

**METHODS AND TECHNOLOGIES OF  
THE RESTORATION OF THE HISTORICAL  
BUILDINGS AND MONUMENTS  
(Example : Bab Sharqi – Citadel of Damascus )**

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**ABSTRACT:**

In the historical stage that followed the independence of Syria, in which scientific and technical experience and workers were lacking, the policies of conservation generally adopted uncovering the historical buildings and monuments and demolishing the parasite buildings and returning the historical building to its original form. This research highlights two important projects (Bab Sharqi, Damascus Citadel) have applied this policy, and demonstrates the history of these two buildings through the successive eras. It also provides the details of the works of these restoration projects and the methodologies and processes of execution. In the end, this research analyzes and evaluates the policies of conservation through these examples , and it gives a set of recommendations concerning the conservation process in general, and the restoration works in particular.

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## **INTRODUCTION**

The historical city of Damascus has been exposed to plenty of planning effects and constructional concepts that have directly affected the historical buildings and monuments through the designing drawings. Many of these historical buildings were demolished, and many constructional area that have historical value were destroyed, and other old buildings were transferred as a result of making streets, and the main historical constructions were uncovered (Umayyad Mosque, Damascus Citadel) in the city of Damascus. The restoration Policies of the that time, which depended on returning the historical buildings to their original forms and using the local materials, have been overwhelming those who executed the restoration works.

### **1- PROJECT OF RESTORATION AND REBUILDING OF BAB SHARQI IN OLD DAMASCUS**

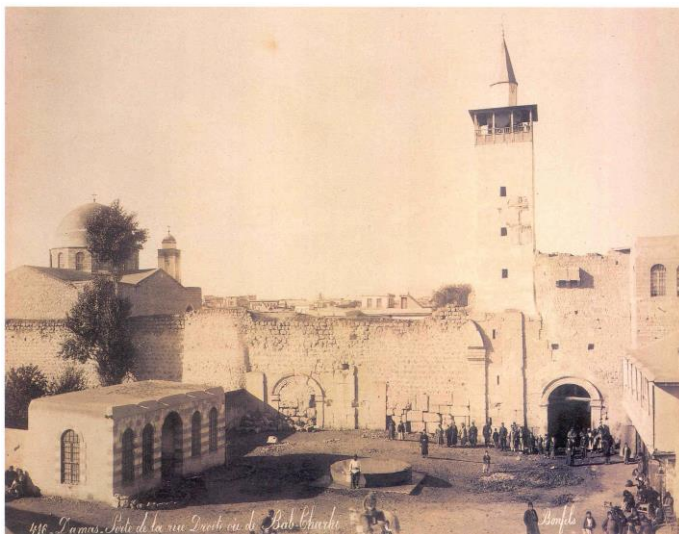
Bab Sharqi ( East Gate of the old city ) is considered the most important gate in Damascus , and the most beautiful building as far as architecture and urban construction are concerned, not only in Damascus , but in all the eastern cities in the Roman era. In that era , gates and walls of cities were an important and basic element.

In the third century AD , security was settled , and gates had the traits of special designs that took the shape of arches of triumph .

Bab Sharqi is at the east side of the city . The gate comprises a triple passageway ,the central one being the largest, and the outer two on both sides . This gate has been the most important monument of the grandeur of architecture. However, the burdens of time have affected most of its parts through pulling down, destruction , and collapse and so on. Hence its peculiarities have been lost. When uncovered for restoration , only two of the triple passageway were left. This has motivated the General Directorate of Antiquities and Museums , collaborated by the Governate of Damascus by providing the special studies for organizing this part of the city, to adopt this project .

#### **1-1 HISTORICAL BACKGROUND**

The gate was constructed in the period of Septimius Severus and Caracalla (late 2C, early 3C) , during which period the Roman Civilization mixed with the Oriental Civilization . It is believed that local builders studied and built these great buildings. Thus , the Arab architects have contributed to this period by constructing some buildings in Rome. Apolodor of Damascus is an example, to mention only one . see (fig 1)



( fig . 1 ) Bab Sharqi – Eastern Elevation before restoration works –1880

## 1-2 DESCRIPTION OF GATE

The Gate consists of triple passageway , each has an arch ( 27.48 m long and 4.18 m wide ). The central passageway was for the wheeled traffic along the Straight Street, and its height is 10.91 m from the level of the floor tiles to the top point of its inside arch , and its width 4.18 m from the eastern and western sides. Its top boundary is a decorated lintel , above which there is an arch . It is supported by two pillars at both sides. The outer two passageway correspond with arcades (5.98 m high and 3.36 m wide. Above these arches are lintels too which are supported by two side pillars , this structure belongs to the qualities of the Oriental architecture in the Roman era. The distinguishing feature of the eastern elevation of the gate is its four pillars that have bases ( 1.38 m wide , and 0.43 m projection from the front ), the bases are similar to those of the wall of Jupiter Temple of Damascus , which were constructed in the same period of that era. Parts of the arch molding that were above the gate have been found during the excavation near the gate. On the western side, the lintel that joined the arcades of the Straight Street at the Gate is supported by two Doric pillars – each of them is 6.22 m high , and 0.43 m projection from the western front. There are two inner square towers on both sides of the central passageway . From these towers people could climb to the top of the gate for watch and defense . The northern tower was later used as a base for the minaret of the mosque.

## 1-3 CONSTRUCTION MATERIALS

All parts of the gate are built from white lime stone ( the type known as columnar (Awameidi ) ). The heights of stone-blocks ranges between 0.63 m and 0.66 m, their length between 0.6m and 2 m , while their depth ranges between 0.4 m and 1.12 m. They are built with marking lines and are very well fixed from all the sides (top, bottom and sides ) ; they are very well dressed and polished.

Bab Sharqi is registered in the record of historical buildings under decision No. 138 and date 11/08/1983.

**Project Owner : General Directorate of Antiquities and Museums**

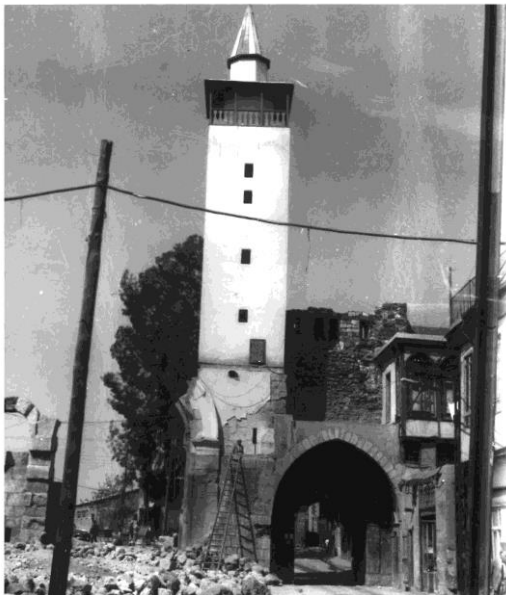
Carried out by : local professionals, workshops and contractors

#### 1-4 PROJECT START : 1961

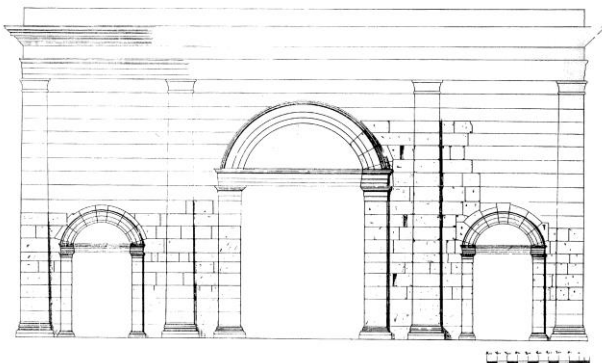
The Project : The works really started by unclosing all the elements of this building early 1961. All houses and constructions that covered the southern parts and the middle parts have been wiped out. Excavations started to detect all these parts and their remnants. It has been found that are parts of the gate are lost , and its stones were used to restore and rebuild other constructions as they used to do in Damascus.

The strategy of works concentrated on preparing the studies, in which a group of archeologists and engineers participated, on the method of restoration and rebuilding that must be applied , and on whether the lost parts should be returned and renewed or the gate should be left as it is after uncovering it. Finally an agreement has been reached : to adopt the method of rebuilding the lost parts in accordance with the suggested visualization of the original shape , and of using the lime stones of the specifications that are similar to the old stone.

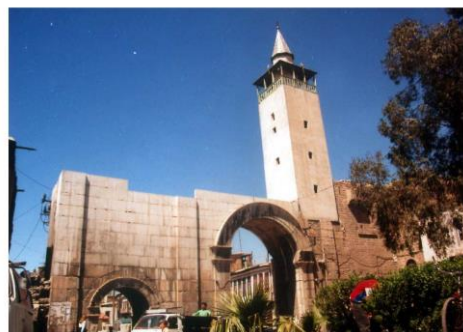
The project has been completed within two years ( 1961-1963 ). After this the gate has witnessed other simple restoration works .see ( fig 2,3,4,5 )



( fig . 2 , 3 ) Bab Sharqi – during restoration works



( fig . 4 ) Bab Sharqi restoration Drwing



( fig .5 ) Bab Sharqi – photo from East elevation

#### Conditions of Restoring the Stones in this Project :

- 1- Numbering the stones that are to be rebuilt after cleansing them with hard plastic brushes and water to ensure that the stones are free of any surface blemishes. No chemicals allowed.
- 2- Washing the surface of the built stones with water to ensure good fixing of mortar.
- 3- The used mortar consists of :
  - Gypsum 39%
  - lime 20%

Ground stone of the original type

- Salt                6%
- Brass             1%

Other conditions of the mortar are : the colour should be homogenous with the original stone. Stones have to be sprayed with water for three days after construction.

4. Metal or wood scaffolds must be used , and dangerous parts should be supported during construction.
5. Supplied stones must be free of flaw , breakage and stone defects

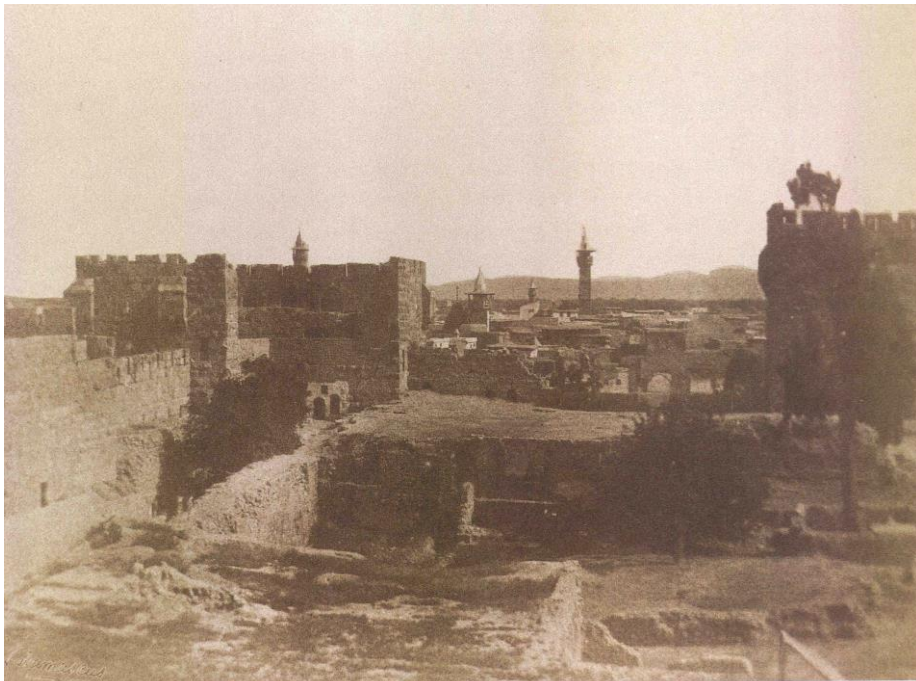
## **2- PROJECT OF RESTORATION AND REBUILDING OF DAMASCUS CITADEL RESTORATION PROJECT**

### **2-1 HISTORY OF THE CITADEL**

The citadel lies at the north-west corner of the old wall of Damascus and represents an important sample of military Ayyubid construction . It is the only citadel in Syria that was built at the level of the city ground.

The history of the citadel begins with the Seljuk reign , and prince Atsar was the first to design this complete project and started the construction of some of the towers (469 Hijra) . The citadel was surrounded with a moat , and it has three gates : in the west, the north and the East. However, its towers are of small size. During the Ayyubid reign, Al-Adil started building the citadel ( late 6<sup>th</sup> hijra century , 599- 614 Hij. corresponding to 1202 – 1217 AD ) after demolishing the old part of the citadel in accordance with a fresh drawing . He began building the walls and towers and digging the ditches.

The Ayyubid Citadel took the rectangular shape, whose dimension ranged between 225-260 m long and 165 m wide. Its total area was around 33176 m<sup>2</sup>. Some of the previous constructions were maintained in their places inside the Ayyubid Citadel , and a palace was added to it which made the citadel as a royal quarter in which a throne hall was established as well as other administrative positions : the mail, the mint and arms workshop etc.see ( **fig 6** )



( **fig .6** ) Citadel of Damascus – photo to the courtyard to the west - 1845

### **2-2 CONSTRUCTION MATERIALS**

The citadel was built from the lime stones whose quarries are available in Damascus suburbs. The stones that were used in the Ayyubid reign has projecting faces , unsymmetrical cut , surrounded with polished frame. The projection ranges between 15 and 20 cm . We find some stones the front of which was dressed in a symmetrical way . This kind of stones was



specially used in the scuttles that decorated all the towers of the citadel. Scuttles are closed stone windows that are projected from the citadel walls and towers. They have cuts at their bottom from which boiling oil could be poured as a defensive measure. In addition to this , there were narrow cuts to be used the bow men to throw their arrows through them. In the reigns that followed the Ayyubid period, the dressing of stones changed , and this could distinguish the restored and renewed parts from the original parts. Lime stones used with leveled sides without the polished frame, and the sizes remained as large as the stones used by the Ayyubids. In the Memluk and the Ottoman reigns , the stones became smaller in size , and the careful dressing became less . The Ottoman used undressed stones in the restoration works.

The whole citadel was destroyed by the first Mongol invasions ( 658 Hij. – 1260 AD) . Baibars , the Memluk leader defeated the Mongols at the battle of Jalout (658 Hij. – 1260 AD) and became a Sultan . He started to repair the citadel after the destruction inflicted in the citadel. The repairing works were secondary works of restoration that did not change its Ayyubid design. During the Ottoman reign the citadel began to collapse and breakdown gradually because of negligence and transgression.

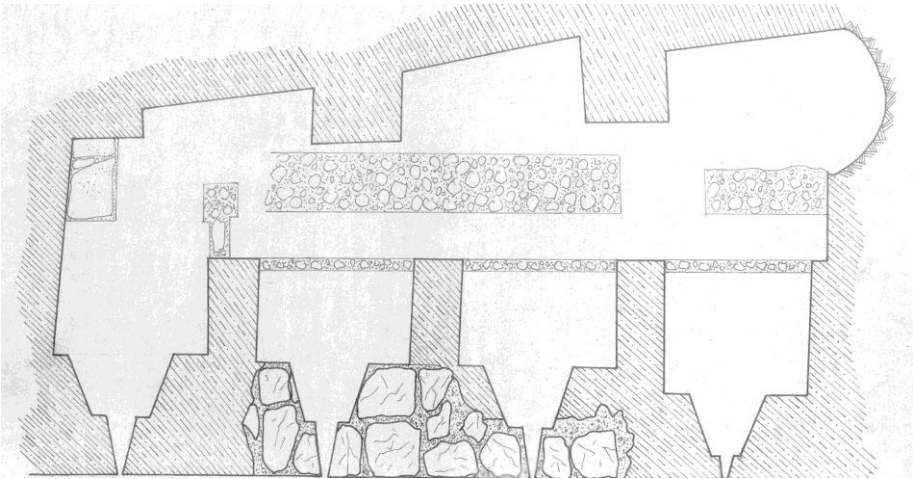
Losing its military role, the citadel began to deteriorate. When Ibrahim Pasha occupied Damascus, it surrendered without any resistance in 1831. Destruction overwhelmed everywhere. After the French colonization, the citadel was converted to a prison and remained so until it was evacuated early 1985 when the bazaars or markets to the west , east and north around it were demolished as per the general designing drawing of Damascus city ( Echoshar ) .see ( **fig 8** )



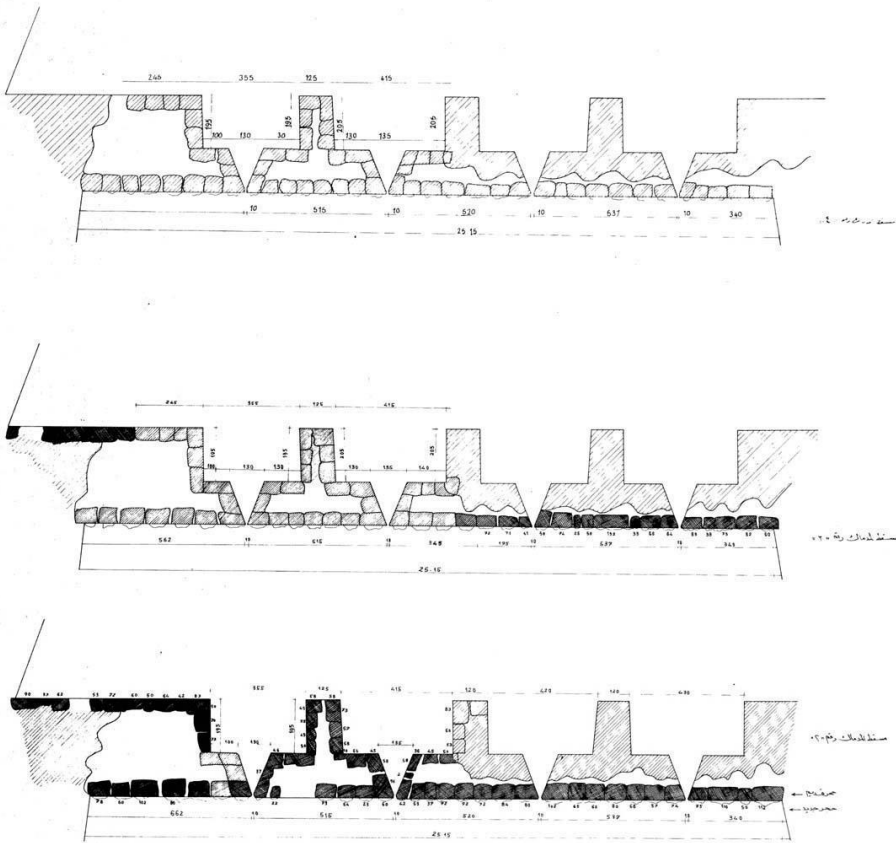
( **fig .8** ) Citadel of Damascus – photo when uncoverd for the restoration works-1980

## **2-4 RESTORATION PROJECT**

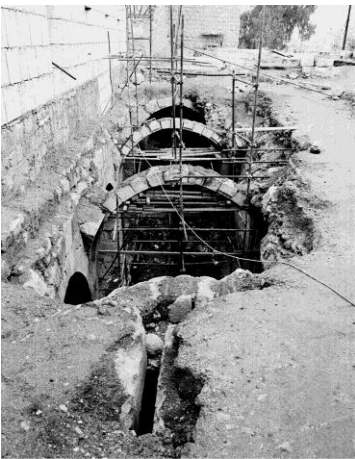
This project is considered one of the most important projects in the citadel. It was executed by the Military Construction Execution Establishment in 1985,see ( **fig 9,10,11,12,13** )



( fig . 9 ) Citadel of Damascus – Plan of the wall during the rastoration



( fig .10 ) Citadel of Damascus – Plan of the wall befor and after the rastoration



( fig .11, 12 ) Citadel of Damascus photo to the western wall during the restoration



( fig . 13 ) Citadel of Damascus photo to the western wall before the restoration

The General Directorate of Antiquities and Museums provided a complete study of the works of restoration and reconstruction in the citadel . A clear policy was followed in this project , which included : on the one hand , reconstructing the western tower in accordance with a perception that had been taken from the actualities of the completed Ayyubid towers in the citadel , and the execution works had to be done by an establishment that owned the equipment and expertise to execute such works. Thus, the project was to reconstruct the south-western tower and restore the southern side of the citadel in addition to some restoration works in some northern towers and the inner and outer bodies. In order that the works be conveniently completed, a special strategy was formulated which was concentrated on the following :

- 1- When reconstructing any part, it must be distinguished by the type of stones and the way in which the stone blocks are organized.
  - 2- The new constructed structure must be consistent with the traditional method of execution. The method of execution should be clarified in a sequential execution order.
  - 3- Providing the detailed studies of the parts that need reconstruction or restoration which should be authenticated by the General Directorate of Antiquities and Museums.
  - 4- All reconstruction works should not breach or violate the historical position of the citadel.
  - 5- The General Directorate of Antiquities and Museums provides the conditions and the particular specifications of the reconstruction and restoration works.
  - 6- Pressurized sand should not be used in the cleansing operations , which is consistent with Art. No. 1 of the Venice Accord , which stipulates the respect of the original material.
- At that stage there were different view points concerning these principles. The biggest difference was concerning reconstructing the south-western tower , but the decision has been in favour of adopting the above mentioned principles.

Recently , the walls of the citadel are suffering from several problems , the most important of them is the negative effect of the environment, corrosion and descending noted in some towers and bodies , and the historical intervention . The whole situation makes us think of drawing policies and strategies taking advantage of the project of advanced and consistent technologies , and the storing systems and documentation of the stone works at the antiquity sites in the Mediterranean region.

### **3- RECOMMENDATIONS AND RESULTS**

In the light of these practices and the lack of experience and the absence of communications with legislatures and recommendations that are provided for in the international conferences and agreements , the works of restoration and conservation policies remain different by the effect of time and location. Therefore, some recommendations that conform with the local data must be put forward . The most important thereof are:



- 1- Providing criteria , standards and bases for restoring the historical buildings with reference to the continuous advances of science.
- 2- Increasing the communications with scientific and technical establishments by means of the interknit and exchanging experience with them.
- 3- Increasing the studies of construction materials ,their specifications, their importance and methods of choosing them.
- 4- Drawing policies of conservation that corresponds with the historical value of the historical buildings and historical areas in the designing drawings in particular.
- 5- Encouraging the traditional crafts and increasing the workers in this field.
- 6- Working on the popular awareness and increasing the cultural awareness in the field of conservation .

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