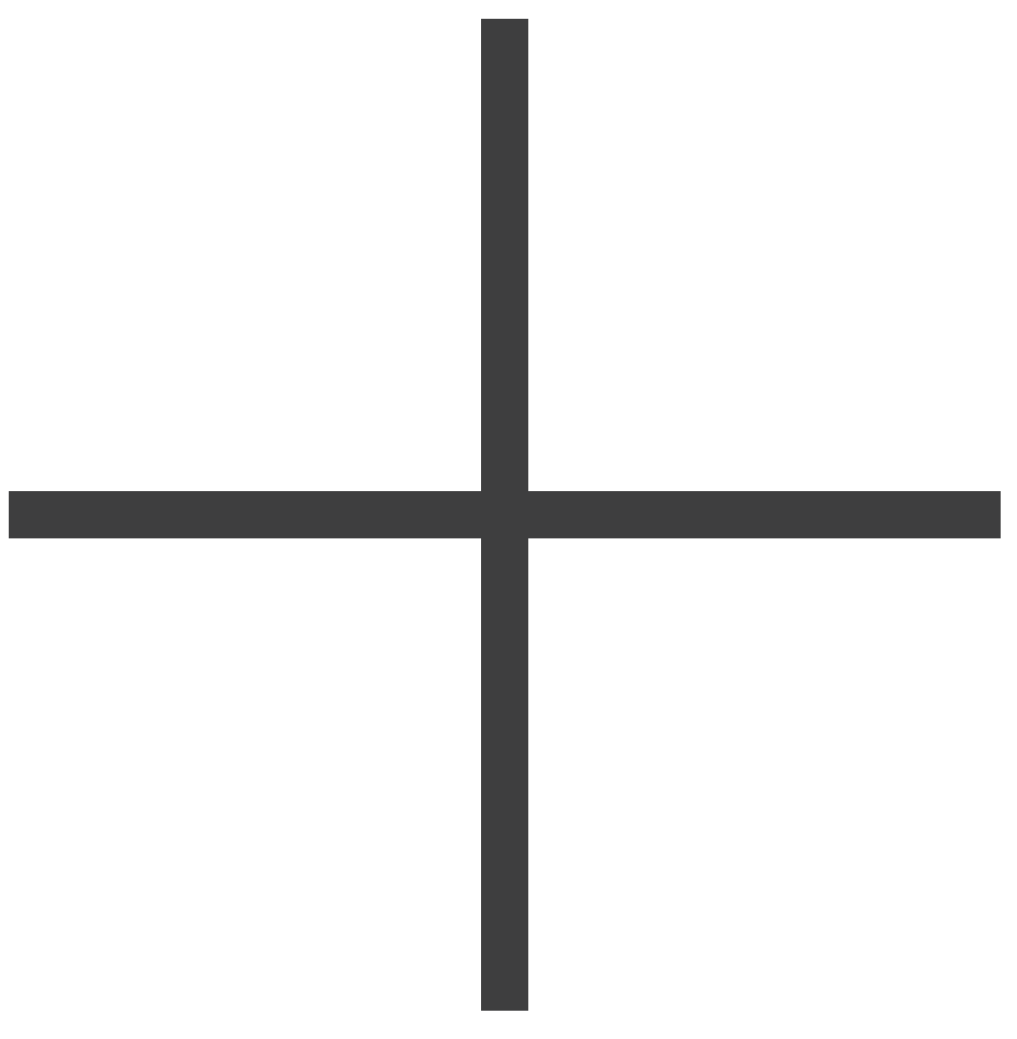


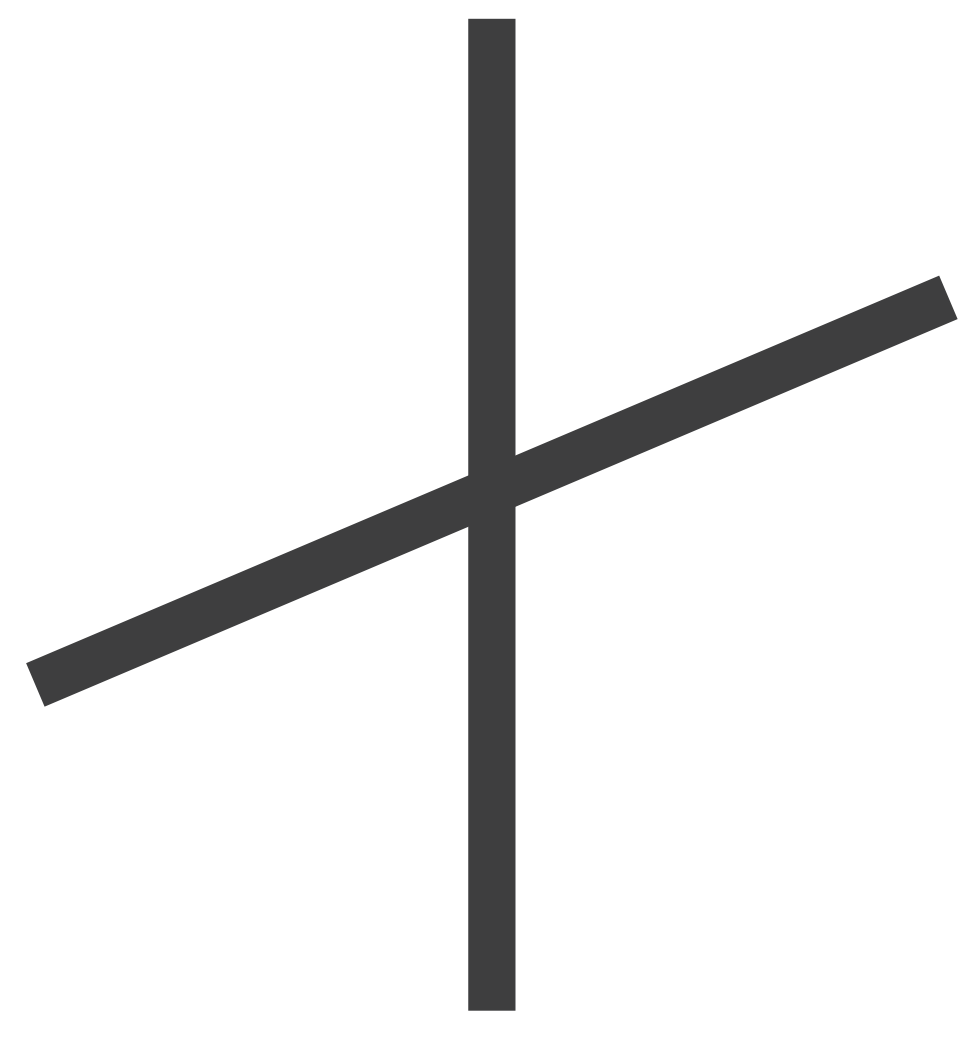
THE SEVENTH STREET IMPROVEMENT ARCHES OF ST. PAUL MINNESOTA

A STUDY OF THEIR HISTORY AND OBLIQUE METHOD OF CONSTRUCTION

BRENNA HOISINGTON
 Faculty Sponsor: Benjamin Ibarra-Sevilla
 College Of Design - Architecture Department



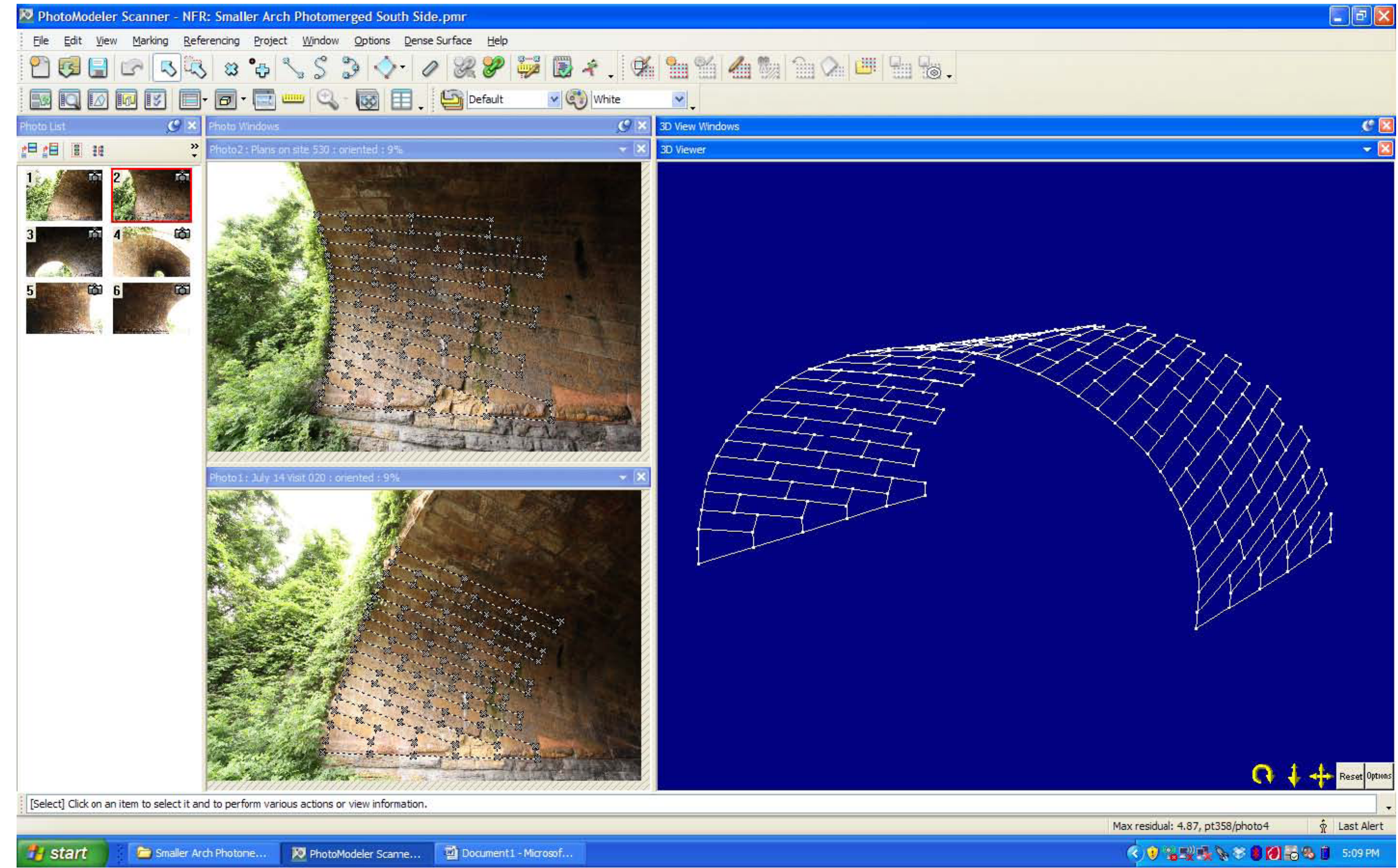
PERPENDICULAR CROSSING



OBLIQUE CROSSING



SITE PLAN



MODEL OF ARCH "END" (PHOTOMODELER)

OBLIQUE METHODS IN MASONRY CONSTRUCTION:



THE RIBBED ARCH METHOD

- Requires that a set of regular arches are gradually offset from one another (to approximate the "skew")
- Demands the least amount of skill and experience from the stonemasons
- Oftentimes considered to be a "false skew" approach, as well as very weak and unattractive



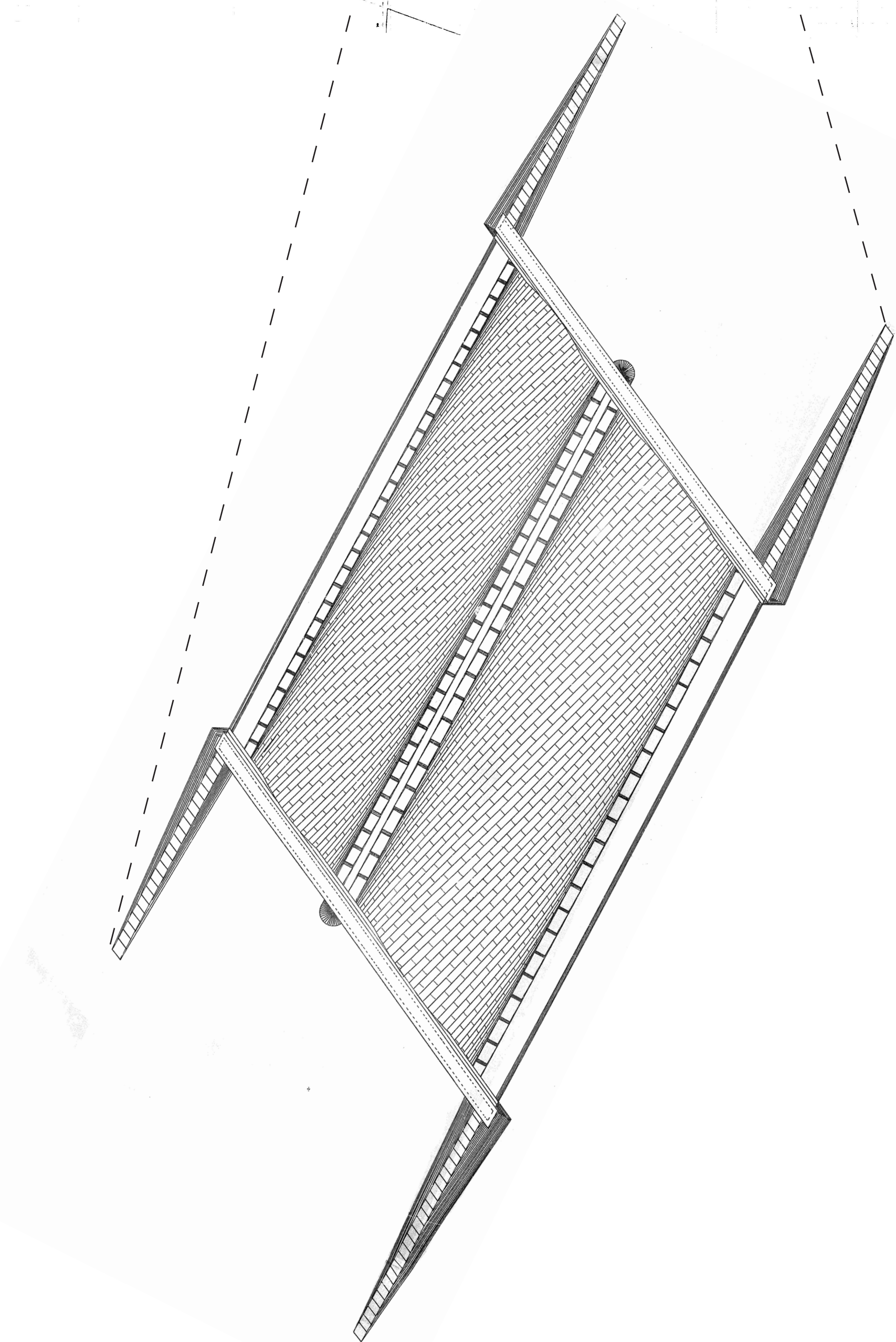
THE LOGARITHMIC METHOD

- The most intricate and accurate method, but requiring the greatest amount of skill and experience
- Requires that each voussoir piece is specially cut depending upon where it is placed within the vault



THE HELICOIDAL METHOD

- Requires that the individual voussoir piece is of a special shape, but that this shape is able to be repeated throughout the interior of the arch
- Creates a series of spiraling courses that are evenly and consistently spaced throughout



ORIGINAL PLAN DRAWING

THE SEVENTH STREET IMPROVEMENT ARCHES

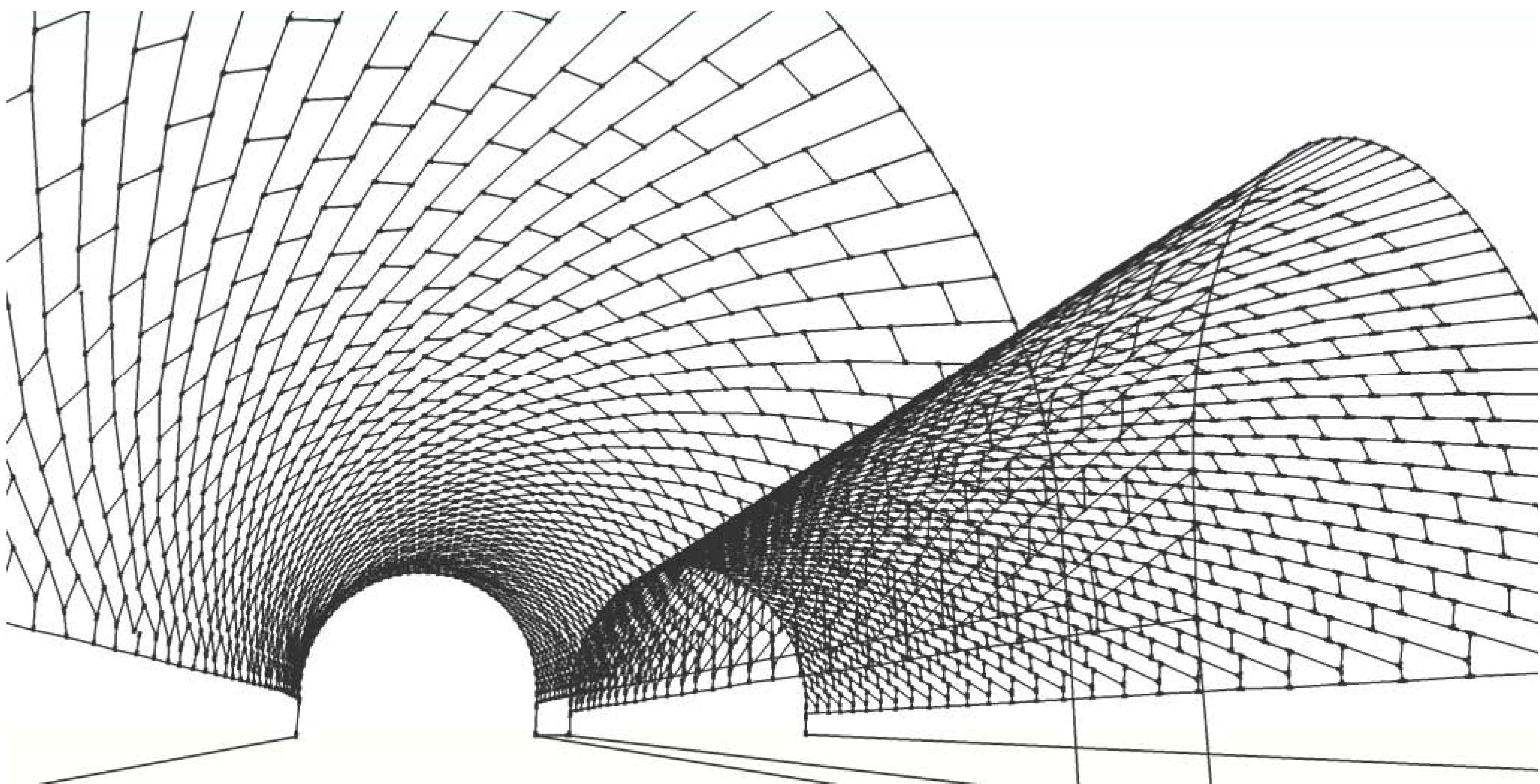
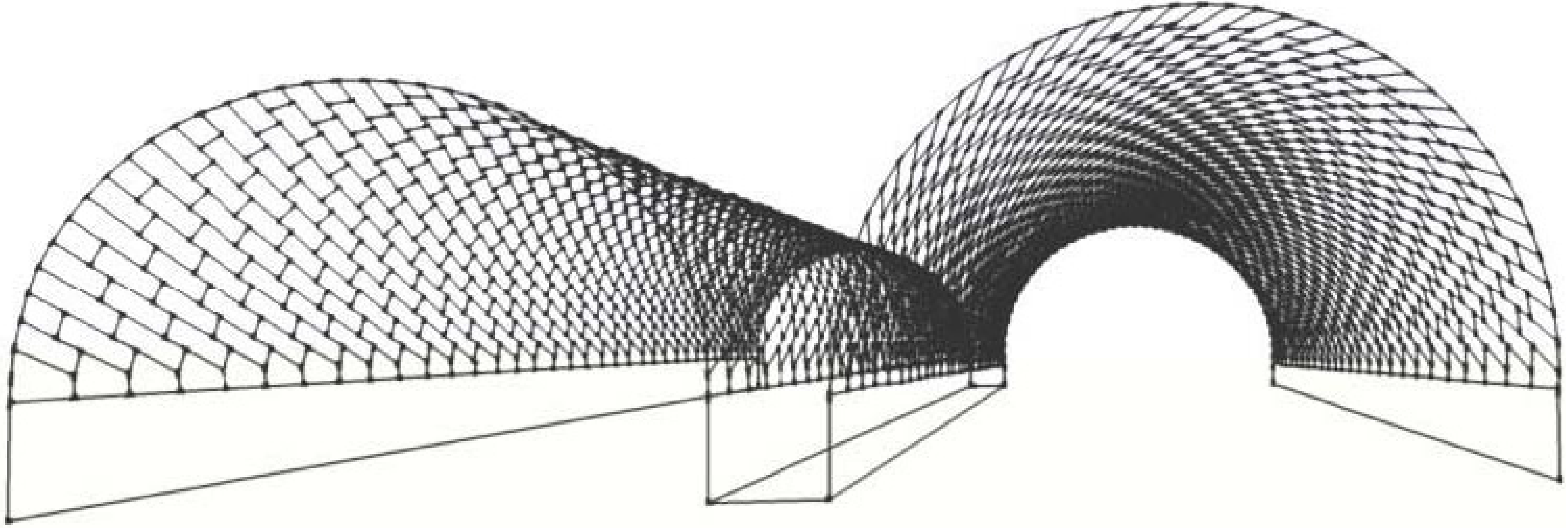


HISTORY + CONTINUED IMPORTANCE

- Begun in 1883 and completed in 1884
- Solves the problem of the 63°28' crossing of East Seventh Street over the St. Paul and Duluth Railway
- Designed and constructed under the leadership of William A. Truesdell
- Arches have maintained their presence despite a rapidly changing environment
- In 1989, they were placed on the National Register for Historic Places
- Today, they still remain as the only known helicoidal example in Minnesota

ACKNOWLEDGMENTS

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COMPLETED MODEL (SKETCHUP)

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 Images of the Original 1883 Drawings by W.A. Truesdell. Photograph. City of St. Paul, MN - Bridge Division Architects. St. Paul.