Indiana Preservation Conference
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Cracking Open the Problems in Modernist Masonry at First Christian Church in Columbus

Architect
Louis Joyner AIA
Louis Joyner Architect
Columbus

Structural Engineering
Scott Drake, Historic Preservation Specialist
Arsee Engineers
Fishers

Preservation Consulting
Anne Schneider, Preservation Specialist
Ratio Design
Indianapolis
Logistical, Cheerleading Support
- Indiana Landmarks
- Landmark Columbus
- Division of Historic Preservation
- Community Funders

Major Funders
- Save America’s Treasures, National Park Service
- Jeffris Foundation
- Partners for Sacred Places

Photo Credits
- Columbus Indiana Architectural Archives
- First Christian Church Archive
- Saarinen Archive, Yale University
- Library of Congress
- Louis Joyner Architect
- Arsee Engineers
- Ratio Design
Louis Joyner
  What is it?
  Design options
  Construction Photos
  History of previous work
Scott Drake
  What we understand is happening
  What we are doing
Anne Schneider
  Special Challenges
    Brick
    Panels
    Door
What Is It?-The Church

- Considered the first significant Modernist church in the US.
- A work of Eliel and Eero Saarinen
- Commissioned by in 1937; major funding from Linny Sweeney (J.I. Miller’s grandmother).
- Construction Fall 1940-May 1942
- Columbus’ first work of Modern architecture and still the anchor for the entire group.
- One of a remarkable group of buildings by Eliel and Eero Saarinen that included:
  - Fenton Community Center 1938
  - Koebel House, 1939 (NR)
  - Kleinhans Music Center, 1940 (NHL)
  - Crow Island School, 1941 (NHL)
  - Wemuth House, 1942 (NR)
  - Cranbrook Art Museum and Library, 1943 (NHL)
  - Berkshire Music Shed, Tanglewood Music Center, 1944
  - Des Moines Art Center, 1948
  - Christ Church Lutheran, 1949 (NHL)
What Is It? - The Tower

- Freestanding tower
- Serves no practical function except to hold a clock at the top and cistern in the sub-basement.
- Brick Mass Masonry Construction
  - Walls 27” Thick at Base
  - 17” Thick at Upper Level
- Concrete Floors
- 6 Levels above grade, 2 below.
- 166 Feet Tall from the Courtyard Level
- Likely one of the last large-scale mass masonry structures in the US

Glossary:
- Clock Chamber
- Grid
- Zipper
FIRST CHRISTIAN CHURCH TOWER

OVERVIEW
Exterior Elements

FIRST CHRISTIAN CHURCH TOWER

OVERVIEW
Design Options

FIRST CHRISTIAN CHURCH TOWER
Design Closer to Final

FIRST CHRISTIAN CHURCH TOWER
January 27, 1941

**FIRST CHRISTIAN CHURCH TOWER**

Construction Images
April 28, 1941
To construct: 6 Months start to finish.
To renovate: 10 months
FIRST CHRISTIAN CHURCH TOWER

Probably
Summer 1942

Complete
### Previous Work

<table>
<thead>
<tr>
<th>Date</th>
<th>Major Work</th>
<th>Details</th>
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<tbody>
<tr>
<td>1942</td>
<td>Church Dedicated</td>
<td></td>
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<tr>
<td>1945</td>
<td>Vertical cracks on south side of tower-Church was worried enough to be documenting the cracking.</td>
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<tr>
<td>1950</td>
<td>Cracks repaired; floors modified</td>
<td></td>
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<tr>
<td>1959</td>
<td>Repairs to address &quot;Torsional Effects&quot;-Probably the patch at the Zipper.</td>
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<tr>
<td>1964-65</td>
<td>Delamination and crack repairs</td>
<td></td>
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<tr>
<td>1967 &amp; 68</td>
<td>Crack Repairs</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td>Precast concrete grills replaced with plastic panels</td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>Pointing and caulking</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>LJA assessment found significant concerns</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>Engineering study and emergency repairs</td>
<td></td>
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<tr>
<td>2023</td>
<td>Major repair and restoration</td>
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**First Christian Church Tower**

![Image of First Christian Church Tower](c. 1967)
Investigation-2018 Study

FIRST CHRISTIAN CHURCH TOWER
Investigation

First Christian Church Tower

METHODOLOGY
First Christian Church Tower

FINDINGS – SOUTHEAST CORNER
First Christian Church Tower

NORTHEAST CORNER
First Christian Church Tower

WEST ELEVATION
First Christian Church Tower

SOUTH ELEVATION
First Christian Church Tower

PLASTIC PANELS
First Christian Church Tower

Previous Repairs
First Christian Church Tower

PREVIOUS REPAIRS
Figure 2.12 - Example of cracking due to moisture expansion of masonry walls [Photo taken from 2.7]
First Christian Church Tower  Forces

Torsion

Combined loading
Based on all that evidence what do we think is happening?

Movement
• Mostly due to moisture and thermal expansion and torsion
• Partially Stabilized by previous “Zipper” Repair
What Do We Think Is Happening?

Corrosion

Due to:
• Condensation
• Excessive Water Vapor from Cistern
• Leaking Downspout
• Lack of Ventilation

First Christian Church Tower
What Will Be Done?

Guiding Principles

• Hold Saarinen’s design intent as a primary guideline
• Follow the Secretary of the Interior’s Standards for Rehabilitation
• A rehabilitation, not a restoration
• Address all the known issues, to the best of our ability
• Use materials and techniques that are compatible with one another
• Shoot for a lasting fix
• Do no harm (try to anticipate the consequences of our own interventions).
Clock Chamber Reconstruction

First Christian Church Tower Study

RECOMMENDATIONS
Clock Chamber Reconstruction

First Christian Church Tower Study  RECOMMENDATIONS
Clock Chamber Reconstruction

First Christian Church Tower Study

RECOMMENDATIONS
Clock Chamber Reconstruction
Clock Chamber Reconstruction

First Christian Church Tower Study

RECOMMENDATIONS
Clock Chamber Reconstruction
First Christian Church Tower

Construction
First Christian Church Tower Construction
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First Christian Church Tower Construction
1. Durability – another 50+ years
2. **No** maintenance
3. Within budget
4. Meet the grant requirements
   1. Secretary of Interior Standards
   2. Review from NPS
5.) **Distinctive materials**, features, finishes and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

6.) Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials.

7.) **Replacement of missing features** from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.
First Christian Church Tower Restoration
First Christian Church Tower Restoration
First Christian Church Tower Restoration

BRICK MATCH
First Christian Church Tower Restoration

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GRILLES
30. Tower Flood Lights: Omit all equipment and feeders, but provide empty feeder conduits and switches on main switchboard. This would allow for the future installation of the required equipment if desired.

Fiber Optic Lighting

LIGHT PANEL
First Christian Church Tower Restoration
First Christian Church Tower Restoration
First Christian Church Tower Restoration
First Christian Church Tower Restoration

DOOR RESTORATION
First Christian Church Tower Restoration
FIRST CHRISTIAN CHURCH TOWER

Progress
FIRST CHRISTIAN CHURCH TOWER

Progress
FIRST CHRISTIAN CHURCH TOWER
Questions?

FIRST CHRISTIAN CHURCH TOWER