

BASIC IDENTIFICATION**Site name:**

Basilica of San Zeno Maggiore

Location:

Verona (Veneto, Italy), Piazza San Zeno

Associated complex:

Abbey of San Zeno (basilica, crypt, cloister, bell tower, monastic buildings)

Geographical context:

South-western sector of Verona, originally suburban and aligned along the Roman Via Gallica; area characterised since Late Antiquity by funerary use and early Christian cults

Chronological range (site):

Late Antiquity (5th–6th centuries) – present

Focus period for roofing systems:

Romanesque and Gothic periods (12th–14th centuries)



Figure 1. Verona, aerial view of the Basilica of San Zeno Maggiore. (Source: [Parrocchia di San Zeno](#))

1. HISTORICAL OVERVIEW

The Basilica of San Zeno Maggiore stands among the most significant Romanesque monuments in northern Italy and represents a cornerstone for the study of medieval ecclesiastical architecture and roofing systems in the Veneto. Its history is inseparable from

the cult of Saint Zeno, bishop of Verona in the later 4th century, whose burial place rapidly became a focal point of Christian devotion and urban memory.

The site developed outside the Roman city walls, along the Via Gallica, within a landscape marked by funerary monuments and early Christian burials. An initial church was probably erected between the 5th and 6th centuries near the saint's tomb. Although little survives from this earliest phase, literary and archaeological evidence confirms the continuity of cult and the progressive monumentalisation of the site.

A decisive transformation occurred in the Carolingian period. In 806, a large basilica was consecrated under Bishop Ratold and Archdeacon Pacifico, in the presence of King Pepin of Italy. This phase established San Zeno as a monastic and political centre of regional importance. Subsequent rebuilding campaigns in the 10th and early 11th centuries, promoted by Bishop Raterius, reshaped the complex in a Romanesque idiom.

The catastrophic earthquake of 1117 caused extensive damage, prompting a comprehensive reconstruction that defined the basilica's enduring architectural identity. By the mid-12th century, San Zeno had assumed the form largely preserved today: a monumental three-aisled basilica with crypt, articulated nave elevations, and an imposing bell tower.

Later, in the late 14th century, Gothic interventions introduced significant changes, particularly in the eastern termination and in the roofing systems of the nave. These additions did not erase the Romanesque structure but rather layered new constructional and aesthetic solutions upon it, creating a complex architectural palimpsest.



Figure 2. Verona, Basilica of San Zeno Maggiore, exterior view. (Source: [Parrocchia di San Zeno](#))

2. BUILDING PHASES AND CHRONOLOGY

2.1 Early Christian and Carolingian Phases (5th–9th centuries)

The earliest ecclesiastical structures at San Zeno were likely modest basilican buildings with timber roofs, consistent with late antique constructional practice in northern Italy. These early phases emphasised continuity of cult rather than architectural permanence.

The Carolingian basilica consecrated in 806 marked a significant enlargement and formalisation of the site. Although its precise architectural configuration remains uncertain, it likely featured a longitudinal plan with timber roofing and masonry walls, integrating monastic functions into the sacred complex.

2.2 Romanesque Reconstruction (10th–12th centuries)

The Romanesque rebuilding unfolded in successive stages between the late 10th and mid-12th centuries. The basilica adopted a three-aisled plan with a raised nave, side aisles, and a spacious crypt beneath the presbytery. Alternating piers and columns articulate the nave arcades, creating a strong rhythmic progression along the longitudinal axis.

After the earthquake of 1117, walls, arches, and roofing systems were extensively rebuilt. Structural solutions prioritised robustness and flexibility: timber roofs were favoured over stone vaulting in the nave, while masonry vaults were reserved for the crypt and structurally confined areas.

2.3 Gothic Interventions (late 14th century)

Between 1385 and 1389, significant Gothic modifications were introduced, most notably the construction of a timber ceiling shaped as an inverted ship's hull over the nave and the reconfiguration of the apse with Gothic ribbed vaults. These interventions reflect advanced carpentry techniques and a refined understanding of load management, acoustics, and spatial perception.

3. STRUCTURAL AND TYPOLOGICAL ANALYSIS OF THE ROOFING SYSTEMS

3.1 General Roofing Strategy

The roofing systems of San Zeno are characterised by a clear distinction between internal ceiling articulation and external roof structures. This dual system, typical of large Italian basilicas, allowed builders to combine structural efficiency with spatial and symbolic expressiveness.

Timber roofing was consistently preferred for wide nave spans, reducing the mass and lateral thrust associated with stone vaulting. Masonry vaults were selectively employed in the crypt and later in the presbytery, where spatial hierarchy and structural containment justified heavier solutions.



Figure 3. Verona, Basilica of San Zeno Maggiore, interior view. (Source: A. Passuello)

3.2 The Nave Ceiling: Inverted Ship-Hull Timber Roof (*Soffitto a Carena di Nave Rovesciata*)

The most distinctive roofing feature of San Zeno is the late Gothic timber ceiling of the nave, shaped as an inverted ship's hull and executed between 1385 and 1389. This ceiling belongs to a well-defined typological category widespread in the Veneto, representing a highly sophisticated carpentry solution rather than a derivative of nautical construction.

The term *carena di nave* derives from visual analogies: the longitudinal central element recalls a ship's keel, the curved profile evokes an inverted hull, and the horizontal ledges along the nave walls resemble elements known in Venetian nautical terminology as *baccalari*. These associations are formal rather than technical, yet they contribute to the strong symbolic resonance of the ceiling.

Structurally, the *carena* is a lightweight timber lining suspended beneath the principal roof trusses, not a load-bearing vault. It is composed of horizontal timber elements anchored to the walls and a central curved segment formed by shaped boards and moulded components. This configuration allows the ceiling to span the full width of the nave while remaining structurally independent from the external roof.

The curved geometry plays a crucial role in distributing loads and limiting deformation. By avoiding heavy masonry vaults, the ceiling significantly reduces gravitational loads and lateral thrust on the nave walls and piers, a decisive advantage in a seismic context. At the same time, the curved timber surface enhances acoustic performance and contributes to thermal moderation within the nave.

Visually, the *carena di nave* establishes a continuous longitudinal canopy that unifies the Romanesque articulation of arches and piers beneath a single Gothic envelope. The ceiling thus operates simultaneously as a structural, environmental, and spatial device, testifying to the high level of late medieval carpentry achieved in Verona.

3.3 External Roof Structure and Vaulted Areas

Above the decorative timber ceiling lies a traditional pitched roof supported by timber trusses (*capriate*), which carries the environmental loads of the roof covering. This separation between internal ceiling and external roof represents an advanced constructional strategy, allowing for maintenance, adaptation, and long-term durability.

In contrast, the crypt is entirely covered by groin vaults, resting on dense rows of columns and reflecting Romanesque structural logic. The apse and presbytery are articulated by Gothic ribbed vaults, which channel loads vertically and integrate with the surrounding masonry.

4. CONTEXTUALIZATION OF THE ROOFING SYSTEMS

4.1 The Veneto Tradition of Timber Ceilings

San Zeno's roofing systems exemplify a broader Venetian and northern Italian tradition that favoured timber ceilings over full stone vaulting in large basilical naves. This tradition reflects material availability, carpentry expertise, and an awareness of seismic risk.

4.2 Comparison with San Fermo Maggiore (Verona)

A direct and illuminating comparison can be made with San Fermo Maggiore, also in Verona, whose nave is covered by one of the most extensive inverted ship-hull ceilings in Italy. While larger in scale, the San Fermo ceiling shares the same constructional principles as San Zeno's: suspension beneath roof trusses, reliance on curved timber geometry, and reduction of structural mass.

The coexistence of these two monumental examples within the same urban context suggests the presence of a local carpentry culture capable of addressing ambitious architectural challenges through timber engineering.



Figure 4. Verona, Basilica of San Zeno Maggiore, inverted ship-hull timber ceiling. (Source: A. Passuello)

4.3 Italian and European Comparisons

Comparable ceilings are attested in other northern Italian churches, such as San Giacomo dall'Orio in Venice, albeit on a smaller scale. In contrast, transalpine Gothic architecture privileged extensive stone vaulting, highlighting a marked regional divergence in roofing strategies.

This contrast underscores the existence of a Mediterranean constructional dialect, in which timber was exploited not as a provisional solution but as a medium for technical innovation and architectural expression.

4.4 Structural Logic and Symbolic Resonance

Beyond structural considerations, the inverted ship-hull ceiling carried symbolic associations with the Church as the *navis Ecclesiae*. While secondary to constructional logic, this symbolism reinforced the perception of the nave as a unified and protective space beneath a continuous canopy.

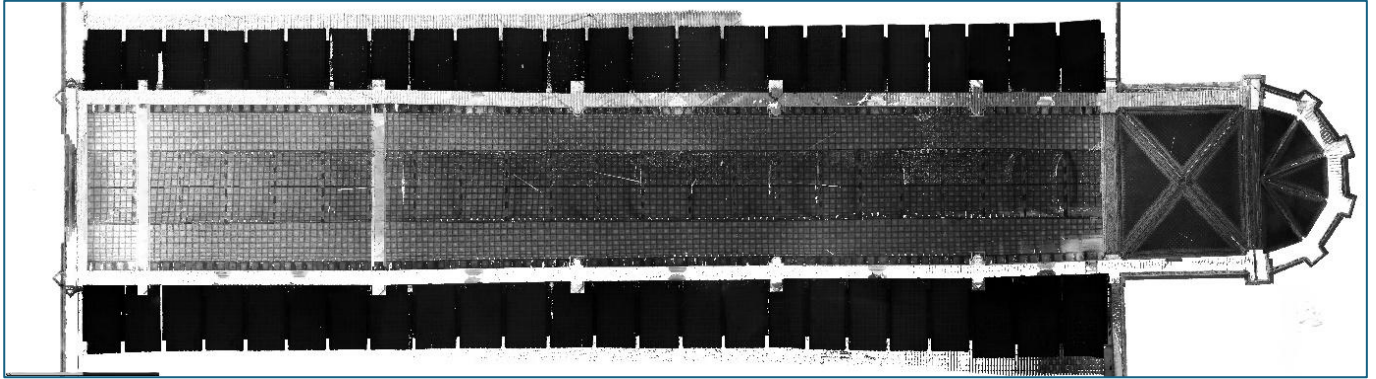


Figure 5. Verona, Basilica of San Zeno Maggiore, orthophoto and plan of the inverted ship-hull roof structure. (Source: ADB Architettura e Ingegneria, Verona)

5. RESTORATION HISTORY AND CONSERVATION STATUS

San Zeno has undergone continuous maintenance since the Middle Ages. Major restoration campaigns followed the earthquake of 1117 and the Gothic interventions of the 14th century. In the modern era, conservation efforts have focused on stabilising the timber ceilings, consolidating masonry, and preserving the Romanesque decorative programme.

Today, the basilica is in a good state of conservation. The roofing systems—both timber and masonry—are carefully monitored, and the stratified coexistence of Romanesque and Gothic solutions remains clearly legible, making San Zeno a key reference for the study of medieval roofing systems in Italy.

6. ESSENTIAL/SELECTED BIBLIOGRAPHY

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Figure 6. Verona, Basilica of San Zeno Maggiore, attic spaces above the aisled nave. (Source: ADB Architettura e Ingegneria, Verona)