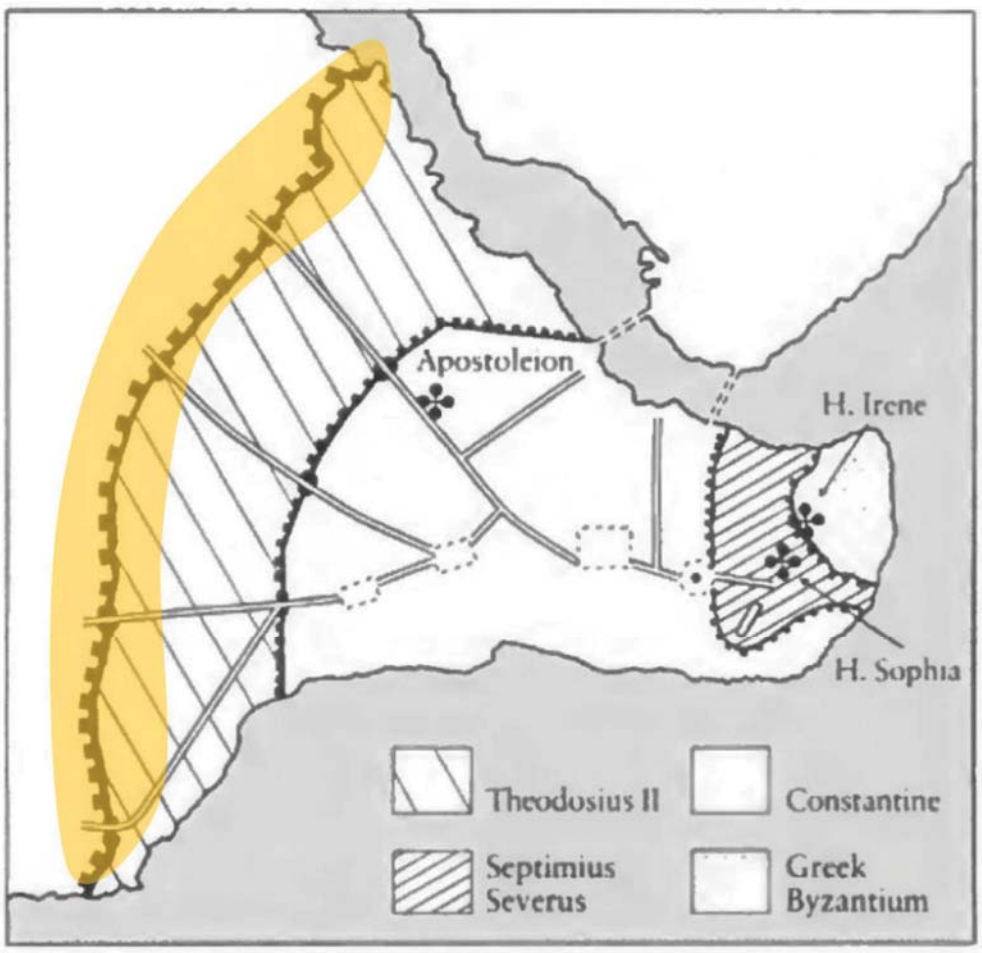

Figure 4-2: Constantinople, showing the growth of the fifth century and the Theodosian walls (Krautheimer, 1986: 44, fig. 37)

[108] Foss and Winfield, 1986.

Even though there is no inscription mentioning the works of Theodosius II on any part of the fortifications, Foss and Winfield date the fifth century fortifications of Constantinople to the period of Theodosius II. The construction elements of these walls exhibit similarities with fortifications constructed much later but the masonry cannot be confused separates them clearly.[109] Foss and Winfield (1986) compare the different periods regarding the wall technique, which is a typical feature of Byzantine fortifications. The outer walls are constructed with a mortar rubble core (25-35 cm thickness) and in the early works the rubble is usually densely packed and well-set.[110]

Foss notes that the use of brick bands was a common feature found in the fortifications and adds that in the fifth century, the use of 5 courses of brick running right through the walls and towers aids the consolidation of the rubble in the wall core and bonds the wall core with the facing (Figure 4-3). Rectangular blocks of limestone are used to face the fortifications of Istanbul. The blocks are so well made and laid that the joints rarely require any mortar. In the wall section dated with an inscription to the seventh century in Iznik (T69-72), the use of mortar between the stone blocks is also rare. Foss, who identified the use of stone block without mortar as classical ashlar masonry, states that 5-6 rows of stone are laid with a vertical distance of 1 m between them. The stone blocks located in the northern part of the fortifications of Istanbul, which are twice the normal size, could be laid directly on top of each other because of being well-cut (Foss and Winfield, 1986).

[109] *Ibid.* p.52.
[110] For detailed information on the fortifications of Istanbul see: Foss and Winfield, 1986: 41-77.

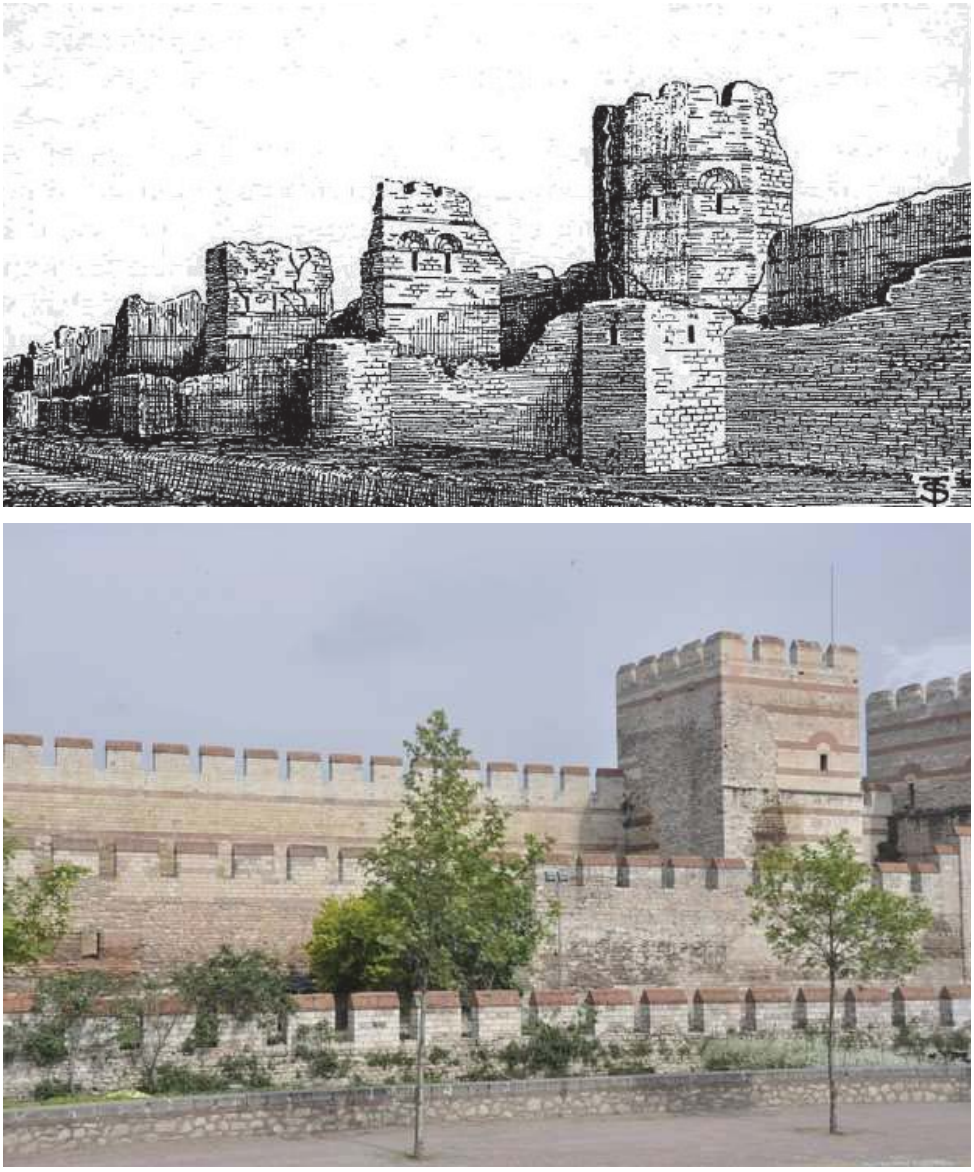

Figure 4-3: Fortifications of Istanbul (above: Sidney Toy, 1955: 47) (below: URL 7)

4.2. COTYAEUM - KUTAHYA

Kütahya is one of the cities playing role in the history of Anatolia. The city which has survived the Roman, Byzantine, Seljuk and Ottoman periods since its founding in the Phrygian period, was called Cotyaeum in Antiquity and the Middle Ages and spread and grew in the Roman period (Foss, 1985). Today the city has spread well beyond the hill that comprised the first settlement (Figure 4-4, 4-5).

Figure 4-4: Fortifications of Kütahya (URL 8)

Figure 4-5: View of Kütahya and its fortifications (URL 9)

Foss (1985) notes that if there are any buildings remaining from the ancient city, they have yet to be discovered, but the reused pieces on the later period buildings forming a natural fortification clearly show that there had been a long lasting settlement on this hill. Foss (1985: 12) emphasizes that the strategic choice of the location for a settlement has had an important effect on the growth of the city and thus explains the positioning of Kütahya as in the following[111] (Figure 4-6):

> Kütahya lies on natural routes which connect it easily with major centres of population, and provide relatively easy communication between the central plateau and the coast. They lead from Kütahya to Eskişehir (Dorylaeum) and the cities of Bithynia or to Ankara; northwest to Bursa or Balıkesir and the Mysian plain; southeast via Aezani and Gediz to the Macestus valley or Lydia; and south through Altıntaş and Uşak to the Maeander and Hermus valleys, or via Afyon to the main highway through Anatolia to the Near East. Such a location, a place from which large parts of western Anatolia could be reached or controlled, accounts for the long historical role of Kütahya as a military and administrative centre and thus for the size and importance of its great castle.

Figure 4-6: Location of Kütahya in Turkey (after Foss, 1985: 10)

[111] For more detailed information on Byzantine fortifications settlement choices, see: Foss and Winfield, 1986; Foss, 1985, for the geography of Kütahya: Philippson, 1913: 85-89; Dönmez, 1982.

Kütahya gained importance after the Dark Ages because of its strategic location on the major trade routes and became one of the largest military bases in Anatolia, with this situation continuing until modern times.[112] Kütahya, one of the provinces of the militarised Byzantine government comprising a large part of northwest Anatolia, was one of the centres of the Opsician Theme.[113] With the spread of Christianity, Kütahya became the centre of a bishopric, together with some other important cities of Anatolia (Foss, 1985). In the notes of Evliya Çelebi (1670) from the seventeen century on Kütahya is mentioned as: [114]

> It stands on a steep blue and red rock and is stone-built. It is on a hill standing like the gem stone of a ring. The circumference including the lower castle is 3.000 pages. All four sides are built on steep rock with no moat. These are precipitous rocks like the laughing pits of Hell. No men can climb to the top but the lower new castle is a low place to the north of the old. Sultan Mehmed II added it in the year 842(?) … There are ways down to the spring from the upper castle. The new castle (main fortress) has 70 towers, each of them a fathom from the other. It is a very sound old building with three gates.

The fortifications of Kütahya, one of the fortifications carrying traces from different periods of Anatolia, have survived until today. Clive Foss, who studied part of the Medieval fortifications in Anatolia, has also studied the fortifications of Kütahya. He gives comprehensive information on the fortifications in his research *Kütahya Kalesi Yüzey Araştırması 1982* published in 1983, and his book on *Survey of Medieval Castles of Anatolia: I Kütahya*. Similar to many other Anatolian cities, Kütahya has castles at more than one location as well (Figure 4-7). In this part, Kütahya Castle which overlooks the city from a position providing both defence and protection will be examined because of belonging to the Byzantine period and having the alternating courses of brick and stone technique; the subject of this thesis.

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[112] Foss, 1985.
[113] *Ibid.* p.13.
[114] Dankoff and Kim, 2010. The travellers or geographers who give information on Kütahya are; Lucas, 1712; Keppel, 1831; Olivier, 1835; Neibuhr, 1837; Texier, 1862; Macfarlane, 1850; Perrot, 1872; Huart, 1897; Mordtmann, 1925; Uzunçarşılı, 1932.

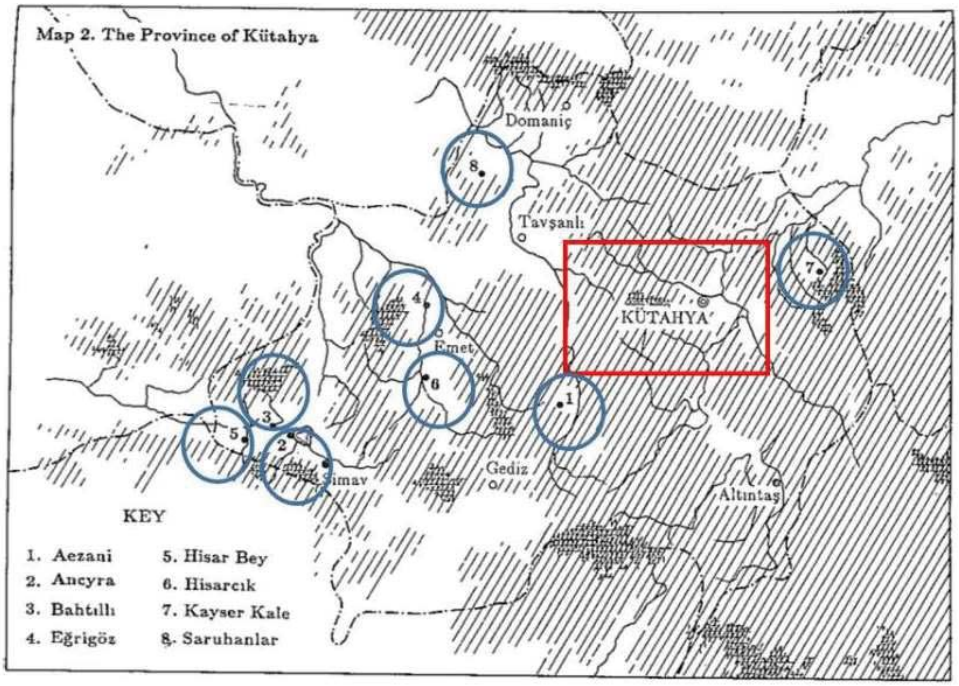

Figure 4-7: Fortifications in Kütahya (after Foss, 1985: 11)

The methodology of the study on the surviving fortifications in Kütahya is similar to the one followed for the Iznik fortifications because in both places the walls and towers of the fortifications are constructed using different techniques. The technique used for the walls is a rubble stone core faced with the cut stone or rubble stone masonry. Apart from the cases where both the types of stonework are used, the use of rubble stone or cut stone in conjunction with courses if brickwork is seen as well. The main technique used on the towers is alternating courses of brick and stone where courses of cut stone or stubble stone stand in between bands formed by four or five courses of brick lays adjacent to each other.[115] When the construction technique, materials, and spolia are taken into consideration, a picture is formed of a typical Byzantine fortification (Figure 4-8).

[115] For the properties of the bricks used in the construction of the fortifications of Kütahya, see: Kurugöl, 2010: Kurugöl and Tekin, 2010.

Figure 4-8: Details from the walls and towers of fortifications of Kütahya (courtesy of Nehir Akgün, 2015)

The date of the construction of the castle is uncertain. Foss (1985) notes that the castle was needed because of the wars during the fifth century. As an important military base in the Byzantine period, Kütahya stands out because of its fortifications. Based on the Foss' attribution to the fifth century, it can be assumed that the existing fortification plan has survived from the Byzantine period. However, the fortification must have undergone changes due to the dilapidation and interventions it suffered through the years. Foss (1983) and his team share the results acquired from their study aiming, first, to create a detailed plan of the fortifications enduring through history, and second, to differentiate between different construction periods by examining the construction techniques (Figure 4-9).

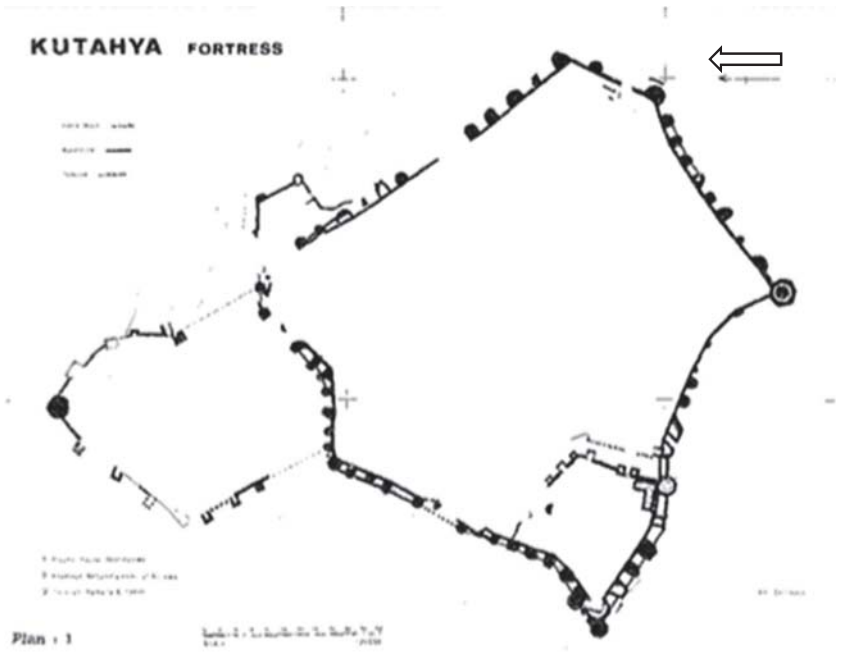

Figure 4-9: Kütahya Fortress (Foss, 1983: 295)

The fortifications of Kütahya, showing several periods of development, consist of three parts: first of all, the walls (between T59 and T71) located at the very top of the hill and constructed on the western side of the fortifications are designated the castle (Figure 4-10). The second part is the middle part called the main circuit. The last part is the lower city walls, constructed on the lower levels and to the northwest of the main

fortification (between T72 and T84) (Figure 4-10). Foss (1983), who found the main fortifications situated in the inner part in a very good condition, notes that this wall was constructed with the bands of stonework comprising alternating tuff stone and brick courses. Even though some of the towers situated on this wall have survived to the present day in a good condition, the walls between these towers and constructed in later periods have fallen into ruins. Foss (1982) states that the towers were constructed using rectangular marble blocks in the lowers parts and with alternating courses of brick and stone technique on the upper parts. In addition to this, the grey coloured mortar used on the construction of the inner walls indicates that they were constructed at the same period as the outer walls. He emphasized that those fortifications resisted the Arab attacks in the seventh or eighth century, and in the ninth century Kütahya was a military province because of these strong fortifications. Foss and Winfield (1986: 21) also notes that because there were plentiful supplies of good quality clay, the use of brick was very common and also that there were reused stones in the fortifications.

> On one flank of the hill are a series of closely set round towers leaving little space for the wall in between them. These are towers undated but the regular alternation of bands of brick with regular coursed stonework suggests an early date during the Arab wars, perhaps in the 8th or 9th centuries. The towers are built on plinths and perhaps are nearest comparison to these walls in their powerful effect are the thirteenth century A.D. walls of Angers in France. Internally the towers were roofed with domes made of arched brickwork. The rectangular towers, which may be later, are of regular coursed ashlar with re-used classical blocks at the base and a contemporary or slightly later curtain wall is of random coursed masonry.

It is known that none of the lower city walls, located outside the main system, exist today, though the information can be achieved from the inside of the towers which were known to have been built on top of the ruins of these walls. It is speculated that the outer walls were at a height maximum of 4 m and formed by large stone blocks that do not contain any ornaments or square tuff stone blocks (Foss, 1983: 152). Foss conjectures, with the help of the well-preserved sections of the walls at certain points, that there were openings in the sides of the towers, a stone balustrade, and a brick covered wallwalk. The towers belonging to this wall were located at considerable

distances from each other, some of the towers were attached to the wall while others were constructed in semi-circle form projecting from the wall (Foss, 1983). Foss examines the substances in the mortar to date the outer wall where there was no use of brick. He takes the use of grey mortar mixed with pebble stones into consideration alongside the use of column shafts from the Late Antique period in the construction of the walls. By combining these two sources of information, he notes the structure belongs to Byzantine period, though, the column shafts must to be dated to a previous period.

Foss (1983) states that all of the fortification parts mentioned above are unexpectedly complex and they went through several construction periods. He continues by noting that there are at least 5 different periods, and these periods, range from the fifth century to the eighth century, embracing three Byzantine and two Turkish periods. Foss (1985) classifies the walls into 4 main periods (Figure 4-10).

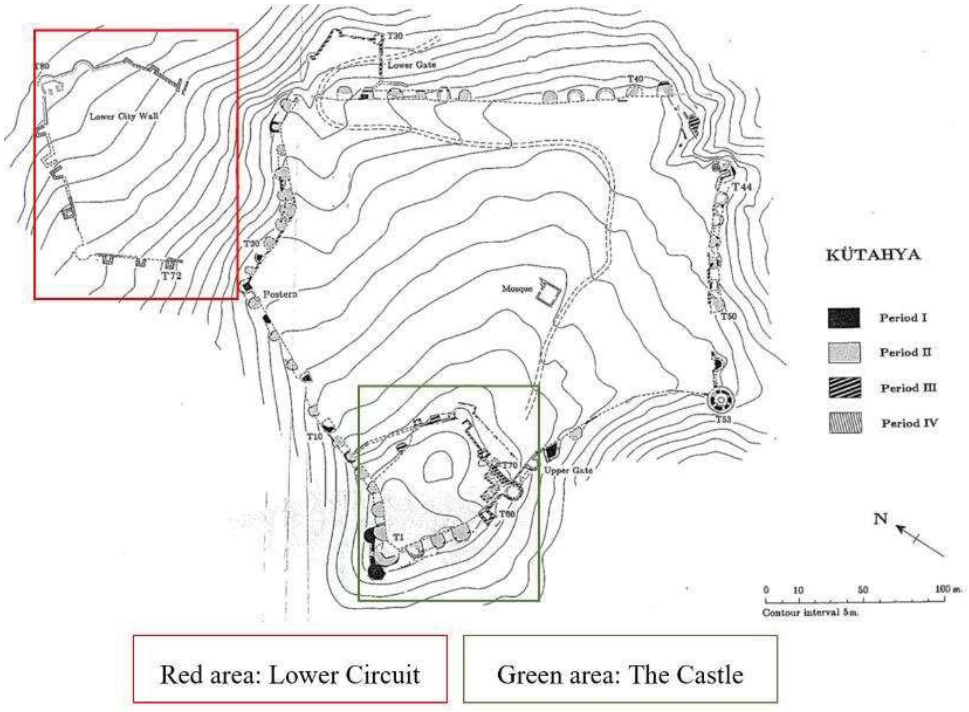

Figure 4-10: Surviving sections and the ruins of the fortifications of Kütahya from different periods (after Foss, 1985: 204)

The relative chronology that Foss (1985: 64-75) has drawn up is applicable for each section of the fortifications, and the period grouping is as follows:

Period I: The period when the use of spolia is relevant is dated approximately between the seventh and twelfth century.

Period II: A notable difference in this period, dated between the eleventh and twelfth century Comnenian period, is the use of a larger proportions of brick. The reconstructions of the walls see to belong to this period when the construction of several towers close to each other was carried out.

Period III: This period, when the castle and barbican were added, is the Seljuk and Germiyanoğulları Principality period. The technical difference lies in the use of the large quantity of wooden beams and orderly use of stone blocks without any brick in the construction of the towers and walls. The sections where brick was used are dated between the twelfth century and fifteenth century.

Period IV: This is the Ottoman period when the lower city wall was added and it is also identified as the period of reconstruction and repair.

Even though there are not any remains of the fortifications from before the Byzantine period, Foss (1983) adds that the large rectangular blocks from the Classical period visible in the wall constructions can be seen in several parts of the fortification as reused materials. Alongside the rectangular blocks, the inscriptions or the pieces of other architectural elements that can be observed from the Byzantine period fortifications are found in fortifications of Kütahya as well. There are some spolia and inscription examples that are generally dated by Foss to the second-third or to the fifth-sixth centuries (Foss 1985: 59-61).

Niewöhner (2006: 472), who studied and inventoried the Byzantine period masonry works in Kütahya, also studied the vestiges from other regions together with Cotyaeum, which was the most important centre of Kütahya in Antiquity. Niewöhner (2006) states that, in contrast to the negative impressions caused by the fact that the city was not seen as important in Antiquity, and the only structure able to have survived until today is its castle, Byzantine Cotyaeum was larger and long enduring as he confirmed with his study.

4.3. NICOMEDIA- IZMIT

As one of the most important cities of the Bithynia region, Nicomedia provides access to the Sea of Marmara. Nicomedia had been the capital of the Roman Empire for half a century in the beginning of the Late Antique period, and later continued to be the capital of Bithynia.[116] Even though it started to lose its importance during the attacks and chaos of the Dark Ages, at the beginning of the sixth century, it continued to be an important city for the Empire because of its strong fortress, its harbour, and its geographical position on a main trading route (Foss, 1996a).

Nicomedia is another city which was important during and after the Roman period. This city, founded in 316 BC, has many common features to Iznik. Both existed approximately in the same period, were in the same region, and had similar defence structures for protection and attack. Thus, they served similar aims and both became important cities. The fortifications of Iznik, which were from the Roman Period and have been preserved for more than a thousand years, are the most important vestiges of the Roman period in Iznik. The walls, as in the third century AD, have a form surrounding the whole city. Their appearance changed due to the process of repairs, reconstruction, and improvement. All of the dilapidation and dismantling ended and they were renewed and repaired during the Byzantine period. Both were strong fortresses and the fortification of Nicomedia, the capital city of the Roman Empire, was constructed using the same method as the fortifications of Iznik. Stone and brick bands were used on the surfaces of fortifications of Nicomedia. This technique, backed by a core of mortar mixed with rubble stone was used on both of the surfaces. Similar features can be found in the towers as well.

[116] For detailed information on Nicomedia in Antiquity and the Byzantine period see: Foss, 1996a: 2-29

Fortifications of Nicomedia consisted of three parts. The Walls of Diocletian surrounding the entire city are long and substantial fortifications extending from the shore to the upper hills of the city (Map 18). Foss (1996a) notes that: "Unlike the Hellenistic and Byzantine fortress, they were not a refuge or citadel, but the defences of a great city, appropriate to the capital of the Roman Empire." Although the uppermost part of the fortification has survived until present, the lower part of the fortification was lost during the enlargement of the city. Foss indicates that the now lost walls should have extended across the seafront, as in the examples of Constantinople and Thessalonica (Istanbul and Selanik) and were probably lost a long time ago. Foss (1996a) explains the technique and materials of the fortifications in the following way: "The core of the wall is a mass of rough fieldstones set in a white mortar with large brick and smaller stone inclusions. It is interrupted at regular intervals about every meter by bands of brick which run through the whole body of the wall. They consist of four rows of bricks 30 cm square and 3 cm thick, closely set side-by-side in neat parallel rows." As mentioned before, the upper parts of the fortifications have collapsed and their traces lost earlier than the other parts. The same situation applies to the fortifications of Nicomedia, due to the dismantling of the wall top walkways and battlements, the height of the fortification cannot be determined, though the width was indicated as 3 m by Foss (1996a: 31). Again, the same masonry is observed on another surviving part of the fortification but in addition to that, well cut stone blocks, such as spolia, exist in the lower parts.

On the northeast side of the Izmit fortification, the wall section between T1 and T5 is called the inner castle and dated to the Byzantine period by Foss (1996a) (Map 19, 20). In the towers located in the triangular area measured as 50x60x70 m, cloisonné technique effected using rubble stone and brick is observed.[117] The use of spolia and large blocks on the corners is similarly to the fortifications of Ankara.

Foss (1996a), who studied each of the towers and walls, identifies the wall section between T5 and T21 as Byzantine period fortifications. Foss notes that on this wall the cloisonné technique is used and stone blocks can be seen in the first course of the walls.

[117] *Ibid.* p. 31.

Together with the cloisonné technique, there are variable amount of courses of brickwork that do not follow any strict order. There are not well-ordered brick rows as in the examples of other studied cities, but the use of 3 rows of brick is observed along with the cloisonné technique. There are two types of towers; towers with circular plans and those with quadrilateral plans. Foss (1996a: 37) when describing the South Gate located at this part of the fortification, states that there are limestone blocks that are not laid with mortar on both sides of the gate and the stones located at the corners bear traces as if they were removed with clamps. The opening, with a height of approximately 2.5 m, is spanned by a brick arch similar to the example of the South Göl Gate in Iznik (Figure 4-11).

Figure 4-11: South Göl Gate of Iznik fortifications (author, September 2015)

The walls constructed on the outside protect the Byzantine fortifications and are mentioned as outer walls or *proteichisma*. They are observed in between T7 and T12 and around T18, T19, and T20. Foss (1996a: 38) explains the wall detail as: "it consists of mixed fieldstones, with their flat facing outward, set in rough rows with an irregular filling of brick which often forms short courses or even some cloisonné."

4.4. AMORIUM

The ancient city of Amorium is located near to Hisarköy in the Emirdağ Province of Afyon (Afyonkarahisar) (Figure 4-12). The city of Amorium, which has been excavated since 1987, was first mentioned by Richard Pococke. Pococke (2.20.85) states that when they arrived at a village named *Alakiam* they discovered some ruins and several inscriptions, one of which was in Latin and dated to the period of Constantine. Pococke (2.20.85) explained the content of the inscription as:

> In this inscription I found the word *Amorinorum*, so that probably Amorium was in these parts; and this plain might be the country of Amorium mentioned by Strabo. I conjecture that some ancient monastery might have been at this place, that the stones were brought to it; and that the town of Amorium was probably at place called Herjan, about six miles to the South east of Jeldutch, where I was informed there are antiquities.

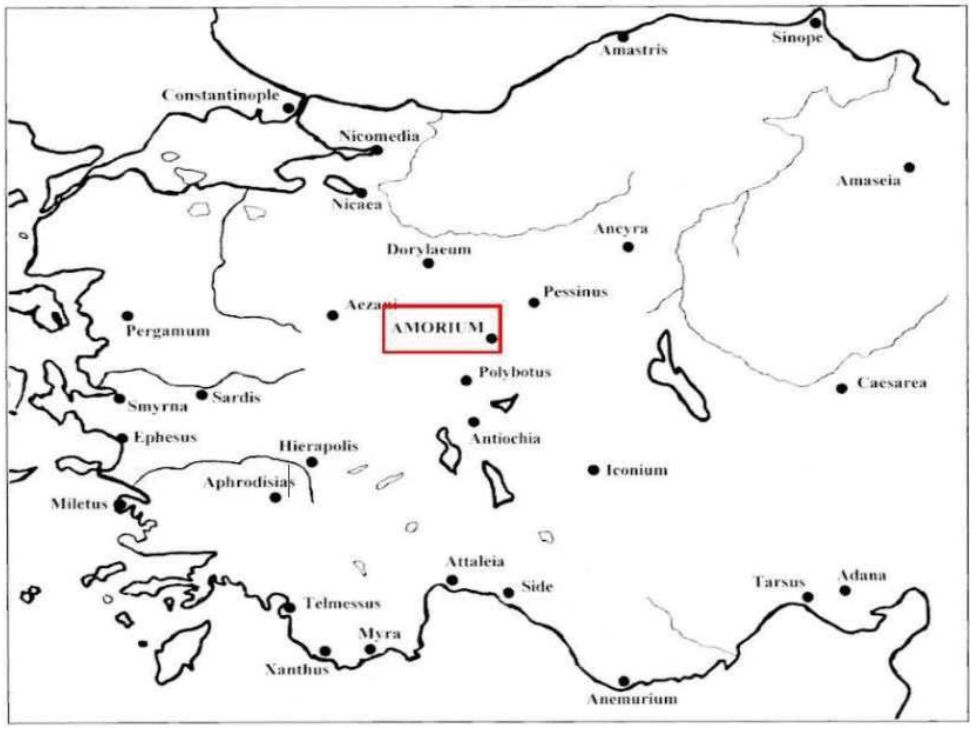

Figure 4-12: Sketch map of Anatolia and the location of Amorium (after Lightfoot, 2002: 230, fig. 1)

According to the data gathered from the archaeological excavations, the city of Amorium was active during the Hellenistic, Roman, and Byzantine Periods and finally the Seljuk Period after the arrival of Turks. Lightfoot and Lightfoot (2007: 24) state that the name of the city, Amorium was verified by the phrase 'of Amorium' recorded in an inscription found in 2006. The archaeological excavations revealed that the city of Amorium comprised two settlements named as the lower city and upper city and a necropolis (Figure 4-13). Excavations in Amorium continue at present day.

The stones, which were supposed to belong to the lower city walls, that Lightfoot and Lightfoot (2007: 113) mentions are dated to a period between the fifth century to the beginning of the ninth century (Figure 4-14). Lightfoot and Lightfoot (2007) state that the remains located in Hisarköy, a settlement nearby Amorium, are not as flamboyant as those in many other Roman cities in Anatolia. They explain this by the fact that Amorium was a very big settlement established after the Roman period. It was even suggested that the city was the third biggest city following Constantinople and Thessaloniki. Excavations at Amorium, a city that survived until the end of the eleventh century, aided in understanding the character of a Byzantine city. There are samples dated to the period from the sixth century to the eleventh century among the marble and limestone belonging to the Byzantine period church of the city located outside the fortifications (Figure 4-15). Lightfoot and Lightfoot (2007: 24-5) list the important events taking place in the history of Amorium as following: Amorium was annexed to the Asia, the new Roman province, in 133 BCE. The fortifications of Amorium were built in ca. 480, during the reign of emperor Zeno (474-491).[118]In addition to the Arab invasions, affecting cities such as Ankara, Istanbul, Iznik and Izmit, started in 641 and the first Arab assault in Amorium took place in 644. Although it is known whether all the cities were exposed to these invasions, as Lightfoot and Lightfoot (2007: 59) mentions, there are scholars who have suggested that Amorium's recovery took some time and the imperial authorities did not commence the reconstruction works immediately afterwards, as in Ankara and that in fact Amorium did not recover fully after the Arab invasions.

[118] For more information on dating the fortifications and other buildings of the 5th century, see: Lightfoot, 1994.

The Emperor Michael II (820-829), who was born in Amorium, was also the founder of the Amorium dynasty. Between 842 and 867, Emperor Michael III ascended the throne (Lightfoot and Lightfoot, 2007). After the preliminary site survey conducted by Professor R.M. Harrison in 1987, the excavations at Amorium started in 1988. Chronological periods identified as a result of the field work in 2006 are as following: The Hellenistic (330-130 BC), Roman (130 BC-AD 300), Late Antique (AD 300-500), Early Byzantine (500-650), Dark Ages (650-850), Middle Byzantine (850-1100), Seljuk (1100-1300) (Lightfoot and Lightfoot, 2007: 24). Although whether fortifications existed in Amorium, which exhibits the character of a Late Roman city, is not known; Lightfoot and Lightfoot (2007: 46) state there was a new massive defence wall in the Late Antique Period. Although no clear information on the period of the construction of the fortifications exists, the authors associate the start of the construction of the fortifications with the reign of Emperor Zeno (474-491).

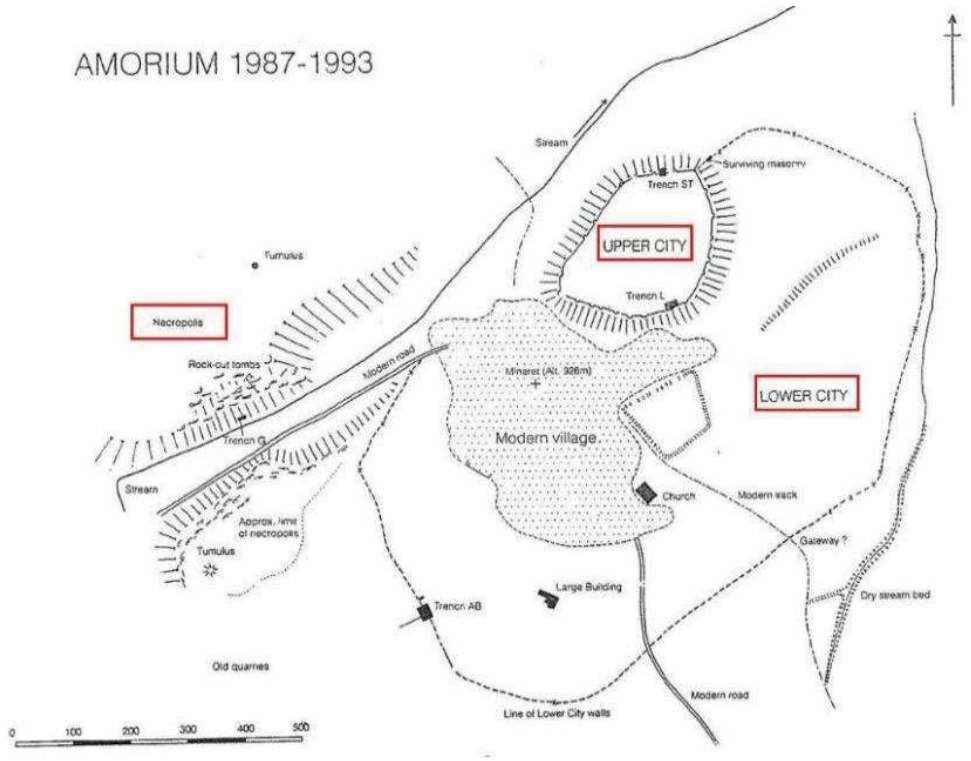

Figure 4-13: General view of the city of Amorium (Lightfoot, 1994: 6)

Figure 4-14: Interlocking lintel blocks fallen from above the gateway in the Lower City Walls (Lightfoot and Lightfoot, 2007: 11)

Figure 4-15: Detail of carving on a Middle Byzantine templon epistyle (tenth century AD) (above left); marble furnishings from the Lower City Church (Early Byzantine, sixth century AD) (above right); Limestone screen panel, found outside the Lower City Church (sixth century AD) (Lightfoot and Lightfoot, 2007: 13, 15, 49)

The fortifications of Amorium comprise two (lines of) walls set on two different levels (Figure 4-13/19). It is not known when the lower city was surrounded with fortification walls. Lightfoot (1994: 19-20), who emphasises that the building complex located in

the southern part of the lower city is a significant structure, although its function is as yet unknown, associates part of this building, made of rectangular blocks of masonry with the upper parts of the walls surrounding the lower city. However, there are courses of brickwork above the courses of stonework in the walls of this building, which is thought to be significant, although its function is unknown (Figure 4-16). With little of the walls remaining intact and no mention of the technique of alternating courses of brickwork in the sources, clear information on the use and type of the brickwork could not be obtained (Figure 4-17). However, both courses of stone and brick could be seen in the remains of wall located in the lower enclosure (Figure 4-18). Lightfoot (1994: 19-20) on the basis of similarities between the fortification walls and the structure under discussion in terms of construction technique and material, and on the basis of the chronology of the ceramics found in the structure, states that it was built in the same period as the fortifications in the late fifth century. With future advances in research, it may be possible to gather detailed information on the technique of the upper parts of the fortifications. Little remains of the fortifications of Amorium, which are dated to the Late Roman period in the light of the excavations conducted. The lower city walls, only a very small part of which are observable in terms of height and length, are known to have surrounded the entire city (Figure 4-19). However, since the fortification wall is not intact, this is impossible to confirm.

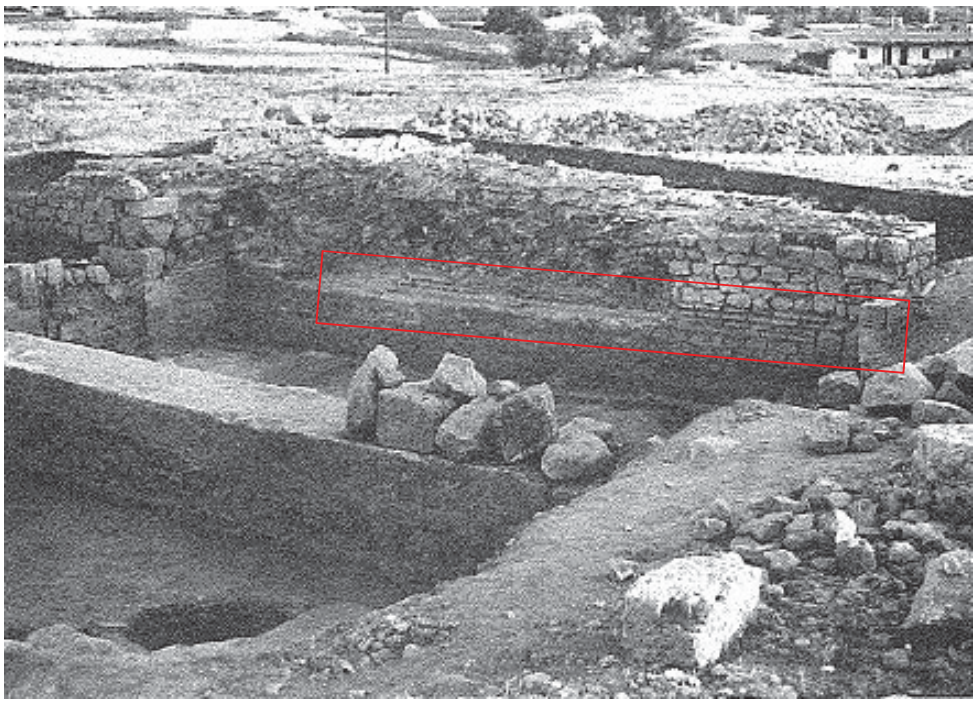

Figure 4-16: General view of the building (Lightfoot, 1994: 19, fig. 5)

Figure 4-17: Mid-Byzantine defensive wall around the Upper City (Lightfoot, 1994: 24, fig. 8)

Figure 4-18: Buildings inside the area of the Lower City Enclosure with alternating courses of brick and rubble stone (Lightfoot and Lightfoot, 2007: 126)

William Hamilton, who visited Amorium in 1836, states in his account that the majority of buildings in the upper city were built with spolia and he even encountered Roman gravestones in 'Phrygian doorstone' (Lightfoot, 1994: 25). He added that there were spolia from the Roman period in the walls of the upper city. Lightfoot (1994: 26) states that the walls and the rooms located in the north point to repairs made as a result of the Arab assaults on Amorium that took place in 838. Lastly, Lightfoot (1994: 27) notes that the Byzantine city was re-established and the defence walls, churches and administrative buildings rebuilt by using materials left from the Roman period, although information about the previous periods becomes hard to understand due to the lack of archaeological evidence. Lightfoot also mentions that Amorium was in continuous habitation from the late fifth century to the early ninth century, and then again from the Byzantine revival to the arrival of the Seljuk Turks, and states that the transformation of an ancient settlement into a medieval town can be seen in the archaeological layers.

Lightfoot states that extensive use of Roman spolia was discovered in the upper city walls and a gate, a nearby tower, and a portion of wall that were unearthed in his works in 1994. The remains indicate that the towers were built in square and rectangular forms and jutted out from the walls (Figure 4-19). The upper wall was built using two different techniques; the first employed reusing building materials from the Roman city; and the second is described as "its construction is of a different type, comprising small, irregular blockwork and pieces of brick" (Lightfoot and Lightfoot, 2007: 144).

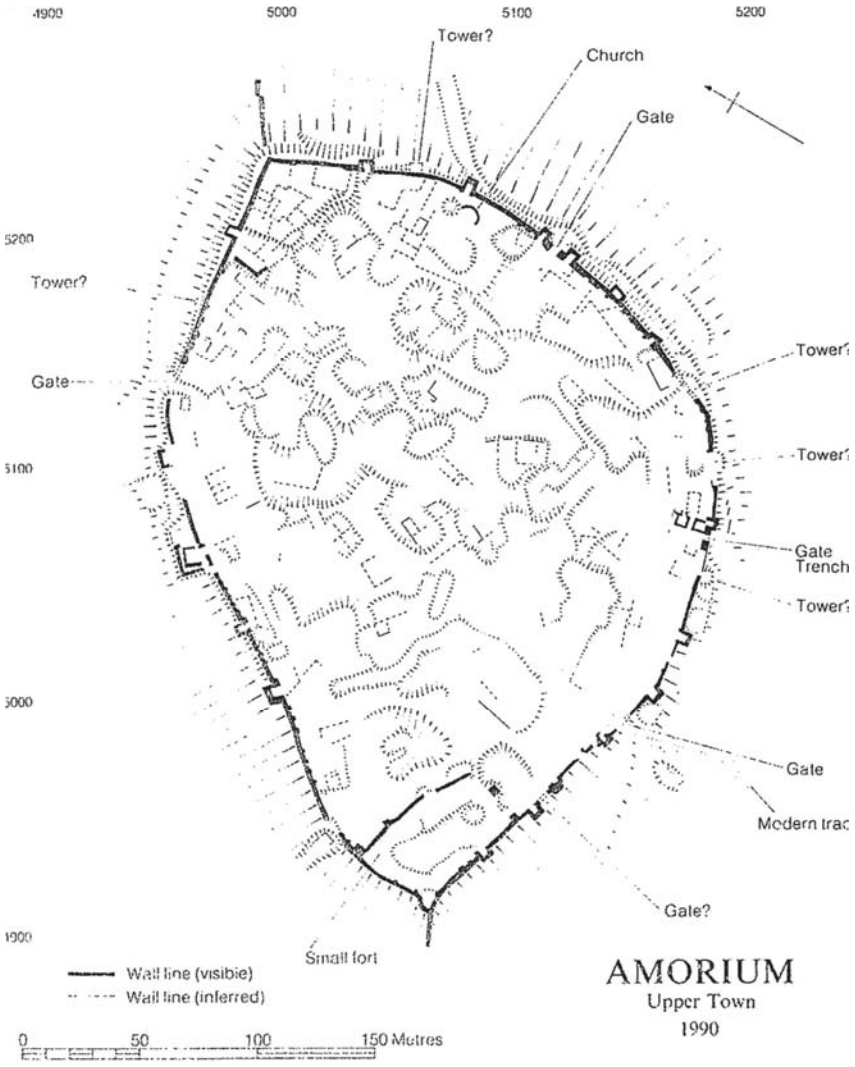

Figure 4-19: Traces of the fortification surrounding the upper town (Lightfoot, 1994: 13)

The use of spolia is a general characteristic of Byzantine period fortifications. The part that was built with spolia of the upper city walls is similar to the Citadel of Ankara and it was therefore thought reasonable to date the wall built with spolia to the seventh century.[119]It was stated that the inscriptions located on the fortifications dated to the Byzantine period had been gravestones before being reused in the walls, and a large inscription unearthed in the foundation of the walls could be dated to the first half of the third century (Figure 4-20).[120]

Figure 4-20: Fragment of an inscribed block from a monumental tomb from the first half of the third century AD (Lightfoot and Lightfoot, 2007: 38)

Unlike with other similar cities, it is impossible to easily derive immediate information on Amorium. A better understanding of the walls believed to date back to the Byzantine period and the ancient city with the aid of future excavation and research. The most prominent common feature of the walls of the cities selected for comparative

[119] For more information on the relationships set between the upper city walls of Amorium and the Citadel of Ankara and other examples, see: Lightfoot and Lightfoot, 2007: 147.
[120] *Ibid.* 36-7. For an extensive work on the Roman period cemeteries and inscriptions: Lightfoot and Lightfoot, 2007.

study is the use of spolia from the Roman period in their construction[121]. From the intact parts of the fortifications of Istanbul, Kutahya, Izmit and Amorium, as well as the cities of Ankara and Iznik, it can be deduced that the building material of the fortifications constructed in the Byzantine period was largely spolia used in-situ or non-situ, cut stone or rubble stone and the brickwork which is a distinctive feature of the Byzantine period.

Eventually, the use of alternating courses of brick and stone with spolia and the existence of more than one variation in this technique, even in the walls of the same city, were identified in the walls of Ankara and Iznik, which are dated to the Late Antique and Byzantine periods. Similarly, when the walls of the cities of Constantinople, Cotyaeum, Nicomedia and Amorium, dated to the Late Antique and Byzantine periods and also built with the technique of alternating courses of brick and stone, were analyzed in terms of the building technique and materials, it was observed that although each wall was built using the same construction technique and materials, they exhibited certain specific differences.

The construction technique seen in the fifth century walls of Constantinople comprises five or six rows of rectangular limestone blocks, cut so precisely that they could be laid without mortar, and five courses of brickwork between stone courses. The courses of brickwork penetrate into the entire thickness of the wall and stabilise mortared rubble core of the wall.

The chronology of the fortifications of Cotyaeum was divided into four periods by Foss (1985): seventh century to twelfth century; twelfth century to thirteenth century; twelfth century to fifteenth century, and the Ottoman period. On the walls of Cotyaeum there are bands of four to five courses of brickwork; alternated with bands of stonework masonry with varying numbers of courses. There are three distinct versions of the technique of alternating courses of brick and stone: alternating use of only ashlar stone with courses of brickwork; alternating courses of only rubble stone and brick, and the use of rubble stone and ashlar stone together. These facing courses cover the both faces of the rubble core.

[121] For a comprehensive source on this issue, see: Saradi, 1997.

Three different types of walls were identified in Nicomedia. On the walls dated to the Byzantine period, the techniques of cloisonné and alternating courses of brick and stone employing three courses of brick were used.

As a result of the archaeological excavations at the city of Amorium, spolia used in the city walls were identified. Better comprehension of the technique of alternating courses of brick and stone used in both the walls and the church of the same period, will require future excavation.

It is hard to make an immediate and definite dating for the technique of alternating courses of brick and stone which appears from about the third century to the twelfth century in fortifications. As at Iznik and Ankara, there are numerous variations of this technique of alternating courses of brick and stone with spolia in the fortifications of these cities. This situation creates serious problems in periodization and dating research and thus restitution studies as well as guiding conservation work in these walls.

CHAPTER 5

PROPOSALS AND CONCLUSIONS

The particular subject of this work is the Late Antique and Byzantine fortifications in Anatolia. One manifestation of the cultural heritage of the Roman and Byzantine Empires that has existed in Anatolia for a very long period is the defence structures; there are many of these fortifications in and around the cities of the region. These fortifications are divided into two categories: the imperial fortifications located in the more central or militarily strategic cities (such as Ancyra-Ankara, Nicaea-Iznik, Smyrna-İzmir, Nicomedia-Izmit, Cotyaeum-Kütahya, Magnesia) and the local fortifications built around smaller settlements.[122] The fortifications studied within the scope of this thesis are the fortifications of cities endowed with imperial and military significance in the Late Antiquity and Byzantine periods. While the fortifications of Iznik and Ankara are investigated in more detail and depth, those in the cities of Istanbul, Izmit and Kütahya are used as examples able to contribute to a comparative study in accordance with the aim of the thesis. The cities selected for investigation are those where the technique of alternating courses of brick and stonework, and the combination of this technique with the spolia that is also a common feature of Late Antique and Byzantine fortifications. It is well known that this building technique, abundantly evident in the fortifications of the aforementioned cities, was in more general use for other buildings dated to the Byzantine period. Among these buildings, this technique of alternating courses of brick and stonework is seen in the church of the Koimesis in Iznik, unfortunately long since demolished and, in the Church of St. Clement, the remains of which survived beneath modern buildings, and in the Roman

[122] Foss and Winfield, 1986: 161-168.

Baths in Ankara.[123] According to Jerphanion (1928) the Church of St. Clement dates to the fifth and sixth centuries. Serin (2014: 72-73) notes that the date of the construction of the Church is subject to dispute with scholars suggesting dates varying from the late fifth or early sixth centuries to the middle of the ninth century. All the buildings mentioned so far are dated to a period between the third century and ninth century.

The analyses of the field survey indicated that the building techniques used in the fortifications of Ankara and Iznik were quite similar. The most basic common feature shared by the buildings of these two cities, which otherwise differ in topography and urban form, is the plentiful use of spolia and a spectrum of variations in the technique of alternating courses of brick. This building technique was employed in very different topographical contexts: The Citadel of Ankara was built in a rectangular-like form upon a hill; in Iznik, the citadel has an irregular polygonal form and is sited on a plain bordering a lake.

In Iznik, the technique of alternating courses of brick and stone was usually used in the fortification walls. The first, second, or third courses in the fortification towers were formed with blocks of marble spolia. Above the masonry formed from spolia, brickwork was used until the top of the structures. In the walls, on the other hand, above the lower courses of spolia, the walls were completed using alternating courses of brick and stone. It can be seen that, after an average of four courses (3-6) of brickwork, a varying thickness of layers of rubble stonework were laid. It can be assumed that, since the walls were weaker than the towers, they would have been undergone repairs and interventions more frequently. Among the extensive repairs and renovations that the fortifications of Iznik were subject to, the ones ordered by the Emperor Michael III (842-867) in the ninth century are among the most significant. This repair and reinforcement work commissioned by the Emperor Michael III in 858 is mentioned in one of the inscriptions on the walls. In fact, significant portions of the fortifications were rebuilt with a technique closely resembling the original technique of their construction in the third century; the technique of the alternate use of spolia, plentiful in the eighth and ninth centuries, with brick and stonework. In addition to this

[123] For the church of St. Clement, see: Jerphanion, 1928; Eyice 1991; Serin, 2014. For the churches of Iznik, see: Peschlow, 2003.

regular alternate use of bands of stone and brick, there is sporadic use of the 'cloisonné' technique, seen especially in proximity to the gates. The external line of walls was built entirely with the 'cloisonné' technique. There was another technique occasionally used in the walls and towers; that was walls and towers faced entirely with blocks of marble spolia. It can be deduced from an inscription that this technique was used during the Arab invasions in the eighth century. The mortar used in the fortifications of Iznik was investigated using comparative analyses for the purpose of dating and, the mortars used in different period aid in defining both towers and walls (Foss, 1996a). However, this method proved ineffective for the fortifications of Nicomedia (which do not bear any inscriptions) because at least 18 different types of mortar were detected; but so similar as to make classification impossible.[124]

In the inner circuit of the fortifications of Ankara, the height of the wall up to an 8-10 m from the ground was built with spolia. After the part made with spolia, the walls were completed with the technique of alternating bands of brick and rubble stone. In the towers of the inner circuit, the application of this technique is usually in the form of 5 to 6 courses of brick and 3 to 4 layers of rubble stone; whereas in the walls, the bulk of the construction consists of rubble stonework. Bricks were used in one or two courses between the layers of rubble stone. The technique of alternating courses of brick and stone was the predominant method used in the towers. The use of spolia, on the other hand, displays consistency in both walls and towers. The fortifications of Ankara also witnessed an important intervention in the ninth century. During this intervention, taking place in 859, the inner circuit of the fortifications was restored. According to the information gathered from the inscriptions, this restoration is dated to the reign of the Emperor Michael III (842-867) and his successor Emperor Basil I (867-886).[125]

In addition to the similarities in the building techniques and materials used in the fortifications of the two cities, only one year separated the initiation of the different restorations. This technique of alternating courses of brick and stone, prevalent in Late Antiquity, is seen in the fortifications of Nicaea, Ancyra, Constantinople, Nicomedia,

[124] Foss, 1996a.
[125]For more information about the inscription: Perrot and Guillaume (1872: 240); Gregoire (1928: 437-42); Jerphanion (1928: 209); French (2003: 21); Serin, (2014: 77).

Cotyaeum. Foss and Winfield (1986) emphasize that in order to understand the fortifications of Anatolia, first the variations of masonry need to be explored and categorised. The classification of dated materials and remains may provide a base for dating other fortifications which otherwise could not be dated due to the large variety of building techniques.[126] However, this relies on clearly datable material, something that is often difficult to come by.

Serin (2014: 74) notes that using the building technique, as the sole criterion, in dating the structures is not appropriate. The scholars (Foss, 1977; Foss and Winfield, 1986; Serin, 2014) who investigated other buildings where the technique of alternating courses of brick and stone was used emphasised that this technique has been used frequently in different building types, and especially in fortifications, since the third century. In this respect, scholars who have studied the buildings of the Byzantine period in Anatolia consider that the technique of alternating courses of brick and rubble stone, in conjunction with the abundant use of spolia, became widespread practice in the buildings and fortifications of Anatolia (Ankara, Iznik, Kütahya) after the ninth century.[127] After consideration, Serin (2014) has stated that variations of this technique were frequent over a long period from at least the third century to the ninth and appear in the Roman Baths, built in the reign of Caracalla, in the Church of St. Clement and in the inner circuit of the Citadel of Ankara, which is dated to the ninth century.

Foss and Winfield (1986) mention that the use of fine cut stone and spolia with brick continued in the fortifications and buildings in Asia Minor especially in the ninth century (Ancyra, Nicaea, Cotyaeum) and after. It is emphasized that dating the fortification walls solely on the basis of their formal features would be difficult as the wall types and castles display wide ranging variations and assume radically different appearances from region to region.[128]

The technique used in the fortifications of Kütahya is a cut stone masonry facing on a rubble stone core. Besides the situations where these two types of stonework are used

[126] Foss and Winfield, 1986.
[127] Serin, 2014. For more information, see: Foss, 1982: 182; 1985: 82; Foss and Winfield, 1986, 129; 162-3
[128] Serin, 2011.

in conjunction, there are also examples of rubble stone or cut stone used in conjunction with courses of brickwork. The principal technique used in the towers is the courses of cut stone or rubble stone sandwiched between layers of four to five courses of brick. Considering the building technique, materials and spolia, the fortifications display the characteristics of the Byzantine Period. According to Foss (1985) the fortifications can be dated relatively to four before mentioned periods.[129]

In addition to studies on the building techniques and materials of the fortifications, possible links between their dates of construction, building aims and strategies, and periods were also taken into consideration. Following the analyses of the building techniques and materials of the Late Antique and Byzantine fortifications in Anatolia, in this chapter, the problems related to the dating of these fortifications, and the consequent problems related to conservation interventions were identified with the aid of the written sources and present data obtained from field survey (Figure 5-1, 2). Rather than pre-planned and overall interventions, most interventions seem arbitrary and irregular, as indicated by the large number of variations in the technique of alternating courses of brick and stone with spolia, a confusion compounded by the lack of written sources. Any single section of the wall may exhibit a series of disparate, and apparently unrelated, repairs and interventions. The aim of this chapter is to scrutinise the effects of building techniques and materials on dating of the fortifications by correlating the studies made on these cities with the current state of these fortifications, then, how this situation is reflected upon the conservation works is emphasised. The fortifications, which have existed for centuries, have withstood assault during the whole of their life. Various interventions, from strengthening before anticipated attack, to emergency repairs during an attack, to restoration after wars have all been undertaken using a variety of techniques and materials. Sometimes, they were reinforced with new structures; sometimes an entire wall section was repaired. There have been times when the height of the fortifications was increased or the fortifications were faced entirely with spolia and reconfigured to fit with new threats and techniques of response.

[129] See chapter 4, p. 132.

Ousterhout (1999), who investigated the Byzantine masonry technique in detail, also deals with the technique of 'alternating courses of brick and stone' with its variations and mentions the existence of varying numbers of brick-stone courses. He explains the relationship between the number of courses and the dating of fortifications as follows: In this wall type, of which there are many variations, sometimes a course of stone is followed by one or more courses of brick; sometimes a band of stone is followed by three courses of brick. The number of the respective courses varies, so wide or narrow bands are formed in the face of the wall. He states that chronological parameters, which can be defined easily, are not then dominant vector in determining these orders. The large number of building techniques and their variations seen in the fortifications, and existence of the fortifications over centuries even makes distinguishing the parts built in the same period problematic. It becomes more difficult to make deductions when confronted with such a variety without a written document providing evidence on the period of each intervention. In the light of this confusion, Foss (1986) suggests that the necessary precautions should be taken in order to make proper interventions, especially in the cases involving rebuilding of fortifications. In fact, he explains these mistakes citing two factor, first, renovations dated to much older periods disappear, and second; the later periods are overemphasized.

Due to the lack of inscriptions on the fortifications of Nicomedia, determination of their chronology becomes difficult. Foss and Winfield (1986), who indicate the usefulness of stylistic criteria in such cases, suggests that a relative chronology can be created by grouping the similar wall masonries together and then identifying the chronological order of these groups with respect to their positions in the fortifications. He also adds that the information gathered in this way should be confirmed by comparison with examples where the dates are known. Foss, who proposes the Byzantine fortifications of Istanbul and Iznik for this comparison, states that although built with similar techniques, since these fortifications were built more elaborately than the fortifications of Nicomedia, the comparison would be difficult. Foss and Winfield (1986), considers that distinguishing one type of masonry from another and making an exact comparison is rather complicated.

Foss and Winfield (1986) who made a detailed investigation into the Byzantine fortifications of Istanbul think the style of masonry could be used in constructing both

a relative and absolute chronology. However, the scholars note that the style of masonry may also cause an important problem. For instance, the date of construction of the fortifications of Istanbul is the fifth century, and those fortifications which underwent extensive repair activity in the Comnenian Era (eleventh to twelfth centuries) seem similar. The fortifications originally built with the technique of alternating courses of brick and stone, were rebuilt, when and where necessary, with the same technique until the twelfth century.

To conclude, one of the crucial issues to be taken into consideration when the maintenance, repair, restoration or rebuilding are under consideration for cultural heritage conservation is the historical information relating to the buildings. The information on the date of construction of the buildings and past interventions is an important factor in decisions relating to these buildings. The primary sources for dating buildings are written sources and inscriptions. However, due to the scarcity of these sources (and the great scale of fortifications), dating these buildings becomes extremely difficult. Fortifications, when investigated thoroughly, are highly complex structures. Certain methods are being developed to obtain information on the building techniques and materials of the fortifications in cases where the written records are missing or insufficient. One of these methods is creating a relative chronology by making comparisons between the walls, the date of which is known, and those the date of which is unknown, on the basis of the building techniques and materials used in the buildings. However, the information gathered in this way is relative, conjectural and based on comparison.

The buildings investigated within the scope of this thesis are the fortifications dated to the Late Antique and Byzantine periods in Anatolia. The common building technique used in these fortifications is the technique of alternating courses of brick and stone with spolia. However, the buildings built with this technique are dated to a long period between the third century and the end of the Byzantine Empire, and in addition, there is a large number of variations of this technique; making dating of fortifications difficult. This study made on the fortifications, built with this technique, indicates that using the building technique and materials as the only criteria/method in dating the buildings would remain partial at best.

In this part of the thesis, conservation oriented proposals are offered for development to consider the problems that have been identified with the fortifications, built with the techniques described and dated to the Late Antique and Byzantine periods.

- First of all, on the basis of the findings of the comparative study, it is proper to state that any fortification should be treated individually and information should be gathered from the fortifications of other cities located in the same geographical areas and/or built or repaired in the same period, when a fortification has to undergo conservation interventions. The fortifications of the same period and same function should be compared to gather information (for instance, the fortifications built in the capital or militarily important cities in the Byzantine period exhibit similarities in terms of building techniques and materials and provide comparative information about each other).
- Because fortifications are the largest structures on an urban scale, continuity of building technique and material may not be ensured for single wall and should not be taken for granted. These structures may be exposed to significant modifications over long periods in the course of fulfilling their defensive purposes. Therefore, a fortification wall should not be subject to interventions as if it was built homogeneously with the same technique and materials.
- Fortifications are defensive structures, continuously at risk of damage and demolition and often have to be repaired or rebuilt immediately. Thus, even a single wall interval might have been exposed to numerous interventions and repairs (Map 10, 12). In this regard, the most important concern to be kept in mind is that while the interventions of various periods on the fortifications are legible; any repairs which emphasise the latest intervention but erase the legible traces of older periods should be avoided. Fortifications should not be restored using a single variation of a masonry technique; instead where needed, modifications in the technique in compliance with the original should be made.
- When considering demolished parts of fortifications alternating courses of brick and stone, in the absence of written evidence, interventions, which would become illegible in future should be avoided. The interventions on these parts should clearly show that these interventions are modern and the original state is unknown.

Finally, existing information on the fortifications which are difficult to date currently, can become unrecognizable and even lost because of modern interventions. Moreover, these interventions negatively influence the setting of the fortifications and legibility of the forms and topographic itinerary of the walls (Figure 5-1) (Map 17). On the other hand, excessive use of mortar pointing on wall surfaces (covering the edges of the stones), a practice which is dated to the Byzantine period by Foss (2003), is a common restoration application in Turkey (in past and at present). Therefore, the possibility that this application was made in a recent period cannot be ruled out (Figure 5-2). However, repairs which are made with concerns about using materials and techniques compatible with the original ensure the proper transfer of these urban cultural properties to future generations (Figure 5-3).

Figure 5-1: The Citadel of Ankara, Hisarkapı before and after the addition of external wall in 2016 (author, September 2016-2015)

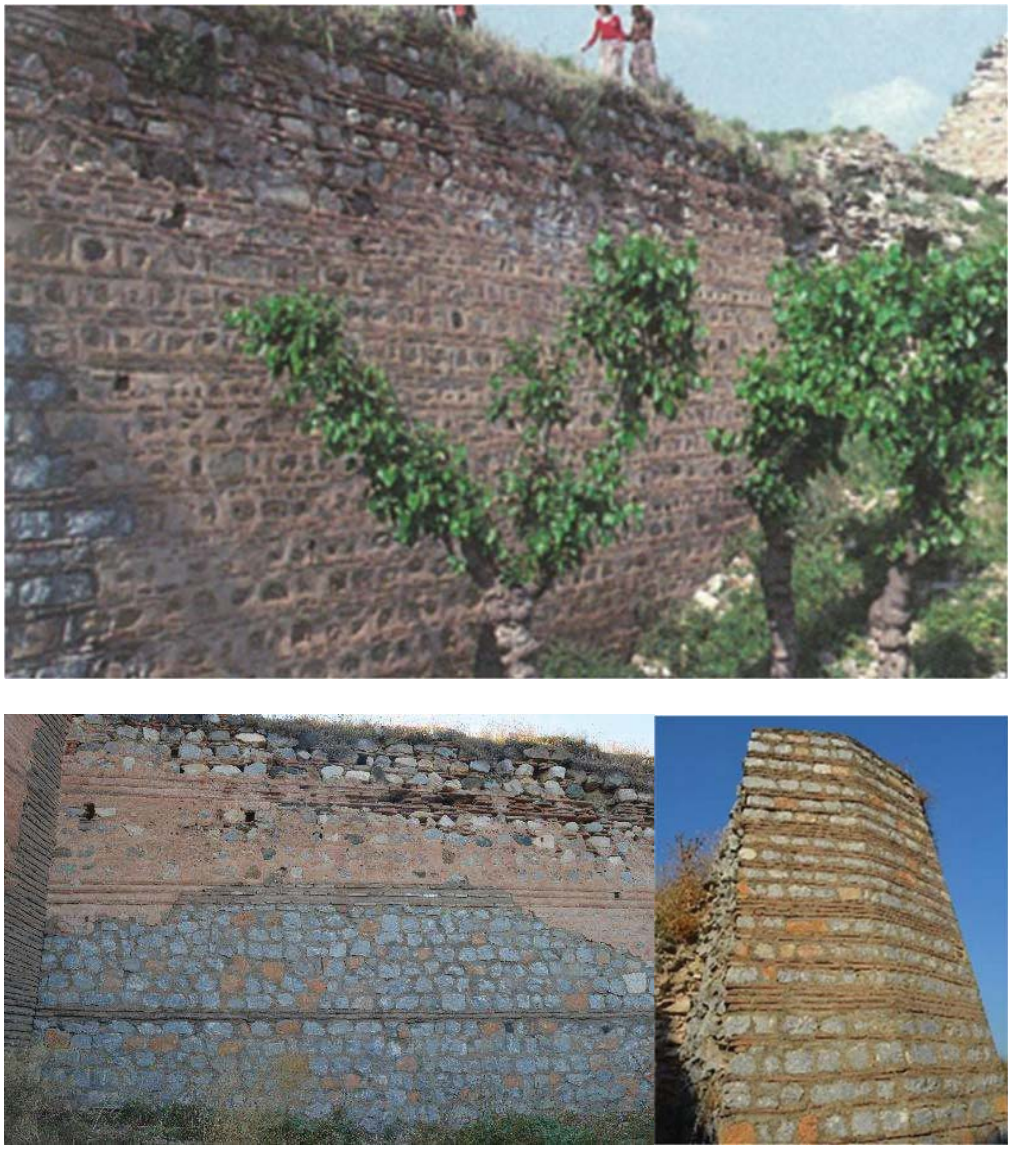

Figure 5-2: Iznik fortification wall with decorative brickwork and extensive use of mortar (above) (Foss, 2003: 259, fig. 18), Restoration application of covering the stone with mortar at the bottom of the wall (below left), use of same application on the surface of a tower (below right) (author, September 2015)

Figure 5-3: Modern repair on the fortifications of Kütahya (courtesy of Nehir Akgün, 2015)

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Table 1: The Gates of Iznik Fortifications

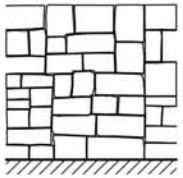
	TYPE	ELEVATION	SECTION	PHOTO
GATES	Istanbul Gate- interior	  *to show the difference in both sides, two elevations are drawn for this type		    
	Yenişehir Gate			 
	South Göl Gate			 

Table 2: Tower classification according to construction techniques and materials

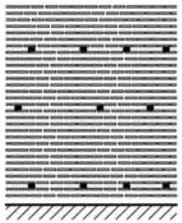
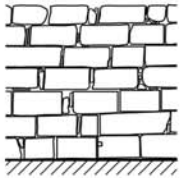
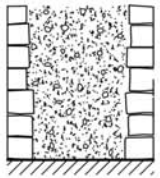
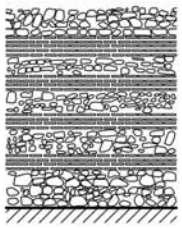
TYPE		ELEVATION	SECTION	PHOTO
TOWERS	brick			
	stone masonry			
	cloisonné			
	alternating courses of brick and stone			*this technique is only seen on these four towers 

Table 3-A: Wall classification according to construction techniques and materials

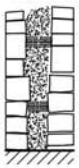
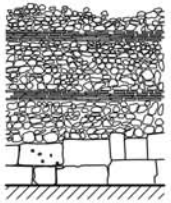
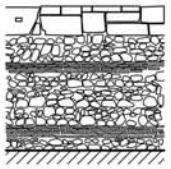
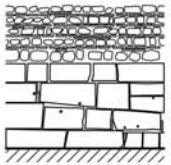
	TYPE		ELEVATION	SECTION	PHOTO
WALLS	STONE MASONRY- A				
	CLOISONNE - B				 Foss (2003: 259, figure 18)
	ALTERNATING COURSES OF BRICK AND STONE - C	alternating courses of brick and stone with spolia on the base (first course)			
		alternating courses of brick and stone with spolia on the upper side of the wall			
		masonry with large amounts of spolia			

Table 3-B: Wall classification according to construction techniques and materials

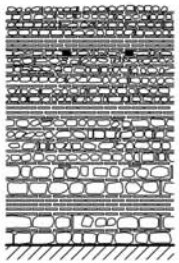
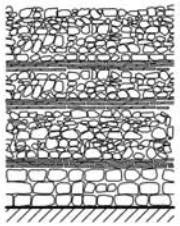
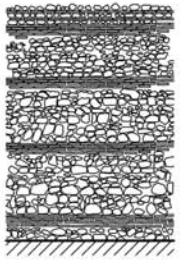
	TYPE		ELEVATION	SECTION	PHOTO
WALLS	ALTERNATING COURSES OF BRICK AND STONE - C	brick bands with rubble stone and one course brick without spolia			
		alternating courses of brick and stone without spolia — +3 courses brick			
		alternating courses of brick and stone without spolia — +4 courses brick			
		alternating courses of brick and stone in different arrays without spolia			 *in this type, schematic drawing could not be done due to the variety of facades

Table 4: Outer wall with cloisonné technique

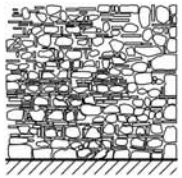
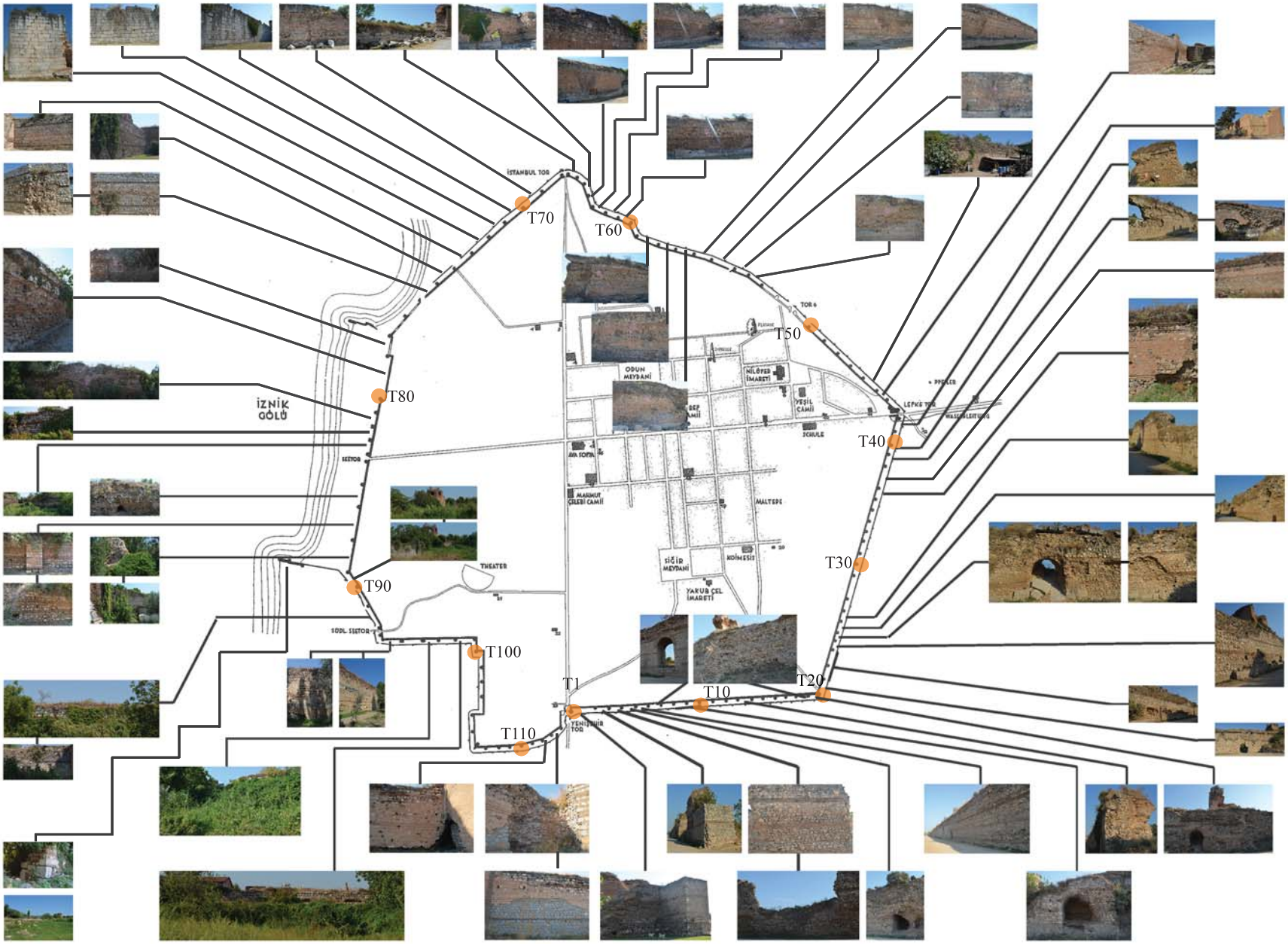
	TYPE	ELEVATION	SECTION	PHOTO
OUTER WALL - CLOISONNE TECHNIQUE	walls			         
	towers			 

Table 5: Inscriptions of Iznik

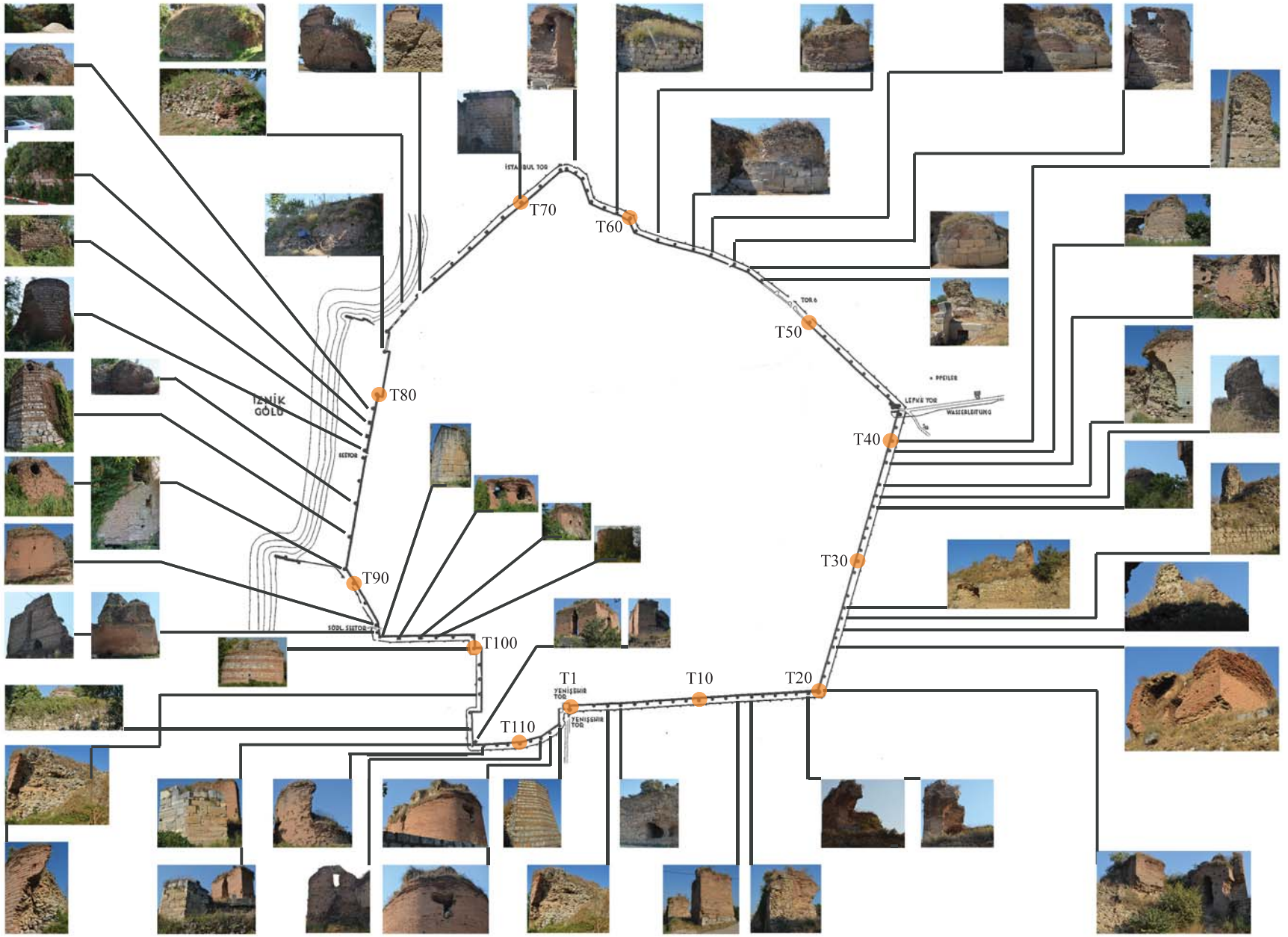
INSCRIPTION
 
 
 

Table 6: Spolia of Iznik

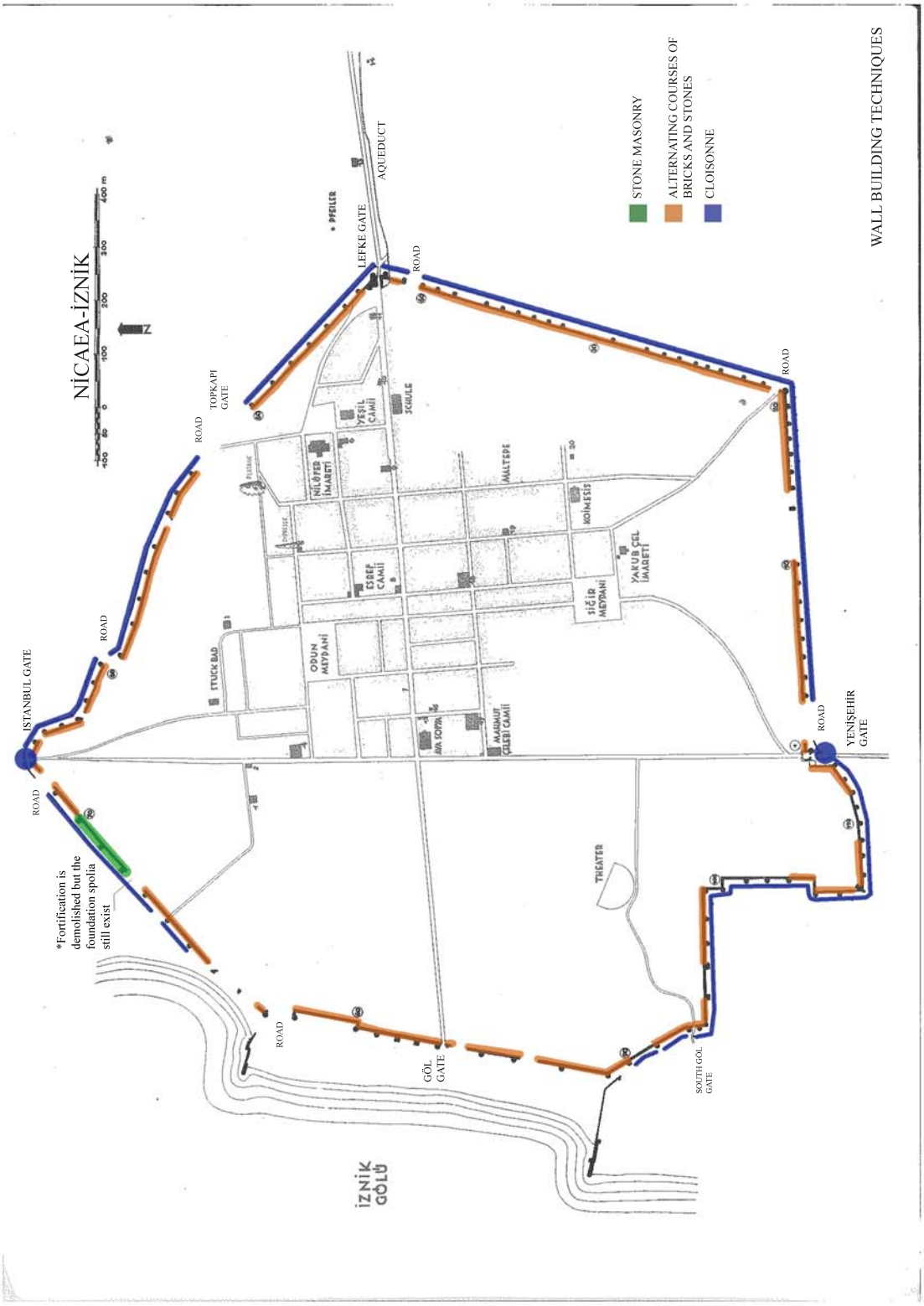
SPOLIA

Map 1: Walls of Iznik fortifications

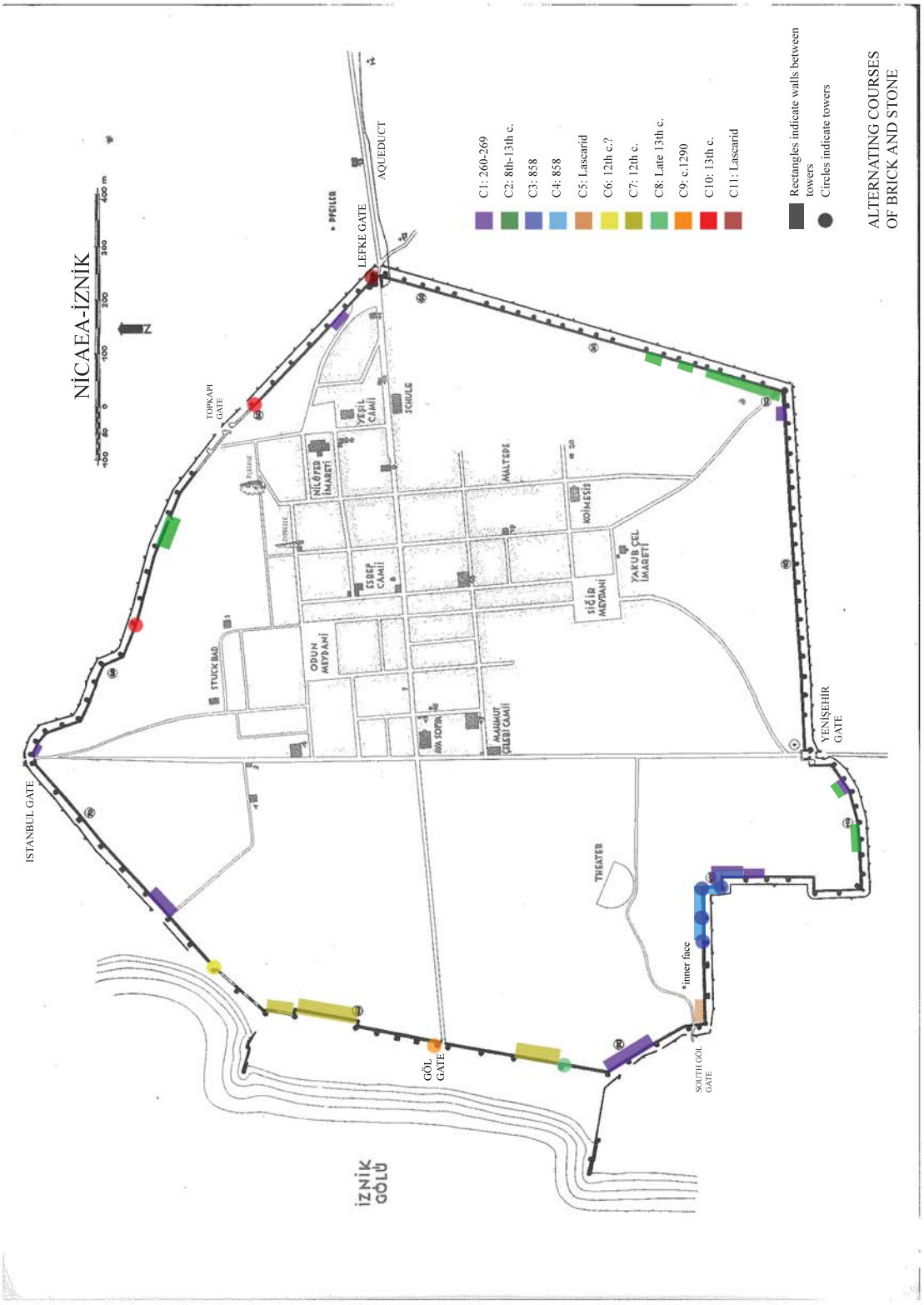


Map 2: Towers of Iznik fortifications

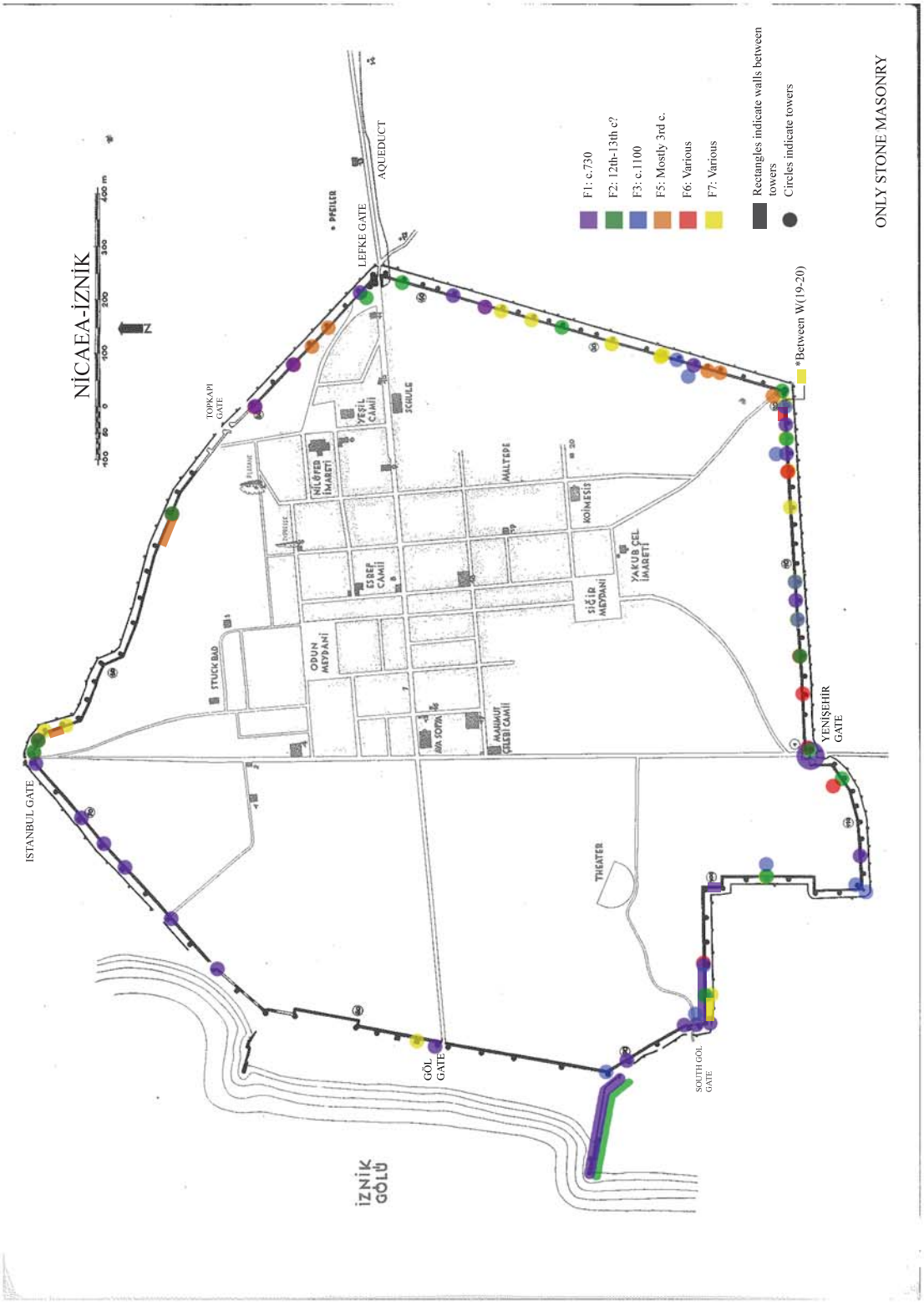


All of the maps between Map 3 and Map 12 are made by author from Foss and Winfield (1986) book and author's field survey which was made in 2015.

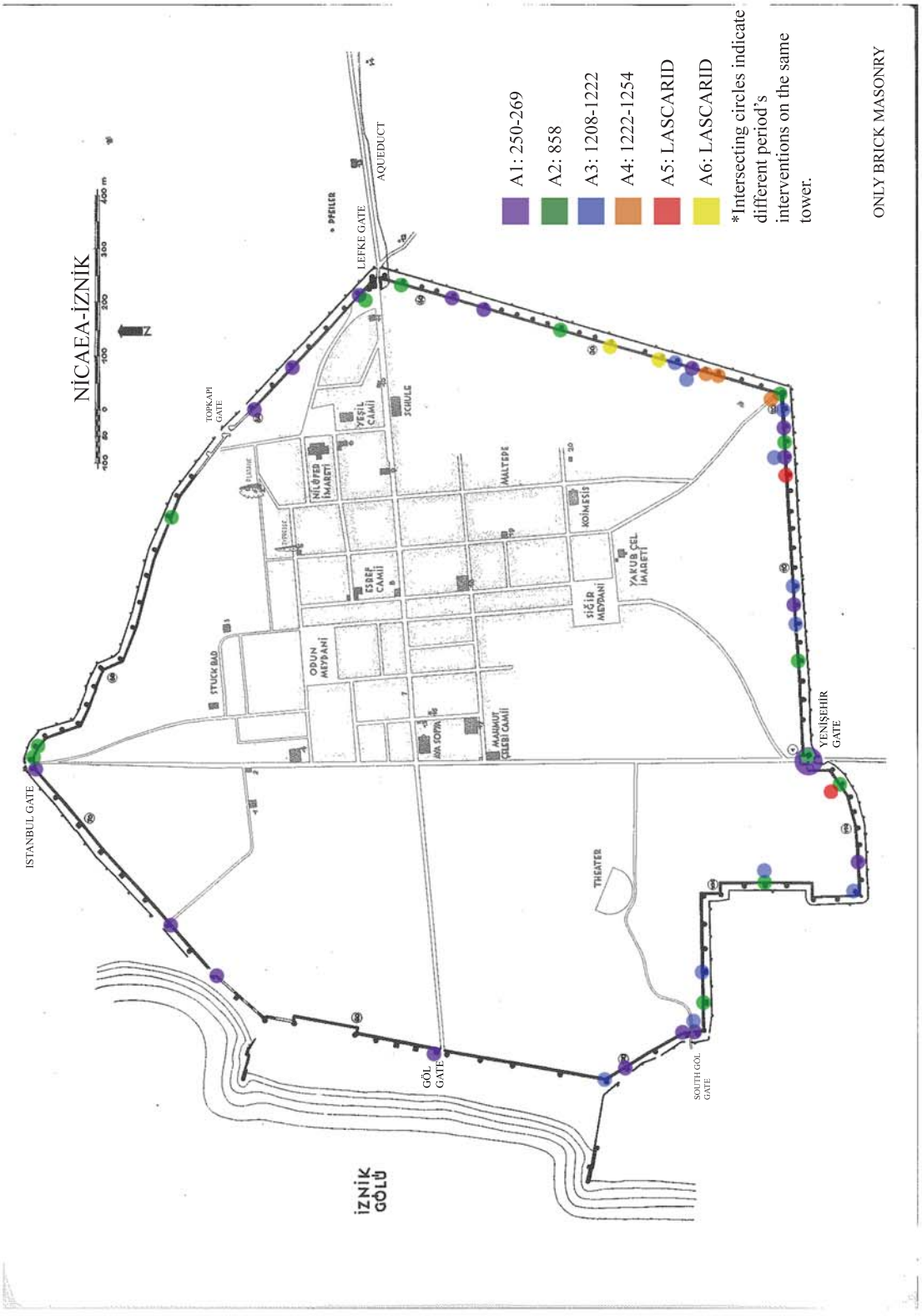
Map 3: Building Techniques in the Walls of Iznik



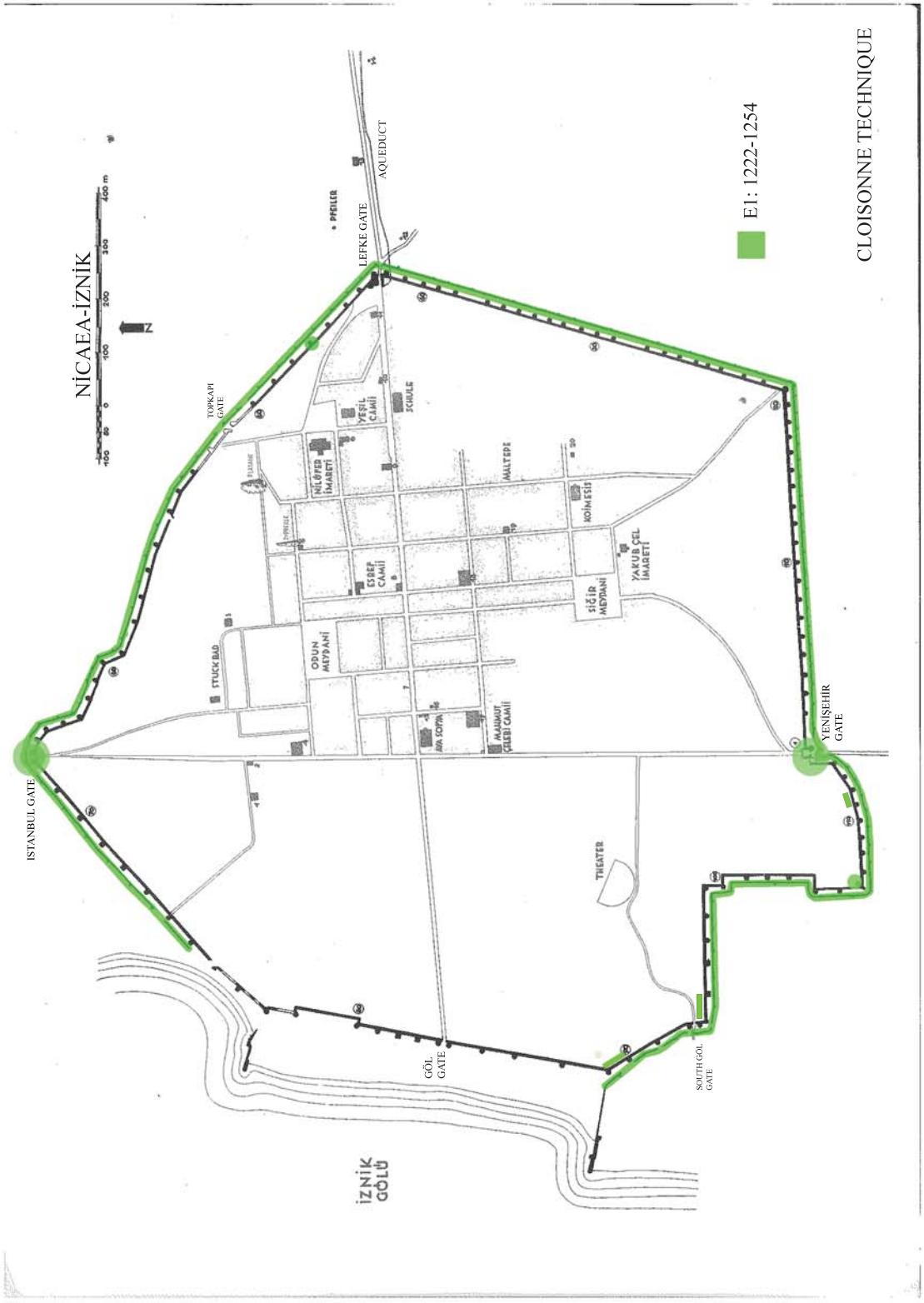
Map 4: Alternating Courses of Brick and Stone



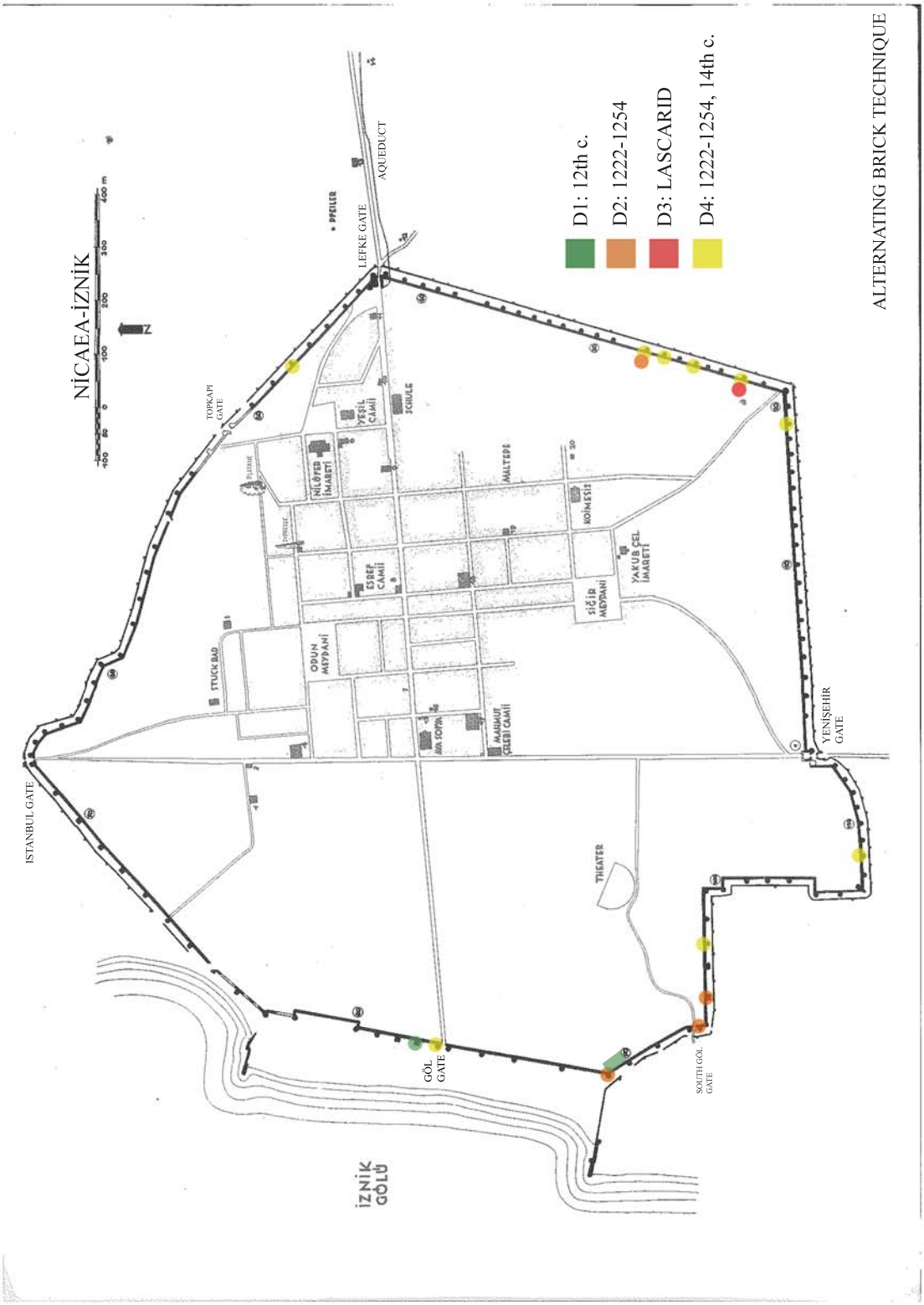
Map 5: Only Stone Masonry



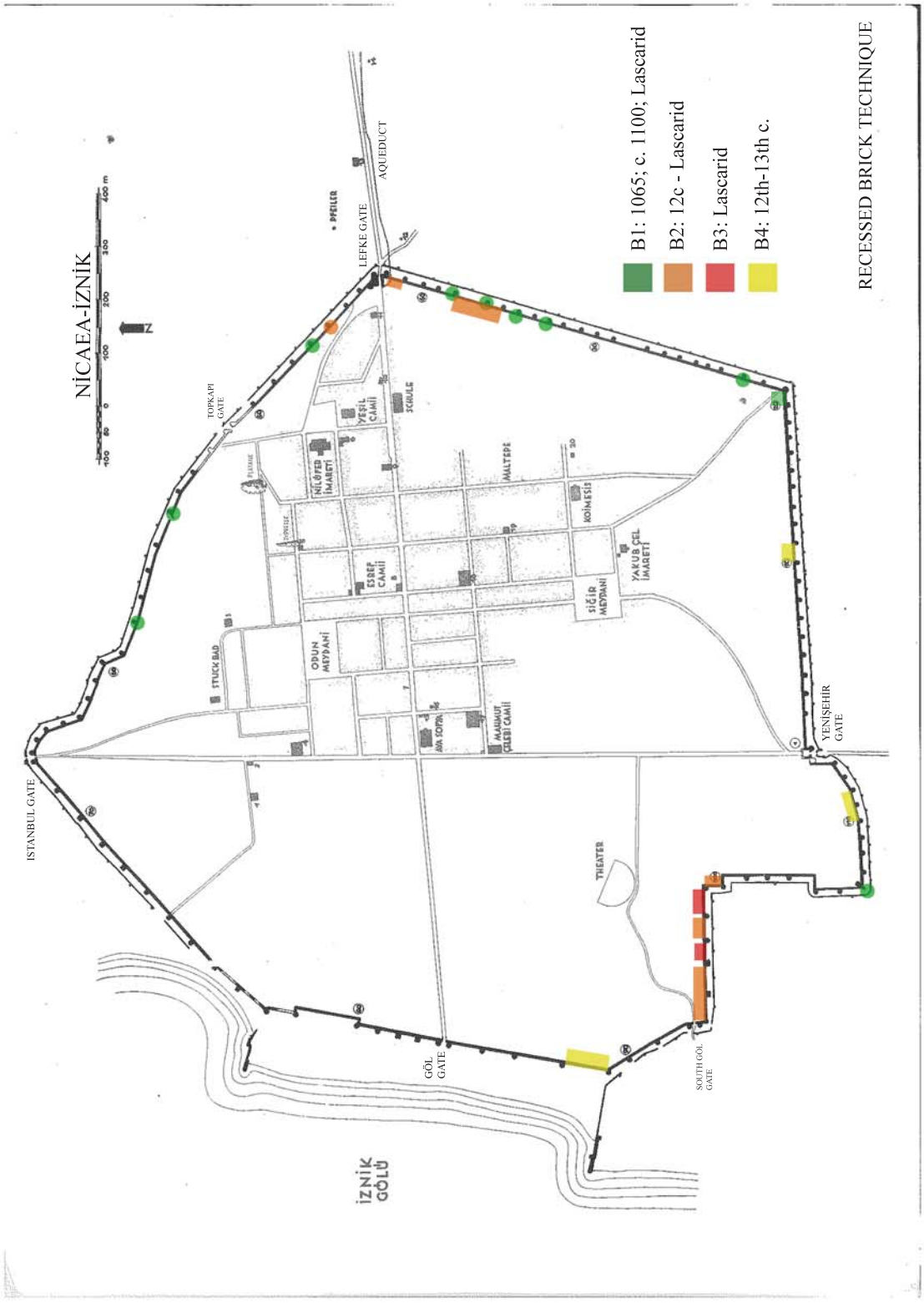
Map 6: Only Brick Masonry



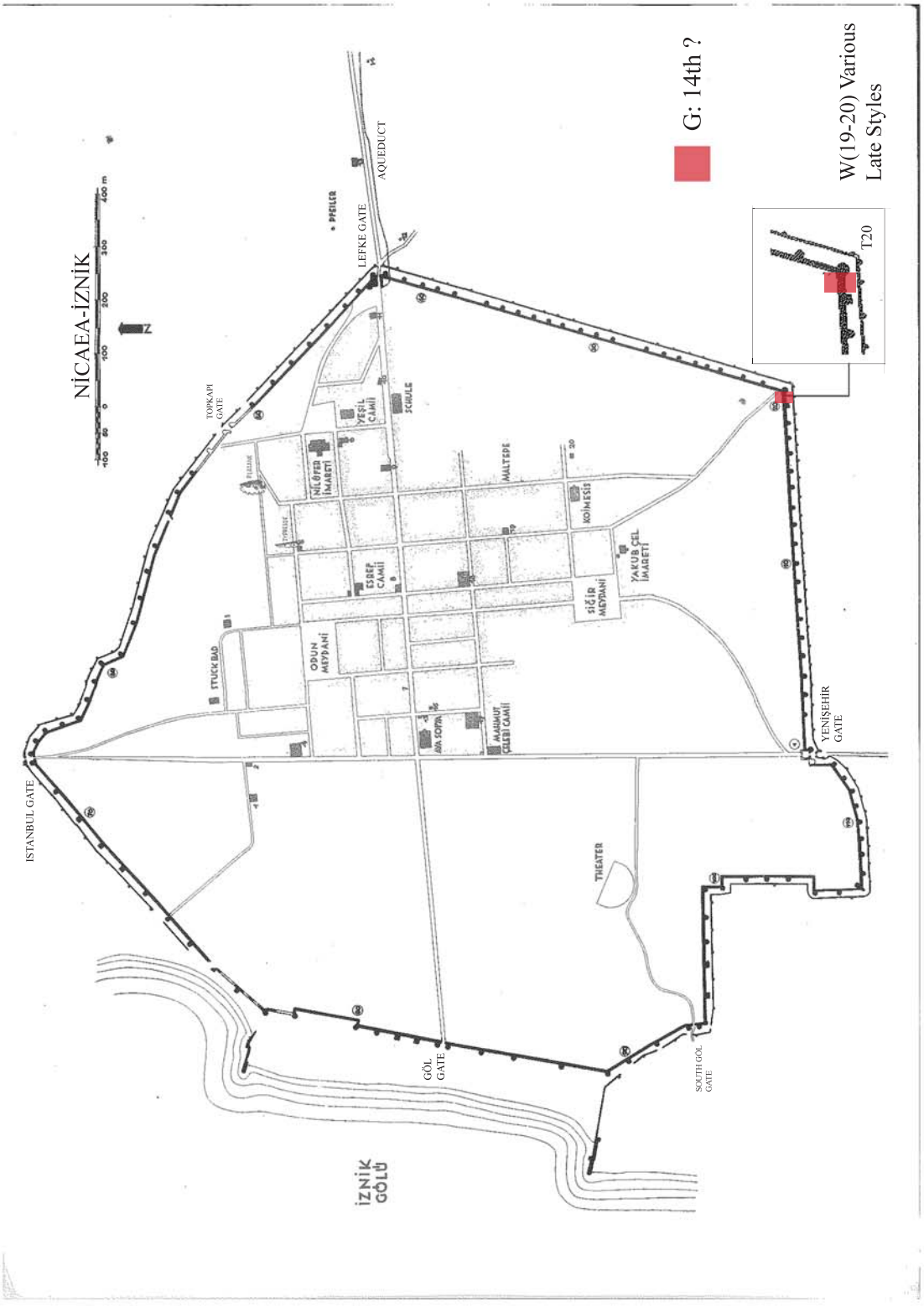
Map 7: Cloisonné technique



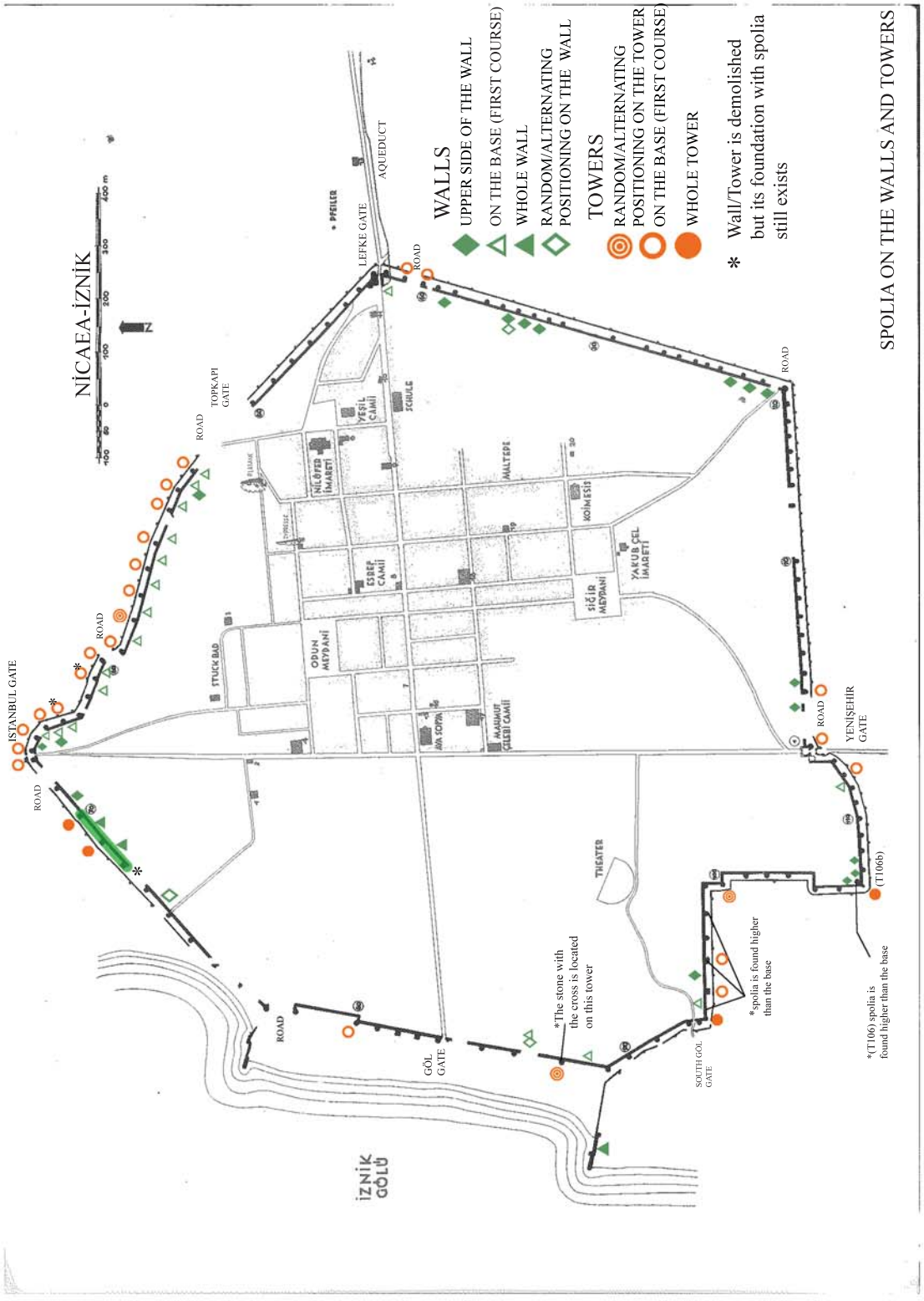
Map 8: Alternating Brick Technique



Map 9: Recessed Brick Technique



Map 10: Various Late Styles



Map 11: Spolia on the Walls and Towers of Iznik Fortifications

Map 12: Chronology and Occurences of Towers and Walls

Table 7: Spolia in the towers of Ankara fortifications

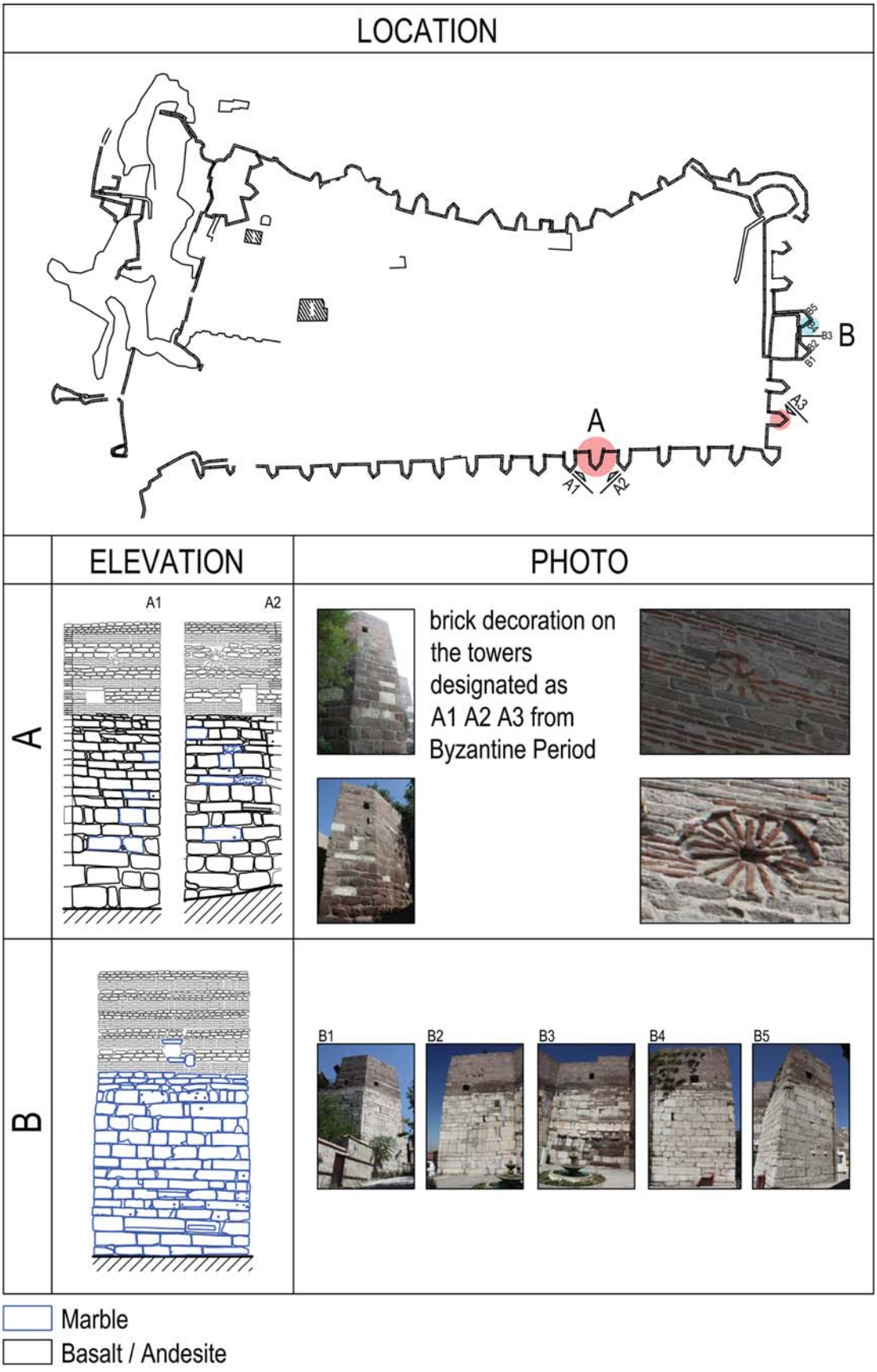
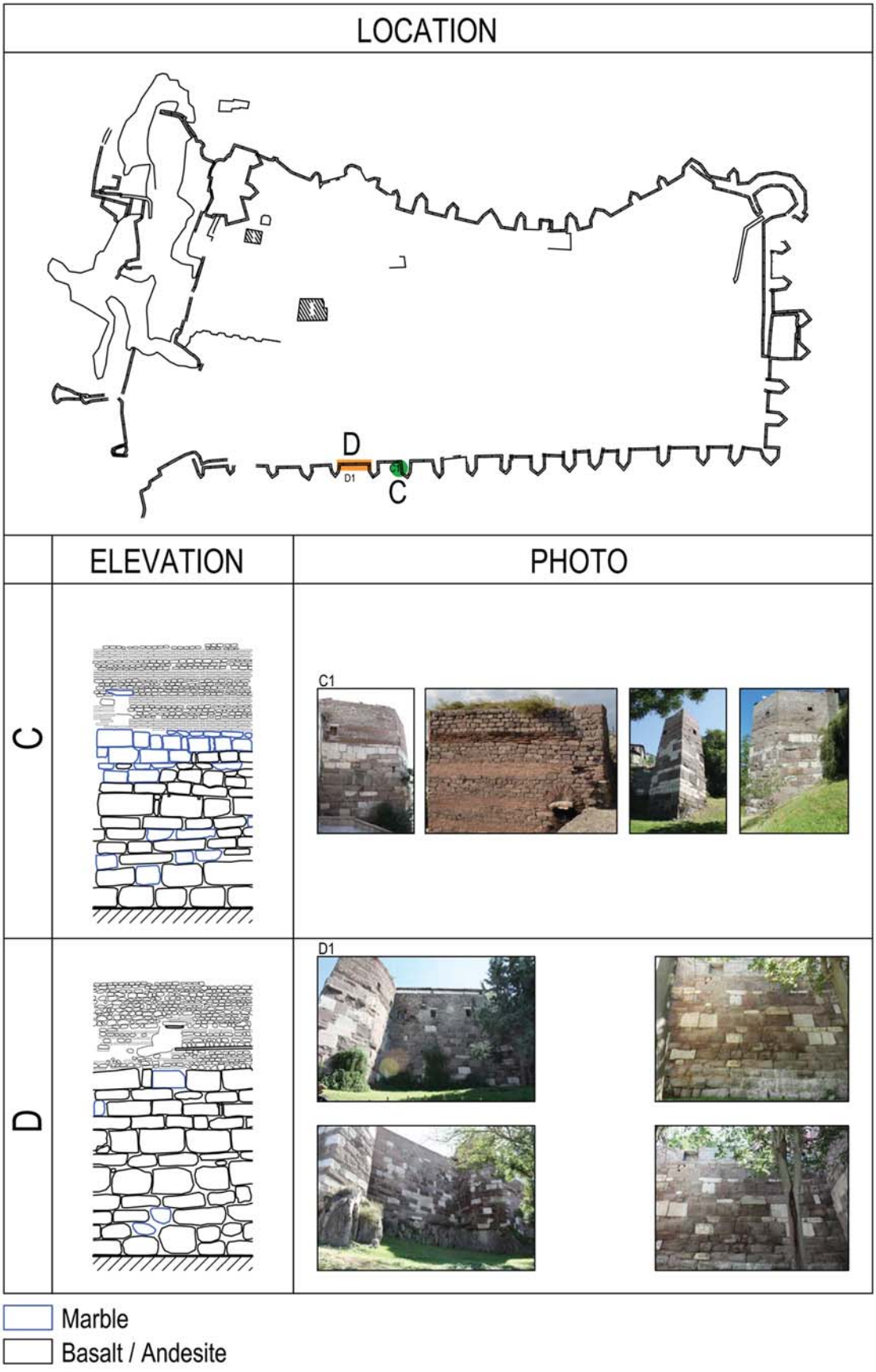
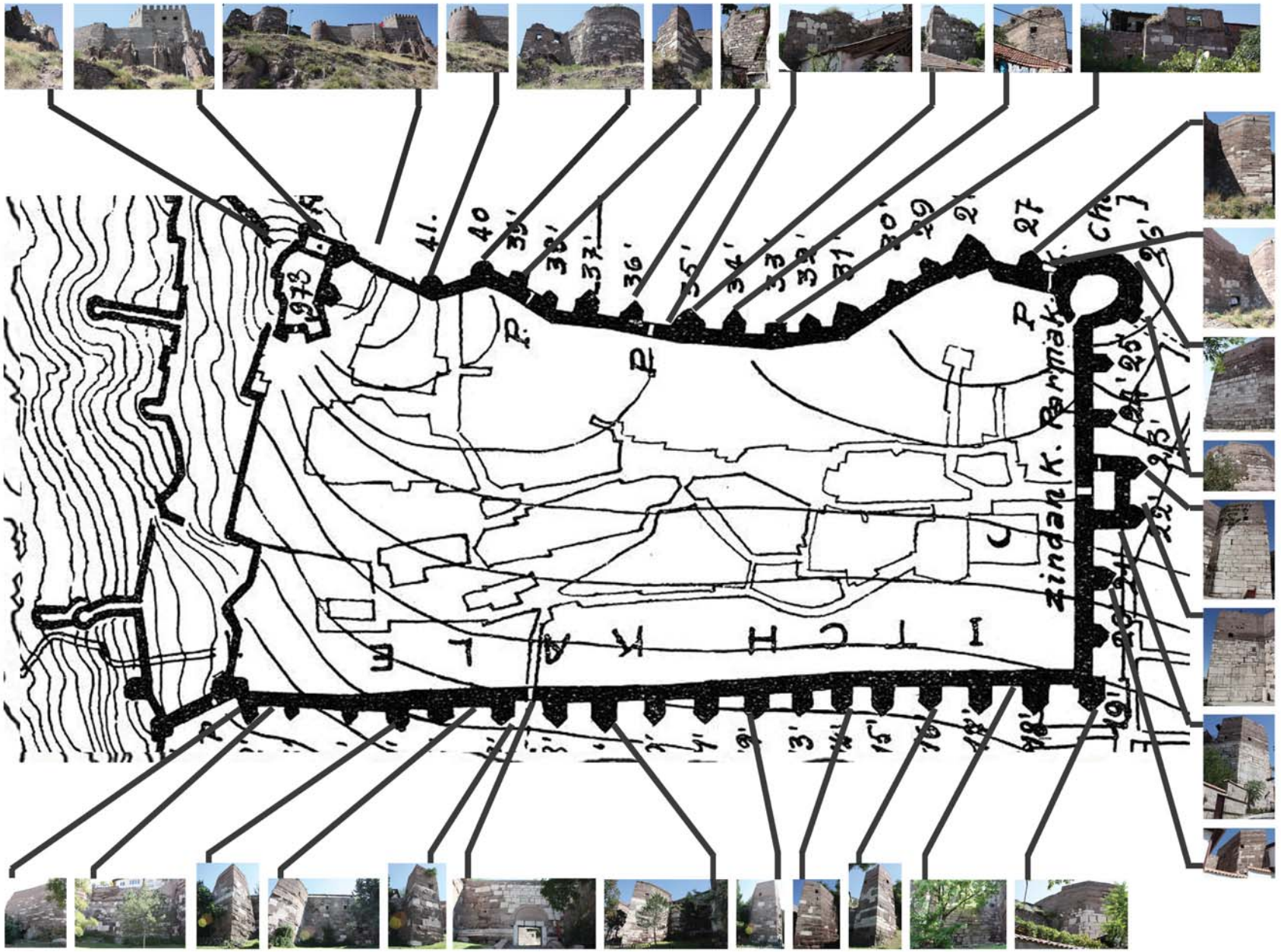
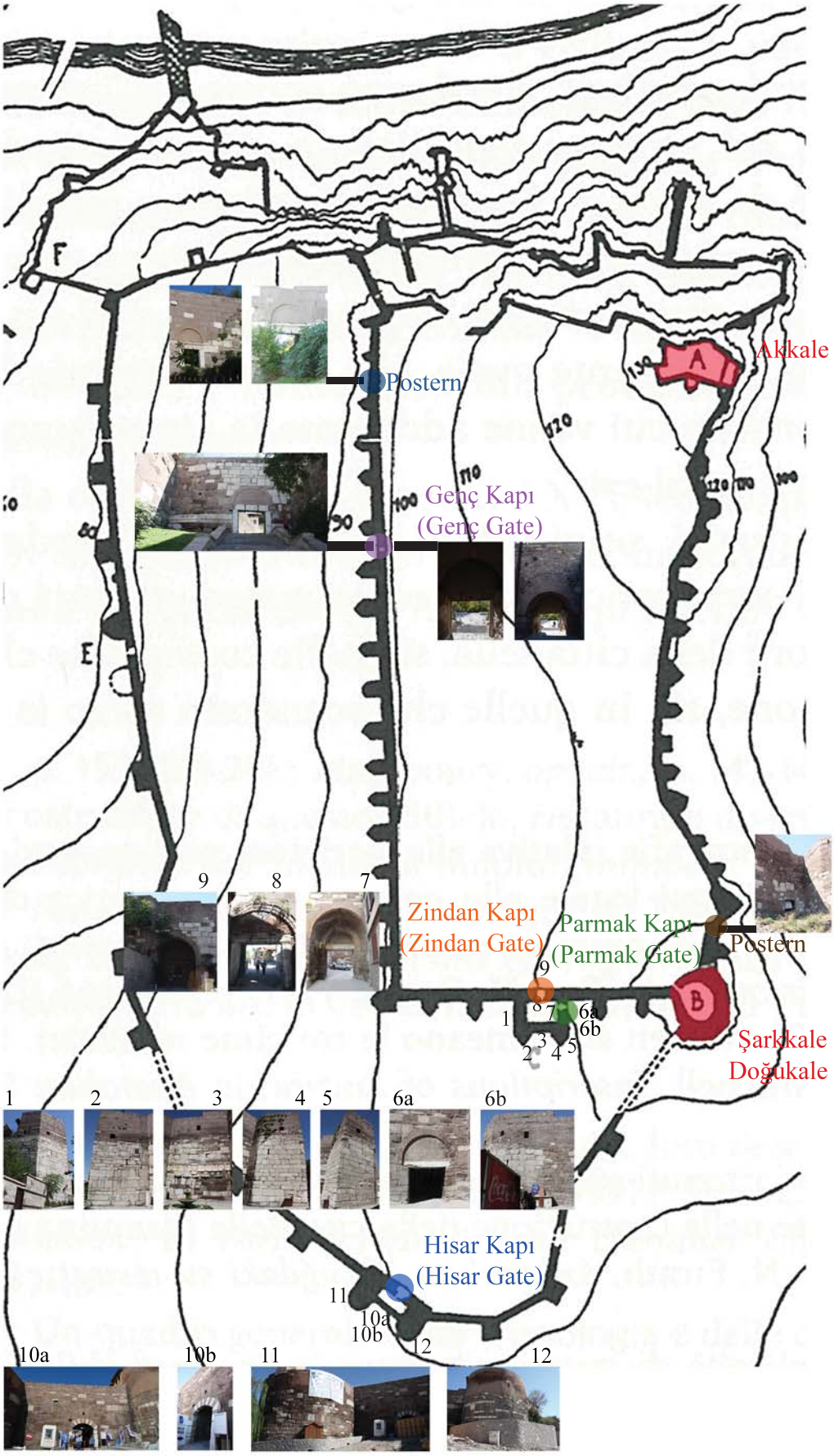


Table 8: Spolia in the walls and towers of Ankara fortifications

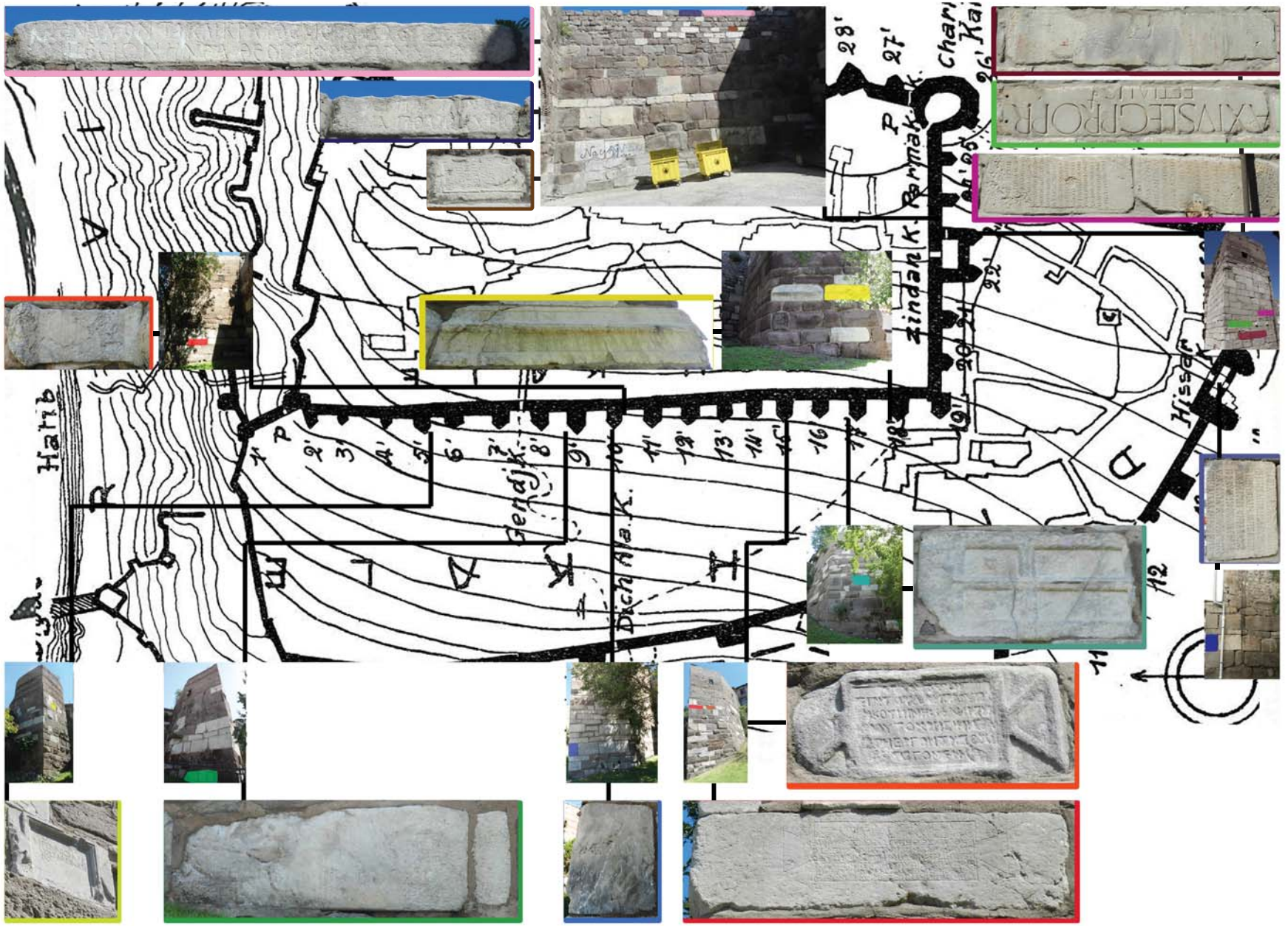




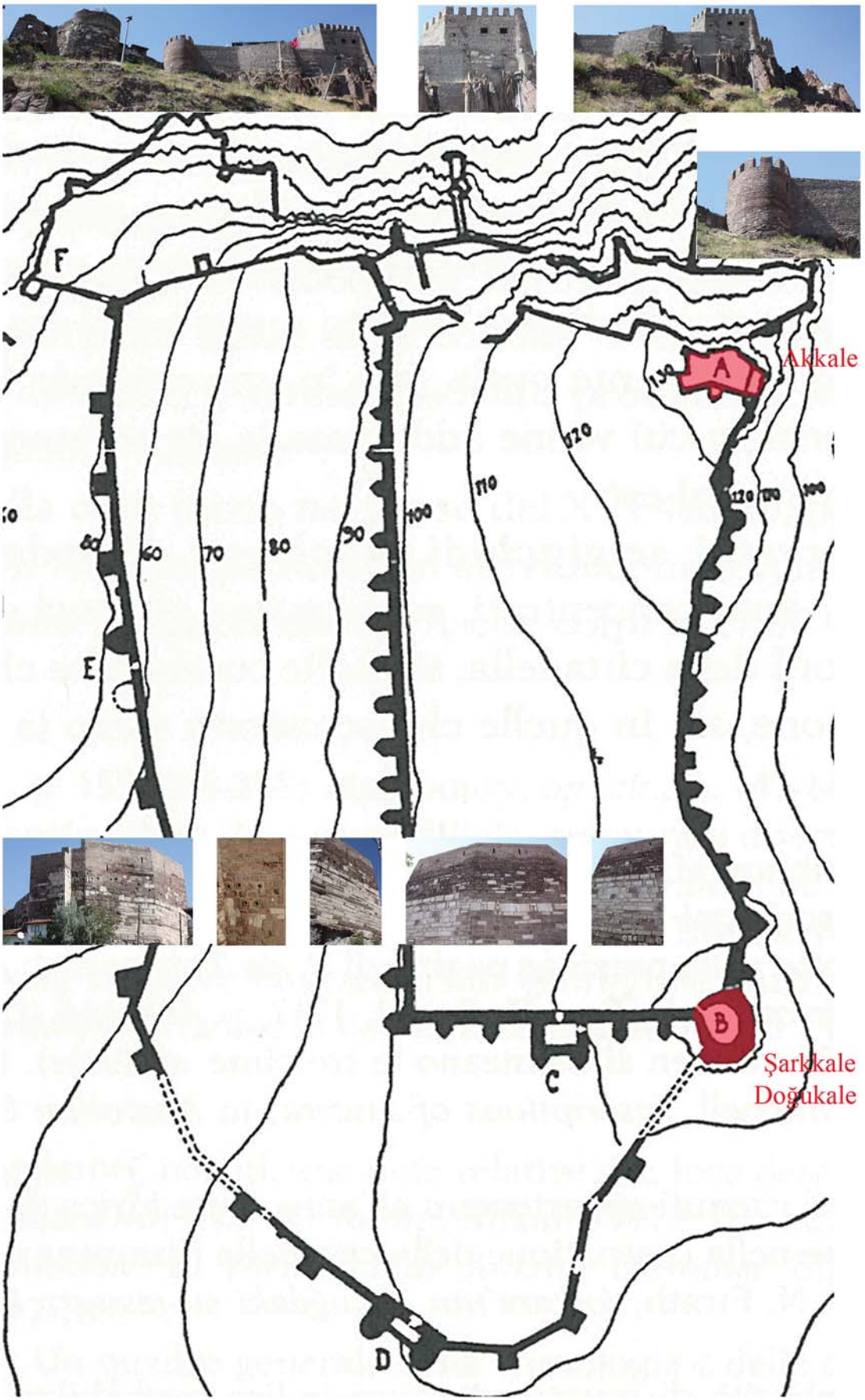
Map 13: Inner fortifications of Ankara



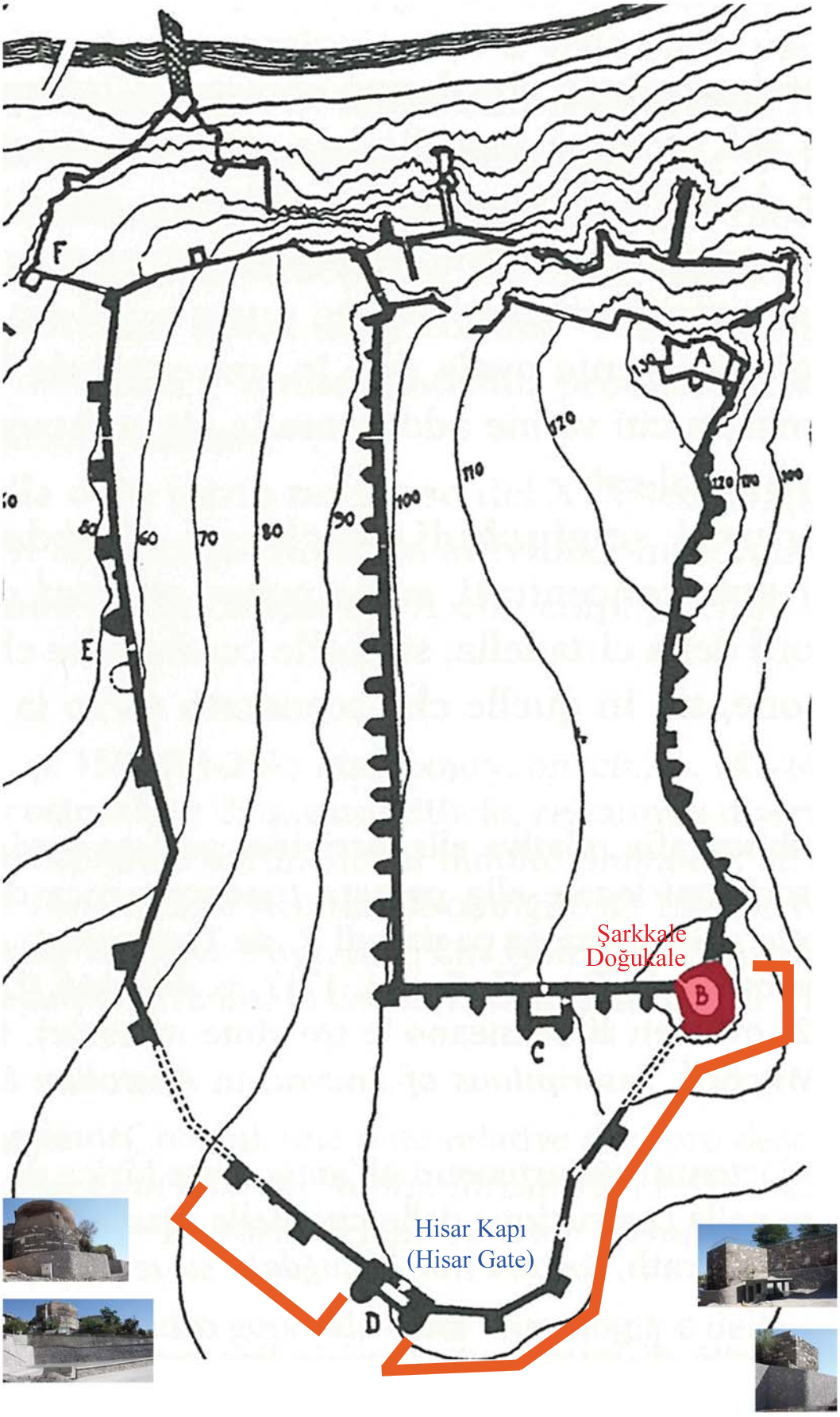
Map 14: Gates in the fortifications of Ankara



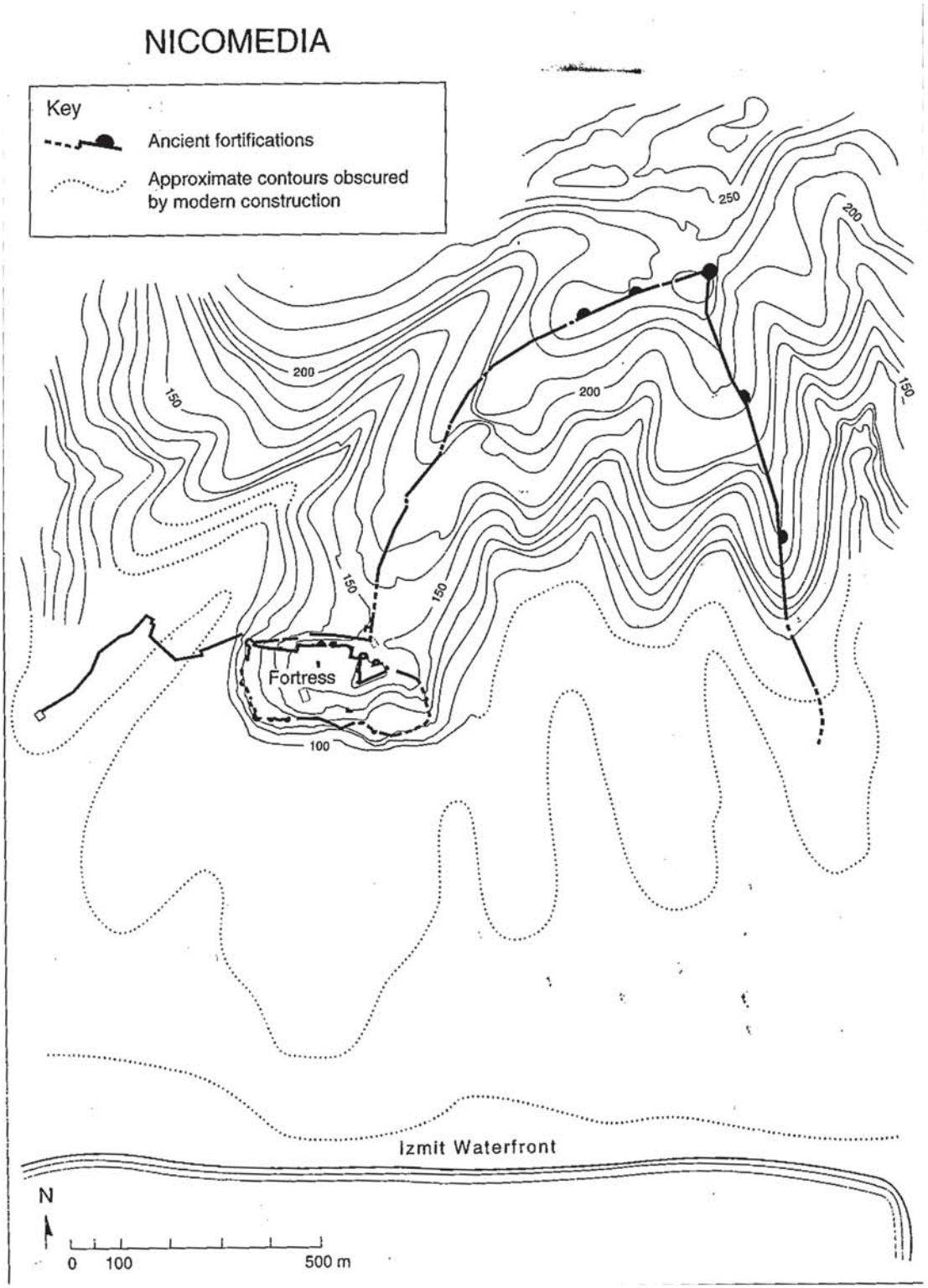
Map 15: Inscriptions on the walls and towers in the fortifications of Ankara



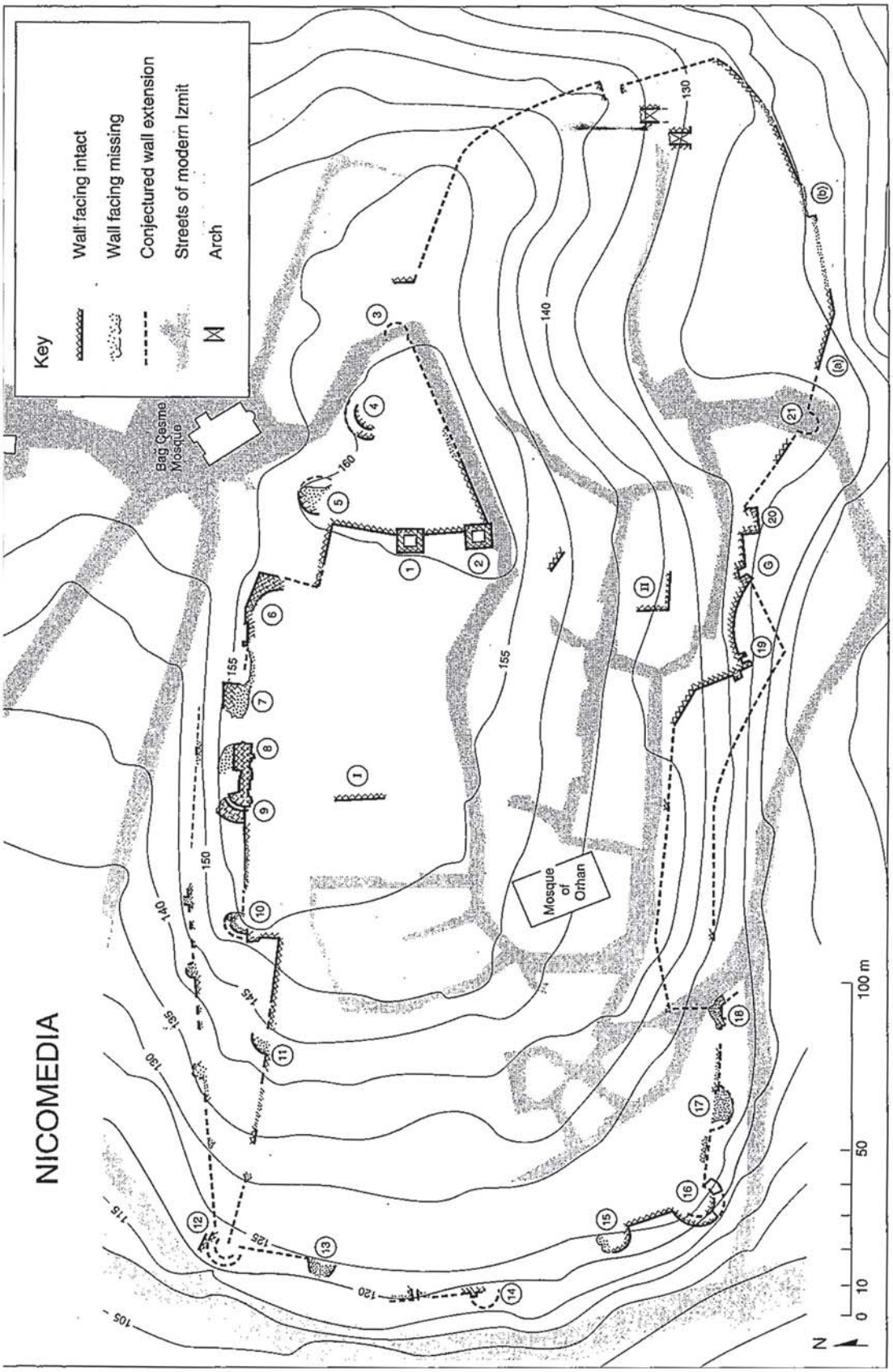
Map 16: Şarkkale and Akkale Bastions



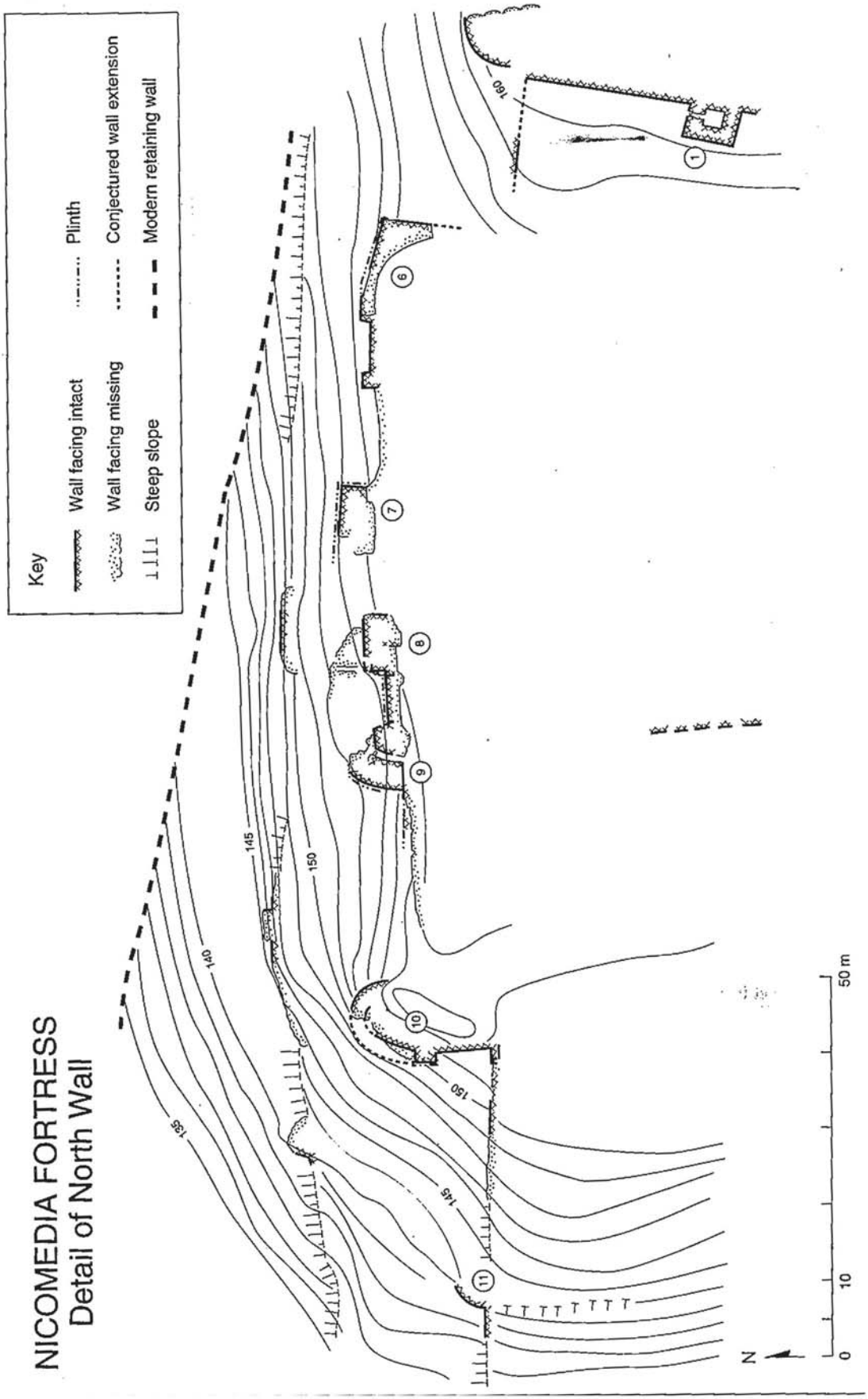
Map 17: A new wall, added in 2016 to the outer fortification of Ankara



Map 18: Nicomedia: The Walls of Diocletian and the Byzantine Walls (Foss, 1985)



Map 19: Nicomedia: The Byzantine Walls and the Citadel (Foss, 1985)



Map 20: Nicomedia: Citadel, detail of the North Wall (Foss, 1985)

Figure 5-4: Photo album of Iznik fortifications

Figure 5-4: Photo album of Iznik fortifications (continued)

Figure 5-4: Photo album of Iznik fortifications (continued)