

*Original article*

# DESCRIPTIVE STUDY OF THE PRINCIPAL ARCHITECTURAL ELEMENTS OF THE CHURCH OF ZAHRANI – SOUTHERN LEBANON

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## Article info.

### Article history:

Received: 9-1-2024

Accepted: 14-6-2024

Doi: 10.21608/ejars.2025.471802

### Keywords:

Zahrani

liturgical space

South Lebanon

Aisle

Nave

Inscription

Cross

Diakonikon

EJARS – Vol. 15 (2) – Dec. 2025: 323-328

### Abstract:

Church architecture in Lebanon, as in other regions of the Eastern Mediterranean, follows a structured and recognizable liturgical layout. Typically, churches comprise three main sections: the sanctuary, the naves, and the narthex, with occasional local variations. Attached to these spaces are several liturgical annexes serving the needs of clergy and worshippers, often located to the south and/or north of the main body, and sometimes behind the apse. This organization responds to the region's distinctive topography, characterized by a narrow coastal strip and terraced mountain slopes upon which many churches were erected. During the 5th century, several churches were constructed within or adjacent to former pagan sanctuaries that had previously been avoided, while others, positioned along major routes, attracted travelers and contributed to the development of small towns and new centers of worship. In Lebanon, as in other Eastern regions, the churches broadly conform to a predetermined liturgical scheme, even when constrained by function, available resources, local development, and topography. Externally, their façades express the spiritual organization of the interior through the orientation of the sanctuary, the arrangement of doors, the height and placement of windows, and the use of selected decorative motifs. Even when façades reflect site conditions or financial limitations, they still embody the fundamental purpose of the sacred space through coherent spatial organization. The mosaic floors of Lebanese churches during the Byzantine period (4<sup>th</sup>-7<sup>th</sup> centuries CE) constitute crucial archaeological evidence that allows a precise description of their architectural layout. This is particularly evident in the Church of Zahrani, where a mosaic pavement was discovered in 1950 during the construction of the Zahrani refinery on the Tapline installation and later transferred to the Jesuit Park in Ashrafieh. The history of this church dates back to the 5<sup>th</sup> and 6<sup>th</sup> centuries. It was built in three main phases and underwent significant modifications in its internal divisions and construction techniques. Based on the preserved inscriptions, the first phase of the church dates to 389-390 CE, while a later major phase is attested in 541 CE. The church comprises a main nave with two side aisles to the north and south, and a baptistery located on the southern side. The roof is a wooden vault covered with tiles and supported by sandstone walls and marble columns (third phase). The floor is paved with rich and diverse mosaics representing animals, plants, and geometric patterns, comparable to those in other Lebanese coastal churches. Through the re-examination of previous studies, historical descriptions, the preserved mosaics, and the overall layout, it has been possible to attempt a challenging architectural reconstruction that aims to approximate the original appearance of the church with its main spaces and dimensions.

## 1. Introduction

### 1.1. The church of Zahrani

Any study of Byzantine churches in Lebanon must return to the Byzantine period beginning under the rule of Constantine [1] (from 307 CE), in order to understand the transition from traditional Roman architectural forms to the emergence of new literary, artistic, and architectural expressions following the recognition of Christianity as the official religion of the empire. This turning point led to the formalization

and rapid spread of Christian art in many domains, particularly in building design and church architecture. However, what is usually termed “Byzantine architecture” only fully crystallized in the early 6<sup>th</sup> century [2]. In Lebanon, the development of Byzantine architecture may be divided into two broad phases: an initial, “primitive” phase between the 4<sup>th</sup> and 8<sup>th</sup> centuries, and a period of notable advancement beginning in the 11<sup>th</sup> century [3]. The present study focuses

on the architectural style and principal characteristics [4] prevalent between the 4<sup>th</sup> and 8<sup>th</sup> centuries [5]. The dominant type of church architecture in this period was the basilica [6], with a rectangular plan in which a central nave is flanked by smaller side aisles—sometimes more than two—and often surmounted or complemented by a prominent dome. Mosaic pavements covering church floors appear chiefly between the 5<sup>th</sup> and 7<sup>th</sup> centuries, displaying complex geometric, vegetal, and animal motifs [7]. One of the most important examples of this architectural and artistic tradition in Lebanon is the Church of Zahrani [8]. It is situated in the Zahrani area, along the Lebanese Mediterranean coast, fig. (1-a), approximately 50 km south of Beirut, fig. (1-b). The church was discovered during excavations conducted by the Lebanese authorities for the construction of the Tapline oil refinery in 1950, fig. (1-c). The remains primarily consist of scattered fragments of mosaic pavements, which provide valuable evidence for reconstructing the decorative program and the internal layout of the building [8].



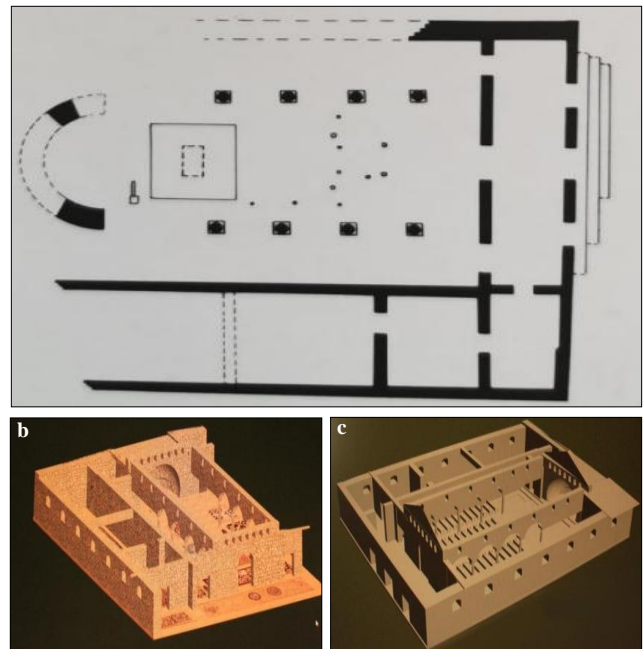
**Figure (1)** Zahrani church; **a.** Satellite view, **b.** location map, **c.** location of the church beneath Al Zahrani refinery

## 2. Methodological Study

### 2.1. Building

The Zahrani church is oriented towards the west. It is a basilica with three naves separated by columns that rest on earlier piers, which were leveled and reused as their bases, fig. (2-a). A narthex precedes the naves to the west, while four annexes are arranged along the south wall, interconnected from the narthex. The third annex functioned as a baptistery, at least in the first two building phases, as shown by two small semicircular basins cut into the floor. Inscriptions designate this third and the fourth annex as “diakonikon” [9], located to the left of the church along the south aisle. The exact phase to which the semicircular apse belongs is not entirely certain. A podium measuring 3.25 m (N–S) by 3.40 m (E–W) occupies the nave in front of the apse. It consists of a slightly elevated earthen core bounded by a row of

sandstone blocks of varying dimensions. Faint traces indicate the former existence of steps on the eastern side, facing the nave. From the earliest phase, the nave was provided with a chancel enclosure in front of the podium. The surviving bases to the south and east outline a projection forming a sort of vestibule towards the east [10]. During a subsequent phase of paving in the central nave, two rectangular slabs were aligned inside the enclosure against the eastern boundary of the primitive chancel, on both sides of an axial passage. In the center of these bases a small column was set, flanked by others of smaller size, supporting a rectangular marble table. In this state, the shallow apse at the end of the nave was flanked by a sacristy to the left, and perhaps also to the right, fig. (2-b). The left sacristy appears to have been raised by a step above the level of the lateral aisle and, for about one meter, it followed the curvature of the apse. The nave likely comprised six bays, of which four and a half were occupied by the combined podium and the advanced choir, fig. (2-c).



**Figure (2)** Zahrani church; **a.** plan, **b.** interior design visualization, **c.** concept of building

### 2.2. Floors

The mosaic pavements appear to be contemporary with the earliest state of the mosaics in the lower church, including the baptistery and the adjacent western room, as well as the two side aisles, although the latter were frequently altered, fig. (3-a). Traces of a plaster floor at an earlier level suggest a phase predating the mosaics [10]. The surface of the preserved pavements is not at a uniform level: it is approximately the same in the nave, the north aisle (right), and the second annex to the east, while the mosaics of the south aisle to the left, fig. (3-b) and the baptistery lie 5 cm and 9 cm lower, respectively. The mosaics of the first and fourth annexes and that of the south sacristy are, on the other hand, raised by 5, 11, and 21 cm, respectively. The mosaic of the sanctuary podium lies 40 cm above the nave, fig. (3-c). All



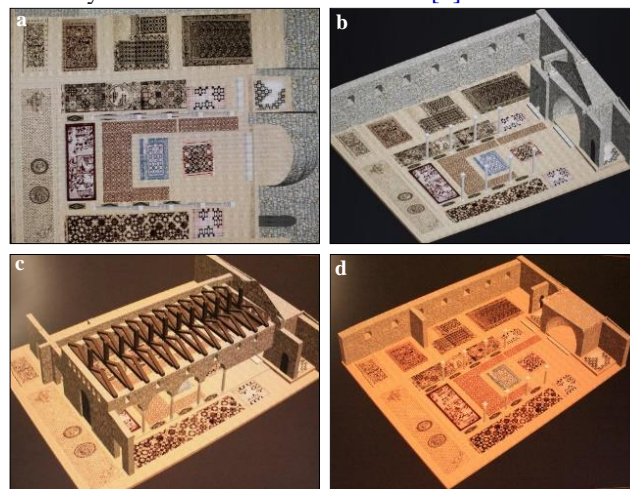
tesserae are made of limestone or sandstone [11]; the palette includes various greys, browns, pinks, white, brick red, and black. Nothing remains of the apse pavement, largely destroyed by the construction works that led to the discovery of the building. The mosaics—especially the earliest—show discreet signs of repair in borders, fields, and even within some inscriptions. The narthex is covered with a continuous mosaic carpet, framed by a narrow border and a two-strand interlaced band. The field consists of a large composition of monochrome scales, each adorned with a rosebud<sup>(a)</sup>. In front of each nave door, a specific motif is inserted into the carpet. To the left, in line with the door to the first southern annex, there is a two-handled amphora<sup>(b)</sup> with opposing S-shaped handles, its lower body fluted. On its rim stand two partridges<sup>(c)</sup>, one of them drinking, fig. (3-d). To the right, closer to the north aisle door, a deep basin on a low pedestal is surmounted either by a handle seen frontally or by a jet of water issuing from its center. Next to the basin, a silhouetted shape—probably a bird—is perched and drinking [2], although the details are difficult to distinguish. In front of the central nave door, a circular medallion bordered by a two-strand interlace is inserted.



**Figure (3)** **a.** Plan of Zaharani for the restoration of mosaic pavements of the second state, **b.** left collateral towards the east, **c.** right collateral towards the entrance, **d.** the mosaic in front of the left door of the narthex

A seven-line inscription in small square and rounded majuscules reads: Ἐτελιώθη ἐ ψέ[φωσις ἐν μ[ηνί Ἰουνίου πρώτη ἰνδικ(τιῶνος) Δ τοῦ ANX ἔτους. “The mosaic pavement was completed on the first day of June, in the year 651, 4<sup>th</sup> year of the indication”, fig (4-a). The date “651” must be read according to the Sidonian era, corresponding to the territory in which the site is located [8]. This era begins in 111-110 BCE and thus places the execution of the narthex mosaic in 541 CE [12]. To the right of this medallion, another, bordered by a line of graduated triangles, also bears an inscription in ten lines of rectangular and oval capitals [13]: Ὑπὲρ σωτηρίας Βαραχέου ὑποδιακ(όνου) (καὶ) Νεεστάρου (καὶ) Βαραχέου υἱῶν αὐτοῦ ἐνεφώθη τὸ ἀμβλατούριον τῆς ἁγίας ἐκκλησίας μη(νὸς) Ἰουνίου Α ἰνδικ(τιῶνος) Δ τοῦ Α(Ν)Χ ἔτους. “For the salvation of Baracheos the sub-deacon, and of Neestaros and Baracheos his sons, the ambulatory of the holy church was paved with mosaics, on the first of June in the year 651, 4<sup>th</sup> of the indiction”. The term ambulatorium used here for the

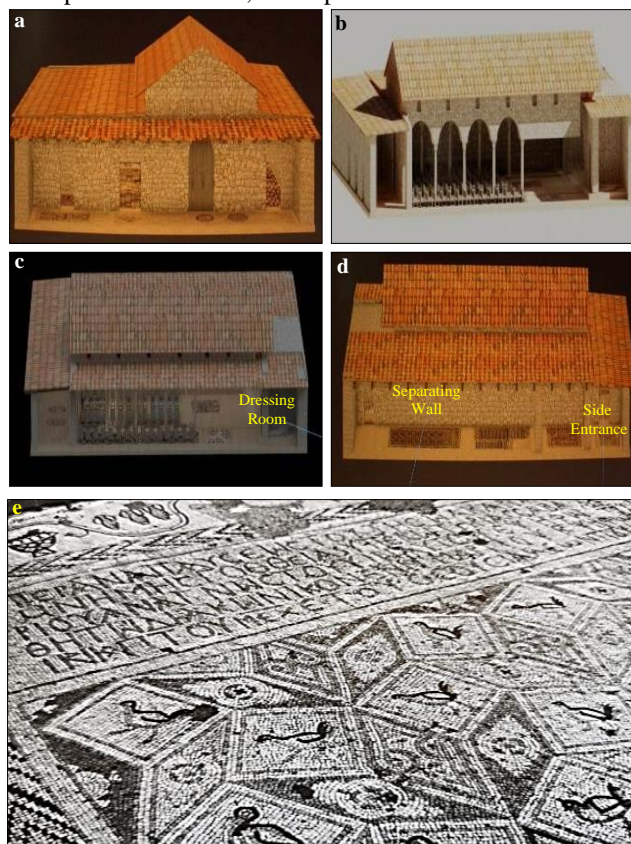
narthex is a remarkable Latinism [13], unique in this specific sense. The date corresponds once again to 541 CE. A large double-winged doorway, as indicated by the preserved threshold, leads into the central nave. From each of the amphorae in the nave zone, two vine branches emerge, producing scrolls, leaves, tendrils, and clusters that shelter two birds. The central part of the field is rectangular, fig (4-b) and bears a medallion with an inscription above which two peacocks<sup>(e)</sup> face one another. The peacocks, shown in profile, greet the visitor entering the nave. Above them runs a long undulating stem with tendrils, ending in short dashes that evoke vegetal ribbons binding the crown of the medallion. The medallion itself is bordered by a cable ornament, with cabochons at the top and possibly at the bottom, where a gap in the pavement appears. The top, left, and right sides of the medallion show traces of blackening, probably from a fire. The inscription, originally consisting of seven or eight lines<sup>(f)</sup>, is heavily damaged. It is written in large round capitals in black tesserae on the left, and in grey rectangular capitals on the right: Ἐπὶ τοῦ [θεοφιλεστάτου ἐπι]σκοπού ημῶν Α[... καὶ Τ[...]αρου Δα]μιάνου εὐ]λαβεστάτου Δύστ]ρου Α Ju. “Under our bishop, very beloved of God, A... and T... and Damianos... and the very pious... on the 1<sup>st</sup> day of Dystros...”. Clear differences are visible between the left and right halves, fig (4-c), not only in color, but also in the execution of the cable and cabochon. The right two-thirds<sup>(g)</sup> appear to have been restored, possibly after an earthquake or heavy wear at the main entrance. The restoration was careful and likely reinstated the original wording and proper names. The field around the choir features a single composition of intersecting and adjacent octagons, with oblique lines forming squares and elongated hexagons adorned with toothed diamonds. In front of the choir, the diamonds alternate red/pink and pink; to the south of the choir, they are only pink. The same composition extends along the south side of the sanctuary podium after a significant gap [8]. On the north side of the choir, the pattern corresponds to that at the western end of the aisle and seems to have formed one continuous carpet spreading over both the nave and the aisle, fig (4-d). The right (north) lateral nave bears a unique geometric carpet covering four bays, while an independent carpet covers the fifth bay at the level of the raised choir [8].



**Figure (4)** **a.** top view tile Zaharani, **b.** interior perspective, **c.** structure of ceiling, **d.** perspective front view in the church.

In front of the entrance door, the white mortar joint serves as a background for an inscription that must have been read from outside, looking inward. It originally had three lines; only two letters survive from the first line, followed by an area filled in with scattered white and black tesserae, indicating repair due to wear [7]. The letters are rectangular capitals [13]: Κύ[ριε ... οἱ] Ναύκληροι ἐξάμενοι τὴν στοάν ἐψηφώσαν +. “Lord... The shipowners, following the vow they had made, paved this portico with mosaics.” The inscription is of particular interest because it mentions shipowners (naūklēroi) in a seaside church and uses the term stoa to designate the aisle closed by a colonnade, in addition to diastēma and euboikos, already known elsewhere. The decorative scheme is a grid of serrated bands with squares set on edge and an intricate play of intersecting right-angled squares. The motifs include perspective solids, four-petal rosettes, nested squares, rainbow-effect patterns, and circles surrounded by four buds. A central alignment of squares contains a fluted vase, a Greek cross with four small crosses, a chi-rho monogram of the Constantinian type [14], a Solomon’s knot<sup>(b)</sup>, and possibly another gilded cross. As with the inscription, the chrism is meant to be read from the center<sup>(c)</sup>. A fourth mosaic carpet, preserved in fragments in the fifth bay, is a grid of bands framed by inscribed squares. The intercolumniar panels to the south and north contain large reclining lozenges with metalwork motifs, squares with cabochons, cordiform elements, and concentric circles. Around the low choir, inside the alignment of the chancel posts, the white background is sprinkled with St Andrew’s crosses, toothed lozenges, swastikas, and rosettes, while along the field to east and west runs a wavy tendril with heart-shaped leaves, fig (5-b). The third annex—the baptistery, fig (5-c)—was organized into two unequal rectangular carpets laid parallel against the west wall, leaving a square area above the western baptismal basin. Only a north–south band of mosaic delimits this space to the west, composed of a truncated row of hexagons sheltering toothed lozenges. The principal northern carpet consists of intersecting octagons forming hexagons and squares adorned with tooth-edged lozenges, while the smaller rectangular carpet in the southwest corner displays interlaced circles enclosing four-petal rosettes and bifid crosses. The fourth annex contains a single carpet with an extension on the eastern entrance side; the western edge is destroyed. The border is double—triple on the eastern side—with a line of rosebuds along the wall. A continuous wavy scroll originates from stylized vases resembling pelta shields and carries large heart-shaped leaves, grape clusters, lotus-like flowers, baskets of fruit, birds, and tall amphorae. The field is a composition of staggered groups of diamonds defining squares, a unique geometric design. The longitudinal eastern panel is read from west to east. The inscription is written in gray round and rectangular capitals [13], ending in a monogram composed of the letters Φ, Ω, T, Y, A, M, A, T, and E, fig (5-e): Ὑπὲρ ἀναπαύσεως τοῦ τῆς (μ)ακαρίας μνήμης Γοθθείας (καὶ) ὑπὲρ σωτηρίας Σαβαρίου ἀναγνώστου υἱῷ αὐτοῦ ἐψηφώθη τὸ διακωνικὸν ἐν μηνί Μαρτίου Κ' ἰνδικ(τιῶνος) ΠΙ τοῦ ΜΕΧ ἔτους Σουσία (καὶ) Λεωντίου υἱῷ αὐτοῦ ἐψηφώθη. “For the repose of the soul of Gottheias of blessed memory and for the salvation of Sabarios the reader, his son, the diakonikon was paved with mosaics on

the 20<sup>th</sup> of March, in the year 645, 13<sup>th</sup> of the indication. For the salvation of Sousias and of Leontios, his son, the mosaic was laid”. This inscription explicitly identifies the room as a diakonikon, as suggested in the second annex. The date, read according to the Sidonian era like the other inscriptions on the site, corresponds to 20 March 535 CE.



**Figure (5)** **a.** perspective front view, narthex with three entrances, **b.** section/perspective right view, **c.** perspective right view, **d.** perspective left view, **e.** the mosaic with inscription at the south annex (After: *Center of the Sanctuary Form*, 2023).

### 3. Results

The westward orientation of the church remains a distinctive architectural feature that survived later remodeling [15]. The original design, with a double colonnade and a low chancel enclosure, persists beneath subsequent renovations. Although the three carpets in the choir and right aisle do not bear explicit dates, their stylistic traits, viewed within the broader historical context—particularly the edict of Valentinian and Theodosius in 427 CE—allow a relative chronological placement, even if direct association with specific events is excluded. Several inscriptions, however, provide more secure chronological points: the mosaics in the left aisle date to 389–390 CE; those in two annexes to 524 and 535 CE, respectively; and those in the narthex to 541 CE [9]. These dates attest to continued maintenance and replacement of mosaic pavements, leading to superposed levels and visible repairs throughout the building. The inscription medallion in the left aisle and its geometric carpet likely belong to the same phase. Stylistic affinities between the left and right aisles and several annex rooms suggest an initial campaign



of decoration forming a coherent first phase. Further stylistic comparison indicates a staggered building history: the carpets in the side aisles probably belong to the early 5th century; the projecting choir and choir platform may date to the latter half of the 5th century. The intercolumnar carpets and those in the annexes share stylistic features but have different dates, ranging between 524 and 541 CE [16]. The considerable financial resources required for successive phases of mosaic execution and repair, together with the variety of donor inscriptions, underscore the sustained involvement of clergy and lay patrons. The pavements of the side aisles can be compared to those at Qaousiyé, while the knot lattice in the lower choir finds parallels in nearby regions, indicative of a wider stylistic network of the advanced 5th century. Comparable knot ornaments continue to play an important role in later decorative traditions, as demonstrated by recent studies of Islamic art from Khorasan [17]. Certain Christological images suggest a date around the 470s, whereas more complex interlace patterns are likely to belong to the 6th century. The crosses and chi-rho symbols, fig (6), especially in the right nave and choir, show distinctive variations in form and arrangement; the absence of diagonal “X”-shaped chi-rho monograms suggest adherence to the Constantinian type. Finally, the scale panels in the narthex and north aisle reveal the ongoing development of this motif, and the unique geometric composition in the last annex demonstrates the high level of sophistication attained within the church’s architectural framework.

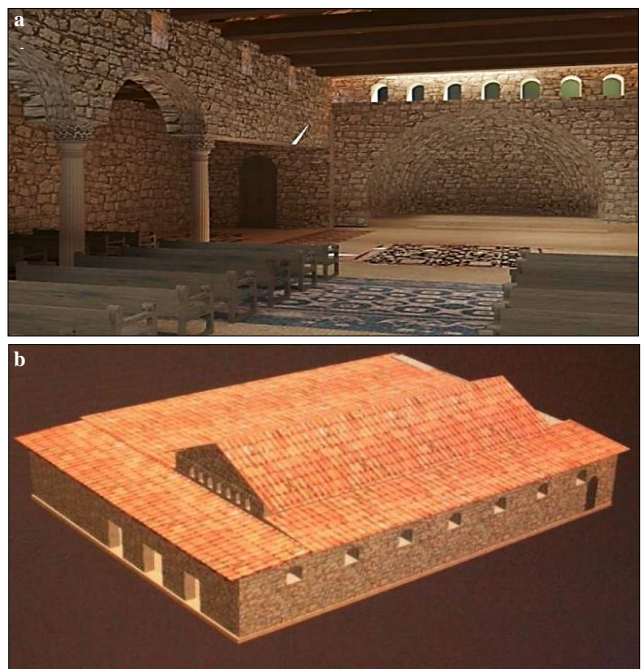


**Figure (6)** the mosaic preserved in the (After: *Center of the Sanctuary Form*, 2023)

#### 4. Discussion

The combined study of representations and inscriptions yields several important insights. *First*, the vocabulary of architectural terminology is noteworthy. We have observed the terms stoa for the aisle, ambulatorium for the narthex, and the designation of two rooms as diakonikon. These deacons’ rooms lie next to each other along the left (south) side of the basilica, at choir level. In the farthest of these rooms, the orientation of the figural motifs and the inscription suggests a direction of movement from the apse towards the entrance; the room was therefore mainly accessed either from external buildings or from the sacristies. In the nearer room, the inscription—visible from the narthex—again announces the diakonikon. Thus, both orientation and text converge towards the room equipped with baptismal fonts. In this later phase of the building, the pavement of the

earlier baptistery is relatively plain, and the rapid pace of excavation probably prevented the recovery of all elements necessary for a more detailed study of the space. The two basins that were found are small in size but may represent only the preserved lower parts of originally larger fonts. They could have been widened upwards by steps above the level of the mosaic pavement, into which they presently sink about 35 cm. The square void in the final pavement corresponds to the shallower semicircular basin in the southeast corner; the other basin to the west was likely covered by the later mosaic floor. The use of the term diakonikon for rooms associated with baptismal fonts finds parallels in both vocabulary and relative position at Soran, Mount Nebo, and Khirbet el Kérak–Beit Yerah [18]. A fourth mention of diakonikon in a pavement occurs in a less clear architectural context but probably in an annex of a church. In no case does it refer exclusively to the sacristy flanking the apse, although this meaning becomes standard in medieval Byzantine usage [19]. At Mount Nebo–Râs Siyagha [20], an inscription located at the entrance to a large hall, whose eastern part contains the baptismal fonts, commemorates the reconstruction and redecoration “of the sacred diakonikon of God, with the holy pool of regeneration which is in it”. Here, the diakonikon is explicitly the room containing the baptismal fonts. The baptistery is thus integrated into the set of rooms that formed the particular domain of the deacons. Considering that deacons were responsible for registering candidates for baptism, managing much of the interaction with the faithful, administering alms, and organizing the baptismal ceremony—including anointing and clothing—it is not surprising to find the “deacons’ room” directly associated with the place of baptism. The regular alignment of the four southern rooms in Zahrani, fig (7-a) suggests that they formed a coherent liturgical and functional circuit, fig (7-b), closely tied to the ministry of the deacons and to the rites of initiation [21] and pastoral care.



**Figure (7)** **a.** Interior Central View, **b.** Perspective View

## 5. Conclusion

The Church of Zahrani, a substantial coastal basilica dating to the 5<sup>th</sup> and 6<sup>th</sup> centuries, stands out for both its scale and its location. Constructed over several phases spanning roughly a century, its architectural style evolved in response to changing liturgical needs, available resources, and patronage patterns. Supported by mari-time merchants, owing to the site's commercial significance, the church exhibits an unusual westward orientation, reminiscent of certain North African churches and marking it as a distinctive regional variant. The Greek inscriptions and Christian symbols—including crosses and chi-rho monograms in the choir and aisles—provide valuable information about the internal organization and symbolic program of the building. The design of the choir shows affinities with nearby churches, revealing shared regional traditions, while elements such as the absence of a synthronon and the specific arrangement of altar and apse reflect broader identities in liturgical practice. Donor inscriptions associated with the diakonikon, the narthex, and the side aisles highlight the role of clergy and laity in financing and maintaining the mosaic pavements over time. The chronological sequence obtained from the inscriptions, spanning from 389-390 CE to 541 CE, confirms that the church was the object of continuous investment and care. More broadly, the Zahrani church contributes significantly to our understanding of coastal ecclesiastical architecture in Byzantine Lebanon. Its architecture, mosaics, and inscriptions illuminate the interaction between liturgical requirements, local geography, and social structures, enriching the wider picture of Christian religious life and artistic expression in the Eastern Mediterranean during Late Antiquity. The proposed architectural reconstruction also resonates with recent digital-heritage approaches that use 3D documentation and visualization to communicate the value of damaged or partially preserved monuments.

## Endnotes

- (a) Rosebuds symbolize purity, beauty, and the divine presence of Mary, enriching the spiritual narrative of the mosaic program.
- (b) The amphora is an ancient Greek jar or vase with a large oval body, narrow cylindrical neck, and two handles rising almost to the rim. In Roman and Byzantine ornament, it represents a vessel of abundance and divine grace.
- (c) The partridge, a short-tailed game bird with predominantly brown plumage, symbolizes renewal and the afterlife, reflecting beliefs in spiritual transformation and eternal life.
- (e) The peacock represents immortality, resurrection, and eternal life in Christian symbolism; its brilliant plumage alludes to divine beauty and the heavenly realm.
- (f) The misalignment of the lines on either side of the fracture and the distortion of the circle clearly indicates the removal and later reassembly of the mosaic rather than an ancient restoration.
- (g) The ease and regularity of the letters on the left, and the way they fit the frame, suggest that this portion is earlier and primary.
- (h) The term “Solomon’s knot” alludes to King Solomon, renowned for wisdom; the motif itself symbolizes unity, continuity, and the eternal cycle of life, death, and rebirth. For a broader discussion of the symbolic significance of knot patterns in later decorative traditions, see Gaber [20].
- (i) At a certain stage, white limestone blocks blocked the exit. It remains unclear whether this blockage coincided with the laying of the mosaic or occurred later.

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