Fortified Factory at Harappan Metropolis Khirsara, Gujarat

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***Abstract**: The excavations at Khirsara (23º50'N; 69º05'E) has revealed a well planned fortified settlement at Khirsara which is rough trapezoid in shape. The excavation has revealed citadel in the south, ware house on east, residential annexe on the north and factory area just opposite the northern face of citadel. The factory is a unique complex with a thick double stone walls, spacious interconnected rooms with entrances, stone paved flooring, pillar bases, drains, water tank, flight of steps, kilns, chullahs of various shapes and sizes etc. The rich material vestiges discovered from this area include a variety of shell objects and debitage, thousands of steatite micro beads, hoards comprising beads of gold and semiprecious stones, weights, copper objects and shell and bone inlays. Besides, evidences of copper smelting were also noticed in this area. All these findings clearly indicate that it was a 'factory site'. The results of the same are discussed here.*

Keywords: Khirsara, Gujarat, Fortified Factory, Mature Harappan, Complexes, Platform, Ceramics

Introduction

Khirsara (23°50'N; 69°05'E) is situated seven km south of the village Ravapar on the Bhuj-Narayan Sarovar State Highway and five km north of village Netra. The site locally known as 'Gadhwadi' is surrounded by two seasonal streams on the northern and southern side which drain into the river Khari flowing at a distance of around 400m away from the site (Fig. 1).

The excavations have yielded rich cultural debris belonging to the mature Harappan phase. The trapezoid shaped double fortified settlement measures 310m x 230m is provided with corner bastions and salient at regular intervals along with citadel on the south, residential complex on the north, ware house on the south east and factory area in the centre – all with separate enclosures.

Fortified Factory Area

The factory area was located just opposite to the northern fortification wall of the citadel with a 5m pathway in-between them. It covers an area of around 6, 600 sq. m. which was half of the citadel area. The excavations here have revealed well planned complexes with spacious interconnected rooms, multifarious entrances, stone paved and plastered flooring, pillar bases, drains, water tank, series of storage jars, flight of steps, kilns, hearths, etc. The construction methods, nature of the materials employed, the size and orientation of structures revealed five structural phases and damages caused by flood in successive phases.

Early Phase

The layout of the factory area in the early stages of the settlement at Khirsara is doubtful. However, early phase structures in the form of rooms with entrances of 0.80 m, stone paved flooring and hearths were noticed in the index trenches (Fig. 2). The structures are raised with sandstone of good quality in random rubble course masonry with mud mortar. As these structures are extending into the unexcavated area, its actual plan was not ascertained. The ceramics of this phase were dominated by the fine quality reserve slipped ware of various combinations. The artifacts are mainly terracotta tubular beads and bangles, steatite micro beads and few copper objects.

Mature Phase

In the next phase, the whole site was reorganized. The factory area was redrawn or it was newly planned over the early phase structures. During this phase, a separate fortification of 3.50m was raised around the factory area with the main entrance on the north. The natural contour of the site was well tailored by the Harappans in raising these structures. At most of the places, these structures were raised over the bed rock, simply chiseling at appropriate places and left the remaining to suit their needs. Well dressed stones of similar sizes were used at the entrance while huge fair face sandstones were employed on the outer wall particularly at the base. This entrance was maintained throughout the occupation of the site though on a reduced scale during the later phases. With a guard room towards the east, the street was 4.70m in width running towards south. Another entrance with a flight of five steps was provided on the southern wall to access from the citadel pathway. The width and the height of the steps are equal in proportions. Meticulously executed third entrance was noticed between the complex 2 and 3 in geometric pattern. The cardinals of the factory were raised with angular stones and this makes the wall to be inclined. Throughout the second and third phase, the rooms are larger in size and polished sandstones are utilized. During the fourth phase, the sudden spurt of activities was noticed in the form of extension of the factory area beyond the fortification on the east, west and north-eastern side. Though the stones betray the early phase, the alignment was almost maintained. However, an encroachment on the bye-lane was noticed. The entrance on the north was narrowed. Flat stones of various sizes were laid at the entrances to use as pathways. The eastern one was closed by raising a wall parallel to it while the

southern was rebuilt. The guard room was shifted outside and bifurcated. These rooms are semi circular in plan. The intense industrial activity was noticed in the form of hearths, charcoal, ash dump and discarded pottery scattered all over the area. The rooms are partitioned according to the necessity. The pillar-bases and post-holes in some of the rooms and even on the fortification wall in the form of embedded cylindrical pots show that the super structures might be of thatched roofs or of perishable materials. The floors are laid with kankars and plastered. One of the complexes was provided with flight of steps.

Late Phase

In the last phase, the whole area was plastered / covered with mud brick materials and reused the stones of the early phases. Even the fortification wall was covered with mud brick materials and its actual purpose was ceased. The structures are of mostly single course without proper alignment. The rooms and floors with flat inferior quality sandstones are the only evidences of this phase.

Complexes

Nearly 6 complexes were exposed and every complex has a specific role in the production. Most of these complexes are planned in the second phase and was continuously used up to fourth phase with alterations and additions.

Complex – 1

Complex 1 is situated in the south-east corner of the factory area (Fig. 3). Exactly square in shape with two big rooms, one small store room, a bathroom, flight of steps, drain, floors and pillar bases secured with stones. The floors are paved with flat stones of various shapes and plastered with clay or multi-colour mud brick bats. One of the largest rooms contains three circular pillar bases, two in an alignment and secured with platforms and the third near the entrance with small stones as supporting bases. Though the floor was badly disturbed, evidences of copper smelting in the form of green patches were noticed here and there. Further, it is attested by the discovery of copper objects in cluster which includes chisels, bars, nails and other unidentified objects.

Complex – 2

Complex 2 is on the western side of the main wall (Fig. 4). This complex consists of 4 small rooms with two working platforms and a water tank. The whole complex was raised with well polished sandstones of almost equal sizes in a perfect alignment and bonded with mud mortar. The floors are laid with stones of various sizes, evenly placed and plastered with mud or multi-coloured mud brick-bats or rammed with powdered shell debitages and lime. Evidences revealed that this complex was especially used to prepare steatite micro beads, shell and bone objects.

Complex – 3

Complex 3 was built over by incorporating naturally elevated rock. This complex has

rooms, entrances with door sills, drains and stone paved floors. In one of the chambers, weights of various shapes, sizes and materials are noticed. In another chamber, hoards of bone and shell inlays, carnelian tubular beads, conches in clusters and stag's antler were recovered. Further, 4 huge storage jars like drainage pipes with flat base and two holes on top were also noticed.

Complex – 4

Complex 4 is situated west of complex 2. On the north, it was enclosed by the main enclosure wall and on the west by the wall of the main street. The evidences in the form of spacious room, storage rooms with small entrances, hearths, platforms, flight of steps leading to a platform, pillar bases and storage jars secured with stones are noticed. The artifacts recovered are in the form of steatite micro beads, weights of various shapes and copper bangles and terracotta objects.

Complex – 5

Complex 5 is situated west of complex 4 and enclosed by the wall of the main street on the east. This is one of the huge complexes with spacious rooms, platforms, pillar bases, rooms with multiple entrances, stone paved flooring and plastered with mud brick materials, hearths filled with small stones probably heat retainers, drains, etc (Fig. 5). Evidences of heavy burning activities are noticed in most of the rooms in the form of charred bones, ash dumps and charcoal. Storage jars are also noticed in most of the rooms.

Complex – 6

Complex 6 is situated west of the factory area which comprises spacious rooms with drains, bathrooms paved and secured with polished sandstones with outlet connected with main drain, series of storage jars secured with stones at the base, clusters of kankars probably used as heat retainers, shows the well planned system. This complex revealed raw material of various semi-precious stones, hoards of beads in various stages of production, stone objects like mortar, quern (both legged and plain), pestles, mortar, drill bits, chert blades, whet stones / sharpener, sling balls and hammer stones. All these evidences indicate that this complex was mainly engaged in the production of semi-precious stone beads.

Platform 1

Platform 1 is located south of complex 2. It is square in plan measuring 4.40m x 3.55m. Encased with single course stone, this open air platform was plastered with thick clay. An oval shape furnace was noticed on the south-east corner measuring 1.10m. The base of the furnace is secured with flat terracotta plate to retain the heat. Bricks kept on 'edge' in 'V' shape along with ashes, charcoal and burnt terracotta lumps were also noticed (Fig. 6). The southern side of the furnace is secured by a single course wall of 0.60m width towards west and runs up to 3m and ends abruptly leaving a space for the entrance for the complex II. On the north-west corner of the platform – the important and interesting discovery is the bead hoard which contains nearly 363 beads (26 flat

disc bead of Gold, 90 spherical micro beads of Gold, 28 Carnelian beads, 198 black and white banded beads of Agate, 18 small tubular Serpentine beads with square section - this total excludes the Gold micro beads inserted on one side of the Serpentine beads) and 3 gold rings in a small terracotta red ware pot. On the south-western corner of the platform, a rough square stone probably used as an anvil and a storage jar secured with stone were noticed.

Platform 2

Platform 2 is located north of the platform 1 with a gap of 2.85m, having all the features of platform 1. Measuring 6.65m x 2.85m, the eastern extension is not clear due to the disturbances. This platform was plastered / rammed with mud brick materials with a circular pillar base secured with stones. The evidences of 2 twin storage jars – one set kept below the platform, another near the centre with huge shell debitages, stone pounders and pestle along with a storage jar in the east were noticed. All these evidences show that this platform was used for shell crafting (Fig. 7).

Platform 3

Platform 3 is located exactly north of platform 2 at a distance of 2.75m and measures 7.65m x 3.50m. This open air platform was encased with stone foundation with storage jars embedded on the south-west corner. At a distance of 7.65m along the west facing wall, flight of two steps was noticed. As the north western corner was found buried inside the unexcavated area, the actual purpose was not ascertained. A furnace was noticed on the south facing retaining wall of the platform 3 and nearly 1.15m from the south east corner of the platform and attached to the above mentioned wall. Facing east, this pear shaped furnace was partly disturbed. With a centre square stem measuring 0.30m x 0.30m x 0.20m, the whole furnace measures around 1m (NS). The western end of the furnace is attached with a single stone wall running towards south. The vitrified clay and the reddish colour soil with a huge centre stump – all suggest that this furnace is used for a prolong time for huge firing activity.

Platform 4

Platform 4 was noticed just opposite to the platform 1 was one of the largest platforms and measures 6.60m x 3m and open to sky. It was attached to the main partition parallel wall. An interesting find is the 'tandoor chullah' near the north-west corner of the platform and was secured with walls on two sides. This double pot chullah, semicircular in shape measures 0.40m in diameter and 0.30m in depth. Kept one inside the other, the gap in between the two was filled with clay. The pot is filled with charcoal and ashes. The finishing of both the pot shows that these pots were meant for this purposed only.

Platform 5

Platform 5 is finest in plan, measuring 9.70m x 4m, was noticed near the parallel wall. Actually, this was raised to cover up the naturally elevated outcrop by filling with multi colour mud brick bats and materials, kankars and sandstone.

Platform 6

Platform 6 is situated within the complex 4 and secured with single course stones along the periphery. It measures 4.50m x 4.50 and revealed a series of storage jars and a hearth secured with stones and filled with heat retainers on the south. In this series, a perforated jar is kept inside the cylindrical jar. One of the small chambers revealed steatite micro beads and weights.

Apart from the complexes and platforms separated with lanes and by-lanes, an interesting structure of this phase was a four chambered complex. Measuring 7m x 3.5m with inlets and outlets, provided on the north and south respectively. This was probably used as 'dying vat' (Fig. 8).

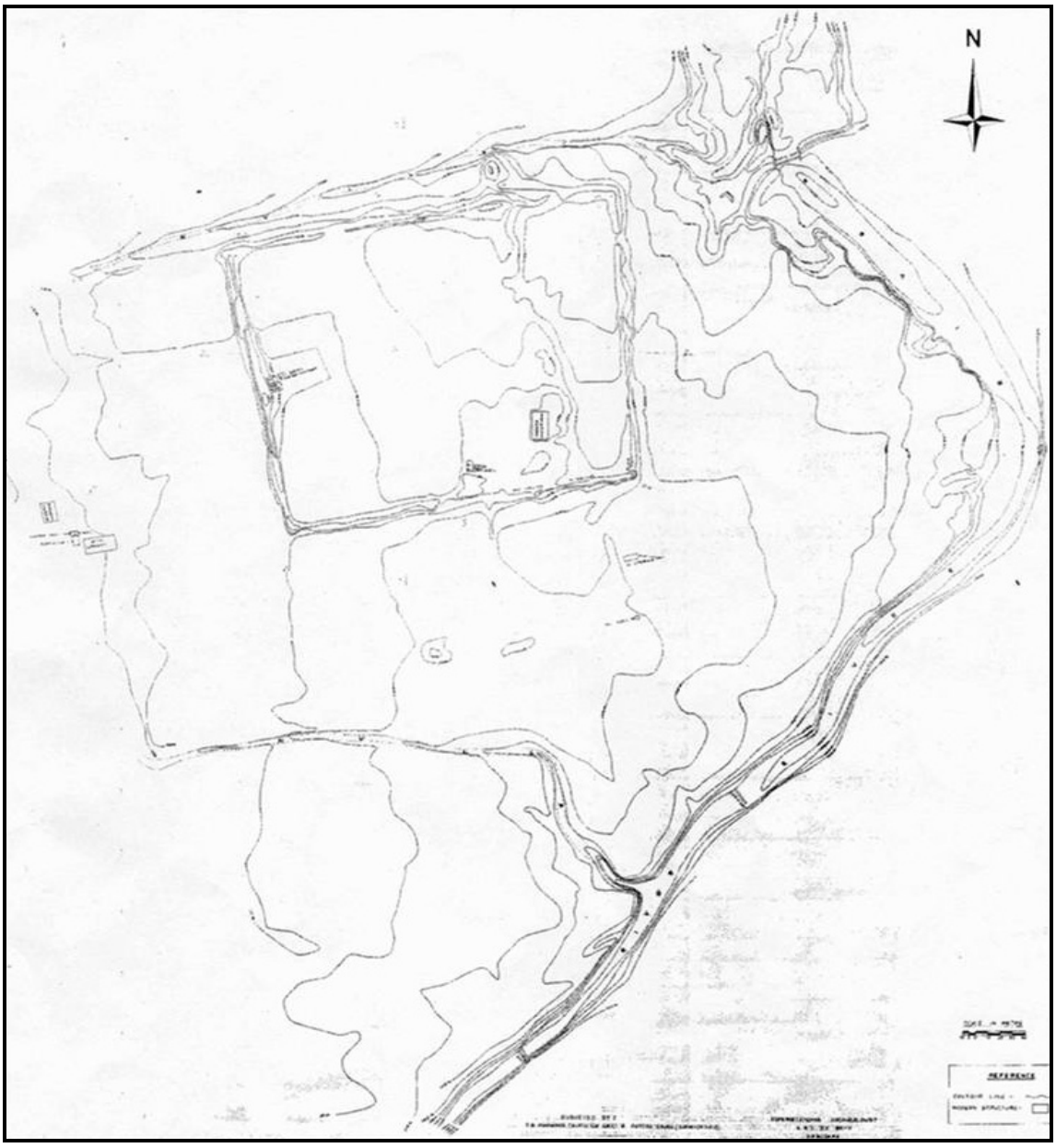


Figure 1: Contour Plan of Khirsara, Dist. Kachchh, Gujarat



Figure 2: Structures of Early Phase below the 'fortified factory area' at Khirsara



Figure 3: General view of Complex-1 in Citadel, Khirsara



Figure 4: General View of Complex-2, Khirsara



Figure 5: General View of Complex-5, Khirsara



Figure 6: An Oval shaped furnace in Platform-1 of Complex-2, Khirsara



Figure 7: Shell debitages with an 'anvil in the centre' in Platform-2, Khirsara



Figure 8: 'Dyeing Vat' (?), Khirsara



Figure 9A: Gold 'axial' beads from the hoard, Khirsara



Figure 9B: Steatite disc and micro beads, Khirsara



Figure 9C: Banded Agate beads from the hoard, Khirsara



Figure 10: General view of 'fortified factory area' from north-west corner, Khirsara

Ceramics and Artifacts

The ceramics repertoire portrays a variety of Harappan pottery like red ware, coarse red ware, painted red ware, red slipped ware, buff ware, painted buff ware, perforated sherds, chocolate slipped ware, a vast variety of reserve slip ware, sand rusticated ware, incised and appliqué wares. The artifacts constitute beads of terracotta, shell, faience, steatite, agate, carnelian, jasper, chalcedony, quartz, lapis lazuli, copper and gold (Figs. 9A,B,C), bangles of terracotta, shell, copper, faience, various shapes of inlays, weights of various denominations and materials, seals, terracotta toys and wheels, hop scotches, animal and bird figurine, anthromorphic figurine, stone objects including quern, pestles, mullers, pounders, balls, pillar bases, chert blades, microlithic tools, drill bits and inlays, bone and ivory objects. The copper objects include fish hooks, arrow heads, pins, knives, chisels, nails, needles and weights.

Discussion

The situation of the factory infers that it was under the direct control of the citadel. The evidences indicate that after the end of early phase, the whole site was reorganized (Fig. 10). Even the alignment of the structures shows a deviation from the former one. The left out area of the phase II i.e. the natural rock area, was also incorporated in the third phase and it was concealed either with flat stones paved flooring or filling with mud brick materials. While doing so, the angular structures of the early phase were avoided. In this process, they even block one of the entrances of the factory from east.

Though, minor variations were noticed in the ceramic shapes and quantities, no such was noticed in the antiquities.

Overall, the archaeological excavations have revealed that Khirsara was an important manufacturing hub in western Kachchh engaged in bead making, shell crafting and copper smelting meant for trading and most probably with the overseas people. A circular seal found from factory which is of Mesopotamian origin vouches the same.

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References

Nath, J. 2012b. 'Excavations at Khirsara, Dist. Kachchh, Gujarat', Paper presented in the International Conference on Harappan Archaeology', organized by the Archaeological Survey of India during 27th – 29th October 2012 at Chandigarh.

Nath, J. 2012a. 'Excavations at Khirsara', *Itihas Darpan* 17(1): 58-69.

Nath, J. and R. N. Kumaran, 2012, 'Inscribed Material from Khirsara, Dist. Kachchh, Gujarat, *Itihas Darpan* 17(2): 235-242.

Nath, J., R. N. Kumaran and A. Kulkarni. 2012. '*Archaeological Investigations at Khirsara (2009-2011)*', Paper presented in the International Seminar on Harappan Sites in Western India (Gujarat) at Poona from 22-24 March 2012.

Nath, J., R. N. Kumaran and A. Kulkarni. 2012. 'Excavations at Khirsara: A Harappan Outpost in Kachchh', *Puratattva* 42:122-132.

Nath, J., R. N. Kumaran and B. Chandra. 2012a. '*Stone Artifacts from Khirsara*', paper presented in the International Conference on 'Harappan Archaeology' organized by the Archaeological Survey of India during 27th – 29th October 2012 at Chandigarh.

Nath, J., R. N. Kumaran and B. Chandra. 2012b. '*The Ware House at Khirsara – an Amazing Harappan Architecture*', paper presented in the Regional Workshop on 'Archaeology of Western India' jointly organized by the Archaeological Survey of India, Mumbai Circle, Mumbai and Deccan College, Pune during 5th – 6th November 2012 at Pune.

Nath, J., R. N. Kumaran and B. Chandra. 2012c. '*A Study of Harappan Bead Tradition of Khirsara (2009-12)*', Paper presented in the Joint Annual Conference of IAS, ISPQS and IHCS and National Seminar on Archaeology and Cultural Diversity, organized by the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda and the

Archaeological Survey of India, Vadodara Circle at Vadodara from November 22-24, 2012.

Nath, J., R. N. Kumaran, B. Chandra and R. Meena. 2013. '*Further Excavations at Khirsara (2011-12)*', paper presented in the 8th National Conference on Maritime Archaeology of Indian Ocean Countries, organized by the Society of Marine Archaeology jointly with National Institute of Oceanography, Goa, Archaeological Survey of India and National Centre for Ocean and Antarctic Research, Goa during 1st – 2nd July 2013 at Goa.