



The demolition of the restaurant inside Queen's Fort of Tarragona (Spain)

J. M. Toldrà Domingo

Universitat Rovira i Virgili, Reus, Spain

Imma Teixell

Ajuntament de Tarragona, Spain

P. Solà-Morales Serra

Universitat Rovira i Virgili, Reus, Spain

Agustí Costa

Universitat Rovira i Virgili, Reus, Spain

Raquel Casals

Universitat Rovira i Virgili, Reus, Spain

British General James Stanhope reached Tarragona in 1709. He wanted to establish a naval base, in order to give military support to Archduke Charles of Austria in his dispute for the throne of Spain with Philip V. The "Fortí de la Reina" (Queen's Fort) is part of the overall project for the city fortification, led by Austrian and British; its position defended the northeastern end of Miracle Beach. Between 1988-1992 a large restaurant (about 2500 m²) was built within the walled perimeter of the Fort; it recreated a Romanesque cloister using GRC panels (glass fiber reinforced concrete), an architecture totally incongruent with the austere 18th century military structure in which it was housed. After various legal disputes, in 2007 a court ordered the demolition of the restaurant to return, as much as possible, the Queen's Fort to its previous state. In this paper we describe this demolition work.

© 2014 Green Lines Instituto para o Desenvolvimento Sustentável. All rights reserved.

Queen's Fort original construction

In the context of the dispute for the throne of Spain between Philip, Duke of Anjou (the future Philip V), and the Archduke Charles of Austria, the British General James Stanhope reached Tarragona in 1709 accompanied by 12 troop regiments favorable to the cause of the Austrian candidate, with the intention to establish a naval base. It was decided to carry out a city fortification project, creating a defensive line that would surround the urban area between the port and the Miracle beach (Aloguín, 1998). The "Fortí de la Reina" (Queen's Fort) is placed at the eastern end of this defensive network (see Fig.1), which should have been built between 1709 and 1713 under the supervision of Lord Stanhope and Guido von Staremberg. However, the construction of the Queen's Fort was not completed until 1745, under the direction of the engineer's colonel Miguel Marín and artillery's commander Antonio de Olmedo (Massó & Menchón, 1999).

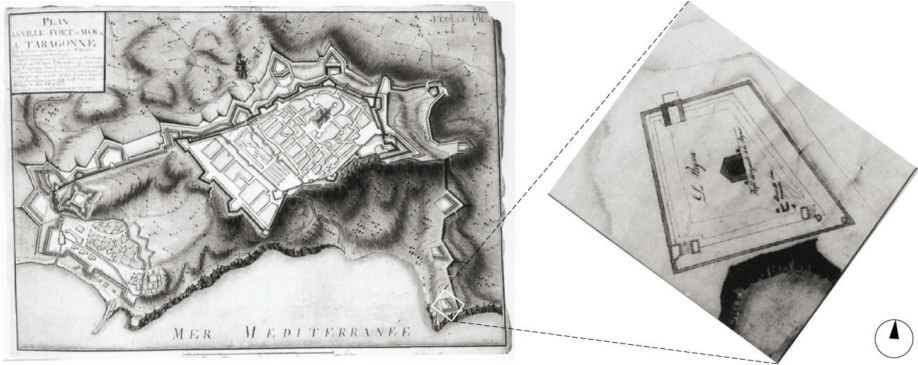


Figure 1. Tarragona plan from the first half of the 18th century, and detailed plan of the Queen's Fort from 1748 by Juan Rafael Silby, both from photographic archive of National Archaeological Museum of Tarragona (MNAT).

Queen's Fort has a trapezoidal layout. The walls original section consisted of an embankment coated on the outside by a sloping masonry wall. In photographs from the early 20th century we can see how their structures followed the inclination of the rocky terrain where relied, with the top very deteriorated, as we cannot distinguish the parapets that typically protected such fortifications (Diaz, 2004). Access to the inner enclosure was performed by a tower on the north flank, with a vaulted gallery oriented towards the neighboring St. George's Fort.



Figure 2. Queen's Fort transformation due to the construction of the restaurant. Comparison between historical images and its appearance in 2007.

The construction of the restaurant

The works carried out between 1988 and 1993 within the Queen's Fort perimeter affected its original composition:

- The original section of the wall was altered in order to increase the inner surface of the enclosure. Inner embankments were emptied, and concrete blocks retaining walls were constructed to stabilize the outer sloping masonry wall.
- Various openings in the wall were performed: six windows and three emergency exits.
- Exterior walls were raised to disguise the upper floor volume.

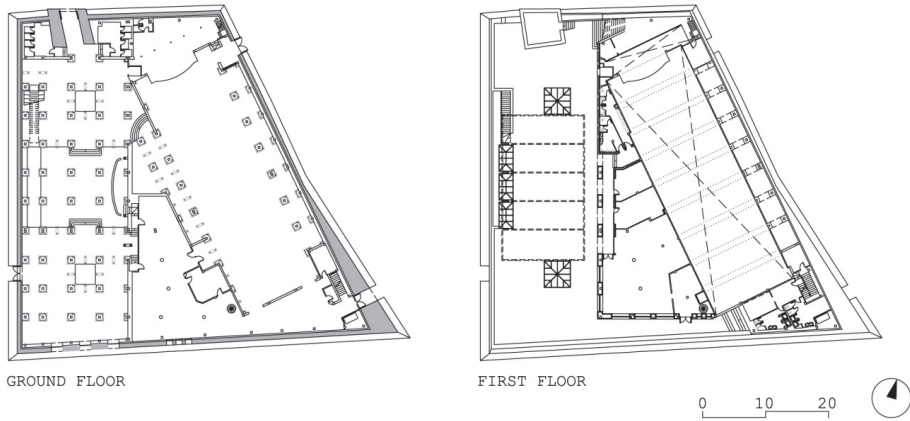


Figure 3. The restaurant within the walled perimeter of the Fort.



Figure 4. Restaurant interior with 'Romanesque style' decoration.

Project to demolish the restaurant and to consolidate the Fort

The restaurant had been built by a private developer with a wrongly issued municipal license, as the Fort was urbanistically classified as a garden zone. Moreover, there were several discrepancies between the various projects drafted by the architect Fernando Trueba (1987, 1988, and 1992) and the "as-built" final solution. Without going into too much detail, we can say that in early project versions the original walls were not ostensibly raised and the top floor had a much lower volume.

These irregularities led to a series of legal disputes. Eventually, in 2007 a court ordered the demolition of the restaurant to return, as much as possible, the Queen's Fort to its previous state.

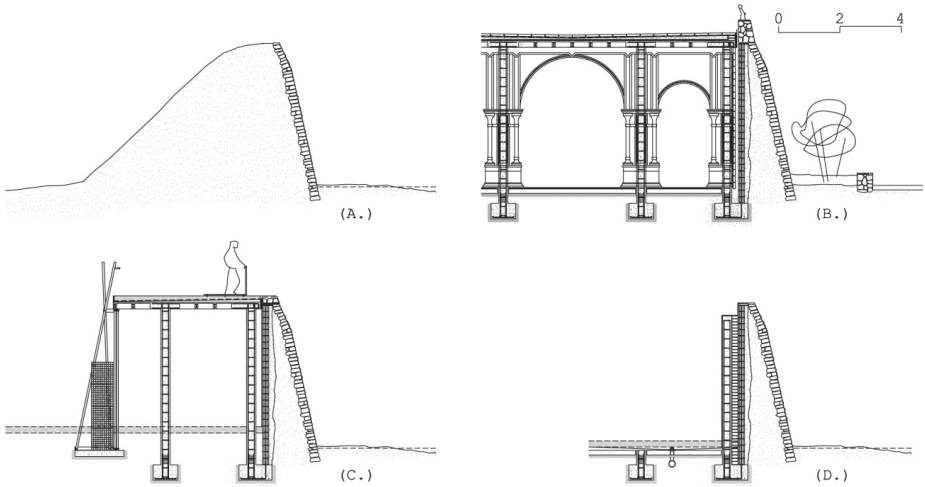


Figure 5. Section of the walls of the Fort: original (A.), alteration caused by the construction of the restaurant (B.), demolition and consolidation project (C.), after the demolition of the restaurant (D.).

Tarragona City Council held a competition to compose an architectural Project for the restaurant demolition and the consolidation of the original parts of the Fort. The winning proposal (Toldrà, 2007) provided to preserve the first bay of the restaurant structure in order to restore the volume of the embankment where exterior stone walls were supported, creating a covered space opening to a central courtyard, with a façade composed by the structural shoring system and metal gabions filled with stones from the restaurant dismantling. A series of ramps allowed easy access to the upper terrace, an excellent viewpoint of the city's waterfront.

We must remember that the Queen's Fort was of private ownership. The competition and the winning proposal assumed that City Council would have an agreement with the owners to acquire the property, so that the demolition work could be accompanied by an intervention to restore the original character of the building—a military courtyard protected by a wall— and open its interior space to citizens. However, the deal fell through, so the actions were limited to the demolition of the restaurant while ensuring the stability of the original walls.

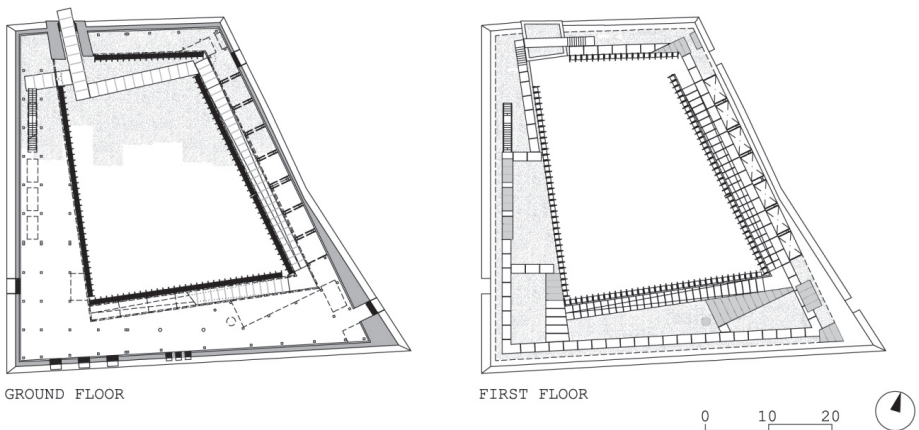


Figure 6. Proposal for consolidation the Fort.

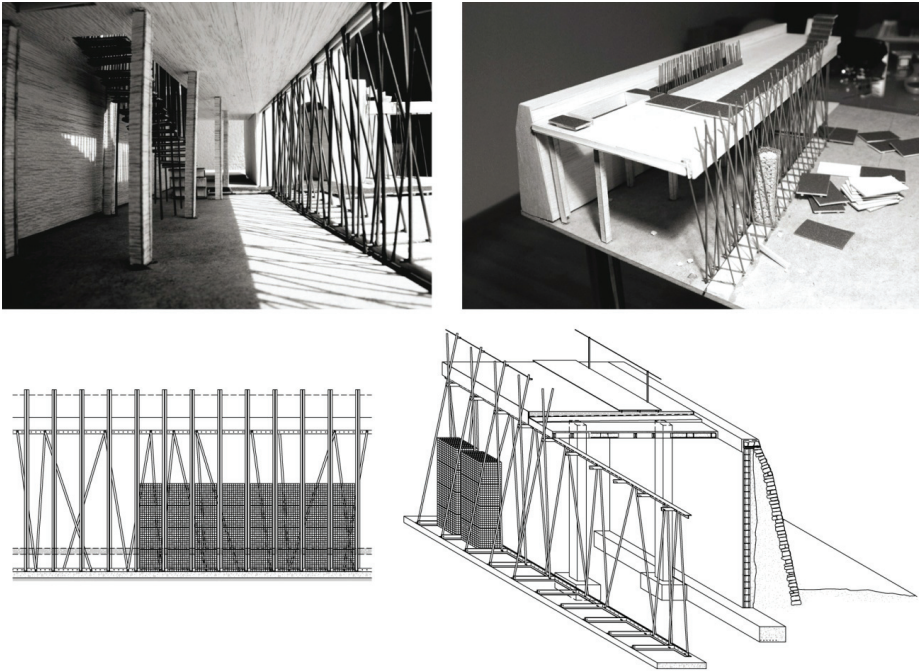


Figure 7. Model and details of the consolidation project.

Methodology for implementing the restaurant demolition

Preliminary work

First, utilities were cancelled (electricity, telecommunications, water and gas) and the restaurant furniture was removed. Numerous tests were performed to check the current status of the construction elements. They corresponded in general to the projected forecast, with one notable exception: the retaining walls were made of concrete blocks, instead of solid concrete walls as indicated in the project details. This was not a surprise; we had examined photographic documentation of its construction, and the demolition project contained various solutions to stabilize the block walls. However, contrary to the expectations, we found very little concrete filling inside the blocks.

The tests were used, as well, to collect samples of the inner GRC (glass fiber reinforced concrete) panels, verifying that they did not contain asbestos or other toxic components.

Much of the outer contour of the walls was occupied by decorative vegetation that impeded an overview of the exterior. These plantations and its boundary walls were removed. An ornamental fountain on the north façade was also demolished. In this same façade, some walls adjacent to the main gate's stone tower were preserved. Even though part of the original structures were not documented in pictures of the early 20th century, it was understood that they had historical value, since they possibly defined the beginning of the road that connected the Queen's Fort directly to the neighboring San Jorge's Fort.



Figure 8. Preliminary work developed out of the walls.

Non-structural elements removal

First, glazing and carpentry that were not required to close the worksite were removed, in order to facilitate the extraction of materials. Then, decorative veneers were dismantled, a particularly laborious operation due to the profusion of GRC panels decorating the restaurant's walls and ceilings, creating a Romanesque atmosphere (in an 18th century building...). The pavement stone tiles of the interior rooms and terraces were manually removed and stored for reuse.

After this first cleaning of veneers, pipes of various installations that came into view were dismantled, and non-structural walls laid out the interior were demolished. On the terraces, chimneys and protection walls were removed. The additions of the Fort walls were lowered to an elevation close to the original, leaving the definitive treatment of the coping to the consolidation phase.



Figure 9. Dismantling decorative veneers.

Structure removal

One of the main criteria was to avoid transmitting vibrations to the original structures. To achieve this, the contacting joints between the restaurant and the walls of the Fort were demolished manually. Once both structures were unrelated, mechanical means were used to deconstruct the modern ones.



Figure 10. Manual removal of the terrace stone tiles (left), disconnecting the structure of the restaurant from the perimeter of the wall (center) and demolition of restaurant structures (right).

Solid concrete elements (columns and beams) were cut with diamond disks and extracted in large parts to the outside of the enclosure. Especially delicate was the removal of the large beams covering the banquet hall of the eastern half of the ground floor: they had a span of almost 15 meters, with a rough section of 40x80cm and a weight of about 12 tons. A shoring system allowed to unload the supporting pillars, then the beams were lifted by a large crane and deposited on the outside, where they were divided into smaller pieces for transport.



Figure 11. Dismantling and removing the large beams from the east hall.



Figure 12. Interior of the enclosure without most of the restaurant's structures.

Archaeological work

Archaeological excavation under the restaurant ground floor gave a completely negative result. Under the stone tiles there was concrete, sand and gravel filling, disposed directly over the natural rock, which was lowered in a good part of the area during restaurant construction to gain headroom.

The external excavations yielded the most interesting data. Along the east façade, the boot of the walls was found resting directly on the natural rock, about 1.5 meters below the existing pavement. The works made it possible to identify the section of the original moat that surrounded the building (Bea & Salsamendi, 2009).

Monument consolidation

Windows and doors opened in the wall during restaurant construction were closed. To allow reconnaissance of the alteration, it was decided to keep the jambs and lintels clad in local stone arranged mimetically with the rest of the facing. It was taken into account that extraction could destabilize the wall, and in fact it was difficult to identify the gap between the original parts and the mimetic coatings. Various solutions were tested for walling up:

- Stainless steel gabions filled with stones debris from restaurant dismantling. This was the original option in the project. We understood that this allowed to preserve the overall colour unity of the facades, while the intervention was clearly perceived: the stones were placed without mortar, and his view was screened by steel grid. On the other hand, it permitted easy removal, if necessary, to reopen one of the emergency exits in the future.
- Stone tiles extracted from restaurant pavement, arranged in dry or with a thin layer of mortar.
- Stones recovered from the demolition and grouted with lime mortar.



Figure 13. Tests for the outer walled up.

Although the first two options seemed to us more appropriate, the Culture commission of the Generalitat de Catalunya considered both inadequate, and gave only its approval to the third solution.

The additions to the Fort walls were lowered in the non-structural removal phase. In the consolidation phase, it was decided to retain some of the 'fake' rows to uniform the wall coping, establishing rectilinear guidelines for the capstones, with the aim of restoring the exterior image of the Fort before the construction of the restaurant.

It was necessary to underpin some of the retaining walls of the restaurant, particularly in a broad section of the east façade, and to ensure the stability against the push of the outer wall the restaurant pillars attached to them were preserved, to a height slightly below its crowning. Walls and pillars were coated with a protective layer of lime mortar.

The foundation footings of the restaurant structure were not removed. Archaeological surveys showed that the pavement on the ground floor lay almost directly on the natural rock, and to execute the restaurant the foundations were excavated; an irreversible alteration, but it did not affect any original structure of the Fort.

The inner paving was solved reusing demolition materials to create a smooth transition between the two platforms on the ground floor (lowest to highest from west to east). To avoid accumulation of water inside the enclosure, the existing sewer system was reutilized, and expanded with various branches and scuppers.



Figure 14. Interior of the Fort after the demolition and consolidation works.

Conclusions

Overall, the works were executed in the order established in the planning and the executive project, but with some significant exceptions:

- It was expected to leave the treatment of outdoor spaces to the final phases, but in the initial stages of the project it was decided to bring it forward in order to facilitate the movement of equipment, material storage and assembling of scaffolding protection for walls.
- As a result of the above, it was possible to move outside the enclosure a significant part of the work previously planned to be carried out inside. In fact, it was only necessary to introduce machinery for the demolition and the cargo of the debris. Because a significant portion of the materials were extracted by cranes located outside the walls, the movement did not require truck traffic within the perimeter of the Fort, and neither its passing through the only large enough way: the original door of the north facade.
- It was expected to demolish most of the floors by manual means or by jackhammers handled by operators. In practice, though, once the restaurant structure was detached from the perimeter wall, it was found that the use of heavy machinery did not produce any damage to the Fort's original structures: the vibrations were not transmitted and demolition material itself cushioned the fall of structure fragments.

We believe that the final result of the work fulfills the goals established by the court order: the Queen's Fort has returned, as much as possible, to its original state before the changes caused by the construction of a restaurant within its walls.

References

- Aloguín, R. (1998) *Guia de fortificacions de Tarragona*. Tarragona: Col.legi d'Arquitectes de Catalunya.
- Bea, D. & Salsamendi, I. (2009) *Intervenció Arqueològica al Fortí de la Reina Anna Stuart de Tarragona*. Tarragona: Arxiu de l'Ajuntament de Tarragona.

- Díaz, C. (2004) *La fortificación abaluartada. Una arquitectura militar y política*, Madrid: Ministerio de Defensa.
- Massó, J. & Menchon, J. (1999) *Les muralles de Tarragona. Defenses i fortificacions de la ciutat (s.II a.C. – XX d.C.)*, Tarragona.
- Toldrà, J. M. (2007) *Projecte Bàsic i Executiu d'enderroc combinat del restaurant del Fortí de la Reina*. Tarragona: Arxiu de l'Ajuntament de Tarragona. Visat Col.legi d' Arquitectes de Catalunya (COAC): 2008601747.
- Trueba, F. (1987) *Proyecto Básico: Restauración y Reutilización del Fortín de la Reina*. Tarragona: Arxiu de l'Ajuntament de Tarragona. Visat Col.legi d' Arquitectes de Catalunya (COAC): 876-02125.
- Trueba, F. (1988) *Proyecto de Ejecución: Restauración y Reutilización del Fortín de la Reina*. Tarragona: Arxiu de l'Ajuntament de Tarragona. Visat Col.legi d' Arquitectes de Catalunya (COAC): 886-02907.
- Trueba, F. (1992) *Modificación del Proyecto Básico y de Ejecución: Restauración y Reutilización del Fortín de la Reina*. Tarragona: Arxiu de l'Ajuntament de Tarragona. Visat Col.legi d' Arquitectes de Catalunya (COAC): 926-02375.