





fig. 3. Location of Rosetta

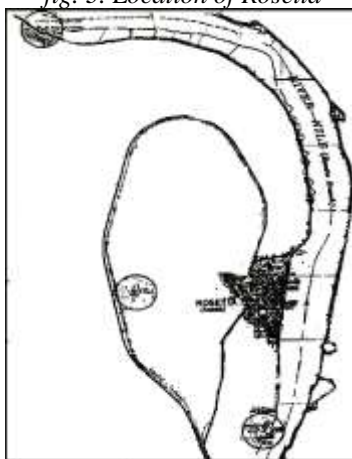


fig. 4. Location of Qaitbay castle and Abu Mandour castle

In the Pharaonic era, the city of Rosetta was a fortified city protecting the Nile branch [1], and it was a center for the manufacture of war wheels [2]. The construction of Boulbitine Castle had begun during the reign of Merneptah and was completed during the reign of Ramses III, on the same architectural planning for all the castles of the northern Delta, including Pharos Castle [9].

The renovations and additions to the castle continued until the modern era. It witnessed renovations and changes in its architectural elements in the Abbasid era when Al-Mutawakil built a ligature on it as well as on the Pharos castle. It witnessed reconstruction in the Mamluk era, especially in the days of Al-Zahir Baybars Al-Bandaqari, Sultan Qaytbay and Sultan Al-Ghuri [10]. It also witnessed a renewal during the era of the French campaign [11] and the era of Muhammad Ali [1].

But soon the castle was completely destroyed, and it was worse off, as its walls and towers were demolished and the stones used by the people to establish their homes were removed, many parts of it fell off.

In 1985, scientific excavations were conducted at Rosetta Castle [1] by the archaeologist Mahmoud Darwish, which began to show the foundations of the castle in order to determine its architectural features, in preparation for the complete documentation process, which contributed to the restoration and development project of this castle. Excavations in the castle contributed to re-dating it and identifying all its elements. Architectural and defensive as one of the most important Egyptian fortifications, where studies began to prepare an integrated project for its restoration after its walls and towers were demolished [13].

The Egyptian Antiquities Authority has undertaken to rebuild it, and repair and restoration work has begun based on the studies and drawings conducted by the mission in charge of this matter.

Excavations have begun to show the foundations and define its architectural features in preparation for the complete documentation process, which will contribute to the restoration and development project of this castle, and in this regard, I must point out that the excavation and restoration work of the castle contributed to re-dating it and defining all its architectural and defensive elements as one of the most important Egyptian entrenchments. Studies have begun to prepare an integrated project for its restoration after its walls and towers were demolished.

The researcher was based on the writings of foreign travelers, sources and references, plans preserved in the Supreme Council of Antiquities, and the historical study of the city of Rosetta and its military entrenchments. The features of the castle were not clear enough to study its architectural elements. Some plans and illustrations had already been produced, and some elements appeared in them that could be used during the research and during the excavations.

The historical study of Rosetta and its military bases is the third source, as the establishment and history of the castle was traced, and plans and illustrations of the castle's elements were drawn up after identifying all its architectural features and the time periods that these monuments went through, each separately. Building and renovation work was possible since the era of Merneptah and Ramses III, and Basmatik 1 the first in the 26th family, and in the Islamic, the Abbasid caliph al-Mutawakkil, Zahir Baybars, Sultan Qaytbay and Sultan al-Ghuri, during the French campaign and the era of Muhammad Ali. It was also possible that this castle was built on the model of the Alexandria lighthouse on which its castle was built.

Excavations began at the site at depths of up to three meters, most of which were below the groundwater level, in search of the foundations of the castle, especially the inner tower and the internal parts.

Despite the short period during which the excavation work was carried out, which did not exceed a month, it resulted in very

important results, as it was possible to trace the foundations of the castle, study the details of the excavations, document them and photograph them, and draw a complete plan for the castle in each of the periods that it went through, and thus it was possible to put an end to the controversy. What revolved around this castle, its history, the development of its location and its war elements, and this has not happened before, and the castle has been described, which no one had previously described or studied thoroughly.

The preliminary study of the excavation project relied on the writings of foreign travelers, sources and references, plans kept at the Supreme Council of Antiquities (figs. 5:11), the historical study of the city of Rosetta, the descriptive study of its military bases, as well as the analytical and comparative study.

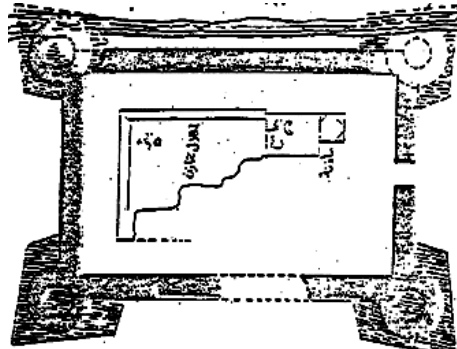


fig. 5. The Rosetta Castle (on the authority of Abd al-Rahman Zaki)

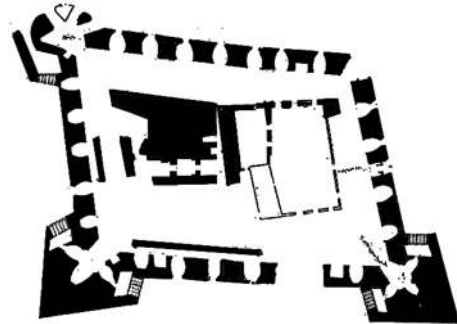


fig. 6. The Rosetta Castle (from the registration center)

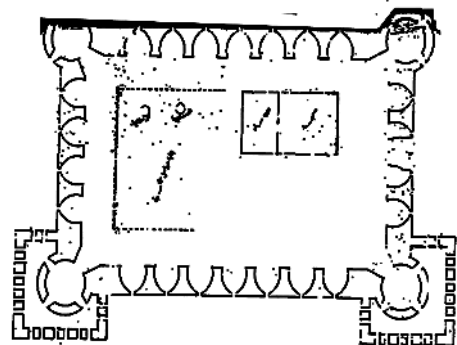


fig. 7. The Rosetta Castle (from the registration center)



fig. 8. The southern façade of the Rosetta Castle (from the registration center)



fig. 9. The Northern façade of the Rosetta Castle (from the registration center)

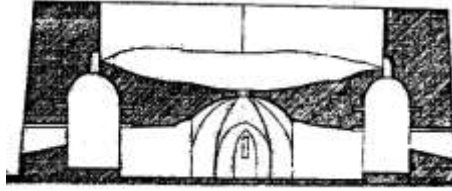


fig. 10. Section in the Southwest tower of the Rosetta Castle (from the registration center)



fig. 11. Section in the inner tower of the Rosetta Castle (from the registration center)

The writings of foreign travelers who visited the castle (fig. 12, pl.1), are among the most important sources, including Peri Réis [14] (1521 AD), Sezar Lamberth [15] (1627 AD), Vansleb [16] (1672-1673 AD) and Paul Lucas [17] (1699 AD), Van Egmont et Heyman [19], Norden [20] (1795), Richard Pocke [21] (1737 AD), Savary (1777 AD), Sonnini [22], La Larme [15], and Vevan Denon [23] (1798 AD) and Jollios [24] (1798). Among the references that dealt directly or indirectly with the castle are Allard [25], Adler [26], Thearch [27-28], Gratian Luber [29], Abdel-Rahman Zaki [30-31-32] and Su'ad Maher [33].



fig. 12. The Rosetta Castle (from Norden)



fig. 13. One of the forts in the east of the Nile, and the Rosetta Castle in the west

We also found a large number of old photos of the castle from the fifties and sixties of the last century, which show the extent of the devastation that befell it, until many of its features were lost. It shows the outer walls and towers (pls. 1:6), the castle from the inside (pls. 7: 10), and the Keep (pls. 11:13).

The works of probing the depths of the castle have resulted in refuting the previous theories about planning, and arriving at its truth and the features of this planning will become clear when talking about this castle through a descriptive study. It was possible to place a number of architectural drawings for all the elements of the castle, which confirmed the great similarity between it and the Citadel of Qaitbay in Alexandria, and studies of historical and architectural rooting were possible, so we have many results that will be presented in the analytical study.



pl. 1. The destroyed Rosetta Castle in the beginning of the sixties



*pl. 2. The western wall of the castle and the northwestern tower appears*



*pl. 3. The Northwest Tower*



*pl. 4. The southern facade and southwest tower*



*pl. 5. A rare picture of the entrance to Boughaz of Rosetta from above the dilapidated castle in the beginning of the sixties*



*pl. 6. Ruins of the eastern wall and minaret*



*pl. 7. The remains of the fences from the inside and the Keep*





*pl. 8. The northwest tower of the castle*



*pl. 9. An embrasure on the northern wall of the castle*



*pl. 10. An embrasure and shows the places of the stones removed by the people*



*pl. 11. A rare picture of the Castle in the time of its demolition*



*pl. 12. A rare picture of the Castle in the beginning of the sixties*



pl. 13. A rare photo of the old Mosque of the castle, and the demolished remains of the Keep

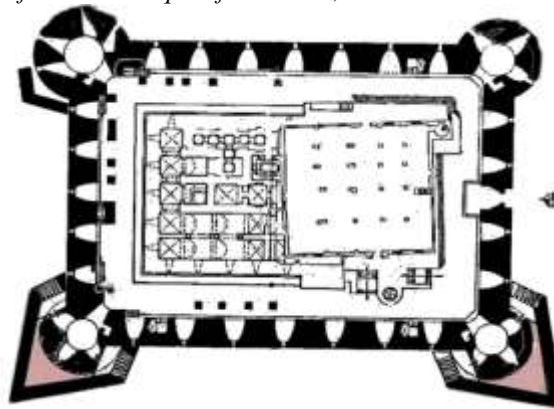


fig. 14. The castle through excavations

**Description of the Rosetta Castle through the excavations of the researcher (Fig. 14):**

**First: the excavations outside the castle**

Excavations were carried out outside the castle to search for the borders of the trench that surrounded it, and the specific wall was found from the outside, the thickness of this wall is three meters, and the width of the trench is nine meters, and it is certain that the entrance to the castle was reached through a wooden crossing to cross this trench, whose depth is (2.50 m), and it is determined from the side of the castle by a stone foundation whose width is (1.20 m). It is the width of the fence.

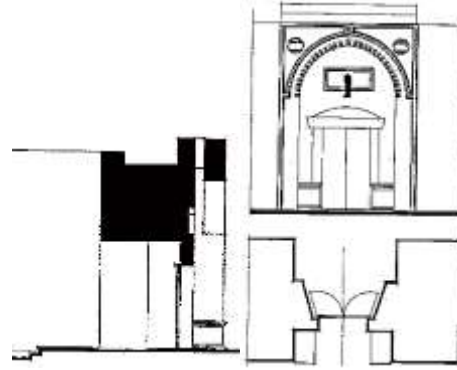
**1. The southern wall and the entrance to the castle**

The wall was built of regular stone on both sides only, while the interior was built of irregular stones, bricks and mortar, by stacking a row of bricks on top of a row of stone, and placing mortar between them to connect. As for the entrance, in the middle of the southern wall (figs. 15-16), two stones were revealed from the granite delineates its opening and on each of them are hieroglyphic inscriptions, the distance between them is (1.65 m) and the width is (0.45 m) and two platforms have been executed that surround the entrance, each of them is width (0.58 m), length (1.10 m) and height (0.95 m), and is located between the two platforms stone floor (pls. 14-15-16).

There is a piece of stone in which the wooden door was fixed, which consisted of the two shutters, each of which is (0.95) m wide, and the width of the entrance is below the protruding shoulders (1.90 m), and there are two recesses opposite the sides of the entrance, each located behind the two shutters of the door, in order to fix the latch of the wooden door tightly.



fig. 15. The southern facade of the castle



*fig. 16. The entrance to the castle*



*pl. 14. The researcher standing in front of the gate of the castle after completing the discovery of its remains*



*pl. 15. Details of the castle entrance*



*pl. 16. Entrance of the castle*

In front of the entrance, at a distance of three meters, there is a brick wall of seven meters in length and one meter in width and between it and the entrance is a broken stone floor with a layer of stone tiles. There are also several levels of floors in the entrance

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(pl. 16), where the floor that follows the wall rises. The front of the entrance is (0.15 m) from the floor between the two platforms, and the lintel rises from this floor by (0.15 m), followed by the floor of the entrance hall, which decreases by (0.15 m), then drops by (0.15 m) in the middle of the hall and then (0.15 m) to the end of the entrance.

In the entrance hall there are two brick walls, each of which is 0.80 m wide, (0.70 m) high and (2.0 m) long and it is noted that it was added at a later period.

The wall includes openings for embrasures, some of which were blocked, and these openings are surrounded from the four sides by stone pieces of granite, it is clear that they are not from the origin of the building, as these stones were added as a result of the expansion of these openings, and it is noted that the first floor of the fence includes four openings, each of which is wide (0.85 m) and (0.70 m) high, and topped by a stone lintel (pl. 17), these openings rise by (0.35 m) from the foundation, and they narrow inward to reach (0.65 m) in width at a distance (0.60 m), where there is a duct was permeated on both sides of the opening, its width (0.20 m) and depth (0.10 m) on each side, and it was a window up to communicate instructions to the upper floor of the fence (pl. 18), and perhaps to put a vertical sliding door that would close the opening by lowering it from the top, and then widening the opening to reach Its breadth is (0.85 m).



*pl. 17. Part of the southern facade of the castle*



*pl. 18. Part of the south facade of the castle*

It is well noted that the outer section of the opening and confined between the duct and the face of the fence has been expanded by moving both sides of the opening, where the width was (0.25 m), and the pointed knot that was above the opening from the outside, whose top was rising by (0.85 m), was replaced from the floor of the opening to a granite stone lintel, its height became (0.75 m).

When examining the openings, it was proven that the architect had lifted the stones from the face of the fence to be replaced by the stones that define the sides of each opening, which caused a clear difference in the conditions of these stones.

The length of the southern wall is (31.65 m), and its middle occupies the entrance block, whose width is (3.40 m), the length of the eastern section of the wall is (14.60 m) and the length of the western section of it (13.0 m), and the eastern section occupies two embrasures, the first of which is far from the southern tower The eastern opening is by (3.45 m) and the embrasure opening is wide (0.85 m) and its height is (0.75 m), which is (0.35 m) higher than the foundation and its sides are granite stone, and the distance between the first and second aperture is (6.45 m), while it is the distance between the second opening and the entrance (2.65 m).

The western section occupies two embrasures, the opening of the first of which is located (2.60 m) from the entrance, and the second is (6.85) m away from the first and from the southwest tower by (3.25 m).

A brick building was erected around the towers, which led to the obliteration of part of the wall on the eastern and western sides, as is the case in the rest of the four walls. This building blocked part of the opening of the second embrasure from the western section of the wall, and no traces of this building remain around the southeast tower is anything because it was located directly on the Nile, and the original tower also fell.

And the presence of embrasures was confirmed on the second floor of the fence, as parts of this building that were blocking the openings were broken, and it turned out that there were three openings on each side of the entrance, and each of the four lower openings was topped by a channel to deliver instructions, and there is an opening between each two of these openings. The openings, as it turns out that the width of these openings was (0.25 m) and height (0.85 m), and they were expanded at a later period and were

closed after that as well.

## 2. The southwest tower from the outside

The Southwest tower consists from the outside of a circular building that includes three embrasures openings, and it has been erected from two floors topped by a spire with balconies, and the second floor also consists of three embrasures openings, and a brick building was erected around the tower that meets the western and southern walls. (2.20 m), and the width of the western wall and the southern wall is (1.80 m). The difference in width is due to the fact that the northern and eastern walls both define a room that was added outside the original tower and this wall includes six embrasures for guns, and the other two walls are between them and the original tower, a triangular building Stone and brick are difficult to penetrate.

The openings for the embrasures in the eastern and northern walls of the modern building rise (1.10 m) from the foundation that were added around this tower, and this foundation was added at a height of (0.10 m) from the old foundation, and the width of the modern foundation is (1.00 m). As for the embrasures openings on the eastern side, the first of them is away from the southern wall by (0.72 m), and the sixth is away from the southeast corner of the tower by (1.25 m). As for the distance between each embrasure opening and the other aperture, it is (0.68 m), except for the distance between the two openings. The third and fourth are (0.66 m), and the width of each of these openings is (0.10 m), and the length of these openings is (12.20 m), and each of them is surmounted by a stone lintel, and the corners of the tower are supported by stones (pl. 19).



*pl. 19. Embrasures in the southwest tower*

As for the building that was added around the tower, its eastern side is (5.95 m) long and the northern side is 6.35 m. As for the southern and western sides, the length of the first is (17.85 m) and the length of the second is (18.15 m). It is noted that this building is pushing inward at the top, as the eastern side is (5.75 m) long, the northern side is (6.15 m) long, the southern side is (17.30 m) long, and the western side is (17.55 m) long. This indicates that the architect was keen to implement thrusts to increase the strength of the walls and strengthen them due to their height (7.75 m) above the first foundation.

As for the northern side of the tower, it includes six embrasures, the distance between the first aperture and the western wall is (0.76 m), and the distance between the sixth aperture and the northwest corner is (13.6 m), and the distance between each opening and the other is (0.72 m) and the width of each of these openings The six (0.10 m) and (1.22 m) lintels have been exhausted with stone pieces from the outside and wooden lintels from the inside, and it is noted that all the openings widen inward, and their height also decreases, reaching its width (0.37 m) and height (0.56 m), it descends outward to enable For defenders, aim them close to the tower.

## 3. Southeast Tower

As for the Southeast tower, its proximity to the Nile caused its destruction (pl. 20), and only the area of contact with the eastern and southern walls was visible, and it is similar to the southwestern one, except that the building that was added around it with bricks has completely lost its features.

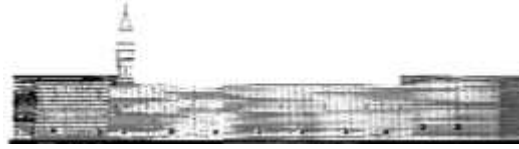


*pl. 20. South eastern tower*

## 4. The eastern wall

As for the eastern wall (fig. 16), many parts of it fell due to the impact of the Nile waters that used to enter the castle through the dilapidated parts of this wall, and its length is (48.10 m), and there are seven embrasures on the first floor and six openings on the

second floor, expand the embrasures after the duct outward openings.



*fig. 16. Eastern facade*

The distance between the first aperture and the Southeast tower is 2.85 m, the distance between the first and second apertures, the distance between the second and third apertures, the distance between the third and fourth apertures, and the distance between the fourth and fifth apertures (6.35 m), the distance between the fifth and sixth apertures, and the distance between the sixth and seventh apertures it is (6.25 m), and the distance between the seventh aperture and the northeastern tower is (2.60 m). The first floor of the wall ends with a cornice of carved stone that extends along the four walls. The wall is also interspersed with occasional granite blocks (partitions) that permeate the wall to support it.

### 5. Western Wall

As for the western wall (fig. 17), it was provided with seven embrasures on the first floor and six on the second floor. The two floors are separated by a cornice carved from stone. The construction that was added around the northwestern and Southwest towers blocked the first and seventh embrasures from the first floor.



*fig. 17. The western facade*

It is noted that the openings of the lower embrasures rise by (0.70 m) from the foundation, in contrast to their counterparts in the eastern and southern walls, which rise by (0.35 m), which confirms that these openings were raised at a later period.

The second embrasure aperture is (6.50 m) away from the cover surrounding the southwest tower that blocked the first aperture. The distance between the second aperture and the third aperture is (6.70 m), as is the distance between the third and fourth apertures, and between the fourth and fifth apertures, and the distance between the two apertures The fifth and sixth are (6.60 m), and the distance between the sixth aperture and the envelope surrounding the northwestern tower is (6.20 m). As for the embrasures of the second floor, they are similar to those in the southern wall.

### 6. The Northeast Tower

As for the northeastern tower, it was in poor condition because it was located on the shore of the Nile. It was similar to the other towers, but some modifications were made to it in a later period. The tower is in its current position surrounded by a foundation whose width is (0.40 m), which confirms that it was reconstructed and used small-sized stones, unlike The stones used in the walls and other towers are similar to the stones used to raise the embrasures of the Western Wall, and the diameter of this tower was also expanded by (1.60 m) so that the width of the foundation became (0.40 m) after it was (1.20 m).

This tower includes four embrasures slots, unlike the other three towers, each of which includes only three embrasures slots, and the width of these openings is (0.85 m) and the height is (0.75 m), and the shape of these openings was inferred through old photos, from which it is clear that the expansion of The opening, whose stones do not fit in its conditions with the building next to it, and two pieces of stone were carved representing the shape of an arch above the opening (pl. 21) with a starting height of (0.10 m), and the height of the embrasures openings from the foundation is (0.70 m). It fits into the openings of the embrasures of the western wall, confirming the contemporaneity of raising the embrasures of this wall with the reconstruction of this tower.



*pl. 21 An embrasure in the northeastern tower*

A brick casing was built around this tower, as is the case with the other towers and it most likely included two rooms equipped with the embrasures. However, this casing was destroyed and only the western part (6.15 m) and part of the northern side (5.65 m) remained. The northwest corner was supported by stones.

It was revealed during excavations on a horizontal channel of stone connected to its course extending towards the Nile and a branch branching into the castle, and this discovery helped in solving the mystery of how the water reached the castle as well as to the trench

that surrounds it, where the water was arriving through this horizontal channel, which is located north of the northeastern tower, as it is the permanent source of water supply to the castle.

#### 7. Northwest Tower

As for the northwestern tower, it is similar in its architectural details to its southwestern counterpart, as it is circular with three embrasures and a brick building has been added around it. The thickness of this building in the east and south is (2.20 m) and its thickness in the west and north is (1.80 m), and the length of the eastern side is (6.20 m). ) and the length of the southern side (5.95 m), the length of the northern side (17.66 m), and the length of the western side (17.75 m). The corners were reinforced with stones with brick courses similar to the one in the Southwest tower.

A foundation was erected around this tower, its width (1.0 m) and its height (0.10 m) from the first foundation, and the height of this tower is (7.60 m), and the architect was keen to implement a push inward with the walls, where the length of the eastern side from the top is (6.10 m) and the length of the foundation is The southern side (5.75 m), the length of the northern side (17.50 m) and the length of the western side (17.35 m). Each of the eastern and southern walls of the casing is occupied by six embrasures each with a width of (0.10 m) and a height (1.20 m), which are above the foundation by (1.10 m).

As for the first opening from the eastern wall, it is (1.0 m) away from the northern wall and the distance between the first and second openings, and the distance between the second and third holes (0.66 m), and the distance between the third and fourth openings and the fourth and fifth openings is (0.65 m), and the distance between the two openings is The fifth and sixth (1.60 m), the distance between the sixth aperture and the northeastern corner of the cover is (1.37 m).

As for the first aperture from the southern wall, it is 0.70 m away from the western wall. The distance between the first and second openings is 0.66 m. The distance between the second and third openings is 0.67 m. The distance between the third and fourth openings is 0.64 m. And the distance between the fourth apertures. and the fifth (0.68 m), the distance between the fifth and sixth slots (0.62 m), and the distance between the sixth slot and the southwest corner (1.37 m).

#### 8. The northern wall

The northern wall (fig. 18) includes five embrasures and is surrounded by the foundation, and its length is (24.65 m). The construction of the cover around the northeastern and northwestern towers blocked the first and fifth embrasures, and the first opening is far from the northeastern tower by about (5.35 m) and its height from the foundation by (1.27 m), the second hole is far from the first hole by (5.80 m) and it rises by (1.27 m) also, and the third hole is away from the second hole by (6.65 m) and rises from the foundation by (0.62 m), and the distance between the third aperture and the northwest tower is (4.34 m).



fig. 18. The northern facade

The clear difference in the stone building system is noted due to the change that occurred in the embrasures, which is evident, as they were raised in a later period following the period in which the embrasures of the western wall were raised and the rebuilding of the northeastern tower. The height of the wall is clearly visible in the area where the brick cover meets the northwestern tower, as it shows the entrance to the extension of the eastern wall at the top of the wall, and the height of the cover over the wall in this area is (1.25 m).

### Second: Description of the castle from the inside

#### 1. The southern wall

As for the description of the castle from the inside (figs. 19-20), the first features that appear - and one of the most important results of the excavations - is the appearance of a line separating mortar in the interior of the wall in the entrance hall from above and on both sides, and this was evidence of the existence of a passage inside the wall whose walls were covered with a layer of mortar this corridor represents the second floor of the walls and reaches the towers as well. The entrance hall was raised in its ceiling with the same height as the towers, and it was topped by a vault whose height (4.0 m) was the same as the height of the domes that topped the towers. From the castle floor and (3.75 m) with the ramparts (pl. 22).

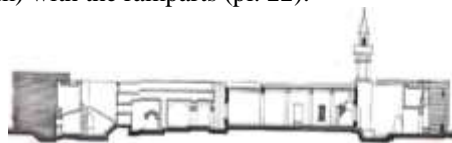


fig. 19. Section from south to north



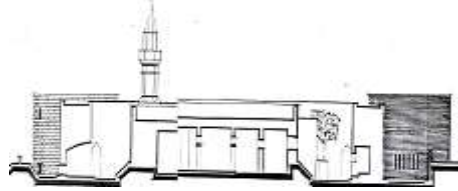


fig. 20. A section from east to west



pl. 22. The corridor that used to represent the second floor of the castle walls

Two walls were found on both sides of the hall, each representing a bench for the castle guards to sit. The depth of the entrance hall is (2.80 m), its width is (3.60 m), and its floor is 0.50 m higher than the floor of the castle, a floor added in a later period.

The wall between the southeast and southwest towers is (35.50 m) long. The embrasures have two on each side of the entrance hall. The first embrasure to the east is located at a distance of (1.95 m) from the entrance hall and is surmounted by a semi-conical vault with the height of its opening. From the outside (3.0 m) from the floor of the castle, the embrasure is 2.95 m in width and 3.25 m in depth, and the embrasure narrows inward until it ends with the throwing hole, which is wide and high (0.85 m) and has a shoulder strap whose top rises from his feet by an amount of (0.10 m) and the arch is composed of two carved stones, and this opening rises from the floor of the embrasure by (0.20 m) and from the floor of the castle by (35.0 m), which runs at the same height as the foundation.

At a depth of (0.40 m) there is a duct whose width is (0.20 m), the depth of the embrasure opening is (1.20 m) towards the outside and its width is (0.25 m), and the width of the opening at the galactic is (0.60 m), and the distance between the first and second embrasure (4.40 m), and the distance between the second embrasure and the southeast tower is (3.75 m).

As for the other two embrasures located between the entrance hall and the southwest tower, the first of them is 2.15m away from the hall, and the distance between the first and second embrasures is (4.68 m), and the distance between the second embrasure and the southwest tower is (3.55 m).

It is worth mentioning that this wall was built with stones to a height of (1.45 m), then construction begins with bricks after that, up to a height of (3.75 m), where the level of the floor of the second floor of the wall, and the semi-conical vaults that cover the embrasures with bricks and covered with a layer of mortar. The embrasures were executed in stone, as the openings were surrounded by granite or basalt blocks, while the duct, which ascended to the upper floor of the wall, were executed with bricks and covered with mortar.

The wall was preceded by a corridor (fig. 14) with a width of 1.45 m. Its ceiling, consisting of cross vaults, rested in the areas between the embrasures, and from a semi-cylindrical vault which is an extension of the embrasure vault. The brick building was built on stone pillars; the length of the side facing the wall was (1.05). m), and the length of the other side (0.95 m), and these pillars rise to the level of the embrasures vault. They were built with stone at a height of (1.45 m), and the construction was completed after that with bricks until the vault that opens towards the courtyard, thus becoming the length of the embrasure vault (5.75 m). ), which is the same length as the embrasure, including the corridor and the confined distance between the two pillars, and the distances between the pillars are the same as the width of the embrasures facing each of them, which is (2.85 m), and thus the width of the fence became (7.0 m) after it was (4.45 m).

It was noted that there were no changes in the embrasures in the southern wall in later periods, except for the clear change that was made to the embrasures openings in the outer section, where these openings were expanded from (0.25 to 0.85 m), and after their height was (0.85 m) and they were topped by an arch that takes the form The arch from the inside and pointed from the outside, and this contract was canceled due to the expansion, and a piece of granite stone was placed in the place of the two legs of the necklace, so the height of the embrasure opening from the outside became (0.75 m).

## 2. Southwest Tower

As for the Southwest tower (pl. 23), it consisted of three floors, the upper of which represented a lane topped by circular balconies. As for the first and second floors of the tower, it was possible to identify all of its architectural elements.

The entrance to the first floor of the tower takes place with an entrance whose width is (2.85 m) and its height is (3.0 m). The building was built inside the tower with stone at a height of (2.35 m), while it was completed after that with bricks to allow the opportunity

to implement the vault that covers the embrasures and the entrance.

The entrance expands to reach (3.60 m) inside, and in this case it extends at a length of (2.95 m). It is topped by a vault built with bricks and covered with a layer of mortar. To the right of the entrance there is a small room with a rectangular entrance that is 1.60 m high and (0.85 m) wide. Its depth is (0.55 m), and it has a granite lintel, its length (1.45 m), its width (0.26 m) and its thickness (0.31 m), and from the inside there was a wooden ceiling for the entrance to be fixed after the wooden door behind the stone lintel.



*pl. 23. Southwest Tower*

The length of this room in the north and south is (1.70 m) and its width in the east and west is (1.15 m), and its ceiling is a semi-cylindrical vault extending from east to west, and it is made of bricks and covered with a layer of mortar. The entrance leads to the hall of the tower, which is circular with a diameter of (5.0 m) and surmounted by a shallow dome of bricks covered with a layer of mortar, and its height is (4.0 m) above the castle floor.

This tower includes three embrasures, the middle of which is located on the axis of the entrance to the tower and is directed towards the southwest, and its width is (2.30 m) and its height is (2.65 m), and it is covered by a semi-conical vault of bricks with a height inward (2.20 m) where there is the embrasure opening that rises from The floor is 0.35 m in height and 0.85 m in width and 0.85 m in width and has a shoulder strap, and its depth is (0.40 m) up to the duct and then narrows outward to reach its width (0.25 m), and the duct is (0.20 m) wide and the opening at it is ( 0.60 m).

As for the two embrasures, the right and the left, they are opposite each other, each having a height of (2.65 m) and a width of (2.30 m) and ending with an embrasure opening. The openings of the embrasures were enlarged, as in the case of the openings of the embrasures of the southern wall, after the duct, the outside width is (0.85 m) and the height is (0.75 m).

A brick enclosure was built around the tower at a later time, after the types of weapons were changed to guns, and the openings of the first and third embrasures were converted into two entrances, each leading to a room bordered by modern construction on the outside, and a three-step staircase was built ascending to the entrance which It rises by (0.90 m) from the floor of the castle, and the first entrance is (1.70 m) high and (1.0 m) wide, and is topped by a wooden lintel with the door that closed the room.

As for this room, the length of its northern wall is (4.68 m) and its southern wall is (4.95 m) and its width in the east is (2.57 m) and in the west (2.50 m), and its northern wall has six embrasures at a height (1.10 m) from the floor, and the width of each embrasure is Among these are the embrasures (0.37 m) and its height (0.55 m) from the inside, and it is noted that its floors slope outward, and its roof is a wooden lintel (0.10 m thick), and there is a brick bench adjacent to the northern wall on which the soldiers stand, whose width is (0.62 m), and its height (0.18 m) and the embrasures rise from it by (0.92 m). From this, it is clear that the lintel of the embrasures from the top rises from the floor of the tower by (2.40 m) and from the floor of the castle by (2.55 m).

As for the room's roof, it is a semi-cylindrical vault extending from east to west and its height is (4.0 m), and thus it rises from the floor of the tower by (4.75 m), and from the floor of the castle by (4.90 m), and from the dome of the hall (dorqa'a) by (0.75 m) Two openings were implemented in the ceiling of the room for ventilation, each with a width of (0.25 x 0.35 m). They are built of bricks and ascend to the second floor of the tower.

As for the third, southeast embrasure, its opening was transformed into another entrance similar to the first embrasure. Entry into a room is through this entrance, which is 1.83 m high and 0.80 m wide. As for the room, its northern wall is 4.98 m long. And the length of its southern wall (4.96 m), the length of its eastern wall (2.58 m), and the length of its western wall (2.56 m). There are six embrasures for throwing guns on the eastern wall, each height (0.56 m) and breadth (0.37 m), and it narrows outward to reach ( 0.10 m) and its length increases to reach (1.22 m), and the eastern wall is preceded by a brick bench with a layer of mortar, its width is (0.60 m) and its height is (0.18 m), and above the room is a basement extending from north to south, its height (4.0 m), two ventilation holes in the ceiling of the room, each (0.25 x 0.35 m) wide.

As for the middle embrasure, the building that was added to the tower caused it to be completely blocked. The thickness of the outer wall of this building is (2.20 m). The area between the modern wall and the circular wall was filled with bricks, stone and clay. It is noted that the modern wall in this area is less thick gradually.

This outer wall was built with bricks on the outside, while on the inside it was built with irregular stones, which reminds us of the construction methods of the coastal castles as well as the walls of the castle itself.

### **3. Southeast Tower**

As for the southeast tower, it is entered by an entrance that is 2.85m wide, 2.95m deep, 3.60m wide and 3.0m high. It ends at the circular hall (dorqa'a) covered by a shallow brick dome with a height of 4.15m. m) from the floor of the castle and (4.0 m) from the

floor of the tower and its diameter (5.0 m), and to the right of the interior there is a small room with a rectangular entrance whose width is (0.82 m) and its height is (1.65 m) and its depth is (0.55 m) that leads to the room whose length is in east and west (1.79 m) and its width in the north and south (1.23 m) and it has a semi-cylindrical vault of bricks running from north to south (fig. 21).

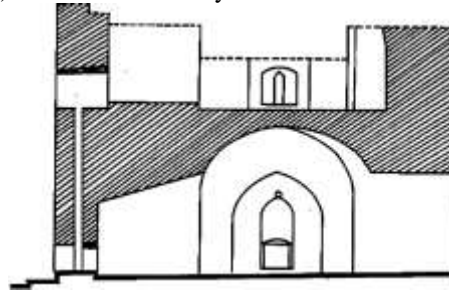


fig. 21. Section in the southeast tower

The tower includes three embrasures, the middle of which is located on the axis of the entrance, its width is (2.30 m), its depth is (2.63 m) and its height is (2.65 m), and the height from the inside is 2.20 m. The rami, which rises from the castle floor by 0.35 m, is (0.85 m) high and wide, and has stone shoulders. The first and third embrasures are similar in their architectural details to the middle embrasure as well.

#### 4. Western Wall

As for the western wall (pl. 24), it is like other walls built of stone, except for the area of the embrasures movement and the vaults that top it up to the level of the floor of the second floor of the wall, which is (2.30 m) high, and below them are stone courses at a height of (1.45 m).

This wall includes seven embrasures and two baths. The first bath is located between the first embrasure and the second embrasure near the southwest tower, and the second bath is located between the sixth and seventh embrasures, close to the northwest tower, and the first embrasure is away from the southwest tower by a distance of (3.05 m). The embrasure is (2.85 m) in width, (3.0 m) in height and (3.0 m) in depth. It is surmounted by a semi-conical vault with a height of (2.60 m) from the inside. The vault was built with bricks and covered with a layer of mortar.



pl. 24 The western wall of the castle from the inside

As for the second embrasure, it is away from the first embrasure by (4.50 m), and between the two embrasures there is the first bath, which is entered through an entrance arched with a semi-circular arch, which is away from the first embrasure by (0.85 m) and the width of this entrance is (0.90 m). The bath floor is raised by (0.87 m) from the castle floor (pl. 25).



fig. 25. A bath on the western wall

The length of the eastern and western walls of the bath room is (2.75 m) and its width in the northern and southern walls is (1.42 m), and there is an entrance to the eastern wall with a width of (1.10 m) and a depth of (0.55 m) with a bath chair behind it, a rectangular niche whose width is (0.16 m) and its height is (0.56 m) and its depth (0.40 m) and rises from the castle floor by (2.45 m) and

there is another income in the middle of the northern wall, its width (0.45 m), its depth (0.25 m) and its height (1.12 m) and its floor rises (0.10 m) above the bath floor, and a piece of it is topped by a piece A stone port with a triple arch. It is noted that the two lateral lobes are perforated with a corner apse. The width of the stone piece is (0.30 m), the height of the middle lobe is (0.11 m) and its breadth from the bottom is (0.21 m), and the height of each of the first and second lobes is 0.16 m, the ceiling of the room was divided into two parts, each representing two intersecting vaults.

The third embrasure is (4.54 m) away from the second embrasure, the fourth embrasure is (4.48 m) away from the third embrasure, the fifth embrasure is (4.50 m) away from the fourth embrasure, and the sixth embrasure is (4.48 m) away from the fifth embrasure, and the distance between the sixth embrasure and the seventh embrasure is (2.50 m), and this area occupies the second bath whose entrance is away from the sixth embrasure by (1.10 m), and the width of this entrance is (1.0 m) and leads to a room It is rectangular in length in the east and west (2.50 m) and its width in the north and south is (1.17 m), and there is income in the northern wall of its breadth (0.36 m), height (1.40 m) and depth (0.27 m). The room has a width of (0.97 m) and a depth of (0.51 m). There is a niche in the same wall that overlooks the courtyard of the castle, and the ceiling of the room is made up of two parts, each with two intersecting vaults.

The seventh embrasure was sealed as a result of the construction of the northwestern tower's cover, as it is clear from the planning of the embrasure and the study of the stones surrounding the openings that there was an amendment that was to raise the level of the openings by (0.35 m) by placing a piece of stone under the hole and expanding the outer part of it, and after its width was from the outside (0.25 m) it became (0.85 m), and the architecture used small stones with average sizes ranging between (0.18, 0.47 × 0.12 m).

Two staircases were erected on the north and south ends of the railings, the first staircase ascending to the top of the northwest tower, and the second staircase to the top of the southwest tower, and these two staircases occupied both ends of the aisle that led the embrasure, and these stairs are likely to be constructed after the aisle which He was walking inside the walls.

The wall was preceded by a corridor with a width of (1.45 m), the ceiling of which consisted of intersecting vaults between the pillars in the areas between the embrasure and from the extension of the vaults of the embrasures rested on stone pillars with a height of (1.45 m), which then continued with bricks. The length of the pillar (1.05 m) and its width (0.95 m) m), and thus the width of the wall became (6.95 m), and the length of the vault of each embrasure became including the corridor and the area between the two pillars (5.75 m). A wall built of bricks surmounts these pillars after the railing that was carrying them was destroyed. This wall dates back to a later period.

### 5. The eastern wall

As for the eastern wall, it also includes seven embrasures and a bath between the first and second embrasures to the south, the first embrasure is (3.55 m) away from the Southeast tower. The width of this embrasure is (2.84 m), its height is (3.0 m), its depth is (3.40 m), and its height is from the inside (2.20 m), this embrasure, surmounted by a semi-conical vault of brick and covered with a layer of mortar, narrows to the throwing opening, which is (0.85 m) wide and (0.35 m) deep, to the duct.

As for the distance between the first and second embrasures, it is (4.25 m) and between the two embrasures there is the entrance to the bath, which is located at a distance of (0.95 m) from the second embrasure, and the width of this entrance is (0.90 m) and leads to the rectangular bath room (fig. 22), which has a length of Its sides are in the east and west (2.45 m), and its sides are in the north and south (0.95 m), and its roof is divided into two parts, each with two intersecting vaults, and it is found in the southern wall, its breadth (0.48 m), depth (0.28 m) and height (0.18 m), and it has a stone lintel. Its width is (0.76 m) and it rises by (0.10 m) from the floor. On the western wall is the bath, which is (1.08 m) wide and (0.49 m) deep. To the right of the door is a rectangular window with a length of (0.60 m) and a width of (0.14 m).

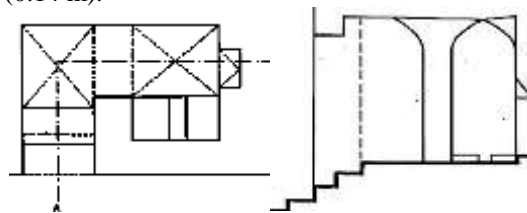
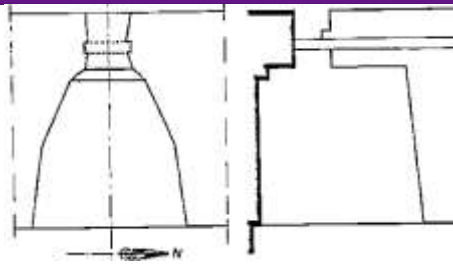


fig. 22. Bath in the eastern wall

As for the distance between the first and second embrasures and the distance between the second and third embrasures, it is (4.25 m), the distance between the third and fourth embrasures is (4.00 m), the distance between the fourth and fifth embrasures is (4.13 m), and the distance between the fifth and sixth embrasures (2.12 m) and the distance between the sixth and seventh embrasures (3.68 m).

The two embrasures blocked the first and the seventh as a result of the construction of the envelope around the southeast and northeastern towers, but the demolition of the two towers and the wall helped to lose their features, although we are certain that the embrasures of the wall were similar to the placement of the other embrasures (fig. 23).





*fig. 23. An embrasure of the eastern wall*

Two staircases were erected on both sides of the wall, the first ascending to the southeast tower and the other ascending to the northeastern tower (pl. 26) and the width of each of them (1.05 m). The north and south (1.05 m) and its width in the east and west (1.03 m), thus the depth of the embrasures became (5.35 m), and the width of the wall became inclusive of the pillars and the corridor (6.55 m), and the wall overlooks the courtyard with an arcade of semi-circular arches resting on the pillars.



*pl. 26. Remains of the staircase leading to the southeast tower*

## **6. The Northeast Tower**

As for the northeast tower (pls. 27-28), it is the only tower that has four embrasures, unlike the other towers, which each have three embrasures, due to the fact that this tower is the most important of the castle towers, which looks towards the main side in the direction of the Boghaz.

The width of the entrance to this tower is (2.52 m) and its height is (30. m). It is a hall that expands inward to reach (4.0 m) and is topped by a semi-conical vault of bricks. The entrance leads to the circular hall (dorqa'a) with a diameter of (5.80 m), which is topped by a shallow dome (4.15 m) high from the castle floor, and to the left of the interior there is a small room whose floor rises and it has a rectangular entrance (0.80 m) wide and (0.30 m) deep that leads to a rectangular room with a width of 1.05 m in the north and south. In the east and west (1.34 m), it is surmounted by a semi-cylindrical vault extending from north to south. The tower was provided with four embrasures, accessed from the hall (dorqa'a).



*pl. 27. The Northeastern Tower*



*pl. 28. An embrasure in the Northeast Tower*

As for the first embrasure adjacent to the eastern wall, its width is (1.42 m), the length of the southern wall is (1.40 m), and it faces east by (3.35 m), the length of the left wall is (3.10 m), and the embrasure is at the end of the vault (0.75 m), at a depth of (0.30 m) from the opening is the duct, which is (0.20 m) wide.

As for the second embrasure, its width is (1.85 m), and it is topped by a semi-conical vault. The right wall extends in the east direction by (0.98 m) and then extends towards the northeast by (20.0 m), the left wall extends by (3.0 m), and the depth of the embrasure (2.40 m), the embrasure is (0.75 m) wide, and is topped by a shoulder arch, and the sliding door cavity is located at a distance of (0.30 m).

As for the third embrasure, its width is (2.70 m) and it is topped by a semi-conical vault, the depth of this embrasure is (3.30 m), the length of its right wall is (3.60 m) and the length of its left wall is (3.33 m), and its width from the inside is (0.75 m) where the throw opened it. The duct is located at a depth of (0.30 m), and the fourth embrasure is (2.84 m) wide, and the left wall extends from it in the northwest direction by (0.74 m) and then returns to extend in the north direction by (4.26 m), while the right wall extends by (3.07 m), and has a slope inward, and the embrasure opening is (0.75 m) wide and the duct is located at a depth of (0.30 m), and the embrasures were at a height of (0.75 m) from the castle floors and 0.60 m from the tower floors.

It is confirmed that this tower does not go back to the first building period of the castle, but was built in a later period, as the style of its construction differs from small stones on the outside, and the width of the hall (dorqa'a) from the other towers.

It is certain that a brick enclosure was built around this tower as in the other towers and the first and fourth the embrasures were converted into entrances to the two rooms attached to the tower.

#### **7. Northwest Tower**

As for the northwestern tower (pl. 29), in its architectural features, it is similar to its southwestern counterpart, as its entrance is (2.65 m) wide and (3.0 m) high, and extends for a distance of (3.75 m) until its width reaches (3.75 m). On the left there is a small room with a rectangular entrance is (1.75 m) high, 0.80 m wide and (0.33 m) deep. The length of the northern and southern walls of the room is 1.40 m, and the length of the eastern and western walls is (1.15 m). This room is covered by a semi-cylindrical vault (3.10 m).

The entrance to the tower leads to the circular hall (dorqa'a) (pl. 24) with a diameter of (5.10 m), and it is topped by a shallow dome with a height of (4.15 m), six courses with the embrasures, after which the masonry is turned into bricks with the vaults of the embrasures, the entrance, and the circular dome of the hall (dorqa'a).

The tower includes three embrasures, the middle of which overlooks the axis of the tower. Its width is (2.30 m) and its height (2.70 m) and narrows inward to reach (0.93 m) and its height inside is (2.15 m), and at a height of (0.20 m) there is the entrance hole that its width is (0.85 m) and its height is (0.85 m) and there is a duct similar to the other embrasures, the first and third embrasures are similar to the middle embrasure, except that after the construction of the brick envelope surrounding the tower, which is thick in the east and south (2.20 m), Two rooms were executed between this cover and the Mamluk tower, and after opening the first and third embrasures and transforming the opening of each of them into an entrance that leads to a room, it was necessary to cancel the opening of the middle embrasure due to its location in front of the meeting of the western and northern sides of the cover surrounding the tower.



*pl. 29. Entrance to the North western Tower*

As for the first entrance, which leads to the room that occupied the east of the first embrasure, it leads to a rectangular entrance whose width is (0.87 m) and its height is (1.80 m), and it leads to the room whose eastern side is (4.68 m), its western side is (5.15 m) and its northern side is long (2.43 m) and the length of its southern side (2.52 m), and its eastern wall have six embrasures for guns that rise from the floor by 1.02 m. The height of each of them is (0.50 m) from the inside and (1.25 m) from the outside, and its width from the inside is (0.43 m) and from the outside (0.10 m), and the embrasures are topped with a wooden lintel of thickness (0.10 m), and the embrasures are preceded by a brick bench, its width (0.59 m) and its height (0.17 m), and the ceiling of the room is a semi-cylindrical vault extending from North to south, it is (3.80 m) high and has three ventilation openings, each (0.20 x 0.25 m) wide.

As for the opening for the third embrasure, it was transformed into an entrance with a width of (0.90 m) and a height of (1.85 m) and it has a wooden lintel. As for the room, the length of its northern side is (4.92 m), its southern side is (4.90 m), its eastern side is (2.57 m) and its length is on the western side (2.54 m), and in the southern wall there are six embrasures at a height of (1.0 m) from the floor, each of which is (0.48 m) high from the inside and (1.25 m) from the outside and its width is (0.50 m) from the inside and (0.10 m) from the outside. The outside is topped by a wooden ceiling of thickness (0.10 m), and the wall is preceded by a brick deck (0.58 m wide) and (0.15 m) high, the room is roofed with a semi-cylindrical brick vault extending from east to west with a height of (3.80 m), and it has three ventilation openings, each (0.20 x 0.30 m) wide.

#### **8. The northern wall**

The length of this wall is (36.05 m) and there are five embrasures that are similar to the embrasures of the other walls. As for the first embrasure towards the west, its width is (2.88 m) and its height is (3.0 m), and this embrasure is far from the northwest tower by (2.0 m). It is noted that this embrasure deviates towards the east due to its location adjacent to the tower, and the architecture has taken care of moving the embrasure to the east so that it does not collide with the first embrasure of the tower during throwing.

The width of the embrasure at its end is (1.19 m) and is topped by a semi-cylindrical vault. As for the throwing hole, it rises from the floor of the embrasure by (1.10 m) and its width and height are (0.85 m) and its depth reaches the duct (0.40 m).

The distance between the first embrasure and the second embrasure is (2.70 m), the embrasure is (2.90 m) wide, (3.20 m) deep, and (3.0 m) high. The embrasure narrows inward to the throwing opening that rises by (0.35 m), with the duct as for the distance between the second embrasure and the third embrasure, it is (4.45 m), and this area is occupied by a ladder with two turns (pl. 29). The first heads from east to west and the second goes from west to east, where the two hearts meet with a single rug of (1.60 x 1.15 m), and each heart consists of 4 steps, each of which is (0.25 m) high, (1.15 m) long and (0.35 m) wide. The staircase led to an entrance on the northern wall, where there were two other staircases, the first heading to the east and the other to the west, each consisting of nine steps (0.25 m) each.

The staircase used to lead to an entrance on the northern wall, where there were two other staircases, the first headed to the east and the other to the west, and each consisted of nine steps (0.25 m) each. These two staircases lead to the corridor that runs inside the wall, whose floor is (3.75 m) higher than the castle floor and represents the second floor of the walls and towers (pls. 30-31).



*pl. 30. The staircase on the northern wall*



*pl. 31. A part of the staircase on the northern wall*

The third embrasure is completely similar to the second embrasure in its architectural details, except that the embrasure opening rises by (1.0 m), the fourth embrasure is away from the third embrasure by (3.80 m), and the fifth embrasure is further away from the fourth embrasure by (2.90 m), while this embrasure is far from the northeastern tower by (3.70 m), and the architectural details of the fourth and fifth embrasures are completely similar to the third embrasure.

We can confirm that the proximity of the first embrasure to the northwest tower was not a coincidence, but because of the system that was followed in the construction of the fence, which was provided with five embrasures and in the middle a staircase leading to the floors of the walls, and (11.50 m) from the northwest tower,

The architect has implemented the deflection so that the shooters can shoot at one target from all the embrasures in the north-east direction, which is the main direction in the direction of the attacking ships coming from the sea. Also, the space designated for the first and second embrasures cannot be implemented in the two embrasures in their natural position unless a deviation is made in one of them so that the position of the opening of the first does not become in the area corresponding to the meeting of the circular tower with the fence.

It is noted that the embrasures were raised to a greater extent than what was done in the walls and other towers, and the staircase leading to the passage through the wall was removed and the entrance was blocked with stones. As a result, two staircases were built on both ends of the wall, the first leading to the northeastern tower and the second leading to the northwestern tower. The construction of the envelope surrounding the northeastern and northwestern towers blocked the first and fifth embrasures.

The wall is preceded by a corridor whose width is (1.35 m) determined by a arch of arches resting on pillars built of stone with a height of (1.45 m), the length of its northern and southern sides is (1.12 m) and the length of its eastern and western sides is (1.10 m), the embrasure depth (5.65 m), the width of the wall became (6.90 m), and it covers the area between the pillars facing the embrasure opening, the extension of the embrasure vault, and the area between the two embrasures is topped by two cross vaults. In a later period, a brick wall was erected over the original construction on the foundations of these pillars. The corridor was also canceled and the thickness of the wall increased in addition to the width of the corridor and the thickness of the pillars.

### **Third: the second floor of the castle**

#### **1. Walls**

The staircase adjacent to the northern wall between the second and third embrasures, as well as the openings that overlook the outside of the upper part of the walls, are clear indications that the wall and the towers consisted of two floors, except for the courtyard and the balconies that represent the third floor.

There were clear indications of this, represented in the appearance of one of the embrasures on the second floor of the western wall, in addition to the appearance of a stone building to the left of the second floor of the southwest tower, as well as the stairs leading from the towers to the walls. As for the embrasures in this role, the depth and breadth of each of them (2.0 m), its depth is (0.25 m) and breadth (3.20 m), and the embrasure ends with the throwing hole whose width is (0.85 m) and height (0.85 m) and narrows outward to reach its width (0.25 m).

The ascent to the second floor of the castle was via a staircase in the northern wall consisting of two sections. The first section - which is located between the second and third embrasures - consists of four steps ending with a stanchion, and each step is length (1.0 m), width (0.35 m) and height (0.25 m). There is an entrance in the northern wall that leads to another staircase, and then there are two staircases, the first heading east and the second heading west. This staircase was at a height of (1.5 m) from the floor of the castle. The two staircases lead to the corridor that represents the second floor of the castle, which continues in the four walls at a height (2.25 m), where it is topped by a semi-cylindrical vault and ascends to the towers and the entrance block with ten stairs, each consisting of four steps.

The first floor of the walls had twenty-three embrasures, as for the towers, there were twelve embrasures, and the second floor had thirty-seven embrasures, of which twenty-five were in the walls and twelve in the towers, the number of the embrasures is seventy-four.

Later in the construction period, the stairs going up to the second floor of the walls and towers were canceled. The ascending entrance



to the corridor was blocked and the corridor was blocked by construction, the openings of the embrasures were blocked on the second floor and the stairs leading to the tower were also abolished. Therefore, the second floor of the walls was abolished and the second floor of the towers was also canceled, which we will see later.

Climbing to the top of the walls and towers is via eight stairs at the edges of the walls, and each two staircases lead to one of the towers, and the width of each of these stairs is (1.0 m), and it is noted that the embrasures in the towers have also been abolished and replaced by a floor with the same floor level, which represents the surface of the fence, so the fences and towers are running at one level (6.75 m), and a cover was established around the towers, which reached a height from the inside (8.50 m), which is inclined to the outside. Therefore, only the embrasures from the outside show any signs of the second floor, as well as the stairs that led to the towers, where the renovations led to the obliteration of all the ancient monuments completely.

## 2. The second floor of the southwest tower

As for the second floor of the Southwest tower (pls. 32-33-34), it represents a circle with a diameter of (4.90 m) comprising three embrasures, each embrasure above the lower embrasures, and the floors of the embrasures rise by (0.25 m) from the floor of the hall (dorqa'a), the width of the embrasure is (1.58 m), its depth is 1.80 m, and its height is (1.68 m), according to the middle embrasure. As for the first embrasure, its width is (1.55 m) and its depth is (1.86 m), and the third embrasure has a width of (1.60 m), and its depth (1.85 m). As for the throwing holes, each of them has a height of (0.90 m) and a breadth of (0.72 m), and each of them is raised by a shoulder node and narrows outward to (0.25 m), where it is topped by a pointed arch.

From this, it is clear that the depth of the embrasure on the first floor, including the depth of the opening, is (3.25 m), and the depth of the embrasure on the second floor is (3.10 m), which confirms the thrust in the tower, which is (0.15 m) to the floor of the second floor and at a height of five meters, the staircase that was ascending to this tower from the north is far from the first embrasure by (2.03 m), and the staircase that was ascending from the east is far from the third embrasure by (1.75 m).

When the brick casing was added around the tower due to the change in defense means, these changes included the second floor of the tower as well, where the embrasures were abolished and a stone floor was made on the whole floor whose height reached the hall (dorqa'a) (2.0 m), the brick construction continues to a height of (1.75 m) from this floor, where the ventilation holes in the two rooms added to the tower on the first floor appear, the width of the corridor is (1.12 m), the width of the outer wall is (1.90 m) (pl. 35), the width of the inner wall is (0.83 m), and the outer wall is inclined to allow archers to aim their guns close to the castle, where the amount of inclination in the wall is (0.30 m).

Thus, the height of the floor of the second floor of the tower became equal to the height of the floor of the roof of the walls, and due to the cancellation of the two staircases that used to lead from the corridor to the tower after the work of the added floor, two staircases were implemented connecting from the hall of the tower to the top of the western and southern walls, each consisting of eight steps, it is noted the use of bitumen in the floor added to the tower, especially next to the two walls, in order to prevent rain water from seeping into the building.



pl. 32. The hall of the second floor of the southwest tower



pl. 33. . The hall of the second floor of the southwest tower



*pl. 34. An embrasures in the second floor of the southwest tower*



*pl. 35. The remains of the corridor that used to lead to the second floor of the southwest tower which was blocked at a later time*

### **3. The second floor of the northwest tower**

As for the northwest tower (pls. 36-37), it is climbed by two staircases at the northern and western sides of the walls, where one enters the circular hall (dorqa'a) with a diameter of (5.60 m) and is supervised by three embrasures with a width of the middle embrasure (2.0 m). Its depth is 1.54 m and ends with the throwing hole, the right embrasure is (2.05 m) wide and (1.50 m) deep, and the left embrasure is (2.0 m) wide and (1.52 m) deep.

There are two staircases ascending towards the east and south, each consisting of eight steps, two meters high. The embrasures were also canceled and the floor was executed at the top consisting of stone slabs of sizes (0.27 x 0.23 m) and (0.45 x 0.20 m).

A wall was added around the tower on the ground floor that turns into two walls between them, a corridor on the second floor. The width of the outer wall is (1.72 m) and the width of the interior is (0.73 m), the width of the corridor is (1.25 m) and the outer wall is inclined towards the outside.



*pl. 36. Remains of a staircase to the northwest tower*



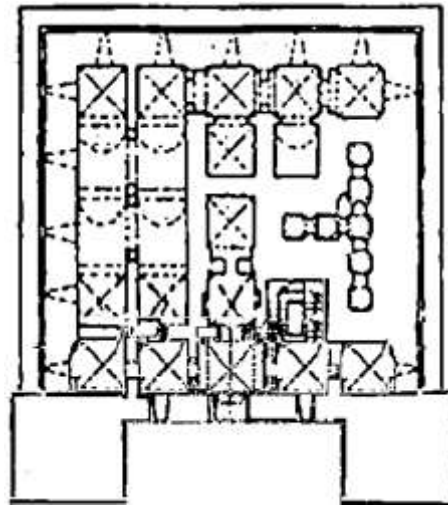
*pl. 37. The second floor of the northwest tower*

The width of the two walls and the corridor is (3.70 m), which is equal to the width of the outer wall on the first floor (2.20 m) and half the width of the added room in the east, which is (1.50 m), meaning that the outer face of the inner wall runs above the vault, therefore, the ventilation openings overlooked the second floor inside the tower, and not the corridor.

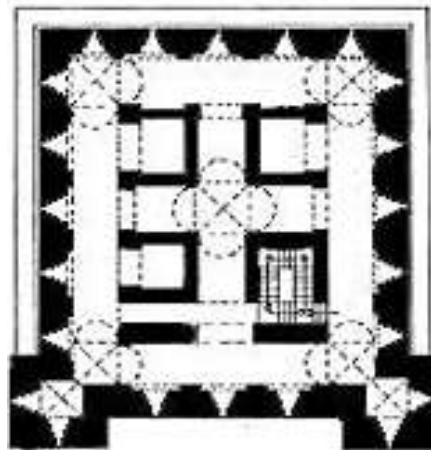
#### **Fourth: the keep**

##### **1. The tower from the outside**

It is located in the center of the castle close to the northern wall, and the researcher was able - after studying and carefully examining the remaining elements of this keep - to arrive at the origins of its architectural elements, which were obliterated due to the acts of vandalism and demolition that the castle was subjected to in general, as well as the mosque that was established in the sixties on the foundation of an old mosque, which expanded until it covered a large part of the tower and led to the obliteration of many monuments (fig. 24).



*fig. 24. The first floor of the keep through excavations*



*fig. 25. The second floor of the keep through excavations*

This keep is very similar to that of Alexandria castle, which is rectangular in shape and its entrance is located in the south on the axis of the entrance to the citadel (pls. 38-39). As for the southeast and southwest corners, they were provided with two square towers, and the outer walls were reinforced with a triangular retaining wall, reinforcing this wall and the walls of the castle also with columns of granite, basalt or marble, extending across the walls (partitions), showing the features of the eastern, western and northern facades of the tower, as well as the southeast and southwest towers.

The researcher was able to visualize the shape of the southern facade, by calculating the thickness the walls, the width of the corridors,

the width and length of the rooms, as well as the foundations of all the structural stages of the keep.



*Pl. 38. The keep with the western section*



*The triangular retaining wall of the keep pl. 39.*

The northern facade of the keep is (24.80 m) long; the eastern and western facades are both (23.15 m) long and (2.25 m) thick. A retaining wall of the keep was built on three sides (pl. 38), which is triangular in shape, beveled from the top by (0.25 m), at the meeting point with the tower wall, and from the bottom at the meeting with the floor by (0.15 m). The height of this wall on the side adjacent to the existing fence is (1.65 m), and its base from the bottom is (1.50 m). As for the side, its length is after deducting the amount of the upper and lower bevels (2.15 m). This wall is connected with the wall of the keep by partitions of variously shaped granite, marble and basalt columns from ancient ruins.

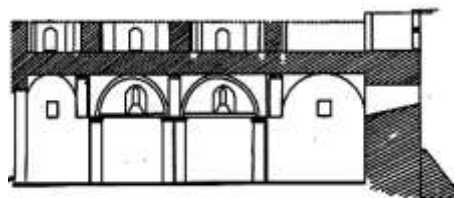
As for the stones that were used in this retaining wall, the size of each one ranged between (0.70, 0.23, 0.49 x 0.37 m) and (0.87, 0.23 x 0.40 m). As for the walls of the keep above the level of the retaining wall, the sizes of the stones are (0.70, 0.36). 0.25), the outer wall on top of the retaining wall was supported by granite partitions, each rectangular in size (0.36 x 0.33 m).

At a height of (2.10 m) from the upper bevel, remnants of embrasure holes with pointed arches (pl. 39) measuring 0.95 m in height and width (0.25 m) appeared, which were openings that brought light and air into the keep.

As for the southeast and southwest towers, each of them protrudes by (2.10 m) from the outer walls of the tower, the length of the eastern and southern sides of the southeast tower and the length of the western and southern sides of the southwest tower is (6.50 m). Both towers also protrude from this facade by (2.10 m).

## 2. Ground floor

It was found that the keep of the castle consisted of four floors, the upper floor of which is a pedestal topped by circular balconies, and parts of the first and second floors have survived after it reached a very poor condition and most of the architectural elements were destroyed (fig. 26).



*fig. 26. A section from east to west in the keep*

Behind the mosque, there are remnants of lintels and walls that give a complete picture of the shape of the obliterated section, including the private entrance of the keep, the entrance led to the first room of the central section of the five sections of the keep, which was directly facing the entrance (pl. 40).





*pl. 40. The keep*

The width is (3.80 m), and it has two entrances at the northern end of the eastern and western walls, and the length of each lintel of the two entrances is (1.40 m), these two entrances were facing east and west, and there were two other lintels, east and west of the two previous lintels, leading to the southeast room and the southwest room of the tower. In the west wall of the southwest room, a clear concavity appears, reminiscent of the one in the southwest room of the keep in the citadel of Alexandria.

The widening of the corridor leading to the eastern and western sections is clearly visible, and it is clear that the wall defining the eastern sections to the south, the first central chamber, and the wall defining the western sections to the south, have been rebuilt towards the north from its original position in order to widen the passage, as the current wall is separated from the outer wall of the keep, and this wall was delayed to the north by (0.95 m), so the width of the corridor became (2.35 m).

As for the central section, which was facing the entrance, it starts in the south and consists of a rectangular room (pl. 40), its length in the north and south (3.20 m) and its width in the east and west (2.50 m), and it has an entrance in the south that is (1.0 m) wide and has two shoulders width each of them is (0.80 m), and it has been found that there are two niches in both the eastern and western walls, each of which rises from the floor by an amount of (0.50 m), its width is (1.0 m), its height is (1.95 m) and its depth is (0.40 m). The space between it and the arch was blocked by a wooden arch, and a rectangular window (0.90 m) was surmounted by each of these naves, these windows were blocked at a later period, and the room was covered by two cross vaults (pls. 41-42-43).



*pl. 41. Vaults in the keep*



*pl. 42. Vaults and arches in the keep*



*pl. 43. Arched entrance in the keep*

It is noted that there are two windows on top of the previous two windows with a deviation towards the north. It is also noted that the southern wall differs in its construction from the other walls, and it is clear from the mortar and the type of stones used in that it is a talk about the other walls, and this is confirmed by the presence of evidence confirming that the vault was added in a later period represented in doing Placing a row of bricks on top of the wall confirms that the basement and the walls do not belong to the same period, and this also confirms that the width of the room has been reduced by (0.70 m).

The entrance from the first room to the second room is through an entrance whose width is (1.00 m), the thickness of the southern wall is (0.80 m), the length of the eastern and western sides is (3.9 m), the length of the northern and southern sides is (3.20 m), and there are two shoulders in the southeast corners. In the southwest, the width of each of them is (0.70 m) and its prominence is (0.20 m). A lintel of palm tree thickness (0.25 m) was used, consisting of three pieces extending to both ends of the wall, and above the entrance was a window that was blocked at a later period with bricks and another window was erected above it. It is worth mentioning that the two shoulders of the entrance were added in a later period. The width of the first entrance was (2.70 m), and the width of the wall in which it is located was (1.50 m).

As for the two western sections (pl. 43), their southern wall is (0.85 m) wide, and there is an entrance leading to the first section (1.76 m) wide and (0.37 m) deep. The western shoulder has been provided with a protrusion of 0.8 m, so its breadth is in the inner section (1.84 m) and its depth (0.48 m), and a granite stone representing the lintel of the entrance was placed, its width (0.40 m) and its height (0.20 m), and the height of both sides of the entrance is (1.65 m), where the arch that crowns the entrance is anchored and is pointed.

The two western sections occupy a rectangular area with a length in the east and west (15.30 m) and a width in the north and south (7.25 m). The two sections are separated by two walls in the north and south, each with a width of (0.75 m), and the length of the northern wall is (4.05 m). The length of the southern wall (3.05 m), there are two columns at the southern end of the northern wall and the northern end of the southern wall, each of them resting on a granite stone base, each area (0.65 × 0.65 m), on which the two columns with a diameter of (0.60 m) are based. (pl. 44), and between these two columns, there are two other adjacent columns resting on a rectangular base of granite stone (0.13 x 0.75 x 0.40 m). Two semi-circular arches stand on the columns, and the ceiling of each of the two sections is divided into four sections separated by three arches, bringing the number of arches separating the divisions of these two sections to eight, with two heading from north to south, and the other six heading from east to west.



*pl. 44. The two western sections of the keep*

Each of the northern and southern sections is surmounted by two cross vaults, while the other four sections are topped by a semi-cylindrical vault, the length of each of the southern sections in the east and west is (245 m), the length of the next two sections is (4.15 m) and the length of the following two sections is also (4.15 m) As for the two northern sections, their length is (3.25 m), and the width of each of the two sections is (3.25 m).

The presence of the four columns played a major role in identifying the features of this area (pl. 44), each of which is (3.15 m) long. As for the eight arches that are based on walls or columns, their tops rise by (4.85 m) and each width is (0.55 m), it stands out from the ceiling by (0.15 m), as the ceiling rises from the floor by (5.00 m).

A modern floor has been added to the two sections, rising from the first floor by an amount of (0.75 m), and traces of this floor

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appear in the third and fourth sections of the first section, and a well was found adjacent to the eastern wall of the fourth section, from which exits a water channel built of bricks covered by a basement and running towards the west. The channel is special for draining the water of the bathroom, which was added in the third room of the central section, and this channel goes out to the network for draining the water, which is located in the courtyard between the keep and the walls, where it heads west after that, and this water channel was discovered next to the outer western wall of the keep (pls. 45-46).



*pl. 45. The water channel next to the keep*



*pl. 46. The water channel is next to the western wall of the keep*

In the fourth section of the first section to the west, an entrance in the eastern wall leads to the fourth room of the central section, its width is (2.70 m), and this width was reduced in a later period to (1.45 m) by building two shoulders with a length of the north (0.50 m), the length of the south (0.75 m) and the width of each of them (0.55 m).

As for the third and fourth rooms of the central section, the length of each side of the fourth room is (3.20 m), and it has three entrances, the first in the west and leads to the first section in the west, and the second entrance leads towards the east, and its width was (2.70 m) and this width was reduced to (1.80 m) by building two shoulders, the first in the north and its length (0.50 m) and the second in the south and its length (0.40 m) and the width of the shoulders (0.55 m), and the length of the room became after reducing the width of the eastern and western doors with regard to the northern and southern walls (4.45 m), where added to it (0.90 m) from the western shoulder and (0.35 m) from the eastern shoulder, and the room has four shoulders in the four corners, while the shoulder located in the northeastern corner and the opposite shoulder in the southeast corner are both (0.35 m) long and (0.25 m) protruding as for the two shoulders in the northwest corner and the southwest corner, each is (0.90 m) long and stands out (0.25 m).

The beginnings of the legs of the arches rise after adding the modern floor (2.55 m), and the lintels of the entrance were implemented, each of which is (0.15 m) high, and the shoulders are (0.55 m) wide. There is a well adjacent to the northern wall with a length of each of its sides (0.80 m). It was erected in stone at the level of the modern floor, and it was special to deliver water from outside the tower, through which the cistern was supplied with water. A pottery pipe with a diameter of (0.15 m) was made, which was uncovered at the top of the room, permeating the vault and extending towards the southeast to reach the cistern.

As for the entrance leading to the third central room, its width is (2.20 m), and it has two shoulders, each of which is 0.55 m wide and 0.50 m long. The entrance is crowned with a pointed arch, the length of this room is in the east and west (3.45 m) and in the north and south (3.20 m), above it is a vault extending from north to south, another room for the bathroom was added to this room (pl. 47) located in the southwest corner, and in its east a place where the dowel of hot water and the marble slab of cold water were trampled, which are located along the eastern wall, and the area of this room is (2.0 x 2.0 m) A wall was erected adjacent to the southern wall of the room, as well as another wall in the east and another in the north, each with a thickness of (0.50 m).



*pl. 47. The bathroom in the keep*

The roof of the bathroom consists of a shallow dome based on four corner niches that represent the transition stage to the circle. It was found that there was one of the arches bearing the dome, which remained in the southwestern corner. With the walls, especially in the southeast and southwest corners, the floor of the room was paved with rectangular stone tiles of dimensions (0.35 x 0.17 x 0.5 m), and there is an opening to drain the water into the well located to the west of the room through a pottery pipe with a diameter of (0.15 m).

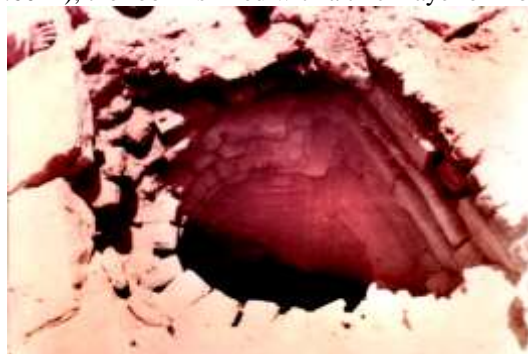
The ascent to the marble slab area, the dowel, and the roof of the room was done by a ladder adjacent to the northern wall and then heading south, and below it, in the northeastern corner of the original chamber, was a cellar in which fires were lit to heat the water with the staircase. From the central section to another room, the length of its northern and southern sides is (2.90 m), and the length of its eastern and western sides is (3.20 m). It has an entrance in the east whose width was (2.70 m). The width was reduced by building two shoulders, each of which was (0.50 m) long and (0.55 wide). and the width of this room became in the north and south (3.55 m) and in the east and west (3.20 m), and after reducing the width of the two entrances, the room became four shoulders, two in the northeastern and southeast corners, each of them length (0.35 m) and width (0.25 m), and two in the northwest and southwest corners, each is (0.30 m) long and (0.25 m) wide.

Two lintels were revealed in this room for the eastern and western entrances, and parts of the old floor and the modern floor were revealed, and it turned out that the added lintel had been placed on top of the old lintel.

A semi-octagonal building was built in this room, which blocked the entrance that led to the third room from the first section to the east. This building was used as a channel for a cistern that was added to this room in a later era and has an opening on the second floor.

The eastern entrance leads to the fourth room of the second section in the east, which is (3.20 m) long in the east and west as well as in the north and south, and due to the reduction of its western entrance, it has been expanded to become the length of its northern and southern sides (3.70 m), and it has two shoulders in the northern corner. The western and southwestern sides are each (0.50 m) long and 0.25 m wide, with two shoulders on the eastern side, each (0.30 m) long and (0.25 m) wide.

The keep includes two cisterns, the first dating back to its construction period, and the second dating back to another period. The first cistern occupies the second room from the first section and the first, second and third rooms from the second section. The other cistern, which dates back to a later period for the construction of the first cistern, occupies the third room from the first section to the east. These two cisterns are accessed from the second floor through a vertical channel for each of them, and the descent is done on a Tarabulsi staircase (pls. 48-49) with incomes on both sides that help to descend and ascend to the cistern. As for the room occupied by the second cistern, it was similar in its architectural detail to the third central chamber in which the bathroom was built, and it was transformed into a cistern by building a vertical channel in front of the arched entrance. The vertical channel is made of bricks and has an opening in diameter (0.60 m), the room is lined with a thick layer of mortar.



*pl. 48. Cistern slot in the keep*





*pl. 49. Cistern slot in the keep*

As for the first cistern, it is considered one of the architectural masterpieces of the utmost perfection. During the excavations in the castle, the researcher went down to this cistern and drew a plan, photographed and studied it.

It consists of seven rooms (fig 14 pl. 50) whose walls are covered with a thick and smooth layer of mortar that does not allow water to seep into the walls, its thickness is (0.15 m), and another layer is placed on the floor, and going down to this cistern is through a vertical channel built of bricks. Its diameter is (0.50 m). As for the chambers of this cistern, five of them run from north to south, and two are west of the fourth chamber, going south in a west direction.



*pl. 50. The cistern in the keep inside*

These rooms are connected to each other by knotted entrances connected by strings of granite columns that extend horizontally with the line of the legs of the arches above these entrances (pl. 48) at a height of (2.10 m) and the arches of the entrances rise by (3.35 m), the rooms are also topped by shallow domes with a height of (3.10 m) and covered with a thick layer of mortar, the thickness of which is (0.16 m).

Thus, it rises from the tank floor by (4.25 m), before adding the mortar layer to the floor, which is the same level of the floor that was added in the tower, and its effects appeared in the first eastern and central sections, and it rises by (5.0 m) from the original floor of the tower, and is equal in height with the basements that the rooms are above the other sections.

The architect was keen to leave right or sharp angles between the walls of the tank rooms so that the mud deposited from the water would not collect in them. In the case of right angles, they should be visible to the outside and not to the inside, as is the case in the corner between the sixth and fourth rooms, and the curvature of the corners of the rooms helped to transform the roof easily from the square to the circle underlying the domes.

As for the first room, it has an area of (1.75 x 1.65 m) and is connected to the second room with a arched entrance whose width is (1.17 m), and to its south is the second room, which has an area of (1.57 x 1.55 m), and it has a vertical channel adjoining the western wall, which is for going down to the cistern. This vertical channel (5.25 m) was erected with bricks and covered with mortar.

The third room is connected to the second room with an entrance, whose width is (1.12 m), and the area of this room is (1.75 x 1.58 m), and this room is connected to the fourth room to the south with a arched entrance whose width is (1.12 m) and its area is (1.76 x 1.64 m). It is connected to the fifth room by an arched entrance; its width is (1.15 m), the area of this room is (1.76 m x 1.66 m).

As for the two western rooms, the first of them is connected to the fourth room through a knotted entrance, its width is (1.13 m), and the area of this room is (1.79 x 1.65 m), and it has a hole for drawing water from the tank and implemented in the ceiling with a diameter of (0.30 m) and it is connected to a vertical channel that goes up to the second floor. From the tower, and located next to it to the east, a pottery pipe (0.15 m) in diameter was extending towards the northwest in the direction of the well located in the central fourth chamber, and this pipe was for the delivery of water to the cistern, and this cistern is unique in this way as the reason for this is that it is added to the building the original, the sixth room is connected to the seventh room with an entrance whose width is (1.10

m) and the area of this room is (1.85 x 1.53 m).

It has been confirmed that the ceiling thickness is (1.0 m), which is the same as the thickness of the cellars above the other sections of the tower, and that the floor of the second floor was (6.0 m) higher than the original floor and it was (5.25 m) higher than the floor in the tank, as well as the floor that was added In a later period in the sections of the tower, the floor of the tank rises from the original floor by (0.75 m), of which (0.15 m) is the thickness of the mortar layer.

The staircase well (pl. 51), which connects to the tower floors, is located in the first section of the first section in the east. It has an area of (5.25 m) in the east and west and (3.85 m) in the north and south. It consists of four cores separated by a wall of thickness (1.05 m) and length (1.85 m). AD), the fourth core was destroyed, the remains of the staircase consist of four steps of the first flip, each measuring (0.35 m) wide, 1.40m long and (0.25 m) high.

By calculating the height of the floor of the second floor, which is six meters above the original floor of the first floor and (5.25 m) from the second floor, the number of steps staircase is (24) steps in the original building and (21) steps after the height of the floor, and at the end of the fold there is a rug of (1.40 × 1.40 m), and the second flip consisted of three steps.

Granite stones were used in the construction of the steps, some bearing hieroglyphic inscriptions, as in the second step, and the third heart was based on a vault extending from north to south, its width (1.05 m) and its height (1.95 m) from the second floor.



*pl. 51. The staircase in the keep*

### **3. The second floor of the keep**

As for the second floor of the keep, it is clear from the remaining elements that in the middle was a hall decorated with marble tiles and surrounded by four Iwans on the four sides. Three rooms are confined between these four Iwans in the northeast, northwest and southwest, as well as the staircase well in the southeast.

The walls of the hall (dorqa'a) are located on the walls of the second central room; the hall (dorqa'a) has an area of (4.05 m) on all four sides. Remnants of marble tiles (pl. 52) have been revealed with its floor reminiscent of what is found in the Qaitbay castle in Alexandria.



*pl. 52. Marble mosaics on the second floor of the keep*

The hall (dorqa'a) opens into four Iwans whose floor was (0.15 m) higher than the floor of the hall (dorqa'a). As for the eastern Iwan, it is (4.35 m) in the north and south, and its width in the east and west is 3.30 m. It had an entrance in the east, its width (2.90 m), with two shoulders, width of (1.10 m), and its prominence (0.20 m). The width of the entrance was reduced to (1.0 m) and away from the northern wall by (1.40 m) and from the southern by (0.90 m). The construction of the northern shoulder caused the water intake hole to be blocked by placing a stone slab on top of it and building the shoulder on it afterwards. It was proven that the process of reducing the width of the doors in this role to (1.0 m) took place in a later period, as well as the implementation of entrances between the Iwans and the hall (dorqa'a) with the same width.

The previous entrance leads to a rectangular hall, its width in the north and south (1.0 m) and its length in the east and west (1.50 m). As for the northern Iwan, its length in the east and west is (4.95 m) and its width in the north and south is (3.30 m). The western and eastern Iwans and the southern and northern Iwans are similar in architectural details. As for the room sandwiched between the eastern and northern Iwans, its eastern and western walls are (3.75 m) long, and its northern and southern walls are (3.20 m) long. It

has an entrance in the east, its width is (3.45 m), and it has two shoulders, each projecting (0.15 m) and its width (1.35 m).

The thickness of the walls defined for the sections of the tower, which are the oases and the rooms sandwiched between them from the outside, is (0.75 m), these walls were erected with bricks, there is a corridor that goes around the rooms and oases of this house, adjacent to the outer wall, and was equipped with the embrasures, each of which is (2.0 m) wide and is located in the income of (0.25 m), and the depth of these embrasures is (2.0 m), ending with a throwing hole Its width is (0.85 m).

The vertical channel of the cistern was opened in this corridor next to the shoulder separating the eastern Iwan and the northeastern chamber, the wall separating the vertical channel and the wall was built with stone, while the vertical channel was built with bricks, and there is no connection between them, also, the vertical channel does not connect to the wall at the beginning of the ceiling, where the construction is made of stone until the nodes connected to the wall, which is separated from the construction of the vertical channel built with bricks up to the surface of the floor, it has been confirmed that the other vertical channel reaches the entrance node of the chamber in which the tank is built and continues downward in the other directions.

#### **Fifthly: the mosque in the castle**

A square mosque was erected in the courtyard of the castle in the Mamluk era, located in front of the Southeast tower of the keep. The area of this mosque was (12.0 x 12.0 m) and its entrance is located in the west, and its roof is made of cross vaults on four columns.

The photo published by Norden showed that this mosque had a minaret with a balcony based on muqarnas, while the western facade is divided into three vertical sectors, the middle of which represents the prominent entrance block, in the middle of which is the rectangular entrance, which is topped by a rectangular window, and the entrance is crowned with a triple arch reminiscent of the Mamluk entrances, on either side of the door are two Platforms (fig. 12).

As for the other two sections, in the middle of each are rectangular windows and a row of battlements crowning the four facades. As for the minaret, it has a square base topped by an octagonal floor, and the square floor ends with a chamfer in each corner to transform into an octagon, above the balcony is a circular floor, topped by a helmet on which wooden cables are placed on which flags are hung. Embrasure windows are opened on four sides on the octagonal floor, the minaret was later demolished and rebuilt at the end of the nineteenth century and erected over the old minaret, and the upper floor of it was transformed into the Ottoman style, where the top of the pencil-shaped minaret was erected. However, the old mosque was demolished in the sixties of this century and a large mosque was built in its place, which extended towards the west and north until it overshadowed parts of the keep, which is the entrance and the first section to the south.

#### **Conclusion**

- The excavations of the castle resulted in the discovery of all the architectural elements, including the moat that surrounded it, the outer walls that include four towers, the outer entrance and the corridor that were located in the walls and was later canceled, the inner courtyard, the walls and towers from the inside, as well as the remains of the second floor of the castle.
- The excavations resulted in the discovery of all architectural elements in the keep and the development of a scientific scheme for it.
- These discoveries helped in developing a plan for restoration in accordance with archaeological rules and principles.
- The restoration of the citadel is considered the most important achievement in restoring the most important military monument in Rosetta and the second most important military impact on the Mediterranean coast in Egypt after the castle of Alexandria.
- The excavation and restoration mission in the castle was able to re-date it and identify all the elements of architectural planning and the architectural elements that were carried out by the architectural restoration works.
- The Castle's restoration project won the Arab Towns Organization award in 1990, in recognition of the efforts made to uncover and restore it, to become an important archaeological and tourist landmark in Rosetta.

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