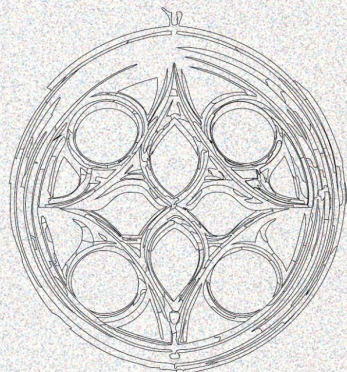


DOMUS DEI: THE HOUSE OF GOD

**CREATING A BEAUTIFUL CATHOLIC CHURCH IN AN
ATTAINABLE WAY**



They are to make a sanctuary for me, that I may dwell in their midst. According to all that I show you regarding the pattern of the tabernacle and the pattern of its furnishings, so you are to make it.

- Exodus 25:8-9

THESIS QUESTIONS

- ④ **How can the beauty of a contemporary church building signify the unchanging solemnity of Catholic worship and aid in the search for the Divine?**
- ④ **How can beauty and craftsmanship be returned to new churches in an economical way through modern construction methods and materials?**
- ④ **How can these ideals be applied to design a transcendent sacred space for a small parish with limited resources?**

BEAUTY IN SACRED ARCHITECTURE

- ④ “What is beauty, which writers, poets, musicians, and artists contemplate and translate into their language, if not the reflection of the splendor of the Eternal Word made flesh?”¹
- Pope Benedict XVI
- ④ Beauty is one of four transcendentals of the Catholic tradition, along with truth, goodness, and unity. Beauty raises our senses beyond ourselves to something greater and serves as a visible manifestation of the goodness of God.



- ④ St. Thomas Aquinas lists three essential conditions for beauty²:
 - *Integritas*: wholeness or integrity; It must not be deficient in what it needs to be most itself.
 - *Consonantia*: proportionality or harmony; Its dimensions should suitably correspond to other physical objects as well as to a metaphysical ideal, an end.
 - *Claritas*: clarity or radiance; It should clearly radiate intelligibility, the logic of its inner being and impress this knowledge of itself on the mind of the perceiver.

SIGNIFICANCE OF CATHOLIC LITURGICAL ARCHITECTURE

- ⊕ The United States Council of Catholic Bishops, in the document *Built of Living Stones: Art, Architecture and Worship*, wrote:
- “Because the church is a house of prayer in which the Eucharist is celebrated and the Blessed Sacrament is reserved, a place where the faithful assemble, and a setting where Christ is worshiped, it should be worthy of prayer and sacred celebration, built in conformity with the laws of the Church, and dignified with noble beauty and intrinsically excellent art.”¹
- ⊕ The Catechism of the Catholic Church, paragraph 1145, states: “A sacramental celebration is woven from signs and symbols. In keeping with the divine pedagogy of salvation, their meaning is rooted in the work of creation and in human culture, specified by the events of the Old Covenant and fully revealed in the person and work of Christ.”²



1. USCCB. (2000). *Built of living stones*. United States Conference of Catholic Bishops

2. Catholic Church. (2000). *Catechism of the catholic church* (2nd ed.). Our Sunday Visitor.

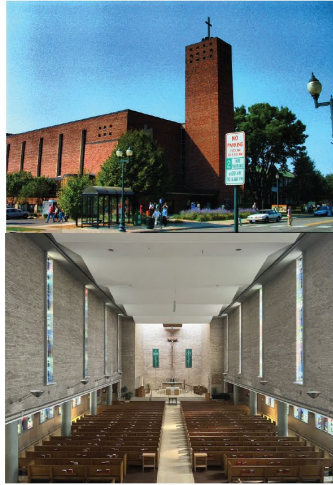
TIMELINE OF REGIONAL CATHOLIC LITURGICAL ARCHITECTURE



1897
St. Stanislaus Sobieski Catholic Church - Little Falls, MN



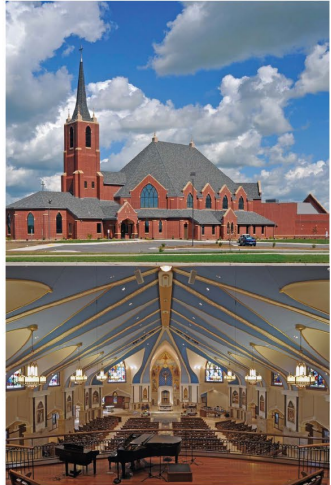
1915
Sacred Heart Catholic Church - Freeport, MN



1953
St Gabriel the Archangel Catholic Church - Hopkins, MN

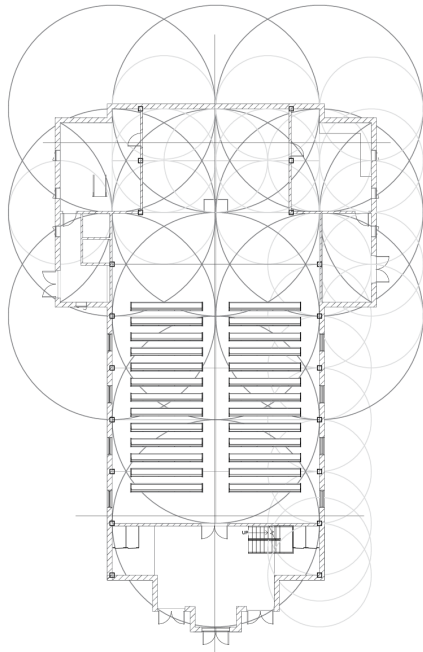


1970
Church of St. Edward- Bloomington, MN



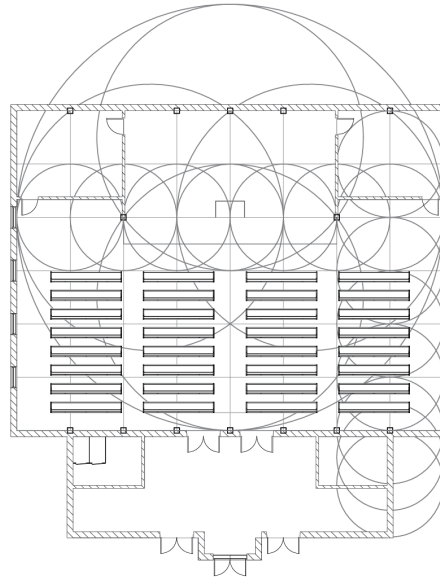
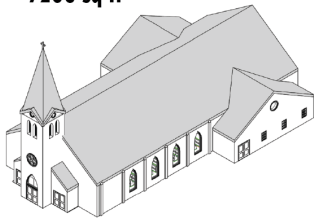
2010
Sts. Anne & Joachim Catholic Church- Fargo, ND

RESEARCH



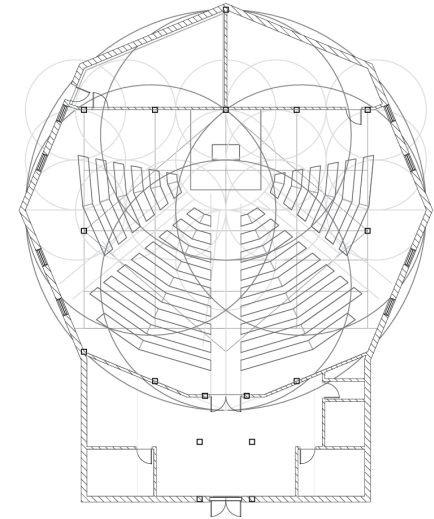
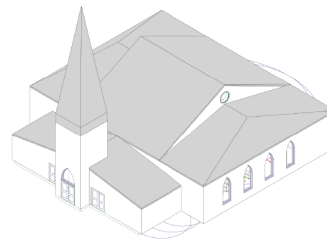
FLOORPLAN 1

7203 sq ft



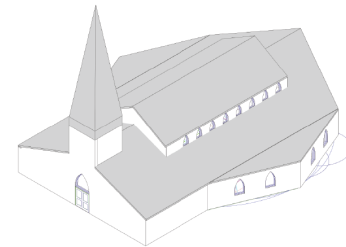
FLOORPLAN 2

6503 sq ft

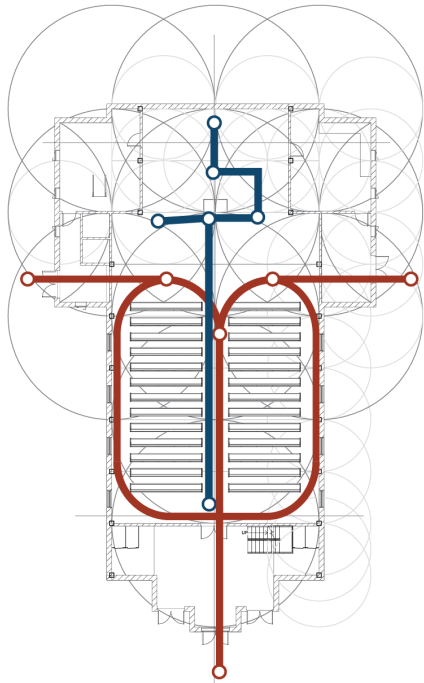


FLOORPLAN 3

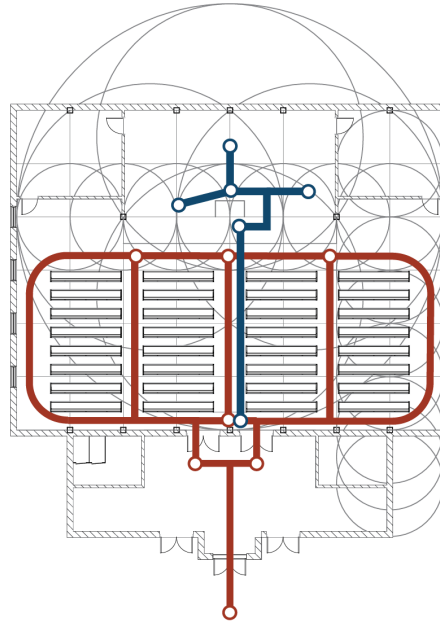
6291 sq ft



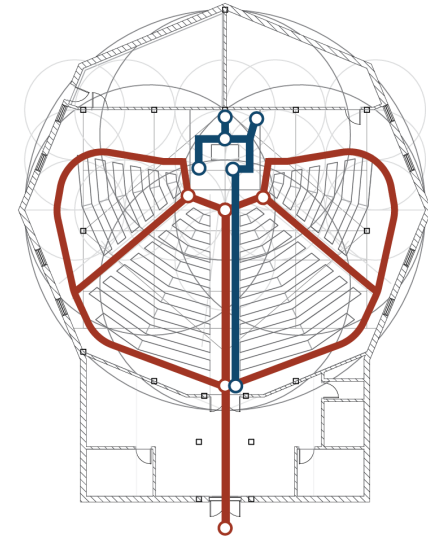
CIRCULATION DURING MASS



FLOORPLAN 1



FLOORPLAN 2

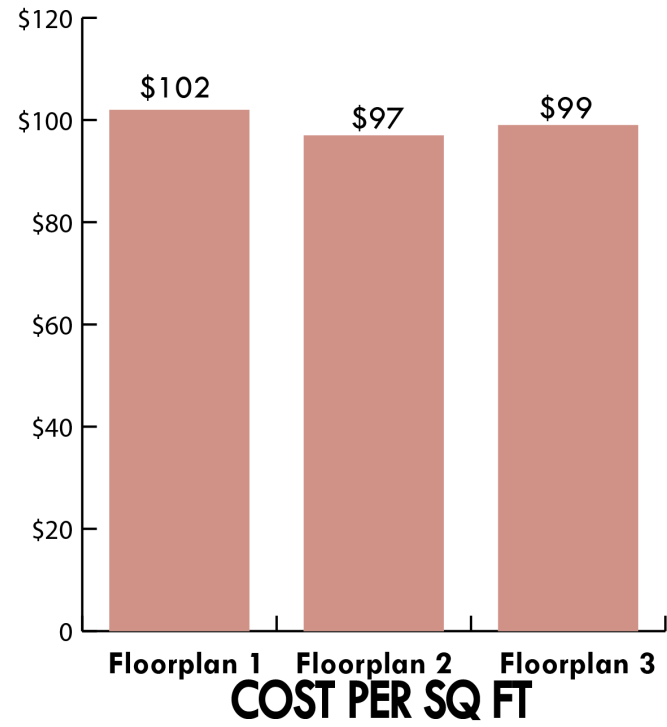
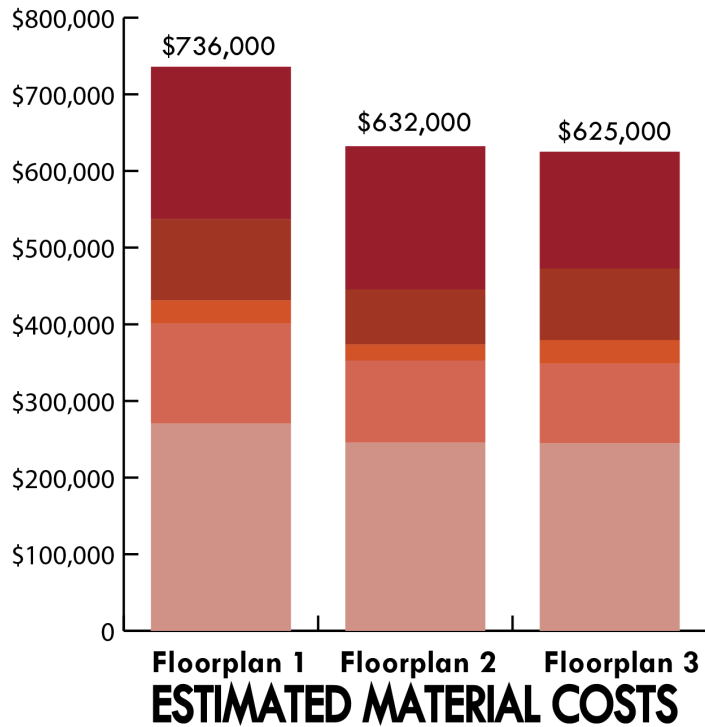


FLOORPLAN 3

 Priest
 Congregation



RESULTS



DESIGN SOLUTION



**CHURCH OF ALL SAINTS
HOLDINGFORD, MN**

PROJECT LOCATION



HOLDINGFORD, MINNESOTA



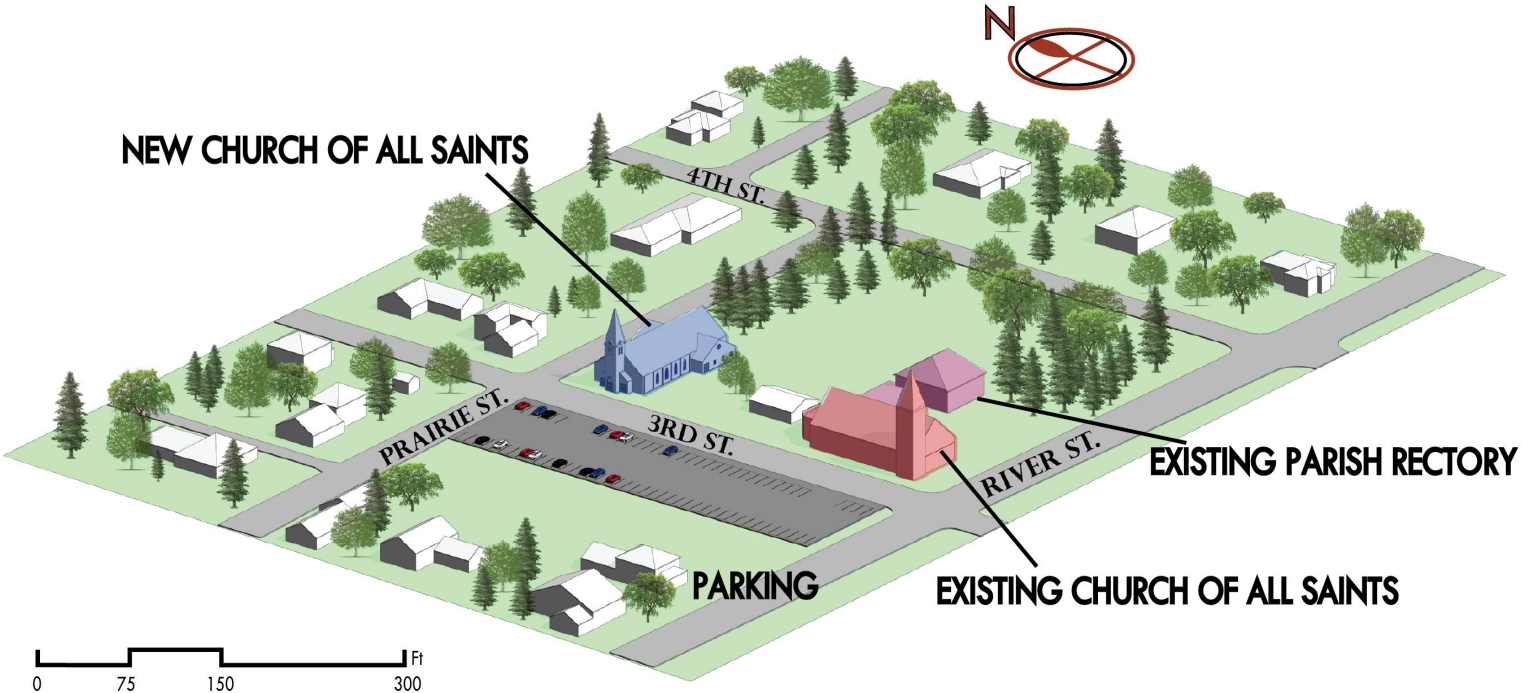
CHURCH OF ALL SAINTS - ST. MARY



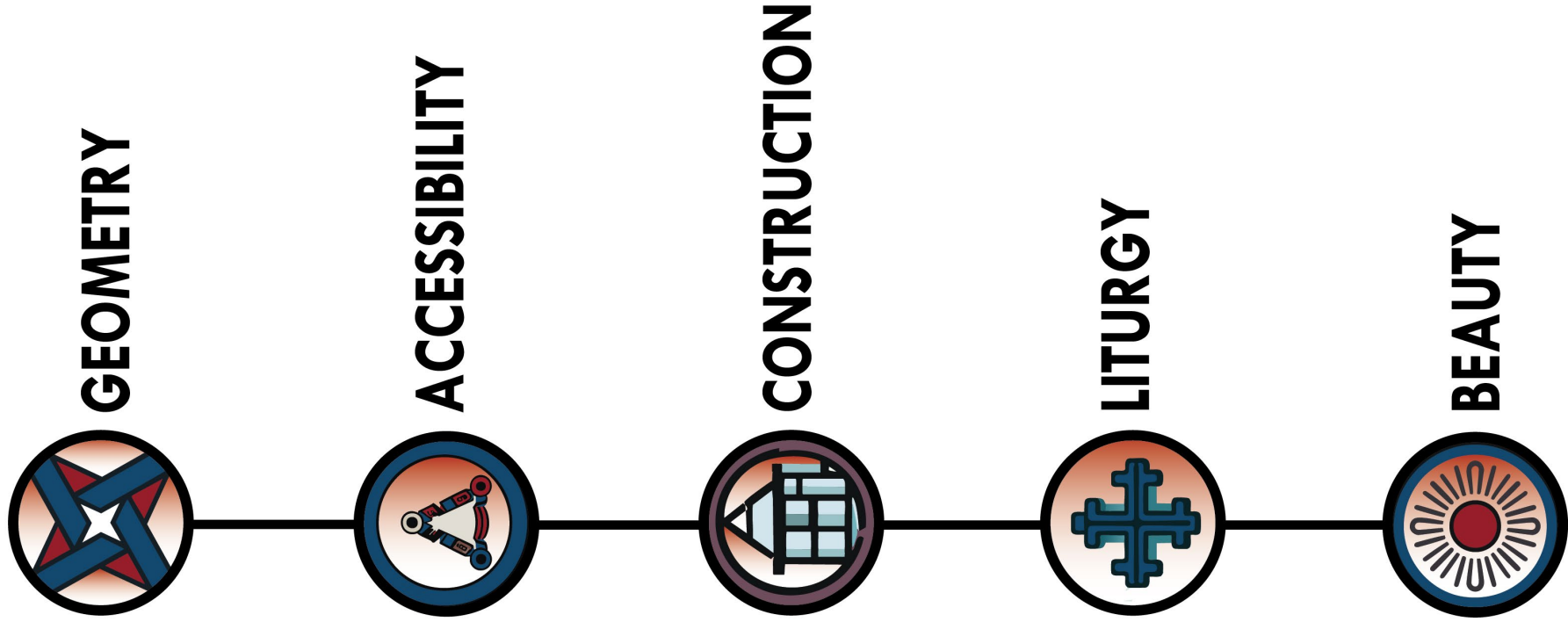
NEW CHURCH OF ALL SAINTS



ST. HEDWIG'S CATHOLIC CHURCH



DESIGN PREMISES



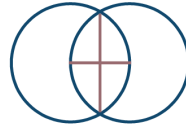


GEOMETRY

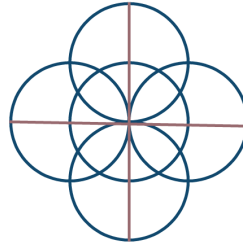
- ⊕ In his book *Sacred Geometry: Philosophy & Truth*, Robert Lawlor writes: “To seek truth has always been to seek the Invariable... To enter a temple constructed wholly of invariable geometric proportions is to enter an abode of eternal truth”¹
- ⊕ There is an unbreakable bond between houses of worship and symbolism expressed through the built form, particularly in ordered forms and proportion. The ordered rhythms of geometrical proportion represent the unchanging teachings of the Church and provide the basis for symmetry and aesthetic beauty
- ⊕ Vesica Piscis translates from Latin to “Vessel of the Fish” and refers to the shape of two equally sized circles arranged so that the edge of one intersects with the center point of the other.
- ⊕ This shape symbolizes many important teachings of Christianity, and is the basis of the fish shape, or Ichthis, that early Christians used to identify their churches.



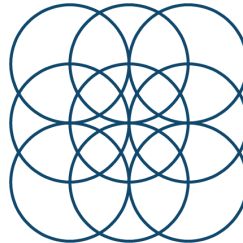
The Icthis



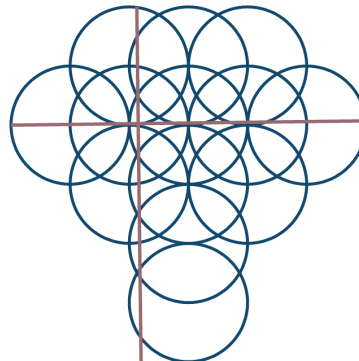
The intersecting circles symbolize the joining of God and man in the Incarnation



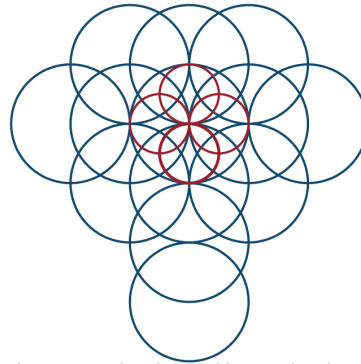
The pattern continues, resulting in the shape of a Greek cross with four equal arms



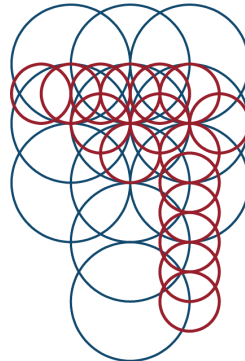
Nine intersecting circles creates the core of the plan, with the altar placed at the center point



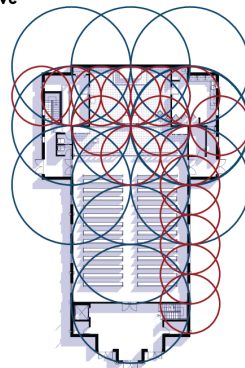
One arm of the cross is extended to form the nave of the church. This creates the shape of a Latin cross



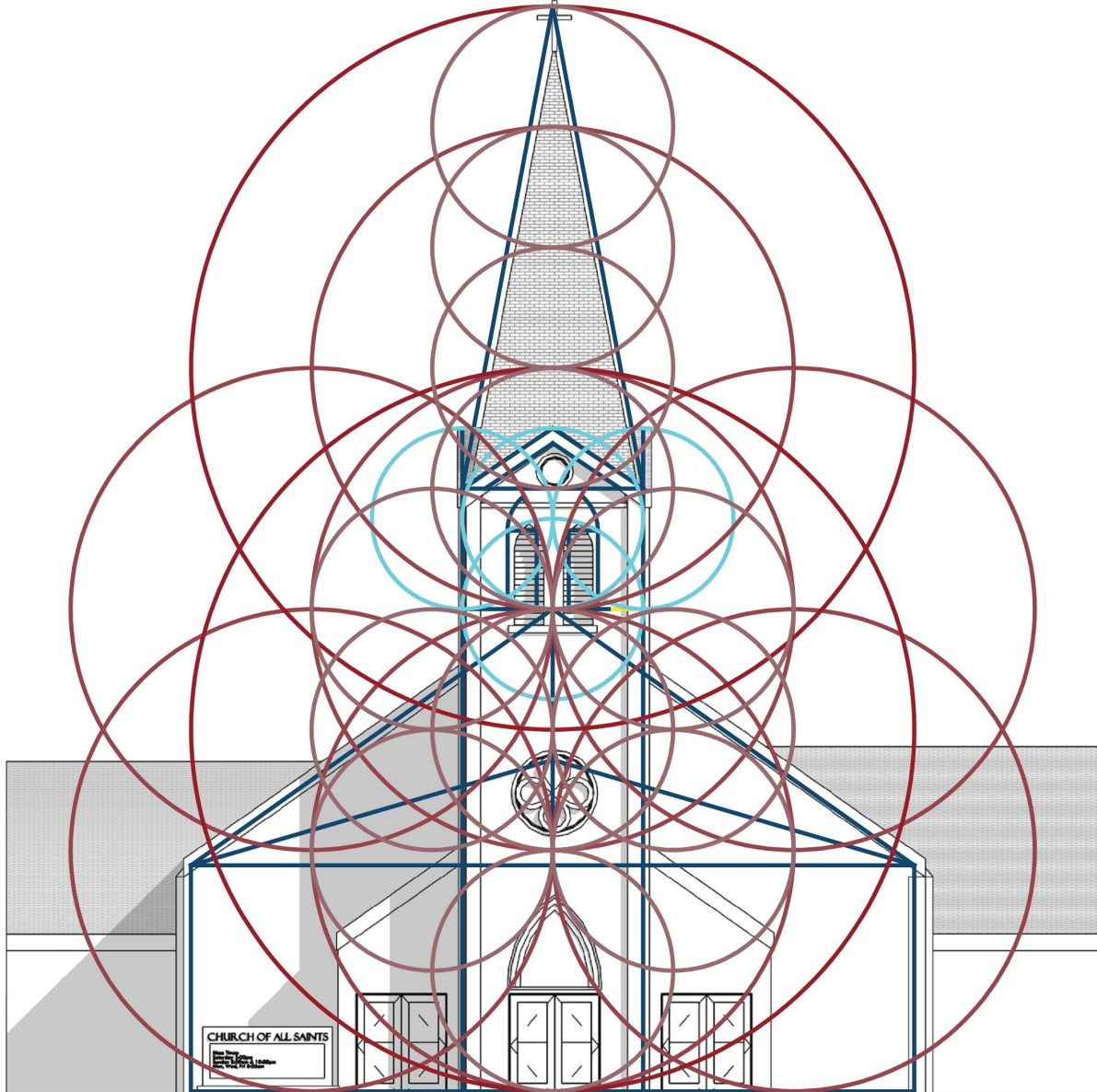
The center circle is bisected by equal circles that meet at the center point, creating further points of intersection within the system



The subdividing circles form their own Vesica Piscis and are continued down the length of the nave

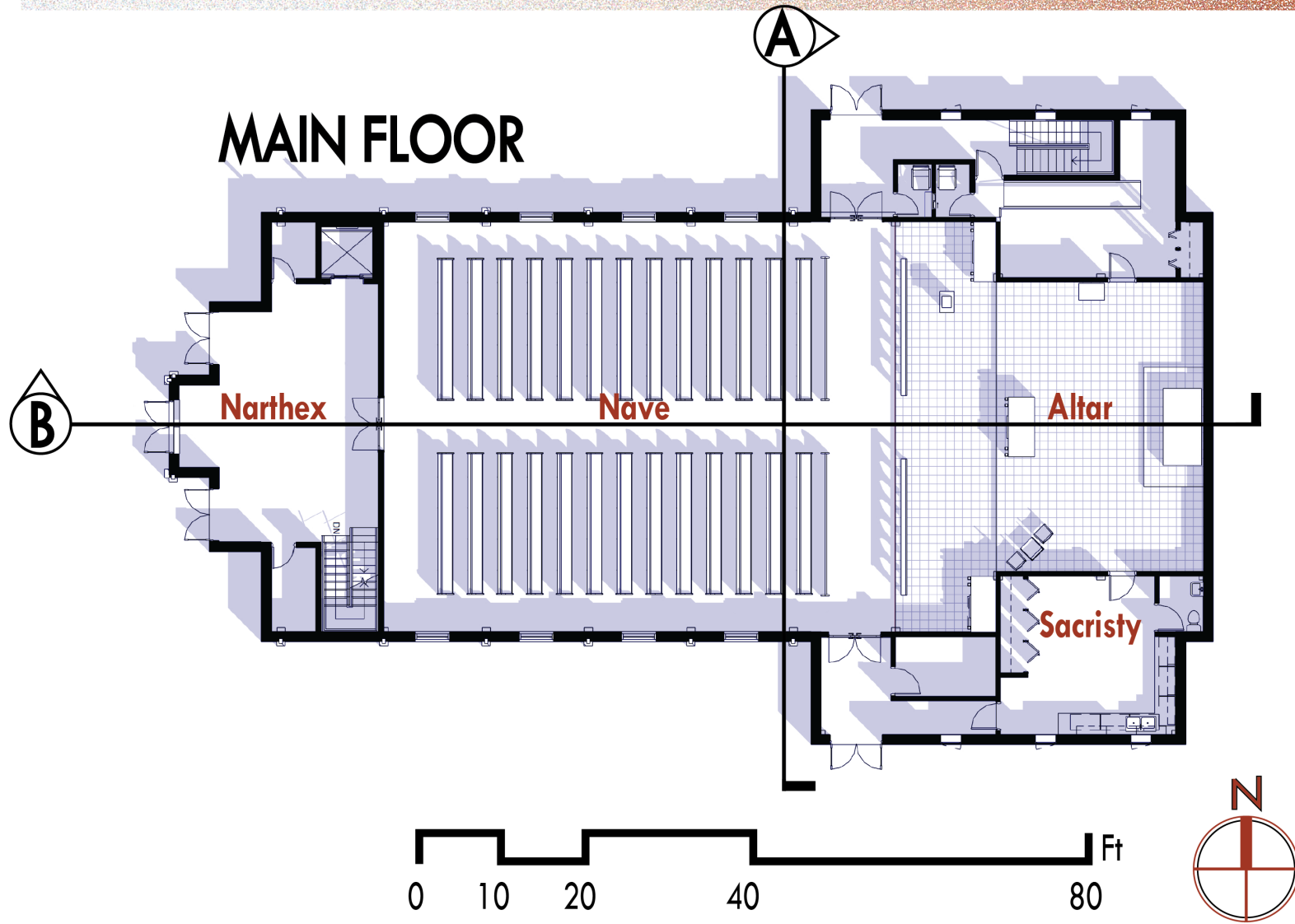


The resulting plan is created, with walls, corners, windows, doors, and furniture proportionally ordered to points of intersection in the Vesica Piscis

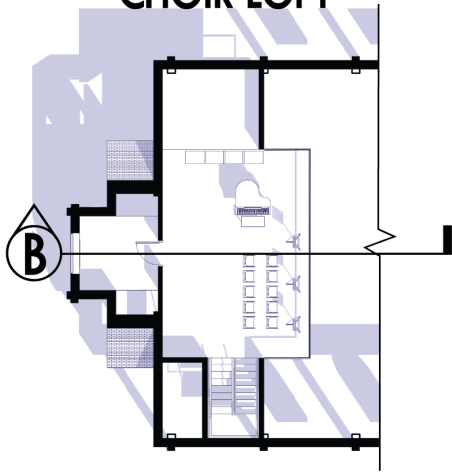


WEST FACADE & SPIRE GEOMETRY

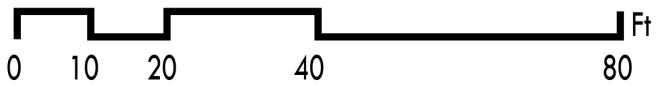
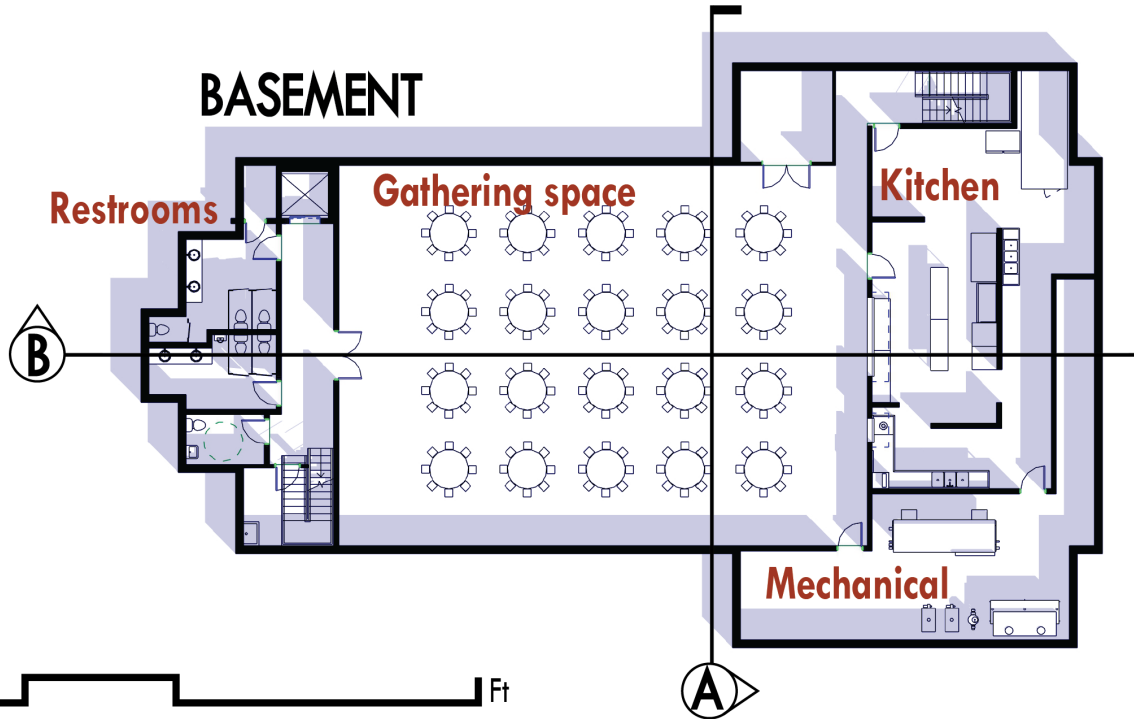
PLANS



CHOIR LOFT



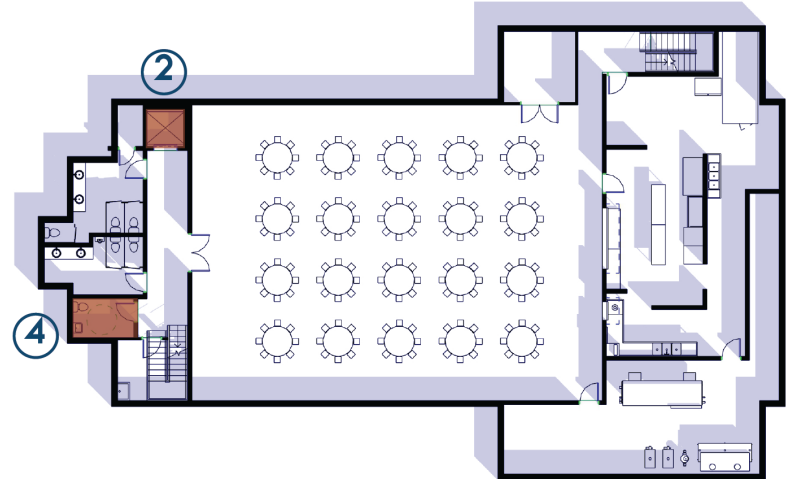
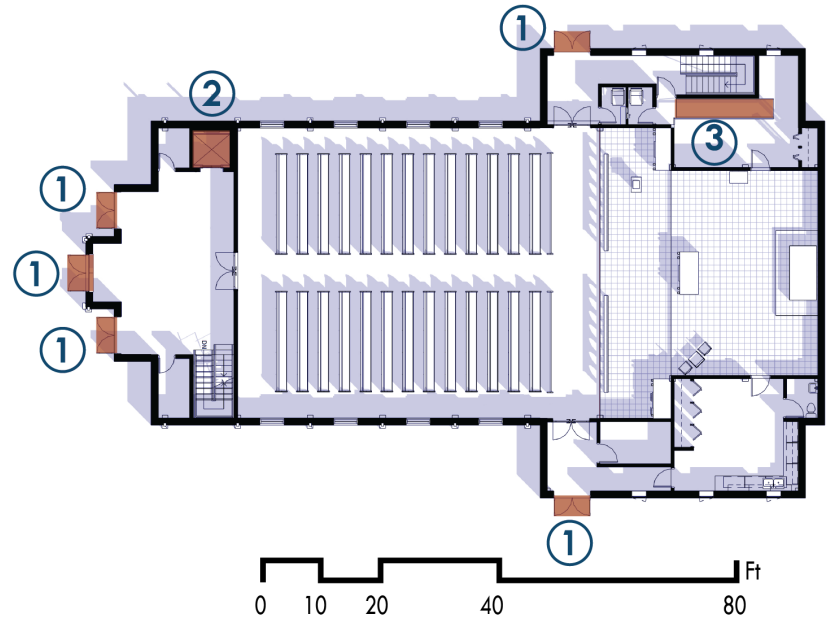
BASEMENT





ACCESSIBILITY

- ① Entrance at grade level
- ② ADA accessible elevator
- ③ ADA ramp to sanctuary floor height
- ④ ADA restroom





CONSTRUCTION

- ⊕ **Prominent liturgical architect Duncan Stroik writes “It is common to describe architecture as having three characteristics: Firmitas, Utilitas, and Venustas. These are the ancient principles of Durability, Convenience, and Beauty...”¹**
- ⊕ **Materials and structural components were chosen to uphold these ideals; simple, long lasting, and architecturally honest materials emphasize the role of the church building**



Heritage brick

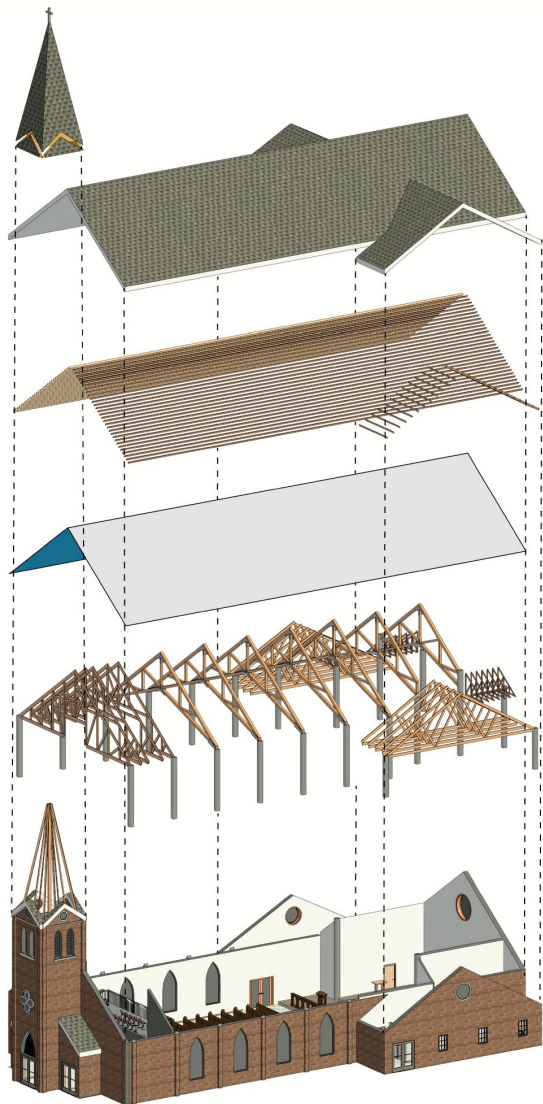


Precast concrete pilaster capitals and sills



Heavy timber roof scissor trusses

1. Stroik, D. (2012). The church building as a sacred place : beauty, transcendence, and the eternal. Hillenbrand.



**Architectural shingles on OSB
roof sheathing**

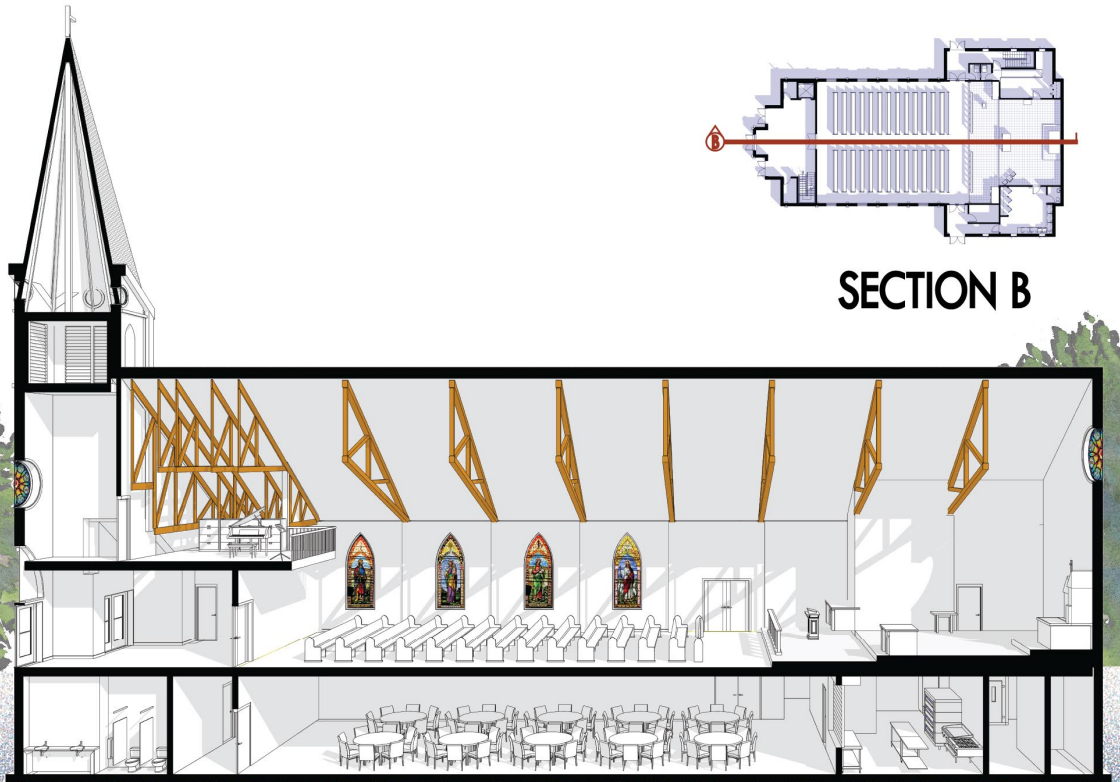
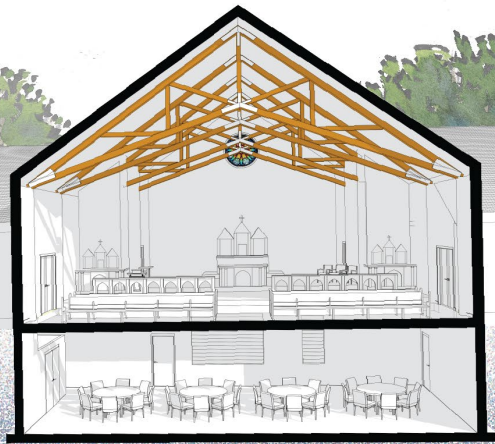
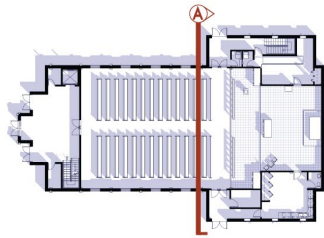
LVL purlins

Gypsum board ceiling

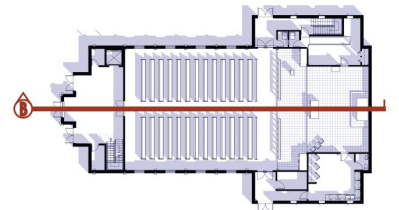
**Timber main span roof trusses
Lightweight wood secondary trusses
Hollow steel structural columns**

Brick on steel stud exterior walls

SECTION A

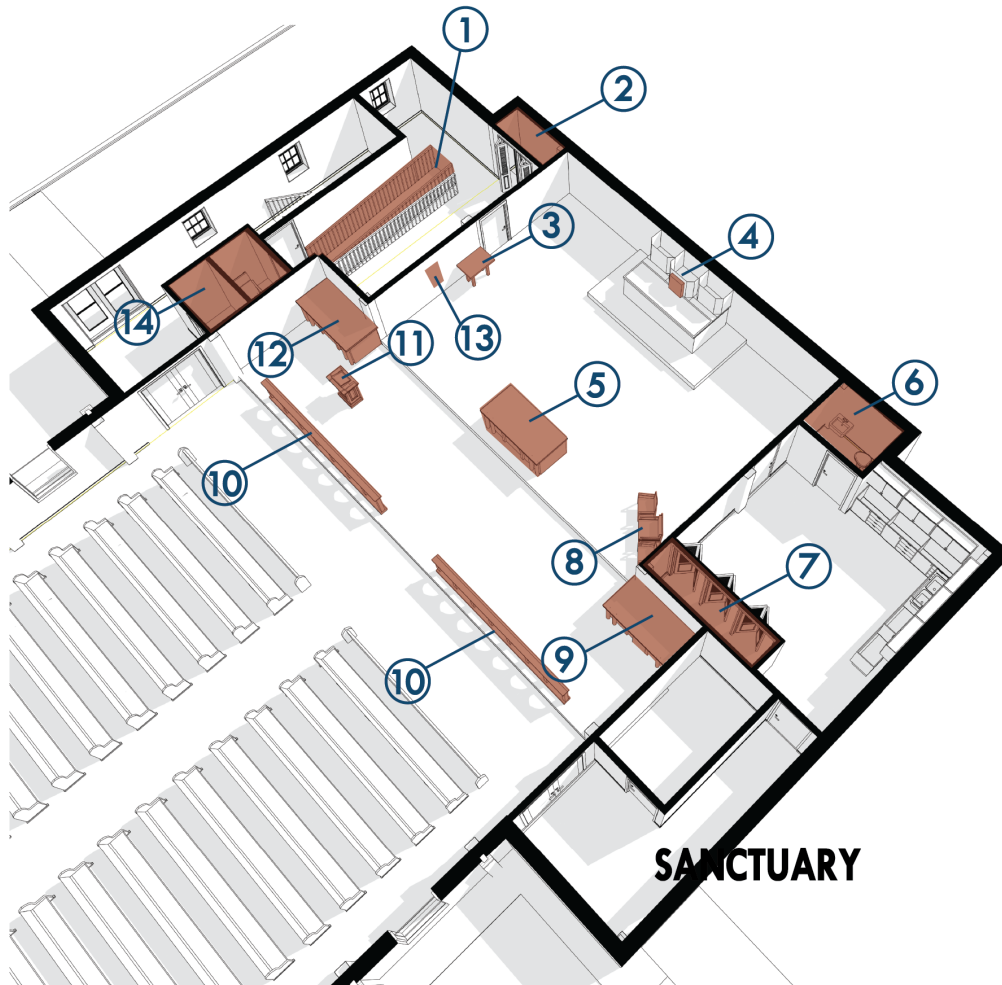


SECTION B





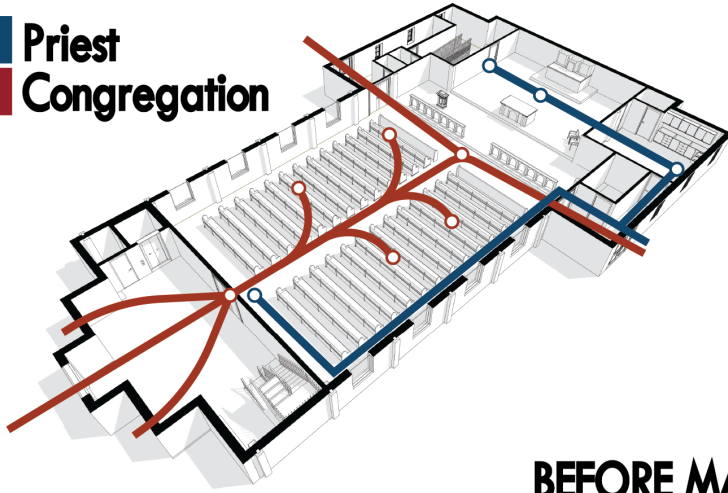
LITURGY



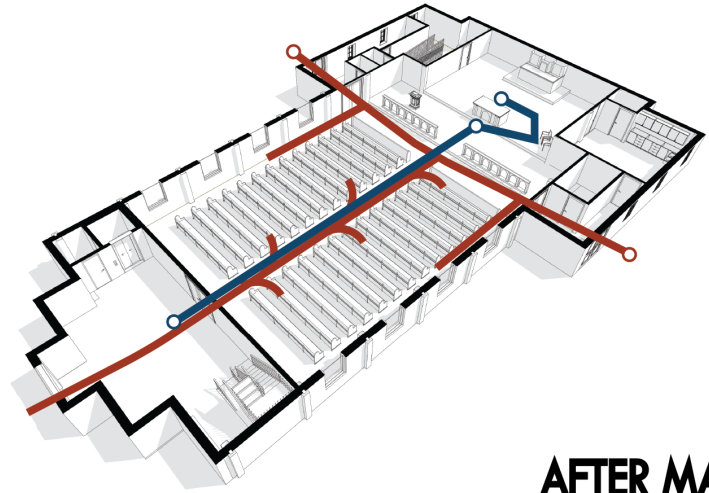
- ① Ramp to sanctuary height
- ② Altar server vestment closet
- ③ Credence table
- ④ Tabernacle
- ⑤ Altar
- ⑥ Sacristy
- ⑦ Priest vestments closet
- ⑧ Presider & concelebrant's chairs
- ⑨ St. Joseph side altar
- ⑩ Communion rails
- ⑪ Pulpit
- ⑫ Blessed Virgin Mary side altar
- ⑬ Ambry
- ⑭ Confessional

LITURGICAL CIRCULATION

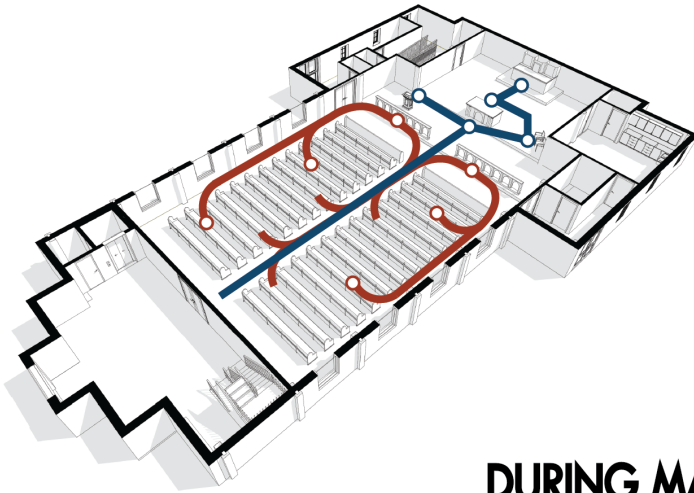
Priest
Congregation



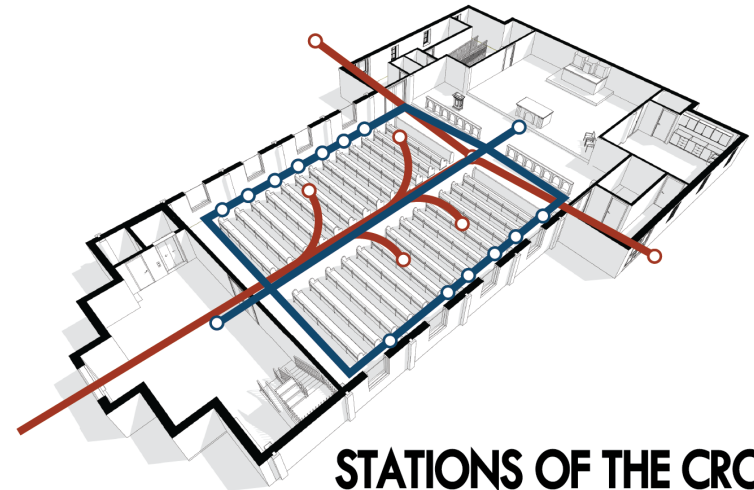
BEFORE MASS



AFTER MASS



DURING MASS



STATIONS OF THE CROSS



BEAUTY

- ⊕ **The Papal document *Sacrosanctum Concilium* states “Holy Mother Church has therefore always been the friend of the fine arts and has ever sought their noble help, with the special aim that all things set apart for use in divine worship should be truly worthy, becoming, and beautiful, signs and symbols of the supernatural world.”¹**
- ⊕ **Sacred architecture may derive beauty from symmetry and order, but also from color and material.**
- ⊕ **A sense of simplicity, paired with noble elements in the sanctuary, emphasizes the most important parts of the church.**
- ⊕ **Architect Duncan Stroik states: “A house fit for God does not necessarily need to be ornate, but it certainly should be strikingly beautiful, and it will employ the best that we can give.”²**

1. Pope Paul VI. (1963, December 4). *Sacrosanctum Concilium* 122.

2. Stroik, D. (2012). *The church building as a sacred place : beauty, transcendence, and the eternal*. Hillenbrand.



REUSE OF CHURCH ELEMENTS



Rose window from existing St. Hedwig's Church

Stained glass windows from the Sacred Window Rescue Project online database, sourced from existing churches undergoing renovations or closure.



Marian side altar from existing Church of St. Mary's



Altarpiece and tabernacle from existing Church of St. Mary's



St. Joseph side altar from existing Church of St. Mary's



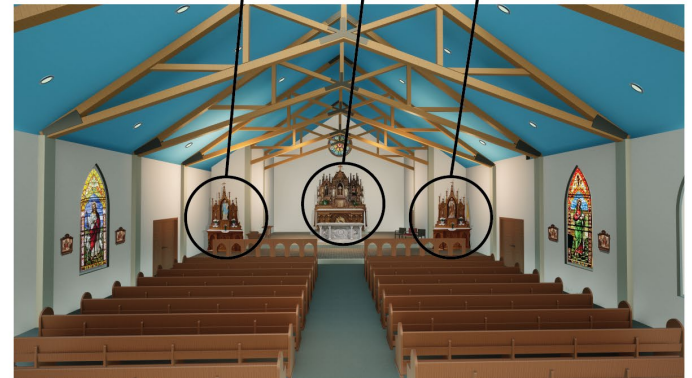
Rose window from St. Hedwig's



Marian side altar from St. Mary's

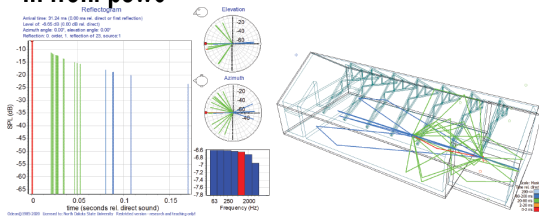
Central altar from St. Mary's

St. Joseph side altar from St. Mary's

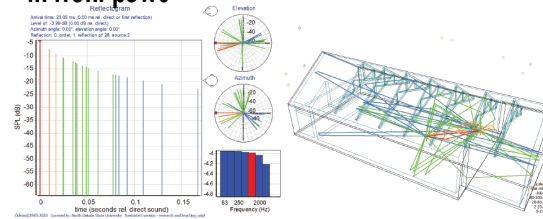


ACOUSTIC PERFORMANCE

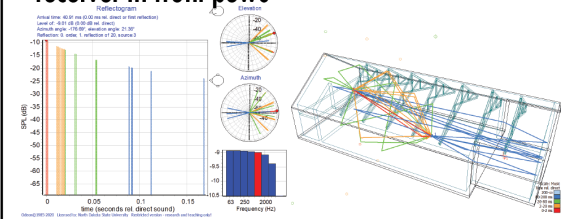
Sound source at altar & sound receiver in front pews



Sound source at pulpit & sound receiver in front pews



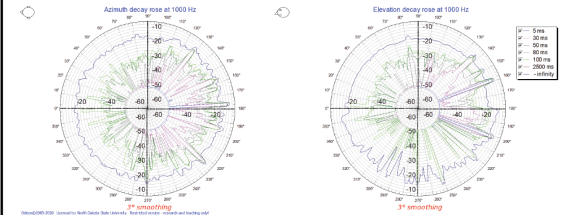
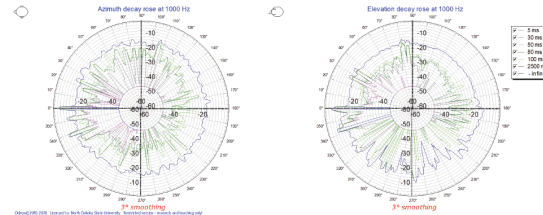
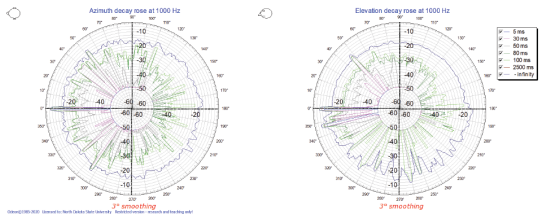
Sound source at choir loft & sound receiver in front pews



Reverberation diagrams

Reverberation diagrams

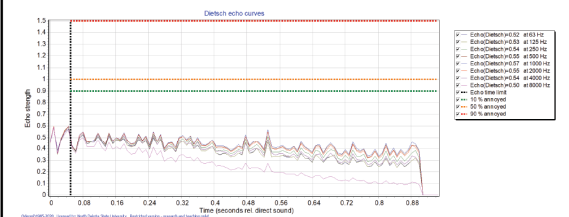
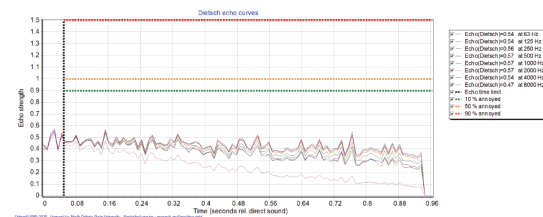
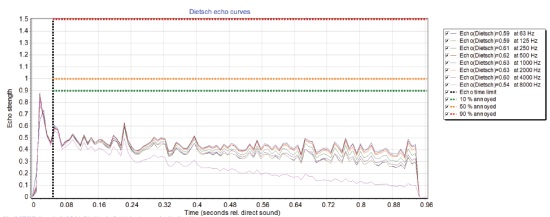
Reverberation diagrams



Sound decay rates

Sound decay rates

Sound decay rates

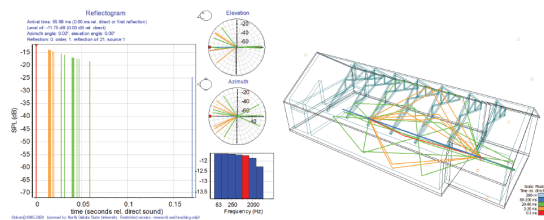


Echo curves

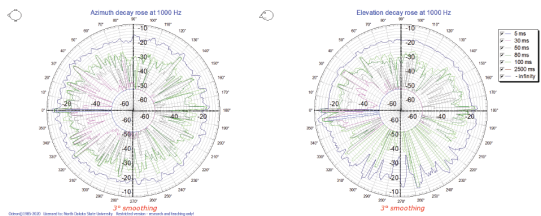
Echo curves

Echo curves

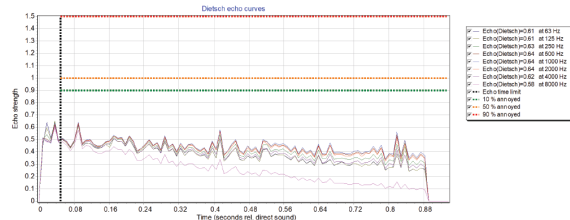
Sound source at altar & sound receiver in back pews



Reverberation diagrams

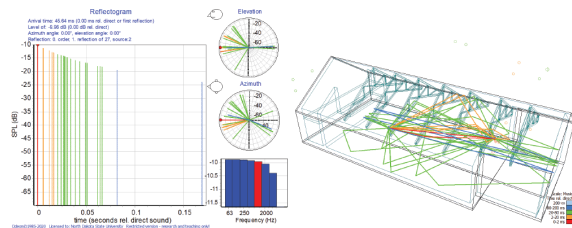


Sound decay rates

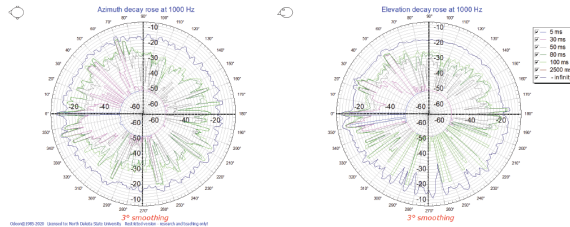


Echo curves

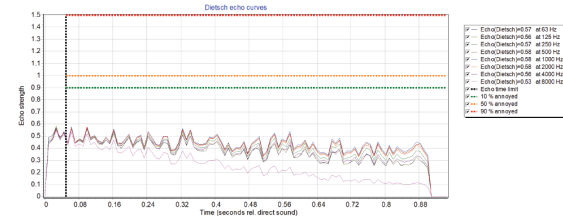
Sound source at pulpit & sound receiver in back pews



Reverberation diagrams

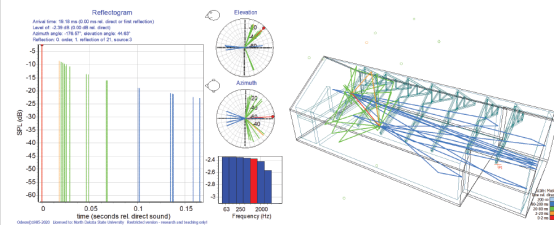


Sound decay rates

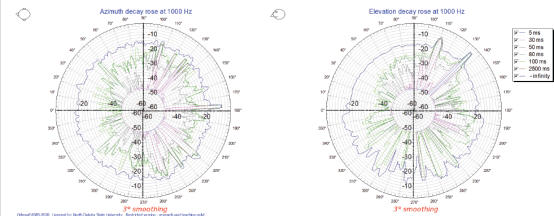


Echo curves

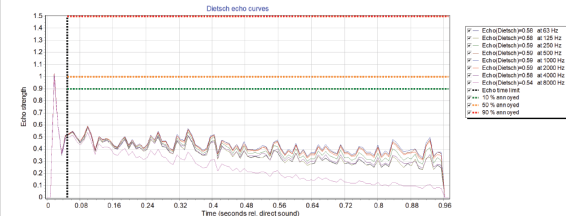
Sound source at choir loft & sound receiver in back pews



Reverberation diagrams



Sound decay rates



Echo curves

**THANK
YOU**



DOMUS DEI: THE HOUSE OF GOD

CREATING A BEAUTIFUL CATHOLIC CHURCH IN AN ATTAINABLE WAY

They are to make a sanctuary for me, that I may dwell in their midst. According to all that I show you regarding the pattern of the tabernacle and the pattern of its furnishings, so you are to make it.
- Exodus 25:8-9



BEAUTY

Beauty is one of four transcendentals of the Catholic tradition, along with truth, goodness, and unity. All four of these ideals are intrinsically connected. Beauty raises our senses beyond ourselves to something greater and serves as a visible manifestation of the goodness of God. St. Thomas Aquinas lists integrity, proportion, and clarity as the three essential conditions for beauty.¹



LITURGY

The United States Council of Catholic Bishops, writes: "Because the church is a house of prayer in which the Eucharist is celebrated and the Blessed Sacrament is reserved, a place where the faithful assemble, and a setting where Christ is worshipped, it should be worthy of prayer and sacred celebration, built in conformity with the laws of the Church, and dignified with noble beauty and intrinsically excellent art."²



GEOMETRY

There is an unbreakable bond between houses of worship and symbolism expressed through the built form, particularly in ordered forms and proportion. The ordered rhythms of geometrical proportion represent the unchanging truths of the Church and provide the basis for symmetry and aesthetic beauty.



CONSTRUCTION

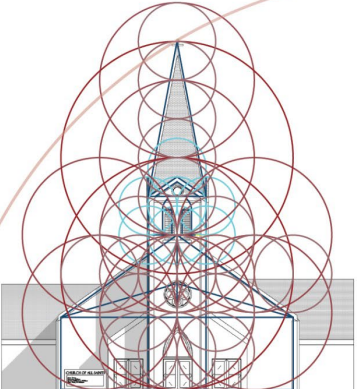
The construction methods and materials of a building hold the key to its affordability. Choosing simple, attainable methods and materials that are durable and structurally honest allow for the church to be constructed in an economical way without compromising on the potential of the space to facilitate an encounter with God.



ACCESSIBILITY

The word 'Catholic' means universal, and just so the Catholic church should echo this title by being accessible to all people of all abilities. Building the new church with the main floor at grade and providing an ADA elevator, ramp, and restroom allow for all congregants to come worship.

1. Steven Thomas, First Fruit, Question 29, Article 4. 2. Built of Living Stones: Art, Architecture and Worship 2000, 25.



WEST FACADE & SPIRE GEOMETRY

SITE

NEW CHURCH OF ALL SAINTS

EXISTING CHURCH OF ALL SAINTS

EXISTING PARISH RECTORY

HOLDINGFORD, MINNESOTA

NEW CHURCH OF ALL SAINTS

CHURCH OF ALL SAINTS - ST. MARY

ST. HEDWIG'S CATHOLIC CHURCH

Holdingford, MN currently has 2 Catholic church buildings: St. Mary's, built by German immigrants, and St. Hedwig's, built by Polish immigrants. The two parishes have since merged and operate as a parish cluster with several nearby churches. The two Holdingford churches are each over a century old and will be closed soon due to maintenance expense and disrepair. The proposed new church is located on property owned by the church and adjacent to the existing St. Mary's church and parish rectory. This allows for the new church to use the existing parking lot. The new plan follows the traditional liturgical orientation, with the altar on the east end of the nave, symbolizing Christ as the sunrise, bringing light to the world.

VESICA PISCIS

Vesica Piscis translates from Latin to "Vessel of the Fish" and refers to the shape of two equally sized circles arranged so that the edge of one intersects with the center point of the other. This shape symbolizes many important teachings of Christianity, and is the basis of the fish shape, or Ichthys, that early Christians used to identify their churches and homes. The recurring presence of fish in the Gospels and Jesus' call to become "Fishers of Men" (Mk 1:17) give the shape symbolic importance in the mission of the church building to lead people to Christ.

The Ichthys

The intersecting circles symbolize the joining of God and man in the Incarnation

The pattern continues, resulting in the shape of a Greek cross with four equal arms

Nine intersecting circles creates the core of the plan, with the altar placed at the center point

The center circle is bisected by equal circles that meet at the center point, creating further points of intersection within the system

The subdividing circles form their own Vesica Piscis and are continued down the length of the nave

The resulting plan is created, with walls, corners, windows, doors, and furniture proportionally ordered to points of intersection in the Vesica Piscis

One arm of the cross is extended to form the nave of the church. This creates the shape of a Latin cross



SANCTUARY

BASEMENT

MAIN FLOOR

CHOIR LOFT

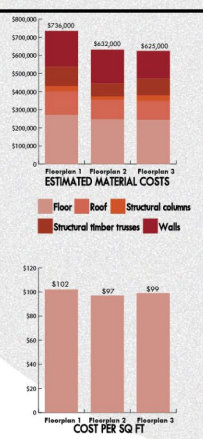
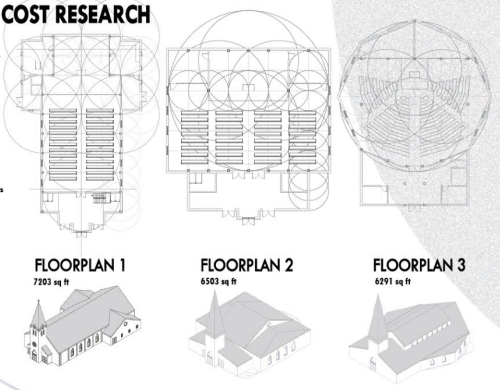
0 10 20 40 80 FT

FLOORPLAN FORM & COST RESEARCH

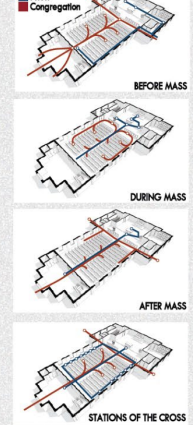
The research phase of this project consisted of estimating the material costs of three distinct church buildings, each typifying a floorplan shape commonly found in contemporary American Catholic churches. Each plan was designed to seat 250 congregants. Costs for 5 main groups of materials were estimated using the RSMeans cost database.

- In the first floorplan, the Latin cross shape creates a long nave leading forward to the sanctuary, representing the journey from the outer world into the holiness of house of God. The focus of the architecture is on the sanctuary, emphasizing the importance of the altar and the tabernacle.
- The second plan is a nonlinear plan, with 4 columns of pews and multiple aisles; the altar is placed along one of the long walls defining the central space. Ultimately, this form is largely devoid of spiritual symbolism and lacks potential to enhance the liturgy.
- The third plan is a radial plan, with the pews forming a semicircle around the altar. While this allows the people to be closer physically to the liturgy, it also shifts the focus of the space from emphasizing the sacredness of the sanctuary to creating a more theatrical approach to liturgy.

Ultimately, while floorplan 3 is the most economical, the architectural potential for beauty of floorplan 1 is the greatest. Additionally, its additional cost per sq ft is minimal, meaning it is the strongest option for a beautiful, attainable church.



CIRCULATION



- Ramp to sanctuary height
- Altar server vestment closet
- Credence table
- Tabernacle
- Altar
- Sacristy
- Priest vestments closet

- Priester & concelebrant's chairs
- St. Joseph side altar
- Communion rails
- Pulpit
- Blessed Virgin Mary side altar
- Ambray
- Confessional

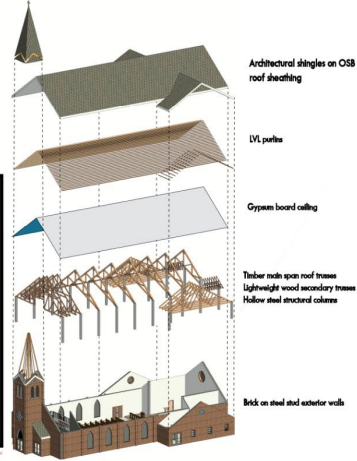
REUSE OF CHURCH ELEMENTS

Rose window from existing St. Hedwig's Church

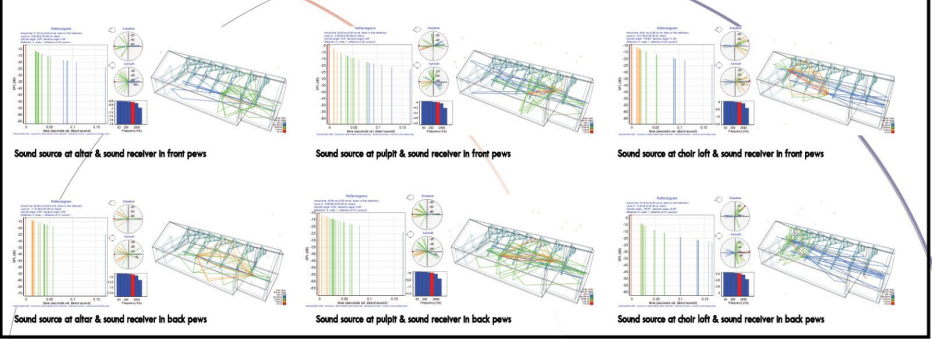
Marian side altar from existing Church of St. Mary's

Altarpiece and tabernacle from existing Church of St. Mary's

St. Joseph side altar from existing Church of St. Mary's



ACOUSTIC PERFORMANCE



SECTIONS

