The Timurid Gateway – Reconstruction and Conservation

Preceding Measures

The most important aim of the excavations conducted by the German-Afghan Archaeological Mission was to research the origins and the development of the city of Herat. Here the oldest evidence of a settlement had to be expected far below the surface and covered by the remains of the following centuries. Therefore, it seemed reasonable to choose a location for the excavations where already larger amounts of earth had been removed, in order to gain comparatively easier access to the deepest layers. Between 1976 and 1979 extensive excavations had been conducted directly at the northern foot of the citadel's Tower XVIII by the Unesco, but the excavated area was not refilled afterwards (Fig. 560).[70] As the area had been uncovered down to a depth of more than 4 m, it seemed an ideal site for Trench 3.

After unearthing the first architectural remains, it is standard in excavations to secure exposed architectural structures and supplement them as far as necessary to prevent or reduce further deterioration. In Trench 3 the measures included primarily the protection of the architecture, the slope and – when necessary – a reinforcement of the sections as well as the preservation and supplementation of the glacis. On closer inspection of the direct surroundings of the excavation, distinct settling cracks were detected in the lower part of Tower XVIII (Fig. 561).[71] It became clear that the greatest need for preservation did not concern the excavation area, but its surroundings. The present tower, rising 17.5 m high, is part of the citadel wall, which directly adjoins the excavation area, 11 m above the ambient city level. Although – in absence of an according documentation – it could no longer be detected, when exactly these cracks had appeared for the first time, the necessity to stabilise the area for static reasons was obvious. The weight of the mighty citadel wall and the difference in height between its position and that of the surrounding city undoubtedly represent a considerable threat to the stability of the entire structure. Therefore, already from the first days of the excavation onwards, protective measures were developed within the area of excavation as well as in its surroundings.

70 See chapter on Tr. 3 excavation.

71 The cracks were documented and for further observation of this development controlled by means of plaster seals.

The Draft

The Construction

On the basis of an immediate expert static assessment[72], it was decided that the best measure to counterbalance the pressure of the massive citadel wall and Tower XVIII would be the construction of massive buttresses. It thus seemed appropriate to reconstruct or restore this supporting structure in the form of the Timurid gate complex, which had originally been situated in this place, as shown by the excavation results (cp. pp 373; 374; 448–451 Figs. 316; 506-508) of the campaigns in 2007 and 2008. The complex was intended foremost to fulfil a static purpose as a permanent supportive structure and to comply with international rules when dealing with historical buildings, without becoming too absorbed in the often dogmatic discussions about the reconstruction and rebuilding of historical architecture. The focus was on the actual situation and pragmatic needs such as the available workforce, the scheduled time frame as well as the necessity of immediate action. Besides these prerequisites, further basic considerations were important for the draft and execution of reconstruction measures:

- The work needed to be carried out using building material that is available on the local market or can be prepared on site. Although the materials are in compliance with historical buildings, they must always be recognisable as modern alterations and supplements – just as the implemented technology.
- Insofar as the necessities of a massive supporting structure allowed, the new construction had to be reversible if necessary, without causing greater damage to the preserved original structure.
- It had to be ensured that the work could be carried out by local staff, who will be able to preserve the construction after completion of building and to carry out repair work when necessary, and this with simplest means, as continuous external financing for preservation measures is rather unlikely and cannot be integrated into the calculation.
- Also needed was a detailed documentation of the construction work, including an extensive photographic documentation, with photographs taken once every day. Copies of this documentation are kept and are accessible on site in the Department of Monuments and Sites, Herat as well as in Kabul, in the Afghan Institute of Archaeology.

72 By W. Herberg Architects.

◀ *The Timurid Gateway reconstructed, 2009*

Fig. 560 The gateway area prior to the 2008 excavations, localisation of the cracks in Tower XVIII; from west

Fig. 561 Tower XVIII, above the gateway, setting cracks and plaster seal of 2008

- This documentation and the pointing of the walls, realised in different colours, enable a distinction between the reconstructed building parts and the preserved original structure.

On the basis of these parameters a time and cost schedule for the planned measures was prepared already during the excavations of 2008. After the financing had been granted by the Department of Foreign Affairs of the Federal Republic of Germany, the drafted plans were substantiated and further developed as well as coordinated with and agreed upon by the local authorities. On April 2nd, 2009 the fully elaborated plans were officially presented to the Coordination Committee for the Safeguarding of Afghanistan's Cultural Heritage in Kabul, where they were explained, discussed and finally approved with all details.[73]

In contrast to numerous reconstructions of historical buildings, the primary goal of this measure was not foremost the restoration of former stages of construction or the visualisation of historical details for a better understanding of the overall architecture; the aim was rather the consolidation of an unstable area and the construction of a supporting structure for a statically endangered part of the Herat Citadel. As a matter of course, we were thus offered a unique opportunity to add an important architectural detail to the present appearance of the citadel, an aspect that had already been noted in 1977. Although at that time the gate complex was only partly excavated and its structure not completely understood, the restoration of this entrance[74] ranked among the architectural highlights of the entire citadel: *'The original entrance to the citadel from the north came to light. This entrance, of the bent-entrance type, typical for Islamic fortresses, is here surrounded by a protection tower, stairs and guard rooms. Once restored, it will afford one of the major architectural attractions of the whole complex.'*[75]

The planned form, size and ground plan of the construction were intended to correspond with the archaeological context of the historical Timurid gate complex, which was unearthed in this place in 2007 and 2008 (Figs. 316; 317). However, the revealed architecture not only contained remains of the original complex dating from the beginning of the 15th century, but also a series of later structural modifications and additions. Indeed, nearly all historical buildings have been repaired, changed and renewed over the centuries' time. Usually, architectural details from the different ages remain on the monument and, thus, can still be identified. One of the most controversially discussed decisions when reconstructing historical architecture, therefore, is which of the various building states should in fact be restored. Moreover, there is the risk that structural elements from different periods were supplemented to form an ensemble, which had not existed at any time in this form. After a comparatively short period these new constructions can no longer be distinguished from historical buildings, bearing false architectural witness to an allegedly historical era. In the present case the risk is particularly acute, because a complete reconstruction of the gate complex would inevitably evoke a wrong impression, namely that it was a structural component of the present citadel, which in its present-day visible form represents a building that is several centuries younger.

Therefore, the entire supportive construction was reconstructed as an architectural snapshot, capturing the situation during the formation of the Herat Citadel in its present condition, that is during the construction of the citadel wall and its towers probably in the 18th century. Although the gate complex at that time was no longer in use, it was still clearly recognisable. Individual walls had also been added, which were meant to protect the gate complex – although in ruin – from further deterioration even then, when it still had the purpose of stabilising the slope.

In order that upon closer view the new construction remains identifiable as a modern addition, it was to be built using lime mortar, with clearly discernible colours that are directly recognisable as imitations even in the structural ornamentation. This possibility of differentiation is ensured, amongst others, by the schematisation of the tower decoration and by refraining, for instance, from the façade segmentation that is typical for Timurid architecture and characterised by the use of flat blind niches or niches in and near passages. Furthermore, through the differential colouration of the pointing, architectural elements of the diverse building phases are noticeably marked. This applies to the differentiation between the 'original Timurid gate complex' (yellowish/brick-coloured), the 'casing of the complex by a stone – and later brick glacis' (whitish) and the 'construction of a citadel wall and – towers in the today encountered appearance' (dark).

Composition and structure of construction principally follow the prerequisites of statics. The expert assessment called for four massive buttresses, leading from the present ambient level up towards the citadel wall (Figs. 562; 563). In their architectural implementation these four buttresses correspond to the two outer walls as well as the two north-south oriented inner walls of the gate complex (Fig. 563). By means of a three-dimensional visualisation (Fig. 564) and

Fig. 562 Gateway at the end of the excavation 2008, schematic display of the necessary supportive system (cp. Fig. 563)

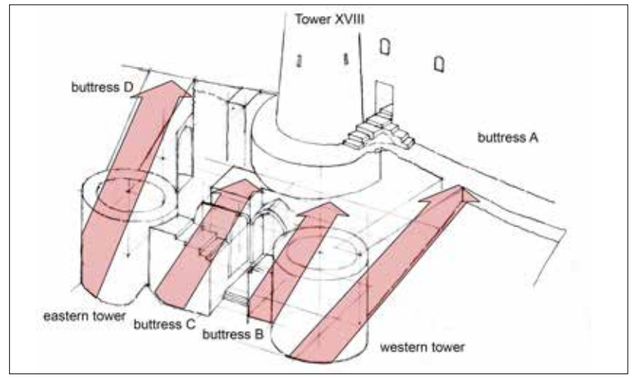

Fig. 563 First draft of supporting structure with schematic outlining of the primary components (basis drawing: W. Herberg)

Fig. 564 Final planning of the supporting structure, schematical visualisation

73 The only constraint by the board that deviates from the draft was the rejection of the complete reconstruction of the decoration on the gate towers in the original execution with coloured glazed bricks (see also pp. 634–636).

74 At that time probably planned, but not realised.

75 Bruno 1981, 13.

Fig. 565 Completed supporting structure, October 2009; from west

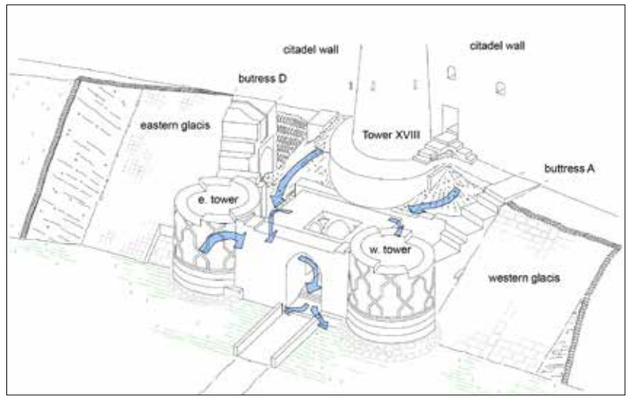

Fig. 567 Isometrical view of the supporting structure, drainage system of surface water

isometric drawings (Figs. 563; 567) the construction was planned and the individual components were drawn in proportion. In coordination with the building expert the statically necessary heights of walls and towers were calculated, and the appearance of the upper termination of the complex was defined in accordance with the proposed aim of mostly displaying a ruin. This appearance was also tested in 2008 by means of a three-dimensional visualisation and served as reference for the actual construction work during the following one and a half years (Fig. 564).

Whereas through the excavations the ground plan of the architecture to be reconstructed was clear, the original absolute height of the individual components was not. This applies – with only few exceptions[76] – to the height

76 Transom and vault heights are known for the northern central room (cf. pp. 418; 638–641).

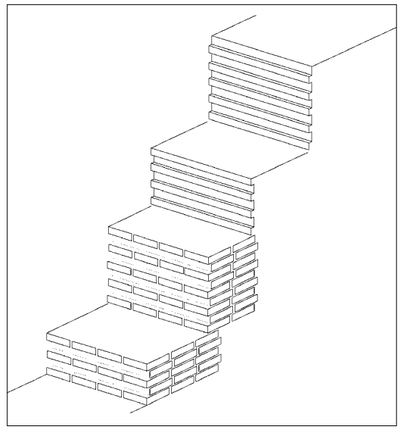

Fig. 566 Schematical view of the implementation of the outer buttresses on the ascending citadel slope, detail, layout of the vertical surfaces as reconstructed only in part

of the towers and enclosure walls as well as to the exact level of vaults and roofs. In order to exercise their static function the walls had to be massively reinforced; and since they could not be widened any further, the only possibility was to raise the height. For the reconstruction this implied that from a certain height upwards passageways had to be vaulted and ceiling or roof constructions had to be indicated or implemented. A largely well-founded decision concerning the absolute height at which such an approach is acceptable can be described as follows: 'as high as evidenced directly or indirectly by the archaeological context'. Corresponding indications are given, for instance, by the height of the topmost step of the side staircase to the roof, the apexes of the vaults in the central interior room (Room 2), and the absolute height of the preserved side of the passage (between Rooms 4 and 5). In the present case, however, the wall height to be reached was contingent upon its required static purpose, whereby there was no objection to a differentiated, stepped height of the complex, ascending from north to south. To counteract the impression that the walls were already stepped in their original state, the vertical wall surfaces were executed irregularly (Fig. 566).

Fig. 568 Graphic instructions for local architects and supervisors

When defining the height for the two gate towers, static-functional aspects also had to be considered, resulting in a specific mass/weight of the towers and the according minimum height. Moreover, parallelisation of the tower decoration with the area with brick-patterns on Tower XIV (the so-called Timurid Tower)[77] enabled an indirect reconstruction of the actual minimum height.

The decision not to vault the central room (Room 2) and not to build a roof over the lateral rooms and the towers made the installation of gutters and channels necessary for draining off rainwater from the complex's fully watertight surfaces and floors (Fig. 567). Drainage of the interior surfaces of the towers is achieved via the stairs down into the towers' anterooms. A possible outflow along the walls of the towers was not chosen as alternative, because it would either have led water directly through the brick decoration, or the water would have been conducted from the pendentives between tower and outer wall directly onto the remains of the original architecture. Moreover, as it cannot be assumed that preservation and maintenance measures will happen regularly in the future, openings in the tower cladding would, sooner or later, result in ugly water streaks and corresponding accumulations of moisture. In order to avoid damage of this kind, large-sized terracotta waterspouts with a U-shaped cross-section were installed for draining-off water from the dripping eaves (Fig. 602). Such elements never existed there in this form, but they are indispensable now for preserving the supportive construction. It is a fortunate coincidence that such gutters were then produced in a workshop of the Aga Khan Trust for Culture (AKTC) in the historical centre of Herat and, thus, could be utilised for restoring the gate complex. Otherwise, plastic or aluminium could have been used, yet with a questionable effect on the general nature of the reconstruction. The roof surfaces of the central access room (Room 1) would drain into the lateral anterooms of the towers and from there via the central passageway to the north into the modern-day park. Because the floors of the two anterooms to the towers are lower than the side platforms in the central access room, the floors had to be provided with narrow drainage channels (Fig. 641). Both floor surfaces showed serious damage in the centre part when unearthed; therefore, only the nonessential parts of the original structure were modified.

77 Cf. pp. 377; 378; 402; 403.

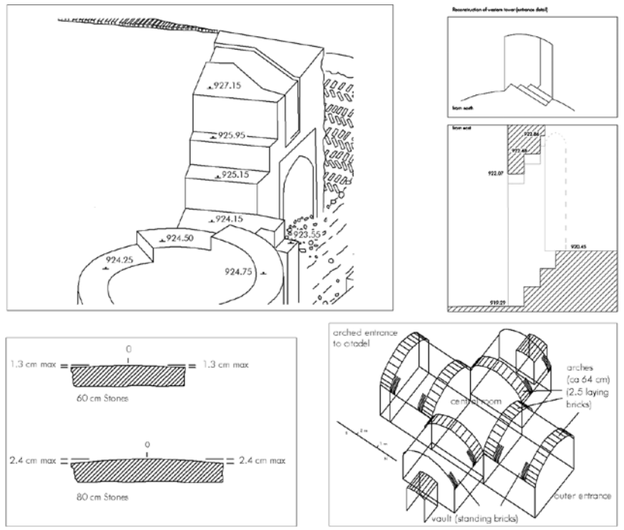

Fig. 569 Simplified instructions for local supervisors

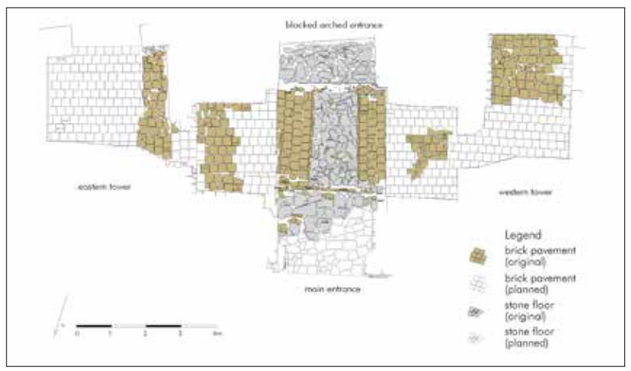

Fig. 570 Instructions for local supervisors: reconstruction of floor paving, distribution of historic and new bricks

Material and Building Technique

As the entire structure was planned to be built throughout upon the ground plan and for the most part upon extant wall remains of the historical gate complex, it seemed plausible to use the same building techniques and the same building materials as were employed in the historical structure. The material substance consists exclusively of burnt bricks of the format 25 x 25 x 5 cm and of clay mortar, in the lower part also lime mortar. The historical tower decoration consisted, in addition, also of coloured glazed bricks of different sizes, but in uniform shapes as well as of large-sized, accurately hewn sandstone slabs. The citadel glacis consisted of roughly worked sandstone slabs with a smoothed upper side and of oversized burnt bricks in the format 32 x 32 x 6 cm.

On the basis of the static assessment report prepared by the Herberg Architectural Office, the decision was made to use lime mortar. It is more stable than clay mortar and easier to remove than modern cement mortar. Furthermore, lime mortar was already in use when the gate complex was built, although only in the lowest layers of the wall foundation and the tower sheathing. Today these parts are situated below the ambient level and are not particularly noticeable. Since the still preserved original walls with their historical clay mortar were also newly rejoined, they can be identified primarily by the colour of the joints. On the interior of the masonry, in contrast, the difference between original substance and reconstruction is marked by the alterations from historical clay mortar to modern lime mortar. The original remains and the new construction were separated on the glacis surfaces – as in the original – by a reversible layer of *pakhsah*.[78]

As the backfill of the rooms also had a static function, the fill did not comprise a layer of debris, but was a solid block composed of bricks, brick fragments, stones and lime mortar. This is admissible in so far as it is a modern construction with an important static function, executed using modern material on a historical ground plan. Nevertheless, the original techniques and building materials similar to the original were employed, as far as technically possible and sensible.

The bricks were produced specifically for the restoration work on the citadel, whereby at the beginning of the work we could fall back on already existing supplies for restorative measures of the AKTC.[79] As a result, a lead time of several weeks for the purchase of bricks was bridged. The format of 25 x 25 x 5 cm of the newly produced bricks corresponds with the average size of the historical bricks. As with the original bricks, smaller formats were adjusted if necessary. A kiln was built at the foot of the citadel especially for the production of large-sized bricks for the citadel glacis (Figs. 658–665).[80]

78 Clay, stamped over a longer period of time and mixed with water and chaff.

79 Thanks to J. Leslie, A. Boostani and D. Sadiq, AKTC, for the excellent cooperation.

80 Cf. pp. 646; 647.

The masonry technique is modelled after the Timurid construction method, as can be observed primarily in the archaeological context, but also in further constructional details of the citadel and other buildings in the region. Thereby, two exceptions were made:

- Both the upper termination and the lateral boundaries of the walls were designed as a visible artificial delimitation, if they had originally been higher or longer in historical times (Fig. 566). In order to indicate to visitors that this reconstruction concerns only part of the actual masonry, these sections were stepped or jagged, respectively.
- Exposed cut edges of the new construction as well as the steps and the borders of reinforced paths for visitors were mostly constructed with vertically placed bricks, because these cannot be easily dislocated when trodden upon. Due to the position of the gate complex outside of the citadel wall and outside of the field of vision of the guards, it must be assumed that this area will not be regarded by the general public as cultural evidence of their own past and, therefore, be respected just as little as other unused parts of the city that are nonetheless accessible to the public.[81]

Time Schedule

Already in early August 2008 stabilising construction measures were begun on the lower cylinder of Tower XVIII (Fig. 572), and the ground above the excavation area along the citadel wall was reinforced and equipped with broad paths. Upon completion of the excavation on August 28th, 2008 all of the stabilisation work that had commenced by then was extended and continued until the winter break at the end of December. Local management and administration were ensured by architects and structural engineers from the AKTC in the branch office in Herat, who had been exempted from their normal duties by the AKTC and were employed for this project.

81 For the same reason the entire park area at the foot of the citadel had to be fenced with barbed wire by AKTC.

The necessary manuals, plans and specification sheets were prepared by the author (Figs. 568–570), and the progress made in daily work was documented photographically by the local supervisors and/or the author. In a first step the most urgent work was to be carried out, especially the consolidation of the excavated architecture, a stable backfilling of the excavated rooms south of the gate complex, and the construction of the masonry shell around the two towers. This work was finished by the end of the year and before January, when the frost period set in.

During the short campaign at the beginning of March 2009 the schedule was planned together with members of the AKTC staff. Based on plans that had been further developed and specified during the winter period in Germany, these measures were then implemented. Also at that time the greater part of the necessary building materials, i.e. quarry stones (for the tower glacis) and sandstone slabs (for the tower friezes), was acquired in order to be hewn and further finished.[82] The reconstruction work resumed at the end of March 2009 – after the winter break – when the consolidation of walls and the erection of the towers were continued up to the specified height, completed by July 2009. Finally, from the end of July onwards the final eight-week reconstruction campaign took place with a significantly greater number of workers and under the direction of the author. During this campaign all details of the reconstruction were further elaborated, the glacis was built to both sides of the complex, rooms were vaulted, and the tower decoration was applied. Only after the official inauguration of the complex on October 7th, 2009, some of the remaining surfaces were pointed.

In view of the relatively short time available, during the last weeks work was carried out in two subsequent shifts, six hours a day, regardless of the time of Ramadan in August. The commitment and achievement of the local, mostly unskilled workers and day-labourers has to be acknowledged here. The recognition that the exceptional motivation of the workers was not nourished solely by the double daily wage and the prospect of a feast at the end of the work, but also by their personal participation in part of their own history, belongs to the most gratifying – and admittedly also surprising – impressions of the entire project.

Anticipatory: The Lower Cylinder of Tower XVIII

Already at the start of the excavation in 2008 it was quite obvious that the lower cylinder of Tower XVIII required immediate restoration and protective measures. The masonry was in a more severe ruinous state than prior to the Unesco repair measures in 1976–1979 (Figs. 307; 309; 310). In 2007 it was dilapidated, although repaired in the course of the Unesco work. Extensive flaws showed up in the outer shell (Fig. 310), so that the entire supportive structure of the tower represented an ever increasing safety risk to the statics of the architecture rising above.

The outer shell of the tower cylinder is located in the centre upon the remains of a square room of the Timurid gate complex (Room 4). The shell,

82 Surfaces adjusted to the curvature of the tower.