

Fig. 382 Trench 3, eastern section, drawing true to scale (note the oblique layers down to the deep sounding)

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### Room Book

#### Methods of Documentation and Basis of Survey

Surveying was realised using a total station in a local, approximate north-south oriented measuring system, the xy-setting of which was adjusted into the UTM WGS system by using several independent hand-held GPS measurements on different days. Because of the less reliable altitude readings of hand-held GPS devices, the absolute height (z-value) was adopted from the topographical land-register plan of 1950.

During both excavation campaigns, the documentation was carried out by means of digital and analogue photography, graphic representation of plana and sections as well as description of stratigraphical units. The high eastern section<sup>1</sup> was drawn (Fig. 382), while the flat western section<sup>2</sup> (Fig. 383), in contrast, was documented in orthophotography, because it contains only the same upper slope and debris layers, which have already been fully included and documented in the eastern profile.

In the system of documentation applied, chronological items were designated as 'units': the material (pottery, organic/anorganic remains, coloured-glazed bricks, etc.) in a finding context/unit *qua definitionem* forms stratigraphic entities, as these finds were buried or deposited simultaneously at a certain point or period in time. In a broader sense this also applies to a deposit that formed within a period and to architectural elements such as a wall that was erected at a certain point in time, or a room that is surrounded by several walls. Additions to or changes of a wall – such as a later building phase – are denoted by further find context numbers. Thereby several overlying find layers might have originated in one and the same room, but for technical reasons of excavation for the time being they are provided with separate numbers (cp. the unit lists at the end of this text). Depending on their respective interpretation, these individual layers can be dealt with separately or together.

Only in an ideal case can all contexts/units be assigned to more clearly defined temporal periods

1 Unit 3036.  
2 Unit 3035.



Fig. 383 Trench 3, western section, assembly true to scale, rectified photos

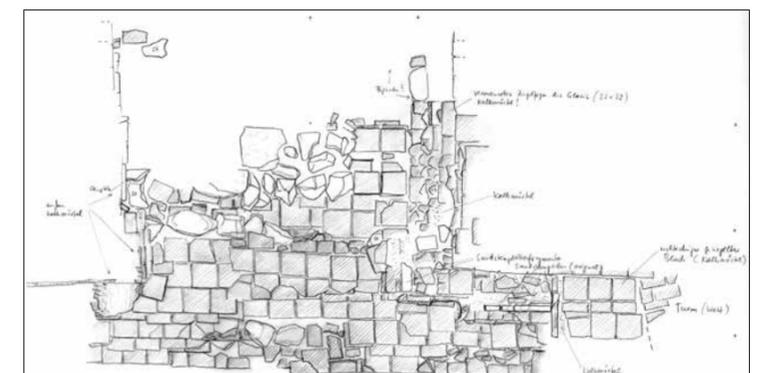


Fig. 384 Excavation documentation: pencil drawing true to scale



Fig. 385 Documentation: combination of drawing and total station measurement

or events, whereby some finds can be of greater diagnostic value than others. Therefore, the final chronological identification of the excavated structures will be possible only after completion of the analysis, when the thus detected unit groups can be designated as phases, layers or periods.

By that time at the latest – in order to make them more comprehensible – the rooms of the excavated architecture will be given a distinct denomination as i.e. 'northern central room' or 'eastern side room', and provided with room numbers (cp. Figs. 316; 318; 319; 407).



Fig. 386 Herat, old town, aerial photo with 3D model of the citadel; from west

The excavated structures were graphically documented as plans and sections (Figs. 384; 389), then levelled (Fig. 385), subsequently digitalised (Figs. 316; 333; 339) and integrated into the three-dimensional recording of the citadel (Fig. 386).

### Construction Methods, Masonry, Architectural Details

The common building material of the Timurid gate complex is constituted by walls of square fired bricks in sizes from 23 x 23 x 5 cm to 25 x 25 x 5 cm, mostly built with simple mud mortar (among others Fig. 396). Stable masonry bonds can hardly be achieved with the use of square bricks alone (Fig. 387c). Such bonds are only stable, if the bricks partly overlap in transverse as well as longitudinal directions of the wall (overlap dimension), so that the joints are not placed directly on top of each other. The smaller formats (half-sized bricks) necessary for this purpose were not prefabricated – as could have been expected, but consist exclusively of square bricks cut in half or reduced in size.

The masonry bond is not consistent (Fig. 387), which could be comprehensively documented and is exemplified, among others, by the eastern outer wall, several metres of which are preserved (Fig. 389 – see also: Fig. 409). In order to avoid superposed joints here as well, bricks of different sizes were aligned. Thereby, the attempt to maintain an even course of a central masonry bond is noticeable: the bricks were laid centrally upon the joints of the course underneath.<sup>3</sup> The wall was mostly built as an irregular bond (Figs. 387d; 389), in appearance similar to a stretcher bond, the courses of which are irregularly placed: the c. 76 cm thick east-west oriented wall, whose pointed-arch gate is blocked, shows an entire course of whole bricks laid in rows of three followed by one course with halved bricks on the edges and two whole bricks inside (Fig. 387d).

<sup>3</sup> This can also be observed in walls, of which only few remains are preserved as ruins: here is also a 12 to 13 cm broad displacement until the next overlying or underlying brick course, which is exactly half of the width of the bricks.

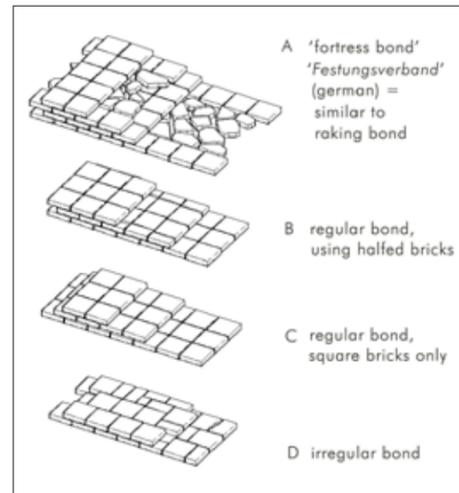


Fig. 387 Gateway, masonry bonds, schematic



Fig. 388 'Niche Room' (Room 6), recesses in the foundation for the placement of horizontal beams

As the brick fragments in the wall fill were generally laid flat, the horizontal joints always continue through the complete breadth of the wall. When uncovering the masonry, larger areas with smooth surfaces appeared in different places. Examples of these structural details are well discernible in the upper part of the western outer wall (Fig. 414).

Although some of the constructions are carried out rather negligently (i.e. the different transom heights of the pointed-arch vault in the south of the central entrance room [Room 1]),

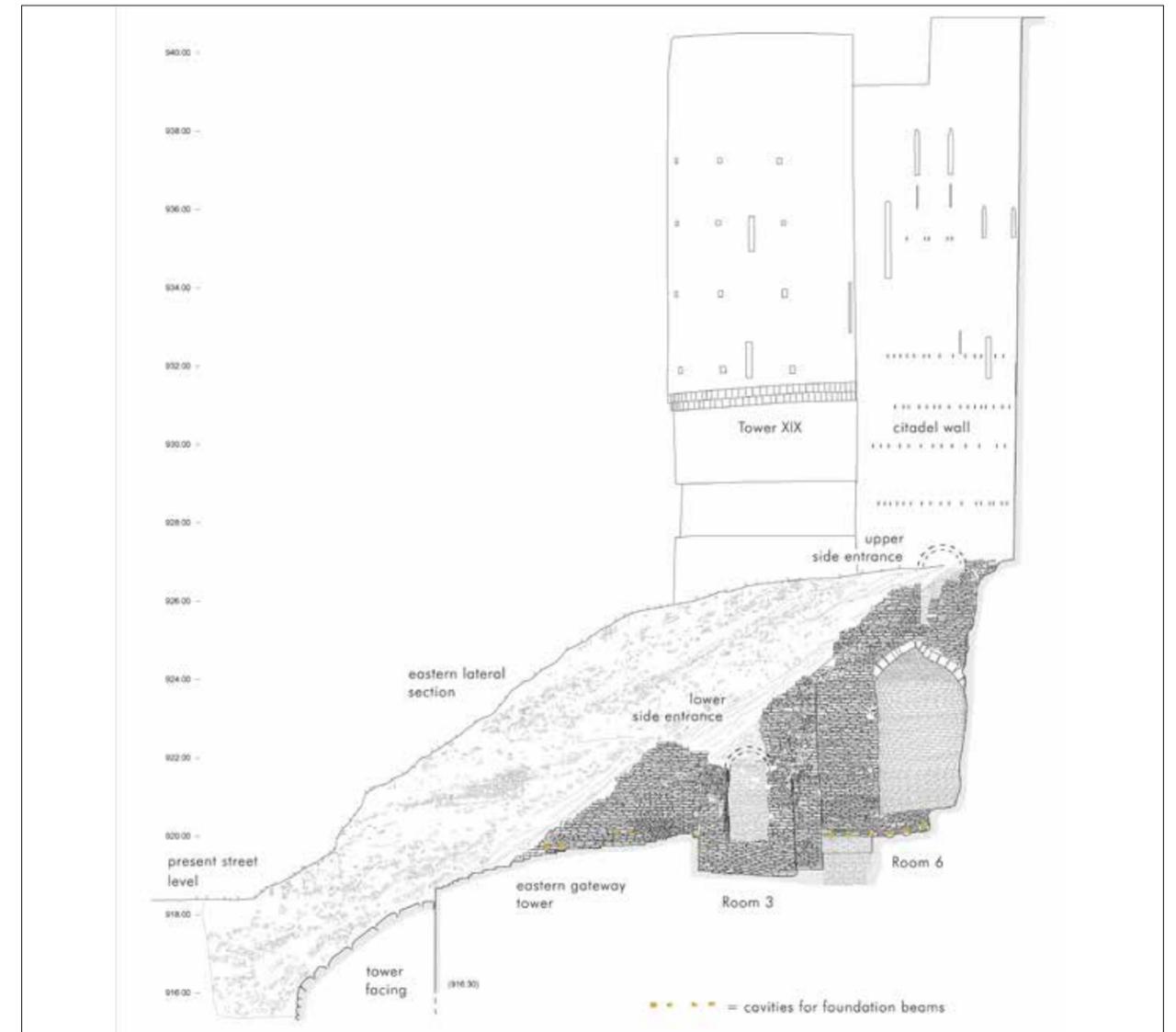


Fig. 389 Gateway, eastern lateral wall, wall design of the inner part (Rooms 3 and 6)

nevertheless the walls were apparently not covered with plaster. This assumption is supported primarily by the decorative details of the outer walls, such as the coloured glazed bricks (Figs. 321; 322; 397–400)<sup>4</sup>, and also by the archaeological context. Thus, later constructions like the stone glacis, for

<sup>4</sup> Larger amounts of coloured glazed bricks were found in the slope debris in and especially above the area around the gate complex (cp. pp. 493; 494), so that it seems likely that selective parts of the citadel's outer wall and towers were originally decorated with coloured bricks.

example, directly adjoin the brick walls without leaving smaller gaps. These would have sealed and protected the plaster from the wall, as far as preserved, and even if it is no longer preserved, the former thickness of the plaster should still be recognisable as interspace between the two building phases.

A distinctive constructional detail is the use of longer foundation beams (Figs. 327; 389; 394). These up to 3 m-long timbers were laid in short distances, mostly in the lower courses, thereby increasing the stability of the whole construction. This construction method was applied in the two towers even in several courses, one on top of the other (Fig. 403). It seems to have been suited primarily for very heavy architectural components such as the towers (Figs. 325; 326; 389; 394; 403) and the several metres high eastern outer wall (Figs. 388; 389; 457), but also for smaller constructions (e. g. piers of the bridge over the moat, Figs. 424; 425). Individual walls built later show

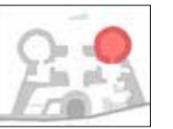


Fig. 390 Edges of the steps with recesses for supporting square timber; from north



Fig. 391 Side entrance blocked by brick wall, edges of the steps originally stabilised by square timber



Fig. 392 Edges of the steps with recesses for supporting square timber; from east



Fig. 393 Central entrance room (Room 1), lateral recesses for square timbers to stabilise the steps



Fig. 394 Eastern tower, recesses for foundation beams; from west



Fig. 395 Eastern tower, access from Room 3, recesses for square timbers to stabilise the stairs

this constructional feature too (Figs. 460; 461). During the excavation these characteristics were revealed both as recesses in the façades of the walls (Figs. 388; 389; 394), as well as blank spaces within the masonry (Figs. 325–327; 401; 403).

A further detail of the use of timbers in the otherwise largely homogeneous brick construction is the reinforcement of the stair nosings with timbers. This technique was applied on a small scale with 4–5 cm broad square timbers on the staircases of the towers (Figs. 357; 395), the staircase in the upper side entrance (Figs. 390; 391) as well as on a larger scale on the broad path along the central axis in the northern central room (Figs. 392; 393; 433–435).

## The Outer Structures

The outer structure of the gate complex consists of the two lateral walls in the east and west, (Figs. 318; 407) the huge round towers in both corners and the northern wall connecting those corner towers. The excavations conducted by the Unesco in 1980 had uncovered the ground plan of the western tower (Fig. 308). The remains of the second tower – east of the first – were largely visible on the surface in 2007, and after cleaning could also be identified with certainty. In the course of these excavations large parts of the eastern tower were exposed, and in 2008 both towers were excavated at the same time, examined and documented (Figs. 315–317; 360; 361; 401).

## The Eastern Tower

The eastern tower (Figs. 394–400) is built of square bricks set in mud mortar, aligned in circular courses. The tower measures 6.70 m in diameter. Only the southeastern part of the 1 m-wide outer wall is preserved to a height of 2 m (Fig. 396), whereas in the north, following the gradient of the slope, the wall remains are just a few brick courses high.<sup>5</sup>

<sup>5</sup> The removal of brick material down to the level of the slope corresponds to the find context of D. van Eenhooge's excavation at the opposite tower, which he explains with the 'quarrying for bricks by the local population' (van Eenhooge 1981, 22).

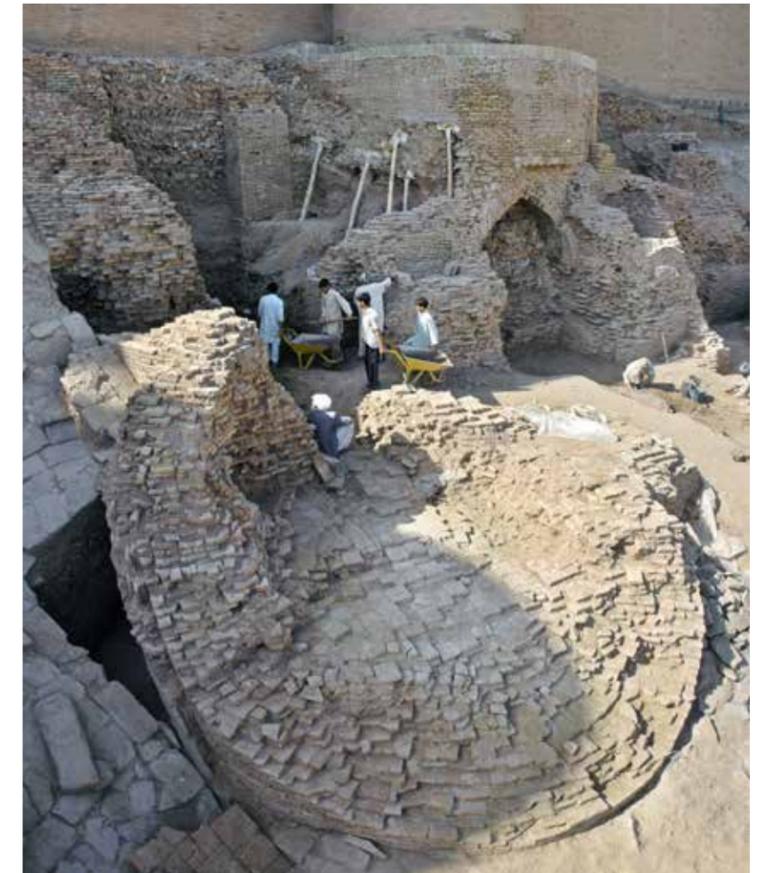


Fig. 396 Eastern tower, general view from northeast; assembled photo

The foundation depth of the towers could not have been determined during excavation without destroying further architectural details; however, there are very specific indications that the foundations reach at least 2 m below the present – very likely also the historical – ambient level.<sup>6</sup>

The interior of the tower is extensively destroyed, but the floor must have been at the altitude of 920.65 m asl, which is also indicated by the height of the threshold in the south (Figs. 389; 395). This access is c. 1 m wide and corresponds in position and size to the entrance of the western tower. Below the ground level remains of at least eight preserved longitudinal cavities, running through the entire tower construction, were found, four of which range from the centre of the tower diagonally towards the northwest, four others to the northeast (Fig. 394). The inner width of these cavities measures c. 12 cm, and they are one to two brick courses high. In the southern part of the tower remains some fitting timber fragments were found (Fig. 327), the age of which could be determined more precisely with radiocarbon dating.<sup>7</sup> The exact dating information complies with the usual two probability ranges for radiocarbon dating within which each value can apply. It thus provides

<sup>6</sup> Cf. p. 434 and Fig. 433.

<sup>7</sup> KIA 35052 HE 07/S7, Unit 3008; wood, juniper; one-sigma range: 1413–1432 cal. AD (68.3% probability); two-sigma range: 1400–1444 cal. AD (95.4% probability).



Fig. 397 Eastern tower, decoration with coloured glazed bricks in situ (detail); from east



Fig. 398 Eastern tower, groundplan (detail) showing the structure of the decoration



Fig. 399 Eastern tower, coloured glazed bricks, dog-teeth frieze and sandstone slabs in situ; from east

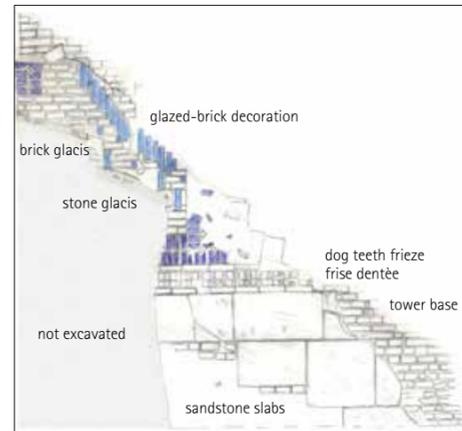


Fig. 400 Eastern tower, decoration elements of the façade, developed drawing (detail)

specific evidence for the time of the construction of the gate complex that complies with historical sources. As can also be noticed in other parts of the gate complex, these timbers were placed in the lower part of the walls or the cylinder of the tower. They served as foundation beams for load distribution of the standing masonry and could also be defined as a constructional detail of the Timurid Tower, where in August 2009, remains of timber could be salvaged in the course of the AKTC reconstructions.

The eastern tower is remarkable in many respects: especially important is the façade-facing with glazed bricks and a sandstone frieze, whose coherence is still preserved to great extent on the eastern facade (Figs. 321; 322; 397–400). The largest continuous area with original coloured glazed brick decoration is near the spandrel between the eastern tower and the outer wall of the gate complex (Figs. 321; 397–400). Another extensive part is today covered by the glacis that rests upon the onset of the tower. Here, the brick decoration was overlapped by heaps of earth that accumulated during the construction of the glacis and, thus, was protected for centuries' time.

The decorative facing was applied around the tower in a 18 to 20 cm thick sheath of horizontally and vertically set square bricks (Fig. 398), which caused the diameter of the tower to increase to more than 7 m. While the masonry of the tower shows the exclusive use of mud mortar, lime mortar was used for the facing. Thereby the construction of the decorative layer became more stable, and at the same time the masonry was protected from moisture and rain.

Above the mantle of square sandstone slabs and the following three-layer dog-teeth frieze made of halved bricks or brick fragments (Figs. 321; 322; 397–400) are coloured glazed bricks that together compose polychrome geometric ornaments and vertical rows. Small

square white-glazed bricks are equally part of that ornament of light blue and dark blue rectangular formats, some of them also with one bevelled narrow side (Fig. 399).

The uncovered decorative elements correspond in their positions exactly to the ornament on the so-called Timurid Tower in the northwest of the citadel (Fig. 323), so that the decorative pattern can reliably be reconstructed (Fig. 321).

On the basis of the archaeological context, which made a graphical reconstruction of the decoration possible, it could be ascertained that the decoration on the eastern tower was applied from east to west, because it deviates slightly from the scheme at its western end (cp. Fig. 611). Here, in fact, the repeating regular pattern could not be completed – simply due to the fact that there wasn't enough surface area left to decorate. The regular application of a repetitive pattern upon a cylindrical surface – in addition, tapering out at the top – involved a major constructional challenge not only for Timurid craftsmen.<sup>8</sup>

The decorative sheathing concurs in its thickness with that of the tower's outer wall, which shows a recess the size of approx. half a brick (Fig. 398). This is of special importance for the chronological identification of the tower's ornamentation, because this slight recess could have been realised only with the knowledge that this irregularity would be equalised eventually by the decorative sheathing. The tower and the decoration were thus built in one and the same constructional measure.

Reflecting on the comparable Timurid Tower west of the citadel, Dirk van Eenhooge refers to the seemingly chronological sequence of the tower's construction and its decorative sheathing.<sup>9</sup> He mentions that there are niche-like indentations and recesses in the wall below the decorative sheathing and that the dog-teeth decoration seems to be positioned nearer to the tower than the ornamentation of glazed bricks. Nonetheless, the find context at the towers of the gate complex shows that all decorative shapes are contemporaneous and that the execution of the tower contains building irregularities, such

<sup>8</sup> There was no difference in challenge of the implementation of the decorative surface on the reconstructed towers in 2009.

<sup>9</sup> van Eenhooge 1981, 21.

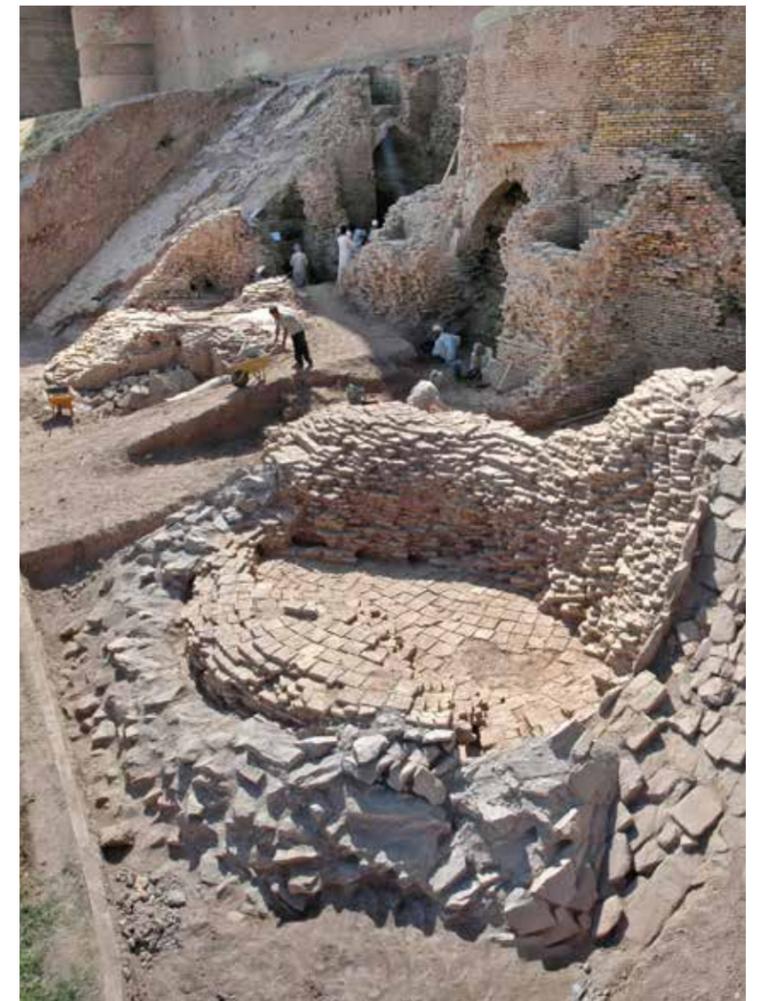


Fig. 401 Western tower, general view from west

as projecting wall sections that do not form niches or constitute any visible recess like, for instance, a *lesene*.<sup>10</sup>

Discernible from the sandstone facing of the eastern tower are the position and the original gradient of the citadel slope (Figs. 399; 400). The sandstone slabs are stepped towards the hillside, with additional bricks laid to compensate for the inclining surface of the slope.

## The Western Tower

Part of the western tower was unearthed for the first time in 1980 (Fig. 308); in 2008 it could be completely excavated (Fig. 401).

The wall thickness is no longer detectable, but through analogy with the eastern tower it likely measured c. 1 m. With a diameter of 6.85 m the tower

<sup>10</sup> Addressed in more detail in the text on p. 378.