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# TAL-E KHANDAGH (“MOATED MOUND”)

## A Military Structure in Ancient Fars



Dedicated to the Late Dr. Masoud Azarnoush

Parsa Ghasemi

**L**ittle is known about the *tal-e khandagh* structures, even though a considerable number survive in ancient Fars.<sup>1</sup> Leo Trümpelmann was the first to examine one of these monuments, at Sar Mashhad, while he was researching the subject of Sasanian mortuary practices. In his opinion, it was a Sasanian tower of silence (Trümpelmann 1984, 329). In 1994, Ehsan Yaghmaei excavated a trial pit in the wall of the rampart of the *tal-e khandagh* at Mohammadabad in Borazjan. He unearthed remains of a mudbrick wall, large quantities of grey clay vessels, and some fired clay objects (*kūpāl*<sup>2</sup>; Yaghmaei 1373/1994). In my recent studies in the area between Bishapur, Borazjan, and Firouzabad, a number of similar structures have been identified and analyzed (fig. 1; Ghasemi 1386/2007, 2009).

### Discussion and Catalogue of *Tal-e Khandagh* Sites

In general, *tal-e khandagh* structures are circular or tetrahedral artificial ramparts of varying diameter and size but invariably surrounded by a deep, wide moat. Based on the existing evidence, it appears that the architecture of these structures consists of a circular or tetrahedral wall constructed of stone

and plaster or mudbrick; the wall is over 12 m in height, with a moat excavated around the exterior of the wall and measuring, on average, about 20 m across. The soil extracted from this feature was used for construction behind the wall. Nowadays such structures can be seen in the forms of huge ramparts with a circular or tetrahedral plan in the plains. Each of these structures is studied below in more detail.

### The *Tal-e Khandagh* at Darūnak

The *tal-e khandagh* at Darūnak is located in the Jereh-o Bālādeh district of Kazerun county, 600 m from the road from Meydānak to Kat-e Khafr-e Oliyā (Upper Kat-e Khafr) in the middle of an agricultural plain. It consists of a circular artificial rampart 20 m in height, with a wall thickness of circa 23 m and a diameter of nearly 120 m. The moat surrounds it and measures about 30 m across and about 3 m in depth. An entrance in the northeastern side of the rampart currently facilitates access to it (figs. 2–4). In terms of shape and plan, this structure bears a resemblance to *tal-e khandaghs* in Sar Mashhad and Mohammadabad.

At the southwestern side of the *tal*, one finds remains of the foundations of a building with a roughly rectangular plan,

Figure 1. Distribution of the *tal-e khandaghs* studied (Encarta 2009).

made of stone and mortar, including three rooms. The foundation wall is 1.2 m thick. Surface finds of this site include three fragments of hand-made pottery; the pottery is grey, and the temper contains sand, chaff, and fine white lime (fig. 5).

### The *Tal-e Khandagh* at Jarūgh

The *tal-e khandagh* at Jarūgh (Jarūq) is located in the district of Jereh-o Bālādeh in Kazerun county, to the north of Kat-e Khafr village, in the midst of the farms surrounding Jarūgh and 200 m south of the Bolbolak–Kazerun road. This *tal-e khandagh* is a rampart that was constructed with a possibly rhomboid form whose

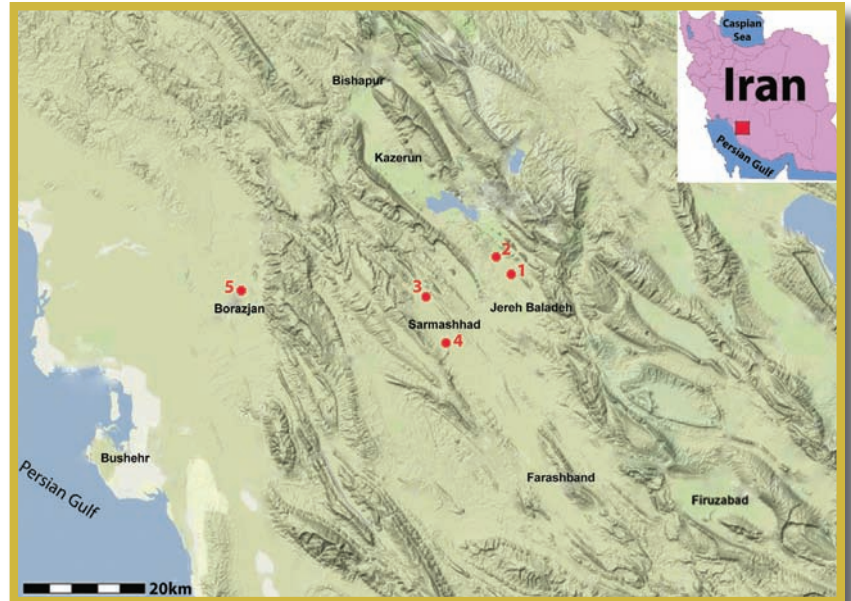


Figure 2. The southern side of the *tal-e khandagh* at Darūnak.



Figure 3. The Darūnak *tal-e khandagh* from another angle.



Figure 4. Satellite image of the Darūnak *tal-e khandagh* (Google Earth, 2012).

**Table 1. Features of Pottery from the Darūnak and Mohammadabad *Tal-e Khandaghs***

No.	Tal-e Khandagh	Description	Period	Parallel
1	Mohammadabad	Buff appearance, buff slip, well-fired, wheel-made	Late Parthian–Sasanian	Whitcomb 1987, fig. D:k
2	Mohammadabad	Red appearance, sand, orange-red slip, well-fired, wheel-made	Sasanian	Whitcomb 1987, fig. D:f
3	Mohammadabad	Red appearance, sand, red-brown slip, well-fired, wheel-made	Late Sasanian	Whitcomb 1987, fig. G:t; Kervran and Hiebert 1991, fig 7:16
4	Darūnak	Grey and black appearance, fine sand and lime temper, without slip, well-fired, wheel-made	Sasanian	Azarnoush 1994, fig. 171: 5
5	Darūnak	Grey color, sand and lime temper, red-bricked slip, well-fired, wheel-made		
6	Darūnak	Grey or black appearance, fine sand and chaff temper, wheel-made, furrowed pattern	Sasanian	

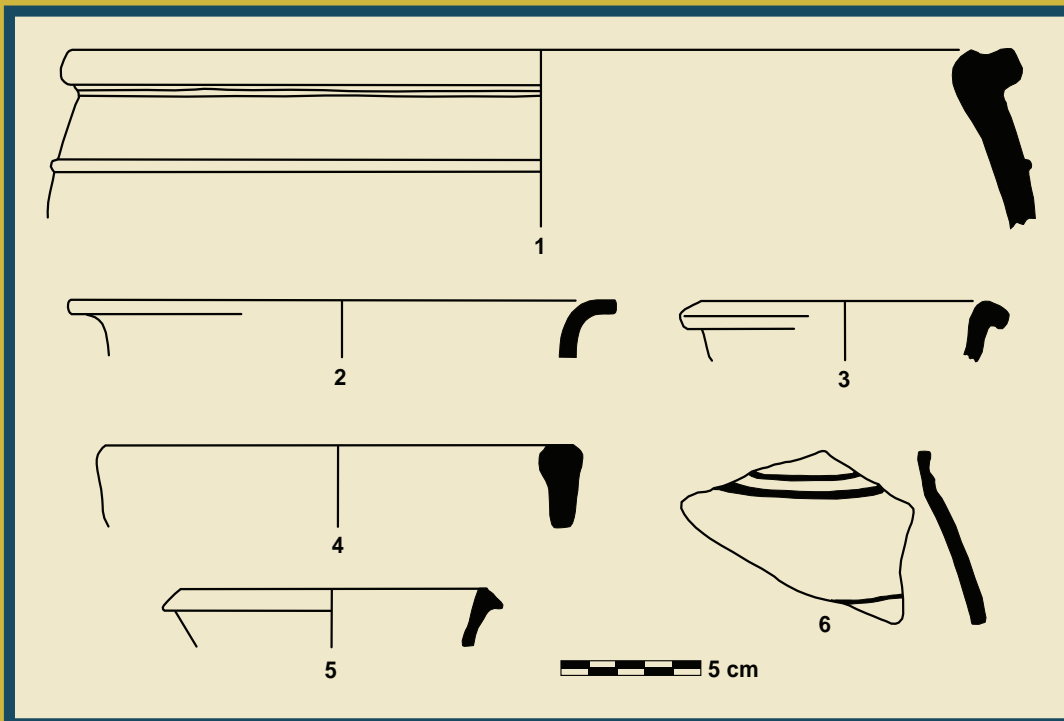


Figure 5. Drawing of pottery found at the *tal-e khandaghs* in Darūnak and Mohammadabad.

longer side is 90 m and shorter side is 85 m, 15 m high on the exterior and 5 m on the interior, and with a moat 20 m wide. Stone and plaster architectural remains can be seen on the surface. The site is generally similar to the *tal-e khandaghs* in Sar Mashhad and Mohammadabad; in terms of plan, it resembles the *tal-e khandagh* in Abolverdi (figs. 6–7).



Figure 6 (above). The moat and rampart wall of the *tal-e khandagh* at Jarūgh.

Figure 7 (below). Satellite image of the *tal-e khandagh* at Jarūgh (Google Earth, 2012).

### The *Tal-e Khandagh* at Sar Mashhad

The *tal-e khandagh* at Sar Mashhad is situated 150 m from the Sar Mashhad–Kazerun road and east of Abbas Soleimani’s pumping station. This site, the best-preserved of the structures under discussion, is comparable with the *tal-e khandaghs* of Darūnak and Mohammadabad. The circular, artificial rampart is surrounded by a moat about 30 m in width and 3 m in depth, with a diameter of 80 m. The interior height is 14 m, rising to 16 m at the exterior; the thickness of the rampart is 30 m. Apparently, its only entrance is located on the eastern side of the structure. The interior part of the *tal* is presently cultivated.

On the wall of the rampart, visible remains of an architectural structure made of stone and plaster prove the existence of a circular wall within the rampart wall. Leo Trümpelmann believed that this particular *tal-e khandagh* is a Sasanian *borj-e khāmūshī* (“tower of silence”) that Kartir, the powerful Zoroastrian priest, founded in the third century C.E. Kartir certainly had special interests in this region, as evidenced by an inscription of his near Bahram II’s bas-relief; in addition, the ossuary in the vicinity of the inscription is most probably Kartir’s everlasting tomb (Trümpelmann 1984, 329). A number of fragments of Sasanian pottery were observed around the *tal*. An aqueduct starts near Gach Mount at the north of the *tal-e khandagh* and passes by the *tal* from the east. It is shown in the aerial photograph (figs. 8–10).



### The *Tal-e Khandagh* at Abolverdi

The *tal-e khandagh* at Abolverdi is located in the rural district of Dādīn, near the town of Kazerun, and 250 m from the Sar Mashhad–Hosseinabad road. This site resembles other *tal-e khandaghs* with artificial ramparts, with a height of 9 m, a wall thickness of 15 m, and a moat 5 m wide. This *tal-e khandagh* is tetrahedral in plan, circa 40 m by 40 m; a possible entrance exists on the eastern side. Traces of stone and plaster foundations are visible. An east-west oriented aqueduct passes close to the north-northwest corner. The surrounding moat was probably supplied with water by this aqueduct. This *tal-e khandagh* is generally comparable with the previously discussed *tal-e khandaghs* and in terms of its plan is comparable with the *tal-e khandagh* in Jarūgh (figs. 11–13).



Figure 8. General view of the *tal-e khandagh* at Sar Mashhad.

Figure 9. Interior part of the *tal-e khandagh* at Sar Mashhad.



Figure 10. Rampart wall in the *tal-e khandagh* at Sar Mashhad and remains of stone and plaster construction.

Figure 11. The western side of the *tal-e khandagh* at Abolverdī.



Figure 12. Interior of the *tal-e khandagh* at Abolverdī.



Figure 13. Satellite image of the *tal-e khandagh* at Abolverdī (Google Earth, 2012).



### The *Tal-e Khandagh* at Mohammadabad

This *tal-e khandagh* is located at the Mohammadabad site, Borazjan, on the eastern side of the site, in the vicinity of an asphalted road. It is a circular structure 150 m in diameter, with a rampart thickness of 30 m and a height of around 13 m. Surrounding its rampart is a moat 25 m wide. This structure is most comparable in plan to the *tal-e khandaghs* at Sar Mashhad and Jarūgh and is the largest of the structures under discussion. A bulldozer cut through the wall of the rampart during road construction exposed some mudbricks measuring 40 by 40 by 12 cm (figs. 14–17). In 1994, Ehsan Yaghmaei dug a trench 40 m long through the southeastern side of the *tal*, on top of the rampart wall. When the 50–70 cm layer of surface soil was removed, some parts of the upper section of a mudbrick wall within the rampart appeared. The dimensions of the unearthed mudbricks are 38 by 38 by 10 cm. According to Yaghmaei, the interior surface of the wall showed a slight protrusion (relative to the upper course). Among other findings of this trench, a number of sherds of grey pottery, a large number of *kūpāls*, and a stone mortar were recovered (Yaghmaei 2009, pers. comm.; see fig. 5.1–3).

In addition to the *tal-e khandaghs* outlined above, many others have been identified in different parts of Fars and Bushehr, including Sofla and Olya Dehrūd in Borazjan, Hosseinabad in Shiraz, and Nojīn.



Figure 14 (top). The western side of the *tal-e khandagh* at Mohammadabad.

Figure 15 (middle). View from the moat and rampart wall of the *tal-e khandagh* at Mohammadabad.

Figure 16 (bottom). View of the moat surrounding the *tal-e khandagh* at Mohammadabad.

Figure 17 (opposite). Satellite image of the *tal-e khandagh* at Mohammadabad (Google Earth, 2012).



Table 2. Features of the *Tal-e Khandaghs* Studied

Row	Name	ID Code	Position		Height above Sea Level (Meters)	Geometrical Shape	Approximate Dimensions (in meters)			
			Y	X			Height	Diameter	Thickness of Rampart	Moat's Width
1	Darūnak	1	591707	3247282	821	circular	20	120	23	30
2	Jarugh	2	590006	249321	778	rhomboid	15	90	20	20
3	Sar Mashhad	3	571656	3240093	828	circular	19	80	30	30
4	Abolverdi	4	5754489	3230467	789	rectangular	9	—	5	5
5	Mohammada-bad	5	518567	3242742	50	circular	13	150	30	25

### Earlier Identifications of *Tal-e Khandaghs* as *Dakhmas*

Trümpelmann argued that the *tal-e khandagh* at Sar Mashhad was a *borj-e khāmūshī* (so-called “tower of silence”) of the Sasanian era that was used for exposure of the Zoroastrian dead and built at the order of Kartir, the supreme Zoroastrian priest (Trümpelmann 1984, 329).

Such a structure, also called a *dakhma*, is a thick, circular wall in the shape of a tower that was built of durable materials atop rocks and high mountains; a staircase provided access to the *dakhma*. The circular area within the *dakhma* was divided into three sections: the outer circular strip touching the wall of the *dakhma* was used exclusively for men, the middle strip

for women, and the inner strip exclusively for children. In the center of the circle was an ossuary pit into which the bones of a corpse could be placed once the skin, flesh, and organs had been removed by necrophagous birds (Razi 1385/2006, 485; Shirmard Farahmand 1377/1998, 15).

However, there is no evidence for such structures during this time period, and exposure occurred on natural high places instead. The earliest evidence for constructed *dakhmas* dates to the Islamic period (Mole 1377/1998, 57, 62; Boyce 2002, 158; Huff 1991, 89). The earliest mention of a *dakhma* or *borj-e khāmūshī* occurs in an 830 C.E. letter from Azar Franbag Farrokhzādān, the Zoroastrian supreme clergyman, to the Zoroastrians of Samarkand. *Borj-e khāmūshī* structures were used for burial of corpses until sixty years ago in the cities of Kerman, Yazd, Tehran, and other Zoroastrian population centers. Some of the *dakhmas* were old and unusable, but some newer ones that were renovated and reconstructed by Mankji Limji, the representative of the Indian Parsians of Mumbai about 140 years ago (1233/1854), were used for a short time. In the 1930s, 1940s, and 1960s, when the tomb and cemeteries were reestablished here, *dakhmas* were totally abandoned (Shirmard Farahmand, 1377/1998, 15; Huff 1991, 90). Consequently, the *tal-e khandagh* cannot be identified as a *borj-e khāmūshī*.

A Sasanian *dakhma* has been claimed by the excavator, Mehdi Rahbar, at the site of Bandiyan in Dareh Gaz (Iranian Khorasan). This



structure has a circular plan and measures 20 m in diameter; its interior is divided into several parts, with a central circular space 4.3 m in width. It is believed that this structure was originally domed, and Rahbar argues that its function is just like the graves of Kalālāk in Shushtar, Saleh Dāvūd in Eyyān Karkheh, and Shoghāb in Bushehr and that it differs from the *dakhmas* mentioned in the Vendīdād as a place to lay the corpses exposed to necrophagous birds (Rahbar 2007, 460, 468).

### The Date of the *Tal-e Khandagh* Structures

The relative chronology of the structures can be determined on the basis of the material evidence such as pottery, *kūpāls*, and masonry, as well as comparison with other sites.

During the sounding at the Mohammadabad *tal-e khandagh* in 2009, carried out in order to define the extent of the site, layers 1 and 3 in test trench 15 produced ceramics comparable to late Parthian and Sasanian pottery (see fig. 5:1–3; Yaghmaie et al. 1388/2009, 55). The finds from the site included some fragments of *kūpāls*, also abundantly found at Siraf, where they are dated to the Sasanian period (Williamson 1972, 146). A surface survey of the *tal-e khandagh* at Darūnak likewise produced some Sasanian material (fig. 5:3–6).

Given the similarity of the plan of the *tal-e khandagh* at Sar Mashhad to that at Darūnak, the former must date from the Sasanian era. No pottery was collected from the surface, but large numbers of Sasanian ceramics are scattered around the structure and the nearby Sasanian settlement. Further, the site lies not far from the major Sasanian–early Islamic city of Sar Mashhad. Fired mudbricks along with stone and plaster were also exposed as a result of clandestine excavations to the north of the wall of its presumed entrance (gateway). A circular wall visible on the surface of the *tal-e khandagh* is constructed of the local stone and plaster, materials abundantly used in the Sasanian structures in Sar Mashhad, and

they are the same masonry used in most parts of the highland Sasanian fortresses in the study area (Ghasemi 2010b, 58–78). Among the four types of the bricks and mudbricks used in the wall and fortresses of the Gorgan Wall, two are 40 by 40 by 10 cm and 38 by 38 by 10 cm and can be dated to the Sasanian period through laboratory analyses (Nokandeh et al. 2006, 161). These are exactly the same brick dimensions recorded at the Mohammadabad *tal-e khandagh* (see above). Bricks used in the Sasanian structures at Turang Tepe and Haftavan Tepe were of the same dimensions (Burney 1973, 170–71; Boucharlat and Lecomte 1987, 27, 45). The pottery, *kūpāls*, and bricks from this structure combined provide a secure date of construction during the Sasanian period for the *tal-e khandagh* at Mohammadabad.

Another clue to the tentative chronology of these structures comes from their location within or near the major Sasanian sites of the ancient Fars. The *tal-e khandagh* at Mohammadabad is situated within the Sasanian site of Mohammadabad in Borazjan, 50 m to the west of the fire temple and ruined buildings of the Sasanian period. The Sar Mashhad *tal-e khandagh* lies within the 1 ha Sasanian site to its west and 1 km north of the 800-hectare city of Kali Koh-he Sar Mashhad. The *tal-e khandagh* of Abolverdi lies within the Sasanian site of Kali Koh-he in Sar Mashhad, and the *tal-e khandaghs* of Darūnak and Jarūgh are located near the 30 ha settlement of Chahar Tagh in Meydank. The settlement sites that house the *tal-e khandaghs* under discussion are among the important yet little-known Sasanian sites in the ancient Fars that have been surveyed and identified by the author (Ghasemi 1386/2007, 2010a). The location of the moated mounds within or next to Sasanian sites suggests their probable construction during this period, and these settlement sites have monumental fortifications.

Another aspect of these structures that can be used in comparative chronology is the close resemblance of the plan, moat width, and wall to thirty-three Sasanian forts identified in the Gorgan Plain and Sasanian cities. Together with these forts, the moated mounds appear thus to be representatives of the prevailing architectural tradition in building fortifications during the Sasanian period.

Although *tal-e khandaghs* were generally built during the Sasanian period, further systematic surveys and excavations are required before we can defini-



Figure 18. Satellite image of Dārābgerd City (Google Earth, 2012).

tively determine their chronology, function, building materials, and architectural styles.

### Discussion of the *Tal-e Khandaghs*

The most noticeable features of the *tal-e khandaghs* are their circular or tetrahedral plan, thick rampart walls, and surrounding moats. Typically *dakhma* or *borj-e khāmūshī* architecture and structure differ from the structure of *tal-e khandaghs*.

According to some scholars, the circular plan of the cities had its roots in the military camps of the ancient East (Pope and Beaudouin 1881, 1393). Huff believes that the concentric plan was meant to display universal sovereignty over the world, thus honoring the central government or even absolute monarchy in the country and in the world (Huff 1366 Š./1987, 81). The rulers' centralization of power around themselves led to the symbolic use of circular plans for cities and fortresses. Further, from the earliest immigrations of Aryans to Iran, many circular structures, both settlements and fortresses, were constructed across Iran and represent a tradition of city planning contrary to that realized in the West by Greece and Rome. Circular cities can be seen in Firuzabad (Gūr), Darabgerd, Veh-Ardashir and other cities in the Parthian and Sasanian eras and Baghdad in the early Islamic period (figs. 18–19; Zoka' 1374/1995, 485; Huff 1374/1995, 24).

As a rule, the reason for establishing circular power centers was their defensive purpose, since protecting and defending a circular city or building is easier than a rectangular one; in addition, constructing a fortification is also easier when one uses a circular plan. Thus circular plans were chosen for a number of cities and capitals within the Parthian and Sasanian era for their defensive purposes (Kiani 1374/1995, 237; Colledge 1967, 116).

A large number of circular, rectangular, square, oval, and polygonal fortresses and defensive walls exists in the region of Gorgan. Most of the above-mentioned structures include a moat, circuit wall, and an acropolis, such as Ghal'eh Kāfar (Kāfar Fortress), Ghal'eh Soltān'ali (Soltān'ali Fortress), Ghal'eh Yasaghi (Yasaghi Fortress), Ghal'eh Tokhmagh (Tokhmagh Fortress), and Ghal'eh

Khandān (Khandān Fortress). These were dated by Kiani to the Parthian period (1374/1995, 240–41), but more recent research shows that they are Sasanian (Nokandeh et al. 2006, 121–73, Saour and Omrani-Rekavandi 2007). In terms of the moat, wall, and plan, these fortresses are architecturally similar to *tal-e khandaghs*. Apart from fortifications in the Gorgan region, other fortified Sasanian structures are known from the Moghan Plain in northwestern Iran, some of which are square in plan and resemble the *tal-e khandaghs* (Alizadeh and Ur 2007, 152–54).

As an additional defense structure, the *tal-e khandaghs* were also surrounded by moats. A moat is a water-filled ditch dug around cities, villages, castles, enclosures, citadels, camps, and the like (Mo'in 1384/2005; Dehkhoda 1377/1998, 9983). To make it impassable, the moat was filled with water, and the ground surrounding it was made treacherous with strategically placed arrows, spears, and wooden and iron beams. In some instances the surface of the moat was covered with wooden pieces, tree branches, and/or straw and grass in order to entangle attackers (Pazouki Tarudi 1373/1994, 24; Al-Ya'qubi 1980, 15; Sotoudeh 1366/1987, 94–95). Digging moats as a defensive strategy was an important element in city planning and can clearly be seen as a general pattern in all of these structures and around the ramparts of the Sasanian period as well as in fortresses along the Great Wall of Gorgan.

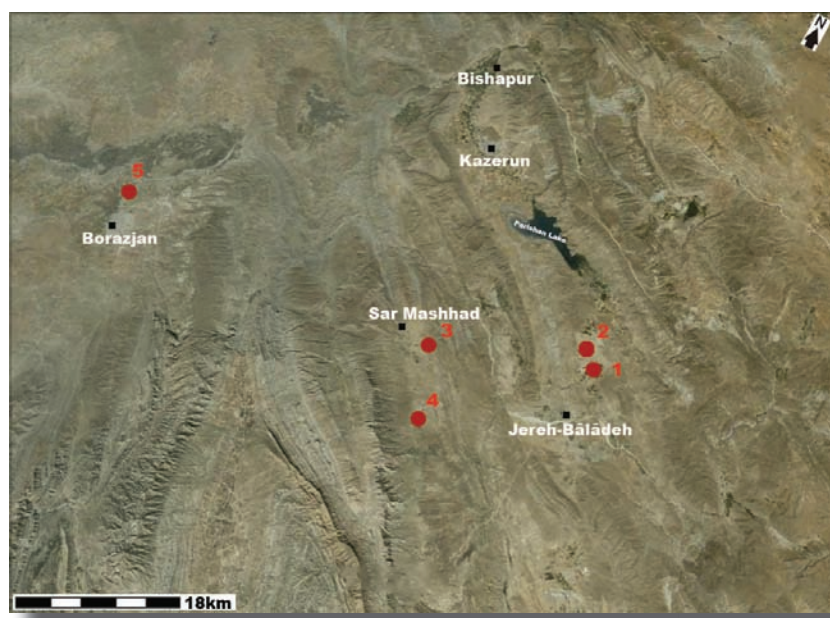
The size of some moats surrounding some of the *tal-e khandaghs* is 30 m in width and several meters in depth. Although

**The *tal-e khandaghs* in the ancient Fars were forts or military garrisons built by the Sasanian army to maintain security in these plains.**

Figure 19. Satellite image of the circular city plan of Firūzābād (Gūr) (Google Earth, 2012).



Figure 20. Satellite image of the region of Kazerun and Borazjan, with the distribution of the *tal-e khandaghs* marked (Google Earth, 2010).



now partly destroyed and flattened, long-distance aqueducts probably supplied them with water. The remains of numerous aqueducts (*qanat*) that led from the foothills toward these *tal-e khandaghs* can still be seen today. It is noteworthy that some of these aqueducts passed by such structures. The moats surrounding these structures, being quite wide and deep, could be an essential defensive obstacle even if they were waterless.

Another characteristic of the *tal-e khandaghs* was the presence of thick rampart walls. On average they measure 14 m in height and some 5 m in depth. Judging by the surface finds, the interior part of the rampart was a mudbrick structure as well as a wall made of stone with plaster mortar. Apart from the *tal-e khandagh* at Mohammadabad, other sites still have visible remains of a rectangular or circular wall made of stone and plaster. A similar circular wall made of stone and plaster can be seen in the *tal-e khandagh* at Sar Mashhad.

Not only do their architectural features (a circular or tetrahedral plan) and the presence of a surrounding moat and thick walls indicate the defensive and protective purpose of the *tal-e khandaghs*; their position on the plains and in the vicinity of populated centers in the Sasanian periods also point to a defensive function (fig. 20). As the ancient sites that are in the vicinity of such structures lack any significant defensive fortifications, it seems logical to see them as defensive constructions. Based on the surveys, the *tal-e khandaghs* in the ancient Fars and the related structures in the Gorgan region and the Moghan Plain may be regarded as forts or military garrisons that were built by the Sasanian army to maintain security in these plains.

## Notes

1. This article is part of my M.A. thesis, supervised by the late Dr. Masoud Azarnoush in 2007 at the Azad University, Tehran, Central branch. During my M.A. courses, I learned a great deal from Dr. Azarnoush, and I am indebted to him for his invaluable advice, support, and constructive criticism. May his soul rest in peace. I would also like to express my gratitude to Prof. Thomas Schneider and Bob Buller of NEA, Prof. Donald Whitcomb, Prof. Eberhard Sauer, Mehdi Rahbar, Fereydoun Biglari, and Shervin Moazami Goudarzi, who read this paper and provided helpful comments. Additionally, I wish to thank Ehsan Yaghmaei, who provided data regarding excavations of the *tal-e khandagh* at Mohammadabad in Borazjan and all other friends who offered their support.

2. A *kūpāl*, also known as *kūbāl*, *kūfā*, *kūfal*, and *pāy-e shotor* (“camel’s leg”), is a small, solid, cylindrical ceramic object whose clay can be fired to a buff, reddish or cream-colored appearance. The average weight of a *kūpāl* is 4 kg; it can be up to 30 cm long. They are typically found at Geonaveh, Deylam, Siraf, and along the Persian Gulf coast (Eghtedari 1375/1996, 53; Williamson 1972, 146). In the excavations of Dahāney-e Gholāmān, in one of the narrow corridors of the southeastern front of the courtyard of building 15, a series of these small ceramic pillars were found installed within a wall at regular intervals (Seyyed Sajadi and Saber Moghaddam 1382/2003, 25). It therefore appears that they had some form of architectural function.

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