BASIC IDENTIFICATION

Site name:

Baptistery of Padua (Battistero del Duomo)

Location:

Padua (Veneto, Italy), Piazza Duomo

Associated complex:

Cathedral complex of Santa Maria Assunta (Cathedral, Baptistery, Episcopal Palace)

Geographical context:

Historic centre of Padua, within the episcopal and civic core of the medieval city

Chronological range (site):

11th century – present

Focus period for roofing systems:

11th–12th centuries, with later medieval maintenance and restorations

Figure 1. Padua, Baptistery, exterior view. (Source: A. Passuello)

1. HISTORICAL OVERVIEW

The Baptistery of Padua stands as one of the most significant medieval religious buildings in northern Italy, both for its architectural structure and for the extraordinary fresco cycle executed in the mid-14th century. Architecturally, it represents a crucial example of a centrally planned baptistery rooted in early Christian tradition, yet profoundly reinterpreted through Romanesque construction techniques and medieval roofing strategies.

The building forms an integral part of the episcopal complex of Padua, together with the cathedral of Santa Maria Assunta and the episcopal palace. Its function as a baptistery required architectural autonomy, expressed through a compact and monumental form, spatial centralisation, and a roofing system dominated by a masonry dome.

The origins of the Baptistery are generally placed in the 11th century, during a phase of intense ecclesiastical and urban renewal in Padua. Although documentary evidence from this early period is limited, archaeological and architectural investigations confirm that the structure was conceived as a unified Romanesque project, characterised by thick masonry walls and a dominant central dome.

Throughout the Middle Ages, the Baptistery remained in continuous use, its roofing system requiring periodic maintenance but never undergoing radical structural transformation. This remarkable continuity makes the Baptistery a privileged observatory for studying the long-term performance of medieval domed roofing systems in the Veneto region.

Within the CaMeRoofs project, the Baptistery of Padua functions as a foundational case study for early medieval domed roofing, forming a chronological and typological anchor for comparison with later vaulted and timber-roofed churches in the Veneto hinterland.

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2. BUILDING PHASES AND CHRONOLOGY

2.1 Romanesque Construction Phase (11th Century)

The main construction phase of the Baptistery is generally attributed to the 11th century. The building adopts a centrally planned layout, consisting of a cylindrical masonry body surmounted by a dome. This typology reflects early Christian models while adapting them to Romanesque construction practices.

The perimeter walls are exceptionally thick and serve a dual function: enclosing the interior ritual space and acting as the principal support for the dome. The absence of an articulated drum or internal articulation simplifies load transmission and reflects a preference for structural compactness.

Recent stratigraphic analysis suggests that construction may have proceeded in successive stages, particularly in the upper zones of the walls and at the springing of the dome. Variations in masonry technique and mortar composition indicate adjustments made during construction, likely in response to the structural demands imposed by the dome.

Figure 2. Padua, Baptistery, interior view. (Source: A. Passuello)

2.2 Structural Refinements and Maintenance (12th Century)

During the 12th century, the roofing system appears to have undergone structural refinement rather than radical alteration. This phase likely involved reinforcement of the

springing zone, improvements to waterproofing layers above the dome, and adjustments to the external roof covering.

Archival references from the cathedral chapter point to ongoing concern for the protection of the dome's extrados, highlighting early awareness of the vulnerability of masonry roofing systems to moisture infiltration.

2.3 Decorative Phase and Limited Structural Interventions (14th Century)

In the mid-14th century, the Baptistery became the setting for the celebrated fresco cycle by Giusto de' Menabuoi. While this intervention primarily affected the interior surfaces of the dome and walls, it required stable environmental conditions and indirectly confirmed the continued structural effectiveness of the medieval roofing system.

No substantial modification to the dome or roof structure can be attributed to this phase, underscoring the durability of the original Romanesque construction.

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3. STRUCTURAL AND TYPOLOGICAL ANALYSIS OF THE ROOFING SYSTEMS

3.1 The Dome as the Principal Roofing System

The masonry dome constitutes the primary roofing element of the Baptistery, both structurally and symbolically. It rises directly from the cylindrical perimeter walls, without the mediation of a drum, and encloses the interior space in a continuous shell.

Structurally, the dome operates predominantly in compression. Loads are transmitted radially and vertically to the supporting walls, whose mass counteracts the horizontal thrust generated at the springing level. The absence of articulation simplifies the structural system while increasing reliance on wall thickness.

3.2 Construction Technique and Geometric Profile

The dome is constructed in regular horizontal masonry courses bonded with lime mortar. Its slightly pointed profile, rather than a true hemispherical form, contributes to reducing lateral thrust and improving overall stability—an early indication of structural optimisation that anticipates later medieval developments.

The construction of the dome likely employed wooden centring, carefully calibrated to ensure geometric regularity and load continuity. The consistency of masonry courses attests to a high level of technical competence on the part of medieval builders.

3.3 The Extrados and Intermediate Structural Layer

Above the dome lies a crucial intermediate zone between the masonry vault and the external roof covering. This space performs several essential functions:

- accommodating minor structural movements;
- allowing inspection and maintenance of the extrados;

- facilitating drainage and waterproofing.

Evidence of protective layers and water-management solutions confirms that the dome was never intended to remain exposed. Instead, it formed part of a layered roofing system, in which each element contributed to long-term durability.

Figure 3. Padua, Baptistery, roofing system with dome and pendentives. (Source: A. Passuello)

3.4 External Roof Covering

The dome is externally protected by a roof structure, originally composed of timber elements and tile covering. Although this outer roof does not contribute structurally to supporting the dome, it plays a fundamental protective role by shielding the masonry from direct exposure to rain and temperature fluctuations.

This strategy reflects a widespread medieval concern for the preservation of masonry roofing systems, particularly in regions with a humid climate such as the Veneto.

3.5 Lighting and Structural Integration

Openings at the base of the dome introduce natural light into the interior without compromising structural integrity. Their positioning reflects a careful balance between illumination and continuity of masonry, reinforcing the unity of structural and spatial design.

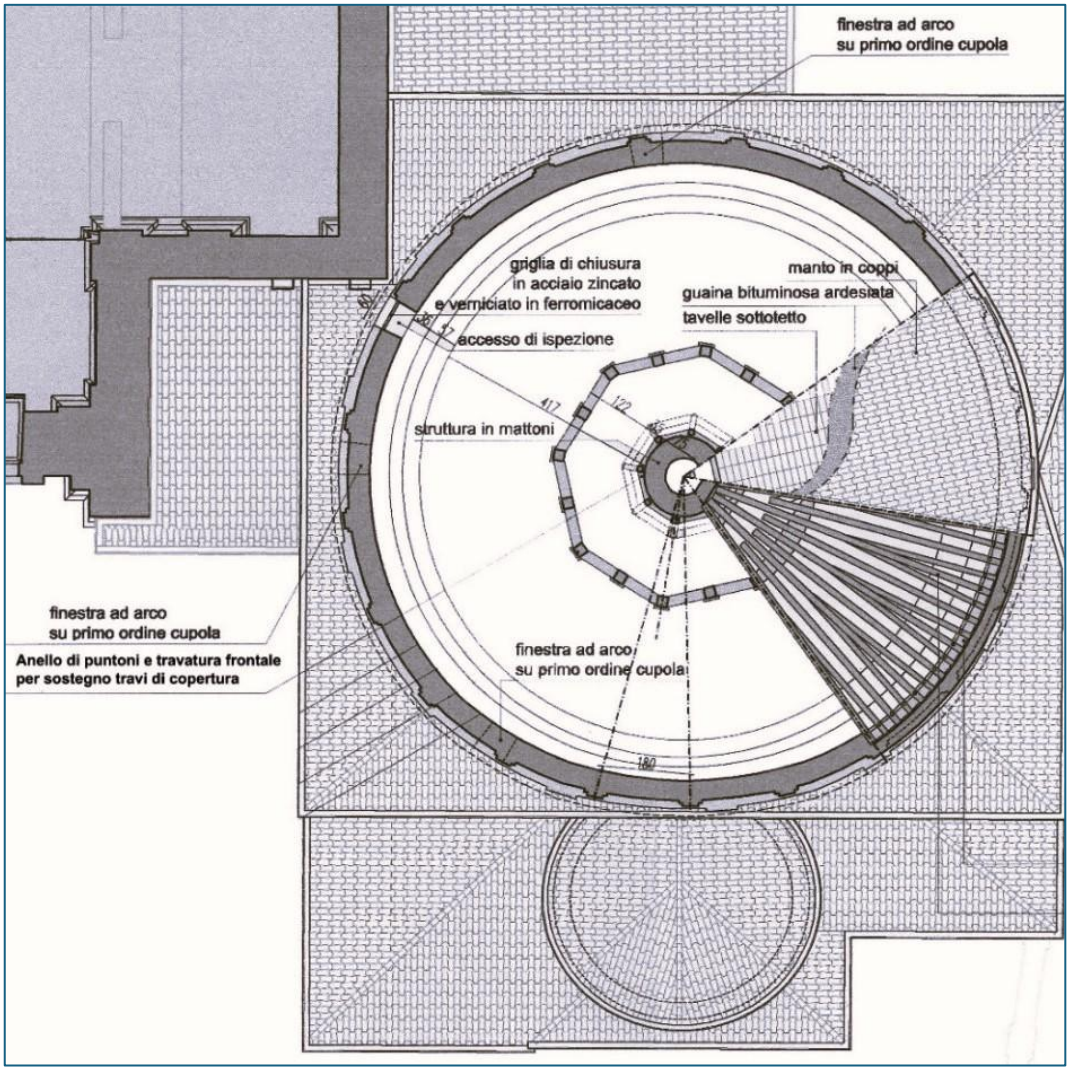

Figure 4. Padua, Baptistery, structural layout of the main dome roofing. (Source: University of Padua Thesis Repository)

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4. CONTEXTUALIZATION OF THE ROOFING SYSTEMS

4.1 Early Christian and Romanesque Traditions

The domed roofing system of the Baptistery of Padua draws inspiration from early Christian baptisteries, such as those of Ravenna, where the dome symbolised the heavenly sphere. However, the Paduan example differs in its heavier masonry construction and reliance on an external protective roof.

This divergence illustrates a regional adaptation of inherited typologies, shaped by material availability, climate, and construction culture.

4.2 Romanesque Centralised Buildings in Northern Italy

Within the Romanesque tradition of northern Italy, the Baptistery can be compared with centrally planned buildings such as the Baptistery of Parma and San Tomè in Almenno San Bartolomeo. Compared to these, Padua's Baptistery appears more compact and structurally conservative, favouring mass and continuity over articulation.

4.3 Transitional Role in Medieval Roofing Practices

The Baptistery occupies a transitional position between exposed domes and later medieval practices of concealing vaults beneath pitched roofs. This layered approach anticipates strategies widely adopted in Gothic architecture, where masonry roofing systems were frequently hidden within complex roof envelopes.

4.4 Regional Parallels in the Veneto Hinterland

Comparable concerns for roofing protection and structural durability can be observed in early medieval churches such as San Prosdocimo in Padua and Santa Maria Mater Domini in Vicenza, reinforcing the notion of a shared regional roofing tradition.

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5. RESTORATION HISTORY AND CONSERVATION STATUS

From the early modern period onwards, the Baptistery required periodic maintenance of its roofing systems, particularly in response to water infiltration at the junction between the dome and the external roof.

Archival sources from the 18th century already mention repairs to the roof covering and drainage systems. Major restoration campaigns in the 19th and 20th centuries focused on consolidating the masonry of the dome, repairing waterproofing layers, and improving rainwater management.

Recent conservation strategies have adopted a preventive approach, emphasising regular monitoring and minimal intervention. Today, the roofing systems of the Baptistery are structurally stable and continue to perform both their protective and symbolic functions.

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