

Fundamentals of Heritage Conservation

RECONSTRUCTION

Reconstruction

/ri:kən'strʌkʃn/

the action or process of reconstructing or being reconstructed.

- a thing that has been rebuilt after being damaged or destroyed.
- an impression, model, or re-enactment of a past event formed from the available evidence.

a copy of something that no longer exists (Oxford Dictionary)

Rebuilding of structures and their contiguous areas, as distinct

(in the US) the period after the Civil War when the southern states returned to the US and laws were passed that gave rights to African Americans.

Synonyms of 'reconstruction'

rebuilding
re-enactment
restoration

rebuilding

/,ri:'bɪld/

to build something again after it has been damaged

to make a situation succeed again after something bad caused it to fail

re-enactment

/,ri:ɪ'nækt.mənt/

an occasion on which people reenact an event

restoration

/,res.tər'eɪ.fən/

the act or process of returning something to its earlier good condition or position, or to its owner

The Venice Charter, 1964

Article 15.

All reconstruction work should however be ruled out a priori. Only anastylosis, that is to say, the reassembling of existing but dismembered parts can be permitted. The material used for integration should always be recognizable and its use should be the least that will ensure the conservation of a monument and the reinstatement of its form.

The Burra Charter

1.8 Reconstruction means returning a place to a known earlier state and is distinguished from restoration by the introduction of new material.

Article 18. Restoration and reconstruction

Restoration and reconstruction should reveal culturally significant aspects of the place

Article 20. Reconstruction

20.1 Reconstruction is appropriate only where a place is incomplete through damage or alteration, and only where there is sufficient evidence to reproduce an earlier state of the fabric. In some cases, reconstruction may also be appropriate as part of a use or practice that retains the cultural significance of the place.

20.2 Reconstruction should be identifiable on close inspection or through additional interpretation.

The choice of treatment depends on a variety of factors, including the property's

historical significance

physical condition

proposed use

a) Historical Significance

These questions should be asked;

Is the building nationally significant?

Is it a rare survivor or the work of a master architect or craftsman?

Did an important event take place in it?

b)Physical condition

These questions should be asked;

What is the existing condition, or degree of material integrity, of the building prior to work?

Has the original form survived largely intact or has it been altered over time?

Are the alterations an important part of the building's history?

Preservation may be appropriate if distinctive materials, features, and spaces are essentially intact and convey the building's historical significance. If the building requires more extensive repair and replacement, or if alterations or additions are necessary for a new use, then Rehabilitation is probably the most appropriate treatment.

c) Proposed use

This question should be asked;

Will the building be used as it was historically or will it be given a new use?

Many historic buildings can be adapted for new uses without seriously damaging their historic character. However, special-use properties may be extremely difficult to adapt to new uses without major intervention and a resulting loss of historic character and even integrity.

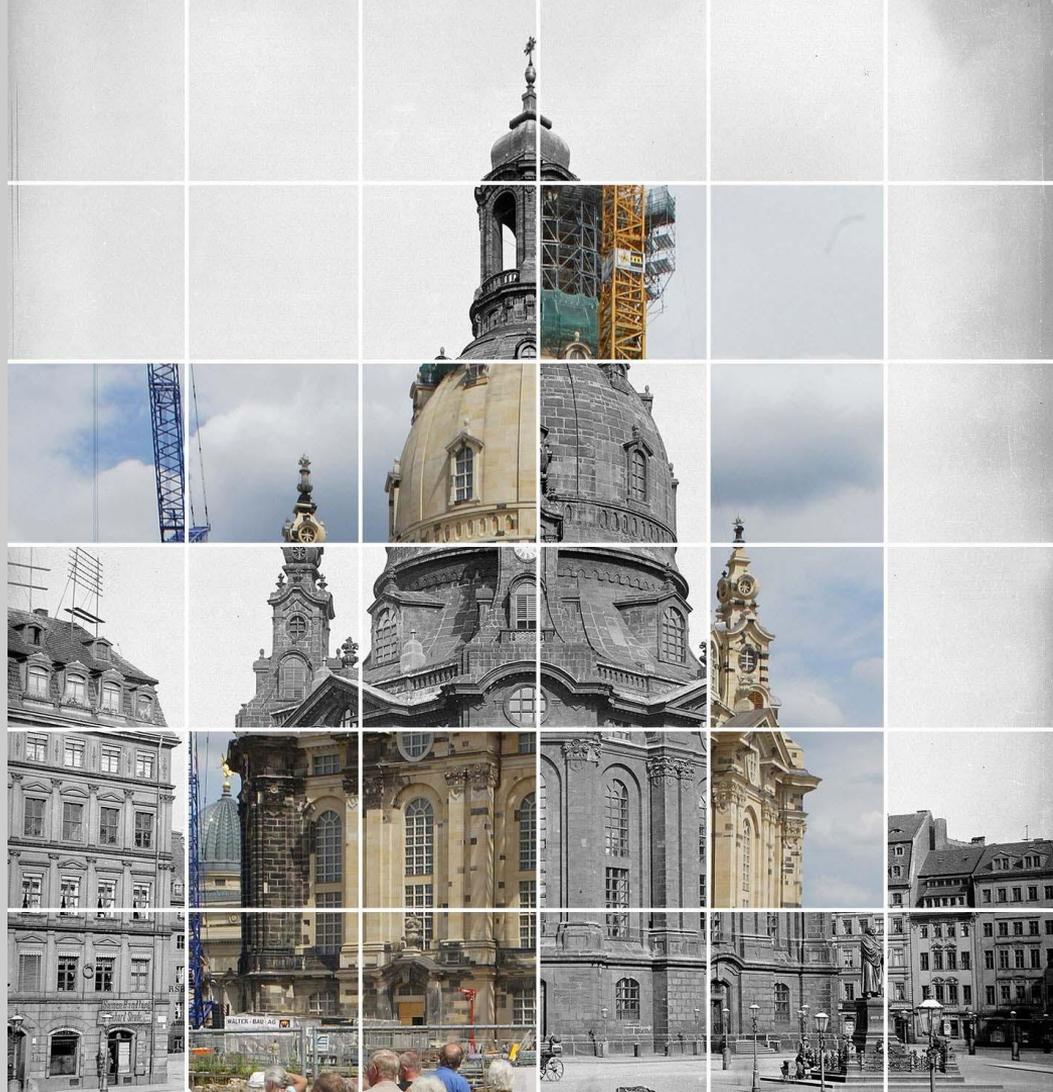
When should we use reconstruction as a treatment?

- When a contemporary depiction is required to understand and interpret a property's historic value (including the re-creation of missing components in a historic district or site)
- When no other property with the same associative value has survived
- When sufficient historical documentation exists to ensure an accurate reproduction

reconstruction may be considered as a treatment.

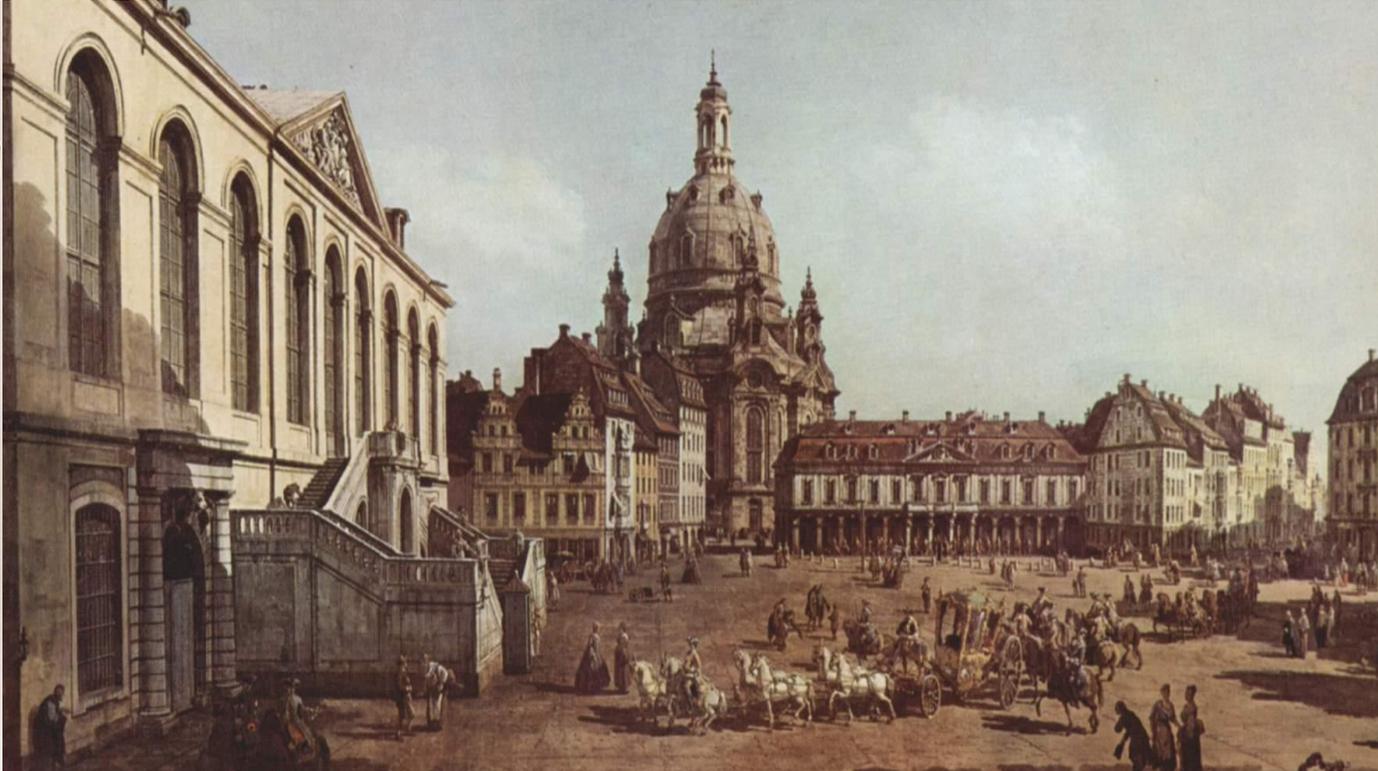
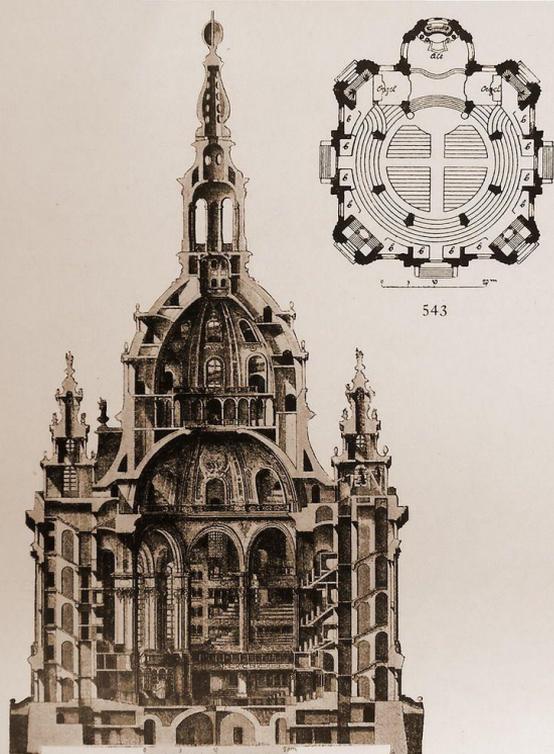
Reconstruction of a **Landmark**;

Frauenkirche - Dresden



The original Frauenkirche was built between 1726 and 1743 as a Lutheran parish church.

George Bähr, Dresden's city architect, designed the church and its most unique feature, the high dome.





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The Frauenkirche was destroyed 15 Feb 1945.

It was at the end of World War II.





The rebuilding of the unique baroque church started in 1994 and it had continued until 2005.



The reconstruction work was essentially based on three guiding principles:

1. George Bähr's Frauenkirche should be **rebuilt using its original structural substance** to the largest extent possible **in accordance with the original construction plans**.
2. This should be done with the **aid of modern technology** as well as the theories and methods of structural engineering and physics valid today,
3. while giving due **consideration to all the requirements resulting from a vibrant usage** of the building in the 21st century.

The dark colouring of the old stones and the dimensional differences in the joint areas between the new and old masonry helps to differentiate the old and new parts of the building.

Statics

While reconstructing the church, geometry of it is aimed to be conserved by using **modern structural elements**. Fortunately, a number of sources existed to assist in this work. Archives still contained historical plans and horizontal projections that could be evaluated.

For example, various workmanship quality levels were defined for the masonry, a tension ring of steel was integrated with special anchors at the base of the inner dome and the number of ties (steel rings too) which help keep the dome together was increased.

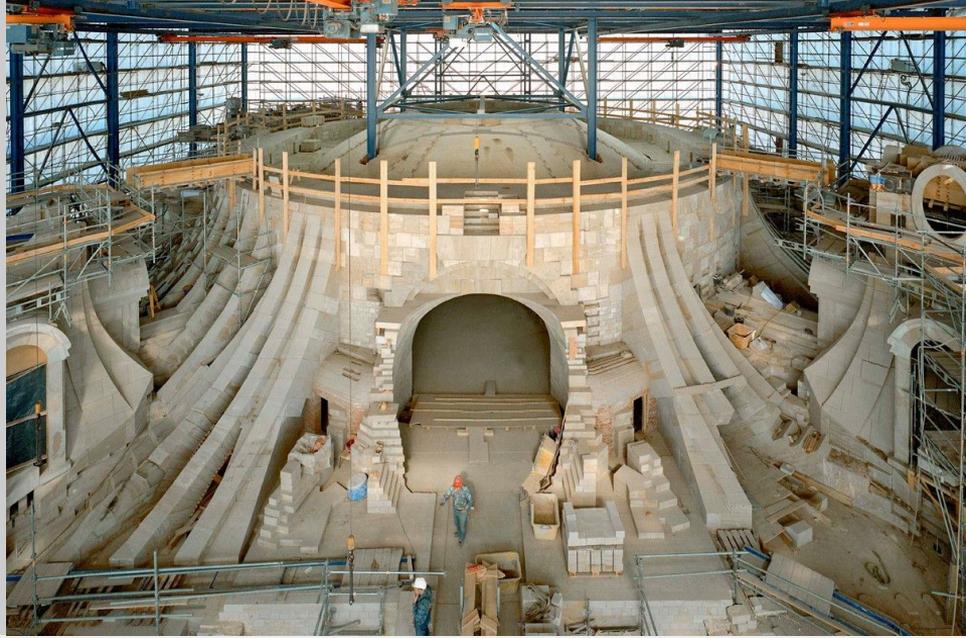


Material



Sandstone is the building material used for the Frauenkirche and many other buildings in Dresden and its surroundings. This material was so popular because it is **very strong, easy to work and available locally**, among other things. The sandstone for Bähr's Frauenkirche as well as the rebuilt church comes from the Posta quarries in the Elbsandsteingebirge (Elbe Sandstone Mountains) near Dresden.

Masonry



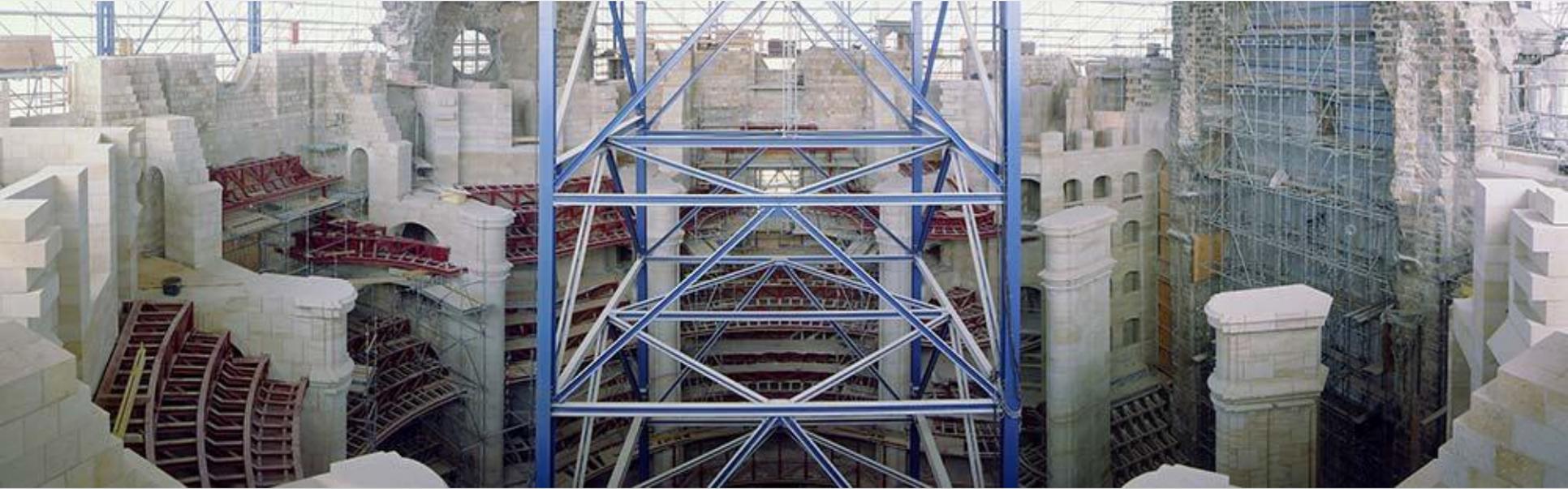
The ashlar were first laid on small spacer plates of lead to produce uniform joints. These plates were exactly the same height as the specified joint, i.e. normally 6 mm. A gap was thus created between the lower and upper rows of stones which was filled with liquid mortar. A special 'pouring mortar for thin joints' was developed for this purpose. To prevent the mortar from escaping at the other end, this was sealed with hemp rope. The rope was removed after the mortar had set and the joint then closed with joint mortar.

Canopy

A solution had to be found to enclose the building site so that it was independent of the weather. The roofing structure also had to ensure a transport of materials via cranes – after all, blocks weighing up to 5 tonnes had to be moved. There were no archetypes for a building site of this size. What's more, it quickly became clear that it would take too much time to dismantle and reassemble the construction to raise it to the required heights. A construction was thus developed which could be raised hydraulically. After the erection of the canopy in June 1996, it was raised five times and retrofitted twice to adjust it to the progress of the building work.



Scaffolding



A variety of different types of scaffolding were needed during the restoration of the Frauenkirche. On the one hand, they gave building workers **access to higher building sections** and on the other they temporarily bore parts of the building under construction.

Timeline of Reconstruction

1992: The preparation works begin

On 20th February 1992, the Dresden city council consented to the rebuilding of the Frauenkirche. The approval plans were submitted to the surveyor's office on 21st July 1992.

1993: The archaeological rubble clearing

The 22,000 m³ mound of rubble was cleared in only 17 months. 8,390 façade stones and interior wall and ceiling stones as well as 91,500 back-up blocks could be saved. A lot of other objects were documented in addition to the stone finds.

1994: The reconstruction begins

The actual rebuilding work began when the first stone was laid after all the rubble had been cleared according to archaeological principles.

1995: A new annex is being erected

The erection of the outer structure was the most important task in 1995. Covering an area of 1,300 m², the new structure houses the functional rooms required to meet the needs of contemporary usage.

Another essential task was the reconstruction of the historic basements. The original historic structure was partly dismantled and rebuilt so that it was strong enough to bear the new building.

1996: The first entrance portal is completed

1997: The canopy is lifted for the first time

1998: The church is rising

In 1998 the canopy had to be raised once again to accommodate the growing structure.

1999: The completion of the piers

2000: The outer walls reach a height of 28 meters

2001: The completion of the inner dome

2002: The building rises more than 50 meters

2003: Stony and melodious bells

The year 2003 was marked by the completion of the main stone dome. The arrival, consecration and installation of the eight bells, only one of which originally came from the old Frauenkirche, were another outstanding event in this year.

2004: The outer contour is restored through the erection of the cupola

The outer shape of the church building was restored to its original glory through the removal of the final external scaffolding on July 30, 2004.

2005: Its done



ricksteves.com

Iberian Gate and Chapel Moscow, Russia

It connects the north-western end of Red Square with Manege Square and gives its name to nearby Voskresenskaya Square (Resurrection Square). The gate adjoins the ornate building of the Moscow City Hall to the east and the State Historical Museum to the west.



The gate and its chapel survived until around 1930, but following the anti-religious plans of the Soviet Union, the chapel of the gate completely demolished, and the chapel replaced by a colossal statue of worker instead. The gate was demolished in less than two years after the demolition of the chapel.

Both the Iberian Chapel and the Resurrection Gate were rebuilt in 1995 on their original place after the fall of the Soviet Union. During the reconstruction of these structures, a medieval wooden construction, some part of the original gate stones, and the Moscow's first birch bark manuscript found on the site of the construction.



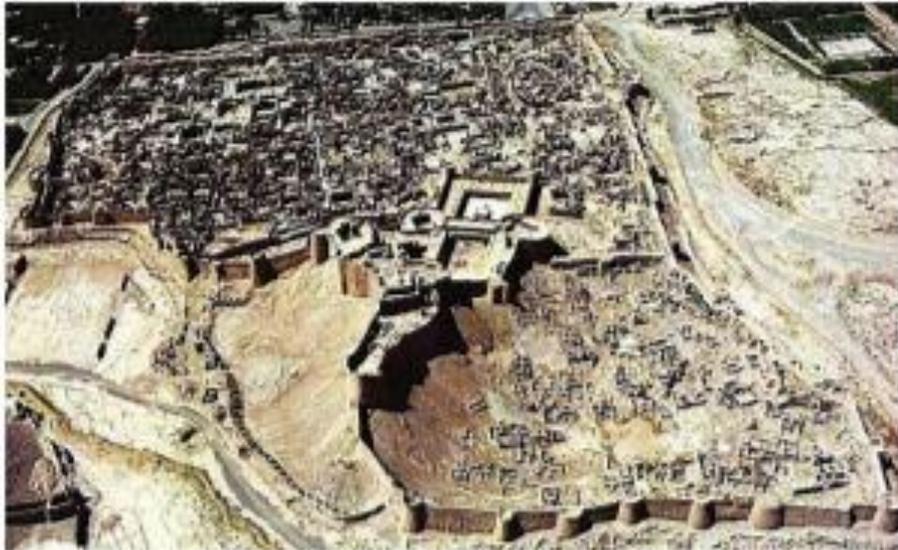
Bam and Its Cultural Landscape, Iran

Bam is a landscape that has almost 2200 years old and the largest adobe building in the world. It is listed by UNESCO as a part of the World Heritage Site in 2004. The citadel which called as Arg-e Bam is situated in the center of the fortress-city, on the point with widest view for security. Since it is one of the oldest cities in the world, there has been many attempt to restorate the damage part of the city.



On December 26, 2003, an earthquake that reached 6.5 on the Richter Scale almost completely destroyed the historic Citadel in the Iranian city of Bam. After the destruction of the citadel, government took a decision to rebuilt Arg-e Bam.

The Iranian authorities, with the help of several other countries, have worked to reconstruct the site following that disaster. It has been estimated that the project to restore Arg-é Bam was completed in 2017.

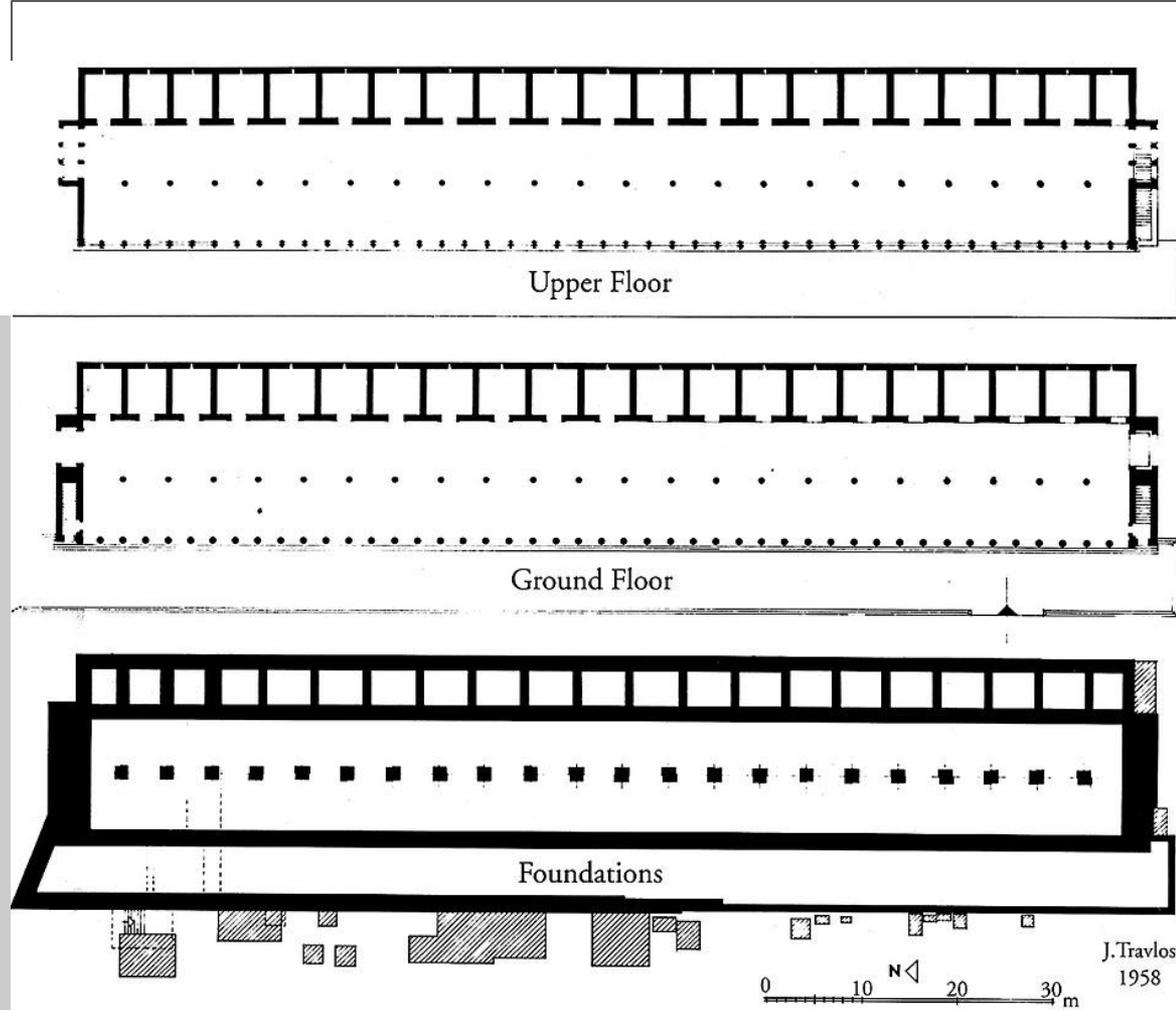


Arg-e Bam before and after the 2003 Bam earthquake (Source: archive of RPBCH).



Stoa of Attalos Athens, Greece

One of Athens' principal Hellenistic civic works, the Stoa of Attalos was built ca. 140 B.C. as a gift to the city by King Attalos II of Pergamon. With its 377-foot façade, the imposing two-tier structure was a dominant element of the Athens Agora, the city's central commercial and gathering area. Fronting its many shop stalls, the Stoa's spacious colonnades were popular strolling and meeting places.



The Stoa was destroyed by the Germanic Heruli tribe in 267 A.D. Its site underwent archaeological investigations beginning in 1862. More intense excavations and study were conducted by the American School of Classical Studies beginning in the 1930s. The school's research produced sufficient evidence to justify a plausible reconstruction. With funds donated, the rebuilding of the Stoa was carried out in 1952-56. The building has served as an important demonstration of the appearance and function of an ancient stoa. It now houses the Museum of the Ancient Agora.





Resources

<https://www.nps.gov/tps/standards/four-treatments.htm>

<https://www.classicist.org/articles/architectural-reconstructions-a-respectable-tradition/>

<https://www.gpsmycity.com/attractions/iberian-gate-and-chapel-5000.html>

<https://moscow.touristgems.com/attractions/4310-iberian-gate-and-chapel/>

https://www.youtube.com/watch?v=ATG566G_DB0

<https://www.youtube.com/watch?v=0ObVHKuc0Cg>

<https://www.athenskey.com/stoa-of-attalos.html>

Who Knows Best? An Overview of Reconstruction after the Earthquake in Bam, Iran, Gharaati, 2008