

# From Screen Patterns Toward Domical Form

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Master of Architecture in Architecture

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Blacksburg, VA

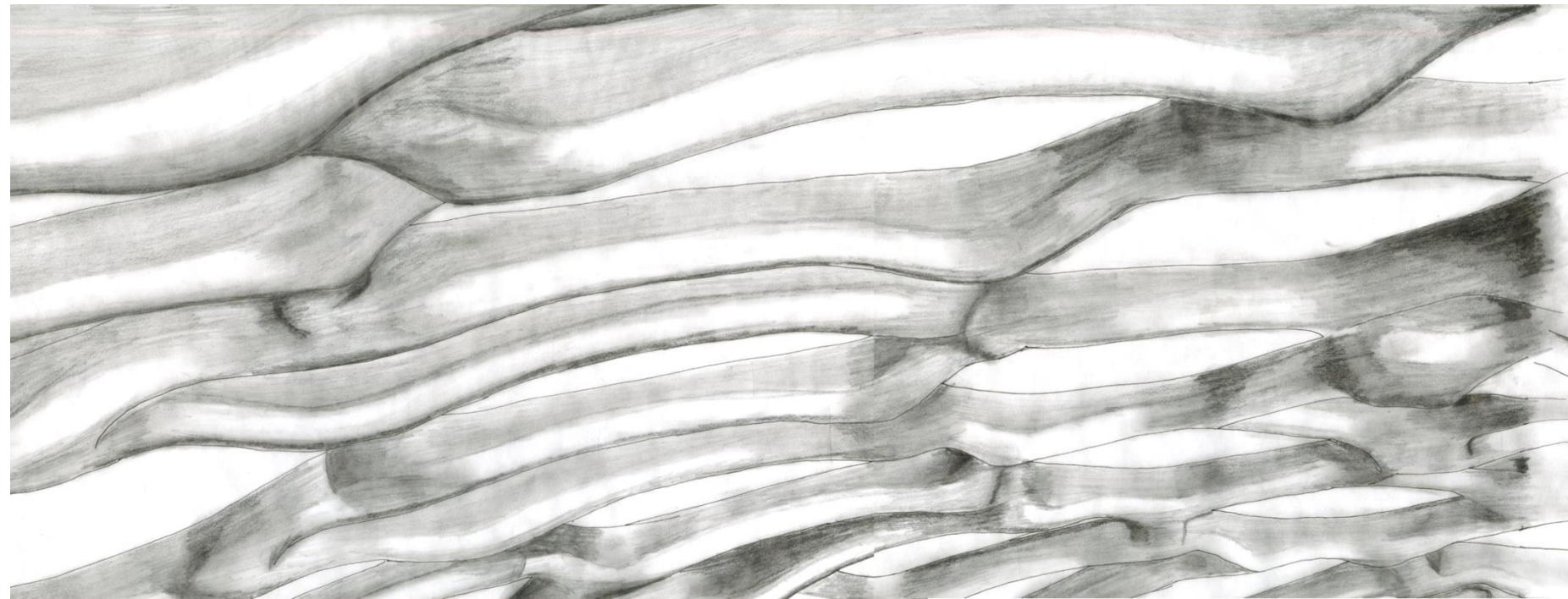
Keywords: pattern, screen, dome, shell, shading

# From Screen Patterns Toward Domical Form

Mohammed Alamodi

## ABSTRACT

This thesis aims at creating a dome fabricated from pattern and studying some of the forms of patterns that focus on organistic pattern.

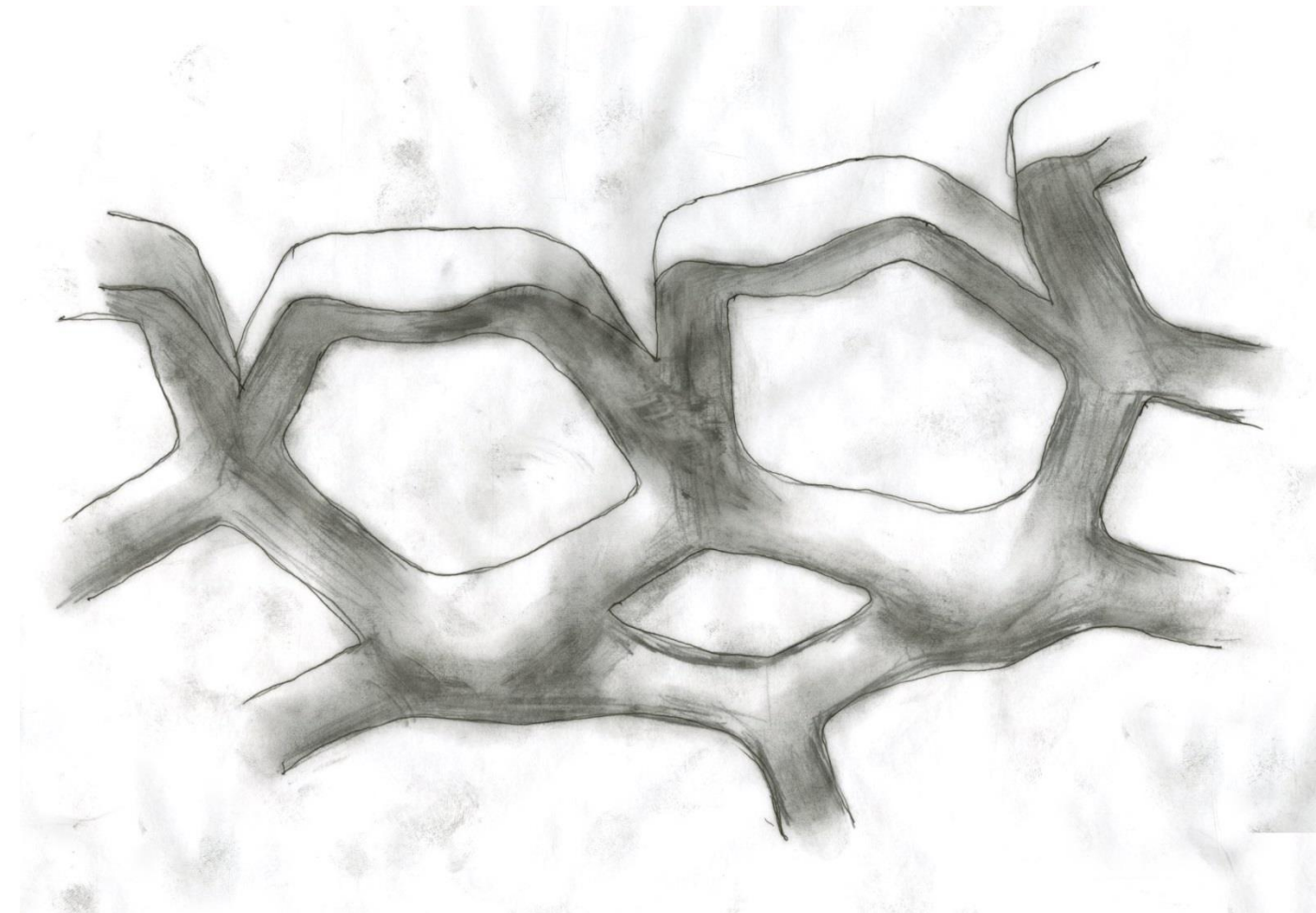


# ACKNOWLEDGEMENTS

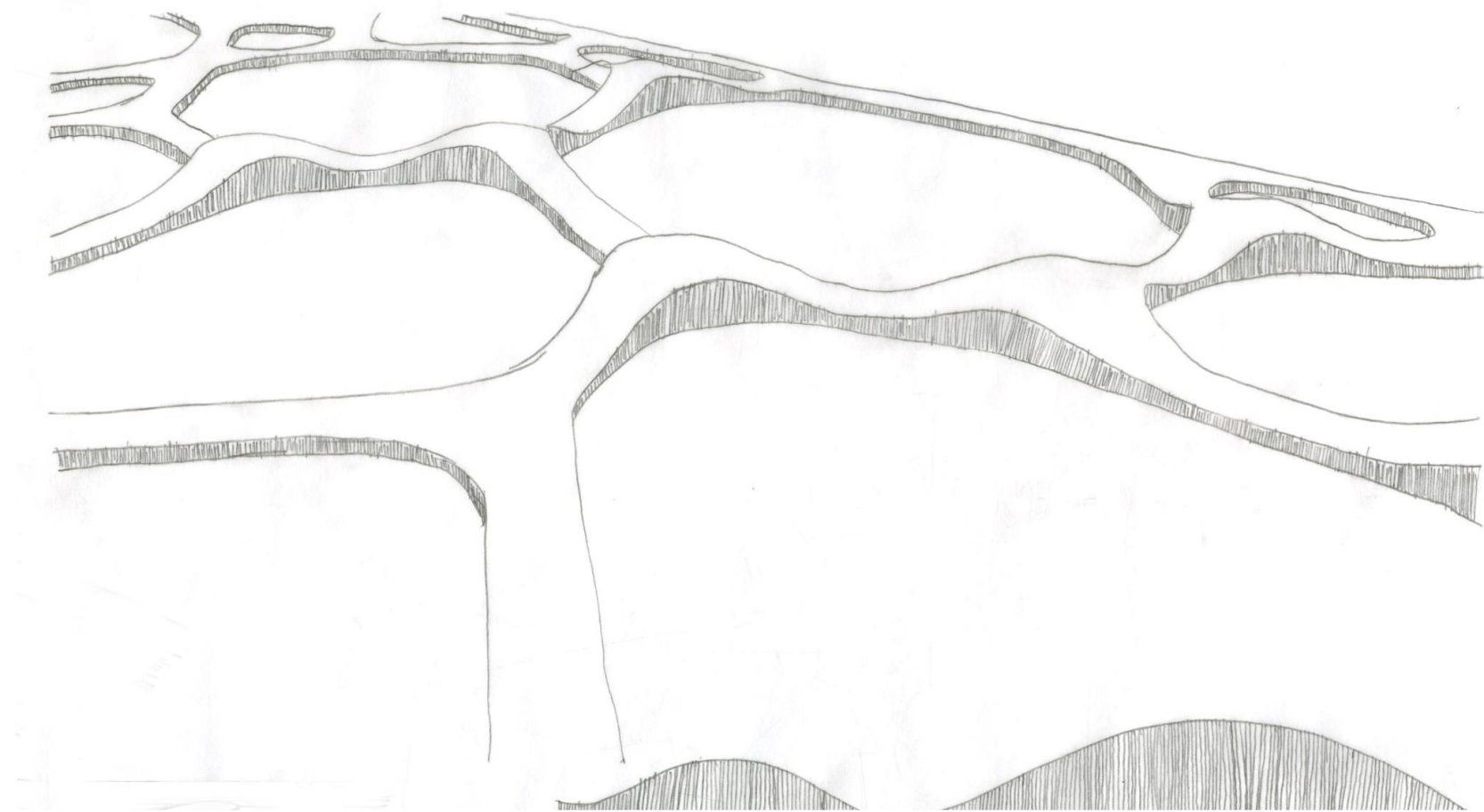
Without the presence, love, and support of my family, friends, and my professors, this thesis could not have been made possible.

To my family, thanks for every thing.

To my committee: Steven Thompson, Howard Gartner, and Hans Rott, thanks all for your patience and critique of my work.

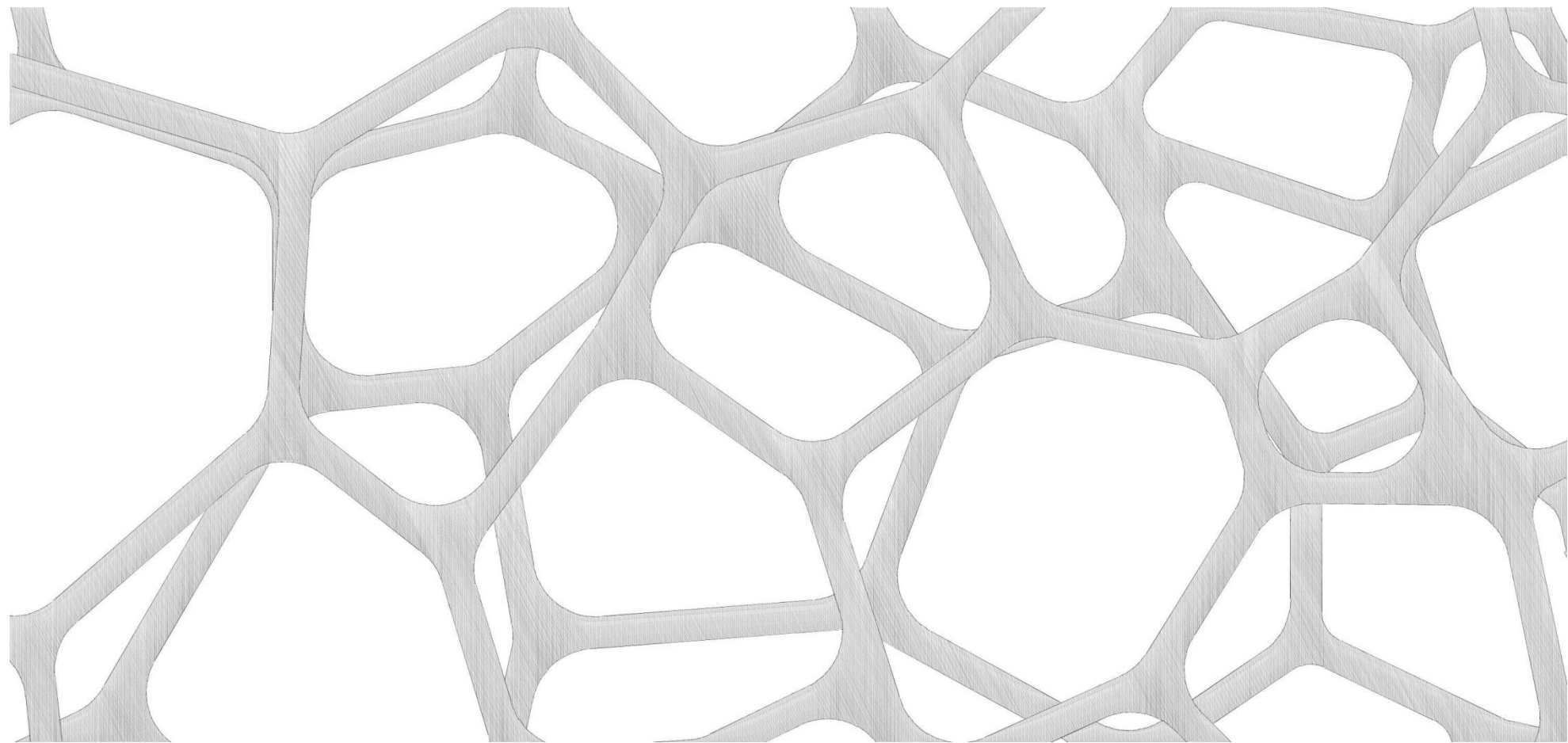


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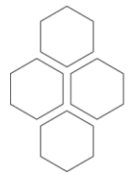


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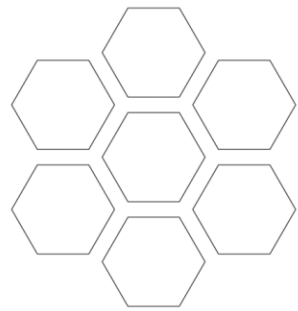




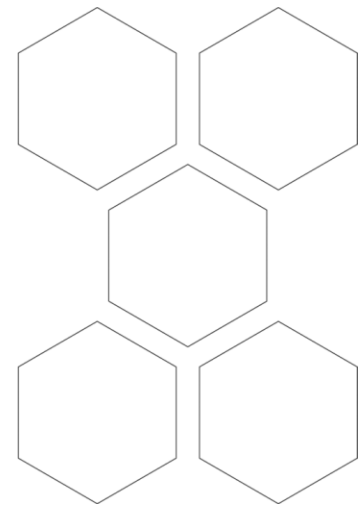
# SCREEN PATTERNS



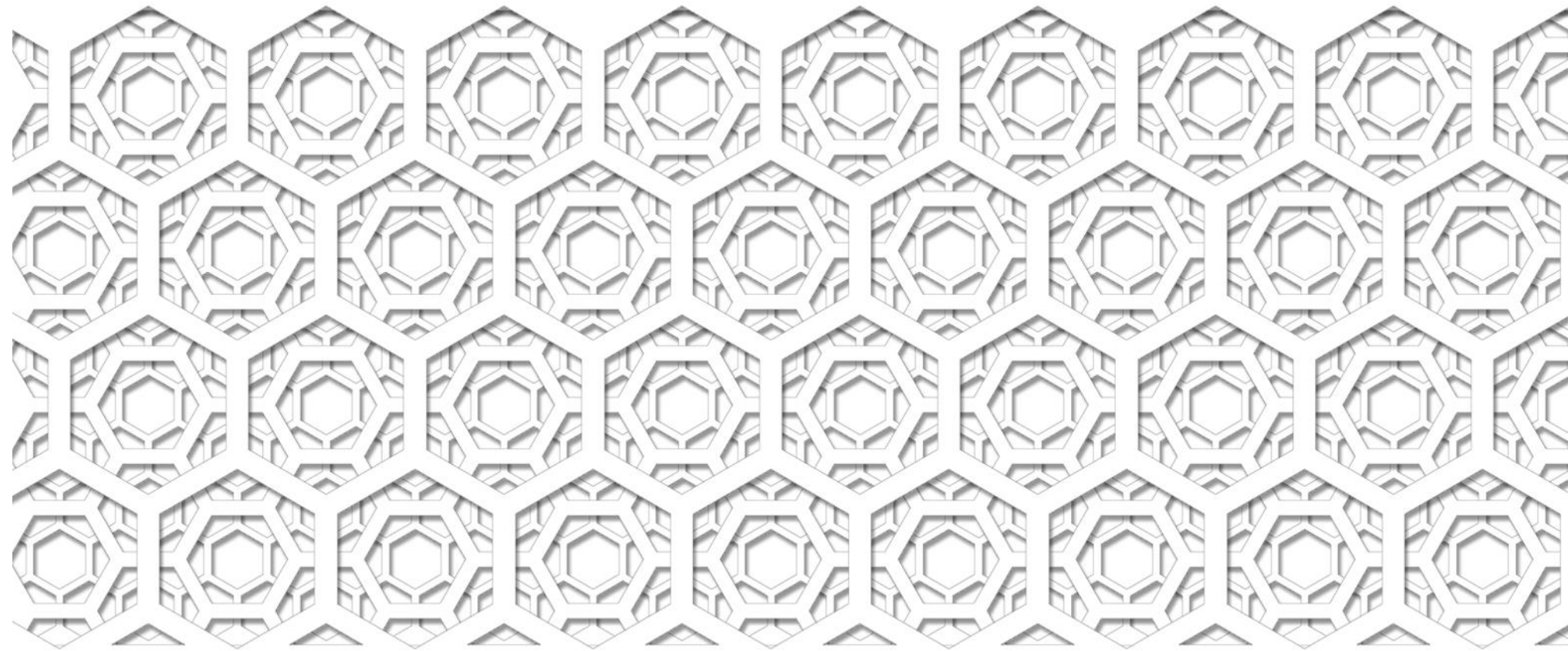
Layer 1



Layer 2

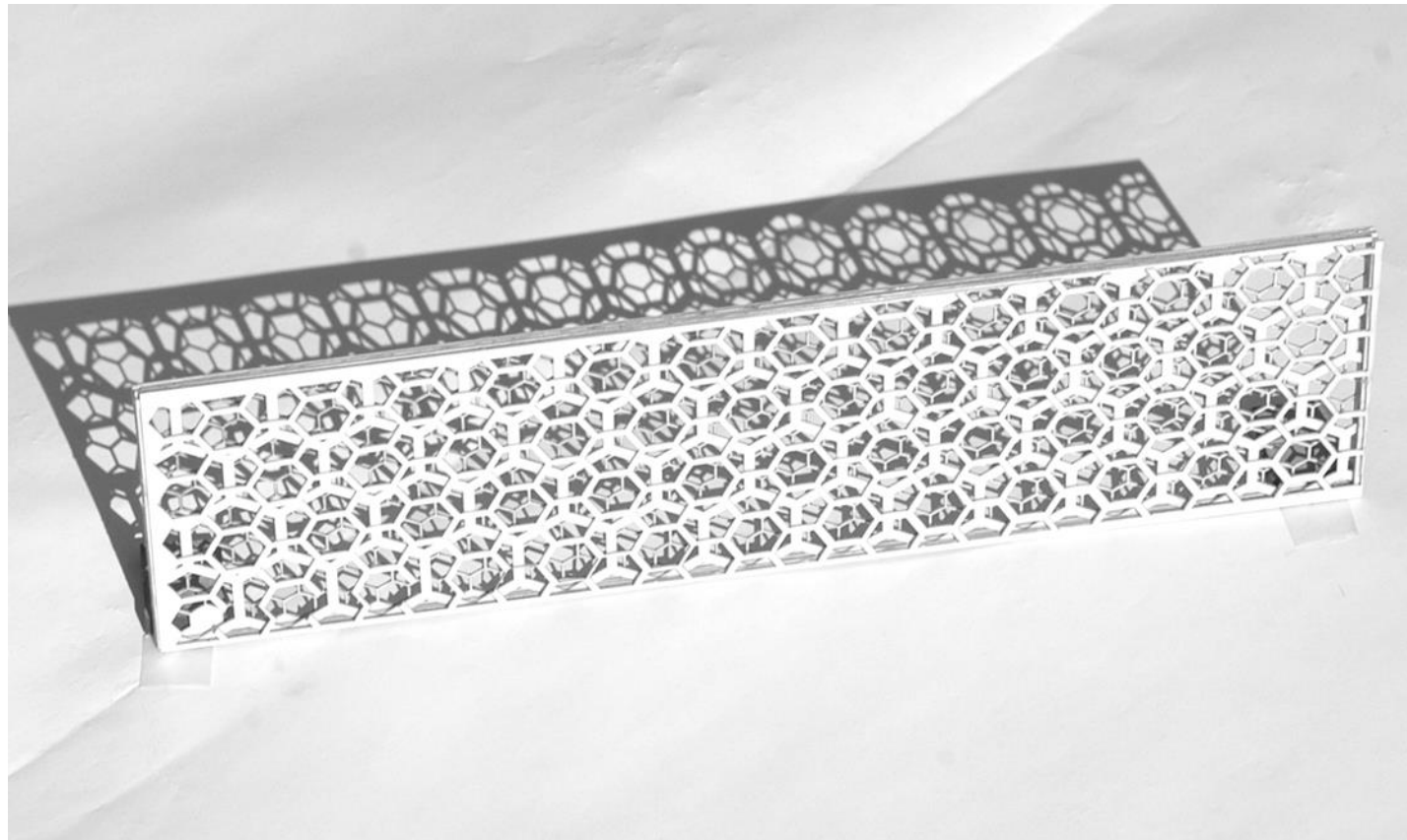


Layer 3

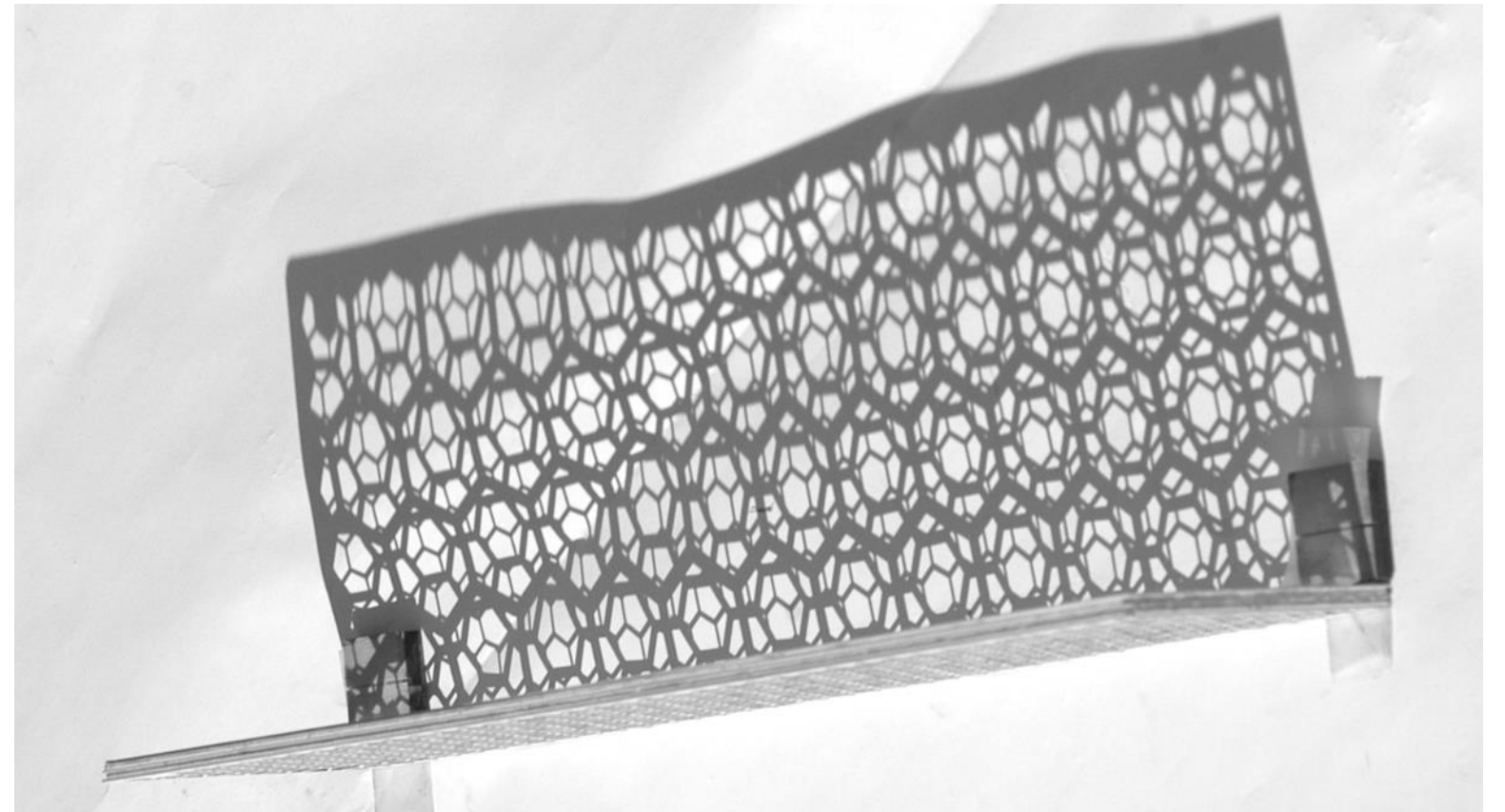


Layer 1+2+3

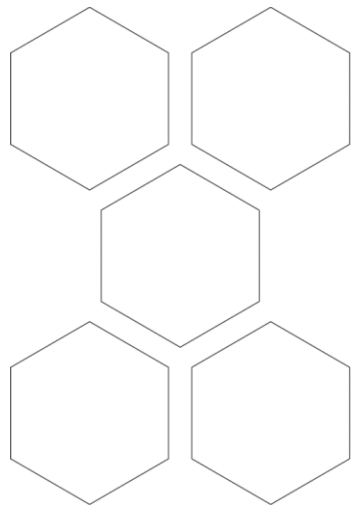
## SCREEN PATTERN



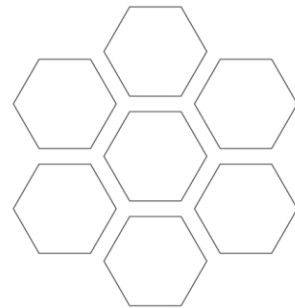
Model of screen



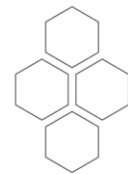
Effect of shade



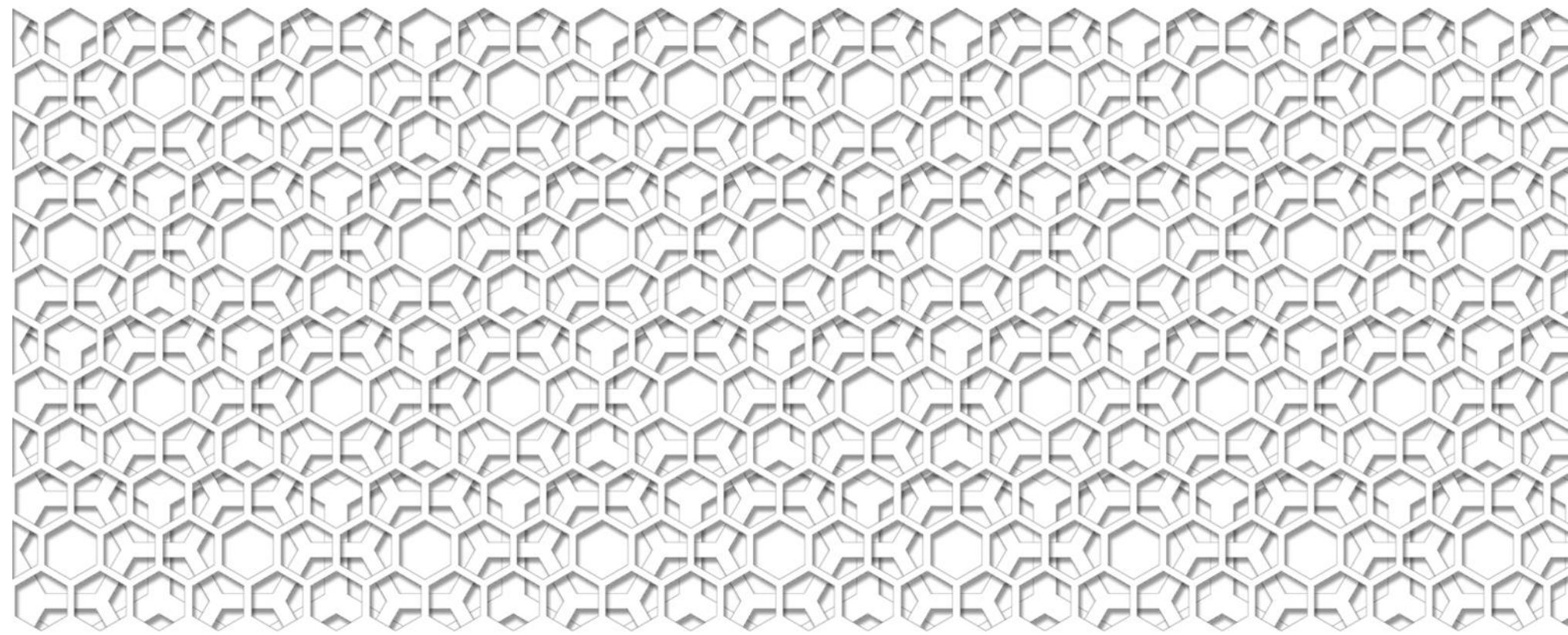
Layer 1



Layer 2

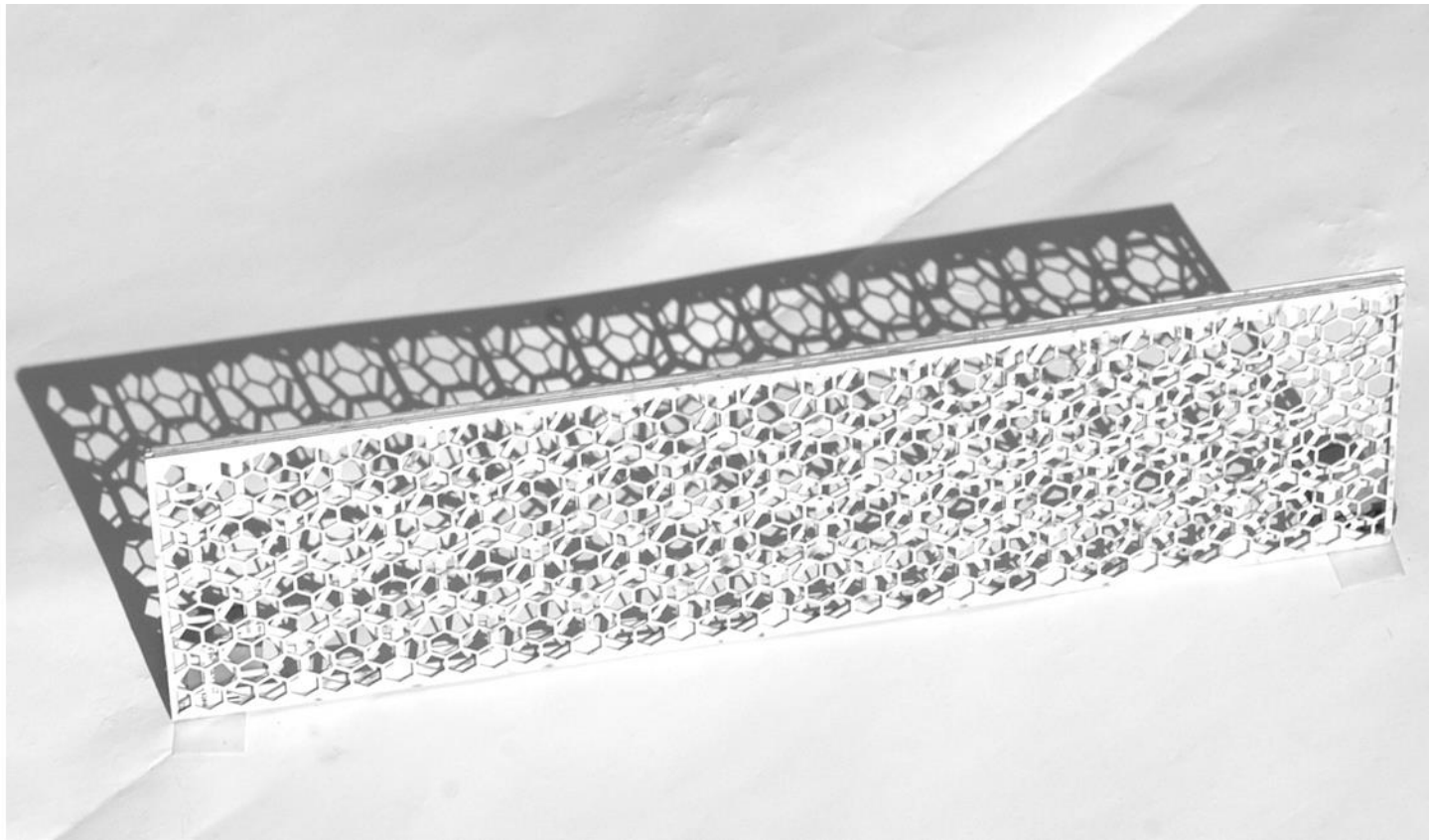


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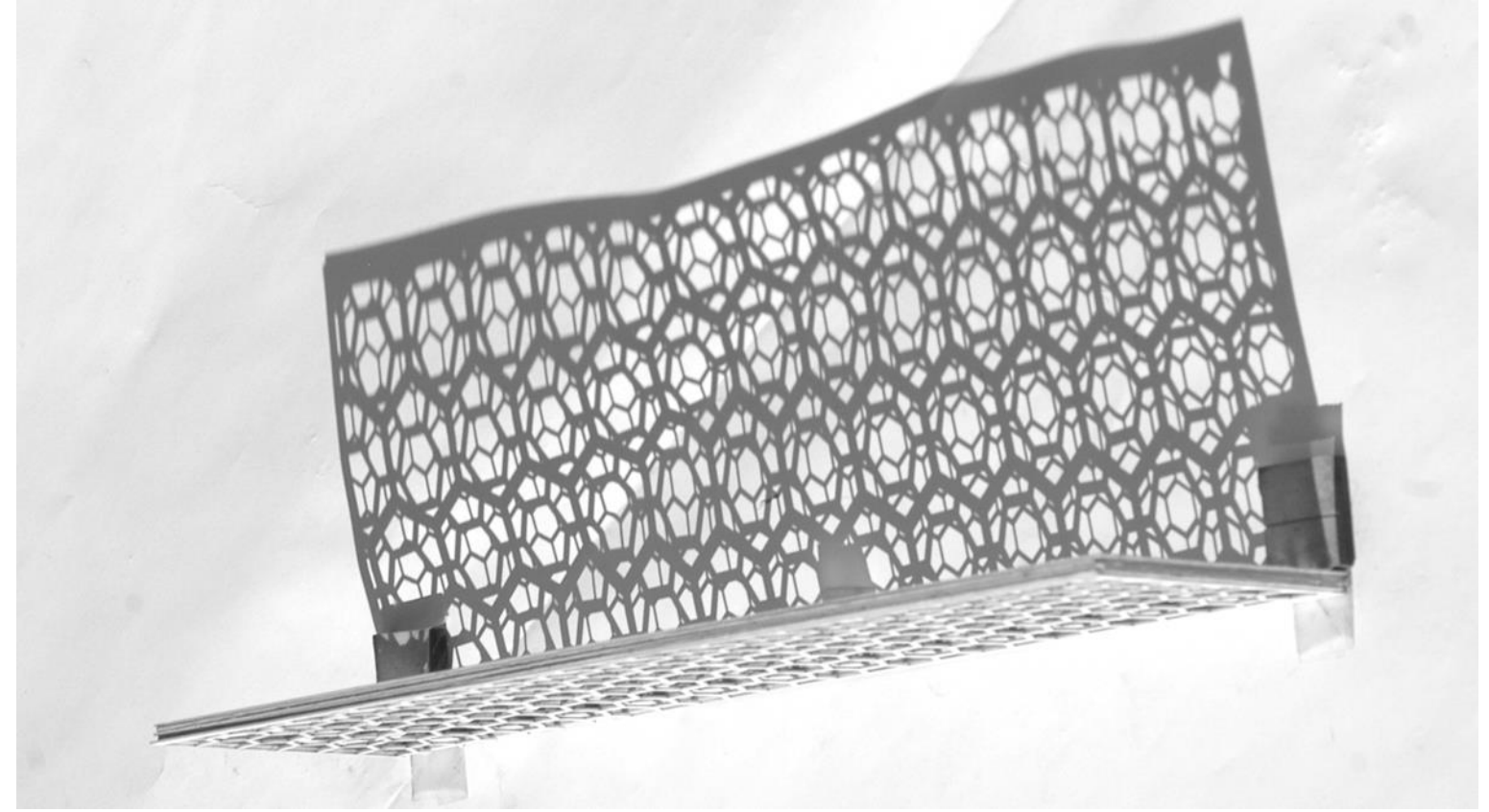


Layer 1+2+3

## SCREEN PATTERN

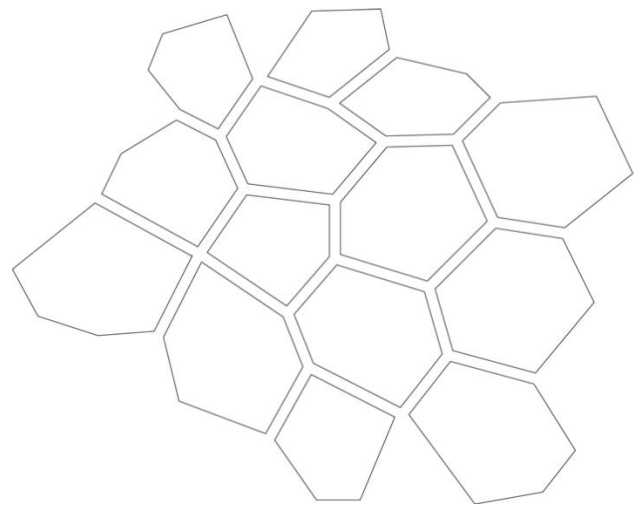


Model of screen

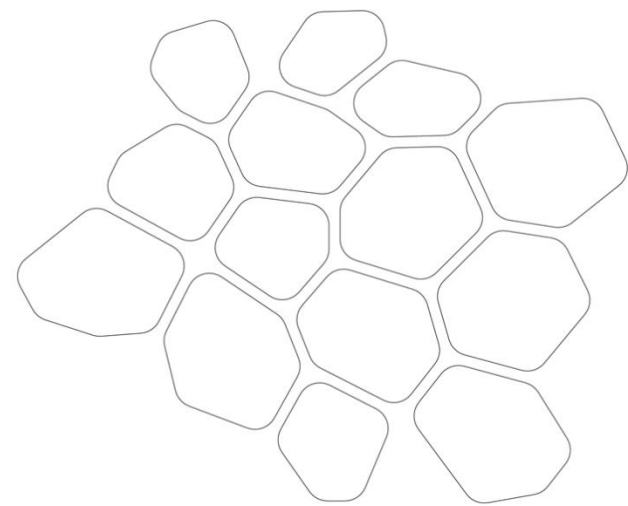


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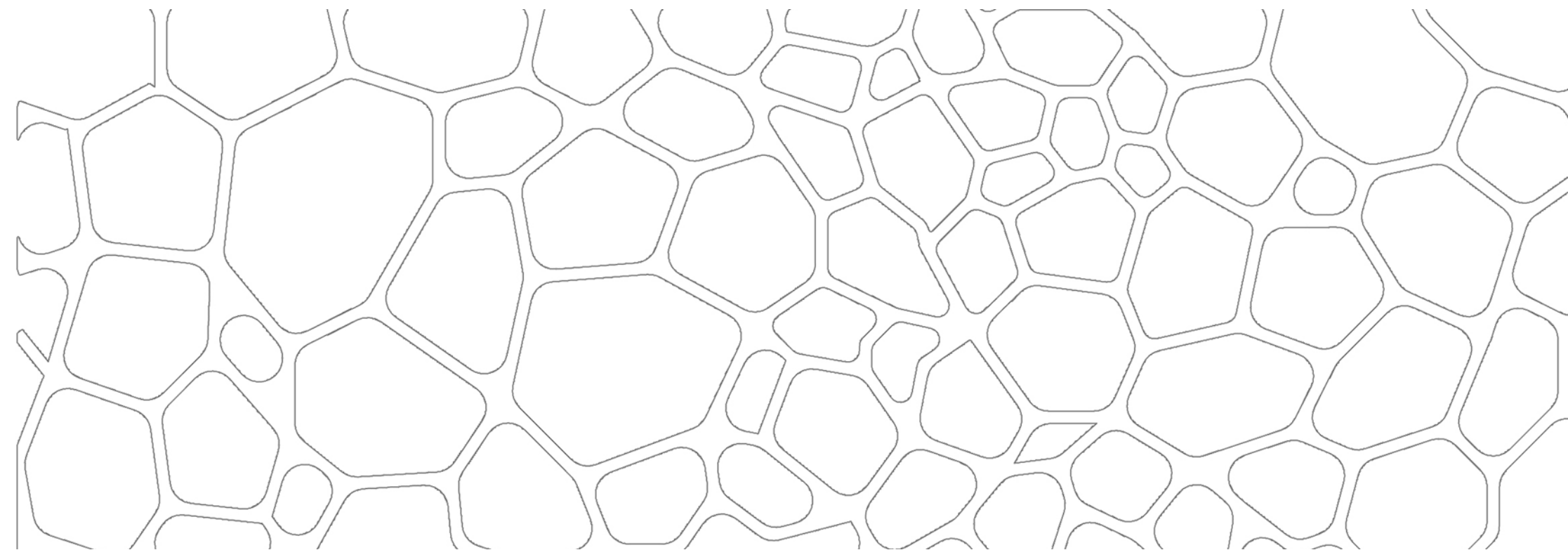
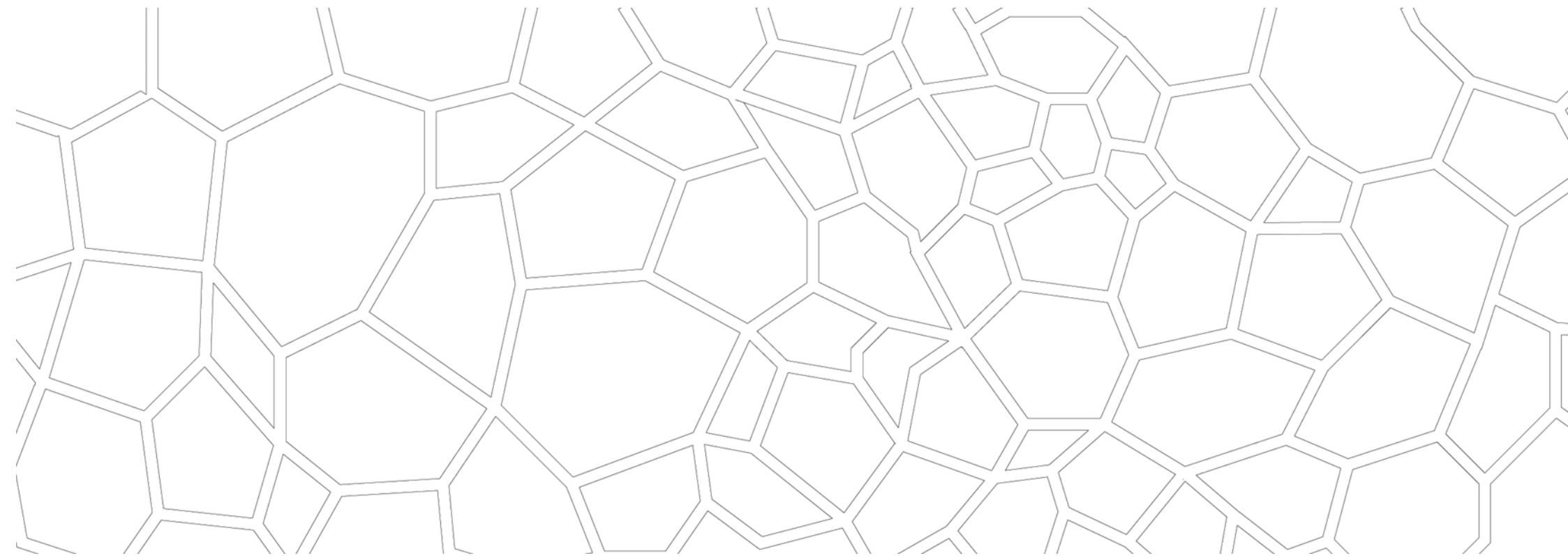




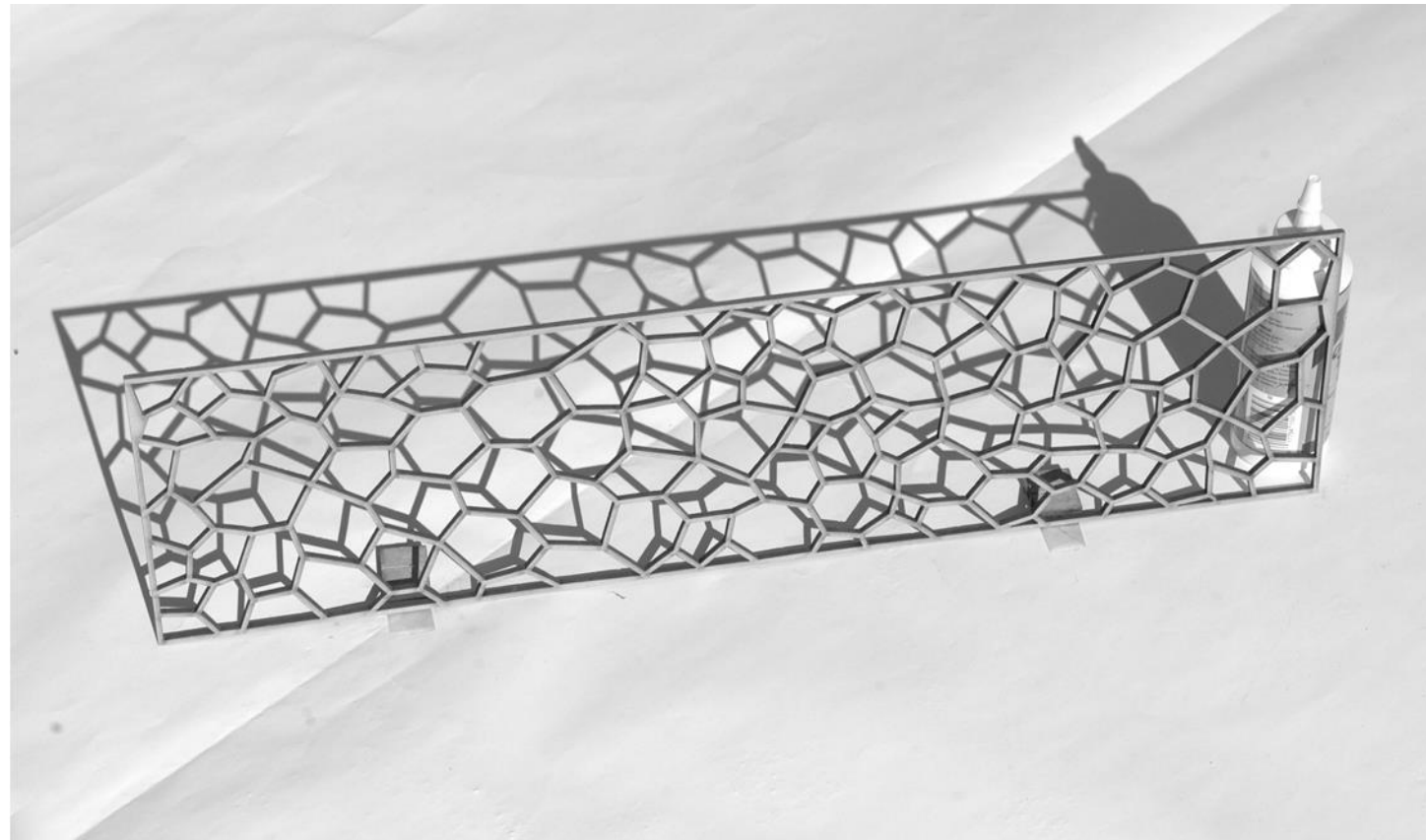
Sharp corners



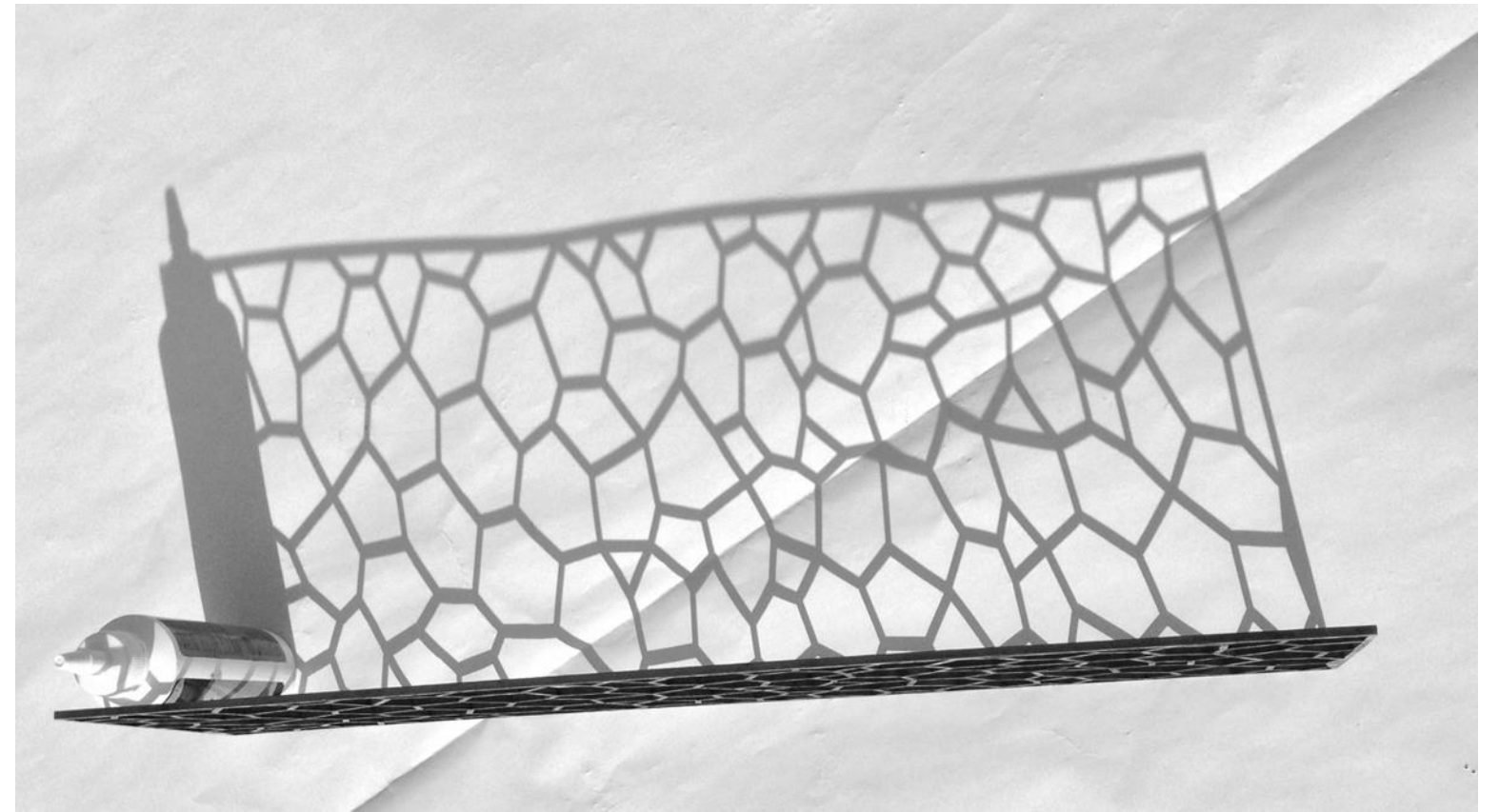
Smooth corners



## ORGANISTIC PATTERNS

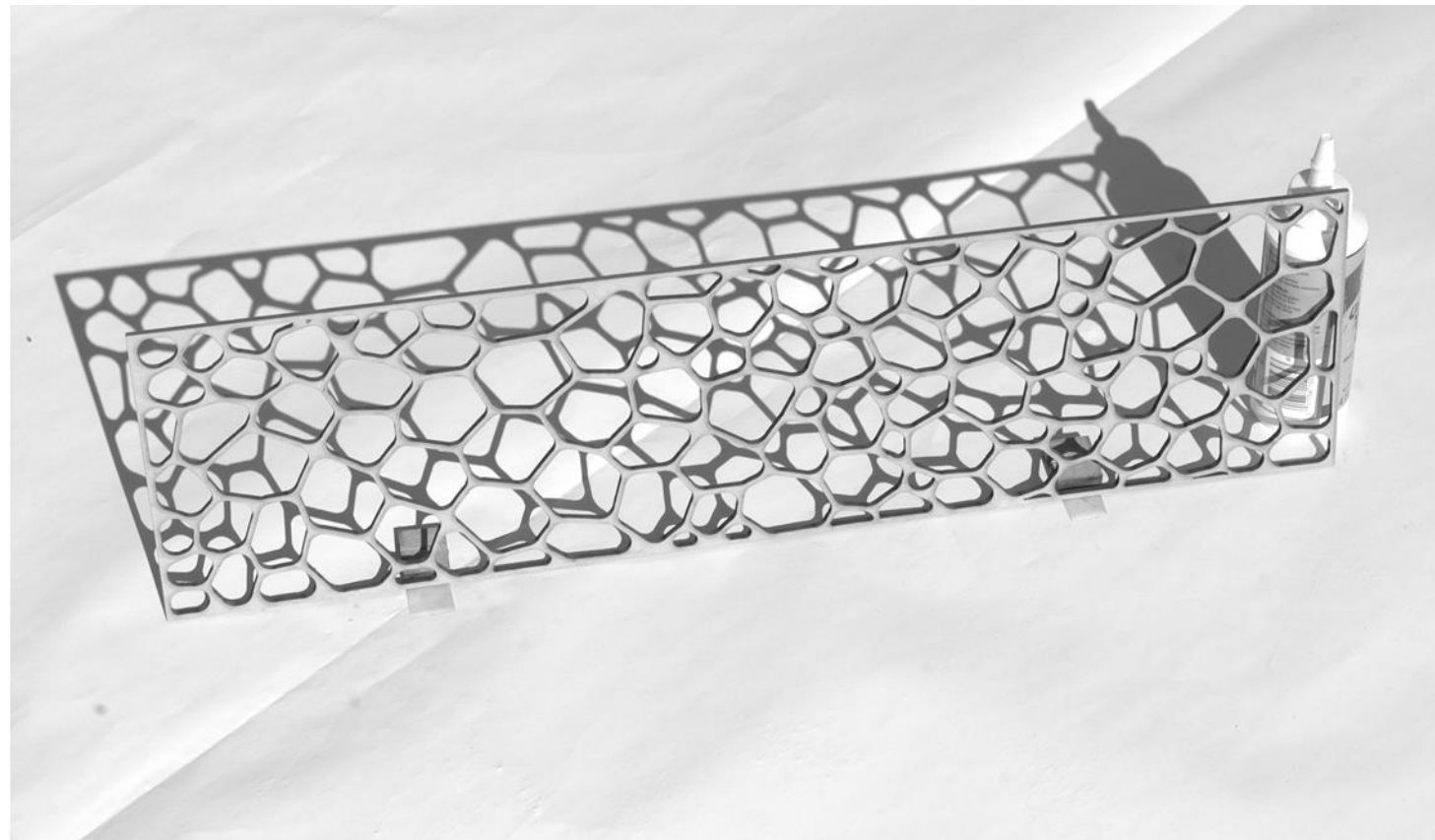


Model of screen

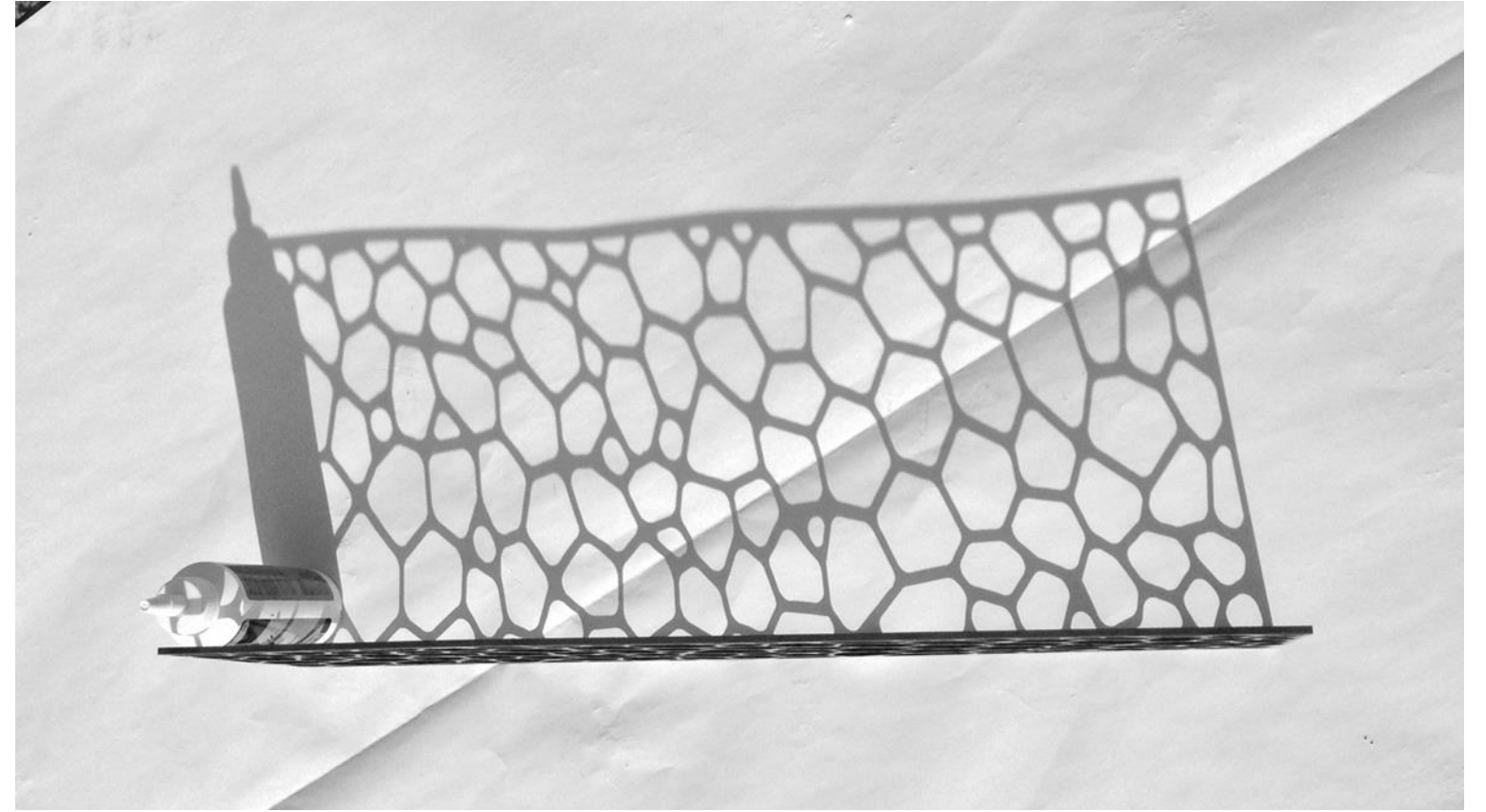


Effect of shade

## SCREEN WITH SHARP CORNERS



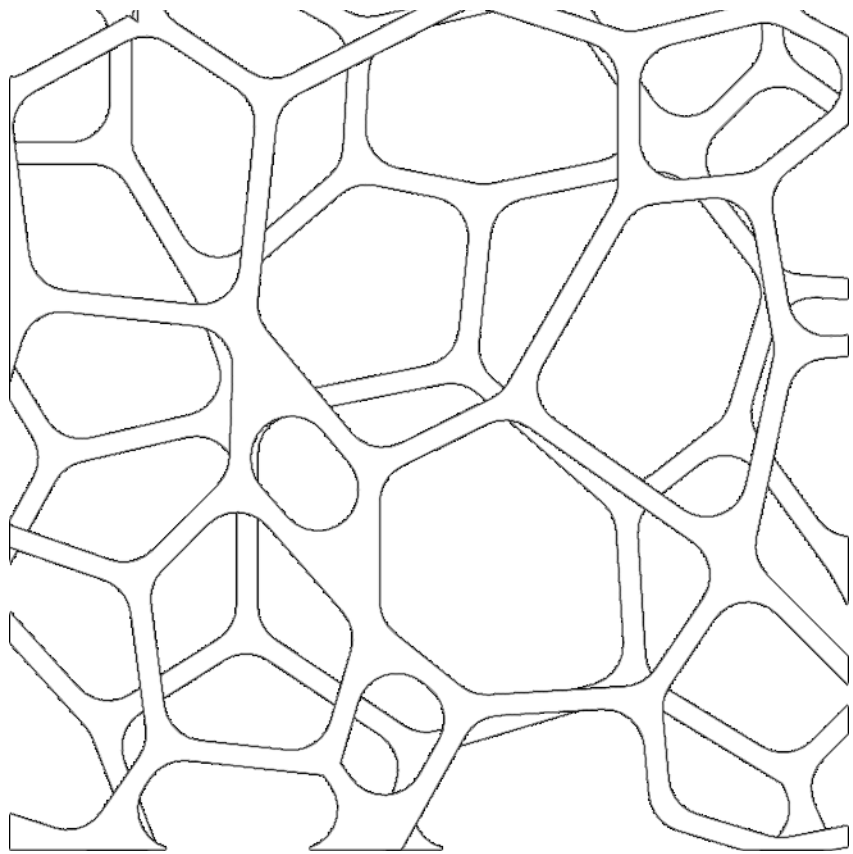
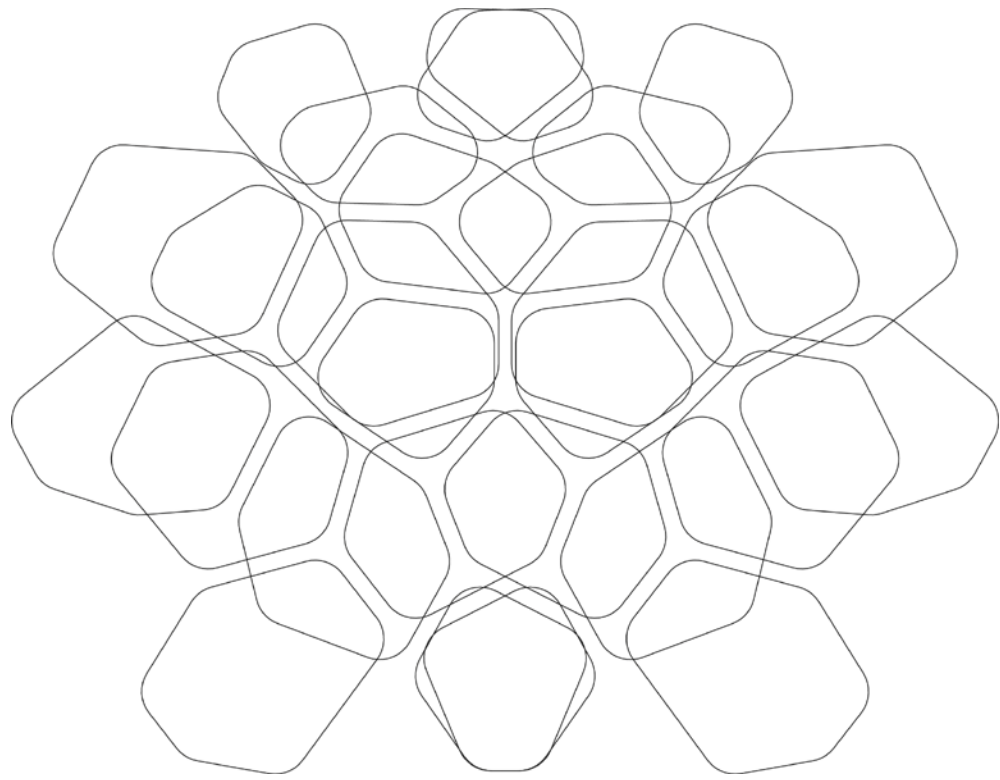
Model of screen



Effect of shade

## SCREEN WITH SOFT CORNERS

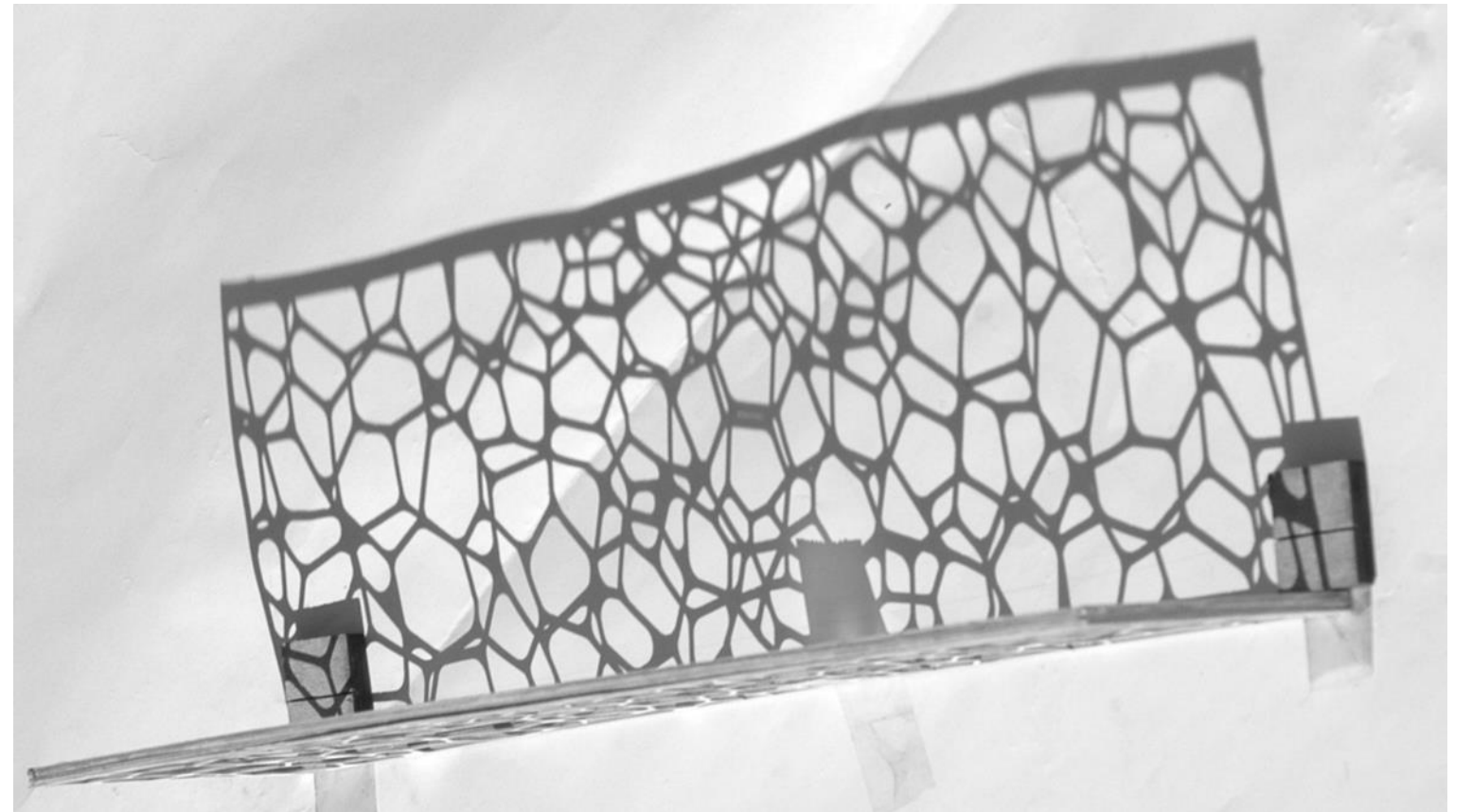
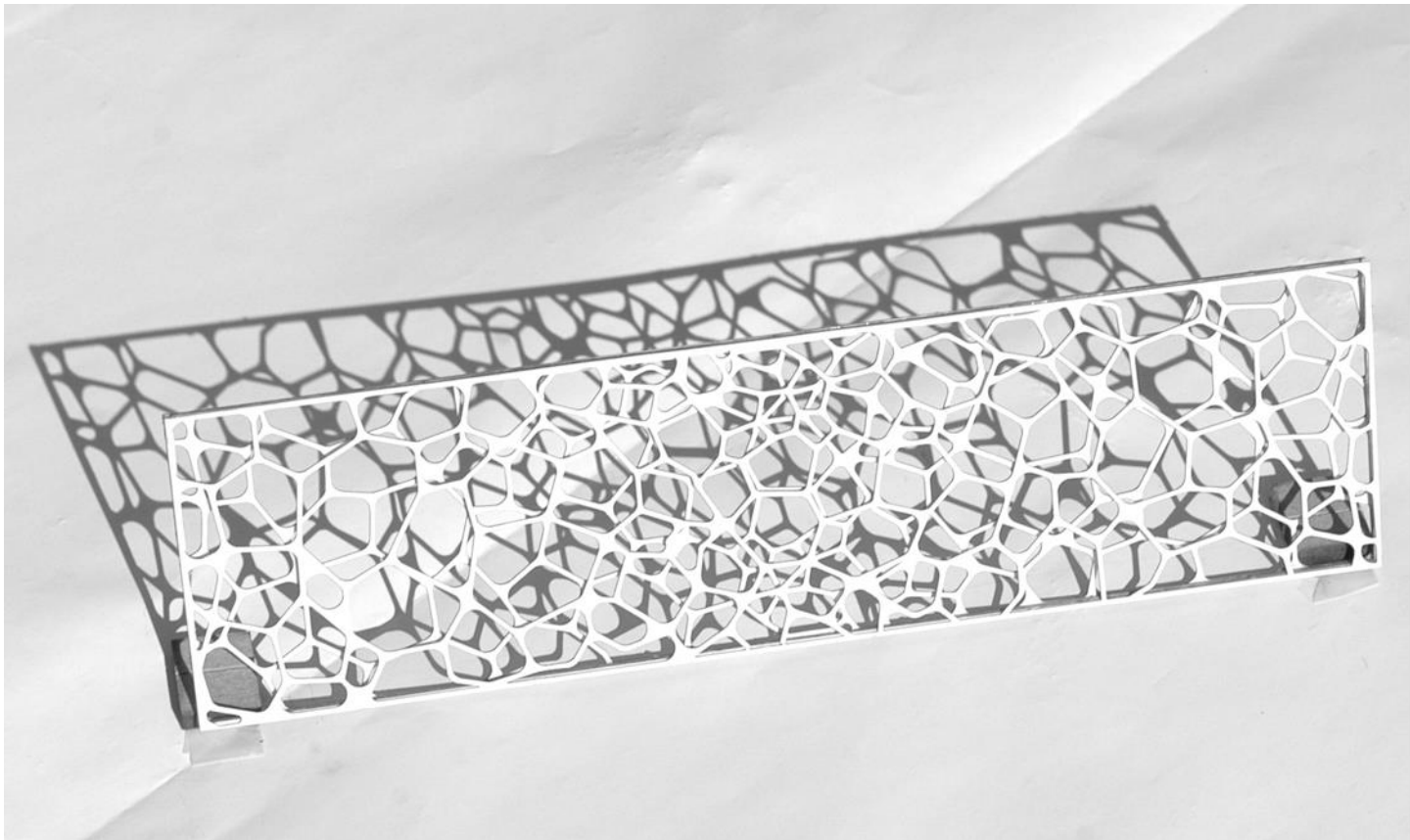
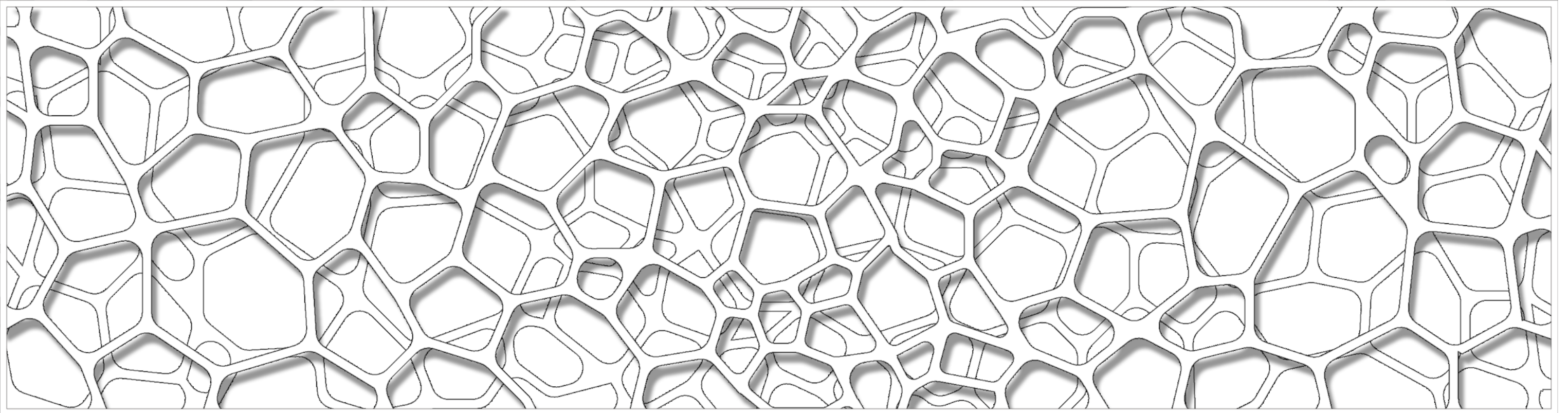




Multiple layers of soft corners

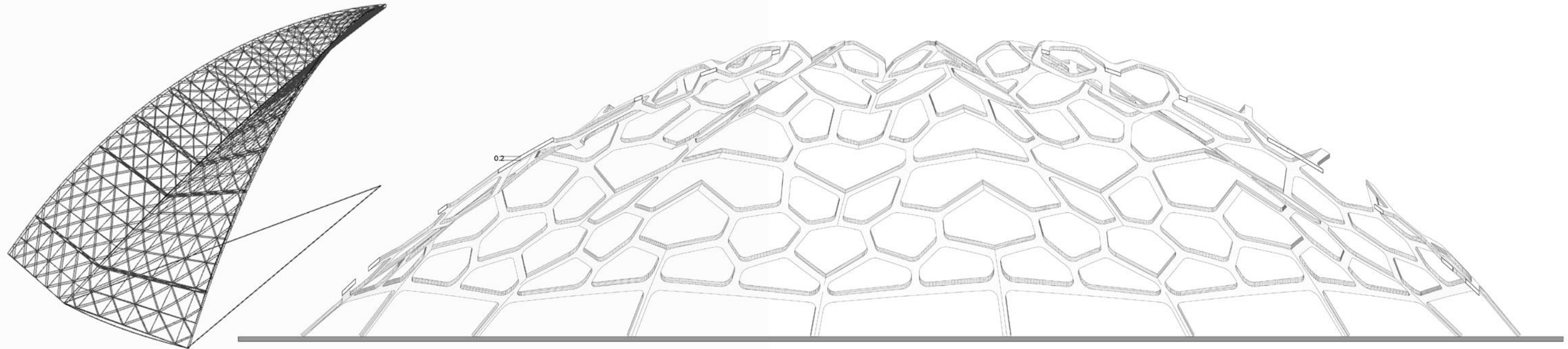




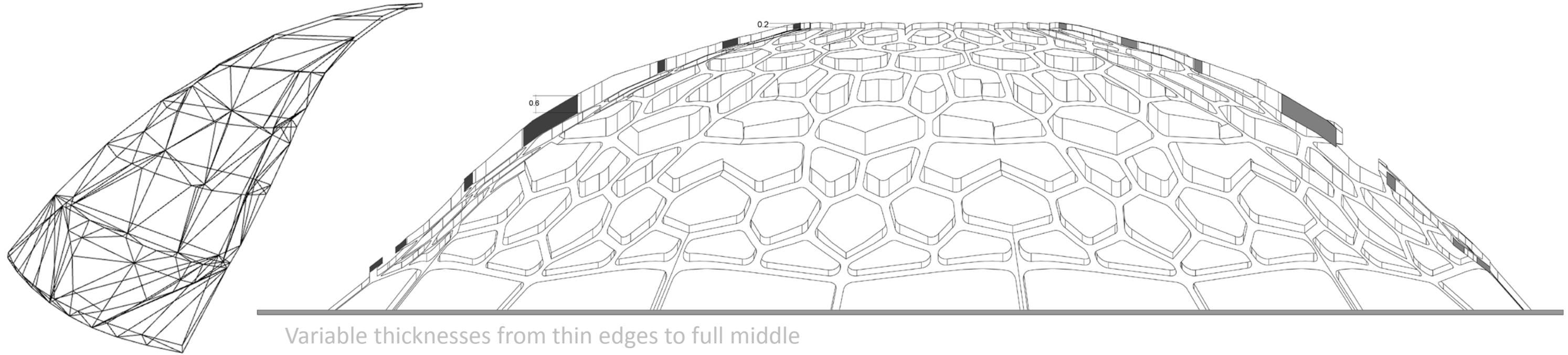


Multiple layers of soft corners



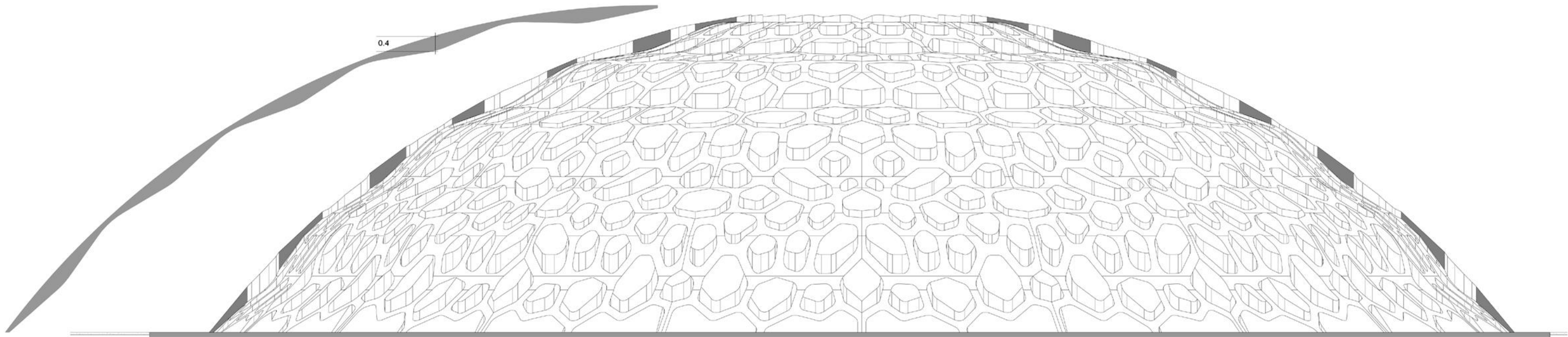


Constant thicknesses with rotation around an axis

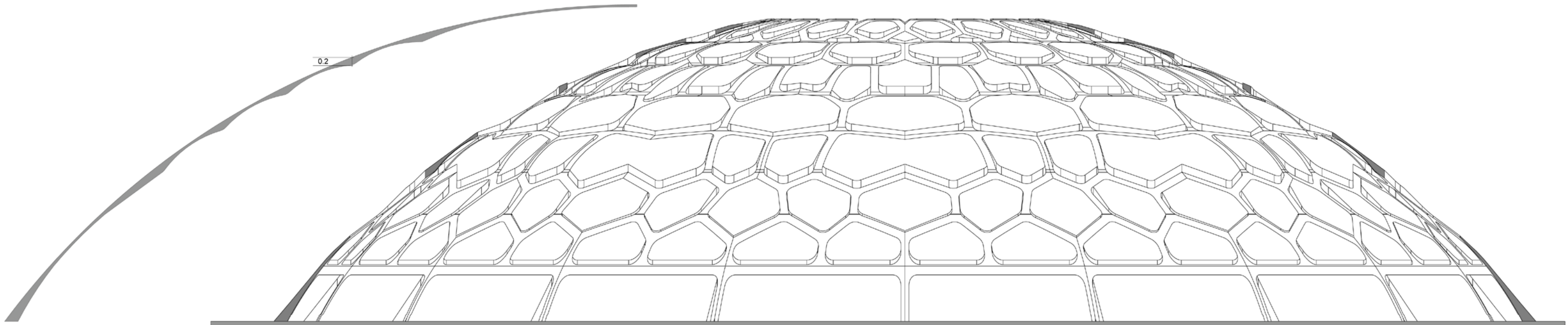


Variable thicknesses from thin edges to full middle

## DOMICAL FORM AND PATTERN



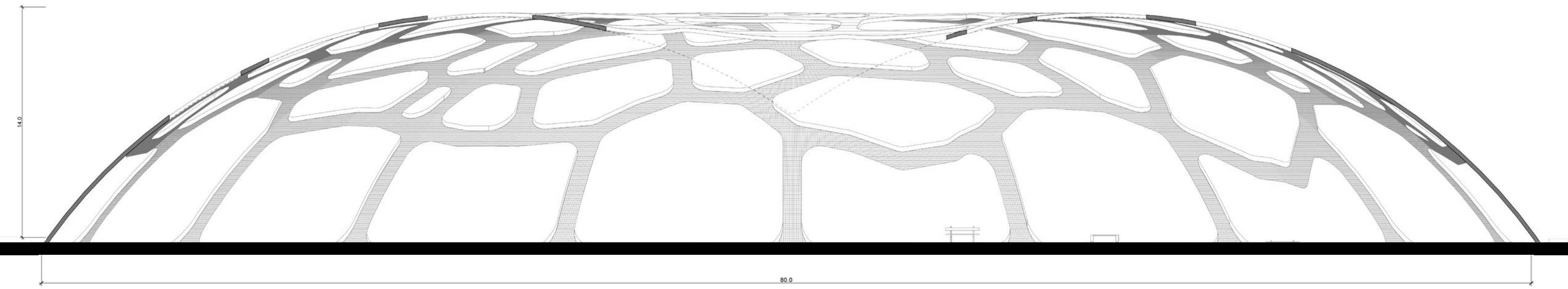
Full thicknesses at intersections



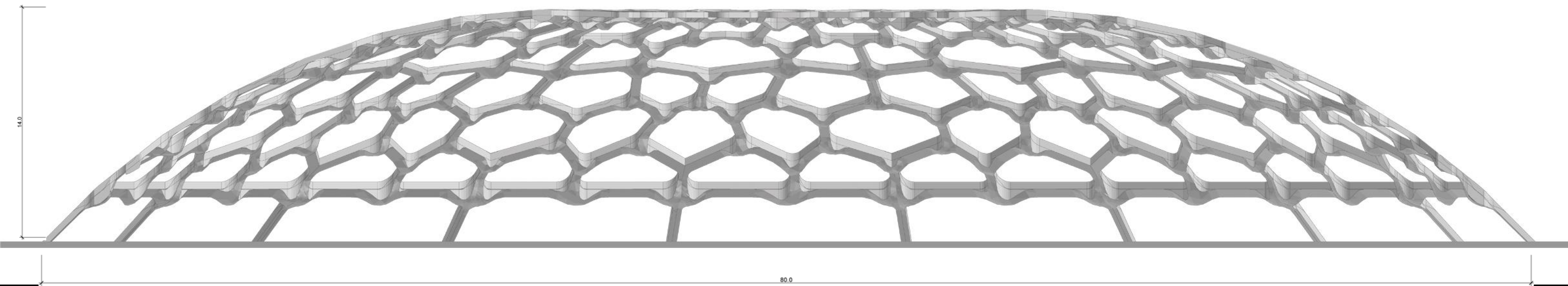
Full thinness at intersections

## DOMICAL FORM AND PATTERN



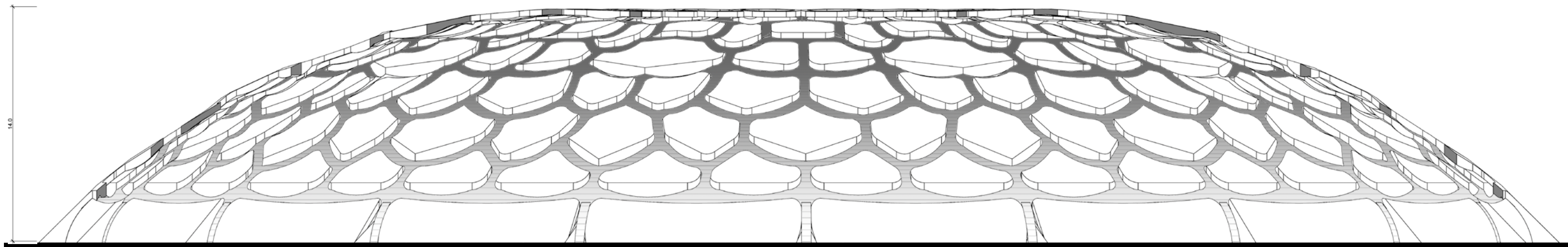


Flat pattern in domical shape (non structural)

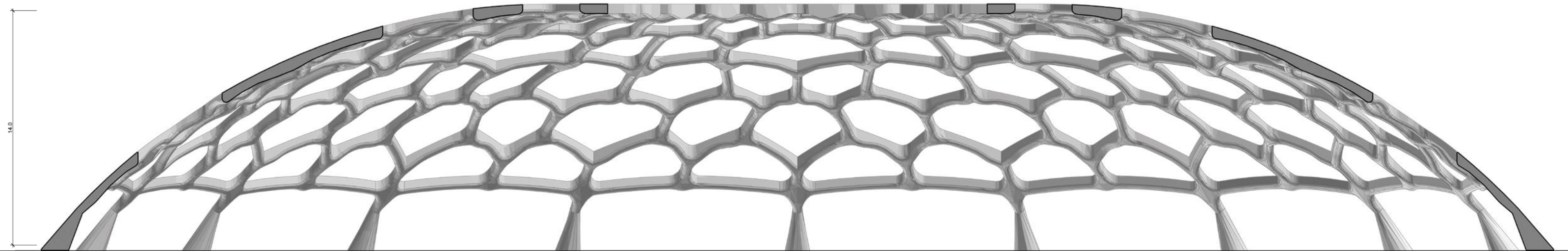


Rectilinear shaped members in domical shape (becoming structure)

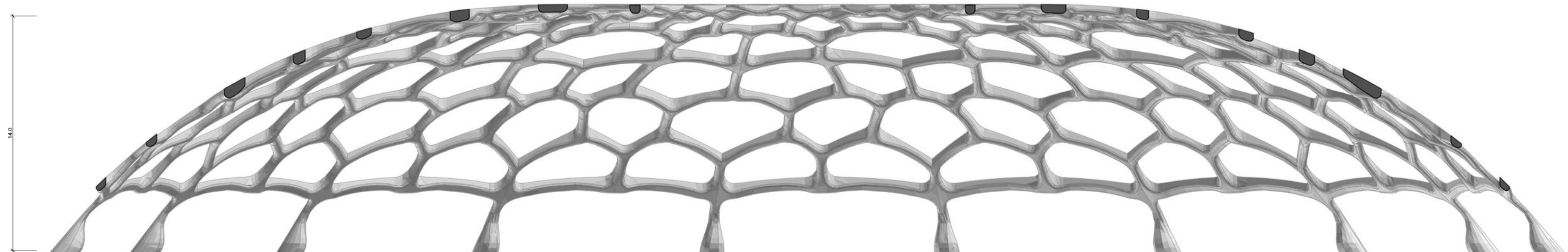
## DOMICAL SHAPE SECTIONS



Rectilinear members in domical shape

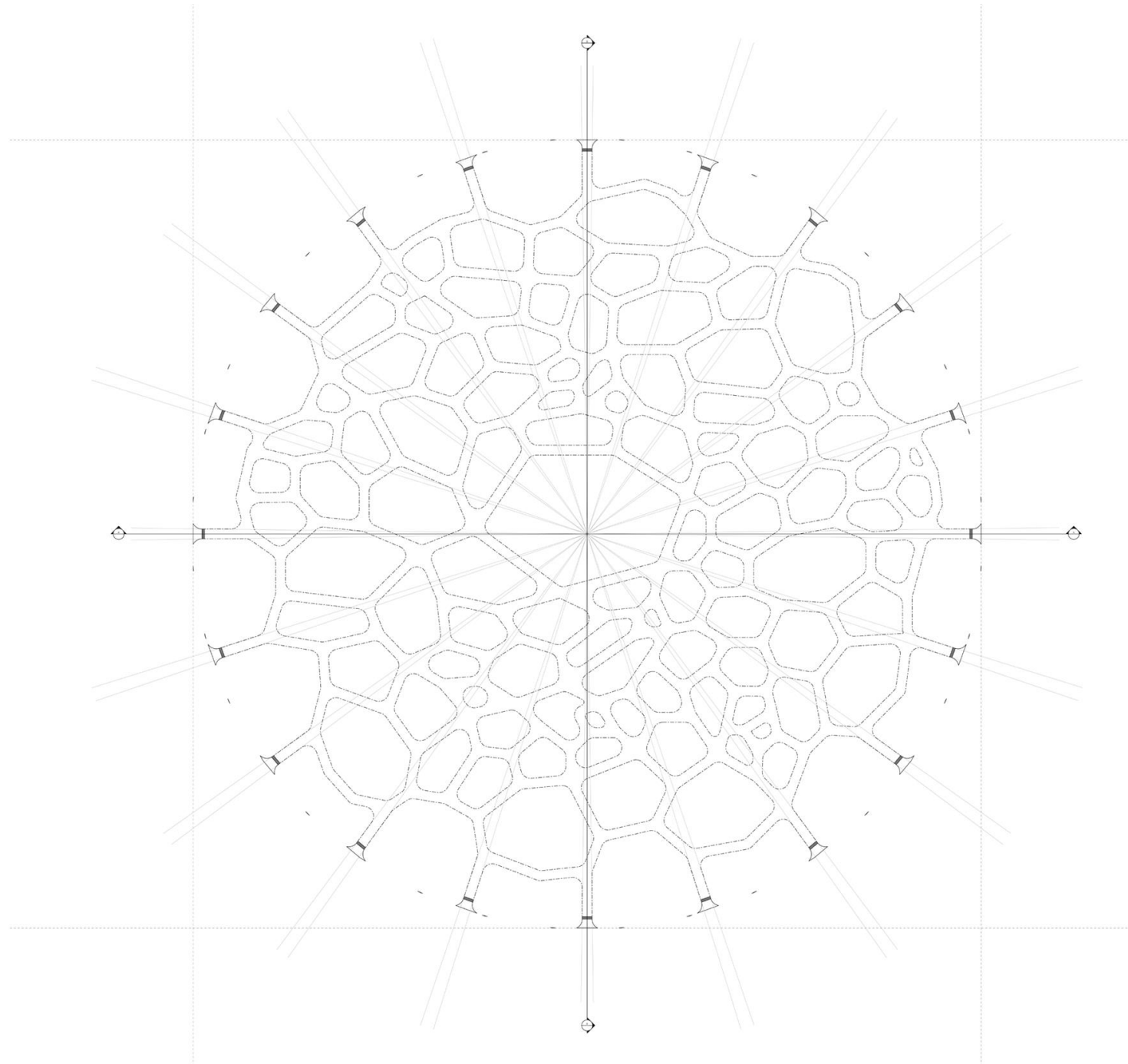


Softened rectilinear members

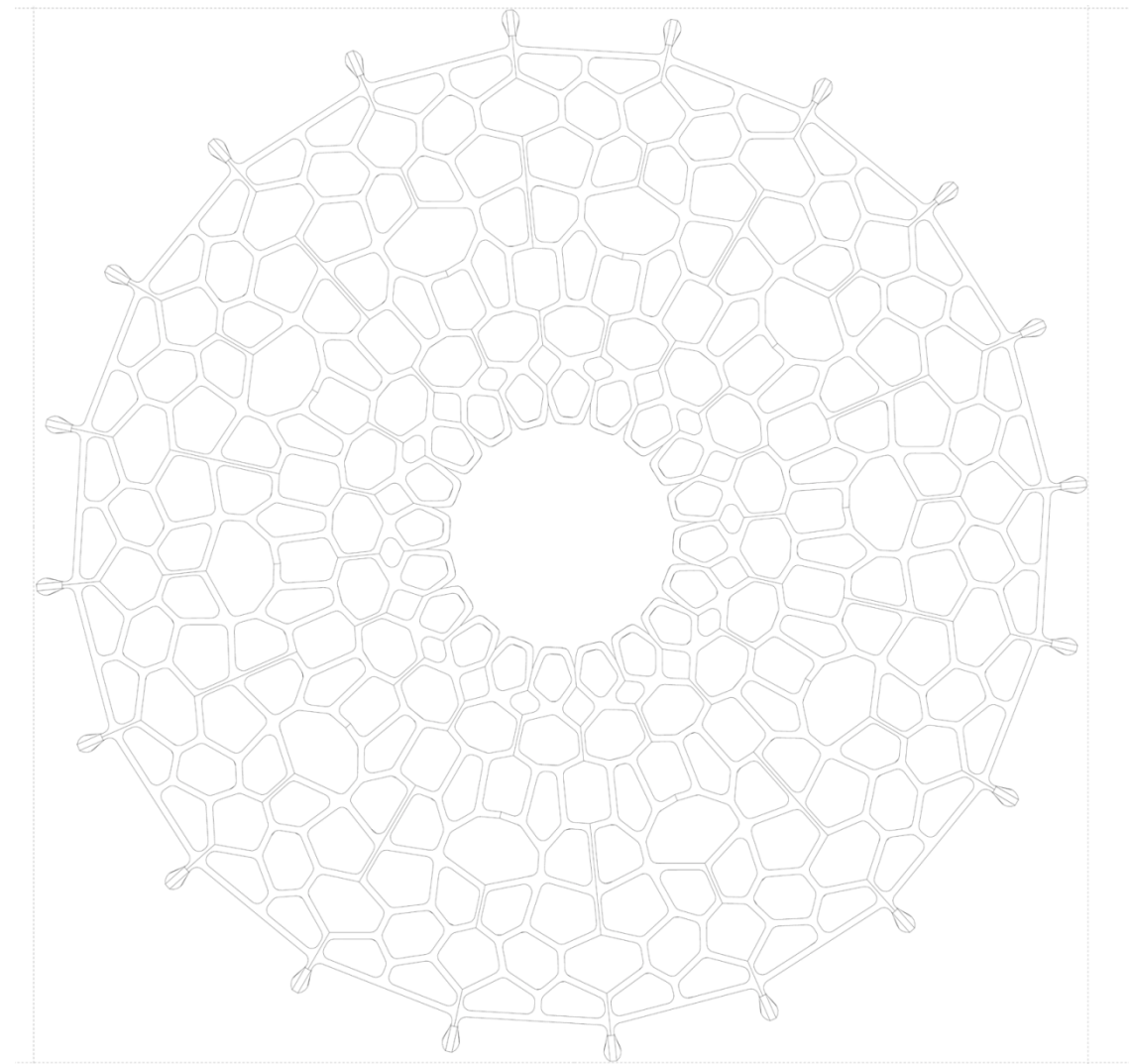


Smooth members





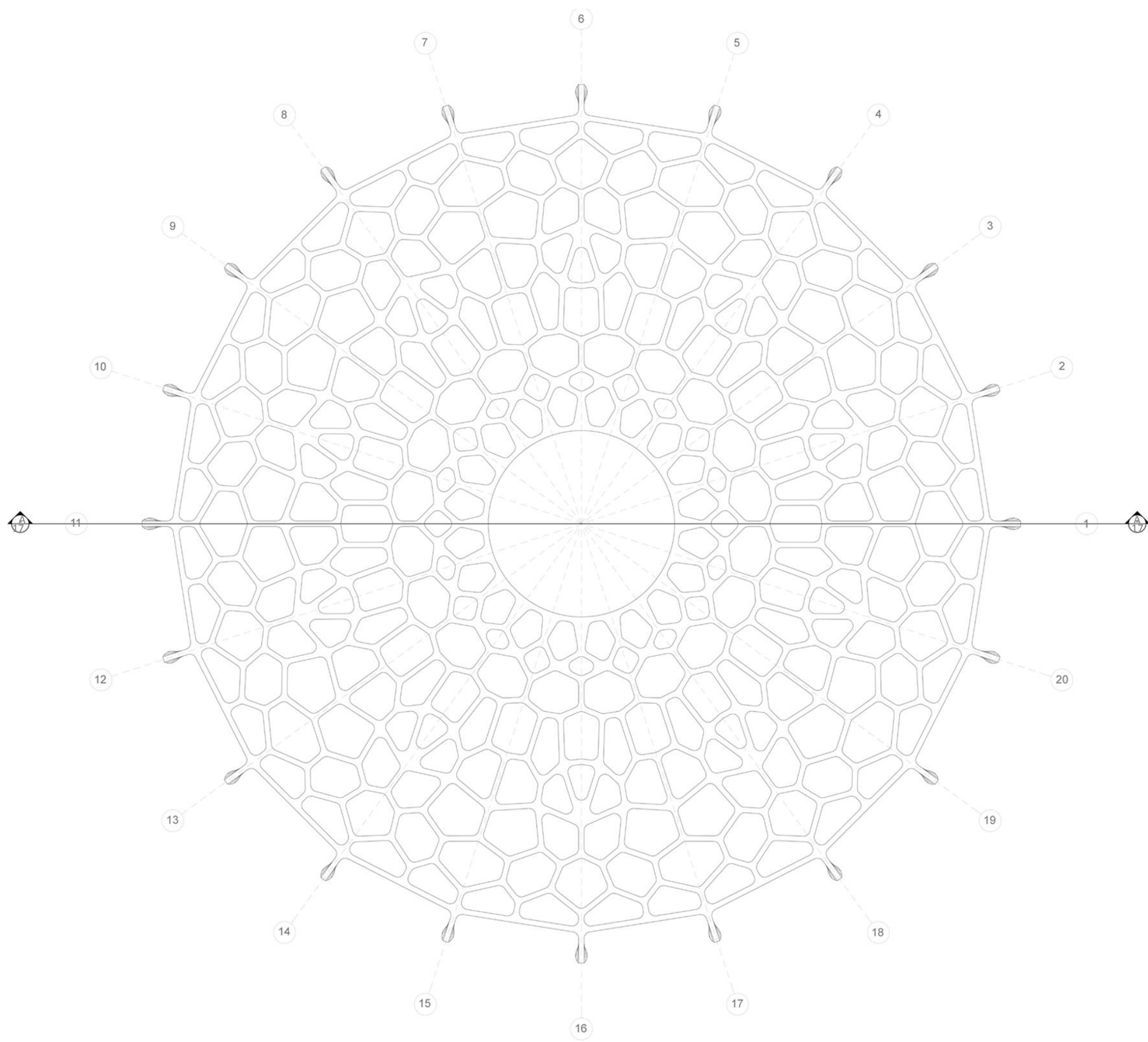
Plan of Dome with random organic patterns



Plan of Dome with irregular patterns becoming structural and material

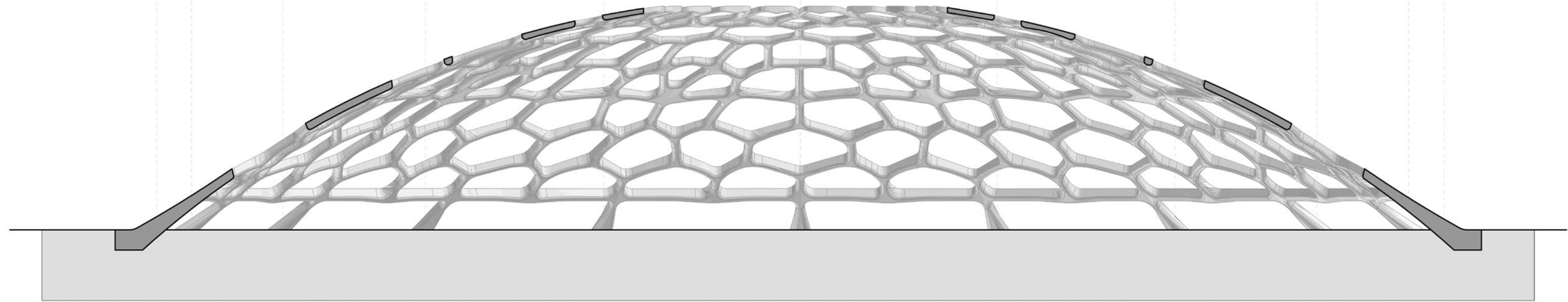
## PLANS OF DOMICAL SHAPE



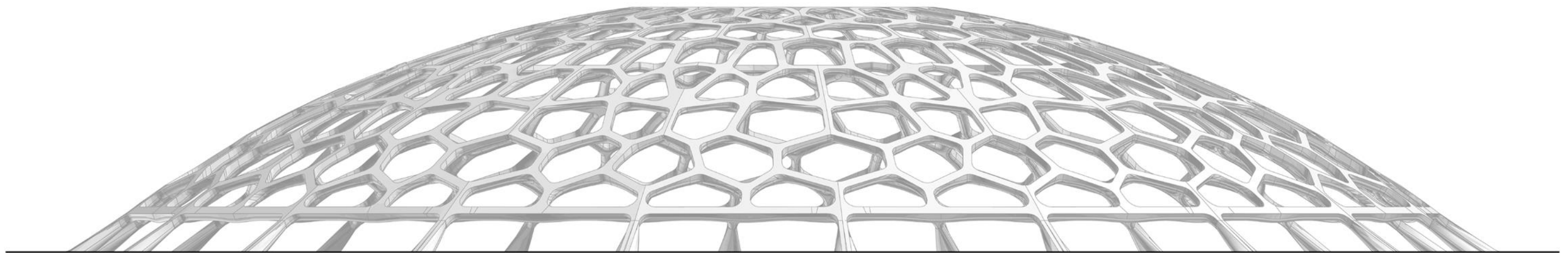


Plan of Dome as structure in Pre-Cast concrete

11 10 9 8 7 6 5 4 3 2 1



SECTION A-A



ELEVATION





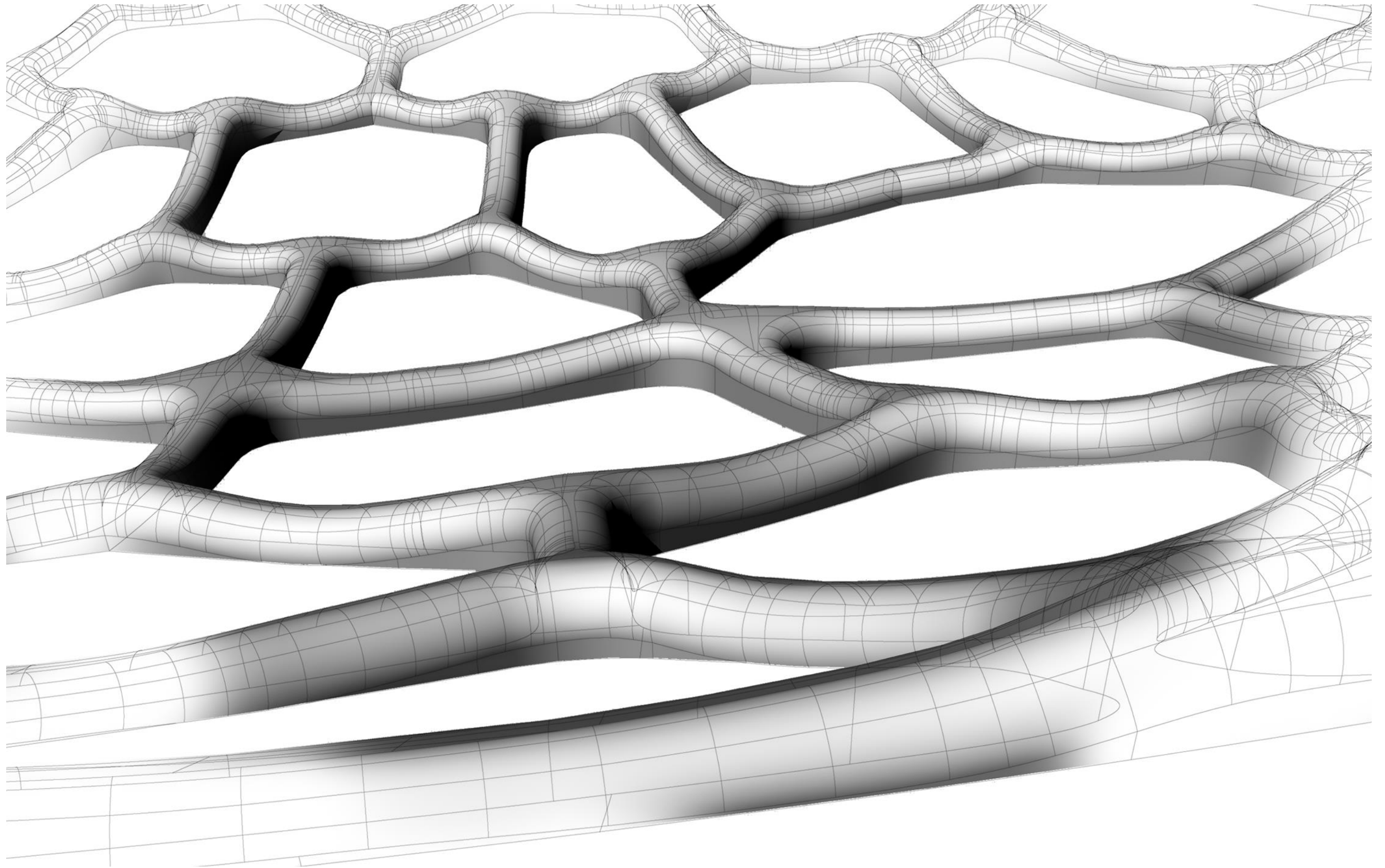
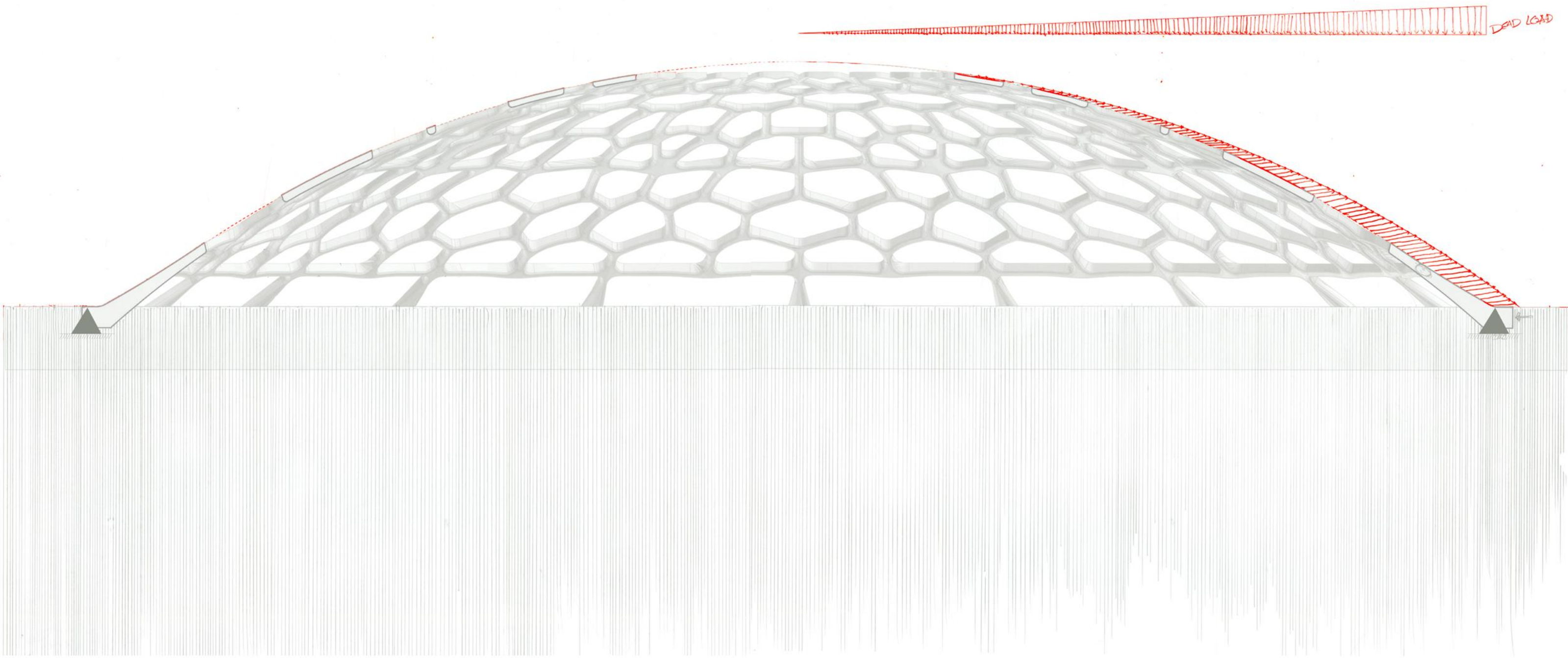
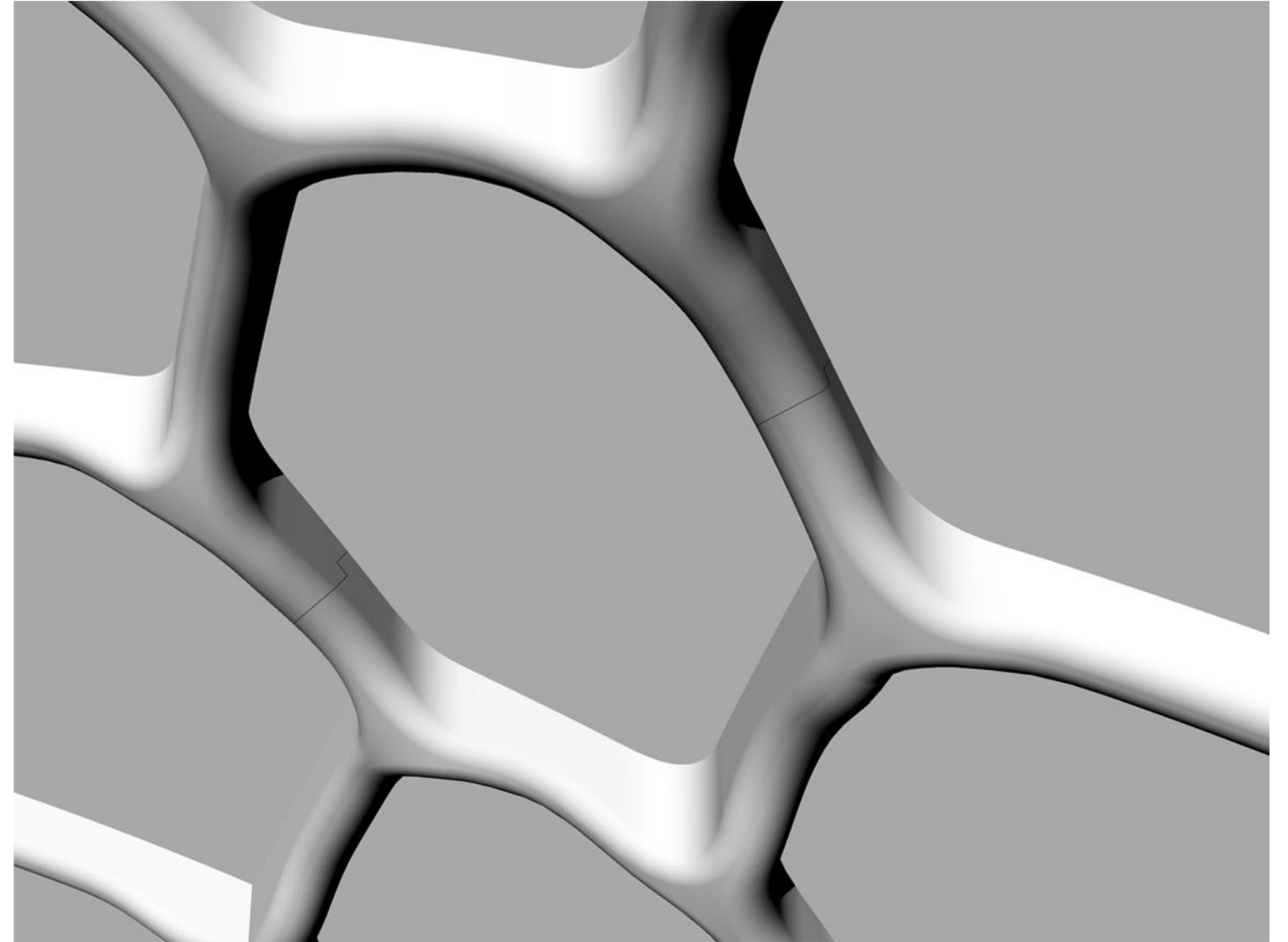
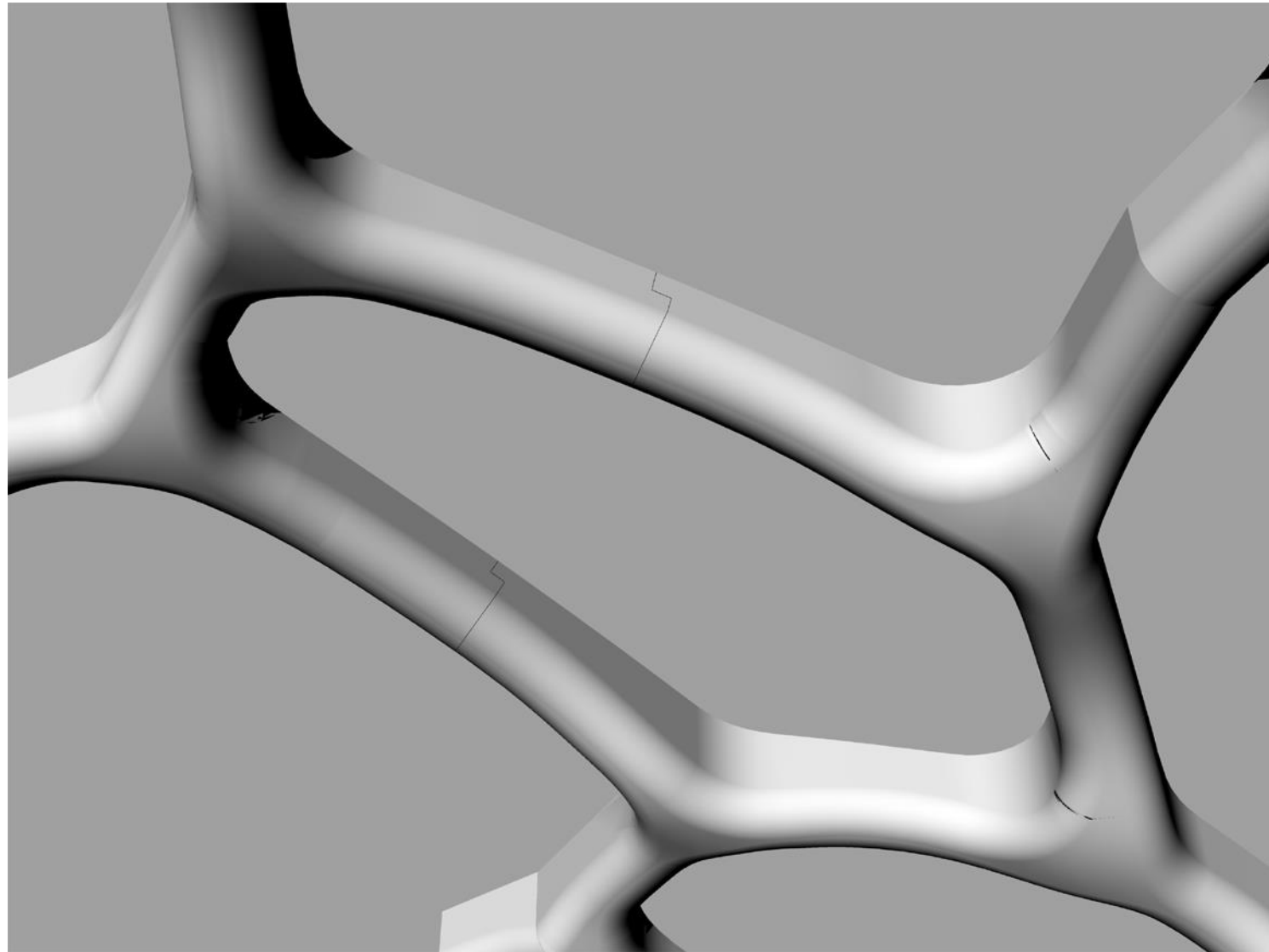


DIAGRAM OF BEAM THICKNESS



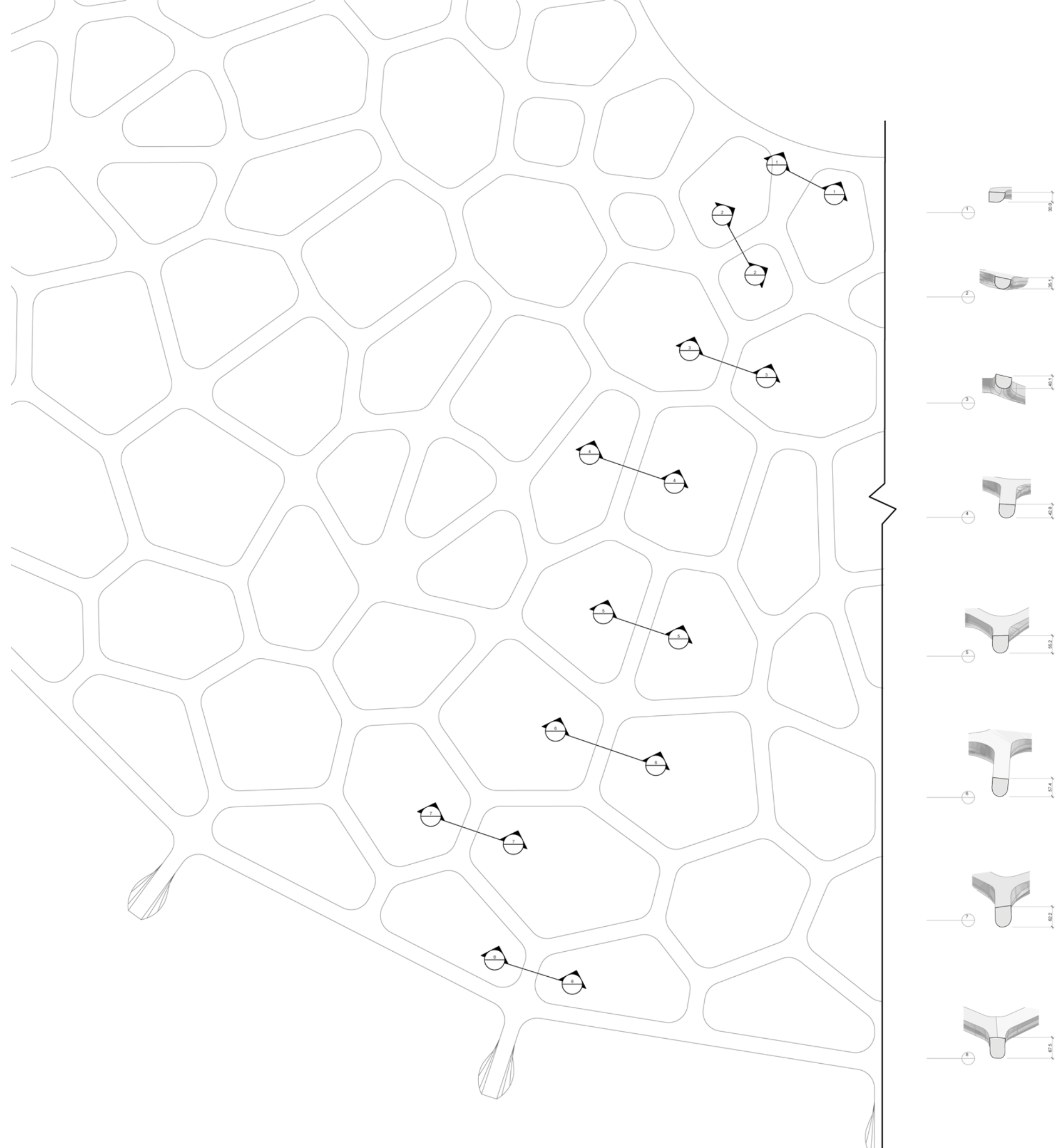
Section Load Diagram

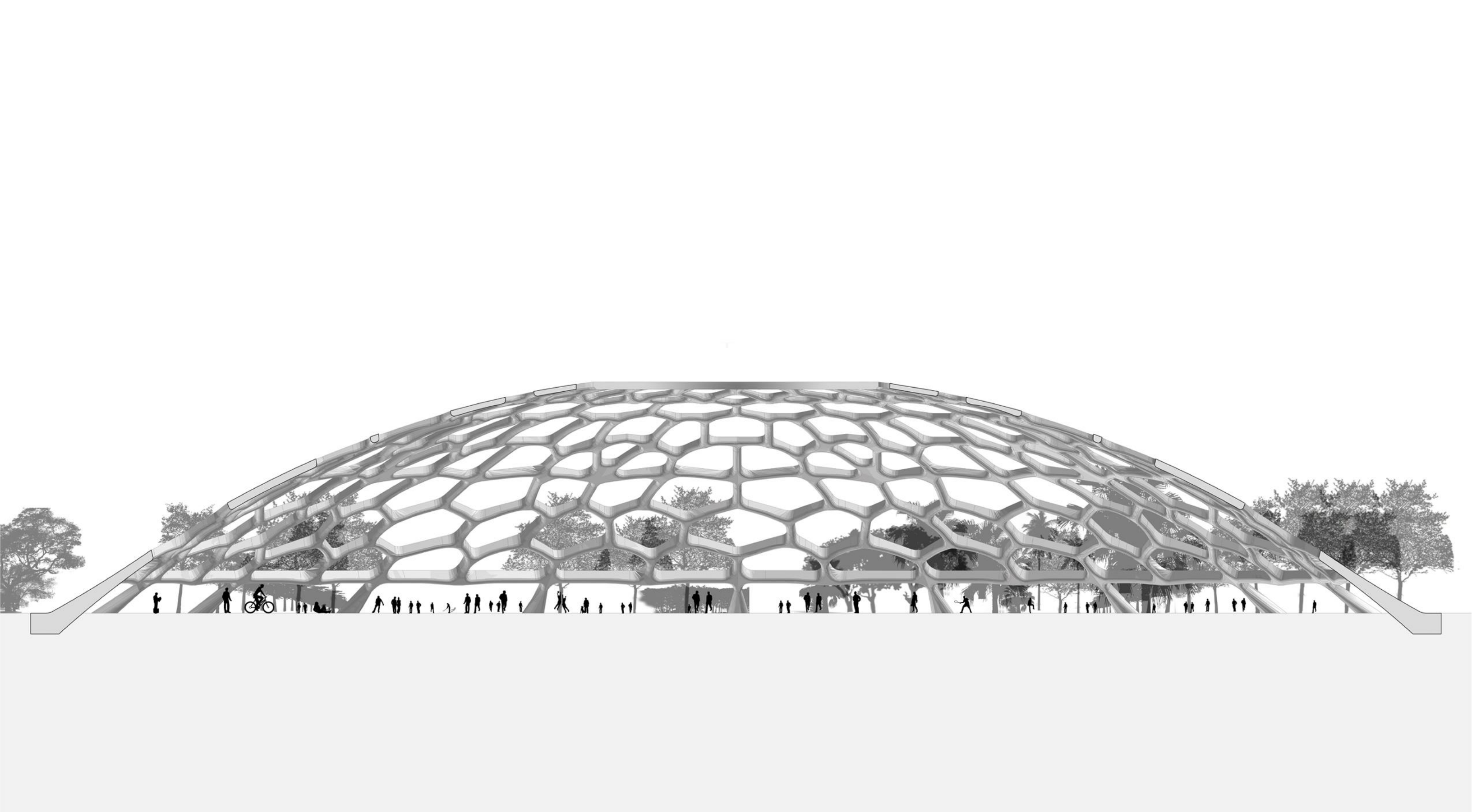


Joining of Pre-Cast beams

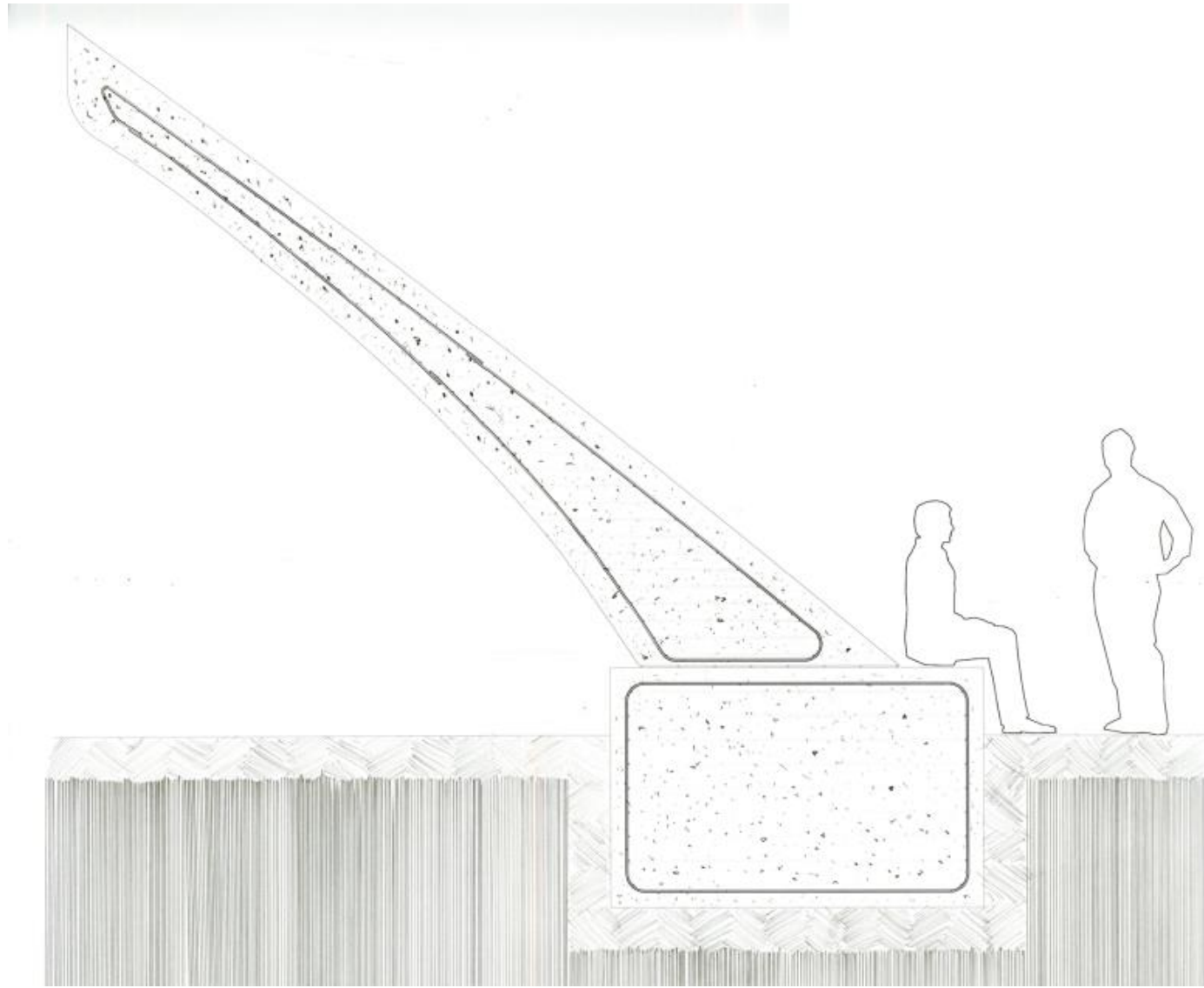


Sections in mutable points





Section of Domical Form structure

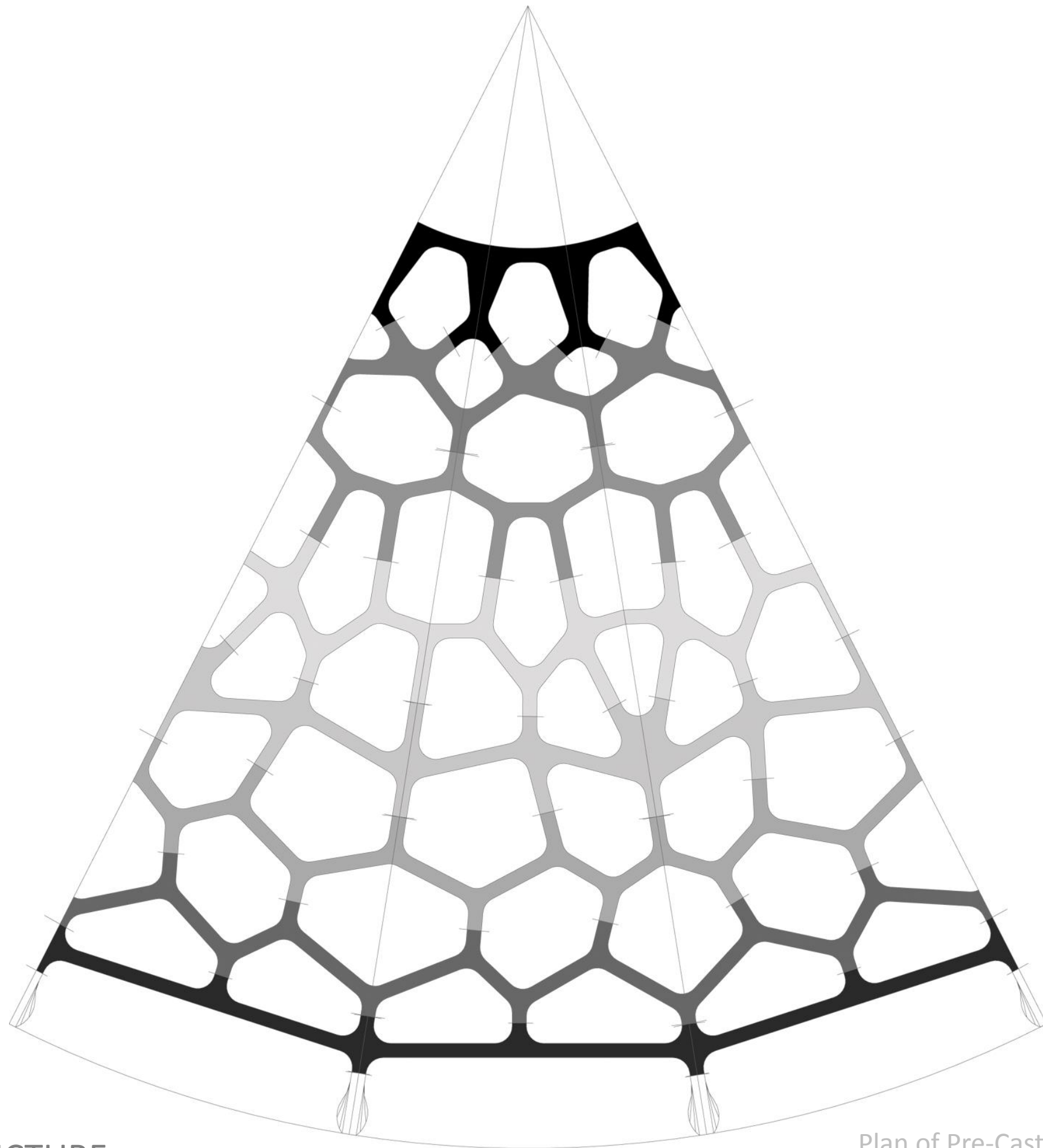


Cast-in-place concrete



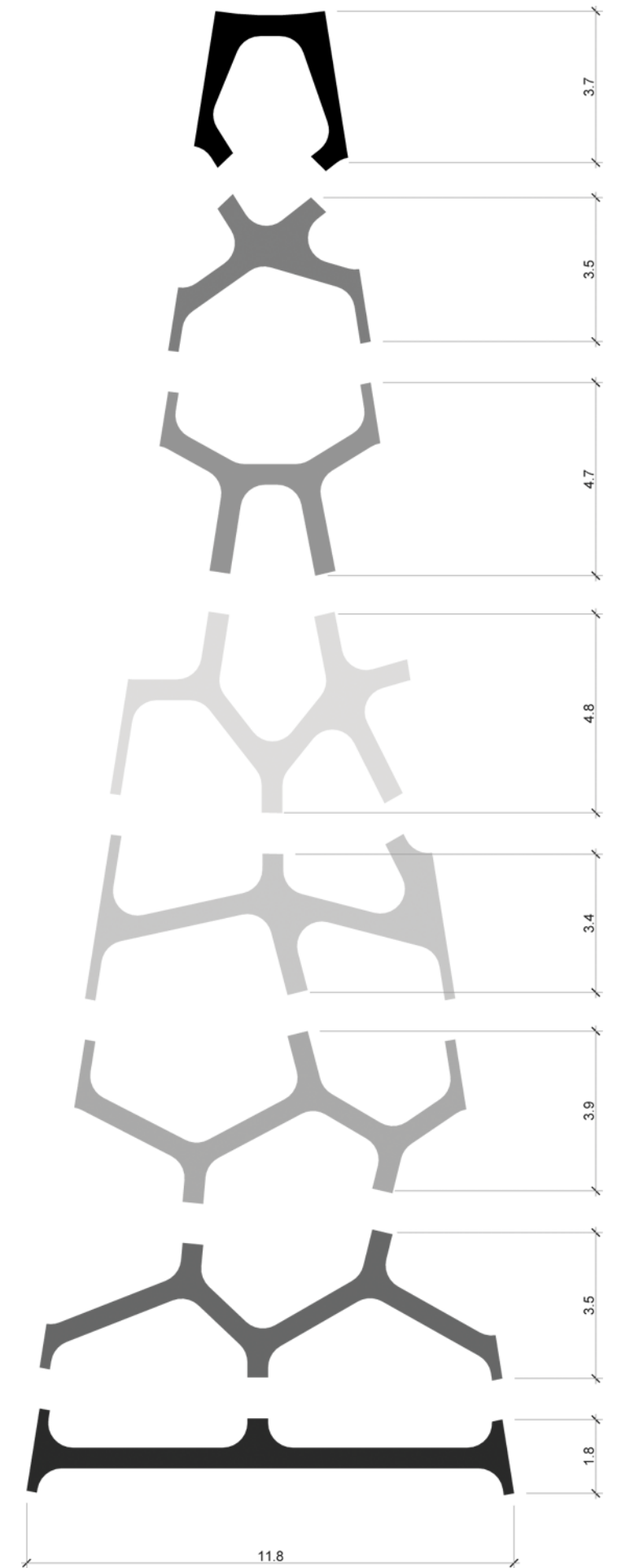
Cast-in-place foundation with pre-cast beams

## FOUNDATION



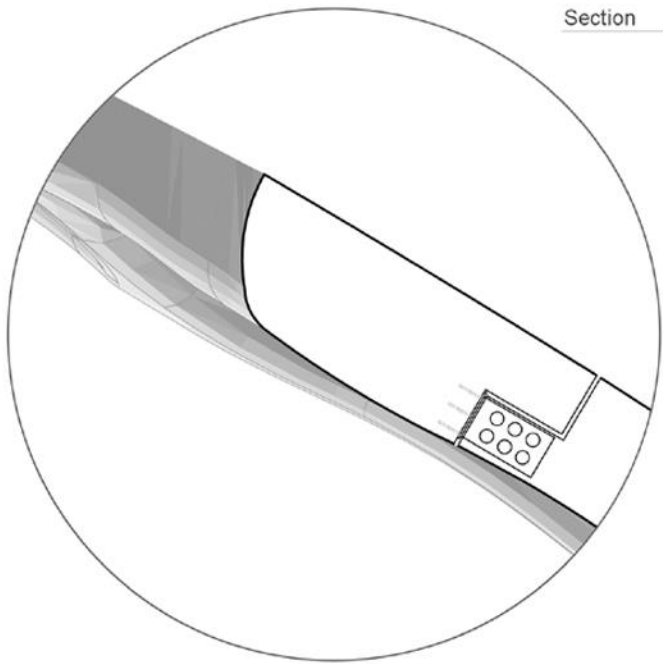
STRUCTURE

Plan of Pre-Cast beams

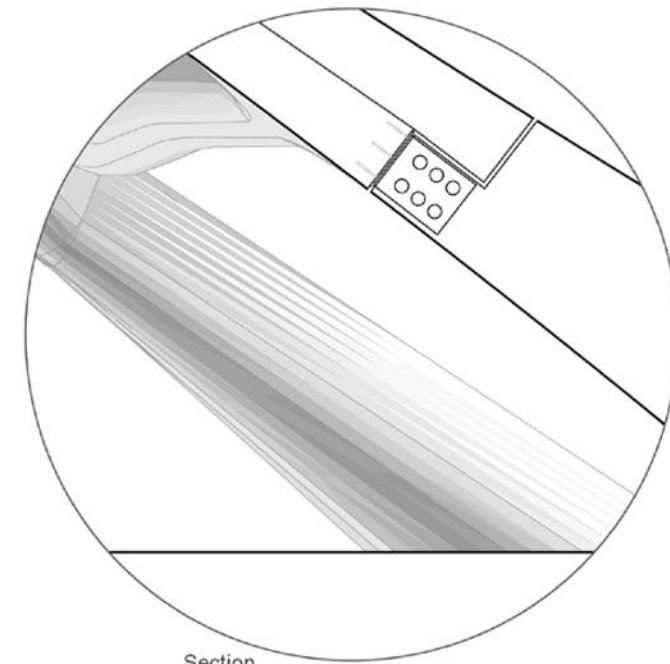




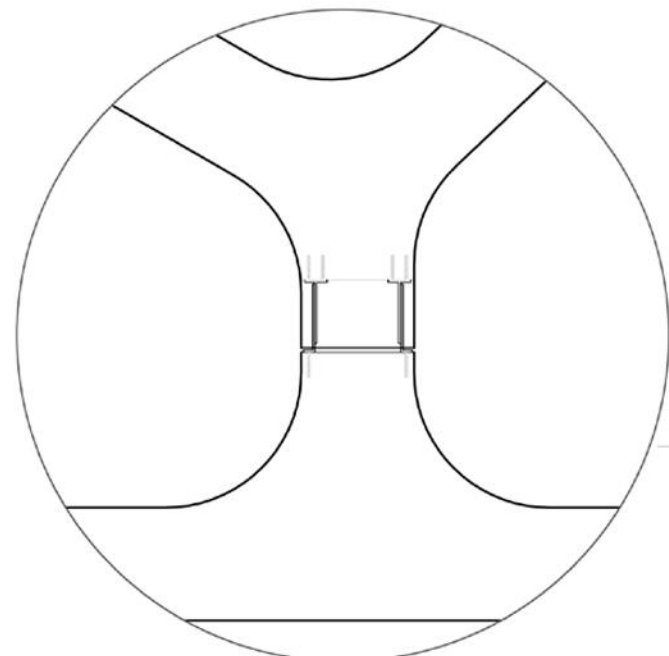
Section



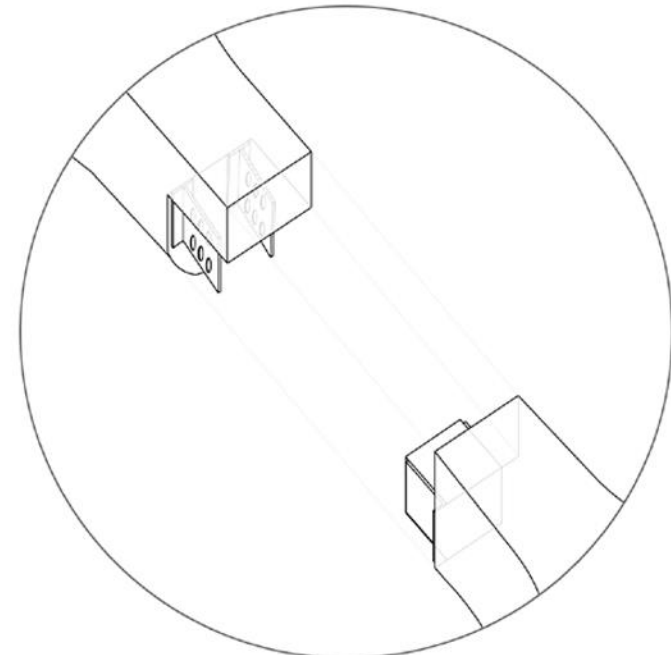
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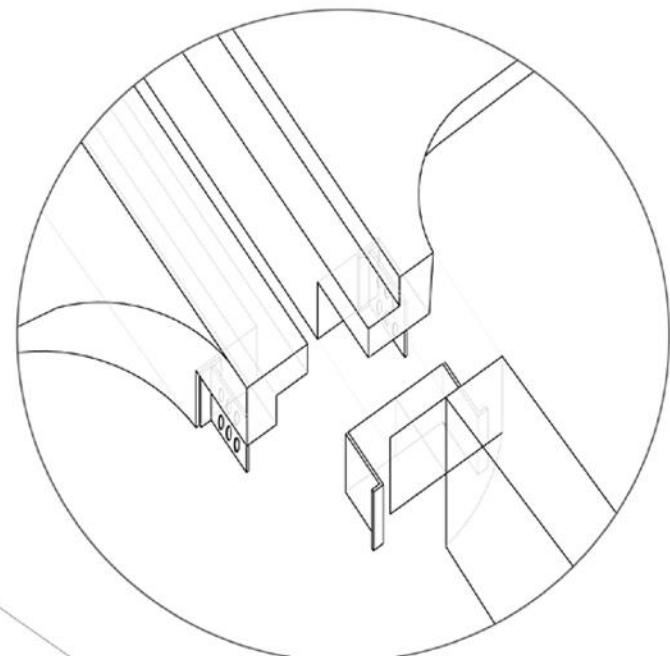
Plan



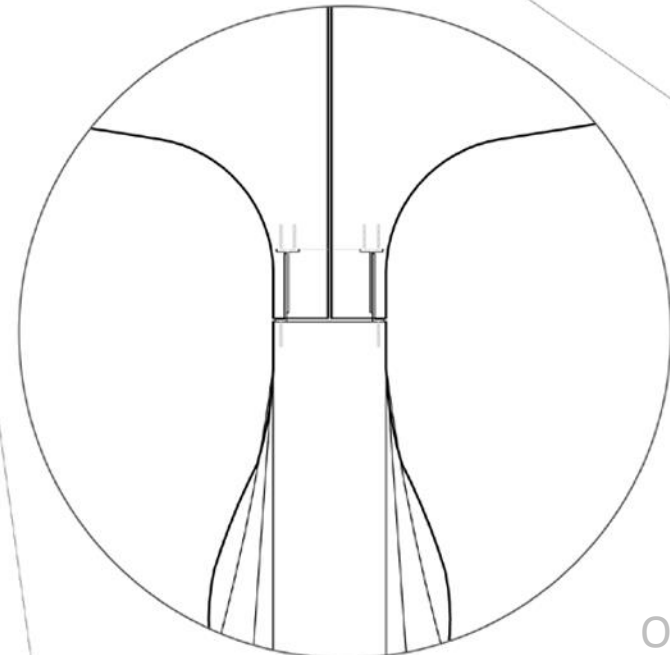
Axonometry



Axonometry



Plan



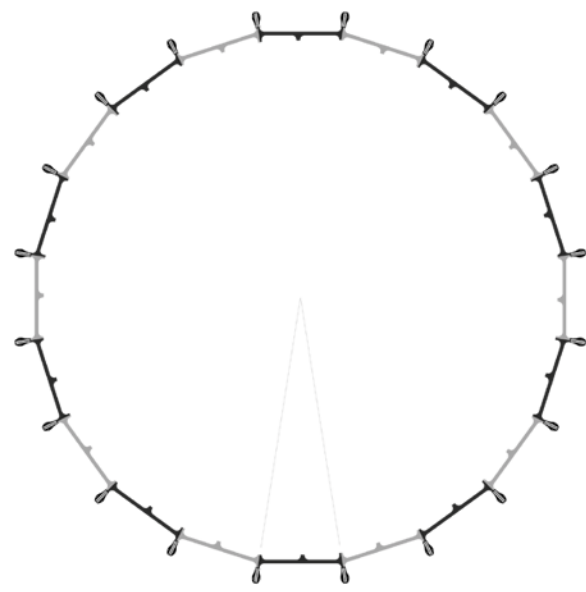
# DETAILS OF JOINTS

Overlapping the beams with the column and weld it.

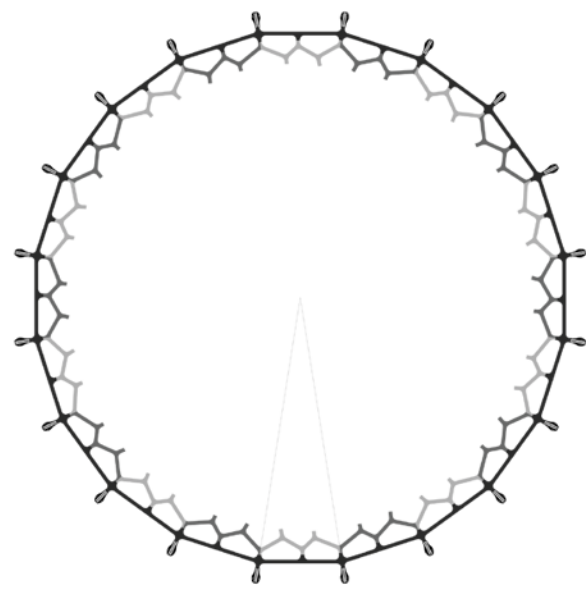




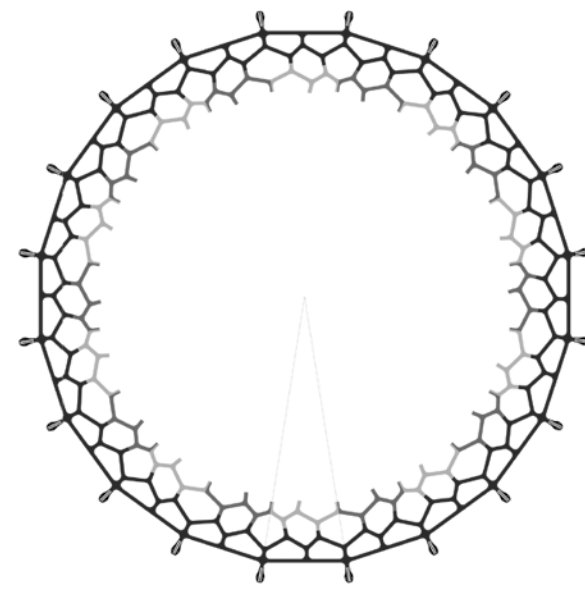
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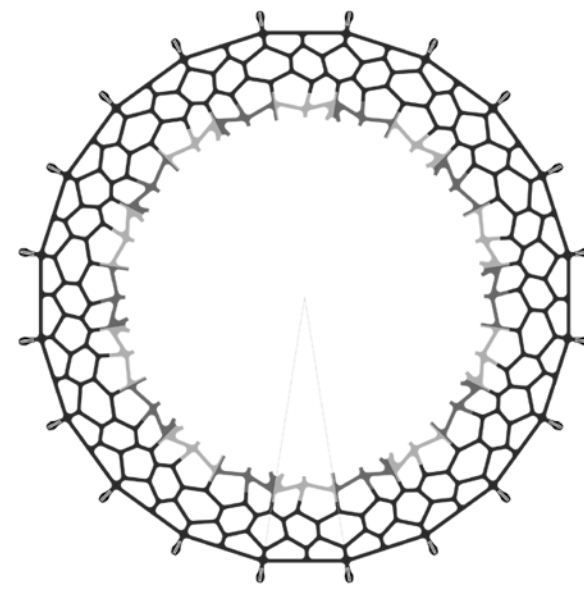
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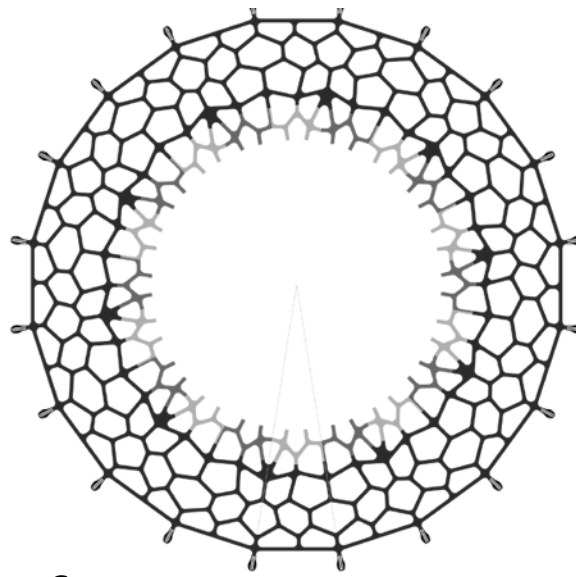
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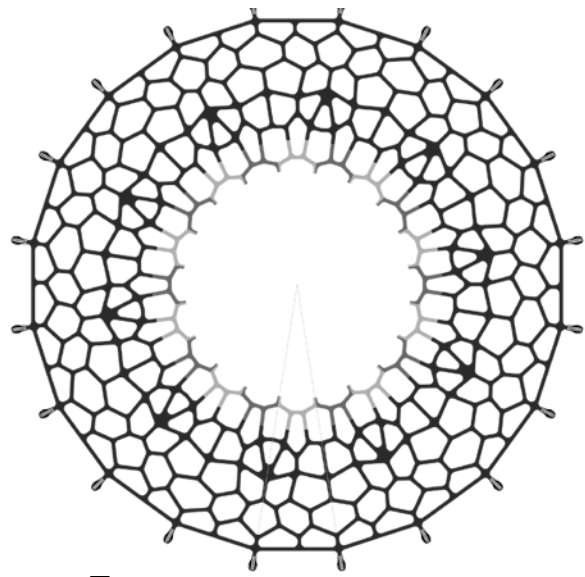
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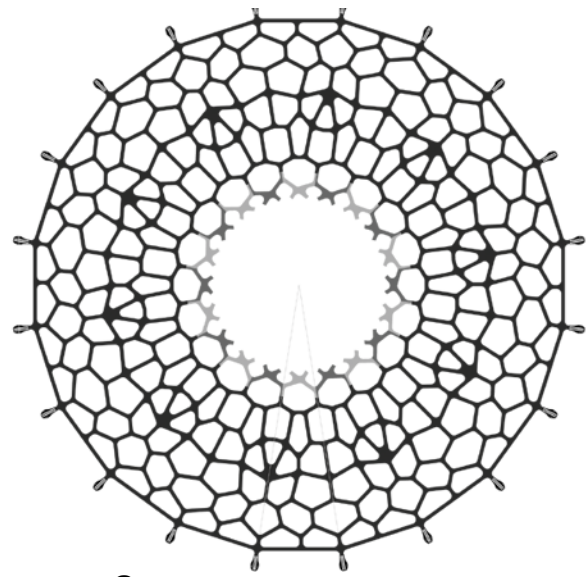
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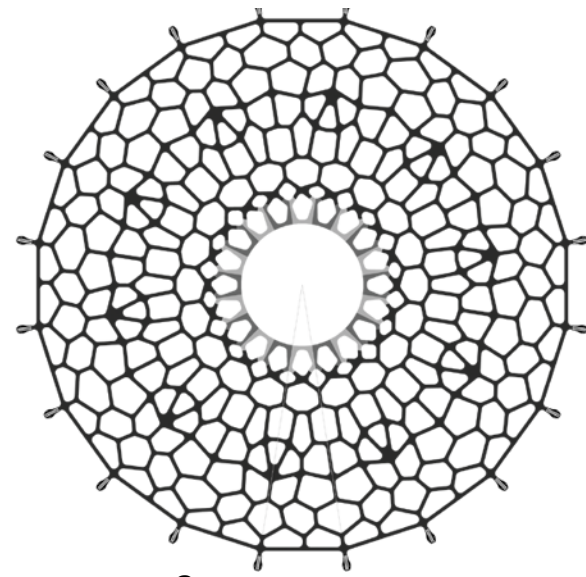
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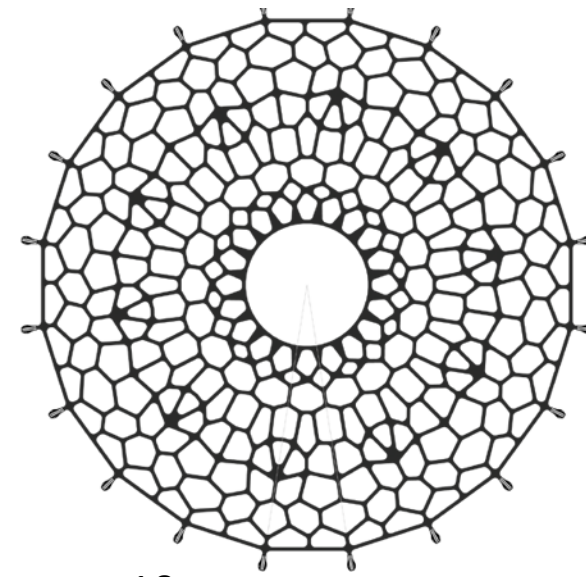
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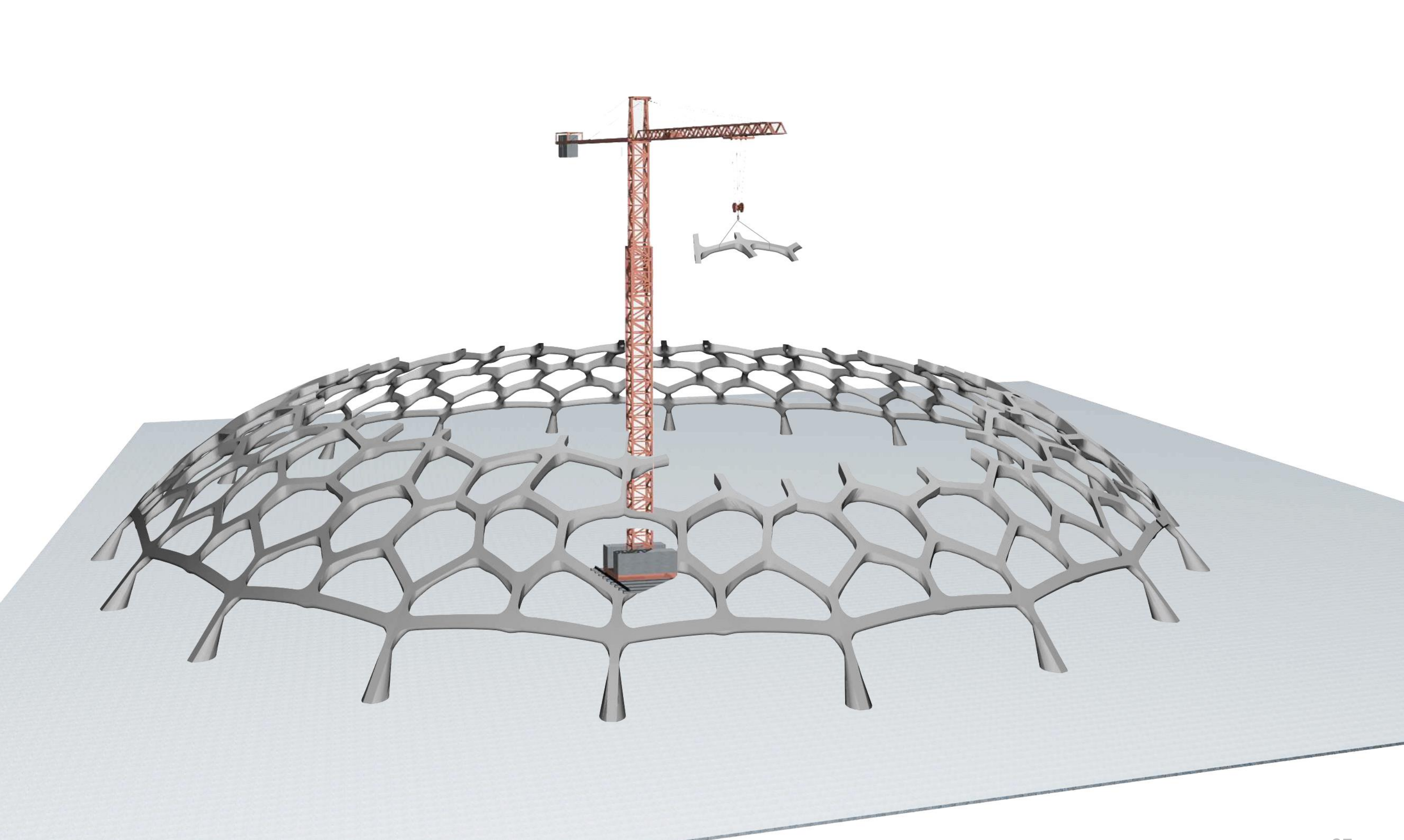
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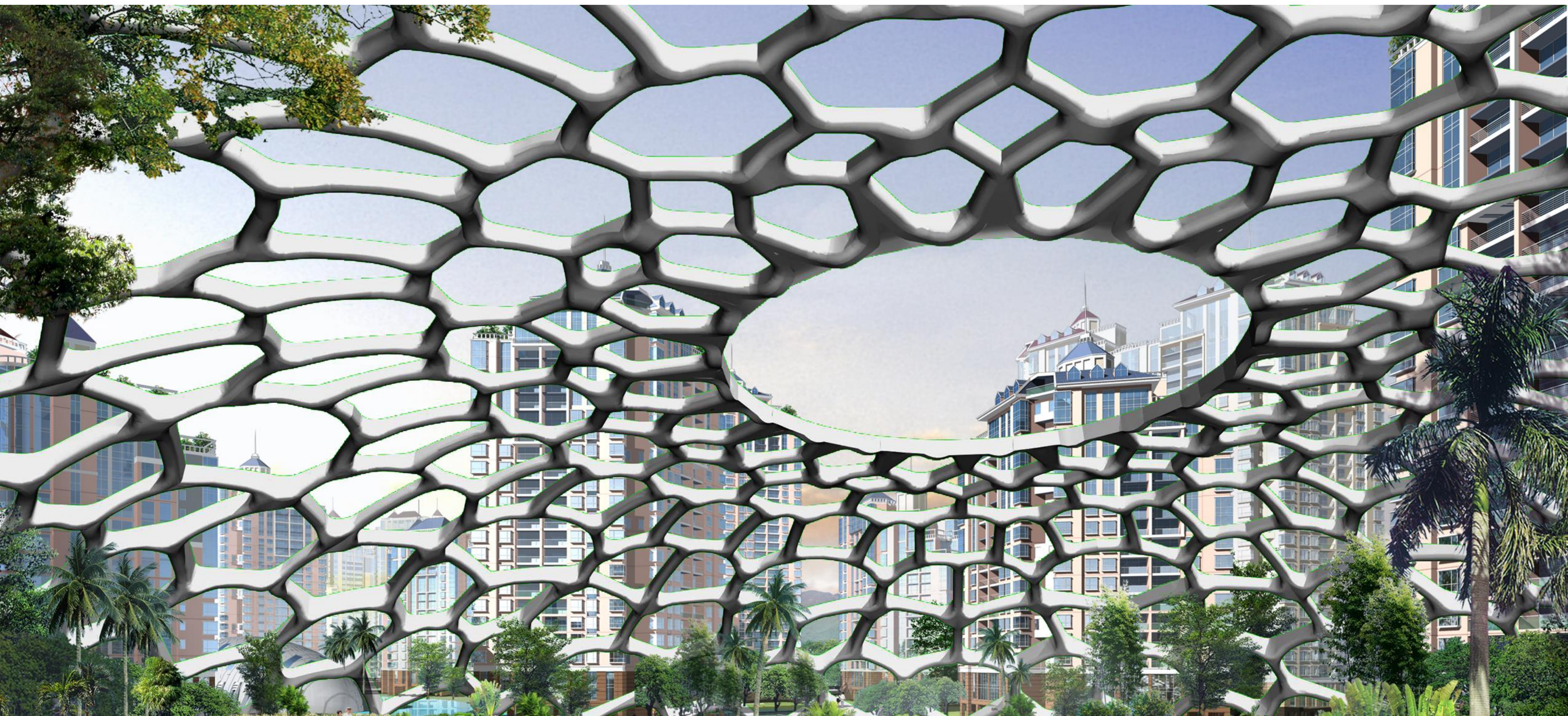


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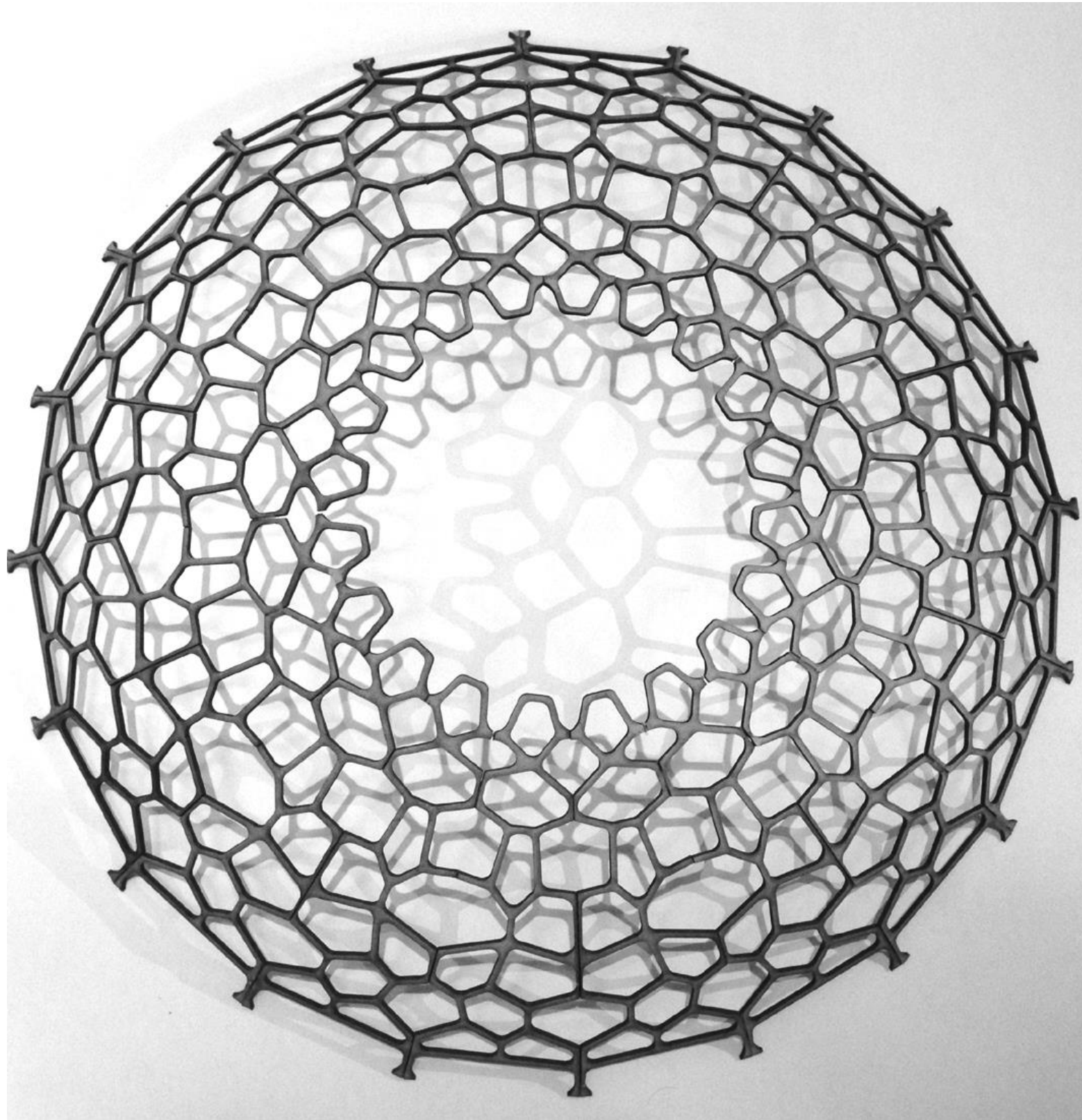


Dome under construction

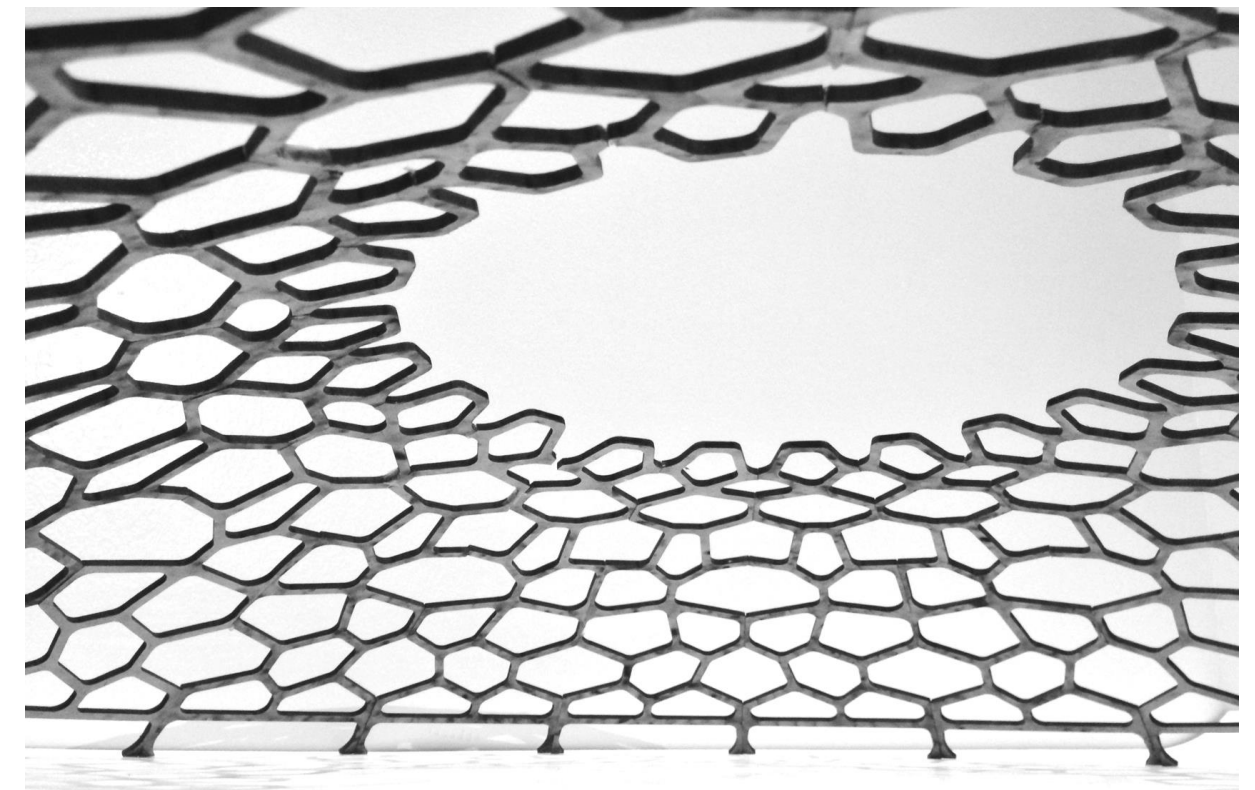
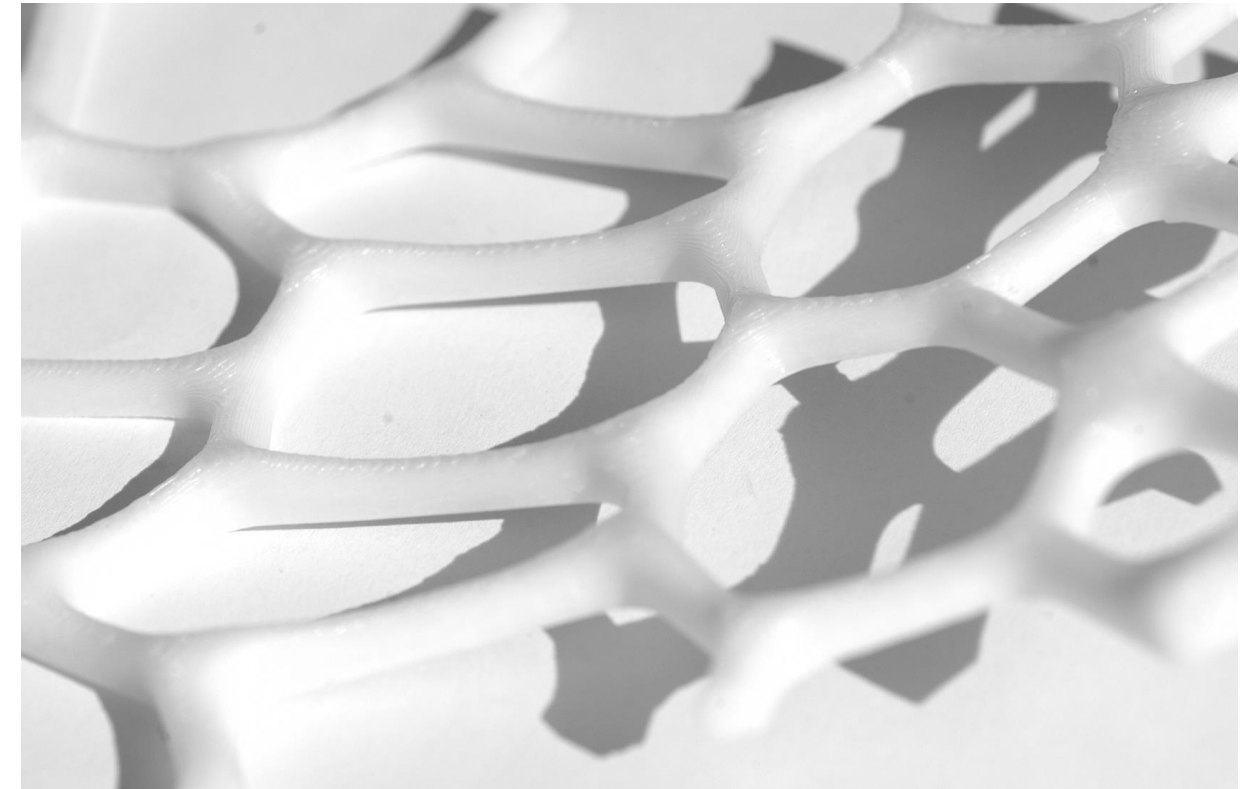






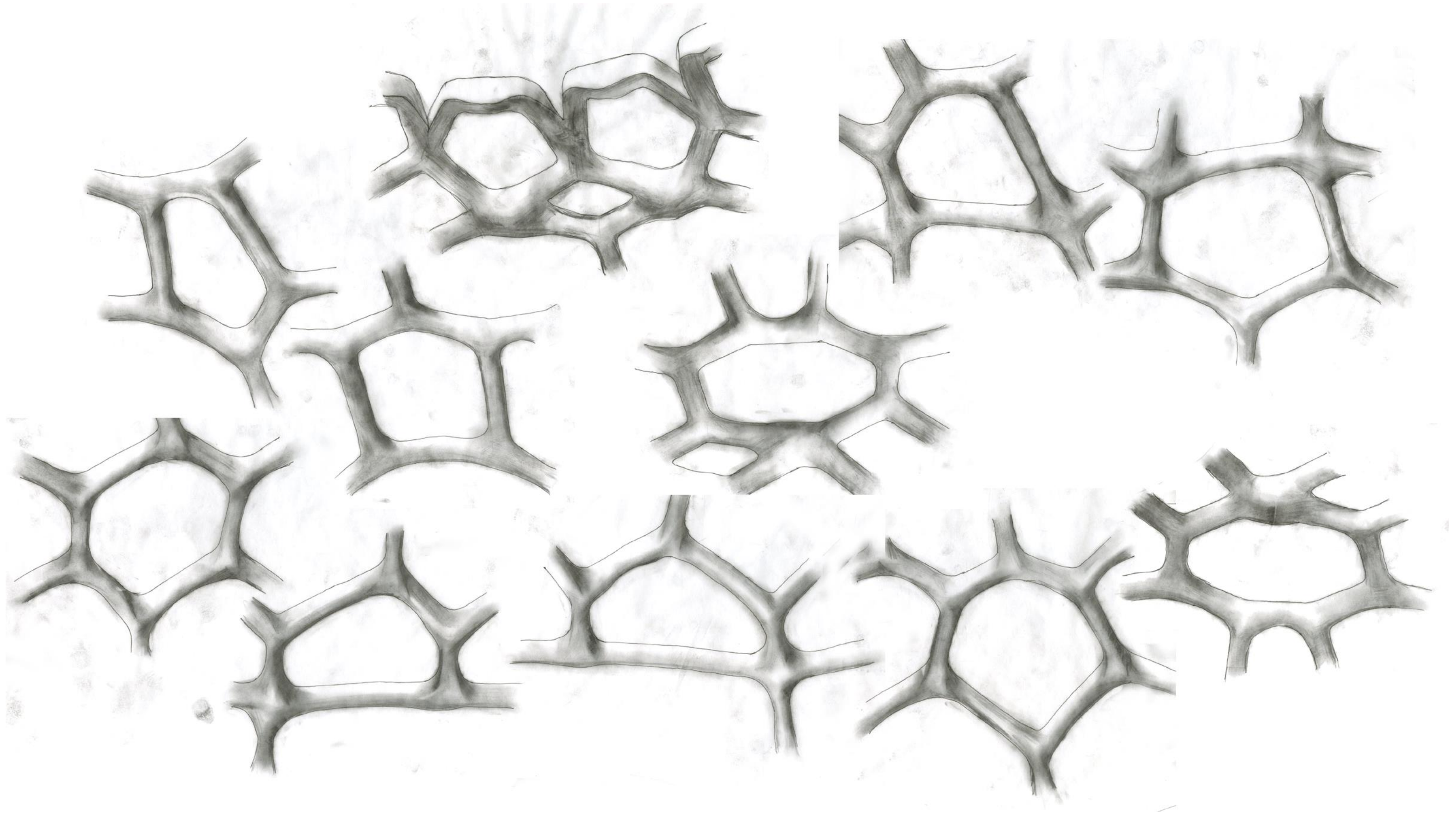


Site plan cardboard model



View of model from within

## PRELIMINARY STUDIES



Organiditic Patterns

SKETCHES



