

Elements of Roman Architecture

by Sophia



WHAT'S COVERED

Historically, the invention of concrete was one of the greatest achievements in architecture, especially Roman architecture. Roman emperors often commissioned public works projects as a way of gaining popularity. This lesson covers:



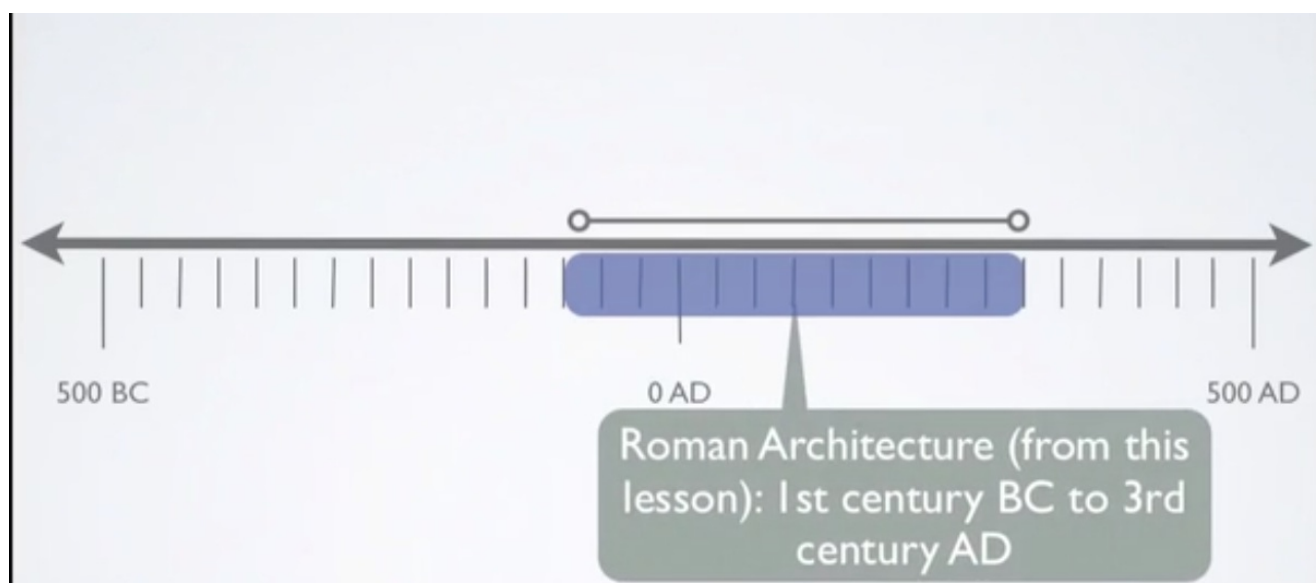
BIG IDEA

The invention of concrete is one of the most important events in the history of human construction, and enabled the proliferation of construction programs on a scale never before seen.

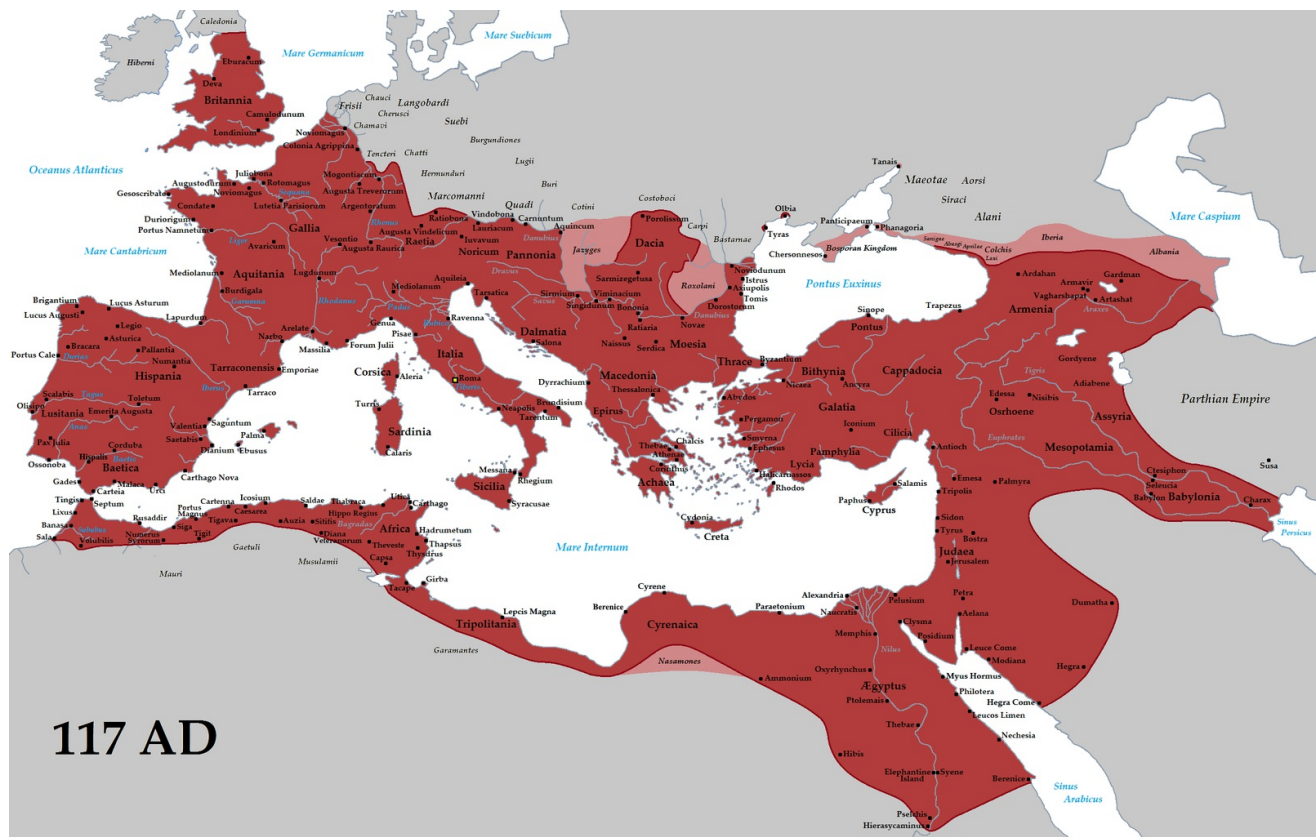
1. Period and Location: Elements of Roman Architecture

The Roman architecture from this lesson falls within the range of first century BC to the third century AD. The geographical region covered encompasses the Roman Empire at its height. The heart of the empire during this point in time was still Rome, but Roman citizens lived on three different continents. In other words, to be Roman didn't necessarily mean you were born on the Italian Peninsula. In fact, in most cases, you probably were not.

The timeline below highlights the period covered in this lesson.



The map below shows most of the Roman Empire at its greatest expanse, under the emperor Flavian during the beginning of the second century AD. Notice how it extends well beyond the Italian peninsula.



2. Invention of Concrete

The discovery of **concrete** allowed the Romans to create unique architectural elements, such as the barrel vault and building on a curve, exemplified in the Colosseum.



THINK ABOUT IT

The Romans were responsible for all sorts of innovations. In terms of construction, the invention of concrete was arguably the most important to the modern era. Just think of all the things that are made of concrete today!

The recipes vary, but the traditional Roman concrete composition consisted of some combination of calcium oxide or quicklime, volcanic ash, sand, and ground pumice, which is a type of volcanic stone. In the presence of water, these basic constituents chemically react and fuse together, eventually setting, or hardening, into the desired shape.



HINT

Concrete and mortar are used interchangeably in this lesson.

Concrete enabled the building of structures that wouldn't have been possible with stone alone, given its limitations. The benefits of using concrete were many, including:

- It was cheap, which meant less skilled labor.
- It was plentiful, which allowed for new projects and renovations.
- It can be poured into molds.

- It is durable.
- It sets underwater.



DID YOU KNOW

Projects and renovations using concrete were commissioned by the emperors to gain favor with the population.



TERM TO KNOW

Concrete

A building material made from cement and crushed stone or sand

3. The Pont du Gard

Rounded arches are possible with stone but only to a certain size, after which you run the risk of collapse. Large expanses wouldn't have been possible with just stone.

➞ **EXAMPLE** Take, for instance, this amazing example of a Roman aqueduct below:



Pont du Gard

Roman aqueduct

Late 1st century BC

Nîmes, France

This structure, the Pont du Gard in Nîmes, France, wouldn't have been possible with just stone. It was built in the late first century BC.

This **aqueduct** provided fresh water from more than 30 miles away. It has an almost imperceptible gentle decline of 54 total feet, gradually over those 30 miles, which is pretty amazing. This is as much a mathematical marvel as it is an architectural one. The huge, rounded arches that stretch across the river wouldn't have been possible without concrete. The proliferation of structures such as this around the empire, in addition to the technical innovations inherent to those structures, was another way of reinforcing the Roman image of power.



TERM TO KNOW

Aqueduct

An architectural structure built to move large quantities of water from one place to another

4. The Maison Carrée

Now, this next image, the Maison Carrée, was built by the Roman military man, Marcus Agrippa, in 12 BC.



Maison Carrée

12 BC

Cut stone and masonry

Nîmes, France

This structure is dedicated to the two adopted sons of Marcus Agrippa's friend and emperor, Augustus Caesar. The fact that it remains in such amazing condition is due to two things: the construction prowess of the Romans and their use of concrete and cut stone, and the fact that it was converted into a Christian church hundreds of years later.

This structure is beautiful to classical Greek ideals but in a manner that really becomes entirely Roman. Specifically, the combination of the freestanding colonnade surrounding the portico, or the area in the front, and its use of embedded columns for the remainder of the building are Roman characteristics. The Maison Carrée is an example of a **pseudoperipteral** temple, where it appears to have columns extending around all four sides when, in fact, some of the columns are actually pilasters that are attached to a solid background, rather than free-standing columns.



DID YOU KNOW

Note that the freestanding colonnade and the embedded columns are just aesthetic enhancements.

These do not provide any support. Also note the use of the Corinthian-style column, specifically in the outdoors, which we don't typically see in Greek architecture. In comparison to Greek structures, Roman buildings could be more technically complicated due to the use of concrete.

Greek structures such as the Parthenon are true architectural marvels. But, like other Greek temples, they are just an elaborate application of the basic post-and-lintel system, which is partly a consequence of the lack of available materials. Cut stone has tremendous compression strength but is considerably weaker in its lateral strength. The higher you build, the more this comes into play.



TERM TO KNOW

Pseudoperipteral

Appearing to have columns extending around all four sides, when in fact some of the columns are not free-standing, but rather attached and decorative

5. The Colosseum

The Roman adoption of the Etruscan Roman arch, combined with the construction qualities of concrete, resulted in a height and airiness to buildings that wasn't possible before.

➞ **EXAMPLE** The famous Colosseum in Rome, Italy, shown below, is an example of this.



The Colosseum

72-80 AD

Masonry, stone

Rome, Italy

Architecture of the Colosseum, which was also called the Flavian **Amphitheater**, started in 72 AD and was dedicated in 80 AD. It's constructed of **masonry** and stone. Even though it has three levels of columns, these are merely aesthetic additions.



DID YOU KNOW

Tuscan columns, the Roman interpretation of the Doric column, were on the bottom. Ionic columns were on the second level, and Corinthian columns were on the top. Corinthian columns do not function as load-bearing supports.



TERMS TO KNOW

Amphitheater

An open-air building with rounded edges and tiered seating that is used for entertainment

Masonry

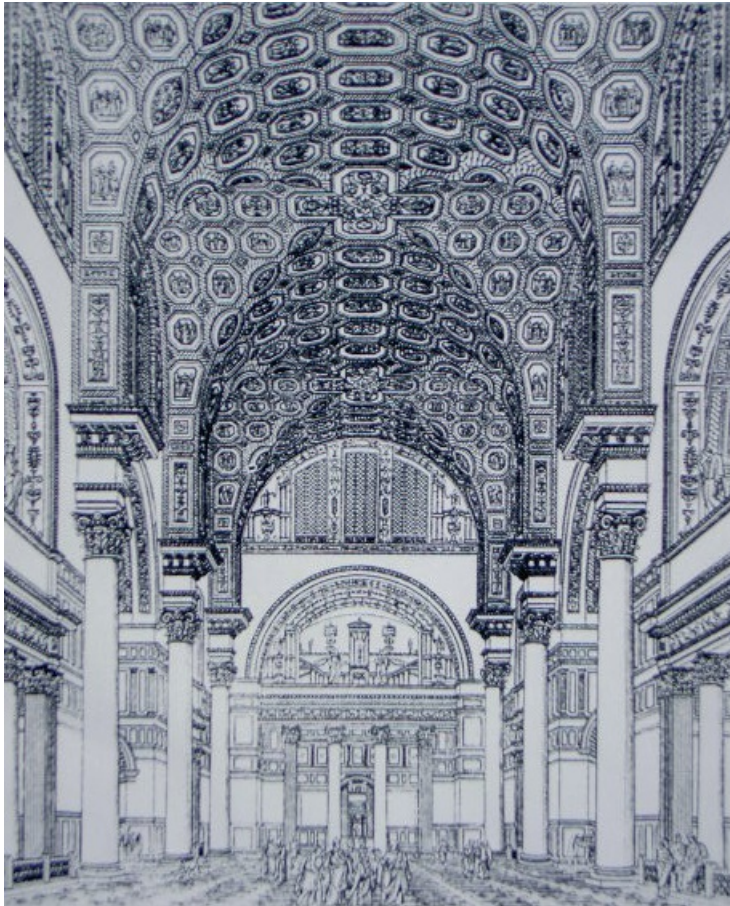
Stonework

6. Baths of Caracalla

Along with the Colosseum, the public Baths of Caracalla were an example of a public work commissioned by

emperors as a way of building and/or maintaining popularity among the people. The Colosseum became an arena for gladiatorial events while the public baths served as a place where Roman citizens could bathe, relax, and socialize. They were constructed of concrete.

➔ **EXAMPLE** This final example is of the public Baths of Caracalla from early 3rd century AD.



Public baths of Caracalla

Early 3rd century AD

Rome, Italy



SUMMARY

Historically, the **invention of concrete** made an impact in many different cultures and civilizations. It was one of the greatest achievements in architecture, especially Roman architecture. In this lesson, you learned about the **period and location of the elements of Roman architecture**.

Some examples you explored were: **The Pont du Gard**; **Maison Carrée**; **The Colosseum**; and the **Baths of Caracalla**. Many of these structures were large and expansive, and they would not have been possible with just stone. Remember that many of these structures were also examples of public works commissioned by emperors as a way of building and/or maintaining popularity among the people.

Source: THIS WORK IS ADAPTED FROM SOPHIA AUTHOR IAN MCCONNELL.



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TERMS TO KNOW

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An open-air building with rounded edges and tiered seating that is used for entertainment.

Aqueduct

An architectural structure built to move large quantities of water from one place to another.

Concrete

A building material made from cement and crushed stone or sand.

Masonry

Stonework.

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Appearing to have columns extending around all four sides, when in fact some of the columns are not free-standing, but rather attached and decorative.