THE KERKENES PROJECT

A PRELIMINARY REPORT ON THE 2010 SEASON

Figure 1. Restoration of the Cappadocia Gate glacis in progress. (10dpcg0425)

Geoffrey Summers
Françoise Summers
Scott Branting
Nilüfer Yöney

LOCATION

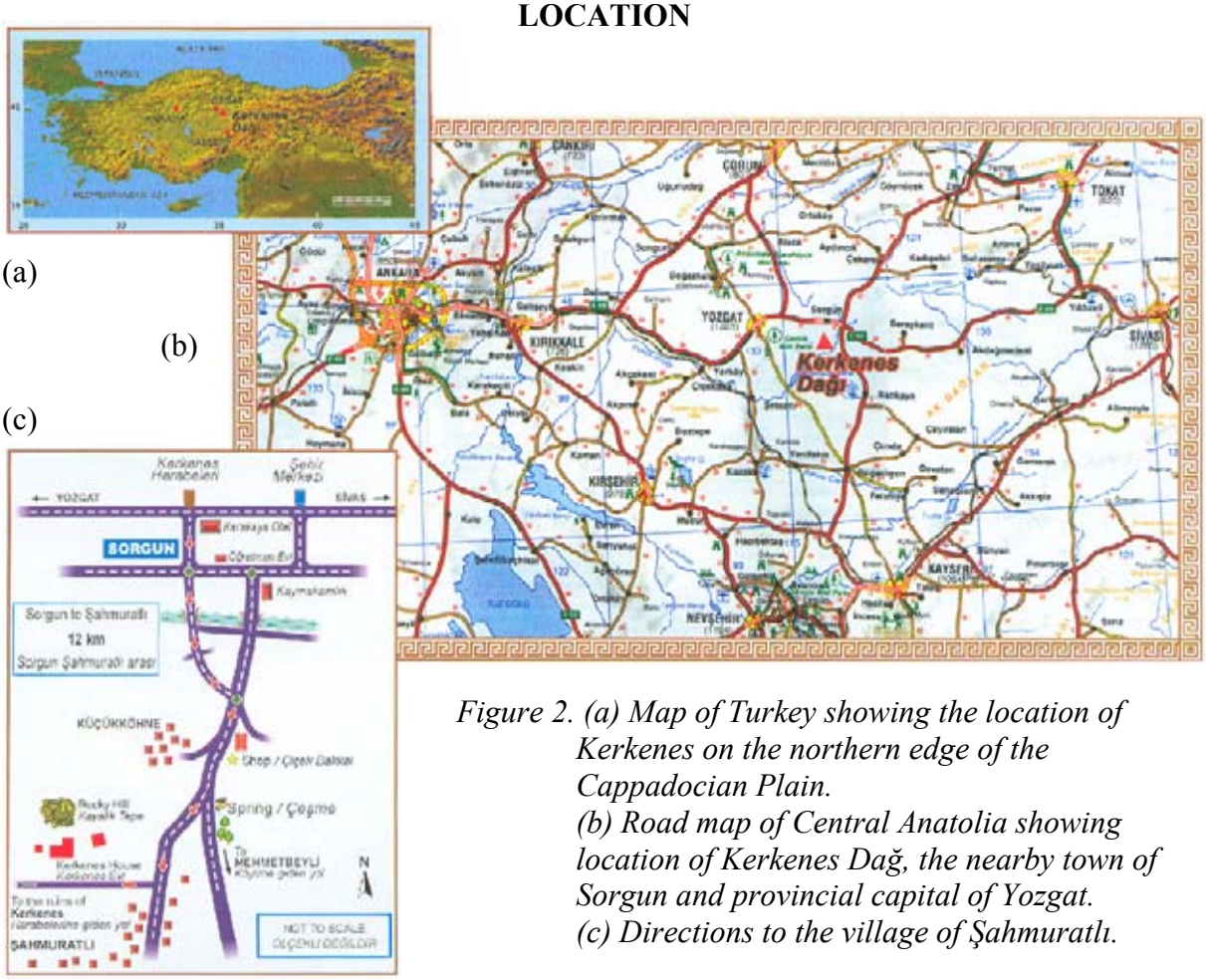

Figure 2. (a) Map of Turkey showing the location of Kerkenes on the northern edge of the Cappadocian Plain.
(b) Road map of Central Anatolia showing location of Kerkenes Dağ, the nearby town of Sorgun and provincial capital of Yozgat.
(c) Directions to the village of Şahmuratlı.

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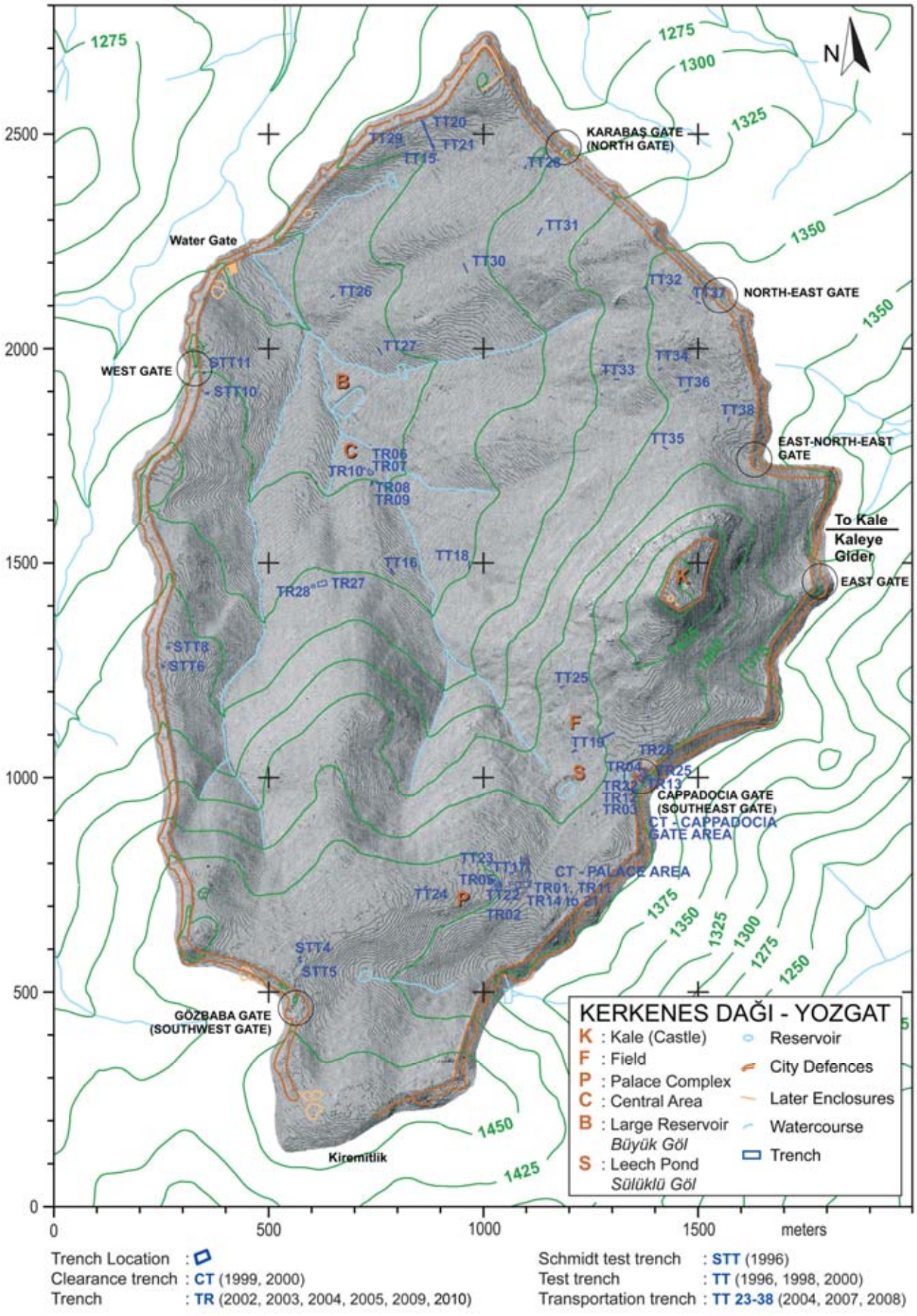

Figure 3. Digital Terrain Model (DTM) made by Işlem GIS, using ERDAS Imagine, from the GPS survey of Kerkenes.

THE 2010 CAMPAIGN

Figure 4. Şahmuratlı village photographed from the ancient city in the spring of 2010. (10dpcp0303)

In 2010, commencement of restoration at the Cappadocia Gate (Fig. 1) and excavation of a large public hall were the two new initiatives at the Iron Age capital on the Kerkenes Dağ overlooking the village of Şahmuratlı (Figs 2, 3 and 4). In addition, excavations inside the Cappadocia Gate revealed unexpected results while the spring campaign of geophysical survey added to our understanding of urban dynamics within the southern zone. Finally, two large stone idols were restored and installed in the Yozgat Museum.

THE 2010 TEAM

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Post-fieldwork, research and publication, Turkey

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The Kerkenes Eco-Center Project

We would like to note that collaboration with the Kerkenes Eco-Center team plays a significant role in various aspects of the project and wish to acknowledge the contribution of the 2010 key team members.

Project Director:	Françoise Summers
Project Advisor:	Soofia Tahira Elias-Özkan
Project Co-ordinator:	Berrin Çakmaklı
Project Co-ordinator (2009-10):	Asuman Korkusuz
Industrial Design:	Güner Mutaf and Korkut Mutaf
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Reports on the activities for the Kerkenes Eco-Center Project appear separately.

http://www.kerkenes.metu.edu.tr/keco/index.html

ŞAHDER, the Kerkenes and Şahmuratlı Village Association, works closely with the Kerkenes Eco-Center Project team.

ŞAHDER Chairman: Sabri Erciyas

ACKNOWLEDGMENTS

We thank the General Director, Murat Süslü, and the staff at the General Directorate of Cultural Resources and Museums for their support. Help and good advice has, as usual, been provided by Melik Ayar. Thanks are also due to three successive representatives, Özge Yurdakul, Kenan Sürül and Resul İbiş as well as to the Yozgat Museum Director Hasan Şenyurt and his staff. Mehmet Erciyas, the Kerkenes Guard, has gone beyond the call of duty to assume his responsibilities in guarding the site and taking care of the project's premises. We are most grateful to the Yozgat Governor Necati Şentürk, the Yozgat Director of Culture and Tourism, Bahri Akbulut, and his successor Lutfi İbiş, Sorgun District Governor Levent Kılıç, Yozgat Mayor Yusuf Başer and Sorgun Mayor Ahmet Şimşek, who, with their staff, continue to provide every possible encouragement to the project. We are grateful for assistance from local organisations, namely the Yozgat Provincial Administration (*İl Özel İdaresi*), TEDAŞ and Türk Telekom. Provision of heavy equipment from the municipalities of Sorgun, Karakız, Dedefakılı, Çekerek and Belencumafakılı greatly facilitated restoration work at the Cappadocia Gate. We are deeply indebted to the village of Şahmuratlı, and to Headman Turan Baştürk, for extending traditional Anatolian hospitality. ŞAHDER, the Kerkenes and Şahmuratlı Village Association, is involved in various project activities and Osman Muratdağı assures the team mobility with his minibus.

Based in office space provided by the Middle East Technical University, the Kerkenes Project collaborates with the Faculty of Architecture, the Faculty of Engineering, METU Museum, TAÇDAM and the Materials Conservation Laboratory and Photogrammetry Center. Research and publication of results, which progress all year round at METU, are made possible by generous donations channelled through the METU Development Foundation. The METU Computer Center provides technical assistance. Colleagues and students from the departments of Architecture, Civil Engineering, Metallurgical Engineering and Geological Engineering as well as from graduate programs in Settlement Archaeology, Archaeometry and GGIT contribute to research and publication. Work is also in progress with colleagues from the Departments of Hydrogeology and Anthropology at Hacettepe University. The Kerkenes Project comes under the auspices of the British Institute at Ankara and we thank the director, Lutgarde Vandeput, for her continuing support. Unfortunately the project no longer qualifies for BIAA funding but we are thankful to the BIAA for facilitating fieldwork and making equipment available. There is a formal agreement with the Oriental Institute of Chicago University represented by Co-director Scott Branting. International cooperation also includes the UCLA Cotsen Institute of Archaeology, the Malcolm and Carolyn Wiener Laboratory of Aegean and Near Eastern Dendrochronology at Cornell University, UC Berkeley, the University of Buffalo SUNY, Laboratoire de Géographie Physique - CNRS and the Anatolian Iron Age Ceramics Project. While conducting a survey at the nearby site of Kuşaklı, an Italian team, led by Stefania Mazzoni from the University of Florence, shared the Kerkenes Project facilities as well as information related to the region.

Sponsors in 2010 were Andrea Dudek, an anonymous US donor, the AICC, the Anglo-Turkish Society - Bernard and Innes Burrows Memorial Award, the Archaeocommunity Foundation, the Binks Trust, the Charlotte Bonham-Carter Trust, Çimpor Yibitaş Yozgat Çimento, the Erdoğan M. Akdağ Foundation, the Loeb Classical Library Foundation, MESA, METU - BAP Grant, the Oriental Institute and the Women's Board of the University of Chicago, Peter Sommer Travels, UCLA Cotsen Institute of Archaeology, the US Ambassador's Fund for Cultural Preservation and Yenigün. GEOSCAN and İşlem GIS assist with software. Contributions from Andante Travel and other visitors include a donation in memory of the late C. T. Ingold for the production of the *Kerkenes News 2010*.

Finally to all the team, the house staff and workers from the village of Şahmuratlı, our heartfelt thanks. Little would have been achieved without their dedication, enthusiasm and hard work.

PROJECT FACILITIES AND THE KERKENES ECO-CENTER

Thanks to the generosity of sponsors and friends, the Kerkenes Project is provided with facilities such as the Erdoğan Akdağ Center for Research and Education which can accommodate large groups of visitors and students (Fig. 5). The Kerkenes Eco-Center Project has thus evolved and a team based at METU works in collaboration with ŞAHDER, the Kerkenes and Şahmuratlı Village Association for Public Relations, Prosperity, Help and Support, to promote sustainable rural development and to involve villagers in the daily running of the expedition. The Kerkenes Eco-Center promotes sustainable rural life through the development of renewable energy, drip-irrigated organic gardens, and building with appropriate materials and energy efficient designs (Figs 6, 7 and 8).

Figure 5. Françoise Summers demonstrates solar cooking. (10kecp0507)

Figure 6. The Solar Building and solar cookers are part of the facilities provided by the Kerkenes Eco-Center. (10kecg0301)

Figure 7. Fadime Gençarslan and Ayşe Muratdağı have mastered the art of solar cooking. (10kecg0304)

Figure 8. Hanım Arslan and Nurdan Erciyas working in the solar space where built in shelves have been provided to facilitate solar drying of tomatoes and other fruit and vegetables. (10kecg0314)

Fieldwork and 'Hands on' Activities

The Kerkenes Project has provided fieldwork experience to archaeology and architecture students from Turkey and abroad since 1993. New facilities provided over the years permit an increasing variety of educational activities for visiting students and villagers.

Students from the Middle East Technical University come to the Kerkenes Eco-Center to take part in the 'Hands on Building' sessions of the elective course Arch 325, 'Architecture *in situ*' (Figs 9, 10 and 11). With the emphasis being on environmental design and recycling, students have selected mudbricks, straw bales, old tyres, recycled bottles and other suitable material to realise their projects while at the same time adding to the amenities of the Kerkenes Project compound (Figs 12 and 13).

Figure 9. METU students enrolled in the 'Hands on Building' course, Arch 325, photographed in front of the Cappadocia Gate glacis in April 2010. (10dpcp0202)

Figure 10. Another group of students from the METU Department of Architecture enrolled for the 'Hands on Building' elective course in the fall of 2010. (10kecg0633)

Figure 11. Students helping to prepare yufka*, the flat village bread. (10kecg0606)*

Figure 12. Students learn from villagers how to produce traditional mudbricks. (10kecg0611)

Figure 13. Working in groups, students build with straw bales, mud, and recycled bottles and cans. (10kecg0622)

Visitors

Yozgat is an ideal choice for an overnight stay as tours of Central Anatolia progress from Hattusa to Cappadocia. Andante Travel this year visited Kerkenes in both May and October (Figs 14, 15 and 16). Guests are eager to see the Iron Age capital as well as the Eco-Center where lunch simmers on solar cookers.

On the Sunday 16th of May, a large group of students led by the Yozgat Museum director Hasan Şenyurt visited Kerkenes (Figs 17, 18 and 19)

Figure 14. The Andante Travel 2010 spring tour of Central Anatolia brought to Kerkenes the first group of international visitors in 2010. (10dpcp0407)

Figure 15. The autumn Andante Travel tour visited when the 2010 program of restoration at the Cappadocia Gate had been completed. (10dpcg0948)

Figure 16. Andante guests visiting in May 2010 always enjoy the wildflowers as well as showing interest in the electric resistance survey that has to take place in the spring before the ground becomes too dry. (10dpcp0414)

Figure 17. A large group of students from Yozgat visited Kerkenes on the 16th of May 2010. (10dpcp0505)

Figure 18. Hasan Şenyurt, the Yozgat Museum director, led students from the Cappadocia Gate to the Palatial Complex, providing them with historical background to the site. (10dpcp0507)

Figure 19. Representative Özge Yurdakul and Osman Muratdağı photographed in front of the Cappadocia Gate glacis with Hasan Şenyurt, his wife Gonca and their daughter Zeyneb. (10dpcp0520)

Ahmet and Dilek Türer visited the site with their two daughters in April 2010 (Fig. 20). A report, including structural recommendations, prepared by Ahmet Türer was submitted together with the Restoration Project proposal for consideration by the Sivas Committee.

The delegation from the Sivas Regional Commission on the Conservation of Cultural and Natural Property scheduled a site visit in May (Fig. 21) before the proposal was due to be discussed by the committee.

In the autumn while excavations were in progress at the Cappadocia Gate, Stefania Mazzoni, Carlo Corti, representative Ozan Corrado Rijavc and Alessandro Poggio visited the site in spite of their busy survey schedule at Kuşaklı Höyük (Fig 22).

The visit from the Sorgun district governor, Levent Kiliç, and the Sorgun director of education, Yusuf Yazıcı, ccoincided with that of Güzin Türel from the Department of Architecture at Bozok University in Yozgat (Fig. 23). The Mayor of Sorgun, Ahmet Şimşek, visited the excavations at the Cappadocia Gate with other local officials (Fig. 24).

Figure 20. Ahmet and Dilek Türer visiting the site with their two daughters, Gökçe and Tuğçe in April 2010. (10dpcp0104)

Figure 21. The delegation from the Sivas Regional Commission on the Conservation of Cultural and Natural Property visiting the site in May 2010. (10dpnc0424)

Figure 22. Stefania Mazzoni, Carlo Corti, the Kuşaklı survey representative, Ozan Corrado Rijavc and Alessandro Poggio in front of the Cappadocia Gate glacis in September 2010. (10dpcg0207)

Figure 23. The Sorgun, District Governor, Levent Kılıç, photographed with Yusuf Yazıcı, the Sorgun director of education, and Güzin Türel from the Department of Architecture at Bozok University. (10dpcg0243)

Figure 24. The excavation team photographed in the inner court of the Cappadocia Gate with the mayor of Sorgun, Ahmet Şimşek. (10dpcg0368)

The Kerkenes Team hosted a group from the American Research Institute in Turkey (ARIT) in the autumn when the Cappadocia Gate restoration work, funded by the US Ambassador's Fund for Cultural Preservation, was in progress (Fig. 25). In October, a group from the Archaeological Tours of New York visited as the restoration of the glacis was nearing completion (Fig. 26).

Figure 25. In September 2010, the ARIT group visited Kerkenes while the restoration of the Cappadocia Gate glacis was in progress. (10dpcg0415)

Figure 26. In October 2010, the Kerkenes team hosted a group from the Archaeological Tours of New York as the restoration of the Cappadocia Gate was nearing completion. (10dpcg0612)

The Kerkenes Festival

On October 2, 2010, the Kerkenes Festival, again held to promote all aspects of the project, was attended by many local dignitaries, Turkish and international university staff and students and, most importantly, local people (Figs 27 and 28).

Figure 27. On the Kerkenes Festival day visitors were first taken to the top of the Kale to see overall views of the ancient city. (10dpkc2308)

Figure 28. The governor of Yozgat with other distinguished guests photographed in front of the Cappadocia Gate glacis. (10dpkc2518)

The highlight of the site visit was the Cappadocia Gate where the Yozgat governor, Necati Şentürk, expressed his appreciation for the good work done by the restoration team (Fig. 29). Restoration architect Nilüfer Yöney guided the visit, explaining the ongoing program of excavation and restoration (Fig. 30). Lunch was served at the Kerkenes Eco-Center (Fig. 31) before the local folklore group performed in front of the Kerkenes House (Figs 32, 33 and 34).

Figure 29. The governor of Yozgat and other dignitaries standing on top of the Cappadocia Gate East Tower. (10dpkc2535)

Figure 30. Restoration architect Nilüfer Yöney explains the gate plan to Yozgat governor Necati Şentürk and Sorgun mayor Ahmet Şimşek. (10dpnd1613)

Figure 31. Lunch was served at the Erdoğan Akdağ Center for Education and Research. (10kend0205)

Figure 32. The local folklore troupe performed in front of the Kerkenes House where guests and villagers gathered to watch. (10dpcg0522)

Figure 33. The afternoon was animated by these young dancers in their colourful costumes. (10kekc1917)

Figure 34. The road with the Kerkenes Expedition house and Eco-Center for background made a perfectly improvised stage. (10dpcg0502)

Lutgarde Vandeput, director of the British Institute at Ankara (BIAA), accompanied by Gülgün Girdivan and Abby Robinson, were given explanations by the project director, Geoffrey Summers (Figs 35 and 36).

The project team members, Güzin Eren, Yasemin Özarslan and Sema Bağci led large groups of visitors and students on a site tour (Figs 37 and 38). The Middle East Technical University Science Bus, *ODTÜ Bilim Otobüsü*, was made available to staff and students for the day (Fig. 39).

Figure 35. Abby Robinson and the BIAA director, Lutgarde Vandeput, discussing the excavation at the Cappadocia Gate with Geoffrey Summers. (10dpkc2605)

Figure 36. Geoffrey Summers and Gülgün Girdivan in front of the newly restored glacis at the Cappadocia Gate. (10dpkc2718)

Figure 37. Sema Bağcı leading a group of students at the Palatial Complex. (10dpkc2706)

Figure 38. Yasemin Özarslan showing burnt debris that contain vitrified granite attesting the intensity of the fire that destroyed the Iron Age city. (10dpkc2711)

Figure 39. The METU Science Bus was made available to the university staff and students. (10kekc1946)

THE SPRING GEOPHYSICAL SURVEY

Geoffrey and Françoise Summers

Fieldwork started on the 4th of May after permission was granted by the General Directorate of Museums and Cultural Assets, T.C. Ministry of Culture. The first objective was to extend the electric resistance survey over the area stretching across the Southern Ridge from the Kale to the Göz Baba Gate. A second objective was to extend the area surrounding the 'Temple', above the Central Area, where excavations by the Chicago Team were scheduled.

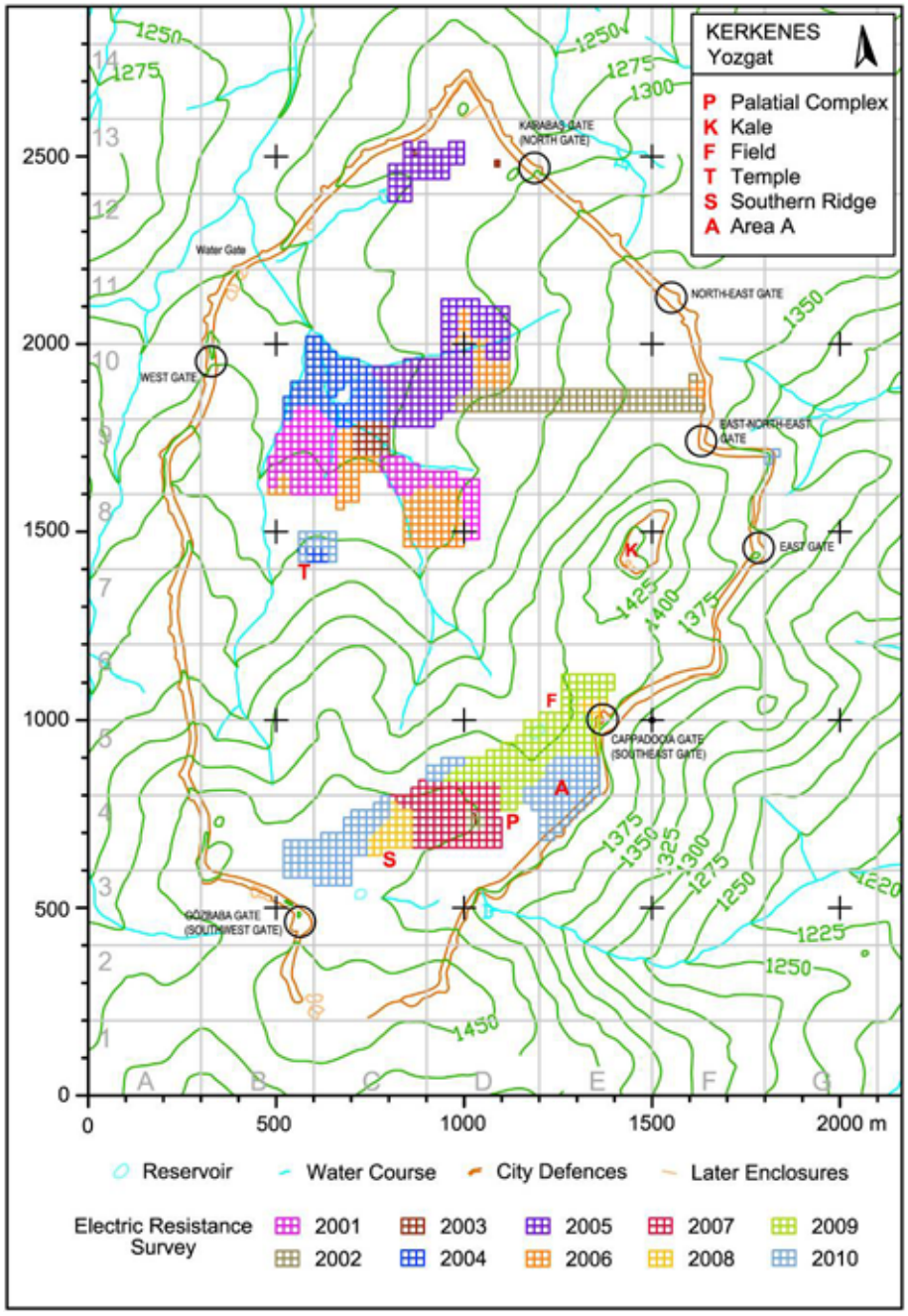


Figure 40. Progress map showing the 2010 electrical resistance survey at Kerkenes.

Adverse weather conditions notwithstanding, 27 days of survey were done while the soil was still sufficiently damp for electrical resistance survey to yield good results. A GEOSCAN RM15 resistivity meter was operated, as in previous years, by three workmen from the village of Şahmuratlı (Fig. 41) under the supervision of the geophysical survey team. As each 20 x 20m grid was surveyed, forms were filled and a small sketch of what is visible on the surface was drawn for each one. Where it was not possible to relocate the grid corners set out and marked with powdered lime in previous years, the points were relocated using a total station (Fig. 42).

Figure 41. Mehmet Baştürk, Cafer Babayiğit and Muhammed Babayiğit collecting data with a Geoscan RM15 resistivity meter over Area A between the Cappadocia Gate and the Palatial Complex while Fatih Arslan fills grid forms and draws a sketch of each grid. (10dpnc1028)

Figure 42. Güzin Eren and Ferhat Can using the total station to relocate unmarked grid corners for the electrical resistance survey. (10dpcp0614)

Collected data was checked and processed on a daily basis so that, in the event of bad data, equipment could be checked to ensure that it was functioning correctly while conditions on the ground, such as standing water, could be appraised. Relevant grids could then be resurveyed the following day on those rare occasions when such problems were encountered.

Geophysical Survey in the Southern Zone

Electrical resistance survey in the southern zone was conducted in three different areas thus enlarging the existing map (Fig. 43). Results were excellent and buildings clearly defined.

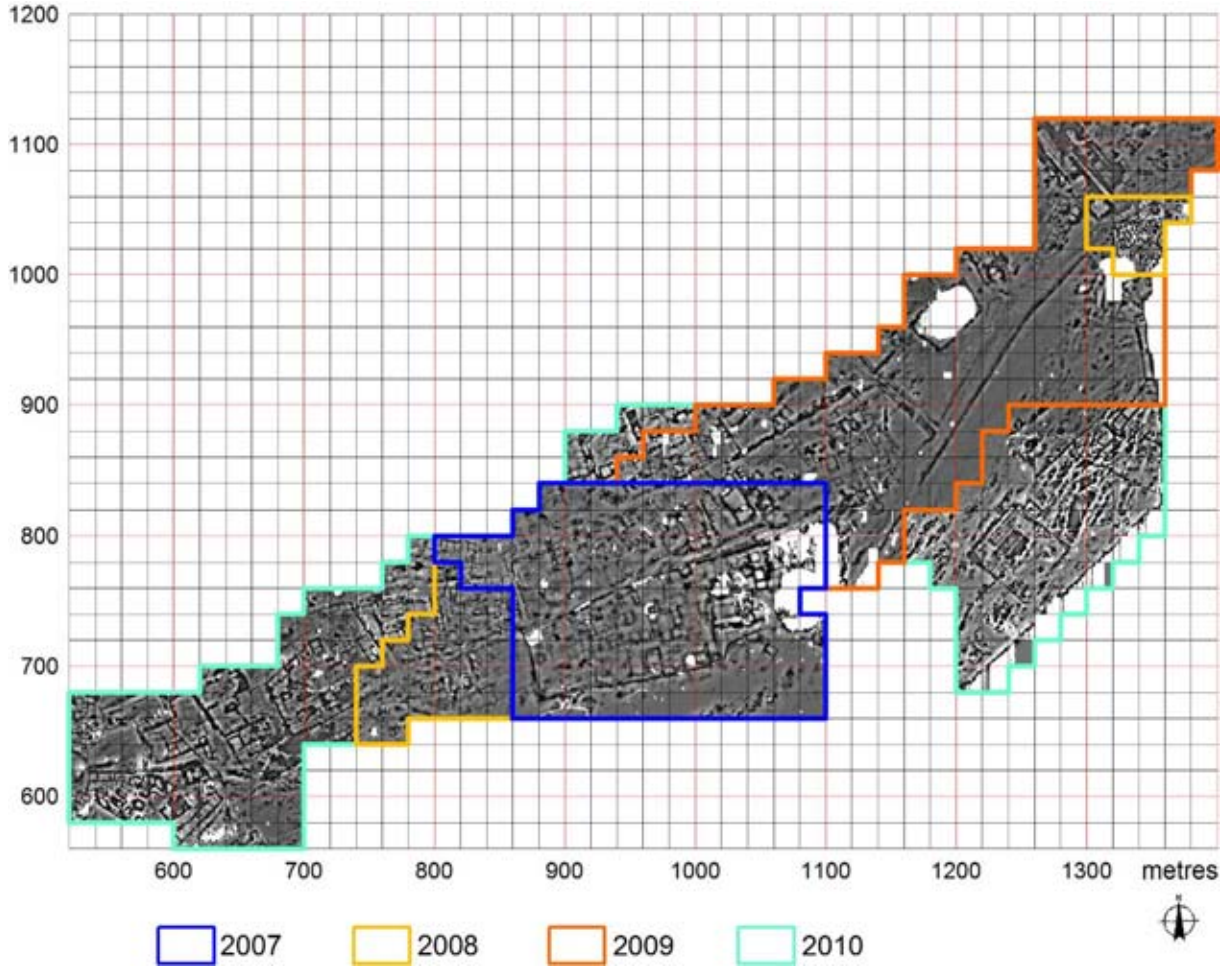


Figure 43. Processed and combined electric resistance data on the Southern Ridge between the Cappadocia Gate and the Göz Baba Gate.

Post-fieldwork Data Processing and Analysis

Data collected during the GPS (Global Positioning System) and geophysical survey of the site since 1993 has been studied. Maps of the Southern Ridge include a detailed Digital Terrain Model (Fig. 44) and geophysical images of subsurface features along the Southern Ridge generated from the Geoscan FM36 fluxgate gradiometer and a Geoscan RM15 resistivity meter surveys (Figs 45 and 46 respectively).

Grids were combined and data processed in Geoplot so as to gain optimum clarity in the imagery. Once basic processing of the geophysical data is done, other types of data can be overlaid and/or combined to help with interpretation and drawing up of final plans. Further studies and analysis is performed using Surfer and Geographical Information Systems (GIS) software.

It was convenient to divide the gradiometer and electric resistance survey maps in three sections as follows:

(i) the western end of the southern ridge (Figs 47 and 48);
(ii) the Palatial Complex and surrounding area (Figs 49 and 50);
(iii) the area between the Palatial Complex and the Cappadocia Gate (Figs 51 and 52).

Different data sets have been used to produce a map of the Cappadocia Gate area which includes the Stables and associated grounds (Fig. 53).

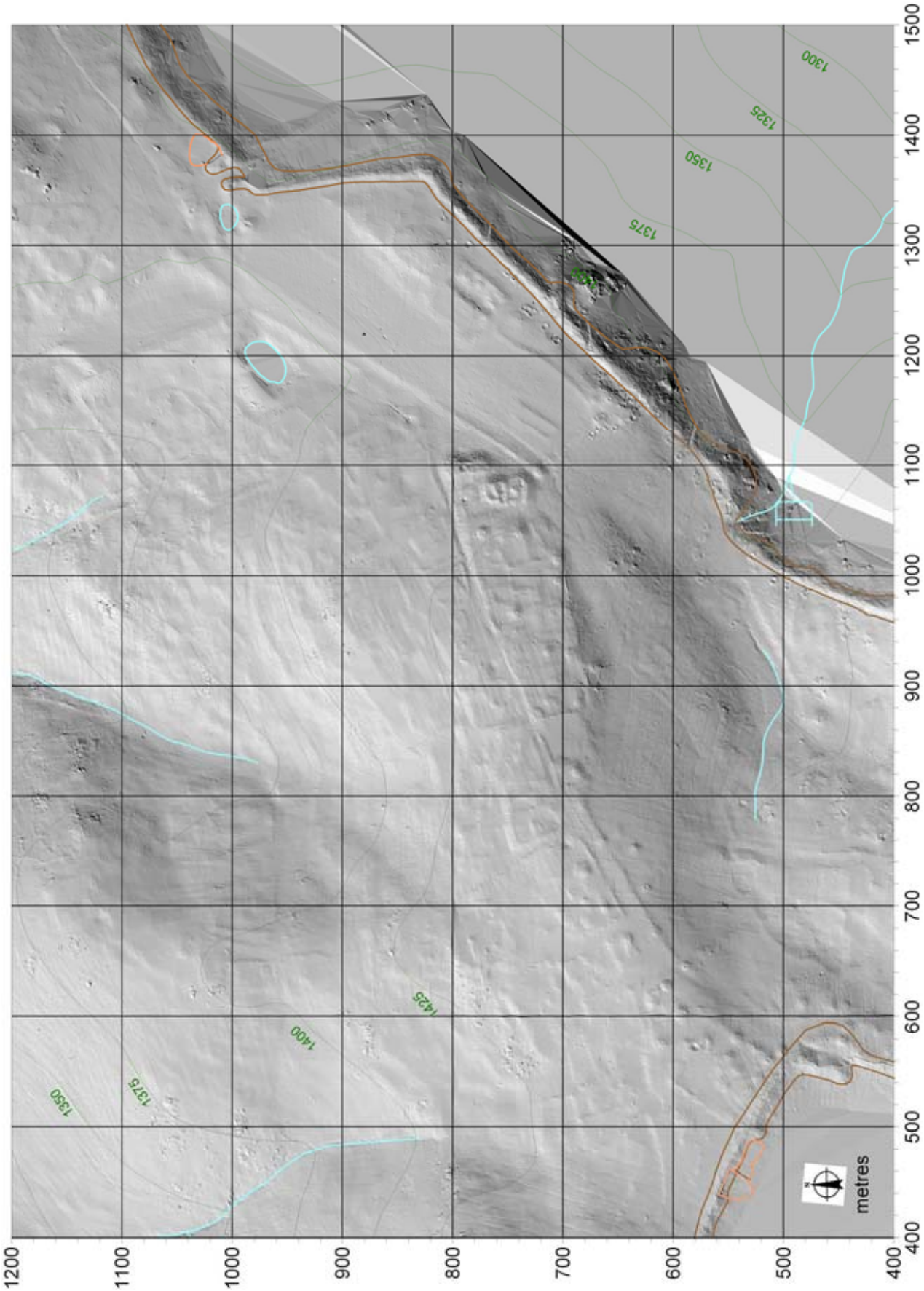


Figure 44. Digital Terrain Model (DTM) of the Southern Ridge made by differential Global Positioning System (GPS) survey.

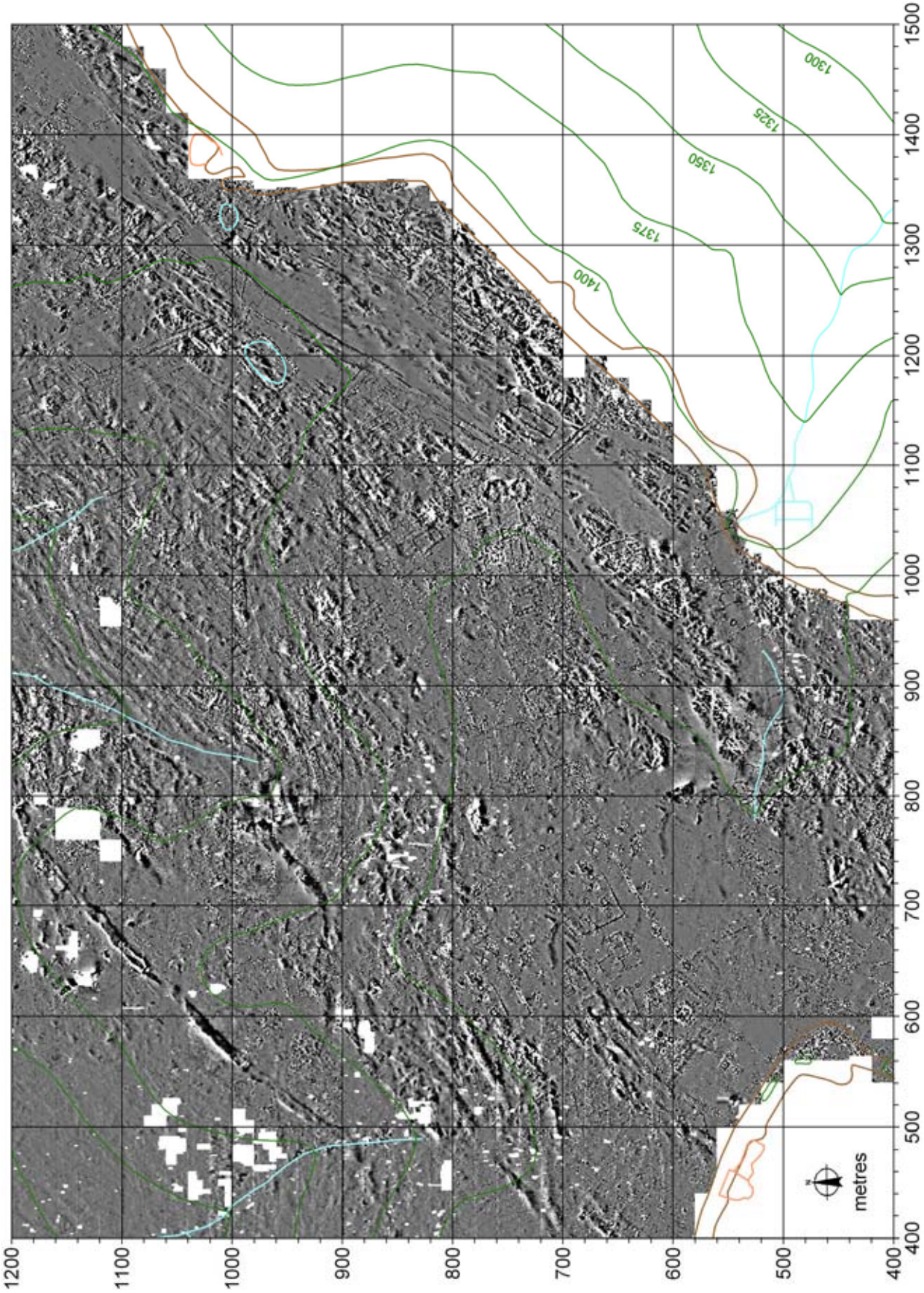


Figure 45. Geophysical image of subsurface features along the Southern Ridge made by survey with a Geoscan fluxgate gradiometer.

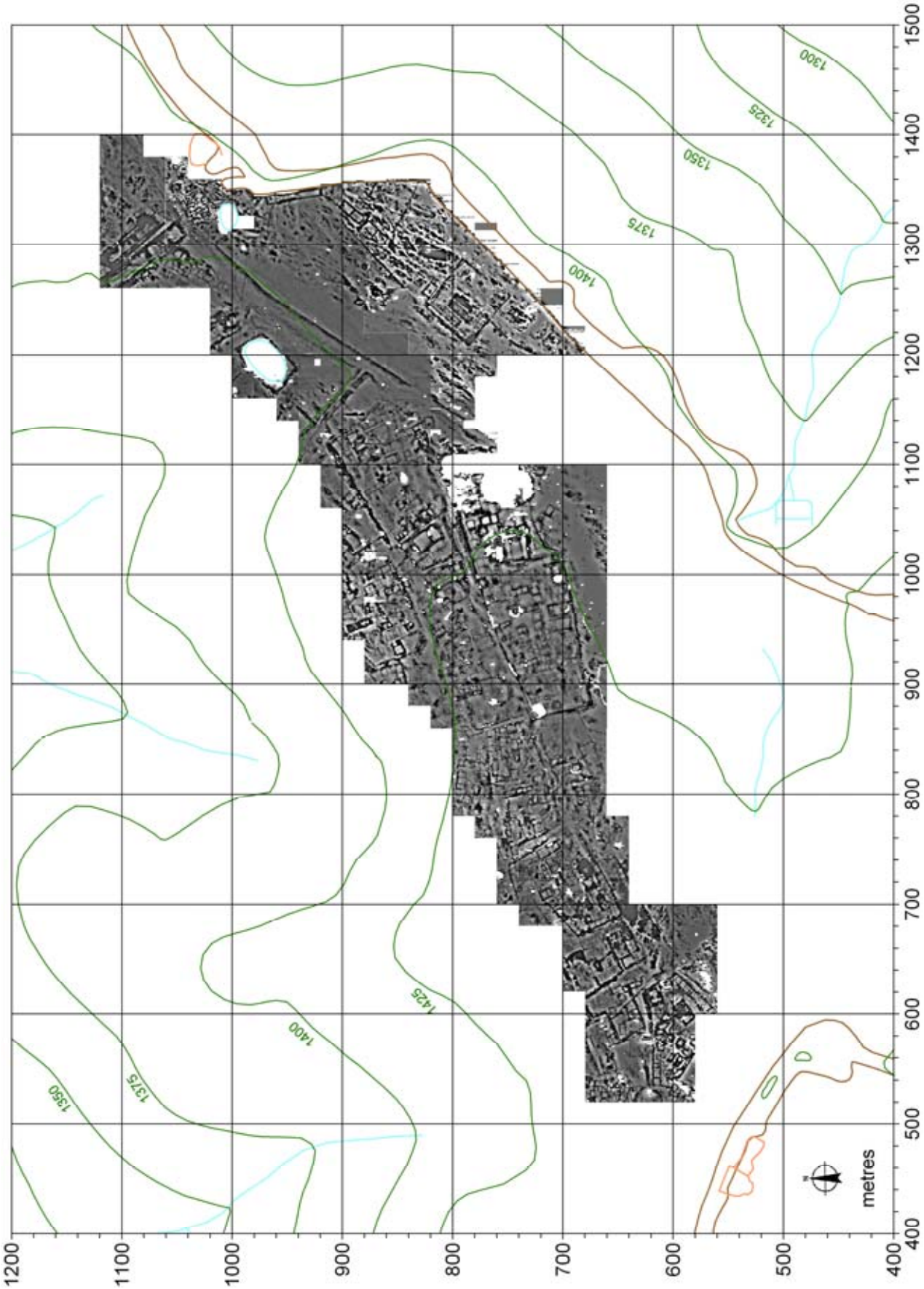


Figure 46. Geophysical image of subsurface features along the Southern Ridge made by survey with a Geoscan resistivity meter.

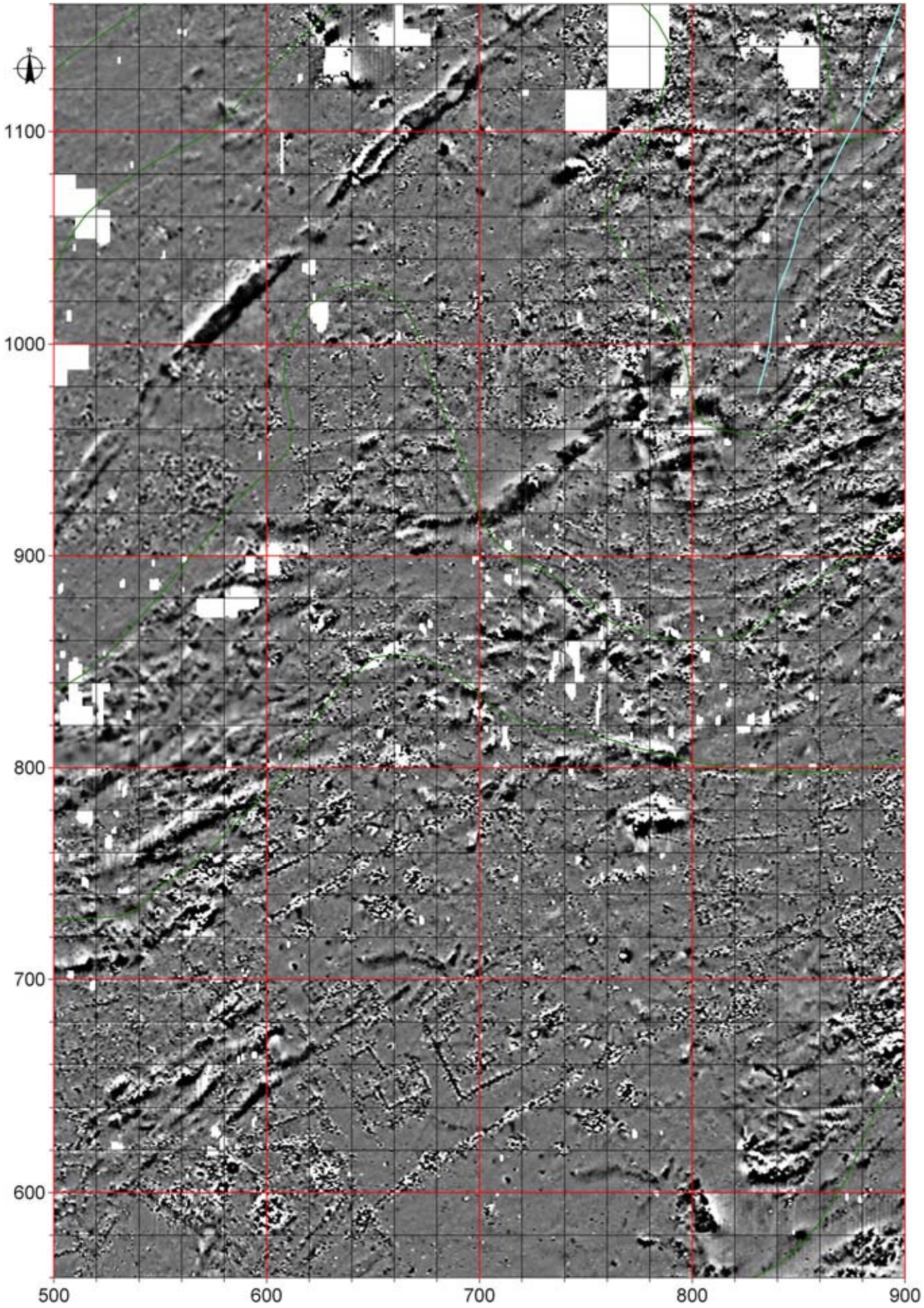


Figure 47. Gradiometer survey towards the western end of the Southern Ridge. Compare with Figure 48.

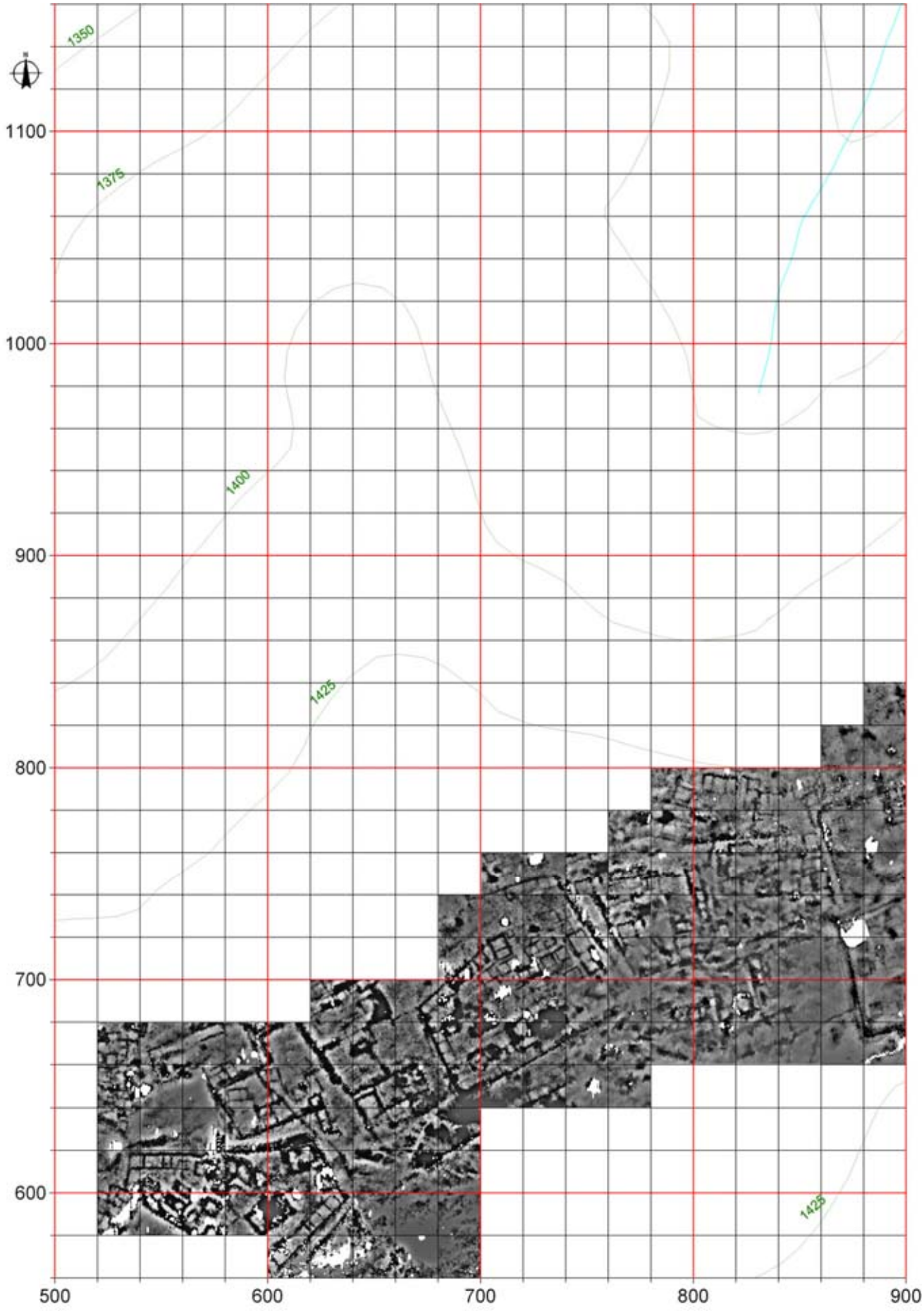


Figure 48. Electrical resistance survey towards the western end of the Southern Ridge. Urban blocks, which contain houses, storage buildings and other structures, are divided by streets.

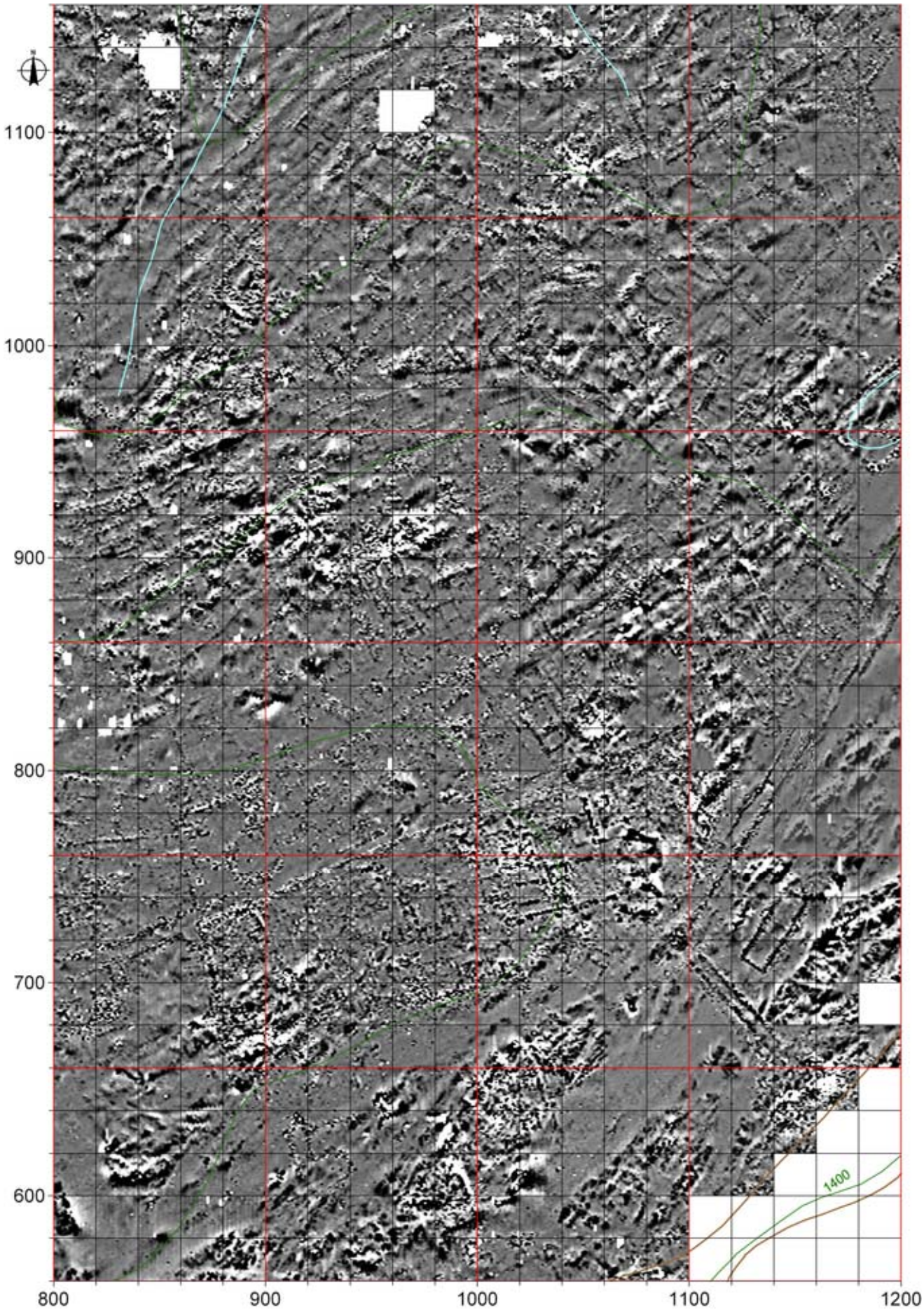


Figure 49. Gradiometer survey of the Palatial Complex and surrounding area. Compare with Figure 50.

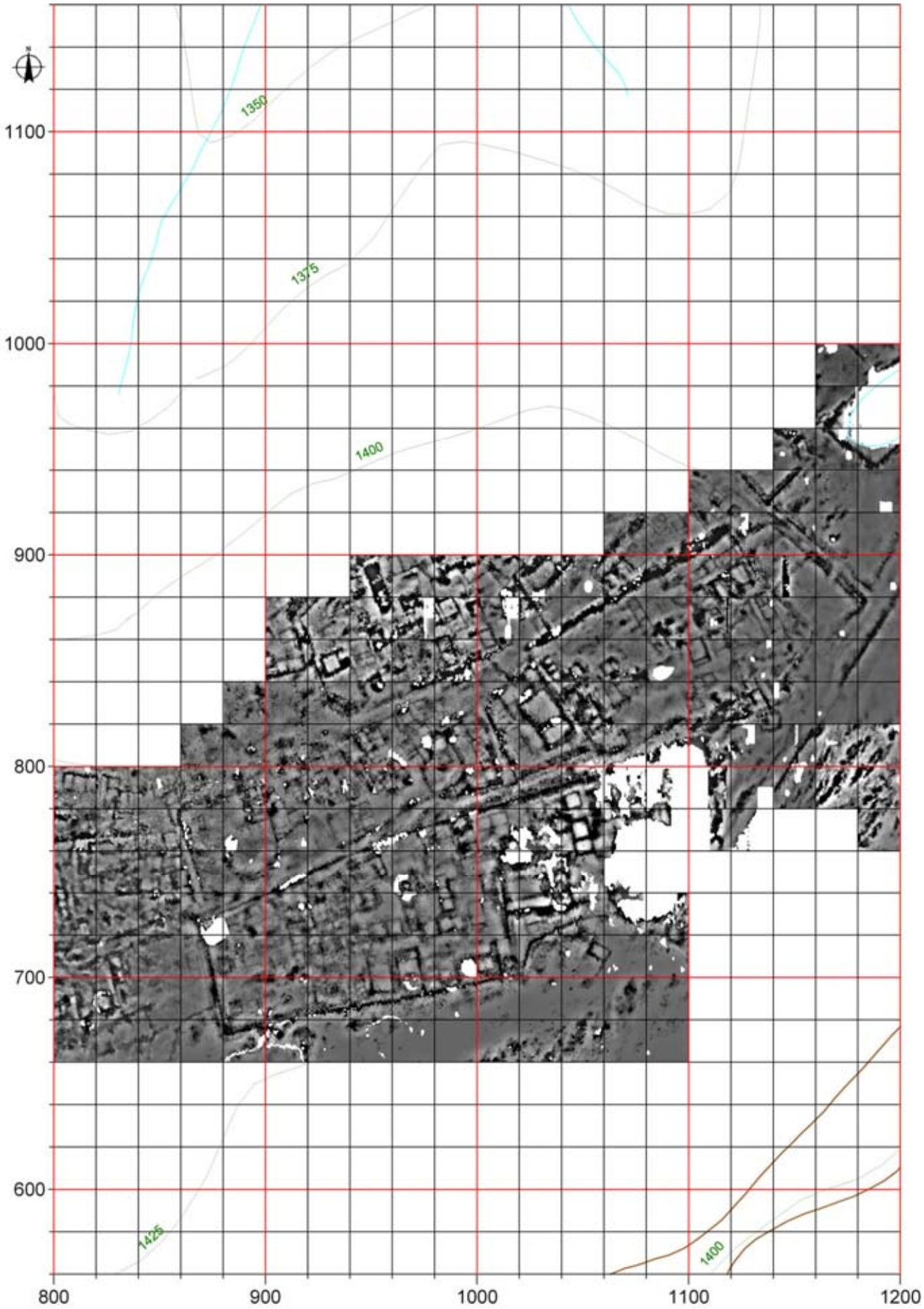


Figure 50. Electrical resistance survey of the Palatial Complex and surrounding area where buildings are clearly revealed.

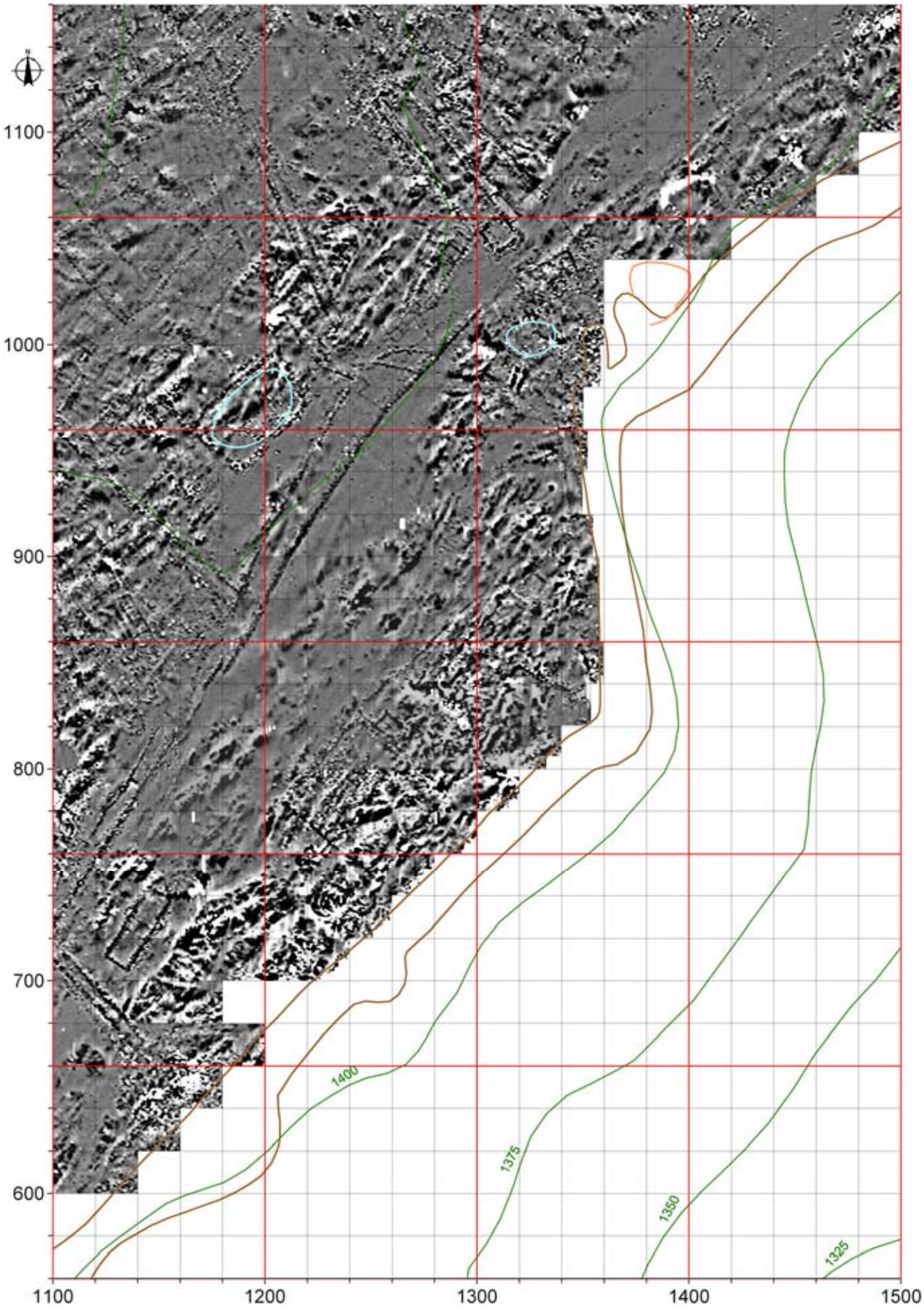


Figure 51. Gradiometer survey of the area between the Palatial Complex and the Cappadocia Gate. The stone-lined Sülüklü Göl is at upper centre. Compare with Figure 52.

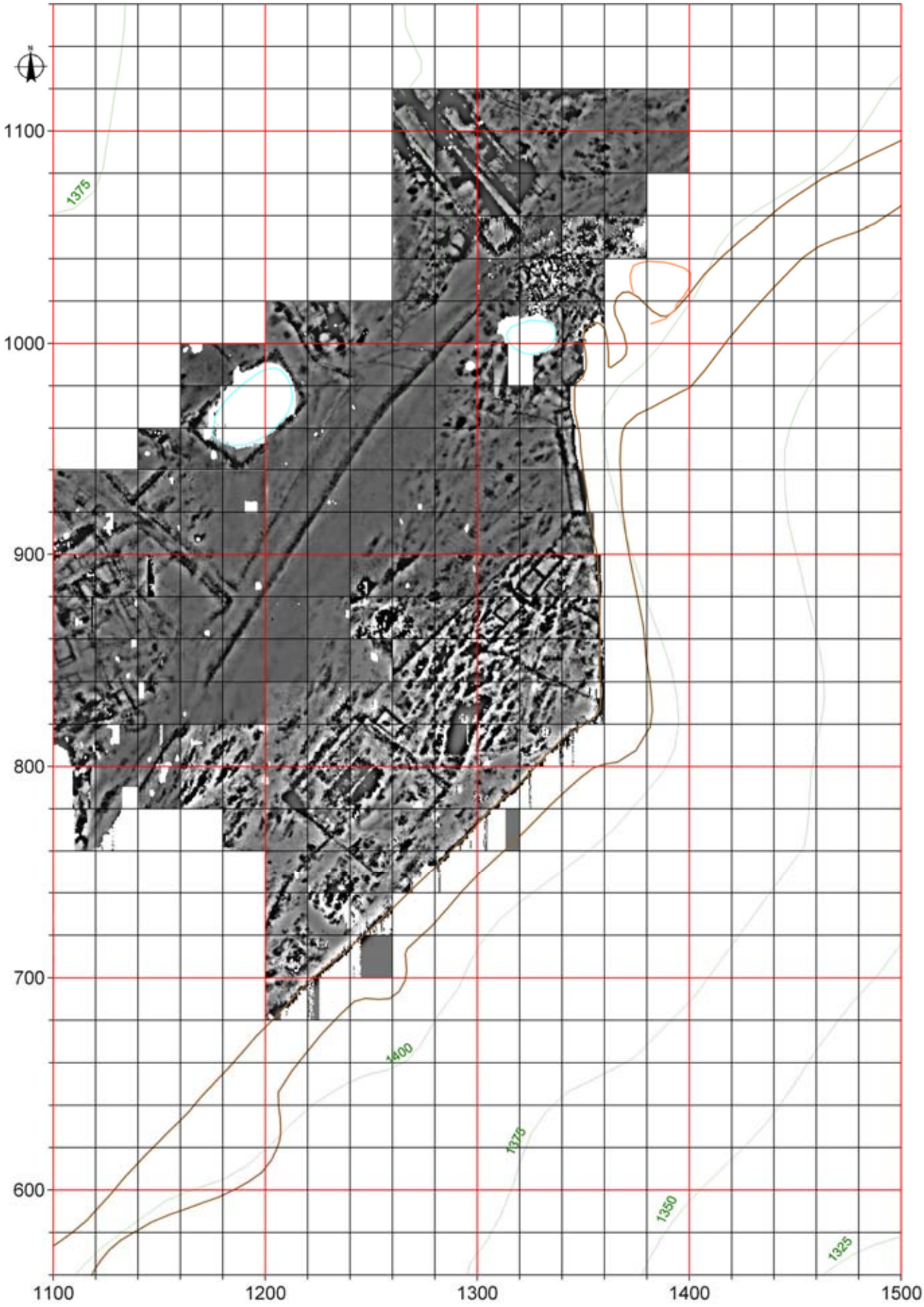


Figure 52. Electrical resistance survey of the area between the Palatial Complex and the Cappadocia Gate. The 'Royal Stables' is at top and an enclosed pool southeast of the street.

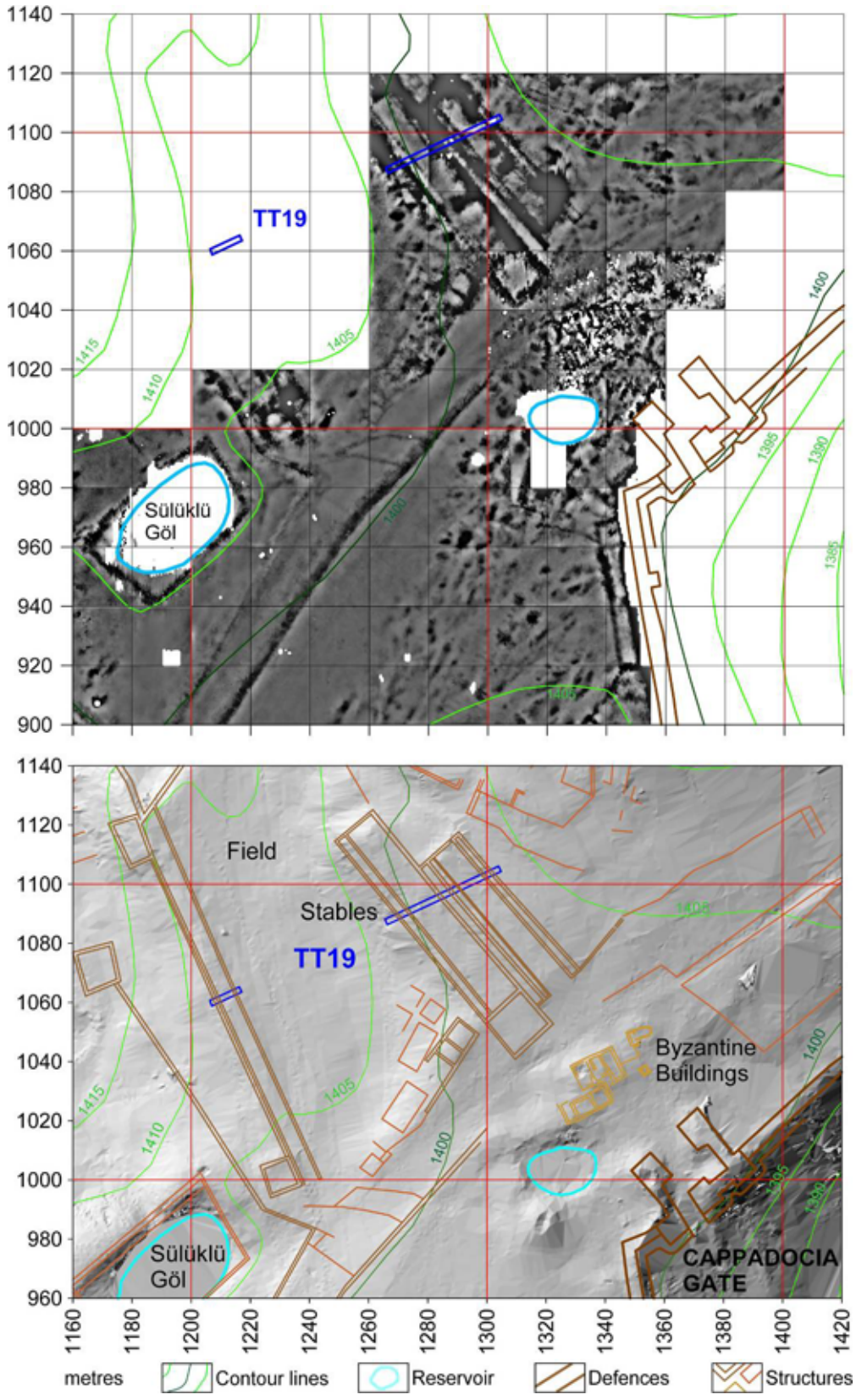


Figure 53. (a) Electrical resistance survey showing the long structures thought to be stables and test trench TT19.
(b) GPS map of the terraces overlaid with plans of visible remains and interpretation of geophysical surveys. Test trench TT19 was dug across the structures in 1996.

Area F, beyond the southern slopes of the Kale (Fig. 54), was surveyed with a gradiometer in 1999 and 2000 and a resistivity meter in 2008 and 2009. In 1996, test trench TT19 (Fig. 53) was excavated to investigate long structures partly visible on the surface of the terraces above the Field. This trench revealed parallel walls of structures that are thought to be 'Royal Stables', as discussed below. Geophysics also revealed associated structures such as might be expected to store bedding and fodder. The so-called Field, a flat area below these terraces, perhaps functioned as an exercise and training ground amongst other purposes.

Figure 54. Area F, with the Kale in the background. The surveyors are more or less in the middle of the Field (the southeast end of which is obscured) and below the northwestern end of the terraces. (10dpnc0119)

Area A and the sector at the western end of the southern ridge were investigated during the 2010 spring season to determine whether there were structures similar to the distinctive architecture of the putative 'Royal Stables' or other urban features that might have been associated with the management of horses. The results show that there are no such structures in either Area A or within the large urban sector towards the western end of the southern ridge where such might have been anticipated on level ground in proximity to the Göz Baba Gate.

Geophysical Survey in the 'Temple' Area

At the end of the 2010 spring survey season, when there was still enough moisture in the ground, it was possible to resume the electric resistance survey of the 'Temple' area over the Central Ridge (Figs 55 and 56). The large burnt two-room building on the Central Ridge (Fig. 57) was tentatively named the 'Temple' when first revealed by the gradiometer survey. The electric resistance survey showed up, with great clarity, the smaller structures around the larger building.

Figure 55. Electrical resistance survey of the 'Temple' area by a team of three, Cafer Babayiğit, Muhammed Babayiğit and Mehmet Baştürk. (10dpkc0111)

Figure 56. The survey around the 'Temple' revealed many smaller structures which are not visible on the surface. The defences running towards the furthest southern limit of the site can be seen in the background. (10dpkc0119)

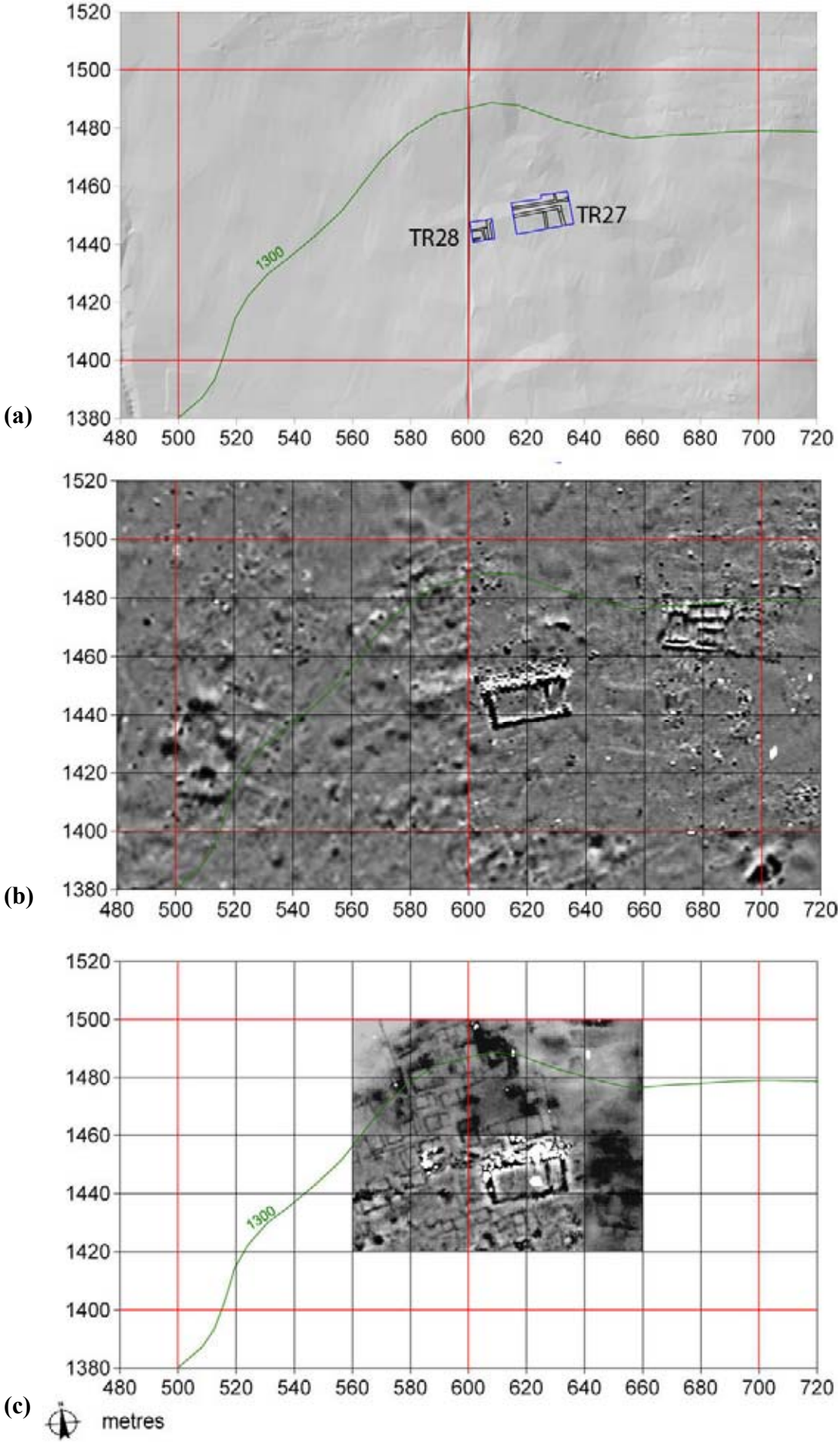


Figure 57. Maps of the Temple Area on the Central Ridge generated from (a) GPS, (b) gradiometer and (c) electrical resistance survey.

THE ROYAL STABLES AND RELATED STUDIES

Geoffrey and Françoise Summers

The Royal Stables

The grant from METU BAP (*Bilimsel Araştırma Projeleri*) fund enabled further studies focusing on the Royal Stables located on the lower southern slope of the Kale adjacent to the Field, an adjacent flat area (Fig. 53). Participants from METU included Sema Bağci, Güzin Eren, Yasemin Özarslan, Geoffrey Summers and Françoise Summers. The additional geophysical survey conducted in 2010 permitted an increased understanding of the surrounding area and associated structures. Two other aspects of the study, phosphate analysis and ethnographic study, are described below.

Phosphate Analysis

Phosphate analysis is a standard method for testing archaeological interpretation of ancient structures such as animal stables. Iron Age horses, which were smaller than modern breeds of military horse, would each have produced about 16 litres of urine per day. Urine is high in phosphates with the result that surfaces, floors and subsurface deposits beneath and in the immediate vicinity of ancient stables are expected to contain high concentrations.

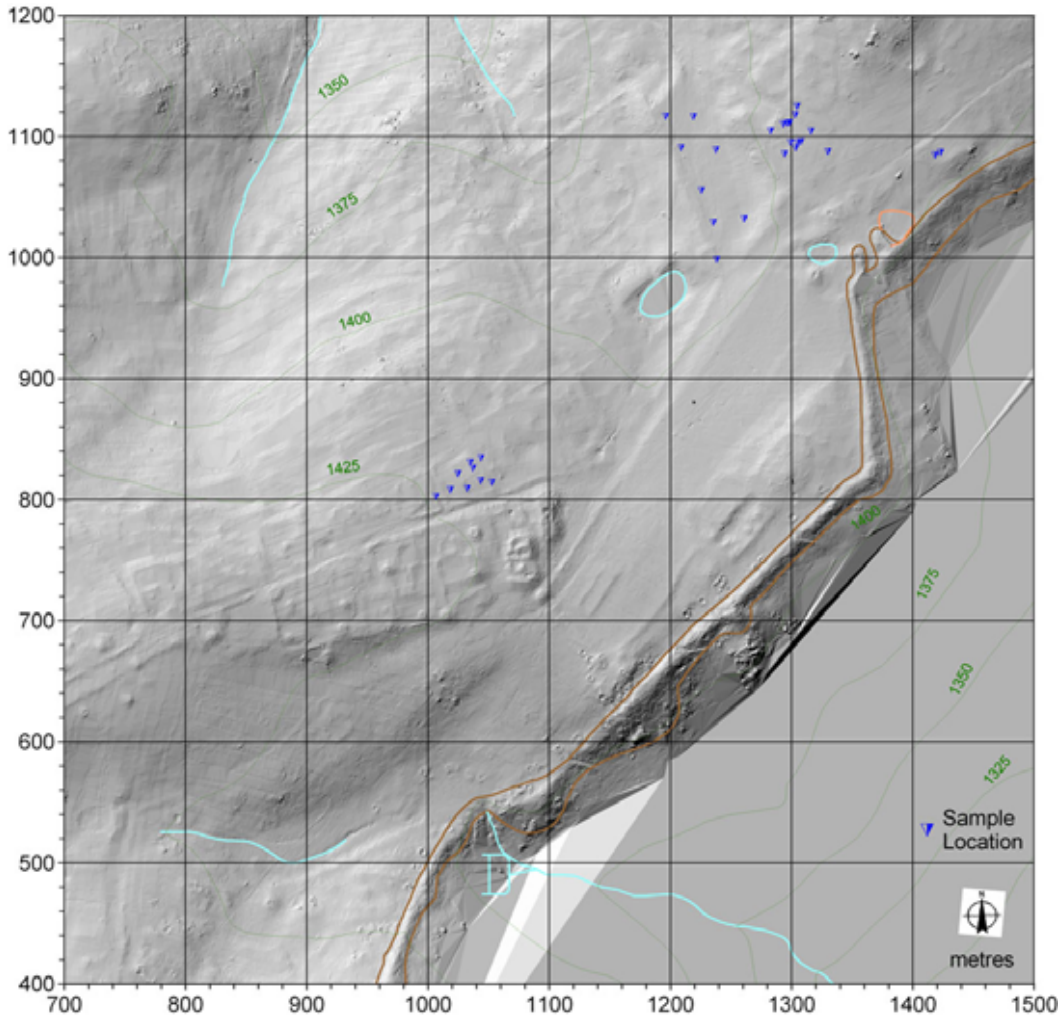


Figure 58. Map showing the location of samples taken for phosphate analysis. Samples at upper right are associated with stables, those at centre are for control.

ID	Sample No	Easting	Northing	Date
1	PhSamp01	677281	4401571	13 Haziran 2009
2	PhSamp02	677276	4401565	13 Haziran 2009
3	PhSamp03	677274	4401565	13 Haziran 2009
4	PhSamp04	677271	4401564	13 Haziran 2009
5	PhSamp05	677260	4401559	13 Haziran 2009
6	PhSamp06	677293	4401557	13 Haziran 2009
7	PhSamp07	677284	4401549	13 Haziran 2009
8	PhSamp08	677282	4401548	13 Haziran 2009
9	PhSamp09	677280	4401544	13 Haziran 2009
10	PhSamp10	677270	4401539	13 Haziran 2009
11	PhSamp11	677306	4401539	13 Haziran 2009
12	PhSamp12	677399	4401533	13 Haziran 2009
13	PhSamp13	677394	4401531	13 Haziran 2009
14	PhSamp14	677283	4401578	13 Haziran 2009
15	PhSamp15	677276	4401549	13 Haziran 2009
16	PhSamp16	677209	4401456	13 Haziran 2009
17	PhSamp17	677208	4401487	13 Haziran 2009
18	PhSamp18	677200	4401514	13 Haziran 2009
19	PhSamp19	677185	4401550	13 Haziran 2009
20	PhSamp20	677174	4401577	13 Haziran 2009
21	PhSamp21	677197	4401575	13 Haziran 2009
22	PhSamp22	677214	4401547	13 Haziran 2009
23	PhSamp23	677234	4401488	13 Haziran 2009
24	PhSamp24	677003	4401286	14 Haziran 2009
25	PhSamp25	676997	4401297	14 Haziran 2009
26	PhSamp26	676995	4401302	14 Haziran 2009
27	PhSamp27	677004	4401305	14 Haziran 2009
28	PhSamp28	677007	4401267	14 Haziran 2009
29	PhSamp29	676977	4401280	14 Haziran 2009
30	PhSamp30	676965	4401275	14 Haziran 2009
31	PhSamp31	676984	4401293	14 Haziran 2009
32	PhSamp32	676991	4401280	14 Haziran 2009
33	PhSamp33	677012	4401284	14 Haziran 2009

Table 1. List of samples for phosphate analysis and their location.

In order to test the hypothesis that the structures under discussion were stables and that the field was primarily used for the exercise and training of horses a series of samples were collected from topsoil and from below stone paving (Fig. 58 and Table 1). Control samples were collected from a very similar situation on a part of the site that was certainly not used for the stabling of animals.

In theory there should be a clear and significant difference in the phosphate content of samples from the putative stables and the control area. If this turns out to indeed be the case the interpretation of the structures as stables would almost certainly be proven. However, the results of laboratory analysis at the University of Wisconsin are not yet available. It is possible that some 2,550 years of leeching of the soil and subsoil, and perhaps also the relatively high acidity of the granitic soils, may have reduced levels of phosphate to such a degree that the analysis will be inconclusive.

Ethnographic Study

The importance and role of horses in the region has been the focus of an ethnographic study in Şahmuratlı and neighbouring villages. Merchants on a horse drawn cart were photographed in Şahmuratlı village (Fig. 59) and a pair of horses pulling a cart encountered in the Köhnüş Valley during a trip to the Highlands of Phrygia (Fig. 60).

Attesting the long tradition of horse breeding in Cappadocia, a statue in the town of Esenli (Fig. 61), commemorates famous racehorses from the village of Dedik now drowned by the waters of the Gellingöllü Dam. A disused animal powered mill in Şahmuratlı village points to the importance of equid power a generation ago (Fig. 62). In nearby Emirhan, a donkey mill is still used to crush grain (Fig. 63).

Figure 59. Merchants still tout their wares in Şahmuratlı and Anatolian villages on horse-drawn carts. (09dpng0710)

Figure 60. A pair of horses pulling a cart in the Köhnüş Valley, Highlands of Phrygia. (09dpng1084)

Figure 61. Statue in the town of Esenli commemorating famous racehorses from the village of Dedik. (09dpng1515)

Figure 62. A disused donkey-mill in Şahmuratlı village. (08dpng0312)

Figure 63. A donkey-mill in nearby Emirhan is still used to crush grain and legumes. (09dpng0418)

Kara Mehmet's Stable in Şahmuratlı Village

Kara Mehmet Erciyas was the last man in Şahmuratlı village to own a horse. Fifty years ago, however, at a time when the village had a considerably larger population than it does today, almost every family owned a pair of horses for ploughing. These horses were stabled in the same animal sheds as the cattle and donkeys but were separated from each other as well as from other animals by wooden stalling. The width of the building, erected by Kara Mehmet's father perhaps 65 years ago, is 5m. Stalls were sufficiently wide for the animals to lie down and straw bedding changed more or less weekly as long as sufficient was available. Floors were of hard-packed earth rather than stone with a central drain running the length of the building. The large juniper roof timbers were probably reused from an older building and feeding troughs line one of the walls (Fig. 64). The original flat roof was constructed of beams supporting rafters covered with split branches and a thick layer of mud. A trap door cut through the original roof (Fig. 65) provides a glimpse of the recently added clay tile pitched roof. Today Kara Mehmet uses the same stable (Fig. 66). Although the floor is now of concrete, the central drain is retained and wooden stalling used to separate calves from their mothers (Figs 67 and 68).

Figure 64. Detail of wooden pillars, capital and roof beams with mud-plastered wall and food troughs. (10dpnd1907)

Figure 65. The original flat roof was constructed of beams supporting rafters covered with split branches and a thick layer of mud. A trap door cut through the original roof provides a glimpse of the recently added clay tile pitched roof. (10dpnd1905)

Figure 66. Kara Mehmet in his stable, now used as a cowshed, at Şahmuratlı village. A central drain runs the length of the concrete floor while food troughs run down either side. The doorway at the far end leads into a dry store for fodder. Note the size of the juniper roof beams which are no longer available in the immediate region today. (10dpnd1904)

Figure 67. METU Graduate Student Yasemin Özarslan enters next to the corner partitioned for calves. Similar wooden partitions would have been used for horse stalls. (10dpnd1908)

Figure 68. Detail of temporary wooden partitions, here used to separate calves from their mothers. (10dpnd1915)

Breeding and Training of Racehorses at Mehmetbeyli Village

In the neighbouring village of Mehmetbeyli racehorses are bred and raised (Fig. 69). The modern stable is built of bricks and concrete, preferred contemporary building materials that do not demand as much maintenance as timber and mud (Fig. 70). The building is roofed with a low-pitched reinforced concrete slab covered with corrugated sheeting to keep the slab dry. The structure is 9m wide and divided into three along its length with a central nave flanked by cubicles each measuring 3 by 3m (Fig. 71). There are high windows providing ventilation without a chilling draft. The total length is over 20m, only about one quarter of the combined length of the Kerkenes Stables as drawn in Figure 45b.

Paddocks and fodder store (Figs 72 and 73) adjoin the stables. Even in the depths of an Anatolian winter there is rarely a day when the weather is so inclement that horses are not put out for exercise. Each animal consumes four bales of feed per day plus a supplement of grain. As can be seen in Figure 73, there are three types of bale: *korunga*, perennial herbaceous plants including vetch, hay (*ot*); and alfalfa (*yonca*,). Sacks of grain are stored in one cubicle of the stable building while bales and bedding is only partially covered. Bedding is of *talaş,* wood chips, purchased in Ankara and changed every three months. If straw is used it should be changed every day because it is not absorbent.

Figure 69. Racehorses bred at Mehmetbeyli village. Prices start at 50,000TL. (10dpnd1715)

Figure 70. Modern racehorse stable at Mehmetbeyli village. (10dpnd1710)

Figure 71. Interior of the modern stable at Mehmetbeyli village. The central aisle, down which a rooster runs, is flanked by individual stalls. (10dpnd1702)

Figure 72. Paddocks and fodder store at Mehmetbeyli village. Even in the depths of an Anatolian winter there is rarely a day when the weather is so inclement that horses are not put out for exercise. (10dpnd1708)

Figure 73. Three types of fodder for Mehmetbeyli racehorses. (10dpnd1731)

EXCAVATIONS AT THE 'TEMPLE'

Scott Branting

During June and the first half of July, two trenches were excavated in the south-central portion of the city (Fig. 74). These trenches, TR27 and TR28, were positioned to uncover significant portions of a large two-roomed building (Structure A) and an attendant smaller building (Structure B) revealed by the geophysical surveys in 2002, 2004 and 2010 (Figs 75 and 76). It had been suggested that the 26.5m x 12.5m Structure A might be a temple or other public building due both to its size and its position outside of a proper urban block. It had also been suggested from analysis of the geophysical data that Structure A had been intentionally set on fire in the final destruction of the city. The reasons for excavating these two trenches were therefore to confirm the reconstructed plans of these structures, to investigate their construction and destruction, and if possible to recover material evidence related to their functions (Figs 77, 78 and 79).

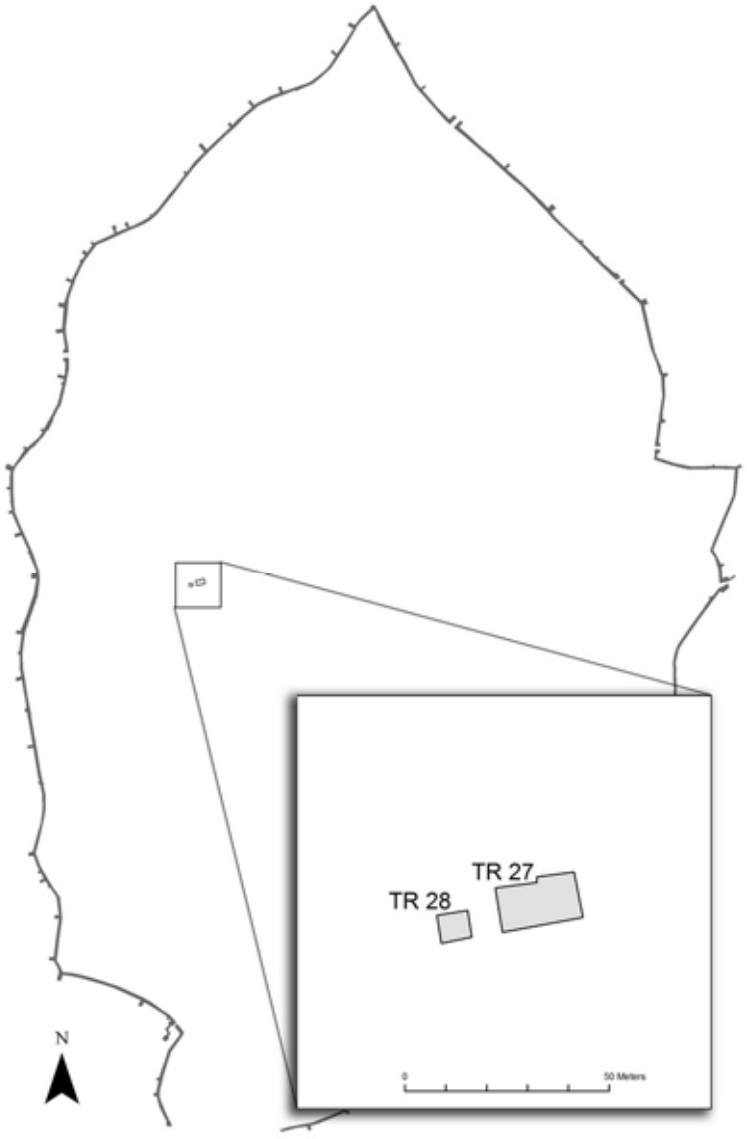


Figure 74. Map of trench locations.

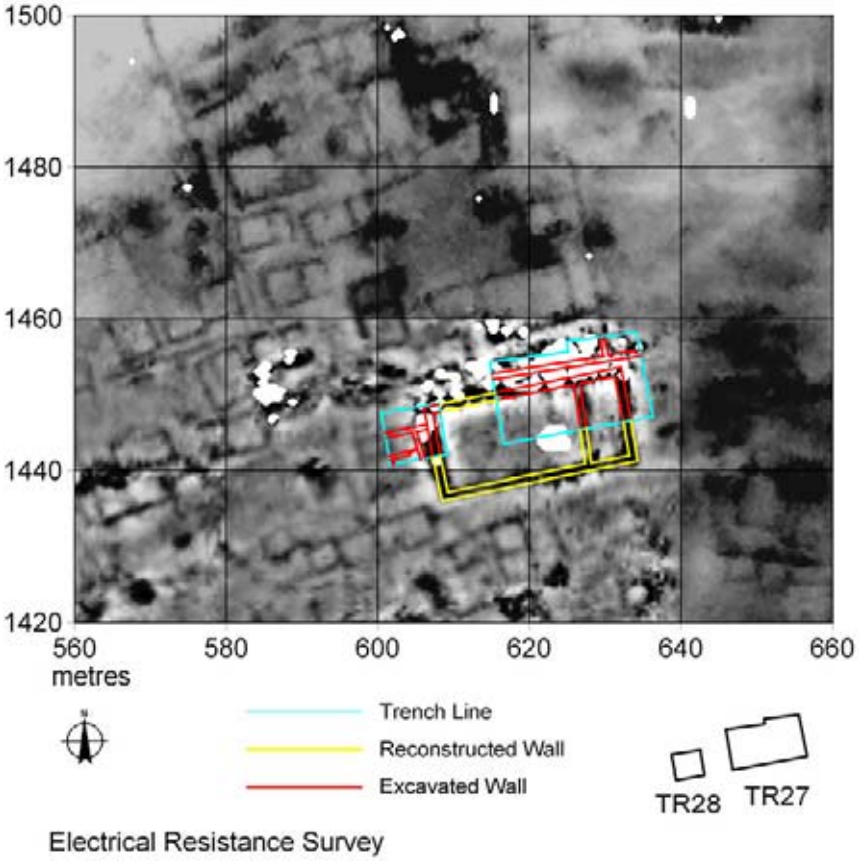


Figure 75. Electrical resistance survey of the so-called 'Temple' area with trenches and excavated walls overlaid.

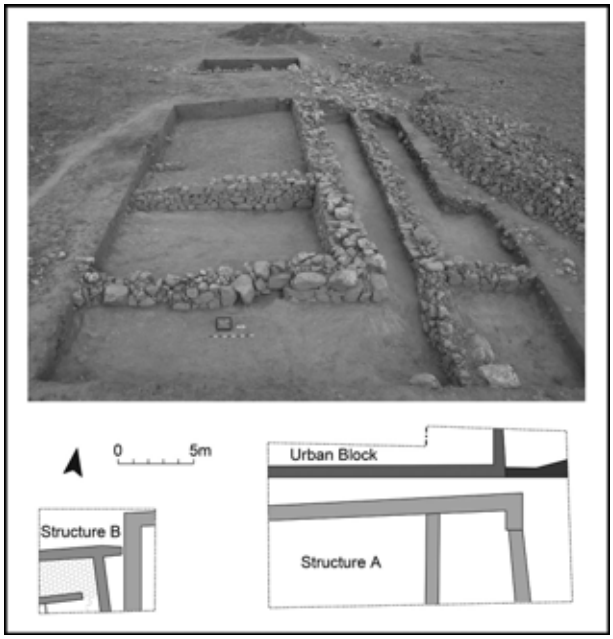


Figure 76. Block plan and photograph of trenches TR27 and TR28.

Figure 77. A total station was used to plan the new trenches, walls and features. (10dpnd0438)

Figure 78. Excavation in progress at the 'Temple' area. (10dpkc0224)

Figure 79. Scott Branting, helped by Tahir Gençarslan, collecting samples from the passage surface for micromorphological analysis. (10dpkc0319)

Trench TR27 was 20m in length and between 11.5m and 11m in width, exposing a total area of 220.5m² (Fig. 80). It was situated to expose the north-eastern quarter of Structure A, a portion of the area in front of Structure A, and a majority of the collapse from the walls of Structure A down the slope to the north. As the rubble collapse was removed to the north of Structure A, a portion of the southern wall and south-eastern corner of the urban block to the north of Structure A were also revealed along with a retaining wall abutting the corner of that urban block wall and extending to the east (Fig. 81). In the narrow area between the northern wall of Structure A and the southern wall of the urban block evidence was found for an unpaved street surface running along the northern side of Structure A.

The meter wide wall along the entire north side of Structure A was preserved up to four courses of stone high and attained a maximum height of 1.4m. It was constructed, as is typical of walls at Kerkenes Dağ, of dry-laid uncut granitic facing stones enclosing a granitic rubble core. This wall served both as a foundation for the superstructure of Structure A and as a terrace wall to contain the over one meter of fill used to level out the floors of the building along the slope of the terrain. Unfortunately, significant erosion had washed away all traces of the floors in the excavated portion of Structure A as well as any internal features such as column bases, thresholds, or a hearth. At the north-eastern corner of the building the wall returned a little over a meter along the front of the building. Here it abutted a less well constructed, narrower secondary wall that was subsequently built across the opening in the front of the building to either support a screen to block vision into the building or to stabilize the front of the structure against erosion.

Within the structure, an internal wall was constructed to divide the ante-room (Room I) from the main hall (Room II). Room I was originally 4.5m by 10.5m in size while Room II was 10.5m by 19m. Complete erosion of the floor surfaces in both rooms down the northern slope precluded any analysis of how these rooms were furnished or used. However, two lines of stone uncovered near what was presumably the top of the fill within Room II, both of which appeared to be parallel to the dividing wall, might be portions of substructure for features that once sat at the original floor-level.

Outside of the structure, the enclosing wall of the urban block to the north of Structure A was discovered under the collapse. Nothing was discovered inside the excavated portion of the urban block other than the significant collapse from Structure A. Abutting the south-eastern corner of this urban block wall was a secondary wall running perpendicular to the slope of the ridge. This wall was constructed as a retaining wall to minimize erosion down the area to the east of this urban block. The area upslope from this wall, directly in front of Structure A, was devoid of anything other than collapse from Structure A buried beneath a layer of later erosion. No evidence for stone paving was found in front of or around the side of the structure.

Between the northern wall of Structure A and the external face of the urban block wall a narrow passageway 1m to 1.5m in width was uncovered. Preserved here beneath the collapse from Structure A was a sandy layer identical to unpaved street surfaces encountered during excavations of streets at Kerkenes Dağ in 2004 and 2008 (Fig. 82). Several micromorphology and loose soil samples were taken from this passage and shipped for analysis at the University of Cambridge in England as part of the ongoing project to test the results of computer simulations of ancient traffic patterns in the city.

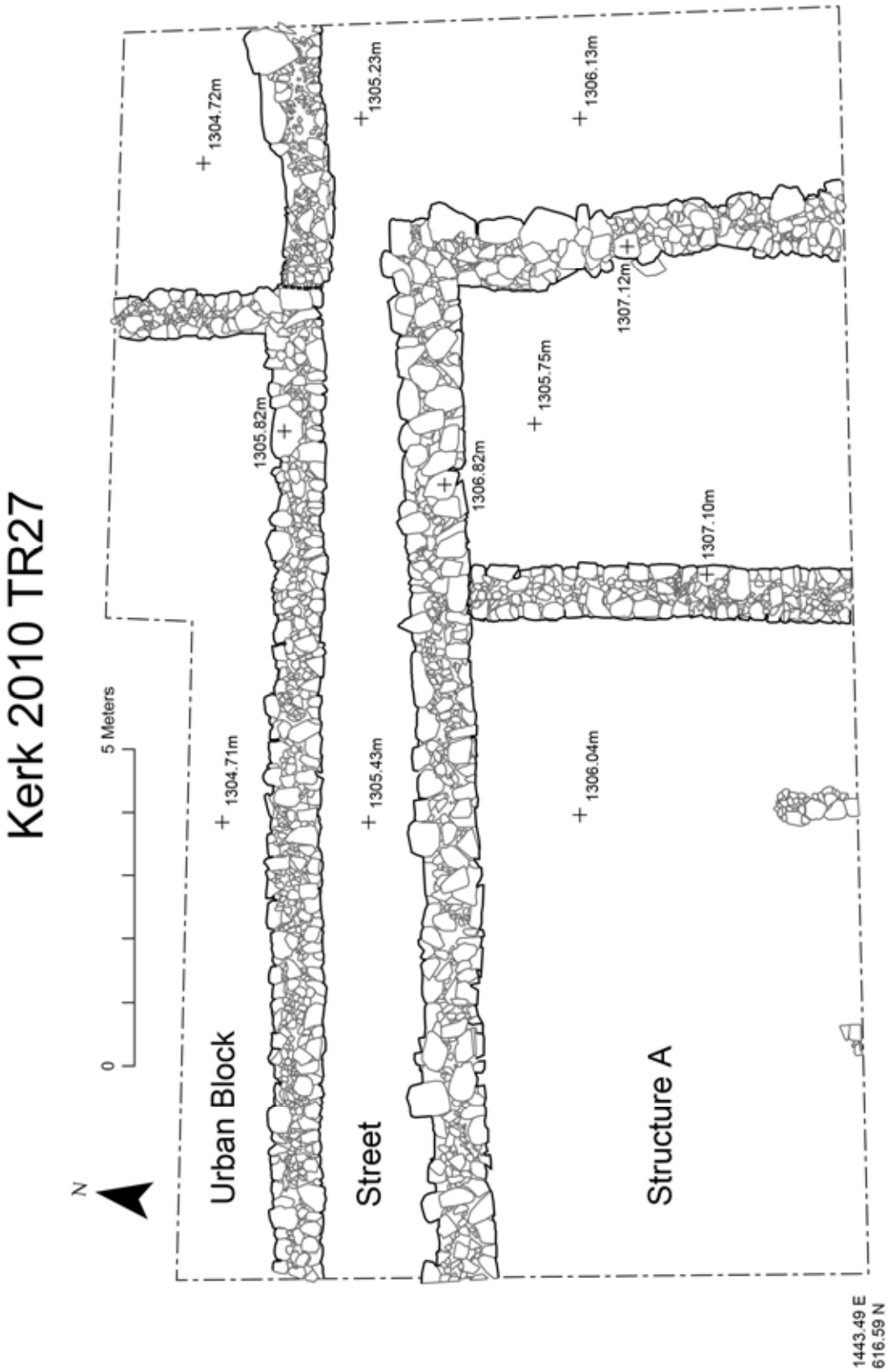


Figure 80. Plan of trench TR27.

Figure 81. Photograph of trench TR27 after excavation. (10dpkc0729)

Figure 82. Photograph of a section through the passage. (10dpkc0305)

Trench TR28 was located 7.5m beyond the western edge of TR27. It was 7.5m in length and 7m in width, exposing a total area of 52m² (Fig. 83). It was situated to expose half of the western wall of Structure A as well as a quarter of Structure B behind it. Just as in TR27, no floor surface or interior features were found within the narrow slot at the back of Room II in Structure A. The west wall of Structure A was slightly wider and higher than the north wall of the building. The increased width of the west wall of Structure A may be related to a significant drop in the bedrock beneath the wall and in the space adjacent to it between Structure A and Structure B. Sandy occupational material, similar to the street surface found in TR27, was also noted running under the lowest course of the northwestern corner of Structure A and into exterior space to the north of Structure B.

The exterior walls excavated along the north and east of Structure B are notably smaller than those of Structure A (Fig. 84). The north wall of the building continues to run beyond the northeastern corner of Structure B, falling just short of the west wall of Structure A. This extension may have been built to retain fill within the half-meter drop in the underlying bedrock just to the south of this wall, thereby preventing erosion from undercutting the west wall of Structure A and the east wall of Structure B. A shallow foundation trench for the eastern wall of Structure B, perhaps to provide additional stabilization, was noted along the southern portion of this wall up to the point at which the bedrock drops considerably.

Within Structure B a single interior wall, with a meter-wide doorway at its eastern end, divided the excavated portion of Structure B into two rooms (Rooms I and II). Burning along the top of the dividing wall suggests horizontal beams once sat on top of this stone foundation. Further possible evidence for the superstructure of the building was found in the stone paving that covered the floor of Room I north of the dividing wall. The paving was laid up to the face of the room's walls other than in a long slot-like gap along the face of the northern wall. This slot, open to the underlying bedrock, was directly opposite four paving stones along the southern wall face that were set slightly lower than the rest of the paving. These stones, along with the slot and a gap in the paving at the northeastern corner of the room may have been the bases for vertical posts used to support the roof and walls of Room I. Evidence was also found for the door that once hung in the doorway between Room I and Room II. A heavy area of ash and charcoal, along with small iron bands with nails still attached, found on the pavement just to the north of this doorway in Room I were likely the remains of the wooden door.

The paving found in Room I continues through the doorway between the rooms and then extends to the south as a single walkway of paving stones into the otherwise unpaved Room II. No evidence was found to suggest the nature of the superstructure or roof in Room II. However, the raised walkway and a line of stones deliberately laid on top of the pavement in the doorway, to apparently block the gap at the bottom of the door, may have functioned to keep water, mud, or dung from entering Room I. A small nonstructural wall abutting the dividing wall in the far southwestern corner of the trench likely delimited space within Room II in some manner, perhaps being the edging of a bin set against the stone foundation of this wall.

Figure 83. Plan of trench TR28.

Figure 84. Photograph of trench TR28 after excavation. (10dpkc0807)

Finds

Finds from TR27

Few artifacts of note were uncovered anywhere within TR27 and none were found *in situ*. This was due to the heavy erosion of all surfaces within Structure A and around it. Portions of 5 iron nails were found scattered around TR27. These may have once been a part of the wooden superstructure of Structure A that was destroyed in the fire. In addition, a single iron arrowhead (Fig. 85) was found within the subsurface fill of Room I and a small nearly complete painted trefoil juglet (Fig. 86) was found within the subsurface fill of Room II. None of the artifacts provide any clues as how Structure A was used.

Figure 85. Iron arrowhead. (10dpkc1220)

Figure 86. Painted trefoil juglet. (10dpkc1239)

Finds from TR28

Room I of TR28 contained a number of artifacts in situ on the stone-paved floor. These included a stone tripod-footed vessel (Fig. 87), a copper alloy arrowhead, two nearly identical star-shaped silver objects (Fig. 88), a small tin-antimony alloy bead, fragments of iron door bands, nails through the door bands, and several heavily broken pottery vessels (Fig. 89). In addition, initial analysis from flotation of samples taken from the Room I floor deposit yielded charcoal, grain, and a grape pip. No artifacts of note were uncovered elsewhere within TR28.

Figure 87. Stone tripod-footed vessel. (10dpkc1233)

Figure 88. One of the star shaped objects. (10dpkc1250)

Figure 89. Partially reconstructed vessel. (10dpkc1261)

Backfilling

Following the excavation and recording of both TR27 and TR28, geotextile was laid over the tops of the exposed walls and surfaces. Both trenches were then backfilled to the level of the modern ground surface. Each wall exposed within the excavations was also built up to a level three courses above the modern ground surface to show visitors where the ancient walls and structures are buried while at the same time protecting the preserved Iron Age walls from damage (Fig. 90).

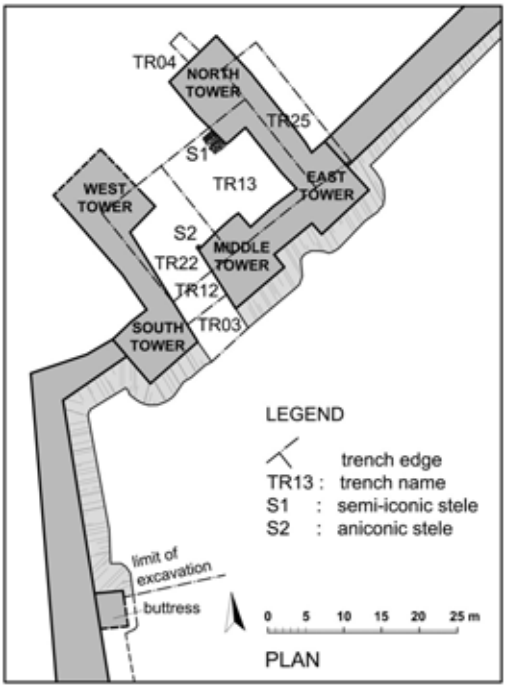
Figure 90. Photograph of trenches TR27 and TR28 after backfilling and restoration. (10dpkc0730)

EXCAVATIONS AT THE CAPPADOCIA GATE

Geoffrey and Françoise Summers

The aim of completing excavations at the Cappadocia Gate in 2010 (Fig. 91) was thwarted by two unexpected discoveries. The first, in the 11m wide rear passage, was the edge of the stone pavement butting against the base of a massive timber structure which incorporated a pair of large wooden doors. The second was a victim of the fire and collapse in the Gate Court which will require very careful recording and lifting in 2011.

At the front of the gate complete exposure of a portion of the glacis at the junction of the East Tower and the city wall was fully achieved with significant new results.



(a)

(b)

Figure 91. (a) Key plan of the Cappadocia Gate;
(b)Panorama of the Cappadocia Gate passage and inner court, looking east, after excavation in 2010. (10dpcg0903pan)

Excavation of the Gate Court

In May, it was possible to excavate a strip parallel to the northeastern wall of the Gate Court so as to determine the depth of the remaining deposit (Fig. 92). The larger stones that had collapsed from the walls of the Gate Court onto the floor (Fig. 93) were carefully articulated to facilitate the recovery of what might have been crushed on the floor during the destruction.

Figure 92. A few days of excavation in May helped assess the remaining depth of deposit to be removed. (10dpcp0703)

Figure 93. Trench supervisor James Osborne standing in the strip excavated in May. Larger stones have collapsed from the surrounding walls onto the floor of the Gate Court. (10dpcp0905)

Excavation of the Gate Court was resumed at the end of September and the aim was to complete removal of the remaining fill. The operation was made difficult by the very large size of some of the stones together with the way those first to fall had deeply embedded themselves in the silt (Fig. 94). Stones were piled up by hand at the north end of the trench from whence they were lifted by means of a mechanical digger, either hoisted individually or manually placed into the digger bucket. In this way it was possible to avoid taking any heavy equipment onto the pavement. Much of the stone was utilised in the restoration work with the remainder being piled up for future use in restoration or the construction of protective walling.

Figure 94. Cleaning the last of the fallen stone in the Gate Court. (10dpkc2227)

In as far as was practicable, when excavation was resumed in September (Fig. 95), stone collapse was removed across the entire area in such a way as to leave in place only the lowermost stones. This procedure was followed in order to record the location of sandstone blocks fallen from the top of the Middle Tower, to ensure that any installations that might have been set up in the court would be recognised even if they had been badly damaged by the fire and collapse and, finally, so that the bottommost stones of the collapse could be carefully removed with as little disturbance as possible to what might lie in the initial destruction immediately beneath (Figs 96 and 97).

Clearance began in the innermost, southeastern corner and proceeded to the northwest limit of the trench. As excavation progressed around the Middle Tower it was necessary to move back the leaning upper courses before removing the fill that was supporting the wall (Fig. 98). The exposed portion of the wall was carefully photographed and recorded before the stones were moved. The stability of the wall was compromised by the gap left where a wooden horizontal beam burnt out during the destructive fire (Fig. 99).

Figure 95. The base of the collapse from an elevated vantage point. At centre right the corner of the Middle Tower from which sandstone blocks fell on the surface during the destruction. (10dpcg0357)

Figure 96. The base of the collapse in the Gate Court with a portion of the paving revealed in 2009. The locations of sandstone blocks fallen from the Middle Tower were carefully recorded. (10dpnd1388)

Figure 97. The base of the collapse looking east. (10dpnd1434)

Figure 98. Once fully recorded, the upper courses of stones from the northeastern wall of the Middle Tower were moved back before the remaining fill was removed. (10dpnd1245)

Figure 99. The wall's lack of structural stability is a result of the gap left by the horizontal timber beam after it burnt out. (10dpnd1390)

The entire Gate Court fill was cleared to the layer of large stones that had collapsed onto the floor. Granite boulders were then carefully removed but blocks of sandstone were left in position and recorded (Fig. 100). A single course of yellowish sandstone was found to have fallen from the corners of the Middle Tower. Burning indicates that the sandstone blocks rested on timbers. Neither the size of the blocks nor tool marks and surface finishes provided any indication of the way these stones were assembled. The stone pavement extended to a slightly curved edge running from the north corner of the Middle Tower to the south corner of the North Tower (Fig. 101). The destruction layer itself amounted to no more than a very thin scatter of burnt matter impressed into the silty surface below when the walling fell. Towards the northern extremity of the excavated area there were fewer large stones and little or no accumulation of silt.

Heavy rain at the very end of the season brought down the northwest wall face of the Middle Tower, while the south corner of the North Tower and the north corner of the Middle Tower had both partially collapsed in the previous winter. Emergency repairs to the top of the wall connecting the Middle and East Towers as well as the face stones of the Middle Tower itself were abandoned in the face of torrential rain that bedevilled the last few days of the autumn excavation campaign.

Figure 100. The location of the sandstone blocks that had fallen over the stone pavement was carefully recorded. (10dpnd2204)

Figure 101. Indentations in the silty clay were made by large falling stones when the wall collapsed, crushing one victim of the destruction. The curved eastern extension of the paving to the corner of the North Tower is at centre. Stones from the tower corner fell onto the steps during the previous winter. (10dpcg0719)

Trench TR13

All work in the Gate Court was conducted within trench TR13, which was extended northwestwards, past the rear of the stepped base on which the stele stood, by approximately 1m in order to reveal the northern limit of the stone pavement (Fig. 102). The pavement terminates at the foundation for a substantial, burnt, timber edifice in which a pair of wooden doors would have been housed (Fig. 103).

Figure 102. Further clearance in the Gate Court exposed the northern limits of the stone pavement, at centre left, beyond the rear of the stepped base on which the stele stood. (10dpcg0704)

Figure 103. The northern edge of the pavement butts against foundations for a timber structure where large wooden doors would have been housed. (10dpcg0910)

Recording of all excavated wall faces by rectified digital photography with control points (Fig. 104) was completed but rain and wall collapse precluded total recording of the stone paving, not least because a portion of the pavement became obscured by wall collapse. Any attempt to remove the newly fallen stone without first consolidating the loose rubble core of the wall above would have been injudicious.

Crushed and poorly preserved human remains in the Gate Court were partially consolidated and then covered with a protective layer of soil because a combination of weather conditions and concern about the stability of other tall walling did not permit the very slow and careful cleaning required (Fig. 105).

Figure 104. Control points for rectification of digital photography are marked on wall faces (10dpnd1381)

Figure 105. Rain at the end of the autumn excavation campaign made it impossible to complete the excavation in the Gate Court where the human skeleton was found. (10dpkc1428)

The Gate Construction

Wall faces are not coursed, but levelling at given intervals was necessary for the insertion of horizontal timbers (Fig. 106). Stones were rudely shaped to some extent by the use of hammers but there was no dressing of faces. This observation also holds true for the glacis, apart from those stones immediately flanking the front passage where oblique light reveals hammering or pecking of the large basal facing stones. Wall and glacis faces were heavily chinked. Restoration masons in 2010 demonstrated how easily skilled artisans could quickly shape stones to fit particular spaces using only simple, heavy, hammers.

The horizontal timbers set into the faces of all walls were approximately 1m apart. Beam slots measured between 25 and 30 centimetres in depth with differences in the number and size of chinking stones indicating variation in the size of beams. The level of timbers in adjacent walls surrounding the Gate Court does not always coincide (Fig. 107). The stretch of wall running along the court's northeastern side has timbers inclined so as to follow roughly the sloping ground (Fig. 91). The purpose of these horizontal beams was to give stability to the wall faces in the event of a single stone becoming dislodged. Cross timbers have not been found in the body of any walling.

Timbers appear to have been rounded tree trunks chinked into position with small stones in the same way as the face stones (Fig. 108). Larger logs may have been split. Charcoal analysis shows that both oak and black pine were used together with some juniper.

Figure 106. The inner face of the Middle Tower before it collapsed showing horizontal beam positions and the intensity of the fire. (10dpnd2168)

Figure 107. The level of horizontal timbers in adjacent walls do not always coincide. (10dpkc2253)

Figure 108. Timbers appear to have been rounded tree trunks chinked into position with small stones. (10dpnd2163)

The stone rubble fill of both the walls and the glacis was very loose, possessing every appearance of having been tipped in at random. Very large stones appear high up in preserved wall cores. The size of stones in the collapse proves that there was no diminution in the size of stones, nor in the proportion of large stones, incorporated into the upper portions of walls. Wall faces within the gate were covered with two coats of mud plaster that were preserved in places where there was moisture in the lower portion of the collapse and also in sparse patches where plaster had been burnt. It is assumed that this plaster covered the full height of the walling and that much of it had washed down to form the thick silty layer in the eastern sector of the court before the burning (Fig. 109). Once exposed the plaster dried rapidly and then crumbled or just fell away from wall faces.

Figure 109. Silty clay derived from mud plaster on the pavement in front of the Middle Tower. Traces of mud plaster cling to the wall face while reddish destruction debris fill a depression caused by large falling stone (removed). (10dpnd2012)

Surfaces Inside the Gate Court and Front Passage

In the lower portion of the front passage there were places on the northeastern side where bedrock stood proud of the burnt surface. Otherwise nothing is known of the original surfaces which lie under the extent of stone pavement that has been uncovered. The paved area extended from the southwestern side of the Middle Tower to the corner formed by the back of the stepped base on which the stele stood along the transverse timber structure. Edging stones forming the lower limit were much larger than the rest, as was the case in the earlier phase of the pavement in the Monumental Entrance of the Palatial Complex, doubtless selected to diminish any possible dislodgement in this most vulnerable position. The eastern edge was noticeably curved. On the northwest side of the passage, the original paving was extended, incorporating a stone-sided drain which was stone-capped along its upper course. Lower down in the front passage patches of paving occurred between upstanding bedrock, together with a central spine of roughly rectangular stones that may have provided a dry pedestrian footway. Elsewhere in this area there were small cobbles and gravel.

In the centre of the passage, a little way down from the line of the inner edge of the Middle Tower, was a circular emplacement resembling a shallow post setting. The base stone had been pecked smooth and there were small stones which appeared to have been packing. There were, however, no equivalent settings at the passage sides that could have been evidence of gates. Additionally, the small size of the setting precludes a structural function. Thus the true purpose of this feature remains enigmatic. Almost the whole of this lower portion of the passage was levelled up with very stiff clay and eroded granite that was presumably quarried for the purpose of providing a more level surface, perhaps one that offered more secure footing when icy. These stone surfaces below the hard clay were not revealed when trench TR12 was first excavated because digging was halted at the fragile burnt surface that represented the destruction of the city.

When the paving was first laid the edging was proud of the earlier surface. The nature of this first surface across the southeastern sector of the Gate Court will not be understood until final clearance is conducted in 2011, although glimpses suggest that it was comprised of trampled and redeposited subsoil.

The Fire and Collapse

Before the fire, as mentioned earlier, a considerable depth of silt had accumulated over the greater portion of the Gate Court and, to a lesser extent, the front passage. When the gate walls collapsed during the fire this silt was wet, as it was when first uncovered even at the end of a dry summer. The heavy stones partially buried themselves as they thumped onto the surface. The silty surface and, towards the northern end, the stone pavement itself were covered with a thin scatter of charcoal flecks and burnt mud from the walls. There were no artifacts on the surface at the time of the destruction. Black stains on the northeastern section of the pavement indicate that a part of the timber structure fell here and continued to burn. A large iron strip being held in position by large dome-headed nails, perhaps to the doors, was recovered in the rubble.

Victims of the Destruction

When the city was put to the torch the gate was also set alight and collapsed while it burnt. It was established in 2009 that the walling fell in one single event as the timbers burnt, and that the still burning fallen timbers, as well as those still embedded in the standing portions of wall faces buried by the collapse, smouldered to ash. Two victims have been found. One, uncovered in 2009, was a middle-aged woman killed while fleeing down the front passage. The second, yet to be fully excavated, was crushed and contorted beneath burning beams and large stones. Neither had possessions or adornments.

The crushed and partially burnt individual was found at the end of the 2010 excavation campaign in the Gate Court (Fig. 110). Excavation was slow and tedious (Figs 111, 112 and 113). It seems that the person was killed instantly when the walls fell, first falling on his/her knees and then twisting sideways, although these details will need to be confirmed when excavation is completed in 2011. The bones, and especially the skull, are poorly preserved, firstly because of the way in which many of them broke when the body was unevenly squashed into the wet silt and, secondly, because of the acidic nature of the granitic soil. On the final day of excavation, in appalling weather conditions, exposed bones were consolidated, linen sheets laid over the area and a protective covering of earth laid on top.

It will, nevertheless, be possible to recover a considerable amount of detail. These human remains are to be studied by Yılmaz Erdal at Hacettepe University. It is not impossible that yet more victims await discovery closer to the southeast corner of the court, but this is not thought very likely because much of the very thin burnt surface has been exposed in this area. If there are further human remains they will be even less well preserved than the bones of this individual.

Figure 110. Ahmet Çinici recording the crushed bones of a victim beyond the end of the stone paving. (10dpnd2185)

Figure 111. Ferhat Can excavating the crushed victim in the gate chamber. Note the way in which large falling stones squashed the body into the wet silty clay thereby breaking many of the bones. (10dpcg0732)

Figure 112. The skeleton was skilfully excavated by Ferhat Can but, due to the rain, excavation had to be stopped and the bones covered up awaiting the 2011 campaign. (10dpcg0734)

Figure 113. The skeleton, knees bent, was crushed by the large stones falling from the top of the walls. (10dpcg0747)

Further Clearance of the Stone Glacis at the Base of the East Tower

Work at the junction of the East Tower and the City Wall, begun in 2009, was completed this year in conjunction with the first stage in a program of restoration of the glacis (Figs 114 and 115). Clarification of outstanding issues and new results were attained because the inner corner of the glacis was found to have collapsed as far down as the basal course (Figs 116 and 117). This circumstance permitted examination of both the northeast face of the East Tower wall and the outer face of the City Wall to within a couple of courses of the base (Figs 118 and 119). Clearance of rubble tumble and fill, which was primarily conducted to examine the present stability of the gate structure, revealed details of construction techniques, building material, fill and collapse. Additionally, a small amount of pottery and animal bone associated with the construction was recovered. Rubble was not removed to the very base of the vertical wall because of concerns over safety, but sufficient was removed to make it certain that the wall faces did continue downwards, an observation that was verified by inspection of the face stones in large voids within the rubble where it had been roughly heaped against wall faces.

Figure 114. The east corner of the East Tower photographed in May 2010, before excavation of the glacis. (10dpcp0304)

Figure 115. The junction of the East Tower and adjacent stretch of the City Wall after excavation revealed the surviving portion of the glacis. (10dpnd1012)

Figure 116. The East Tower, in September, before excavation of its northeast face. (10dpcg0206)

Figure 117. Excavation at the junction of the East Tower and the City Wall revealed a working transverse face in the tower glacis. (10dpnd1029)

Figure 118. Glacis construction phases divided by a transverse stone. The nearly vertical working face doubtless contributed to the glacis collapse. Rubbish, including food remains and broken cooking pots, accumulated in this sheltered corner. The uppermost portion has been rebuilt. (10dpkc2156)

Figure 119. The midden-like accumulation beneath the stone fill of the glacis ran up against the transverse temporary working end in the tower glacis. (10dpnd1268)

Results of Glacis Clearance at the Base of the East Tower

The results may be conveniently listed as follows.

1. The City Wall was butted against the East Tower from the base of the walling to the top.

2. The built stone faces of the both the Tower and the City Wall were constructed from the ground level and not, as had been seen for instance in the massive construction and glacis at the Palatial Complex, begun within the stone rubble some way above the original ground surface. In this respect it is noted that in the front passage of the gateway the walls and glacis were built directly on hard subsoil and patches of outcropping bedrock.

3. Horizontal timber beams were incorporated into all wall faces at regular, approximately one-metre, intervals from the base of the walls. Thus the lower beams were hidden behind the glacis. However, the levels of the positions of the beams in adjoining wall faces do not coincide.

4. The basal course of glacis stones were pitched at the desired inclination by means of small setting stones that projected slightly from the front of the glacis. In part these stones were set into a foundation trench. The continuation of the foundation trench and/or setting stones provided a clear indication that the glacis was of one single build from the Tower across to the City Wall.

5. Details of how the glacis was constructed were revealed. The portion of the glacis against the southeast face of the East Tower was found to contain a temporary termination and to have been constructed in two stages. This can be seen in Figure 118 where the top of first stage was marked by a large transverse stone that extended from the glacis face back almost as far as the tower wall. The second stage, immediately above the transverse stone is noticeably different in character. The uppermost few centimetres, above the stones with black mineral staining, are recent. Around the inner corner the portion of glacis against the City Wall had a similar but much less regular temporary end. The corner space thus created appears to have been used for rubbish and perhaps for food preparation (Fig. 119) before the corner was eventually filled in.

6. The inner corner of the glacis, described above, was found to have slipped and collapsed to the basal stone, as indeed it had done on the outer, eastern, corner of the tower. In some places along the exposed section of the glacis, and particularly around the front of the East Tower, the tops of some stones in the glacis had been pushed outwards by the weight of the structure behind. It seems highly likely that at both the inner and outer corners one or more of the lower stones had slipped in this way and that the top was pushed so far forward that entire portions of the glacis slid downwards. The nearly vertical temporary ends in the glacis core were a very major factor in this collapse. Other contributory factors were doubtless subsidence into the permanently wet subsoil on which this section of the defences was founded and the soft rubbish and silt layers below the stone rubble glacis fill in the corner. Whether earthquake damage might also have been a contributory factor is tantalizingly unknown.

Several important conclusions that result from these discoveries are summarised below.

- The collapse of the glacis was not the result of attack as is demonstrated by the full extent to which the vertical wall faces of both the East Tower and the City Wall are preserved.

- The collapse of the inner corner took place before or during the burning of the city, as is shown by the burning of timbers in the northeast face of the East Tower as well as by the amount of burnt debris that was removed from against the wall faces.

- It is probable that the glacis was further reduced, particularly where exposed in front of the City Wall, by later exploitation of the collapsed corner to create over the wall the path for grazing animals that was in use until 2010.

- In the inner corner the lower part of the glacis fill, behind the face stones, contained water-laid silty material and black, burnt material, seen in Figure 119, which yielded a small quantity of pottery and some animal bones. It is likely that this deposit within the otherwise sterile and very loose rubble fill behind glacis face stones represents a small accumulation in a sheltered corner of refuse and perhaps food preparation connected with sustenance for the builders of these fortifications.

- It now seems certain that the stone face of the glacis and all of the wall faces were covered with a minimum of one coat of clean mud plaster. This possibility, first mooted by David Stronach in 2000, was treated with scepticism because it was thought that mud plaster would quickly wash off the glacis face, as it does indeed appear to have done.

- The layer of clean clay in front of the glacis that can be seen to have lapped up over the setting stones, which were employed to set the first row of face stones at the desired inclination, is almost certainly mud plaster washed from the glacis and wall faces. Two thick coats of mud plaster have been found in situ in the gate passage as well as in much of the chamber, where it is only preserved on the lower facing stones or in small areas where it has burnt. None survives on the glacis face except perhaps in the inner corner of the East Tower and City Wall. Such plaster would have covered horizontal timbers in the wall face and helped to keep chinking stones in place. The smooth surface of the plaster would also have made the glacis face itself much harder for an attacker to scale.

- The possible use of mud plaster has implications for our understanding of the visual impact that the city defences might have made from afar. The walls would not have been gleaming granite but light-coloured mud plaster which would have stood out in full sunlight.

The Cappadocia Gate in the Iron Age

The Cappadocia Gate is the only one of the seven city gates at Kerkenes to have been provided with an internal chamber (Figs 120 and 121). In plan the final form of the gate, when it was destroyed by fire along with the rest of the city, comprised five towers, three at the front and two at the rear. The new plan supersedes all earlier plans because it has been drawn, in as far as was possible, at ground level. Generally the discrete elements of the gate structure are poorly aligned with one another, ninety-degree angles are rare and then only approximate. The road leading up to the gate from the rolling fields below (Fig. 122) might in part explain why the entrance passage was on a different alignment to the rest of the gate structure.

Sections drawn after the 2009 excavations have been updated to include the lower part of the walls uncovered in 2010 (Figs 123 and 124).

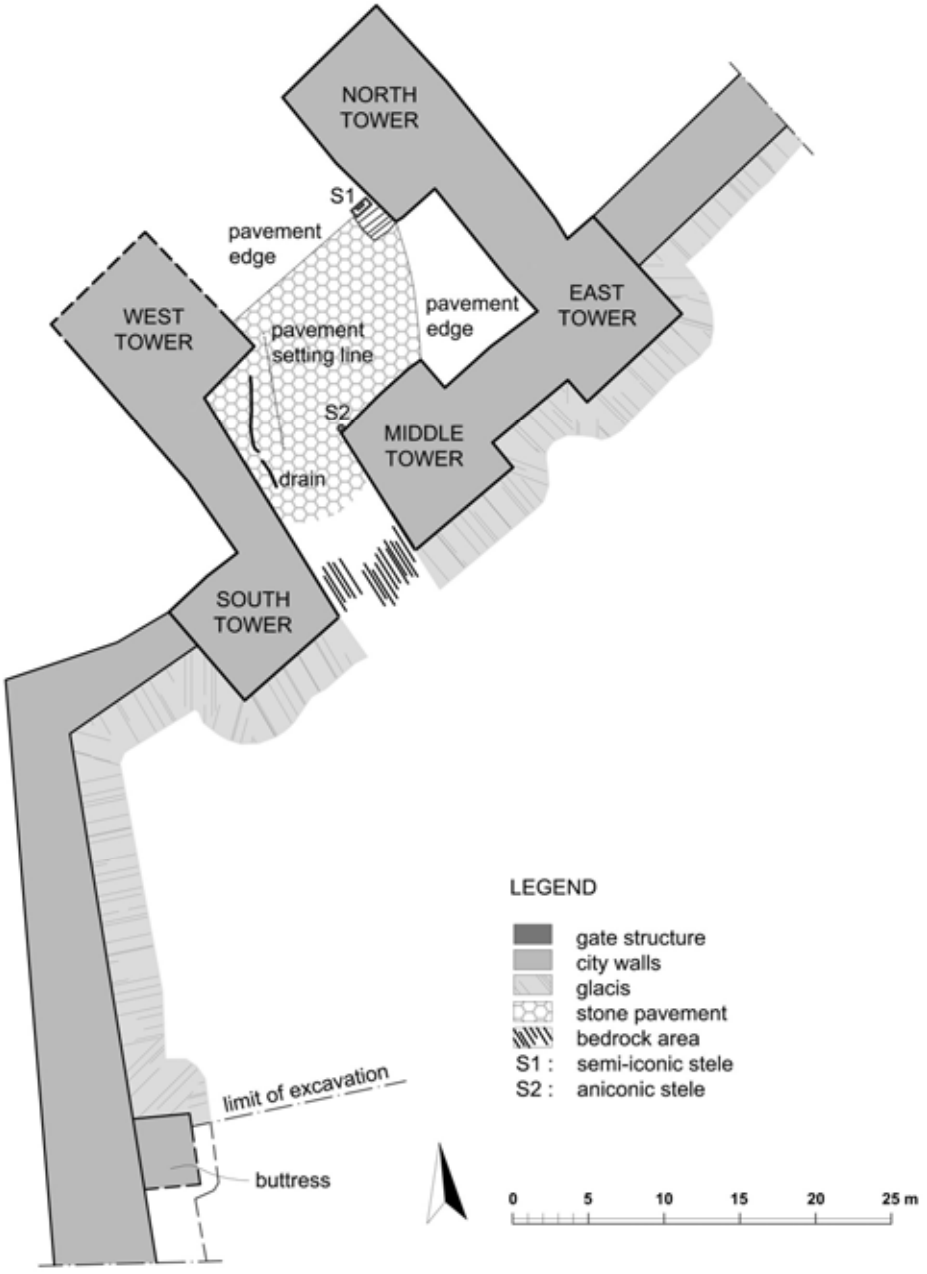


Figure 120. Plan of the Cappadocia Gate.

Figure 121. The Cappadocia Gate at the end of the 2010 excavation season. The northwestern and northeastern limits of the stone pavement were exposed and setting lines indicating the different phases clearly visible. (10dpcg0929)

Figure 122. The broad ancient road leading up to the Cappadocia Gate stood out with exceptional clarity as the result of an accidental grass fire over the hillside. (10dpnd1003)

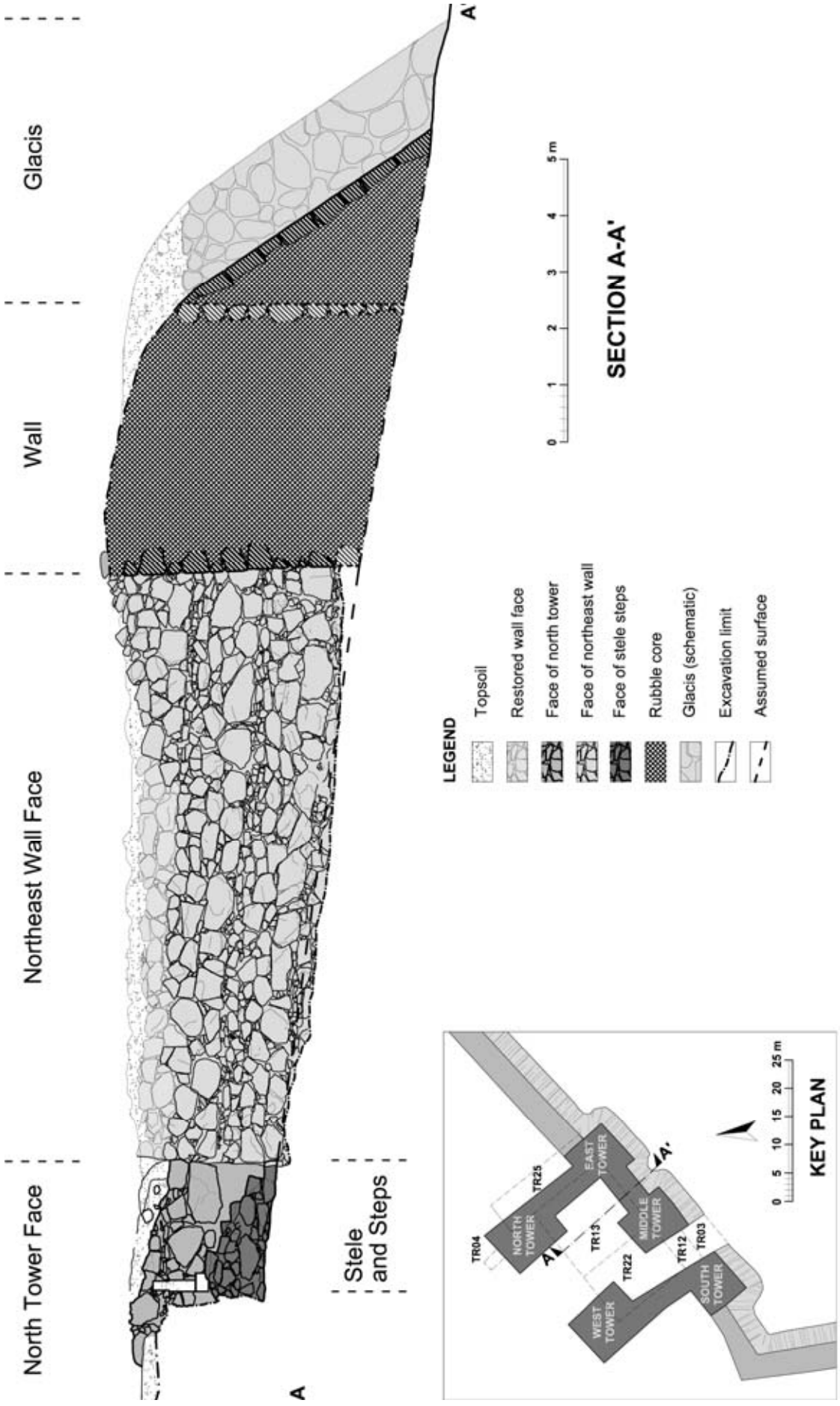


Figure 123. Section AA' through the Cappadocia Gate Court.

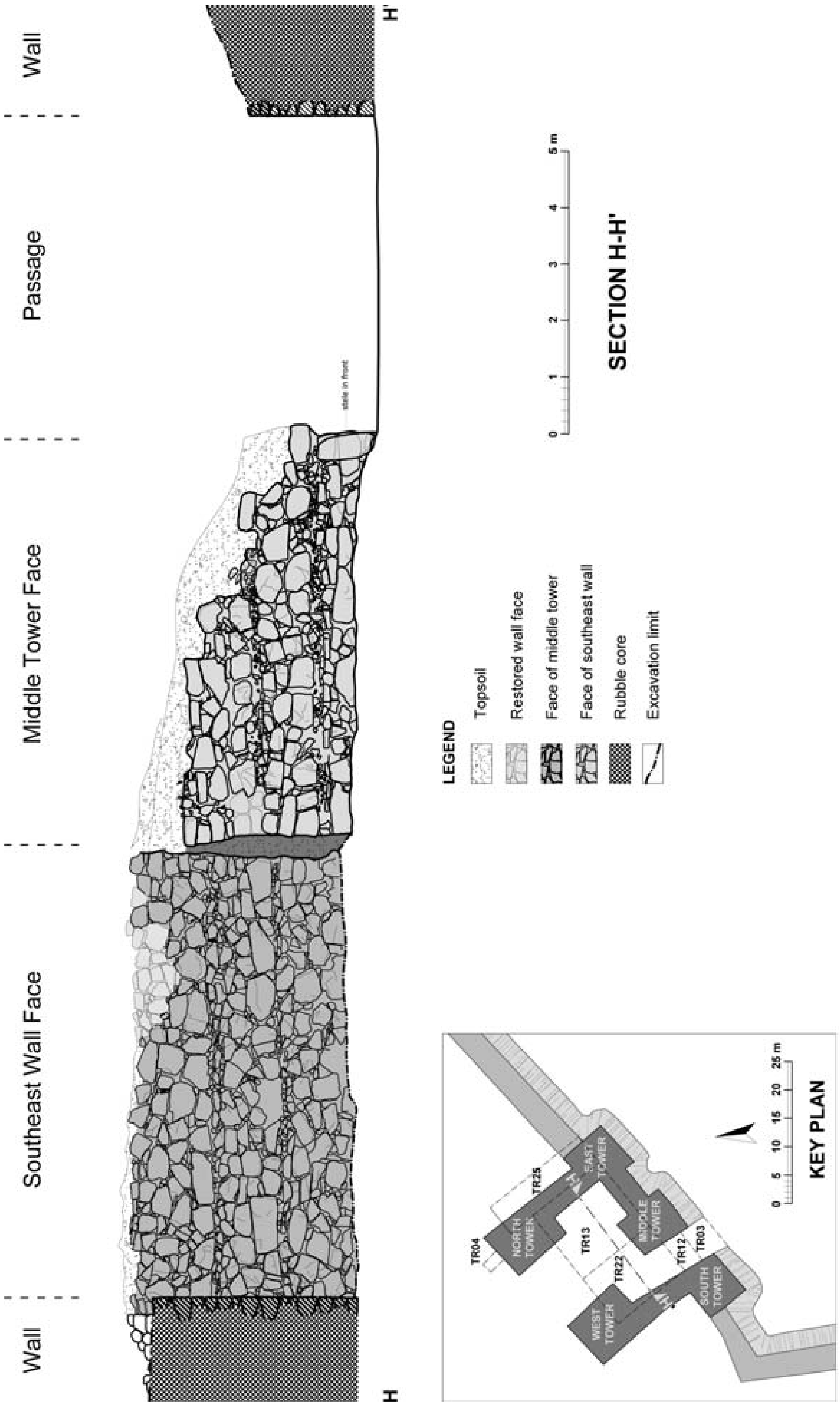


Figure 124. Section HH' through the Cappadocia Gate Court.

The two towers on the southwestern side are conjoined by a stretch of wall that forms the southwest side of the entrance passage. A similar wall links the East and North Towers while the Middle Tower is joined to the East Tower by a wide stretch of wall creating a recess on the glacis side in such a way as to appear like a double tower as the gate is approached from outside the city.

Orientations of the various phases of paving, as well as the course of the drain align with neither the front passage nor with the Gate Court and rear passage (Fig. 120). A large rectangular Gate Court with recesses along the northeastern and southeastern sides occupies the internal area of the gate. No supports for upright posts were found, negating an earlier suggestion that the recesses may have been roofed.

The rear of the gate is formed by an eleven-metre-wide passage between the West and North Towers. A pair of large wooden doors located towards the front of this rear passage was housed in a large timber structure. The width of these doors is indicated by projecting pavers on the southeast side as well as by (as yet unexcavated) burnt-out door posts. The rear passage has yet to be investigated by excavation beyond the end of the paving and the edge of the foundation for the gated timber structure, but it is possible that the scheme replicates that at the Monumental Entrance to the Palatial Complex, in which case there would be a second massive timber structure with double-leaved doors towards the back of the rear passage. In any event, the existence of a timber structure would resolve the longstanding problem of how defenders of the gate could have crossed from one side to the other.

Immediately to the right of the doors stood a stepped monument crowned by a semi-iconic idol that backed against the wooden structure (Figs 121 and 123). In the same position to the left of the doors, excavation revealed the southwestern face of yet another stone structure. This latter feature awaits further elucidation in 2011.

An aniconic granite stele was set into the secondary paving against the northwest corner of the Middle Tower immediately adjacent to the passage with what appears to be a semi-circular pit behind it seen in Figure 125 after removal of the stele. Collapse of the tower corner in the winter of 2010 dislodged this stele which was removed to the safety of the Stone Conservation Workshop at the Kerkenes House.

Figure 125. Looking towards the Middle Tower from which sandstone blocks, at centre, had fallen. Note the line of the paved road and the curved edge of the eastern extension. (10dpcg0729)

It is worth repeating here that the final phase of the Cappadocia Gate has obvious parallels with the Monumental Entrance to the Palatial Complex. Similarities include the massive timber structure in which a pair of great wooden doors were set, the insertion of stone paving on an alignment that was not that of pre-existing gate structures and, lastly, the installation of semi-iconic and aniconic idols of Phrygian type. It is tempting to interpret these embellishments as reflections of changes which might have included an increasing sense of security in which visual impact and cult practices grew in importance at the expense of concerns over defence.

Outside the gate a structure, perhaps an animal pen, was erected in front of the East Tower and there is evidence that parts of the glacis were possibly in a state of disrepair. In any event the mud plaster skin had largely washed off before the destructive fire. Earlier phases might have offered a somewhat different perspective but to investigate those would necessitate removal of the paving, which is not to be contemplated.

The Gate as a Defensive Structure

It should be stressed that there is no evidence whatsoever that the Cappadocia Gate was sacked and burnt during the hostile capture of the city. Such meagre evidence as has been recovered is not inconsistent with the idea that that the city fell without resistance and was burnt as a deliberate act of savagery only at the time of abandonment. While it is not impossible that future work might demonstrate that other parts of the city were indeed attacked, no evidence of battle has been found at the Cappadocia Gate. Compare the lack of evidence for arrowheads or other weapons, slaughtered defenders, siege mounds and so forth with clear evidence of capture of the Küçük Höyük at Gordion, the destruction at Sardis or of slaughter in the Halzi Gate at Nineveh.

At the time when the city was founded, on a virgin site, strong emphasis was placed on defence, as witnessed by the line followed by the circuit of the walls atop topographic divides followed in order to make the best possible use of the natural advantages of the elevated location. The small number of gates, with only a single entrance piercing the long western side, is perhaps another reflection of the desire to reduce to a minimum the number of weak points in the seven kilometres of defences. In addition, the massiveness of the stone wall strengthened with towers and buttresses is indicative of power as well as of bombast. It is thus surprising that the only way in which the Cappadocia Gate could be closed against hostile attack appears to have been the construction of a monumental structure of flammable wood across the eleven-metre-wide rear passage.

On the other hand, the design of the gate was purposeful. Defence, initially, would have been the prime concern of the military architect. At six metres the unroofed front passage was sufficiently wide to admit wheeled traffic as well as pack animals. Once inside the large open court any attacking force would have found itself barred from entry into the city by the gated structure close to the front of the rear passage. Defenders on the surrounding towers and walls and, doubtless above the wooden doors, would have been able to rain down deadly fire. Such tactical advantage must have been thought sufficient to outweigh the weaknesses inherent in the wide timber structure which housed the doors. If the system at the Monumental Entrance to the Palatial Complex is an accurate guide, a second construction with an equally impressive set of doors might be expected at the back of the rear passage, something that will need to be investigated in 2011.

The Gate as a Public Space

In a secondary phase a large part of the Gate Court was provided with a gently inclined stone pavement. Paving was extended into the upper portion of the rear passage and against the southwestern side of the passage where there was also a stone-lined and partially stone-capped drain. This paving was not, however, extended over to the northeastern side of the front passage nor east of the line between the inner corners of the Middle and North Towers.

Thus the road-like linearity of the paving is clear. While paving was extended to the base of the stepped base to the stele, this additional paving, and perhaps also the stepped monument, were not part of the initial scheme.

In general, streets at Kerkenes were not paved, although a patch of paving was found along the edge of the eroding major street on the north side of the Palatial Complex, presumably intended for light pedestrian traffic in inclement conditions. At the Monumental Entrance stone paving was found to have been laid in each of the major phases, originally leading up into the area behind the glacis, then remodelled and extended to the Audience Hall and finally expanded to form a paved court between and in front of the monumental platforms that flanked the entrance. It seems reasonable to think that in each of these phases at the Palatial Complex stone paving was intended for pedestrian use rather than for animals or wheeled vehicles. This is firstly because stone paving is not kind to hooves and, secondly, because there was no trace of ruts. Additionally, the areas of paving were clearly related to unique public functions. Elsewhere, for example in front of the large hall in the northern sector of the city and around the "megarons" near the centre of the lower city, paving appears to have been for pedestrian use inside walled urban blocks.

Given the general parallels between the Cappadocia Gate and the eastern end of the Palatial Complex it seems not unreasonable to ask if the paving in the Cappadocia Gate might also have been intended for gatherings rather than to facilitate the passage of traffic. Parallels include the double towers and glacis, pavements, monumental timber structures across broad passages containing double doors and the presence of cultic stone idols. The answer, however, would seem to be no because had the Gate Court been intended for significant public gathering it would surely have been paved in its entirety.

One further argument may be adduced against the possibility that the Gate Court was intended for gatherings. Much of the pavement, and indeed the eastern half of the Gate Court in general, was found to be buried beneath a thick, very clean deposit comprising lenses of silty clay. Much if not all of this deposit appears to have been mud plaster that washed off the wall faces. There was no indication in this clean and uniform accumulation that numbers of people had frequently gathered and tramped around in this area. The conclusion that the paving was intended to facilitate traffic passing through the gate is further supported by the evident pattern of wear seen on the pavers.

The Gate as a Cultic Space

Arguments that the primary purpose of the gate was defence and that the paving was intended for passing traffic rather than for public gatherings were set out above. These conclusions have important implications for the understanding of the significance of cultic installations within the gate as well as ways in which they might have been used. Two installations were found within the court, a built stepped monument crowned by a semi-iconic idol by the corner of the North Tower and immediately to the right of the doors, and a completely aniconic granite stele set into the pavement by the corner of the Middle Tower and adjacent to the front passage. The stepped monument was set up before the extension to the pavement was laid whilst the aniconic stele, possibly with a small pit behind it, was set into the pavement. The base of this stele together with the packing stones that held it in position were covered by the thick (>10cm) accumulation of clean clayey silt mentioned above.

Additionally, graffiti cut into two sandstone blocks at the southeast corner of the glacis and the passage show similar semi-iconic and aniconic stele along with other Phrygian symbols.

No evidence suggests that collective cultic practices were enacted in the gate. Rather, the palimpsest of graffiti, the hand-polished top of the granite stele, accumulation of clean silt and the complete lack of artifacts of any kind are not indicative of collective ritual enactment. Rather, the evidence is suggestive of cultic activity by individuals.

CONSERVATION AND RESTORATION OF THE CAPPADOCIA GATE

Nilüfer Baturayoğlu Yöney

In the 2009 and 2010 seasons, architectural fieldwork focused on the documentation, conservation, strengthening and enhancement for presentation and visitor security of the Cappadocia Gate (Figs 126 and 127), located on a southeastern elbow on the city walls and named after the direction in which it faces. Field survey was completed in 2009, and the documentation project was presented to the Sivas Regional Commission on the Conservation of Cultural and Natural Property, under whose jurisdiction Kerkenes Dağ falls, in 2010.

Figure 126. The Cappadocia Gate glacis photographed in May 2010 before the start of restoration work. (10dpcp0118)

Figure 127. The Cappadocia Gate glacis photographed in October when the 2010 restoration work was completed. (10dpcg0935)

In addition, a structural and architectural strengthening project was prepared for the exterior southeast corner of the gate structure (Fig. 128). All these projects were prepared by Rekare Restoration and Architecture Co. (İstanbul), with Dr. Nilüfer Baturayoğlu Yöney (I.T.U. Faculty of Architecture) acting as consultant on architecture and conservation, and Assoc. Prof. Dr. Ahmet Türer (METU Department of Civil Engineering) acting as consultant on structure for the Kerkenes Research Team. Following the official approval of the regional commission on May 19, 2010, fieldwork was conducted between September 9 and October 9, 2010. This work was undertaken by Erkan Kambek (B. Arch., M. Sci. in Architectural Conservation) with five master stone masons (Fig.129). It was supervised by Dr. Nilüfer Baturayoğlu Yöney for the Kerkenes Project. The U.S. Embassy in Ankara sponsored the work through the Ambassador's Fund for Cultural Preservation. The Sorgun District governor and the Sorgun mayor helped the progress of work by arranging for the loan of machinery which enabled the moving and raising of the large building stones as well as great quantities of rubble stone infill for the wall core.

Figure 128. At the start of restoration work the Kerkenes team welcomed the Sorgun District Governor, Levent Kılıç, and the director of the Sorgun Education Department, Yusuf Yazıcı. (10dpcg0248)

Figure 129. The restoration team in front of the glacis. Standing from left to right at the back, Eşref Dinçer, Mehmet Önder, Erkan Kambek and Yüksel Arabacı and in front Osman Traşoğlu, Yahya Dinçer and Himmet Arabacı. (10dpcg0321)

The Gate Structure

The gate structure comprises two parts: the South and West towers and the west wall of the gate passage form the west wing whereas the North, East and Middle towers and the walls connecting them around the inner courtyard form the east wing. The city wall butts against the gate structure on both sides. The glacis surrounding the exterior side of the gate and city walls, towers and buttresses appears to be continuous.

All the main walls are vertical without steps or recesses between consecutive stone courses. It seems that the wall faces were constructed a course or two in advance of the stone rubble cores. Large prismatic building stones were preferred on the corners but the wall faces show a less careful workmanship compared to the glacis. The building stones differ in size with larger stones located on the corners and lower courses. The face stones were not cut or shaped but were fitted leaving relatively minimal gaps or joints, the larger of which were chinked with smaller stones.

Timber beams, presumably rounded, were located along the wall face; these were levelled, wedged and partially hidden with stones ranging in size from chips to fist-sized rocks bonded with mud. No vertical or diagonal beams have been found so far. The timber beams were probably around 25cm in thickness and were placed at 1m intervals. The beams along the courtyard niches on the interior side are not level but parallel to the ground.

Figure 130. Stones, previously cleared from around the Gate structure and dumped nearby, were used to restore the glacis. (10dpnd1121)

Figure 131. The restored glacis looking west. Visitors are standing in front of the 6m wide passage. (10dpcg0601)

Figure 132. The Cappadocia Gate glacis at the end of the 2010 restoration campaign. (10dpcg0935)

Strengthening and Restoration Work

The major structural problems arise from the use of dry rubble stone masonry. The walls exposed as a result of excavation and cleaning in the 2008 to 2010 seasons need to be strengthened against possible collapse due to natural causes such as rain, flooding and wind and to ensure visitor safety. The southeast corner of the building, focusing on the exterior face of the East Tower, was chosen as a starting point. The walls in this area were completed up to the top of the glacis. Where original glacis face stones were dislocated and sliding downwards on the front side and inside the front niche they were taken down and had been repositioned after their backing was strengthened. It is believed that when completed up to its original level the glacis will act like buttressing to the walling through its sheer weight and thereby make the exterior wall faces more stable. All joints and gaps between existing glacis face stones were checked and were chinked with smaller stones, similar to the original, where necessary to preserve stability.

As the wall and glacis faces were raised the wall cores and backing behind the glacis were filled with rubble stone and compacted to stabilize them. The wall core was levelled at the glacis top level in order to prevent the existing interior wall faces and loose core rubble from sliding towards the lower exterior side. The wall face in this area was raised two courses (30-50cm) above the top level of the glacis and it was mitred on the inside, thus preventing visitors from getting too close to the exterior wall and glacis faces. The wall now rises approximately 6m above the exterior ground level, making it impossible to push the top glacis stones outwards, which appeared to be a possible form of vandalism.

The rubble deposited outside the city wall on the eastern side was cleaned, uncovering the original glacis face on this side, which was surveyed and documented in 2010. The wall and glacis were also completed for purposes of strengthening on this side but up to a lower level. Cleaning in this area was completed with the removal of the temporary ramp made in 2009, thus limiting the erosion due to human and animal access over the east wall.

The rubble as well as wall and glacis facing stones used for strengthening and completion were recovered from earlier excavation and cleaning work at the gate. For the wall and glacis faces the stones had to be minimally reshaped for fitting. The reconstructed glacis face on the southeastern corner of the East Tower was made with comparatively smaller stones so that it may be distinguished.

Figure 133. Once the East Tower wall was safely built up, it was possible to raise the large city wall on top of its existing base. (10dpkc2505)

Figure 134. Architect Erkan Kambek contemplating the huge task ahead before the restoration work started. (10dpcg0232)

Figure 135. With his team of five skilled masons Erkan Kambek brought the scheduled work to completion in less than a month. (10dpcg0761)

Figure 136. The eastern end of the Cappadocia Gate photographed in May before restoration. (10dpcp0306)

Figure 137. Temporary access was created in the spring to facilitate excavation work at the junction of the East Tower and the City Wall. (10dpcp0913)

Figure 138. The Kerkenes guard Mehmet Erciyas, and architect Erkan Kambek standing by the East Tower after completion of the restoration work. (10dpcg0940)

Figure 139. Restoration of the glacis was essential if the very loose fill of rubble and soil was to be stopped from washing down. (10dpcg0301)

Figure 140. The east corner was restored before the remaining portion of the glacis was uncovered, thus providing structural stability and minimising the risk of further collapse. (10dpkc3302)

Figure 141. The large stones that had slipped down from the southeast face were identified from photographs taken in 1999 and put back in place. (10dpkc3513)

Figure 142. The machine's bucket was an efficient substitute for scaffolding. (10dpcg0328)

Figure 143. Once the east side of the glacis was built up to the height of the adjacent stretch of glacis, it was found necessary to relocate two slipped stones, at left, before rebuilding the top of the glacis. (10dpcg0318)

Figure 144. The machine operator skilfully lifted the upper stones to bring them down. The large stone that had slipped forward was pushed back in line with the glacis face. (10dpnd0848)

Figure 145. A skilled team and good coordination made the operation a success. (10dpnd0859)

Figure 146. Without the machinery the masons would have been faced with an impossible task. (10dpnd0865)

Figure 147. Stones were lifted up and pushed back into their original position. (10dpnd0882)

Figure 148. Once the two large stones in front of the Middle Tower were moved back to their original position it was possible to rebuild the glacis to its original height. (10dpkc1141)

Figure 149. Where the sloping glacis joined the vertical wall stones were carefully selected to fit in the gap. (10dpkc1936)

Figure 150. The machine's bucket was used to lift large and heavy stones. (10dpnd1395)

Figure 151. The masons filled in the space behind the large glacis stones with medium and small stones. (10dpnd1376)

Figure 152. Small and medium stones were selected to fill up the space behind the facing stone. (10dpnd1387)

Figure 153. The glacis was rebuilt to its full height across the junction between the East Tower and the City Wall. (10dpnd1422)

Figure 154. The junction between the East Tower and the massive defensive wall. (10dpcg0610)

Figure 155. As a safety measure, the restored tower walls have been raised to form a parapet preventing visitors from walking too near the edge. (10dpkc3942)

Figure 156. The Cappadocia Gate glacis restored to its original height. (10dpcg0938)

CONSERVATION AND RESTORATION OF FINDS

Excavation and Documentation in May 2010

The depot was opened up in May to allow work on the documentation and conservation of finds to start in the spring (Fig. 157).

Figure 157. Serpil Ölmez from the Yozgat Museum formally opened the depot for work on the documentation and conservation of finds to start in May. From left to right, Sema Bağcı, Serpil Ölmez, Françoise Summers, Osman Muratdağı and representative Özge Yurdakul. (10dpnc0621)

The aniconic stele that stood in the west corner of the Middle Tower toppled over when the adjacent wall collapsed (Fig. 158). The stele was carefully wrapped up and brought down from the site in the Land Rover to be stored in the stone conservation workshop for full documentation and preservation (Figs 159, 160 and 161).

Figure 158. The aniconic stele was removed from the Cappadocia Gate passage after it became dislodged when the corner of the Middle Tower collapsed. (10dpcp0817)

Figure 159. The aniconic stele being moved to the stone conservation workshop. (10dpcp0821)

Figure 160. A sheet of glass and a drafting pen were used to draw the outline of the stele at 1:1. (10dpkc1515)

Figure 161. Documentation is facilitated by digital photographs from which detailed drawings are produced. The scale is 30cm long. (10dpkc1510)

Restoration and Installation of Additional Artifacts in the Yozgat Museum

In a continuing effort to promote tourism, the restoration and installation of two major artifacts for permanent exhibition in the Kerkenes Dağ Gallery of the Yozgat Museum were completed this year (Fig. 162). These large stone objects were the semi-iconic Cappadocia Gate stele and the upper step of its stepped base (Figs 163 and 164) and the best preserved exemplar of the semi-iconic idols from the Monumental Entranceway to the Palatial Complex (Fig. 165). Work on this multi-year project of conservation and restoration was completed by both our conservation staff and the head preparator from the Oriental Institute Museum in Chicago, Erik Lindahl. Extensive stabilization and reconstructive work was required to complete the restoration of both pieces for public display (Figs 166, 167 and 168).

This is the only idol that bears incised Phrygian characters, reversed Cs, one on the burnt fragment at bottom centre, the other at lower right. These idols are two-sided, but there are no incised marks on the lower portion of the reverse.

Figure 162. Scott Branting, Erik Lindahl and Joseph Lehner, with the help of museum staff, carried the large sandstone idol to the entrance hall of the Yozgat Museum. (10dpkc1113)

Figure 163. The semi-iconic idol and step from the Cappadocia Gate installed in the Kerkenes Gallery at the Yozgat Museum. (*10dpkc1715)*

Figure 164. The Kerkenes display at the Yozgat Museum includes the fully restored semi-iconic stele from the Cappadocia Gate. (10dpkc1721)

Figure 165. The idol viewed from different angles. (10dpkc1723)

Figure 166. Noël Siver and Alison Whyte finishing the restoration work in the Yozgat Museum. (10dpkc1119)

Figure 167. The most complete of the Phrygian semi-iconic sandstone idols from the Monumental Entrance to the Palatial Complex was installed in the Yozgat Museum in 2010. (10dpnd0304)

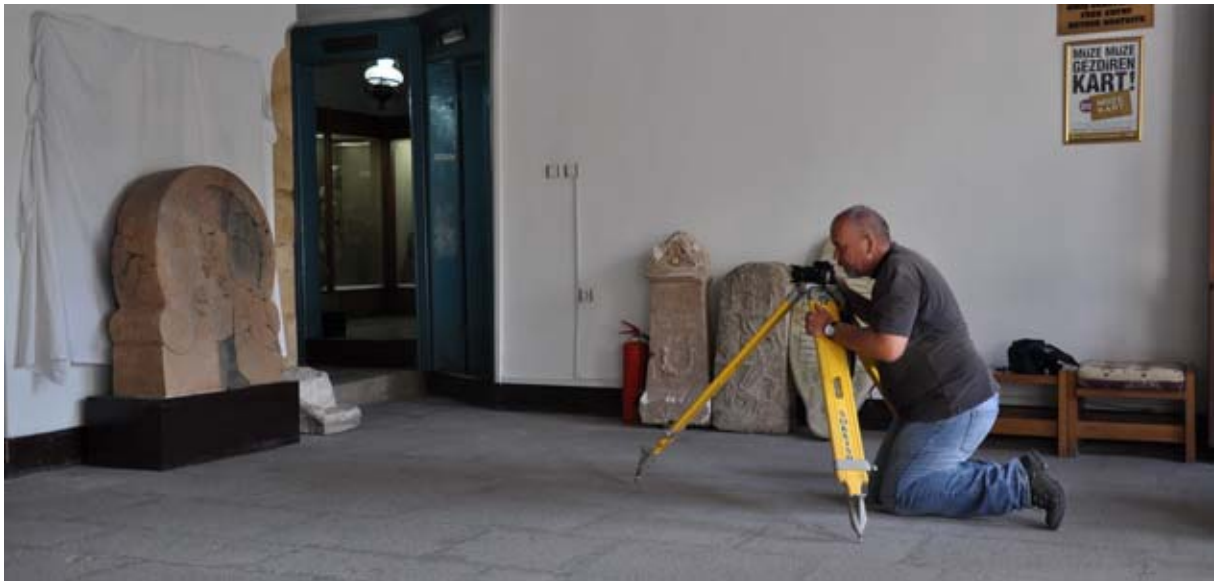


Figure 168. Ben Claasz Cookson photographing the idol in the Yozgat Museum. (10dpnd1101)

Conservation and Illustration

Additional work focused on the conservation and drawing of artifacts uncovered in 2009 and 2010, as well as limited join finding and conservation of the remaining architectural blocks and structural elements uncovered in the Monumental Entrance to the Palatial Complex in earlier seasons. The iron door straps from the Monumental Entrance to the Palatial Complex were hermetically sealed in storage bags specially constructed from ESCAL barrier film (Fig. 169).

Figure 169. Alison Whyte heat sealing ESCAL barrier film bags for storage of iron door straps from the Monumental Entrance to the Palatial Complex. (10dpkc1001)

ARCHAEOMETRY

Sampling for Geomagnetic Dating

In 2007, geomagnetic samples were collected from two heavily burnt contexts at Kerkenes Dağ by Nuretdin and Pınar Kaymakçı of METU. This was part of a much wider study, involving samples collected from archaeological sites across Turkey, to date changes in direction and intensity of magnetic north for Anatolia during the Bronze and Iron Ages. With very promising results achieved by the analysis of the limited samples collected in 2007, additional samples were collected this year from within test trench TT15 to expand this research project (Figs 170 and 171).

Figure 170. Nuretdin and Pınar Kaymakçı collecting samples for geomagnetic dating. (10dpnd0622)

Figure 171. Nuretdin Kaymakçı and representative Kenan Sürül on site to collect samples for geomagnetic dating. (10dpnd0632)

ARCHEOMETALLURGY

Sampling of Metals from Kerkenes Dağ

Metal objects and fragments uncovered at Kerkenes Dağ were once again analyzed by Joseph Lehner using a portable X-ray fluorescence device complimented in certain cases by discrete sample collection for thin sectioning. Samples were taken for analysis at the Cotsen Institute of Archaeology at the University of California – Los Angeles and will help provide a much better understanding of where the metal in the objects originated and how they were made.

A copper alloy piece with tinning (Fig. 172), from trench TR01 located in the Palatial Complex excavated in 2002 was among the metal objects studied.

Figure 172. Copper alloy piece with tinning, 02TR01U07met01, K02.136, from trench TR01 excavated in 2002. (10dpkc1270)

FUTURE WORK

Geophysical Survey

Resistivity survey in the spring continues to produce valuable results and add clarity to the results obtained from previous gradiometer survey. Further survey will continue for a few weeks each spring, the exact duration depending on funding and weather.

Excavations at Kerkenes

Continued large-scale excavations within select urban blocks at Kerkenes Dağ will proceed over the next several years. The next goal is to select and then fully excavate a complete urban block within the ancient city.

Transportation Studies

The excavation of test trenches across city streets will continue in 2011 and 2012. This ongoing work tests the results of the computer simulations used to understand how the transportation network of the city functioned. It also provides a means to integrate information from excavations within different urban blocks within the city.

Restoration Work at the Cappadocia Gate

If more funding is available in 2011, the strengthening and enhancement project will be enlarged to include more of the gate structure. Strengthening is necessary to ensure both the safety of the building and that of the visitors. Possible strengthening methods in addition to partial rebuilding are being discussed, with reference to previous experience in other similar archaeological sites.

PUBLICATIONS

Monograph Series

The preparation of final monographs is steadily progressing. The first volume focusing on the results of the remote sensing and associated test trenches will be followed by two Monographs, one devoted to work done at the Cappadocia Gate, the other on survey and excavations in the Palatial Complex since 1993.

Simulations of Ancient Transportation at Kerkenes Dağ, Kerkenes 4

Continued progress was made in regards to testing the simulations that form the core of this volume. Several soil samples taken at different points along the street uncovered in TR27 will provide data critical for understanding variations in results along a single street. This is an important compliment to the overall testing and calibration of the simulations that these samples provide.

RECENT KERKENES DAĞ PROJECT PUBLICATIONS

By Year

Kerkenes Dağ Web Page
http://www.kerkenes.metu.edu.tr
This site represents a major experiment in the electronic publication of an international archaeological project.

Monograph
2008 Draycott, C.M., Summers, G.D. and Brixhe, Cl.
Kerkenes Special Studies 1: Sculpture and Inscriptions from the Monumental Entrance to the Palatial Complex at Kerkenes Dag, Turkey. Chicago. OIP 135.
https://oi.uchicago.edu/research/pubs/catalog/oip/oip135.html

Chapter in book
2007 Summers, G. and Summers, F.
Kerkenes Dağ. In H. Sivas and T. Sivas (eds) *Friglerin Gizemli Uygarlığı. The Mysterious Civilization of the Phrygians.* Yapı Kredi Yayınları, Istanbul: 115-126.
1998 Summers, G.D. and Summers, M.E.F.
The Kerkenes Dağ Project, in R. Matthews (ed.) *Ancient Anatolia*, London (BIAA), 177-194 and colour pls 29-30.

Kerkenes News / Haberler
2010 Summers, G. and Summers, F. (eds),
Kerkenes News / Haberler 12, 2009, METU Press, Ankara.
2009 Summers, G. and Summers, F. (eds),
Kerkenes News / Haberler 11, 2008, METU Press, Ankara.
2008 Summers, G. and Summers, F. (eds),
Kerkenes News / Haberler 10, 2007, METU Press, Ankara.
2007 Summers, G., Summers, F. and Branting S.
Kerkenes News / Haberler 9, 2007, METU Press, Ankara.
2006 Summers, G. and Summers, F.
Kerkenes News / Haberler 8, 2005, METU Press, Ankara.
2005 Summers, G., Summers, F. and Branting, S.
Kerkenes News / Haberler 7, 2004, METU Press, Ankara.
2004 Summers, G., Summers, F., Stronach, D. and Branting, S.
Kerkenes News / Haberler 6, 2003, METU Press, Ankara.
2002 Summers, G., Summers, F. and Stronach, D.
Kerkenes News / Haberler 5 - 2002, METU Press, Ankara.
2001 Summers, G., Summers, F. and Stronach, D.
Kerkenes / Haberler 4 - 2001, METU Press, Ankara.
2000 Summers, G., Summers, F., Stronach, D. and Özcan, M.
Kerkenes News / Haberler 3 - 2000, METU Press, Ankara.
1999 Summers, G., Summers, F., Stronach, D. and Özcan, M.
Kerkenes News / Haberler 2 - 1999, METU Press, Ankara.
1998 Summers, G. and Summers, F.
Kerkenes News / Haberler - 1998, Phase 1: 3-5 and Phase 2: 6-11, Regional Survey 12-13 and Project Information: 14-16, METU Press, Ankara.

Articles and Conference Proceedings

2010 Kealhofer, L., Grave, P., Marsh, B., Steadman, S., Gorny, R.L. and Summers, G.D.
Patterns of interaction in Central Anatolia: Three Sites in Yozgat Province, *Anatolian Studies* 60, 71-92.

2010 Summers, G.D. and Summers, F.
From Picks to Pixels: Eighty Years of Development in the Tools of Archaeological Exploration and Interpretation, 1927-2007, at Kerkenes Dağ in Central Turkey. In P. Matthiae, F. Pinnock, L. Nigro and N. Marchetti (eds) with the collaboration of Licia Romano *Proceedings of the 6th International Congress on the Archaeology of the Ancient Near East, May 5th-10th 2008, "Sapienza" - Università di Roma Volume 2 Excavations, Surveys and Restorations: Reports on Recent Field Archaeology in the Near East*. Wiesbaden, Harrassowitz, 669-683.

2010 Summers, G. and Summers, F.
Kerkenes 2007, *31, Kazı Sonuçları Toplantısı, 25-29 Mayıs 2009, Denizli*, Ankara: 37-49.

2010 Summers, G., Summers, F. and Branting, S.
Kerkenes 2008, *31, Kazı Sonuçları Toplantısı, 25-29 Mayıs 2009, Denizli*, Ankara: 51-64.

2009 Summers, G.D.
Between Urartu and Phrygia: the North-Central Anatolian Plateau in the Iron Age. In H. Sağlamtimur, E. Abay, Z. Derin, A.Ü. Erdem, A. Batmaz, F. Dedeoğlu, M. Erdalkıran, M.B. Baştürk and E. Konakçı (eds) *Studies in Honour of Altan Çilingiroğlu: a life dedicated to Urartu on the shores of the Upper Sea.* Istanbul, Arkeoloji ve Sanat, 657-671.

2009 The End of Chronology: New Directions in the Archaeology of the Central Anatolian Iron Age. In S.W. Manning and M.J. Bruce (eds) *Tree-Rings, Kings, and Old World Archaeology and Environment: Paper Presented in Honor of Peter Ian Kuniholm*. Oxbow, Oxford and Oakville, 239-251.

2008 Atalan Çayırezmez, N., Ertepınar Kaymakçı, P. and Summers, G.D.
Remote Sensing Methods at Kerkenes: Combining Geophysical and Other Methods, *Journal of the Earth Sciences Application and Research Centre of Hacettepe University* 29, 87-100.

2008 Summers, G.D.
Periodisation and Terminology in the Central Anatolian Iron Age: Archaeology, History and Audiences, *Ancient Near Eastern Studies* 45, 202-217.

2008 Summers G.D.
Kerkenes 2006, *29. Kazı Sonuçları Toplantısı, 2. Cilt, 28 Mayıs - 01 Haziran 2007, Kocaeli*, Ankara, 477-488.

2008 Summers, G. and Summers, F.
A Preliminary Interpretation of Remote Sensing and Selective Excavation at the Palatial Complex, Kerkenes, *Anatolia Antiqua* 16, 53-76.

2007 Branting, S., Wu, Y., Srikrishnan, R. and Altaweel, M.R.
SHULGI: A Geospatial Tool for Modeling Human Movement and Interaction, in M.J. North, C.M. Macal and D.L. Sallach (eds) *Proceedings of the Agent 2007 Conference on Complex Interaction and Social Emergence*, ANL/DIS, Argonne, Illinois: Argonne National Laboratory, 475-487.

2007 Summers, G.D.
Public Spaces and Large Halls at Kerkenes. In A. Çilingiroğlu and A. Sagona, (eds) *Anatolian Iron Ages 6: The Proceedings of the Sixth Anatolian Iron Ages Colloquium held at Eskişehir, 16-20 August 2004*. Leuven, Peeters Press, 245-263

2007 Summers, G.
Kerkenes Projesi 2004 ve 2005, *28, Kazı Sonuçları Toplantısı, 29 Mayıs - 2 Haziran 2006, Çanakkale*, Ankara, 13-26.
2006 Summers, G.D.
Architectural Terracottas in Greater Phrygia: Problems of Chronology and Distribution. In B. Avunç (ed.) *Hayat Erkanal'a Armağan: Kültürlerin Yansıması. Studies in Honor of Hayat Erkanal: Cultural Reflections,* Istanbul, Homer Kitabevi, 684-688.
2006 Brixhe, Cl. and Summers, G.D.
Les inscriptions phrygiennes de Kerkenes Dağ (Anatolie Central), *Kadmos* 45, 93-135.
2006 Summers, G.D.
Aspects of material Culture at the Iron Age Capital on the Kerkenes Dağ in Central Anatolia, *Ancient Near Eastern Studies* 4, 163-201.
2006 Summers, G.D.
Phrygian Expansion to the East: Evidence of Cult from Kerkenes Dağ, *Baghdader Mitteilungen* 37, 647-658.
2006 Summers, G. and Summers, F.
Aspects of Urban Design at the Iron Age City on the Kerkenes Dağ as Revealed by Geophysical Survey, *Anatolia Antiqua* 14, 71-88.
2006 Summers, G. and Summers F.
Orta Anadolu'da Yozgat'ın güneyindeki Kerkenes Dağı kalıntıları bir görkemli Demir Çağı kentinin hikayesini aydınlatıyor, *Arkeo Atlas* 5, 70-77.
2005 Summers, G. and Summers, F.
Kerkenes Dağı Projesi 2003, *26. Kazı Sonuçları Toplantısı 1.Cilt, 24-28 Mayıs 2004, Konya*, 97-110.
2004 Summers, G.D. and Summers, F.
Demir Çağı Kenti'nin sırları, *ODTÜLÜ Sayı 32*, 16-17.
2004 Summers, G., Summers, F. and Branting, S.
Megarons and Associated Structures at Kerkenes Dağ: an Interim Report, *Anatolia Antiqua* 12, 7-41.
2004 Summers, G., Summers, F. and Stronach, D.
Kerkenes Dağı Projesi 2002, *25. Kazı Sonuçları Toplantısı 1.Cilt, 26-31 Mayıs 2003, Ankara*, 183-194.
2003 Stronach, D. and Summers, G.D.
The Ashlar Building at Kerkenes Dağ: An Interim Report, *Anatolica Antiqua* 11, 111-129.
2003 Summers, F., Atalan, N., Aydin, N., Basagaç, Ö. and Uçar, G.
Documentation of Archeological Ruins and Standing Monuments Using Photo-Rectification and 3D Modeling, in M.O. Altan (ed.) *Proceedings of the XIXth International Symposium CIPA 2003, New Perspectives To Save Cultural Heritage, Antalya, Turkey, 30 September – 04 October, 2003*, CIPA, Turkey, 660-668.
2003 Summers, G.D., Summers, F. and Stronach, D.
Kerkenes Dağı Projesi 2001, *24. Kazı Sonuçları Toplantısı 1.Cilt, 27 -31 Mayıs 2002, Ankara*, 449-460.
2002 Aydın, N., Toprak, V. and Baturayoğlu, N.
The Geophysical Survey of an Iron Age City in Central Anatolia: Kerkenes Dağ, in J. Albertz (ed.) *Proceedings of the XVIII. International Symposium CIPA 2001 Surveying and Documentation of Historic Buildings – Monuments – Sites Traditional and Modern Methods, Potsdam (Germany), September 18-21, 2001*, CIPA, Germany, 516-523.

2002 Baturayoğlu, N.
The Survey and Documentation of the City Walls and Cappadocia Gate of the Iron Age Settlement on Kerkenes Dağ in Central Anatolia, in J. Albertz (ed.) *Proceedings of the XVIII. International Symposium CIPA 2001 Surveying and Documentation of Historic Buildings – Monuments – Sites Traditional and Modern Methods, Potsdam (Germany), September 18-21, 2001*, CIPA, Germany, 100-107.

2002 Baturayoğlu, N., Summers, G.D., Summers, F. and Aydın, N.
The Survey and Documentation of an Iron Age City in Central Anatolia: Kerkenes Dağ, in J. Albertz (ed.) *Proceedings of the XVIII. International Symposium CIPA 2001 Surveying and Documentation of Historic Buildings – Monuments – Sites Traditional and Modern Methods, Potsdam (Germany), September 18-21, 2001*, CIPA, Germany, 407-414.

2002 Branting, S. and Summers, G.D.
Modelling Terrain: the Global Positioning System (GPS) Survey at Kerkenes Dağ, Turkey, *Antiquity* 76, 639-640.

2002 Dusinberre, E.R.M.
An Excavated Ivory from Kerkenes Dağ, Turkey: Transcultural Fluidities, Significations of Collective Identity, and the Problem of Median Art *Ars Orientalis* 32, 17-54.

2002 Summers, G.D., Summers, F., Stronach, D. and Özcan, M.
Kerkenes Dağı Projesi 2000. *23. Kazı Sonuçları Toplantısı 1.Cilt, 28 Mayıs - 01 Haziran 2001, Ankara*, 439-448.

2001 Summers, G.D.
Keykavus Kale and Associated Remains on the Kerkenes Dağ in Cappadocia, Central Turkey, *Anatolica Antiqua* 9, 39-60.

2001 Summers, G.
Simulation and Dynamics of an Ancient City, *ArcNews* 23.2, 12-13.

2001 Summers, G.D. and Summers, F.,
Kerkenes Dağ. In A.M. Greaves and B. Helwing, Archaeology in Turkey, *American Journal of Archaeology* 105, 508-509.

2001 Summers, G.D., Summers F., Özcan, M. and Stronach, D.
1999 Yılı Kerkenes Dağı Projesi, *22. Kazı Toplantısı 1.Cilt, 22-26 Mayıs 2000, İzmir.* Ankara, 211-228.

2000 Özcan, M., Summers, G. and Summers, F.
1998 Yılı Kerkenes Dağı Projesi, *XVII. Araştırma Sonuçları Toplantısı, 24-28 Mayıs 1999, Ankara.* Ankara, vol. II, 211-228.

2000 Summers, G.D.
The Median Empire Reconsidered: a View from Kerkenes Dağ, *Anatolian Studies* 50, 55-73

2000 Summers, G.D.
Kerkenes Dağ, in Bienkowski, P. and Millard, A. (eds), *Dictionary of the Ancient Near East,* London, British Museum, 166.

2000 Summers, G.D.
Kerkenes Dağı. Orta Anadolu'da Yer Alan Demir Çağı Kentinin Araştırılmasına Teknolojik Yaklaşımlar, 1993-1999, *1999 Yılı Anadolu Medeniyetleri Müzesi Konferansları,* 119-150.

1999 Ertem, E. and Demirci, Ş.
Characteristics of Hittite Pottery Sherds from Sites in the Kızılırmak Basin, *Journal of Archaeological Science* 42, 1017-1023.

1999 Summers, G.D. and Summers, M.E.F.
Kerkenes Dağı 1997, *XVI. Araştırma Sonuçları Toplantısı: 25-29 Mayıs 1998 Tarsus,* Ankara, vol. II, 121-151.

1998 Ertem, E., Summers, G.D. and Demirci, S.
An Archaeometric Study on Plain Ware Ceramics from the Hittite Period, Kızılırmak Basin, in S. Alp and A. Süel (eds) *Acts of the IIIrd International Congress of Hittitology, Çorum, September 16-22, 1996,* Ankara, 197-215.
1998 Summers, G.D., Özcan, M., Branting, S., Dusinberre, E.R. and Summers, M.E.F.
Kerkenes Dağ 1996, *XIX. Kazı Sonuçları Toplantısı: 26-30 Mayis 1997 Ankara.* Ankara, vol. I, 627-659.
1997 Korolnik, S.A.
The Conservation of a Carved Ivory Plaque, *Anadolu Medeniyetleri Müzesi: 1996 Yıllığı* 11, 173-196.
1997 Summers, G.D.
The Identification of the Iron Age City on the Kerkenes Dağ in Central Anatolia, *Journal of Near Eastern Studies* 56.2, 81-94.
1996 Summers, G.D. and Summers, M.E.F.
Kerkenes Dağ 1994, *XIII. Araştırma Sonuçları Toplantısı: 29 Mayıs - 2 Haziran 1995 Ankara,* Ankara, vol. 1, 99-122.
1996 Summers, G.D. and Summers, M.E.F.
Kerkenes Dağ 1995, *XIV. Araştırma Sonuçları Toplantısı: 27-31 Mayıs 1996 Ankara,* Ankara, vol. II, 331-357.
1996 Summers, G.D., Summers, M.E.F., Baturayoğlu, N., Harmanşah, Ö. and McIntosh, E.R.
The Kerkenes Dağ Survey, an Interim Report, *Anatolian Studies* 46, 201-234.
1995 Gurney, O.R.
The Hittite Names of Kerkenes Dağ and Kuşaklı Höyük, *Anatolian Studies* 46, 69-71.
1995 Summers, G.D. and Summers, M.E.F.
Kerkenes Dağ 1993, *XII. Araştırma Sonuçları Toplantısı: 30 Mayıs - 3 Haziran 1994 Ankara,* Ankara, 567-582.
1995 Summers, G.D., Summers, M.E.F. and Ahmet, K. The Regional Survey at Kerkenes Dağ: an Interim Report on the Seasons of 1993 and 1994, *Anatolian Studies* 45, 43-68.
1994 Summers, G.D.
Kerkenes Dağ 1993, *Anatolian Studies* 44, 15.
1994 Summers, G.D. and Summers, M.E.F.
The Mountain Top City on Kerkenes Dağ (Yozgat) in Cappadocia, *Arkeoloji ve Sanat* 62-63, 2-20.

Research Reports

2010 Summers, G., Summers, F., Branting, S. and Lehner, J.W.
The Kerkenes Project 2010, *Anatolian Archaeology* 16, 26-28.
2002 to 2009 Summers, G. and Summers, F.
The Kerkenes Project 2009, *Anatolian Archaeology* 15, 29-30.
The Kerkenes Project 2008, *Anatolian Archaeology* 14, 30-31.
The Kerkenes Project, *Anatolian Archaeology* 13, 31-32.
The Kerkenes project in 2006, *Anatolian Archaeology* 12, 32-33 and covers.
Kerkenes 2005, *Anatolian Archaeology* 11, 34-36.
The Kerkenes Project, *Anatolian Archaeology* 10, 2004: 18-20.
The Kerkenes Project, *Anatolian Archaeology* 9, 2003: 22-24.
The Kerkenes Project, *Anatolian Archaeology* 8, 2002: 25-27.
2001 Summers, G., Summers, F. and Stronach, D.
The Kerkenes Project 2001, *Anatolian Archaeology* 7: 22-23.
1999 and 2000 Summers, G., Summers, F., Özcan, M and Stronach, D.
The Kerkenes Project 2000, *Anatolian Archaeology* 6: 22-24.
Kerkenes Dağ 1999, *Anatolian Archaeology* 5: 19-22.

1995 to 1998 Summers, G. and Summers, F.
Kerkenes Dağ. *Anatolian Archaeology* 4, 1998: 25-27.
Kerkenes Dağ. *Anatolian Archaeology* 3, 1997: 23-25.
Kerkenes Dağ. *Anatolian Archaeology* 2, 1996: 27-28.
Kerkenes Dağ Survey Project. *Anatolian Archaeology* 1, 1995: 22-23.

1994 Summers, G.D.
Kerkenes Dağ, *Research Reports 1994,* BIAA, 18-20.

Newsletter

2005 Summers, G.
Research Design at Kerkenes: Perspectives at the Start of the Third Millennium A.D., *News Letter 4, 2005, Bilkent University, The Department of Archaeology and the History of Art*, 32-33.

PhD Theses

2004 Branting, Scott Andrew.
Iron Age Pedestrians at Kerkenes Dag: An Archaeological GIS-T Approach to Movement and Transportation. Ph.D., State University of New York at Buffalo.
Online: http://proquest.umi.com/pqdlink?RQT=306&TS=1242405628&clientId=37478

Masters Theses

2009 Lehner, J. W.
Towards an Understanding of Iron Age Metals Economy in Central Anatolia: A View from Kerkenes Dağ, MA Thesis , University of California - Los Angeles, Los Angeles (unpublished).

2006 Atalan Çayırezmez, Nurdan.
Relationships Between Topography and Kerkenes (Turkey), A GIS analysis. MSc Thesis, Middle East Technical University, Ankara (unpublished).

2004 Aydin, Zeynep Nahide.
The Application of Multi-Sensor Remote Sensing Techniques in Archaeology. MA Thesis, The University of Mississippi (unpublished).

2001 Aydin, Zeynep Nahide.
An Archaeometric Study of the Urban Dynamics at Kerkenes Dag Based on the Integration of Geomagnetic Data and GIS. MSc Thesis, Middle East Technical University, Ankara (unpublished).

Electronic Publication

Kerkenes Dağ Web Sayfası
http://www.kerkenes.metu.edu.tr

1999 Summers, G.D.
Medes, Lydians, the 'Battle of the Eclipse' and the Historicity of Herodotus, http://www.kerkenes.metu.edu.tr/kerk1//12propub/wwwpaper/eclbygds/index.html

2000 Summers, G.D.
Archaeology on the World Wide Web: Who Wants What?
http://www.achemenet.com/pdf/colloque/summers.pdf