

The background of the image consists of numerous light-colored wooden planks arranged in a perspective that recedes towards the center. Each plank has a small, dark number laser-cut into its surface, ranging from L3-75 on the far left to L3-8 on the far right. The numbers are arranged in a sequence that follows the perspective of the planks. The text 'ROBOTIC WOOD CRAFTING' is centered over the middle of the image in a large, white, sans-serif font.

ROBOTIC WOOD CRAFTING

Daniel L. Fischer | 4502515



TUNDRA

2015 - Canadian Tundra



TUNDRA

2075 - Canadian Tundra

ARCTIC — GREENING

*„It is a fact, between 1984 and 2012,
30% of Canada became greener.“*



EFFECTS
thaw & vegetation shift



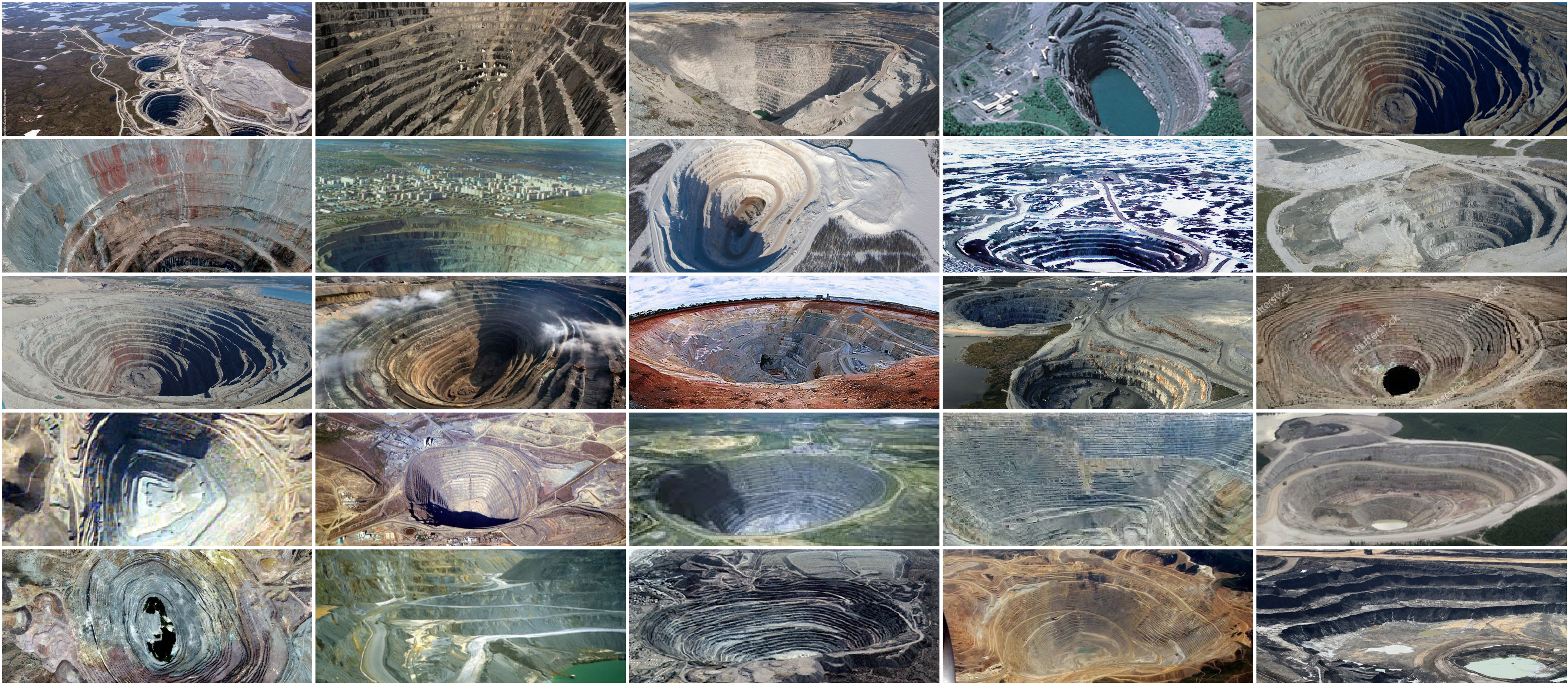
EFFECTS

thaw & vegetation shift



EFFECTS

thaw & vegetation shift

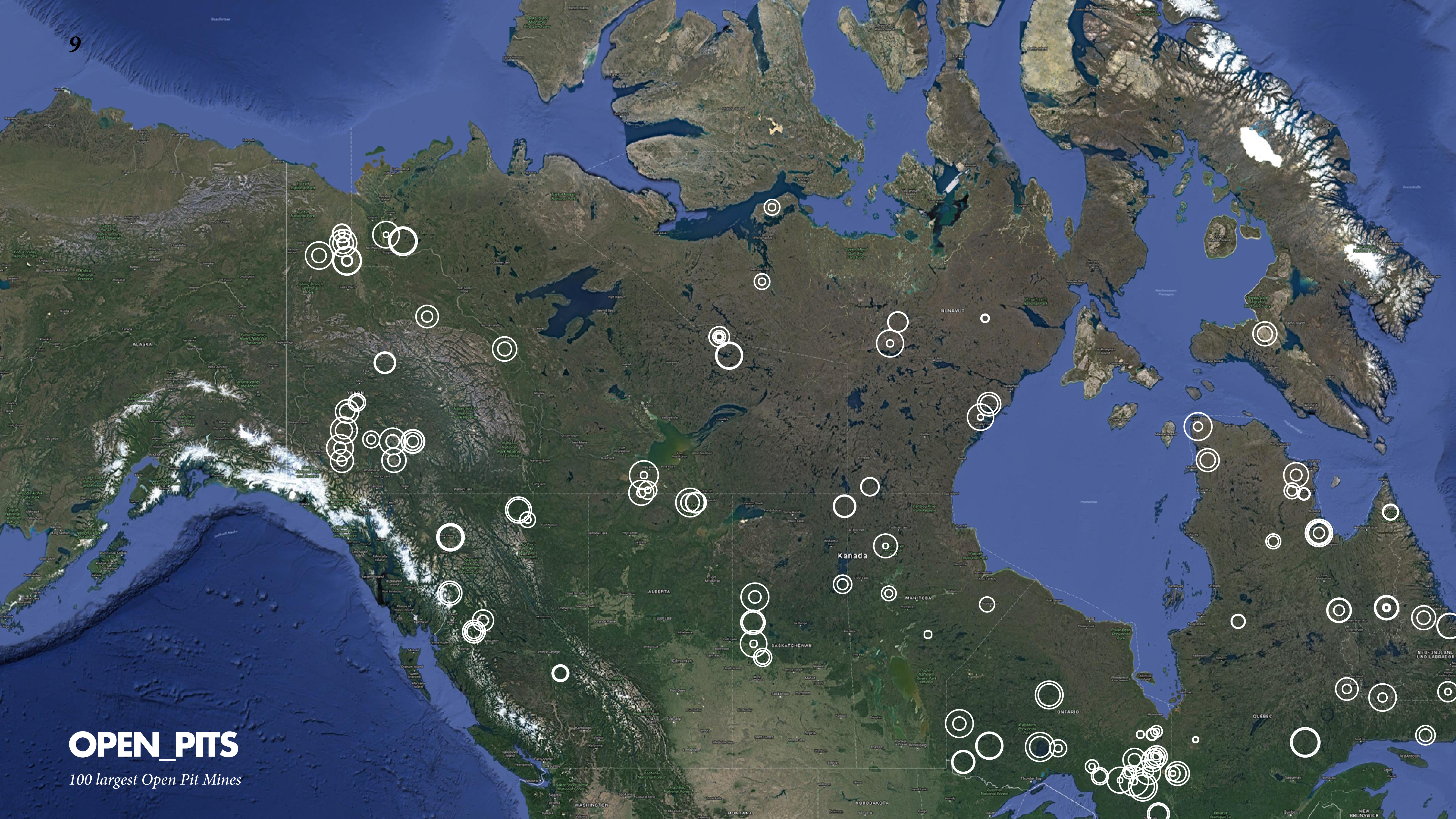


**OPEN_PIT
MINES**

pits in Canada and the U.S.

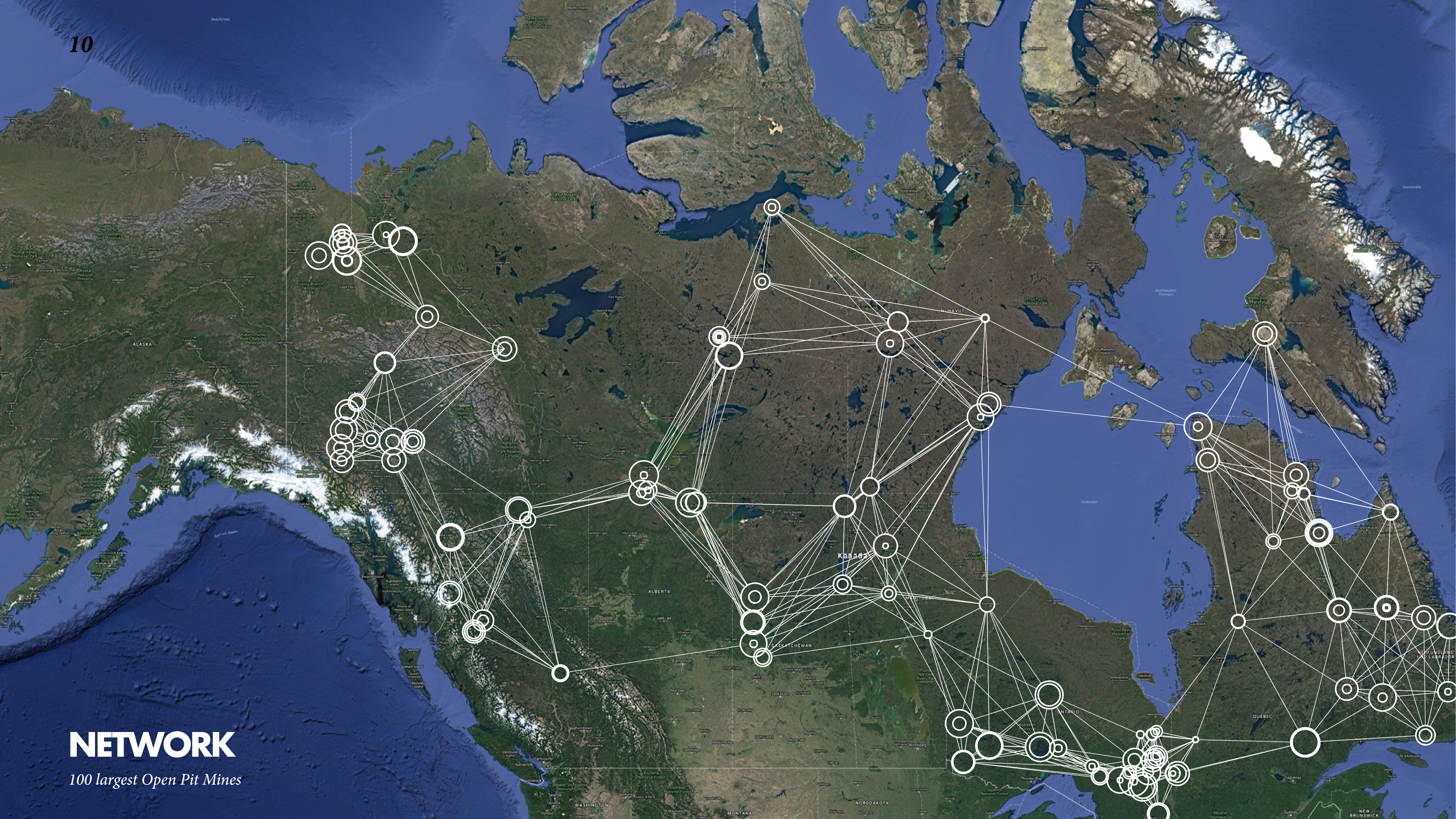
OPEN_PITS

100 largest Open Pit Mines



NETWORK

100 largest Open Pit Mines



11

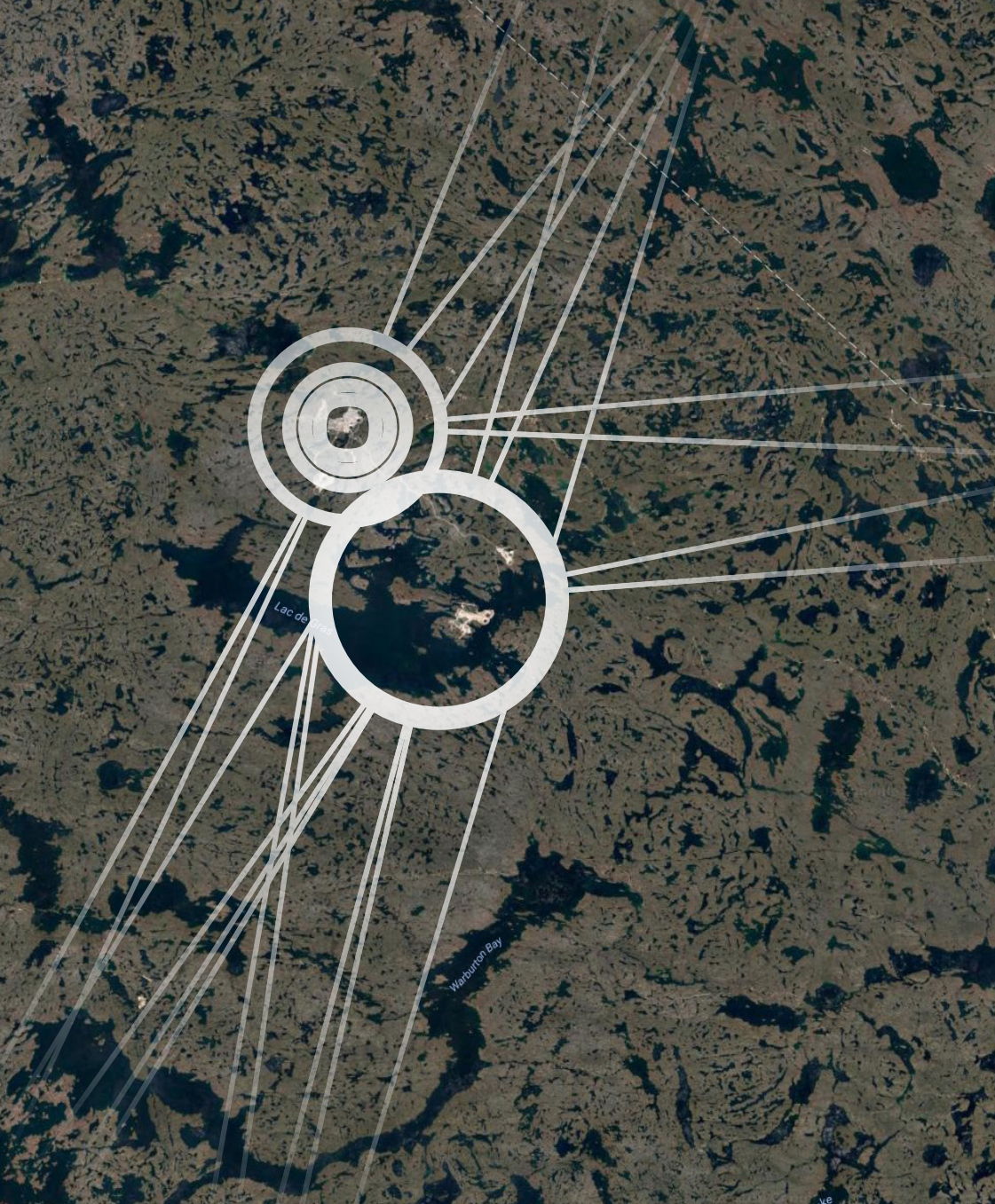
SITE

64°29'38,89"N 110°14'34,95"E



12

100km







DIAVIK_MINE

64°29'38,89"N 110°14'34,95"E



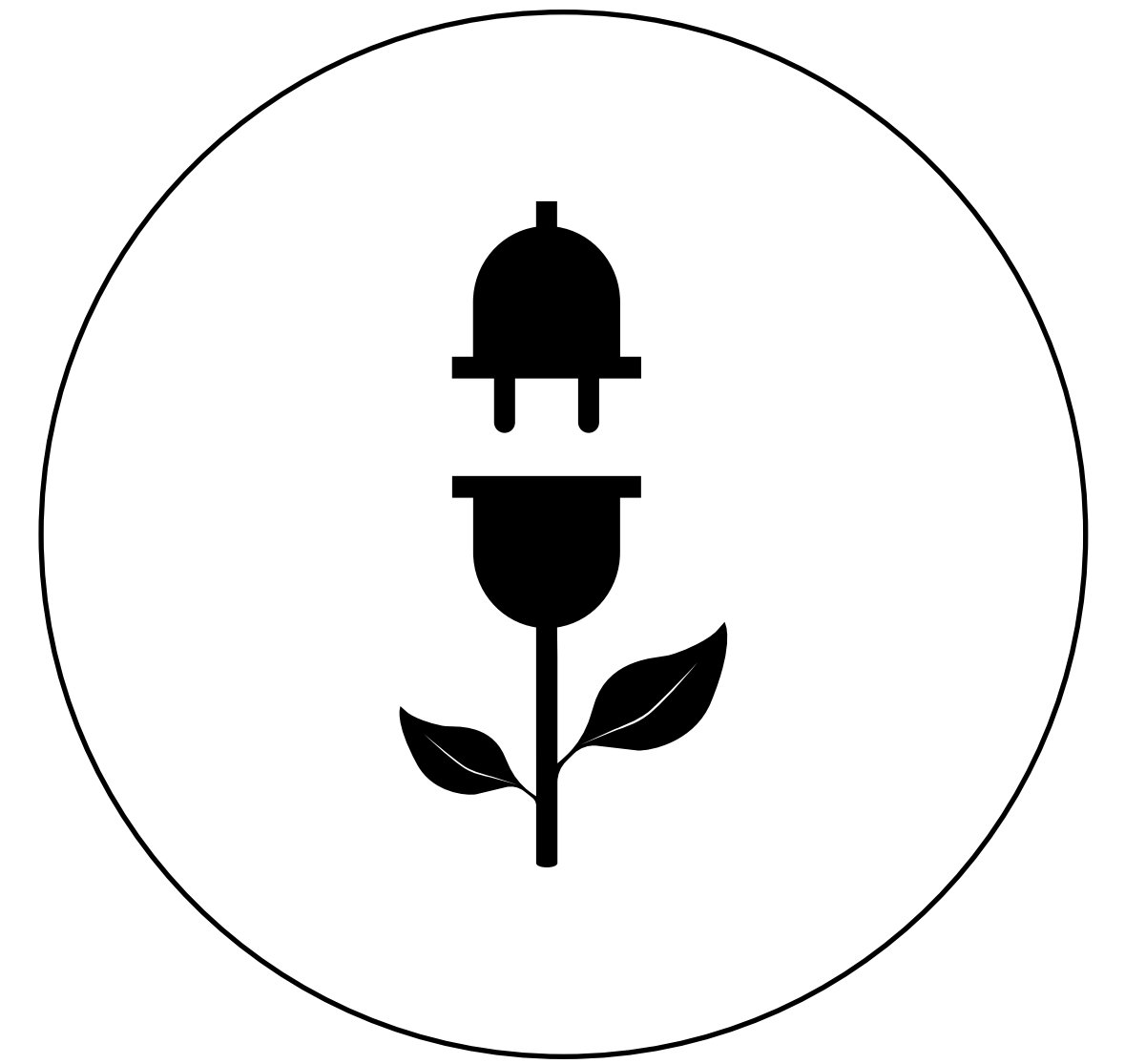
DIAVIK_MINE
64°29'38,89"N 110°14'34,95"E

<i>radiation</i>	<i>max. ~1100 kwh/m²(a)</i>	<i>day lenght</i>	<i>5h - 21h</i>
<i>temperature</i>	<i>-40°C - 25°C (avg. -6°C)</i>	<i>next city</i>	<i>Yellowknife (308 km)</i>
<i>wind</i>	<i>0 - 75 km/h (avg. 12 km/h)</i>	<i>crate width</i>	<i>~ 900 m</i>
<i>rain/snow</i>	<i>avg. 150 mm/year</i>	<i>crate depth</i>	<i>~ 250 m</i>

ECO_____

TOURISM

*„responsible travel to natural areas
that conserves the environment [...]“*





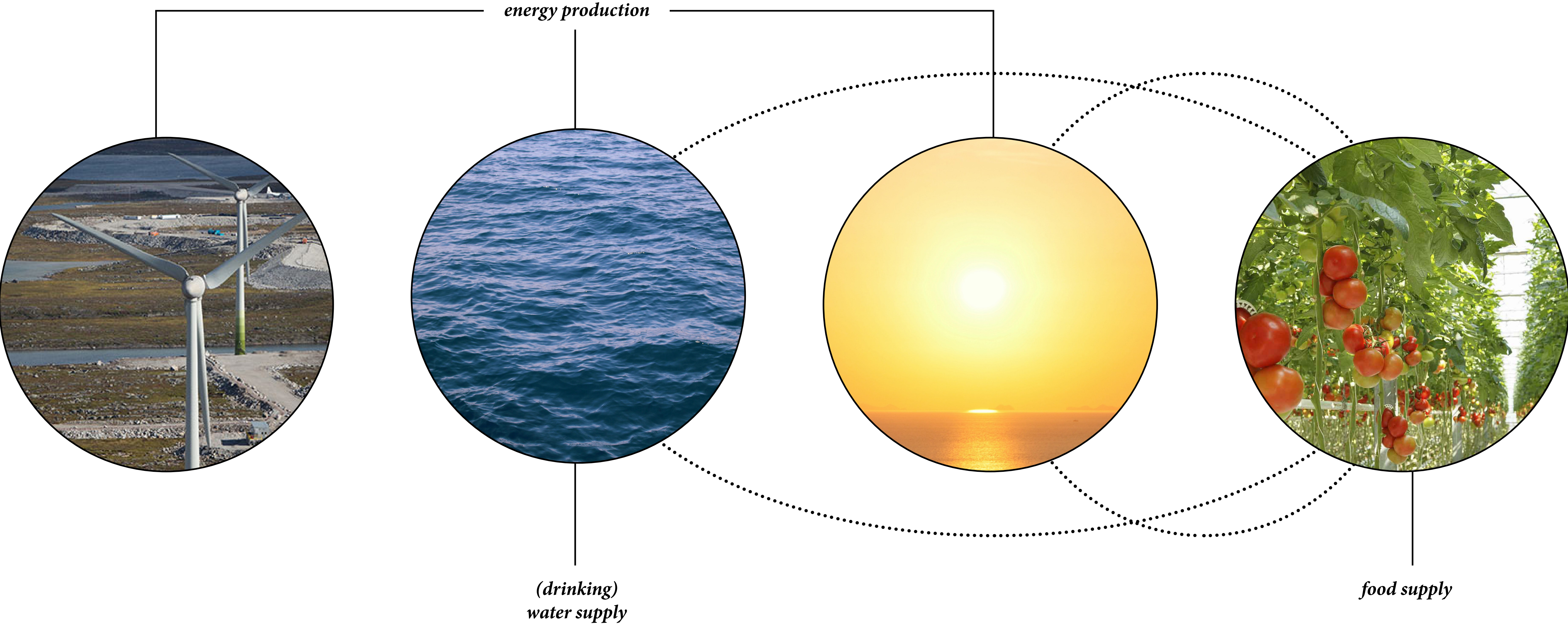
Hotel Arctic, Greenland



Skylodge Adventure suites, Peru

REFERENCES

conceptual & programmatic





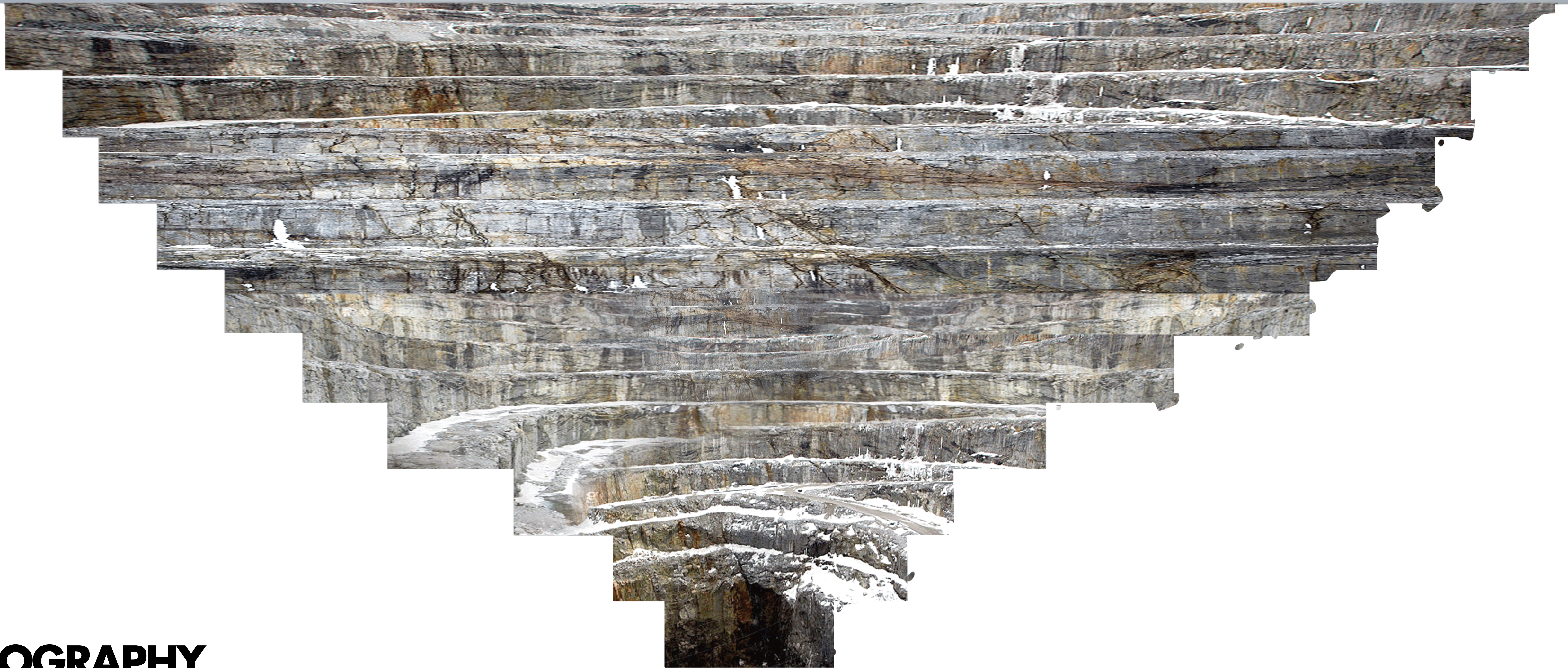
CONDITIONS

wind turbines & runway



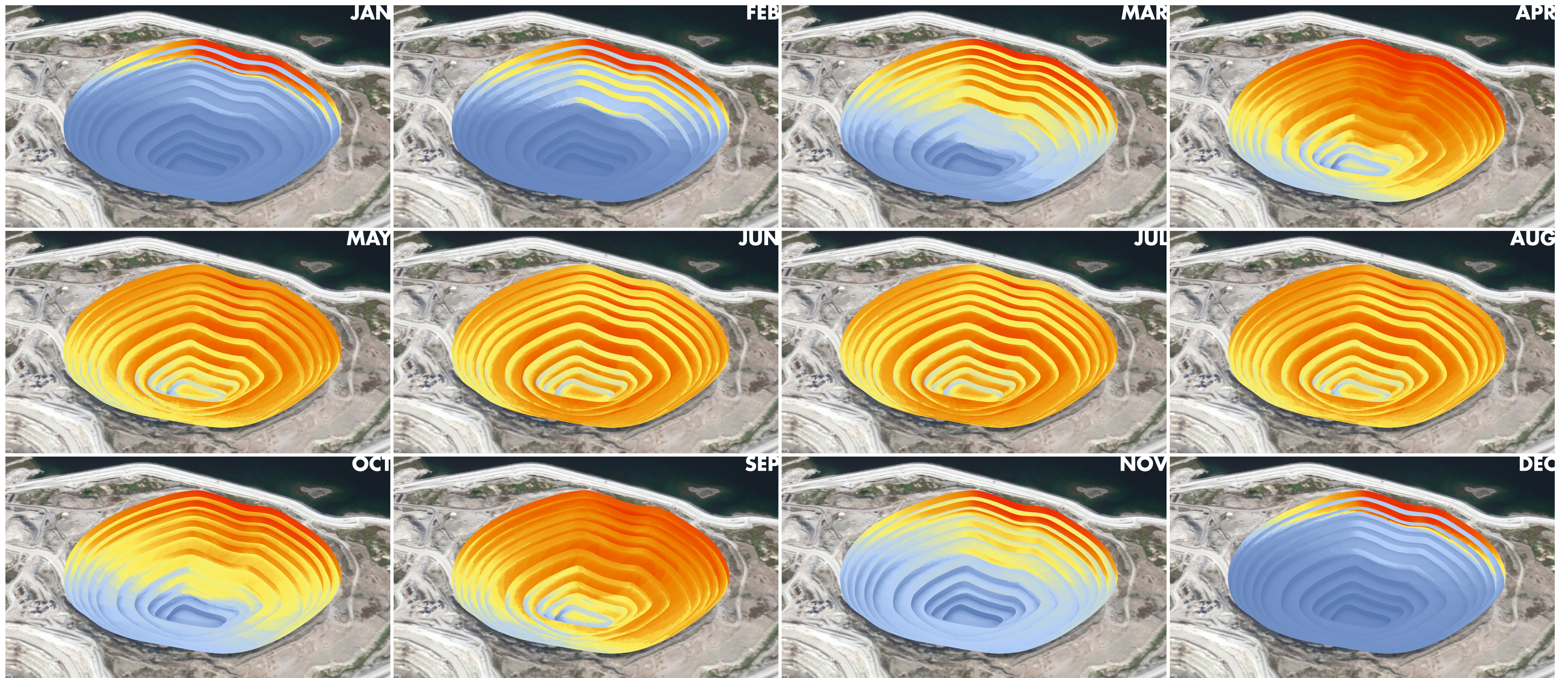
RESTORE NATURE

dismanteling industrial plants



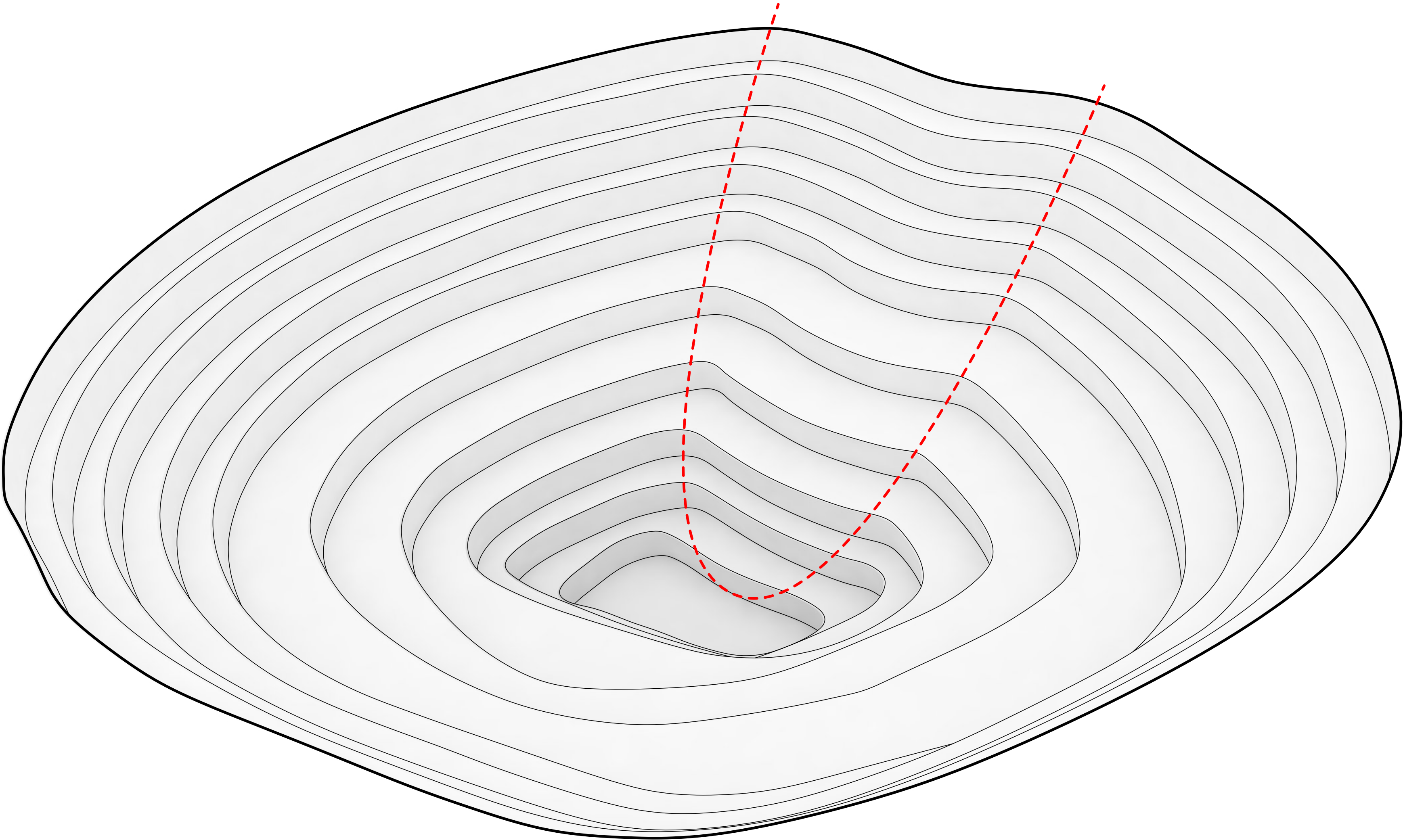
TOPOGRAPHY

diagram



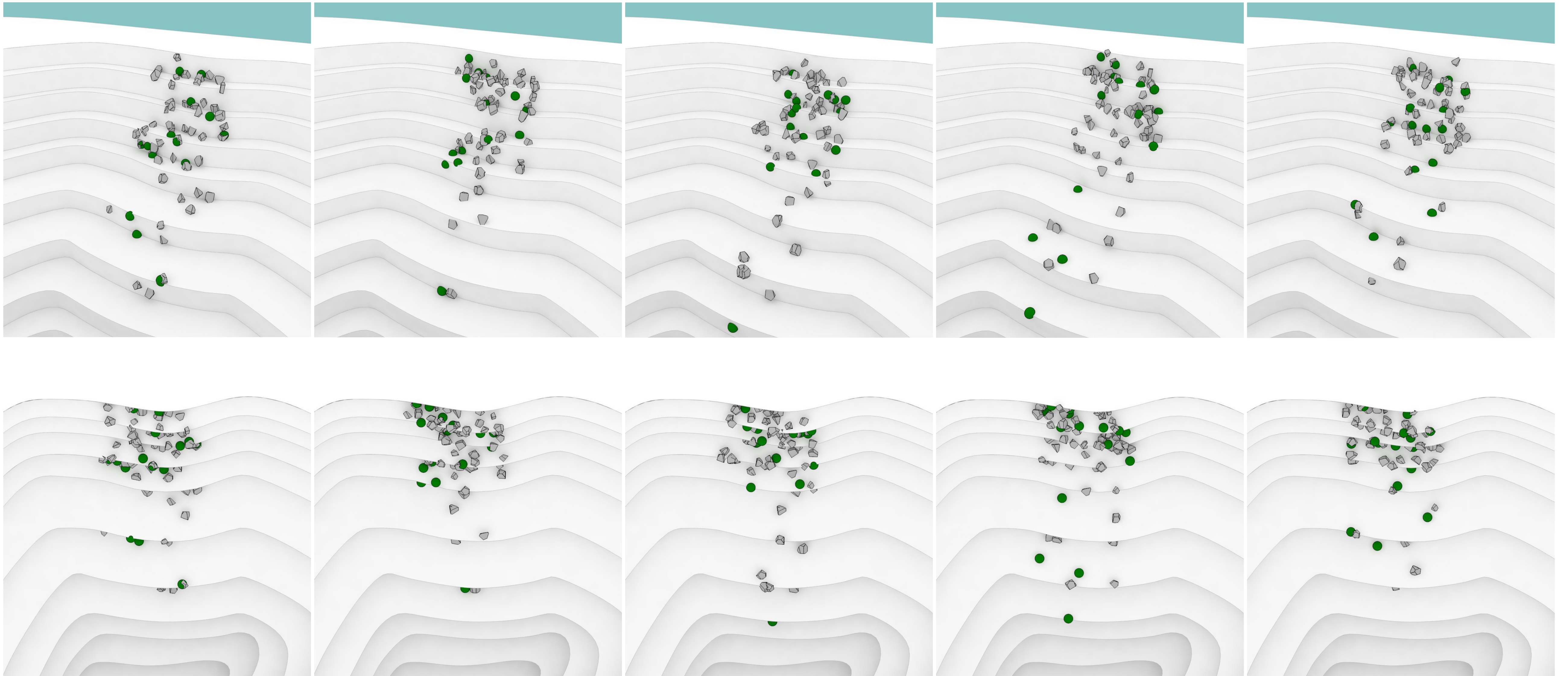
RADIATION

analysis of the sun



**CHOSEN
SITE**

64°29'38,89"N 110°14'34,95"E



VERTICAL GROWTH

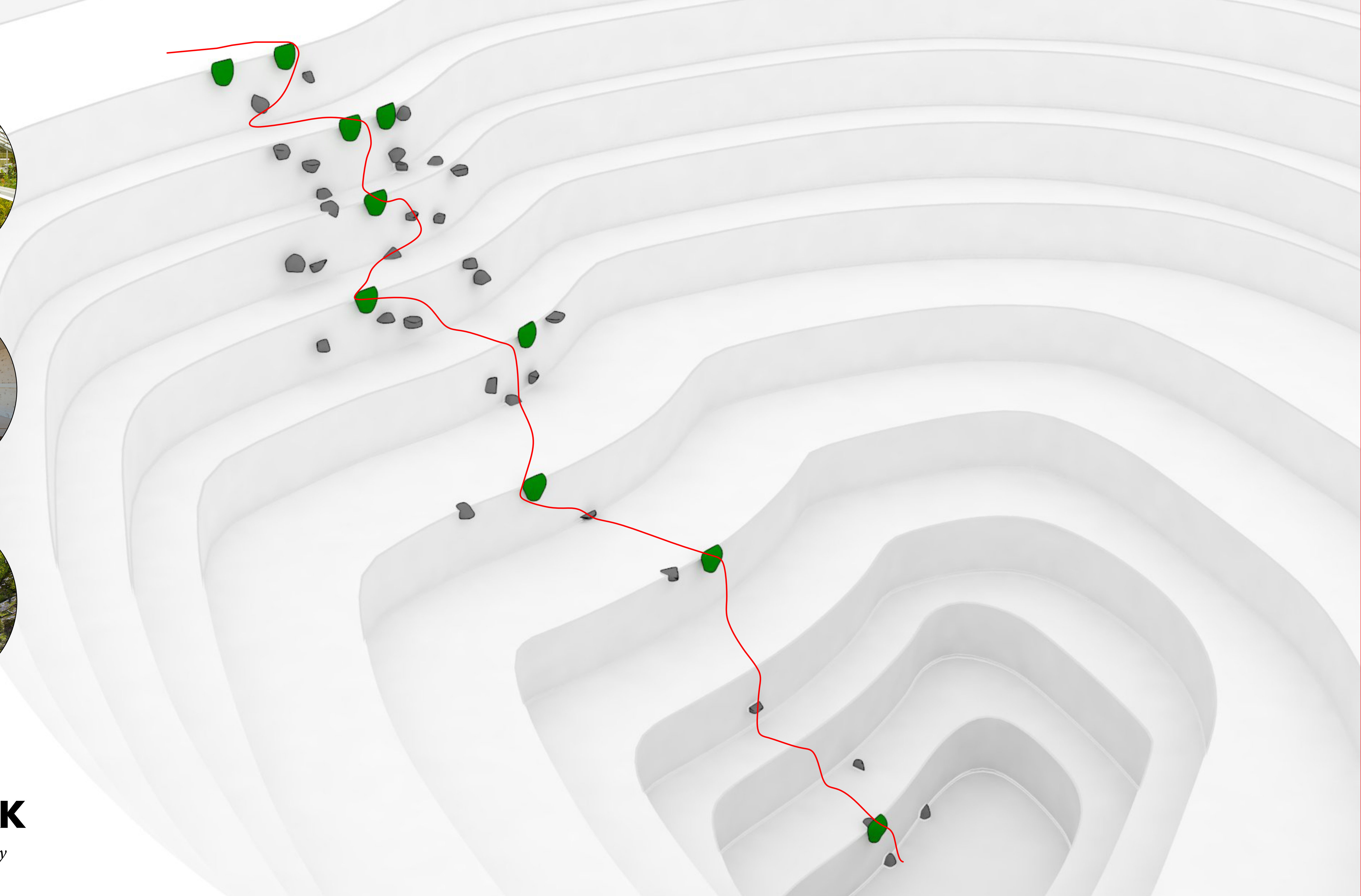
agent based system studies

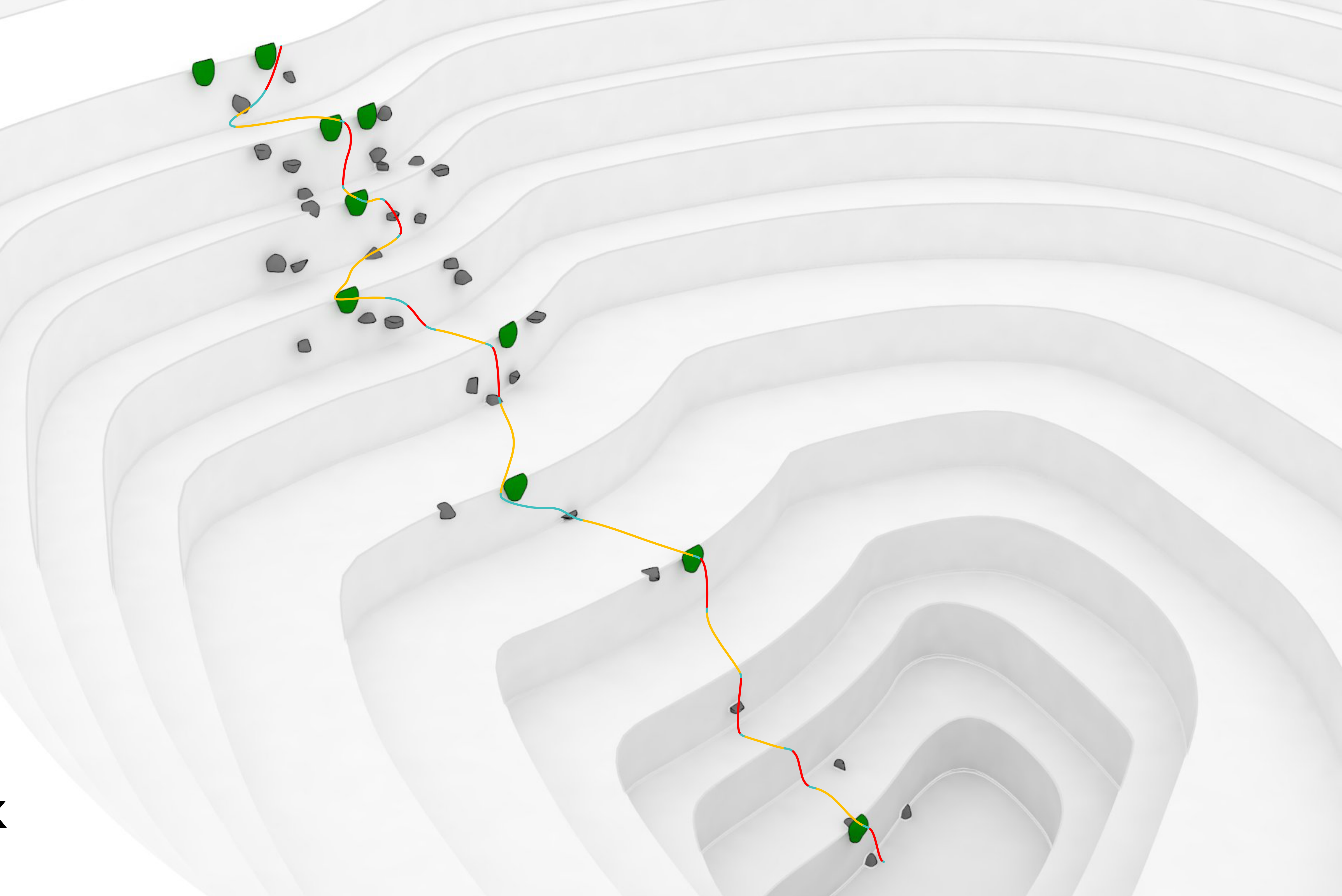
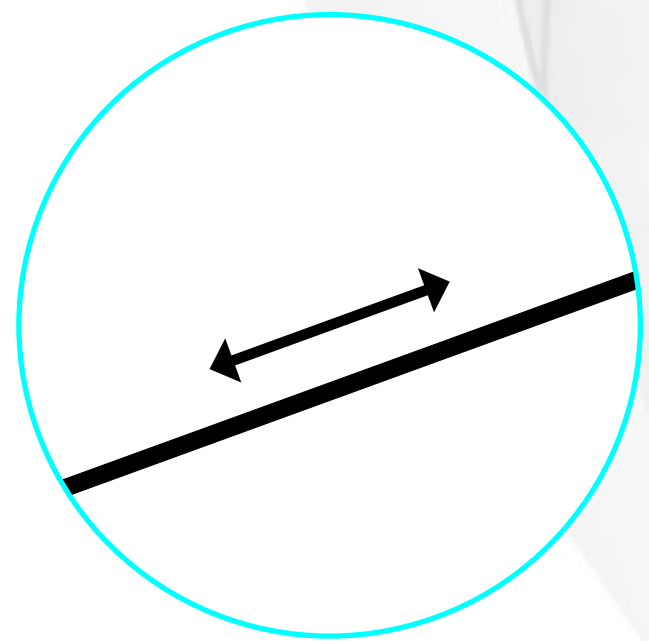
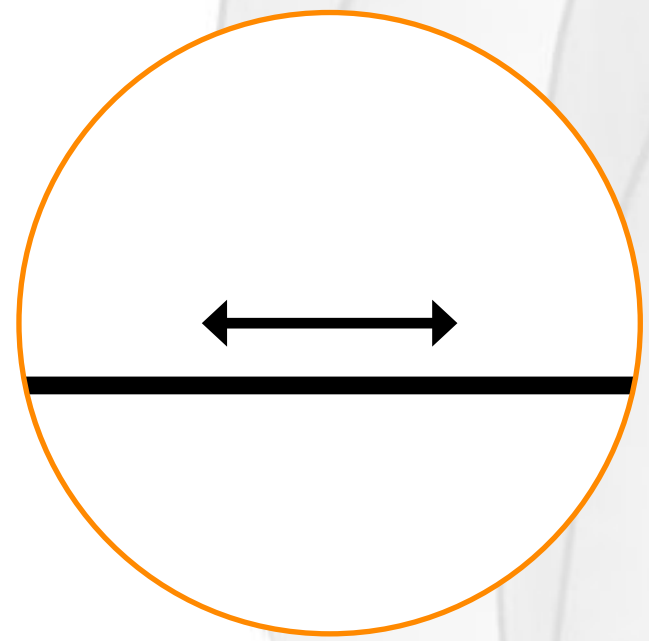
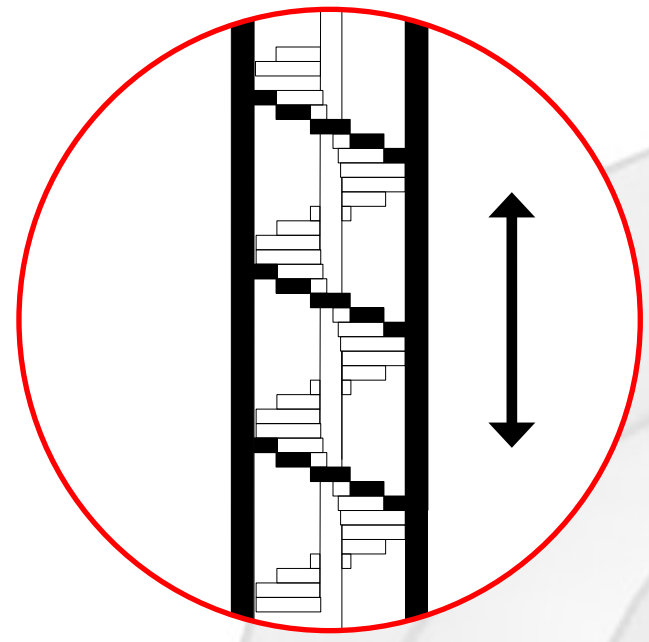




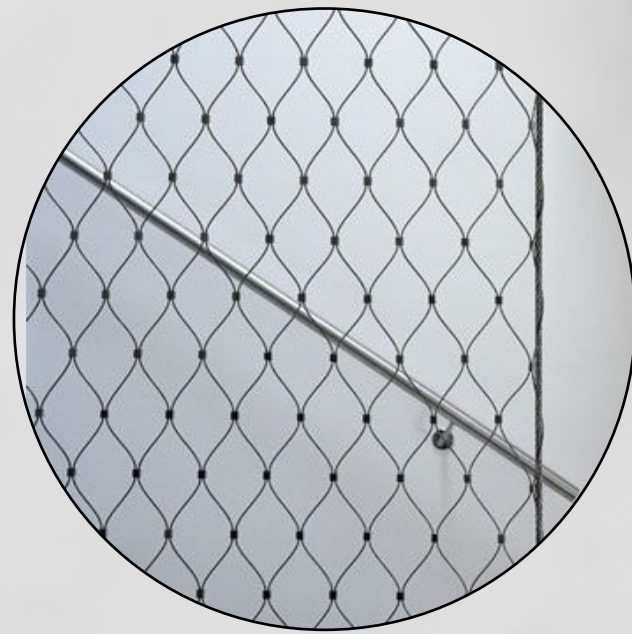
NETWORK

optimizing connectivity



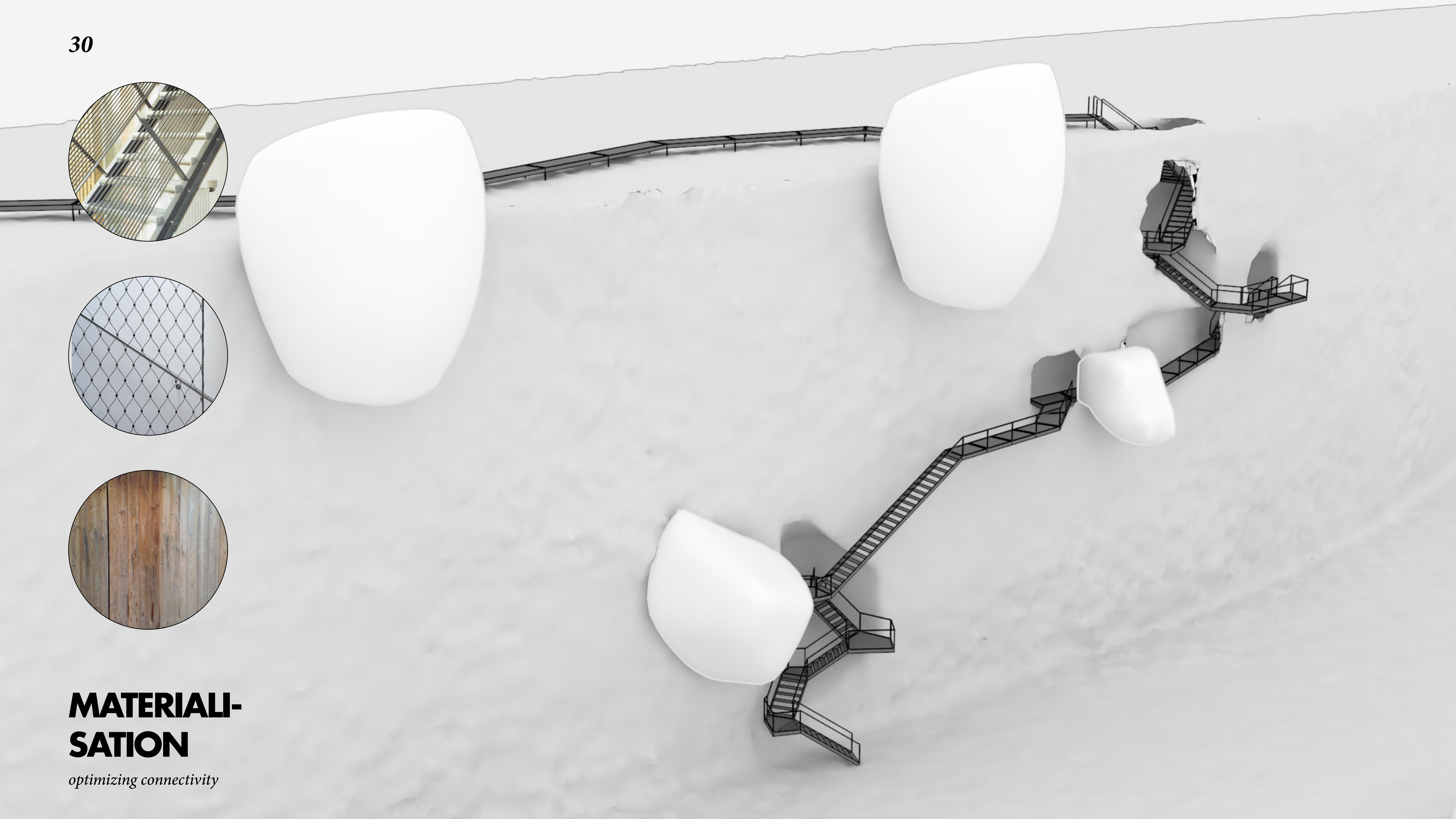




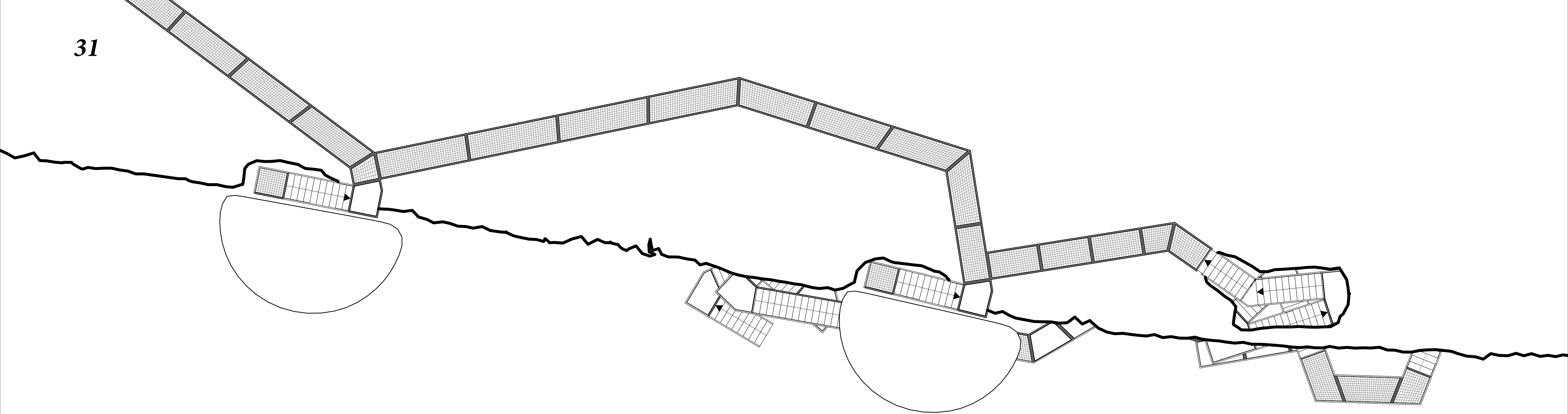


MATERIALI- SATION

optimizing connectivity



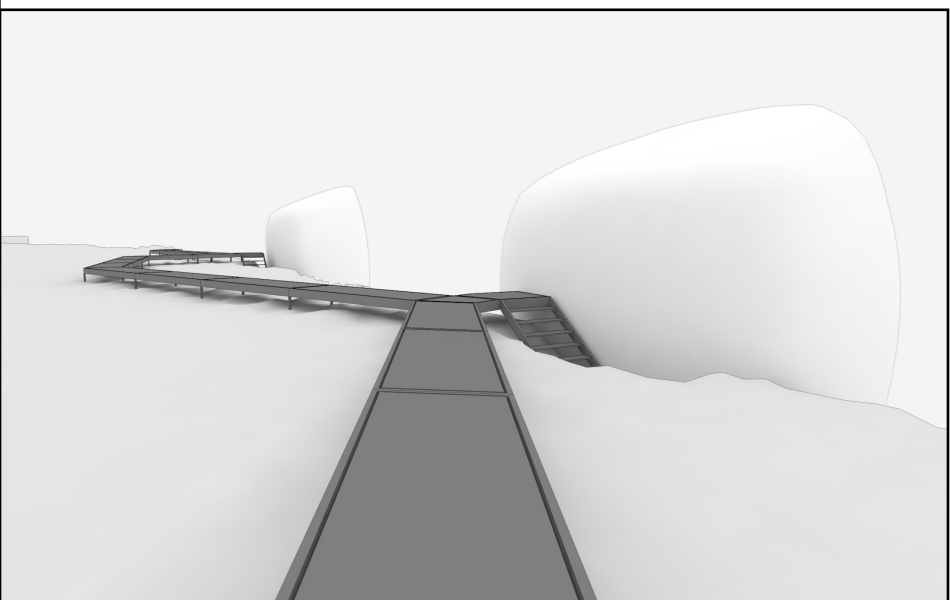
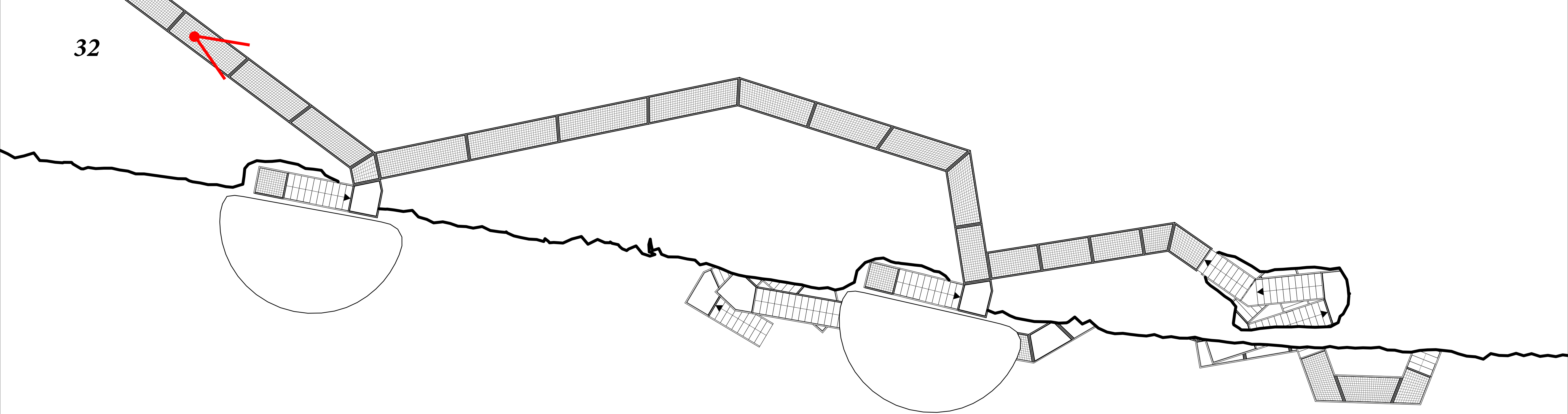
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SITEPLAN

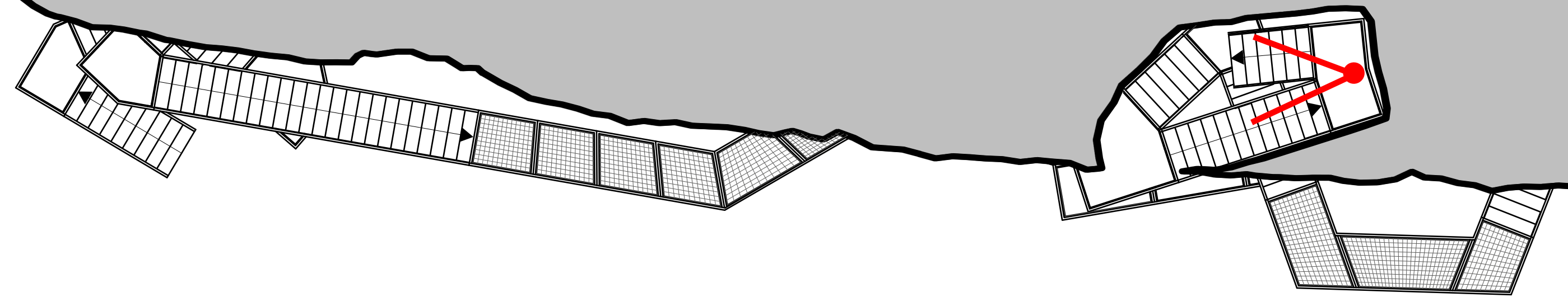
optimizing connectivity

32



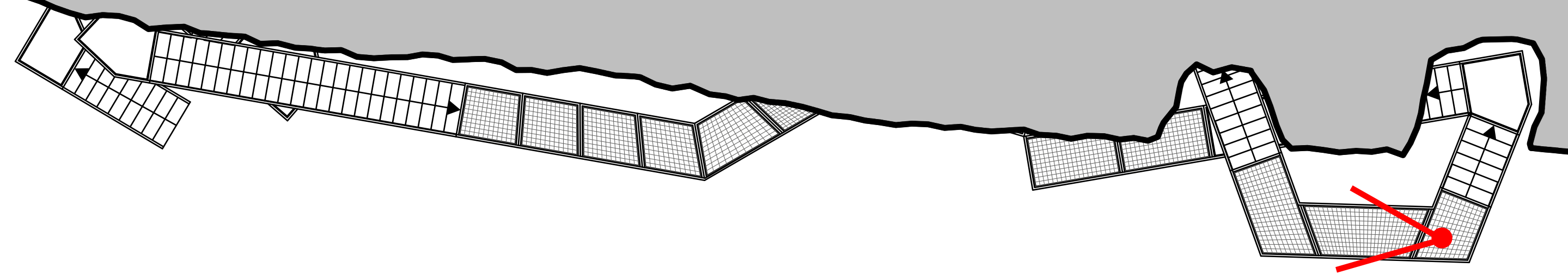
SITUATIONS

optimizing connectivity



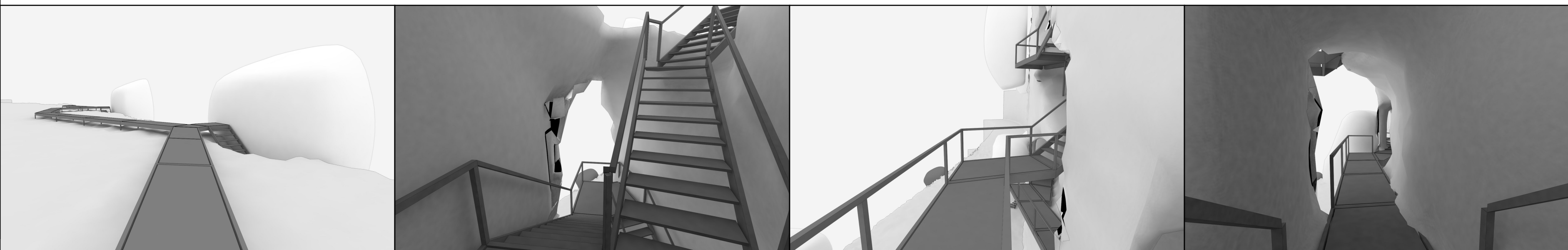
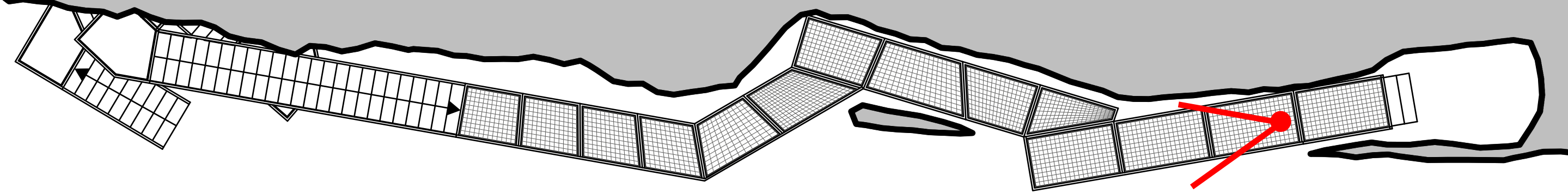
SITUATIONS

optimizing connectivity



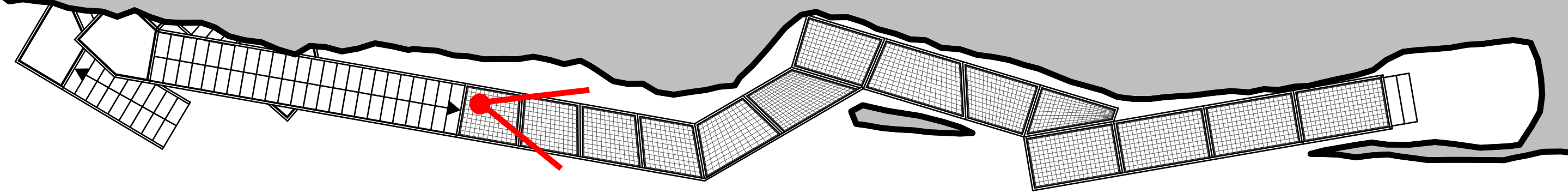
SITUATIONS

optimizing connectivity



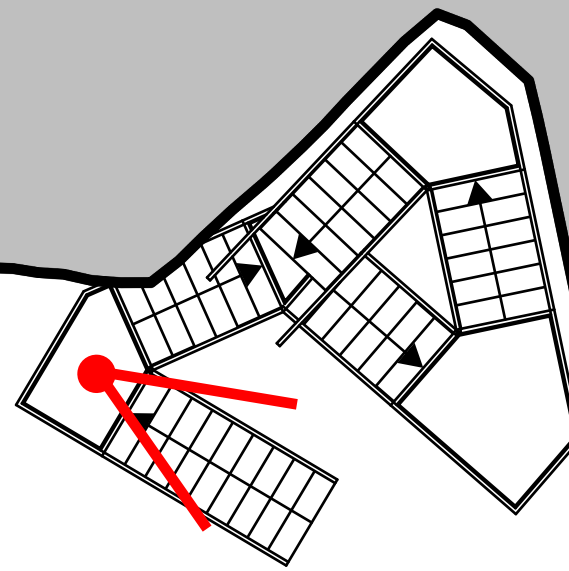
SITUATIONS

optimizing connectivity



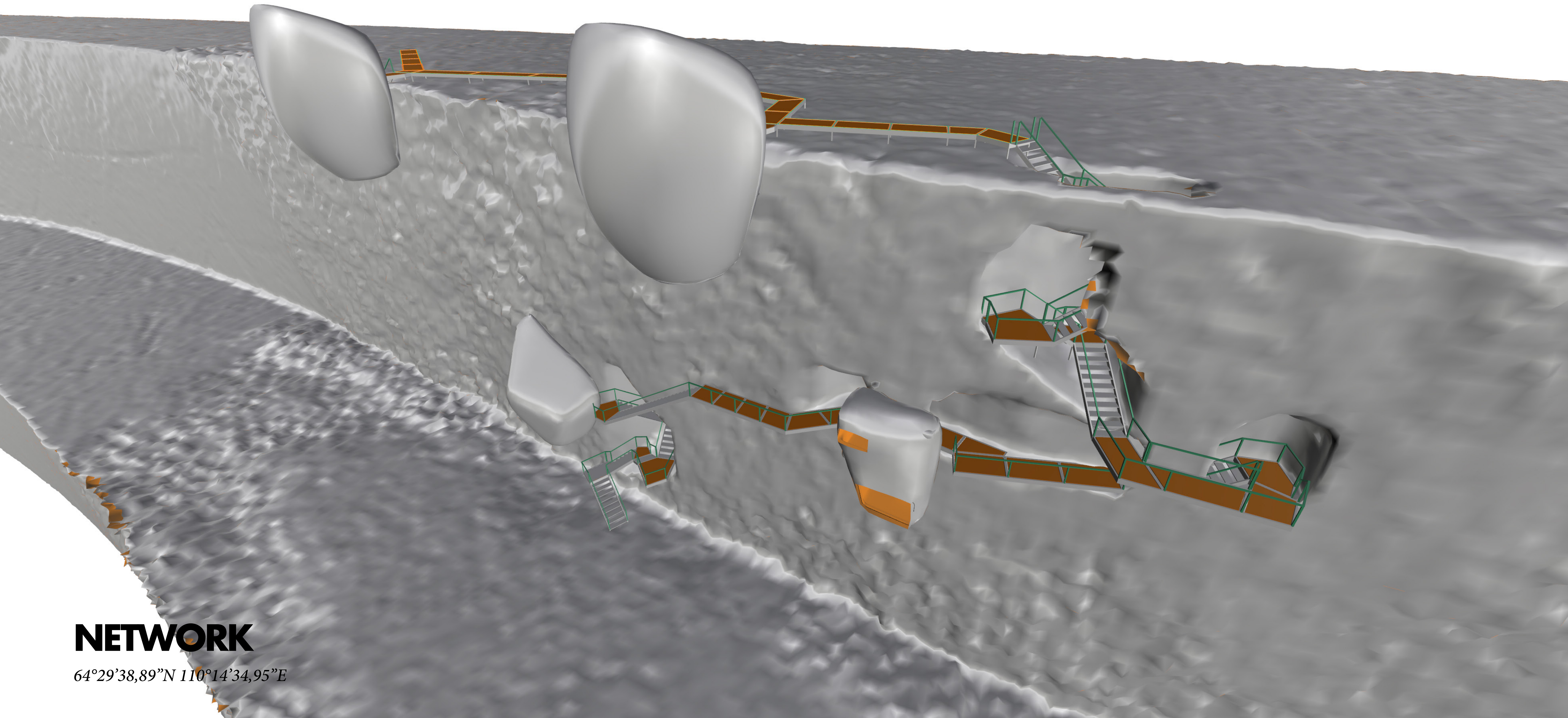
SITUATIONS

optimizing connectivity



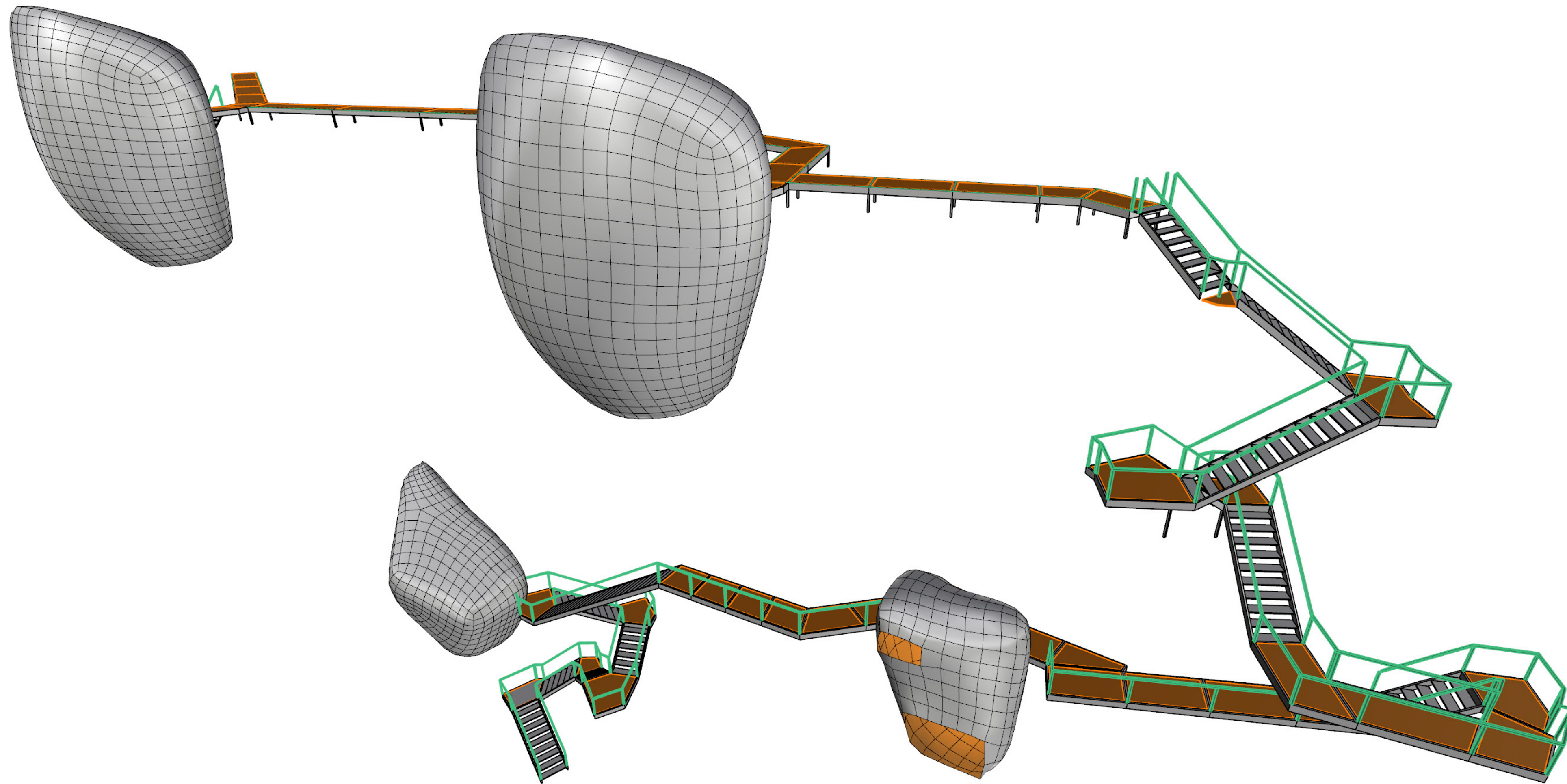
SITUATIONS

optimizing connectivity



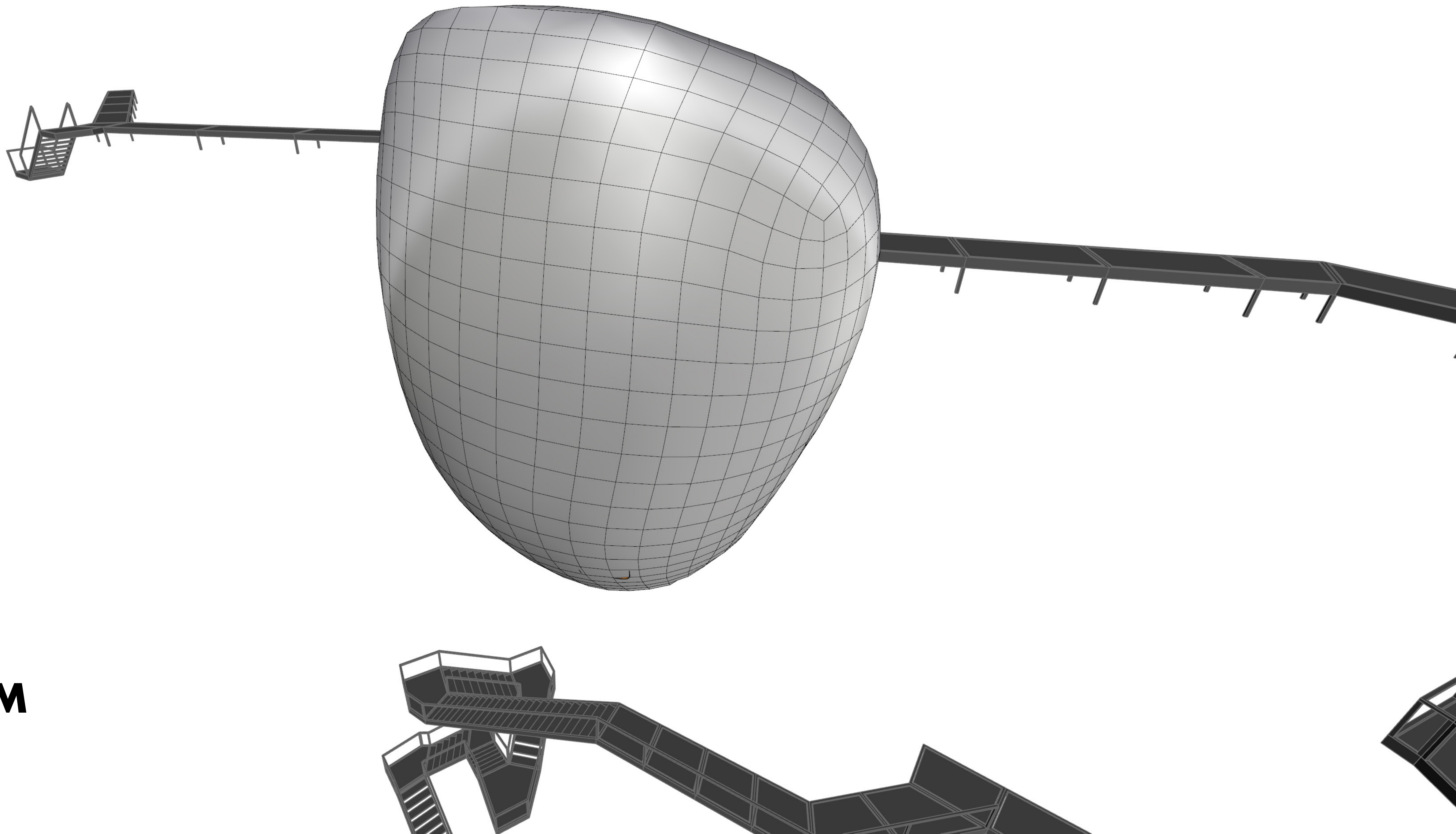
NETWORK

64°29'38,89"N 110°14'34,95"E



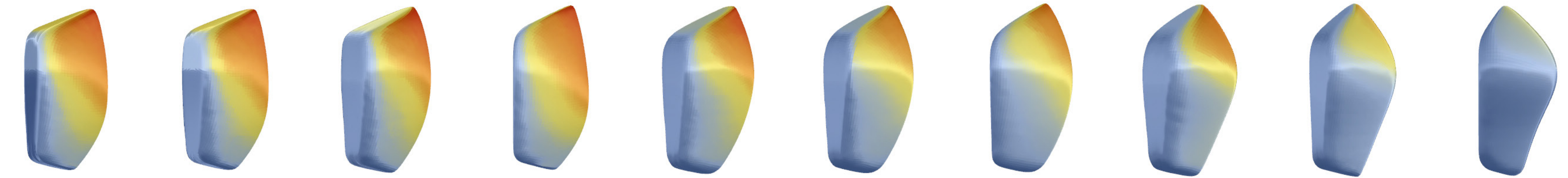
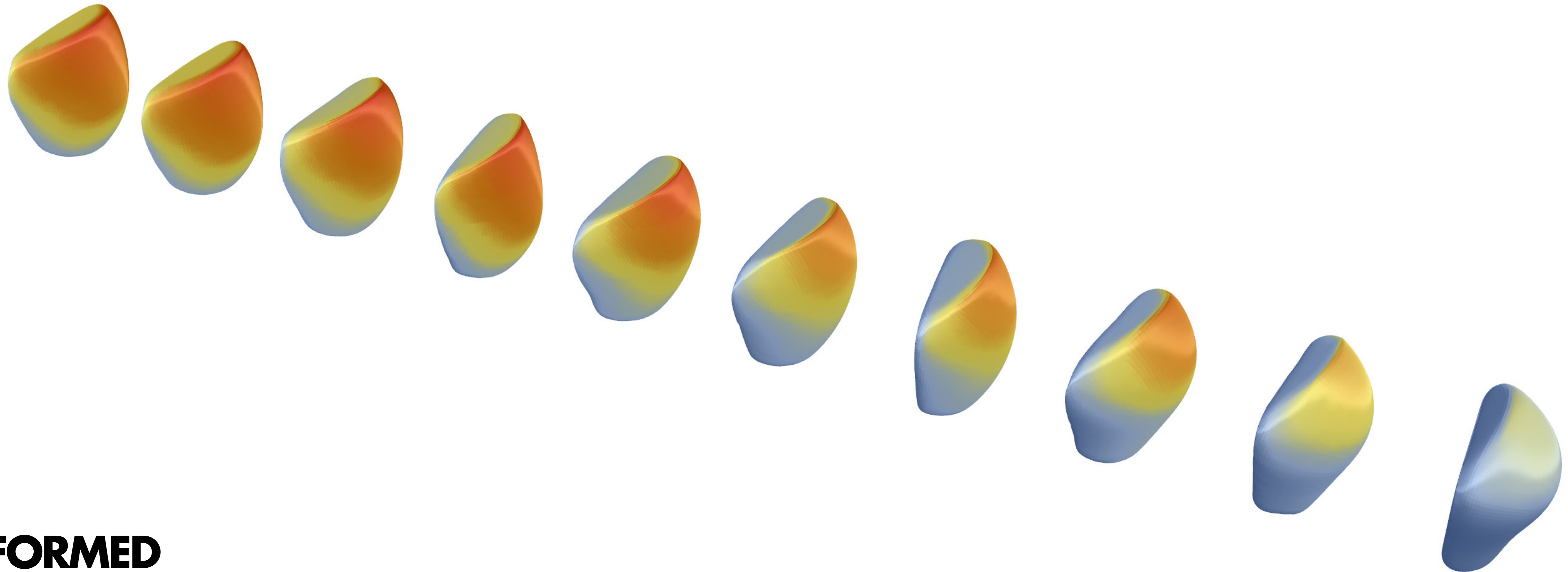
NETWORK

details 1:100



LONG-TERM UNIT

details 1:100

*0m**-225m*

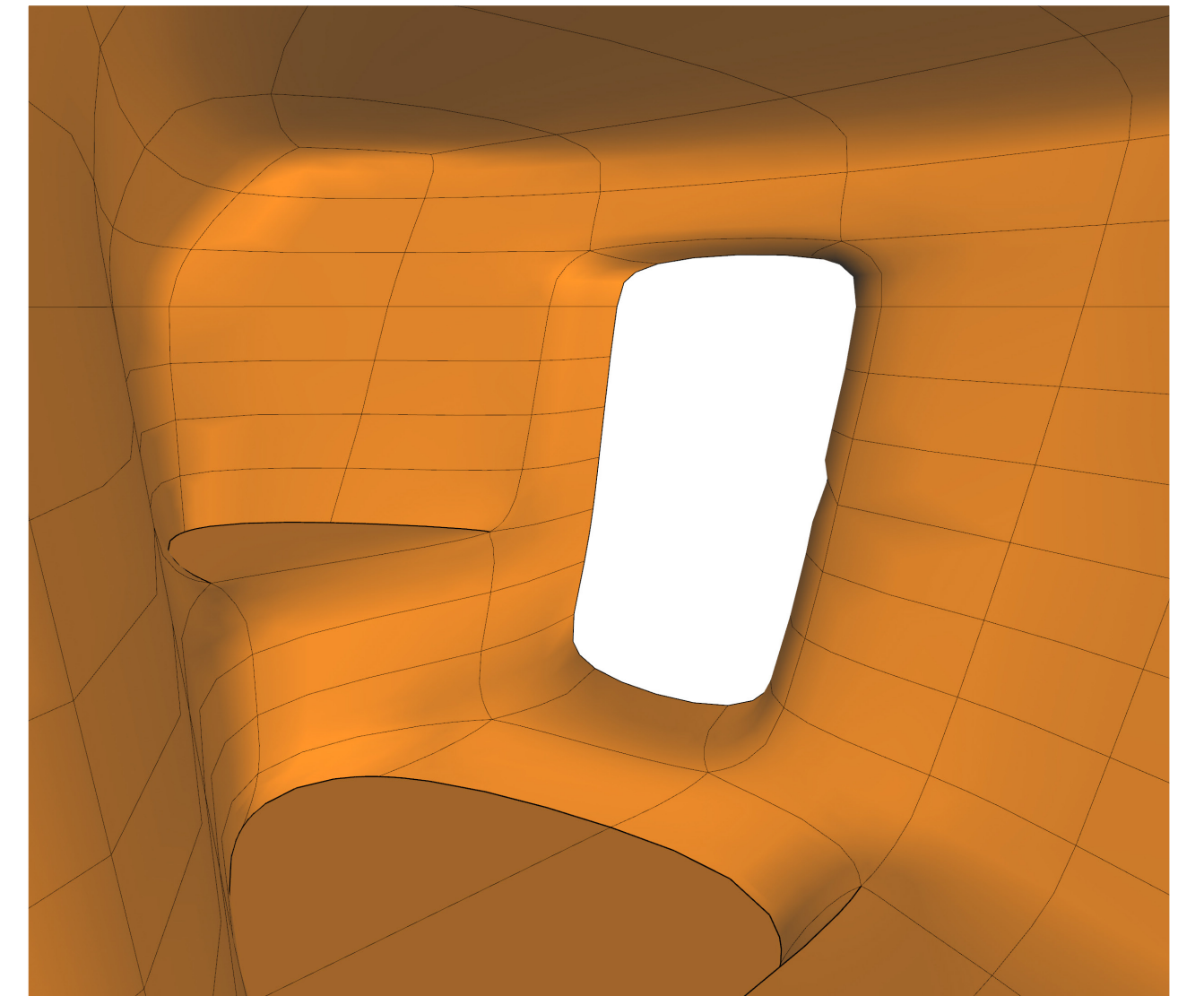
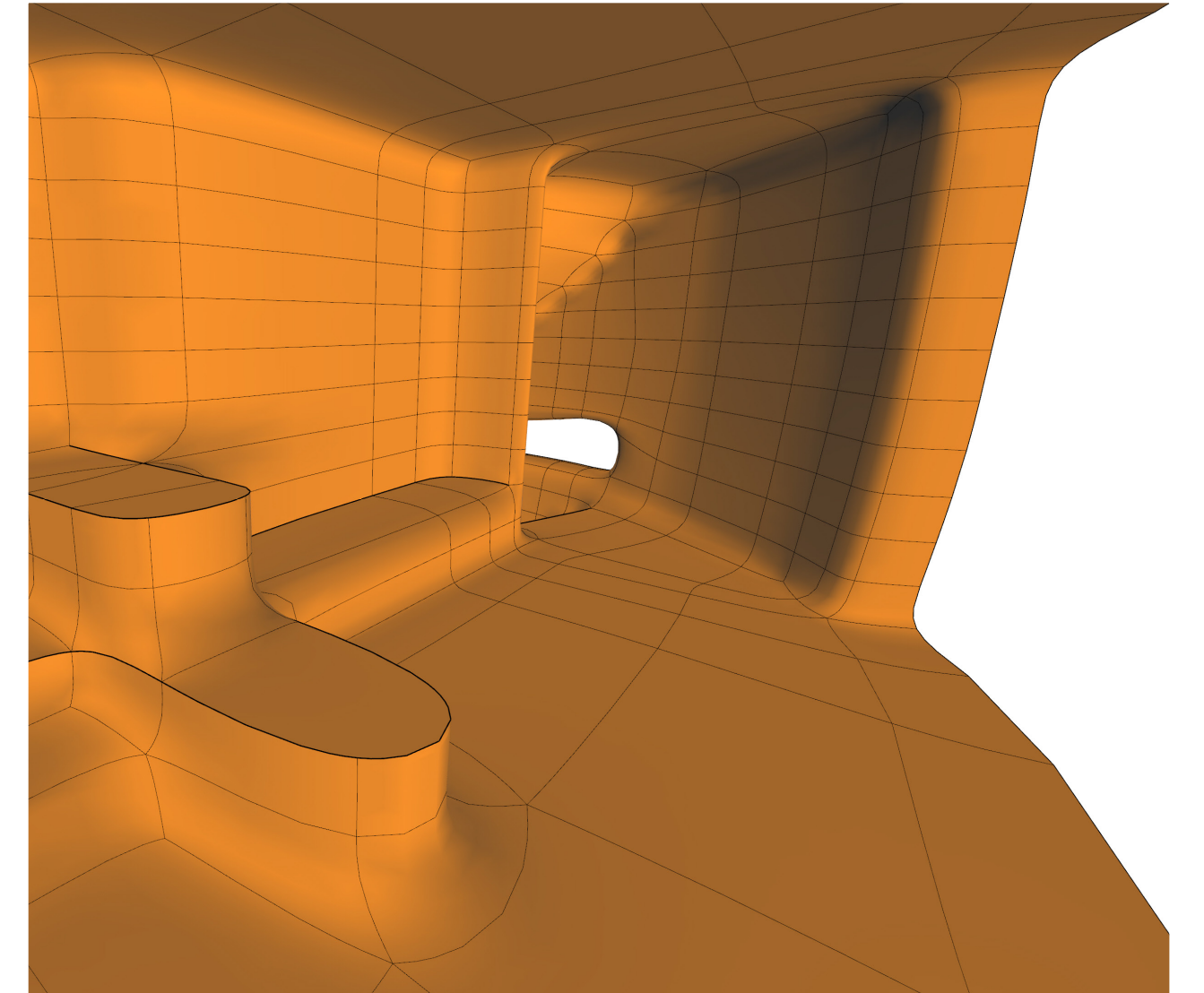
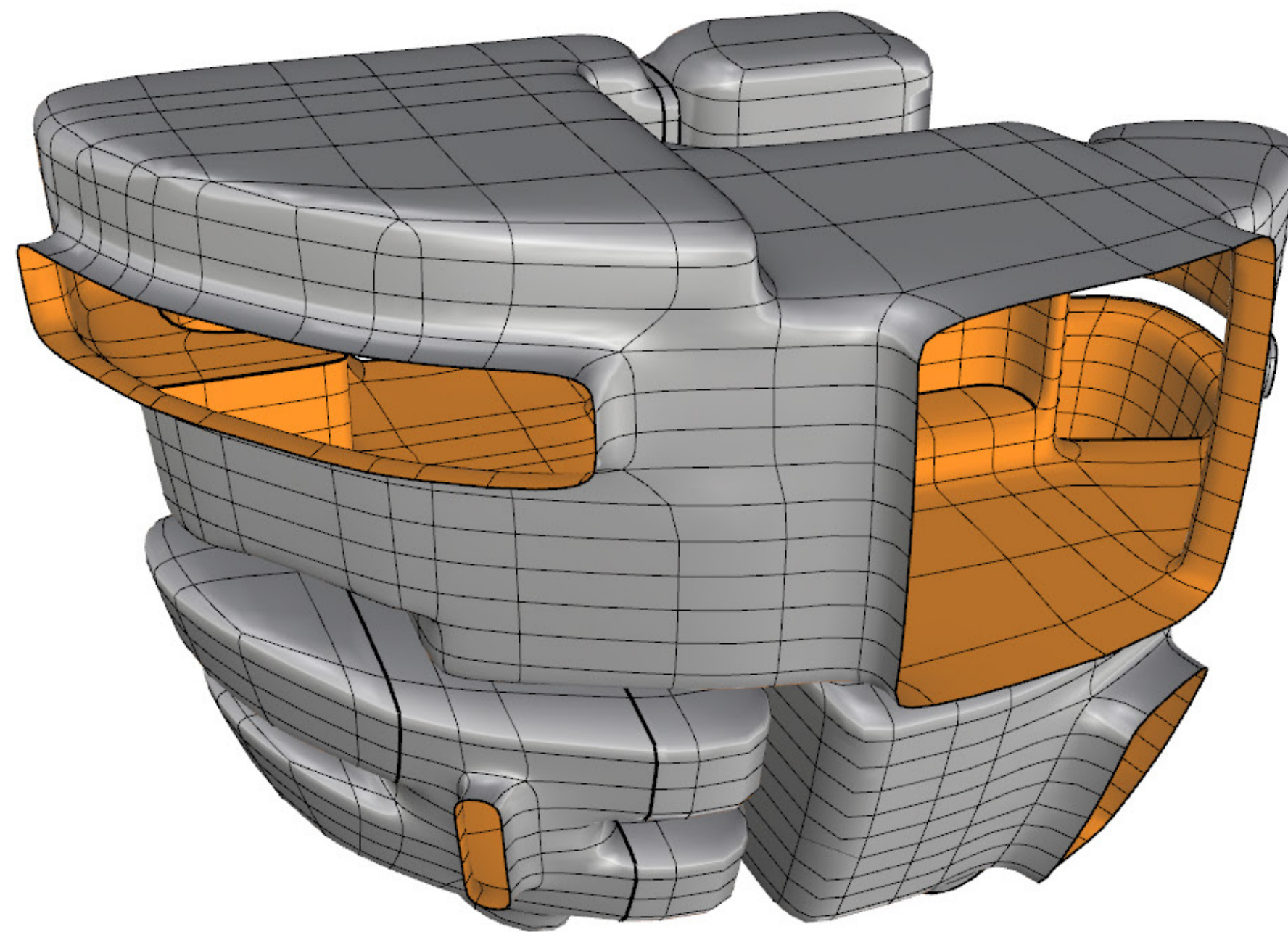
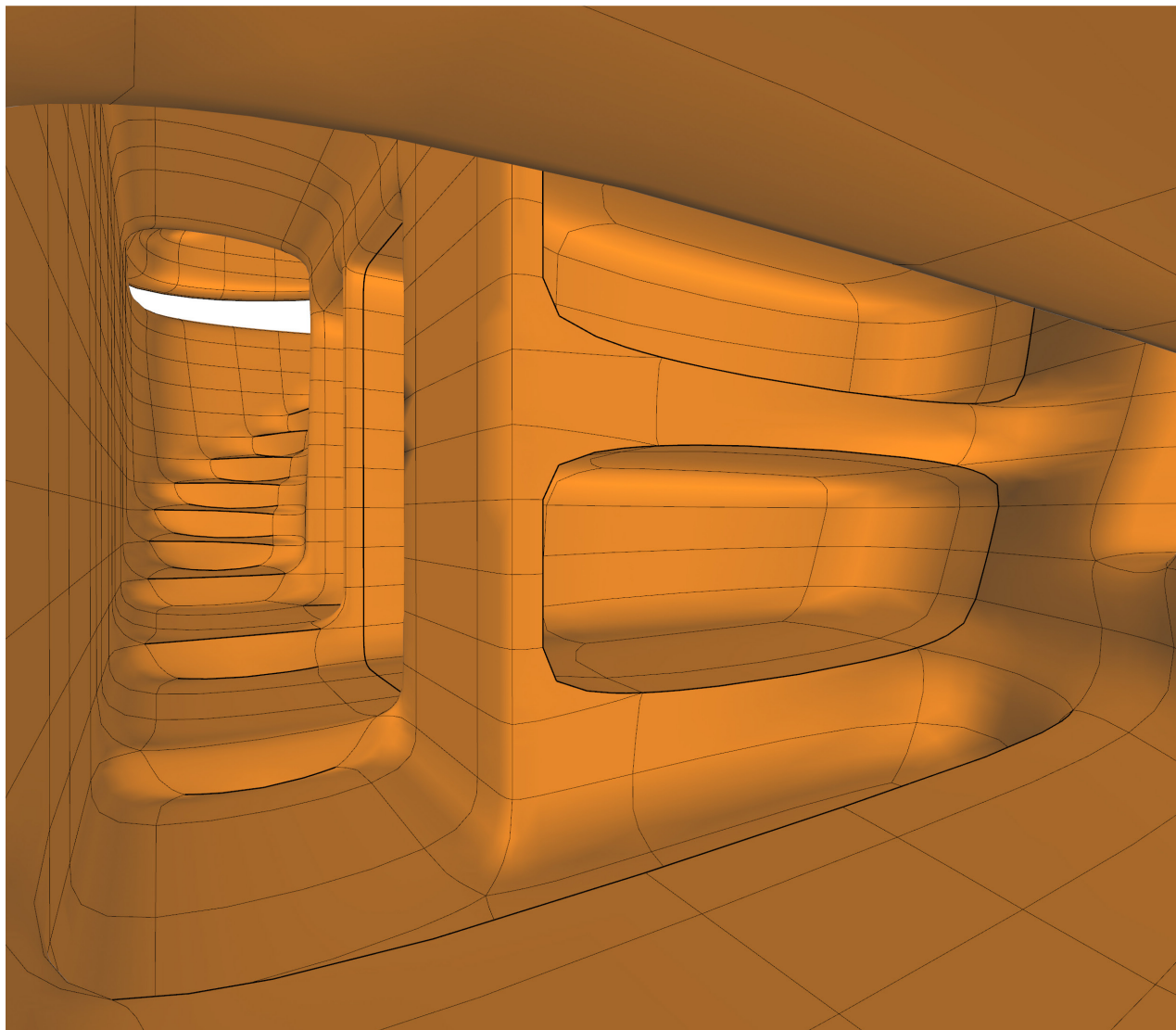
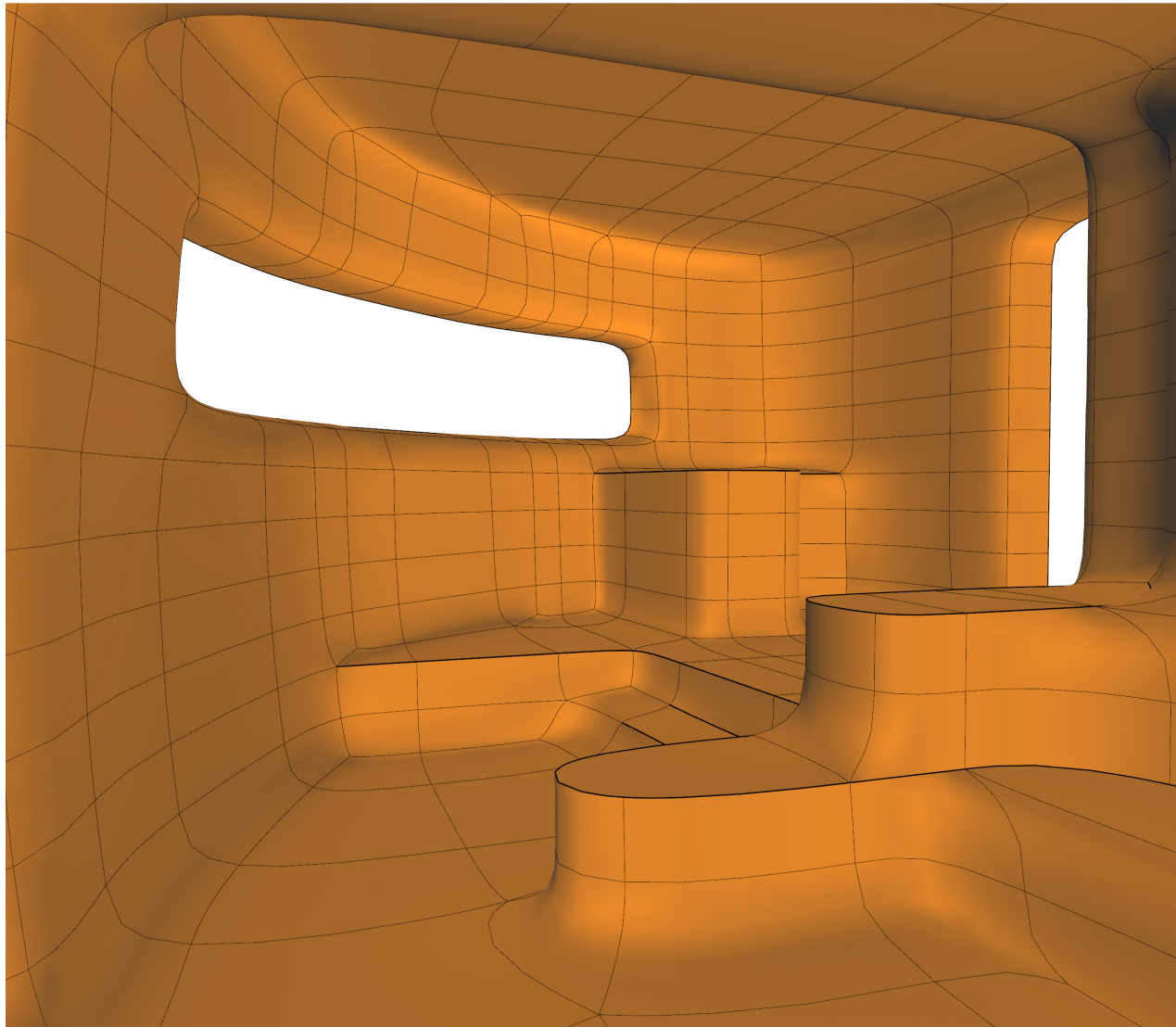
**INFORMED
GEOMETRY**

details 1:100



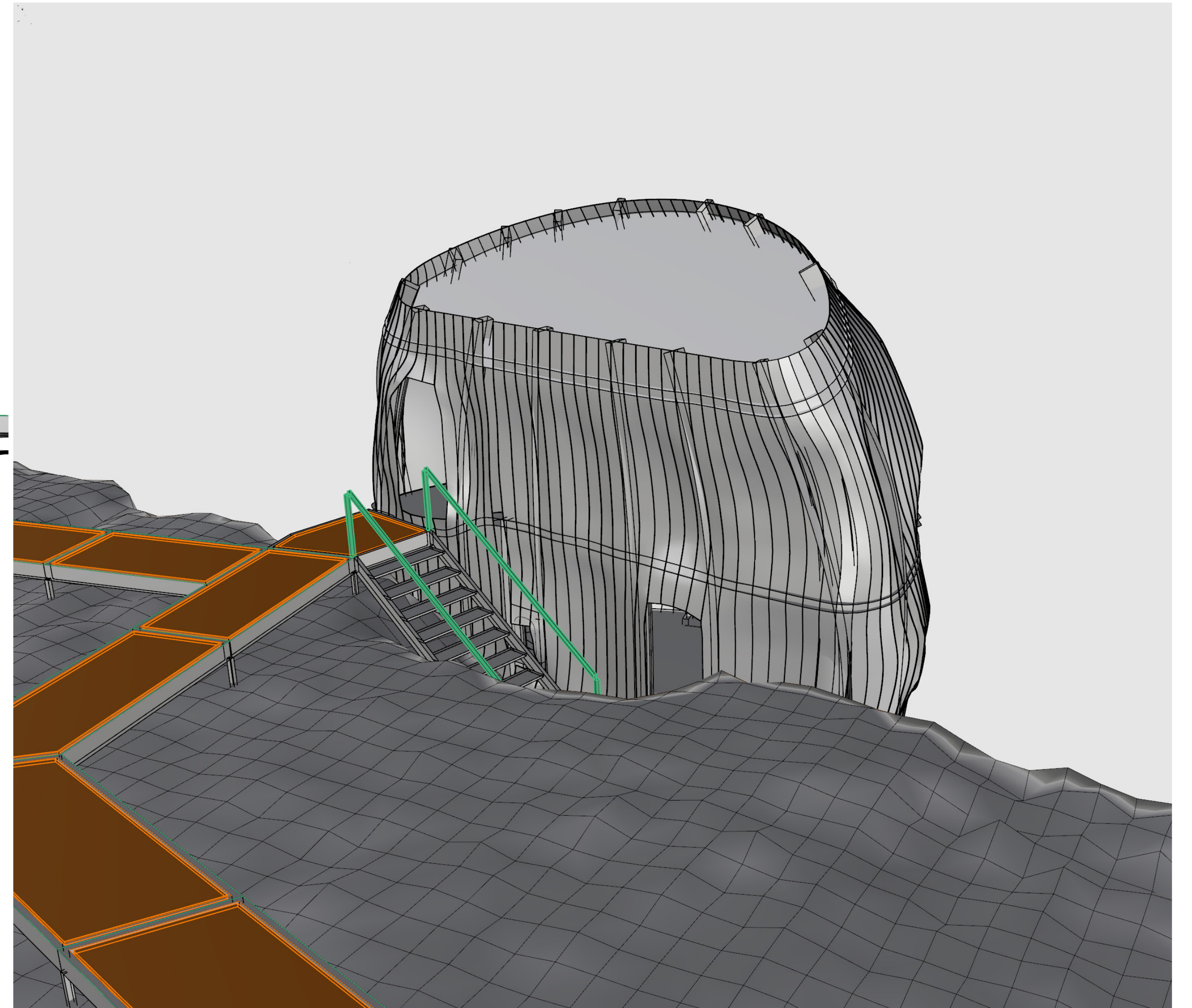
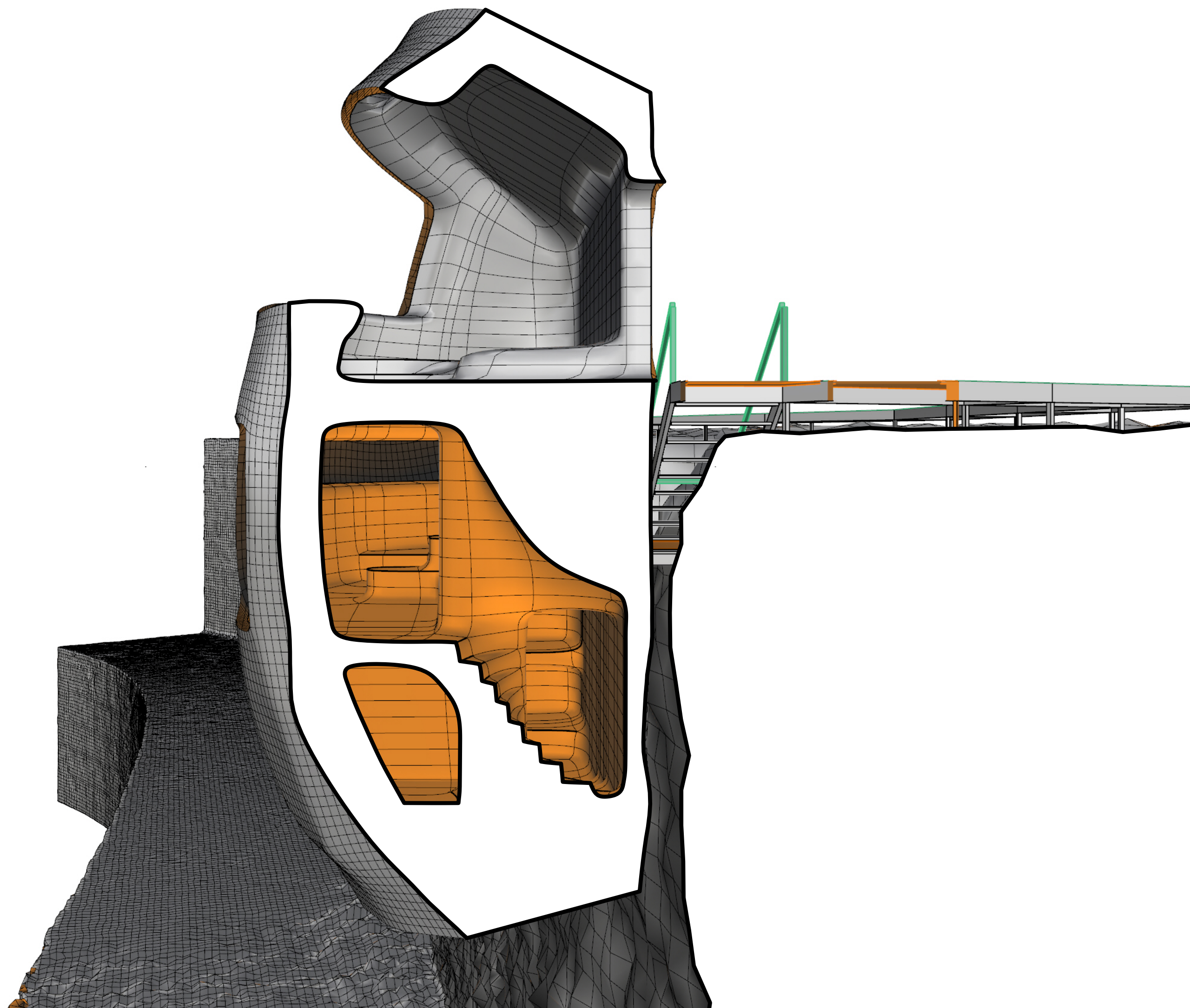
REFERENCES INTERIOR

double curved CLT



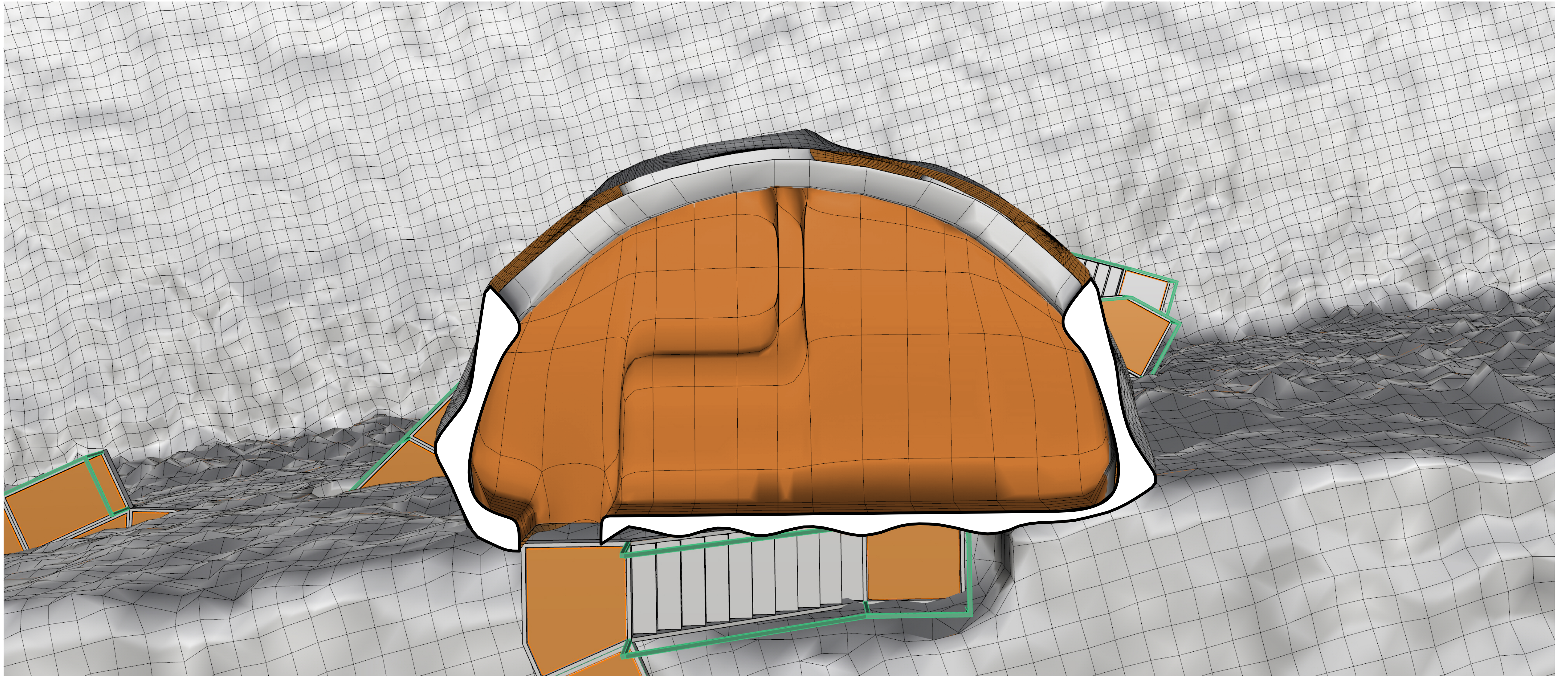
HOUSING UNIT

details 1:100



GREENHOUSE SECTION

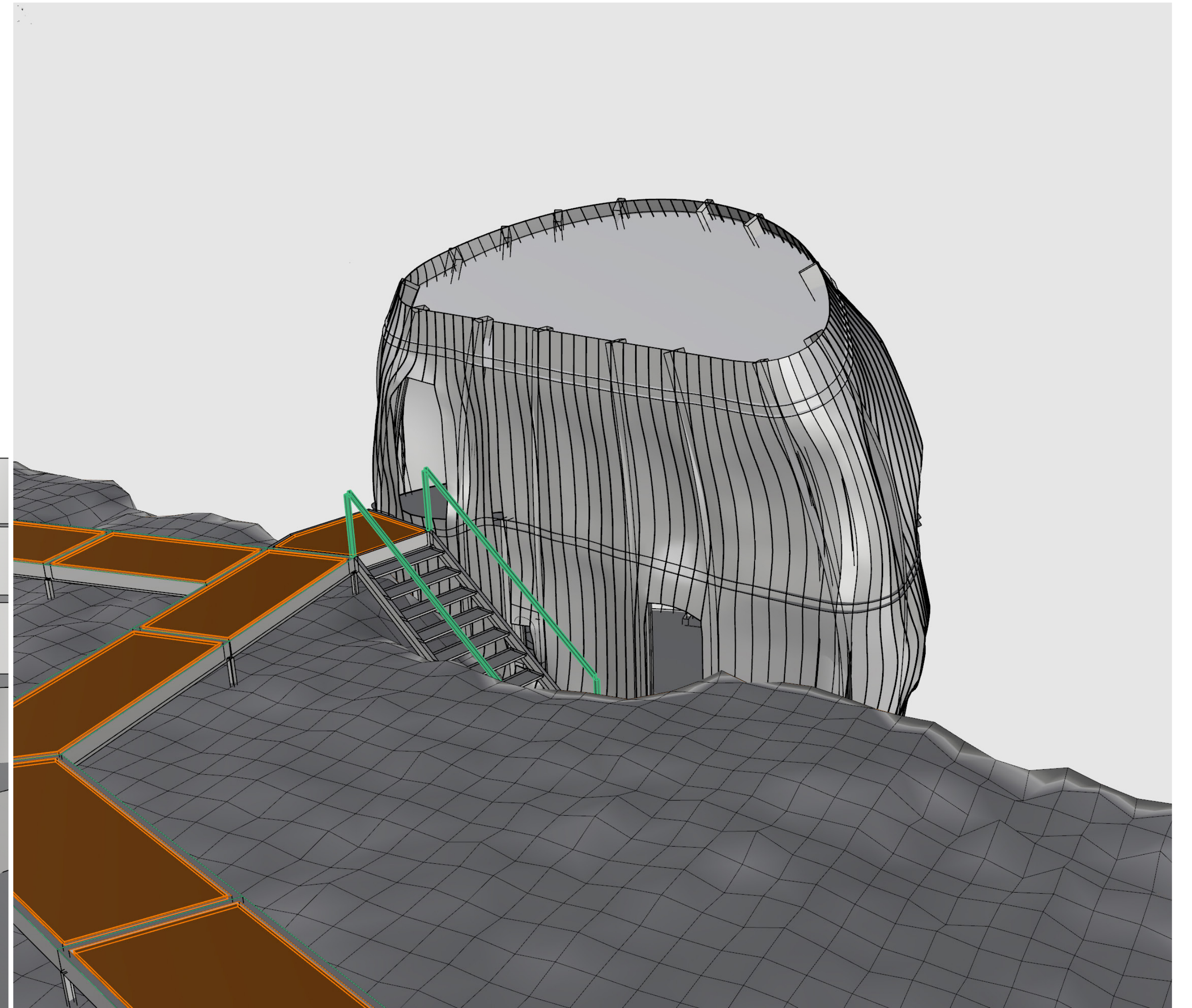
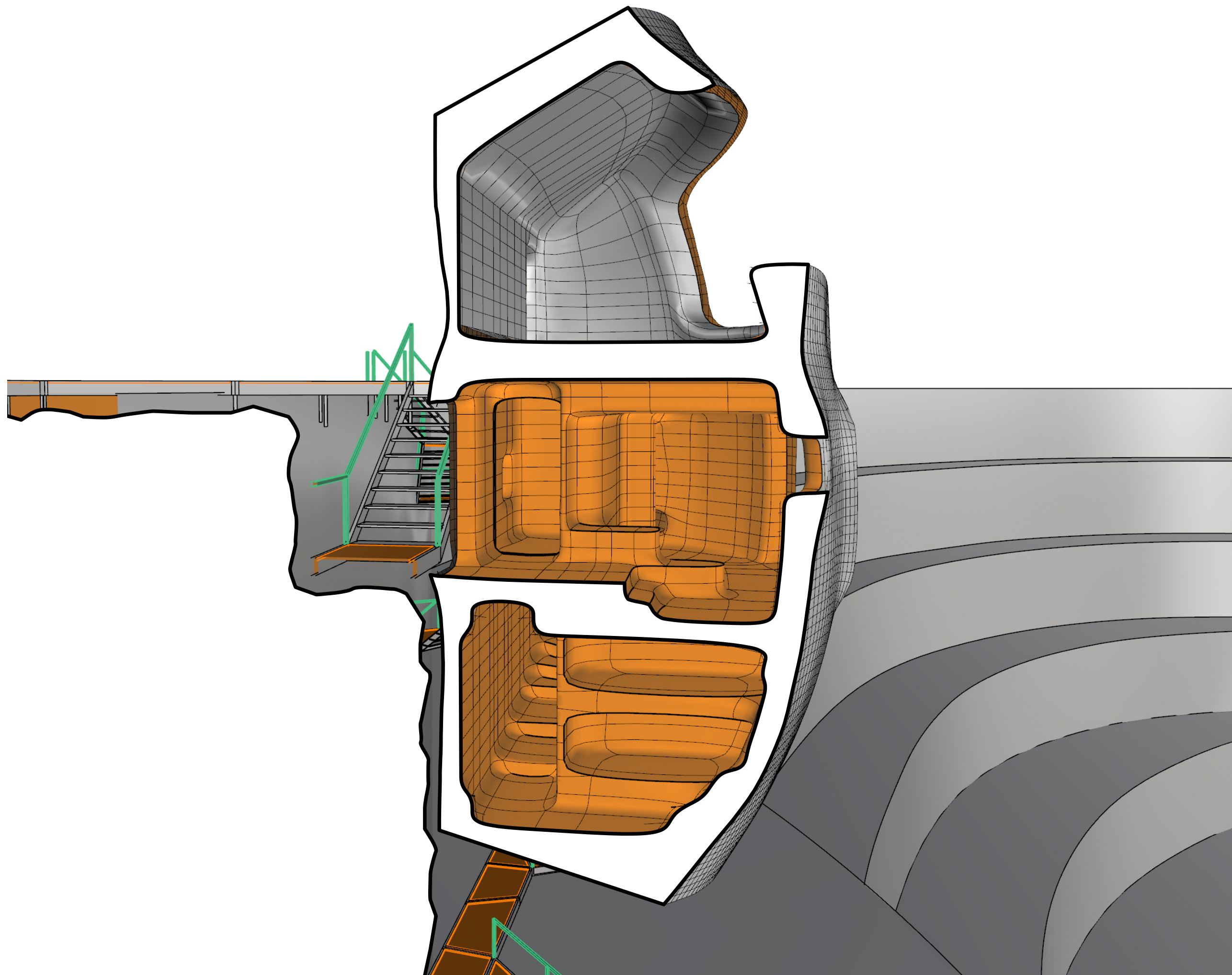
details 1:100



GREENHOUSE

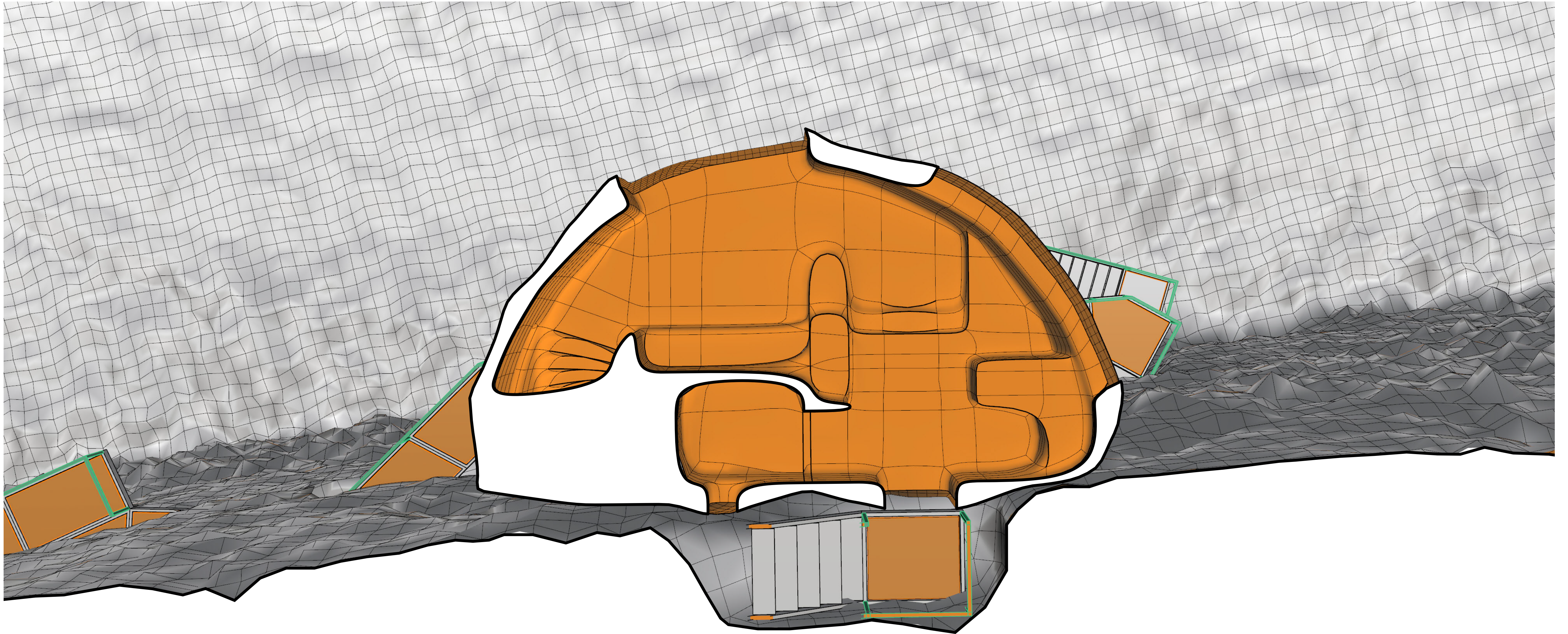
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details 1:100



SECTION 0

details 1:100



UNIT -1

details 1:100



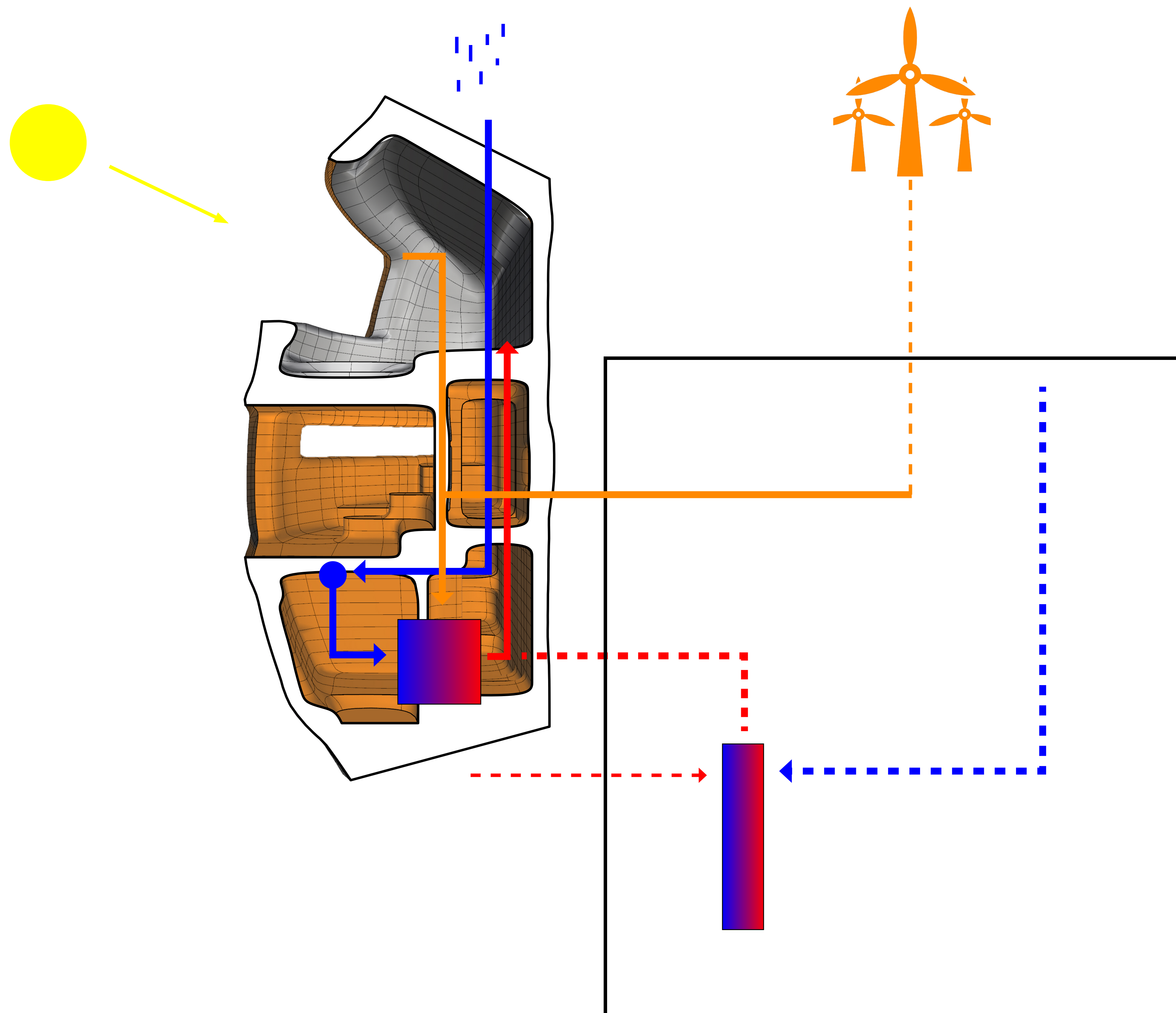
UNIT -2

details 1:100



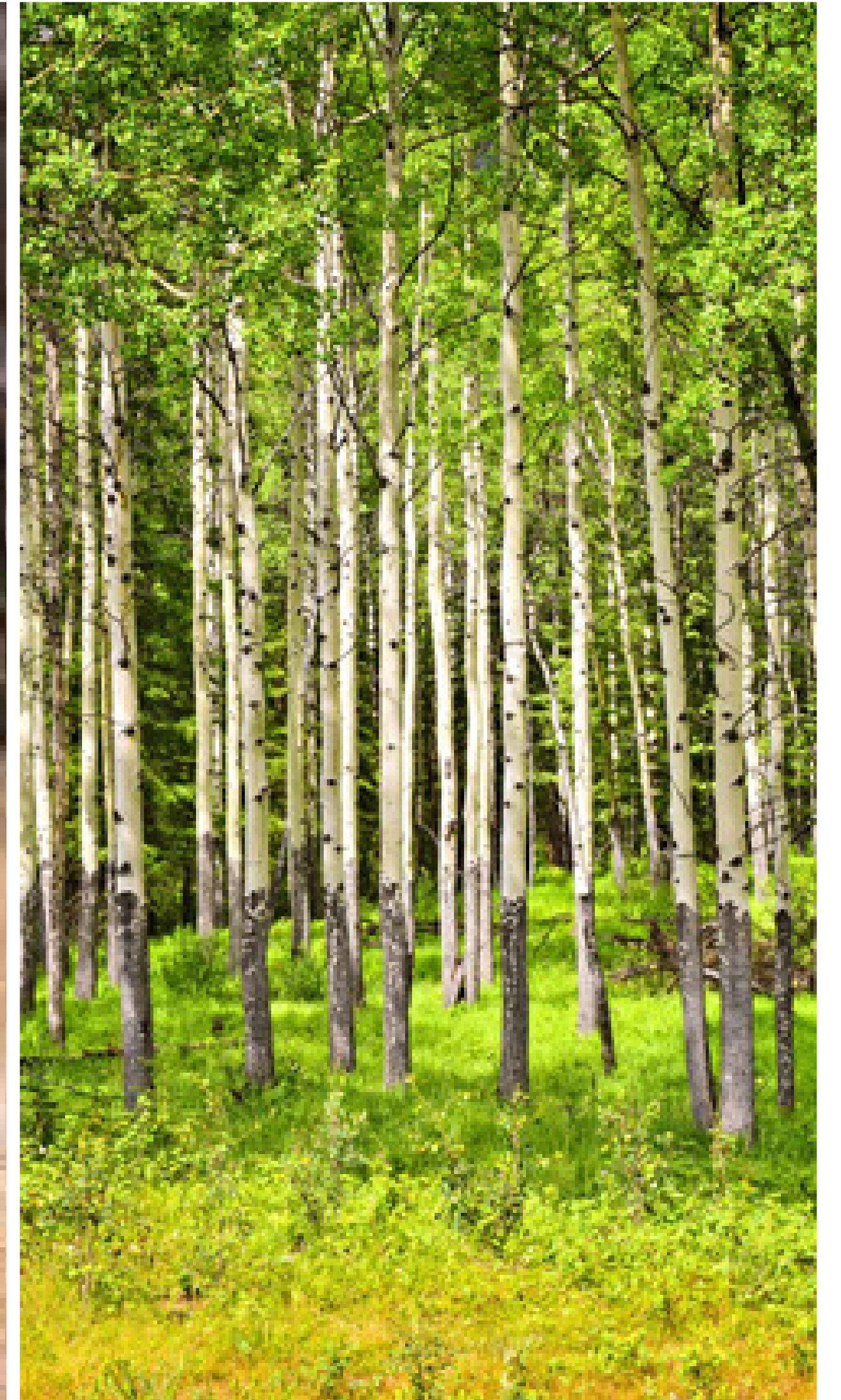
ERGERGY CONCEPT

solar energy & ground storage



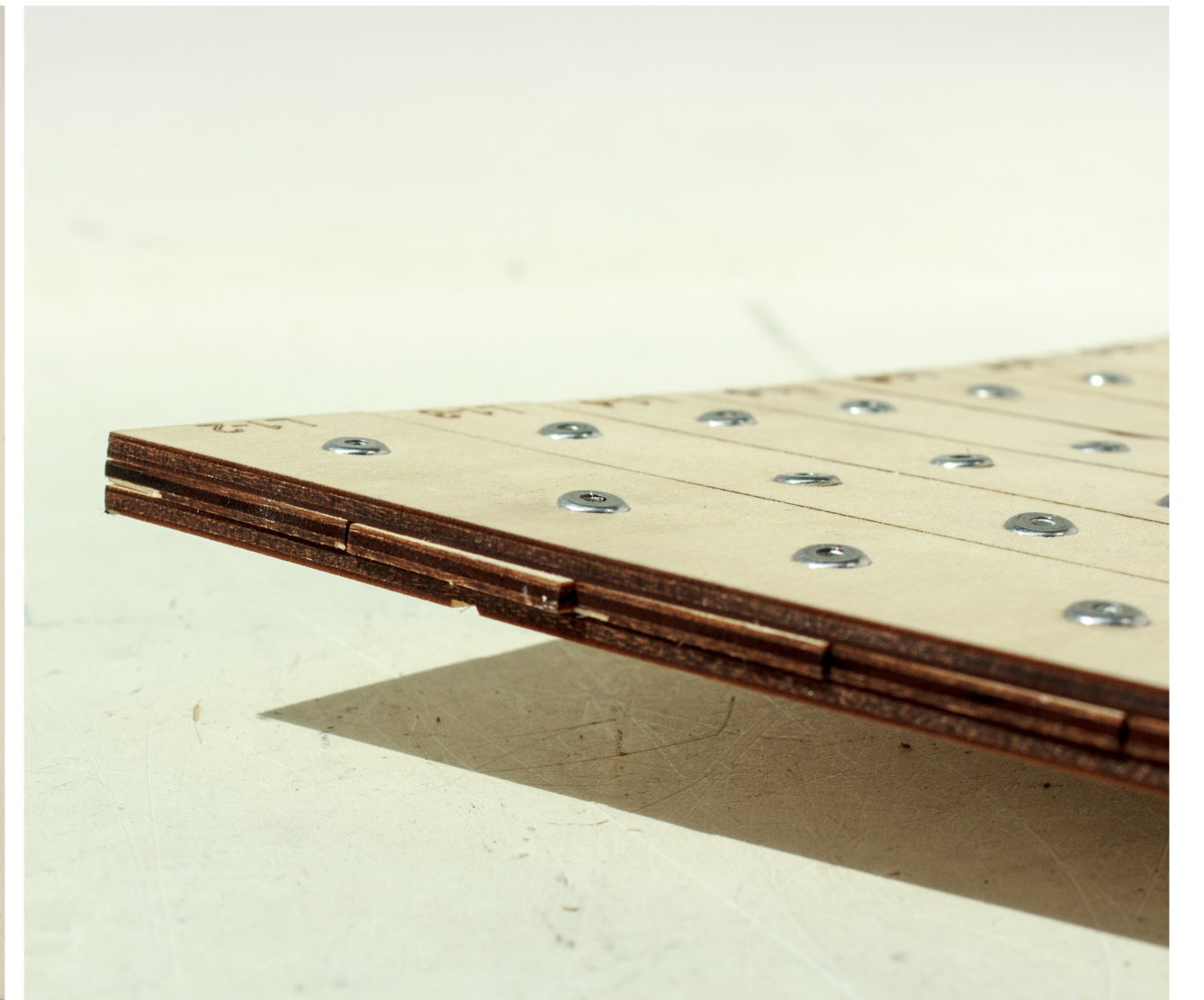
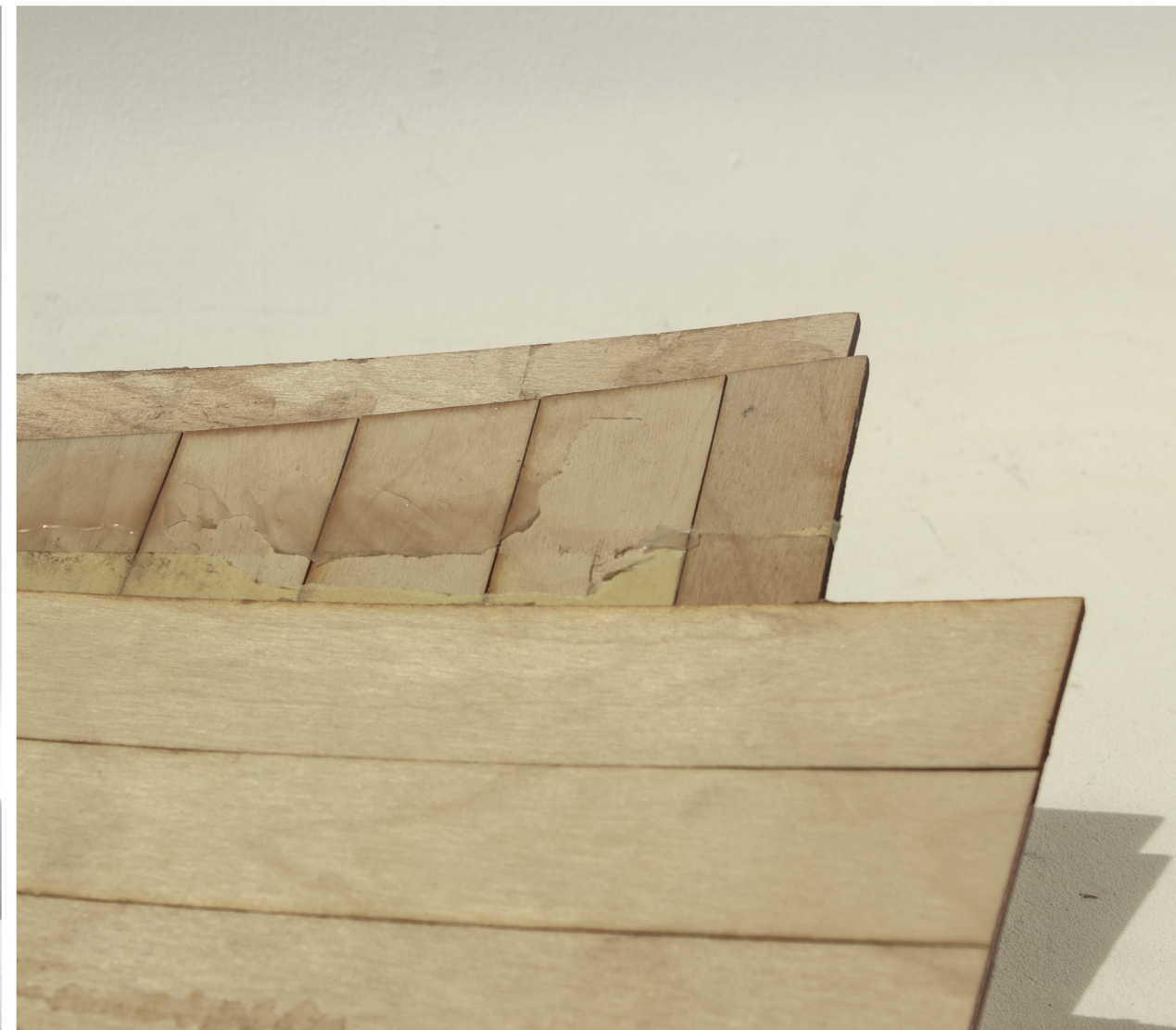
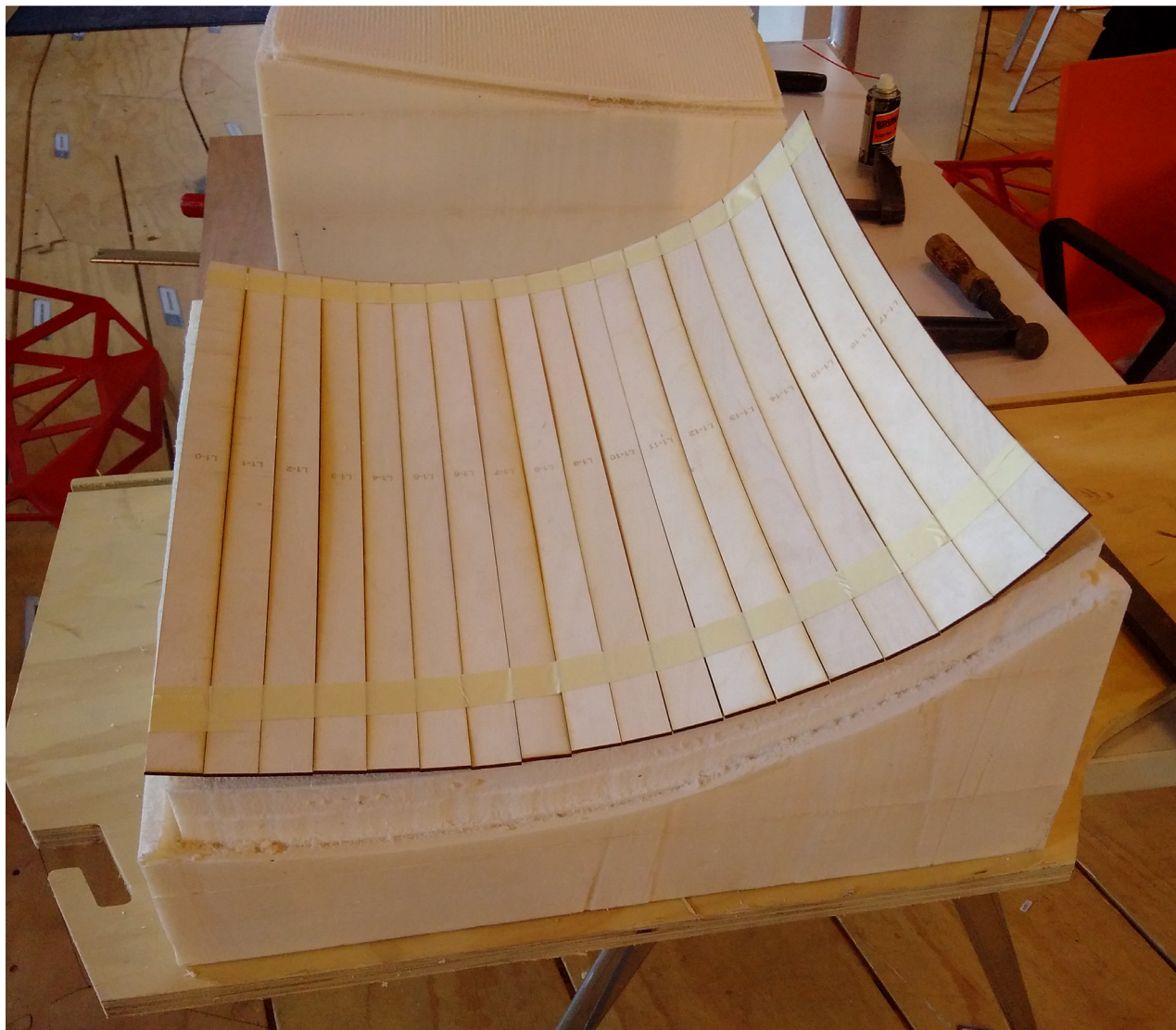
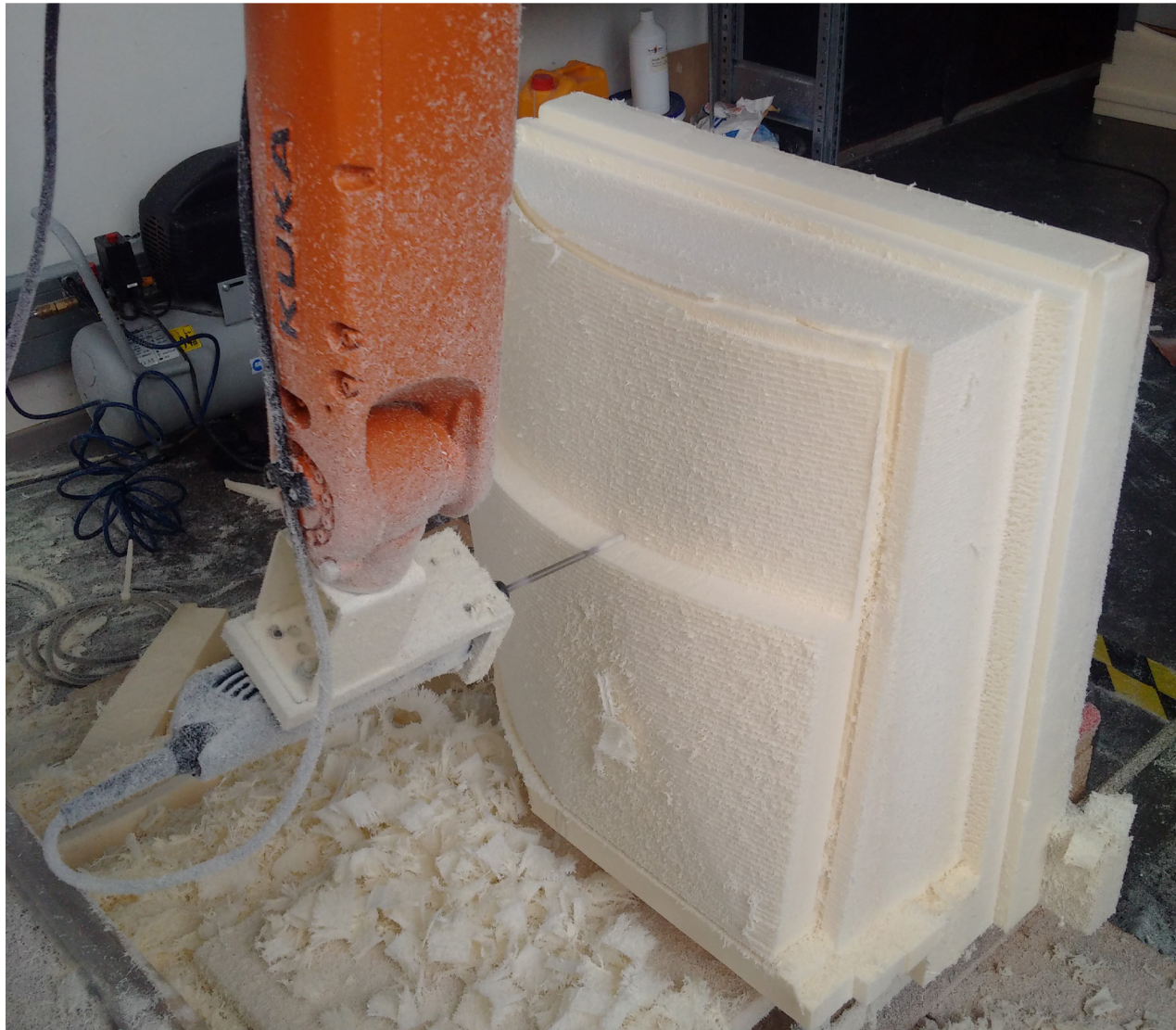


**MATERIAL
RESEARCH**



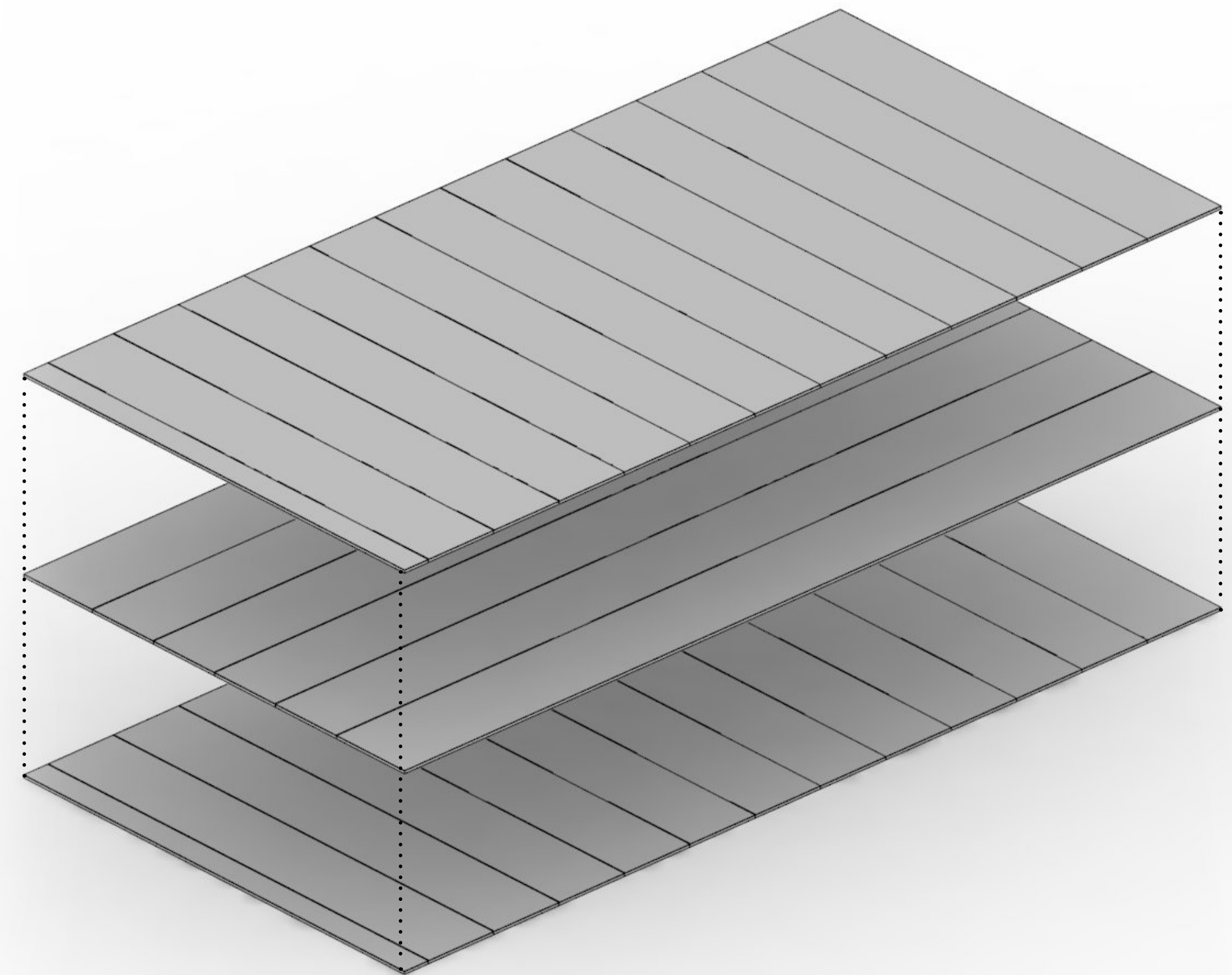
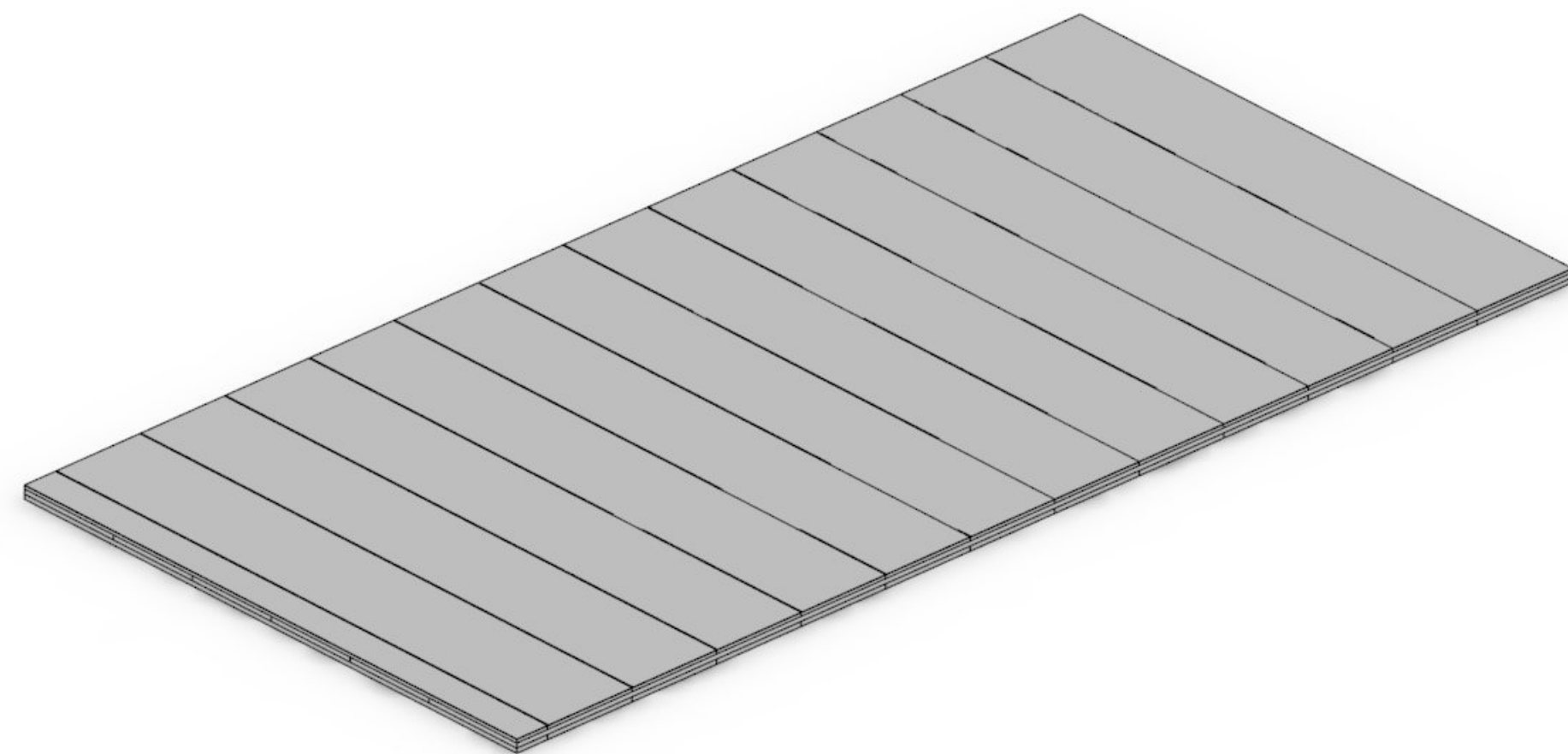
CANADIAN WOOD

dark & white spruce; birch, aspen



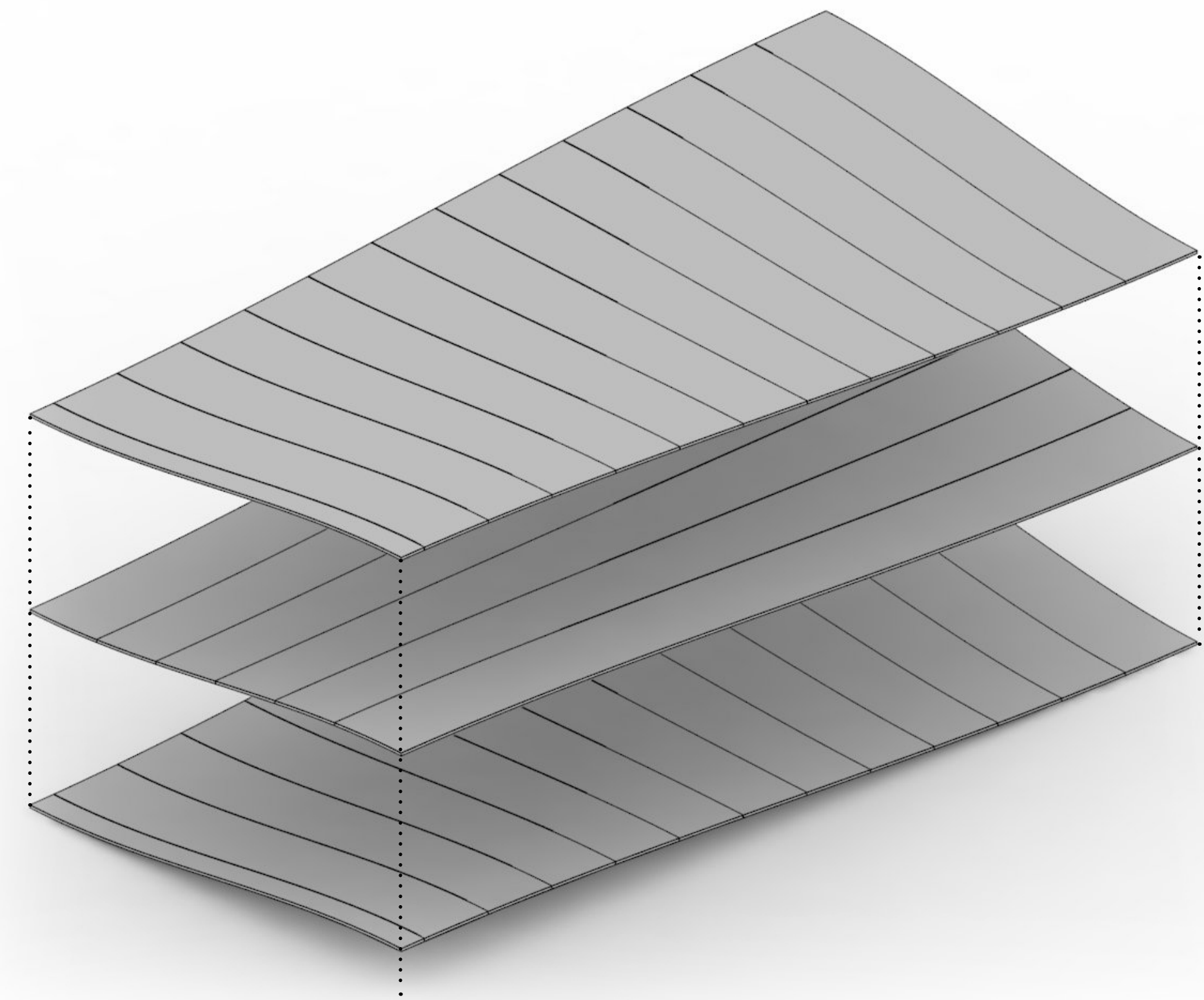
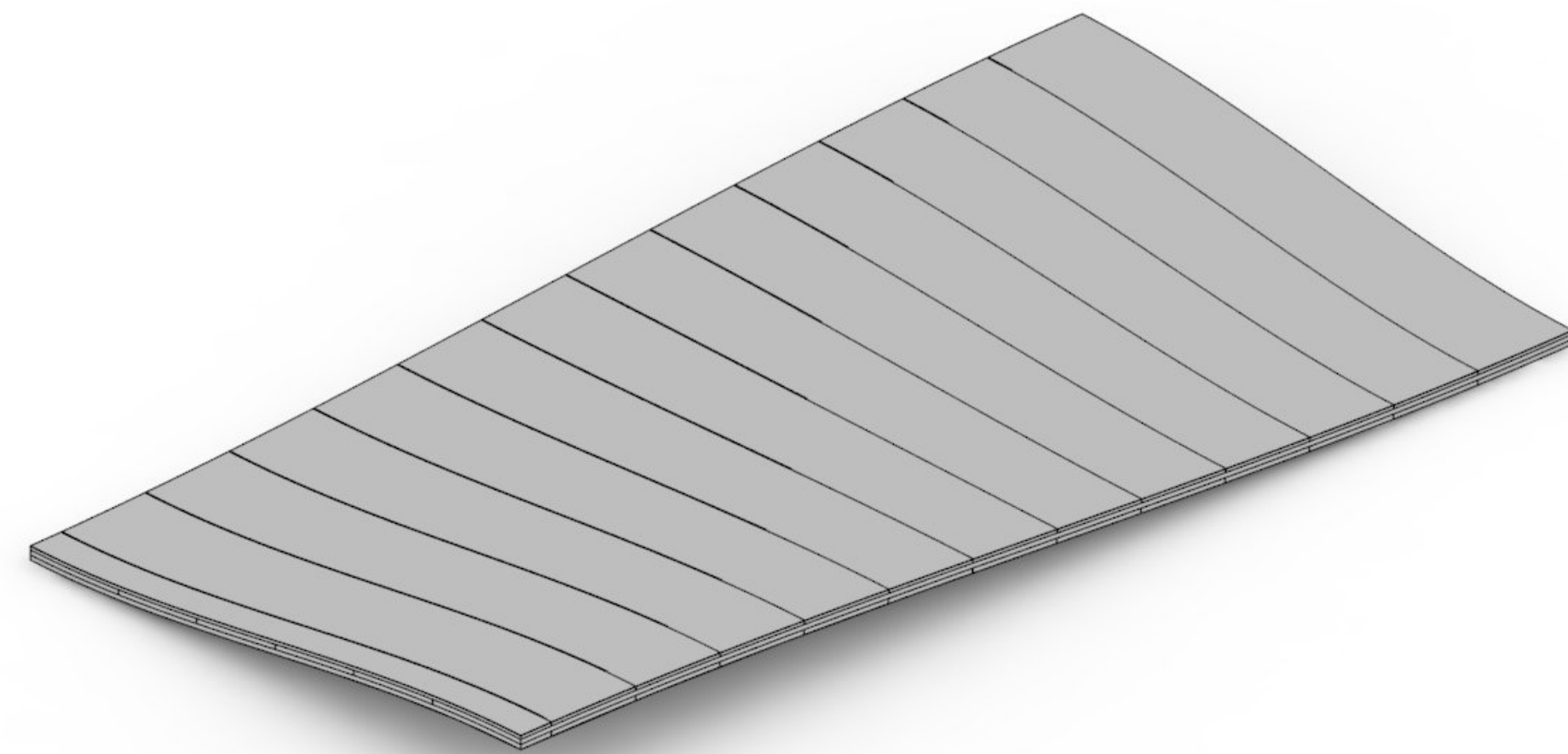
PROTO- TYPING

freeform wood panels



TRADITIONAL CLT

CLT fabrication principle



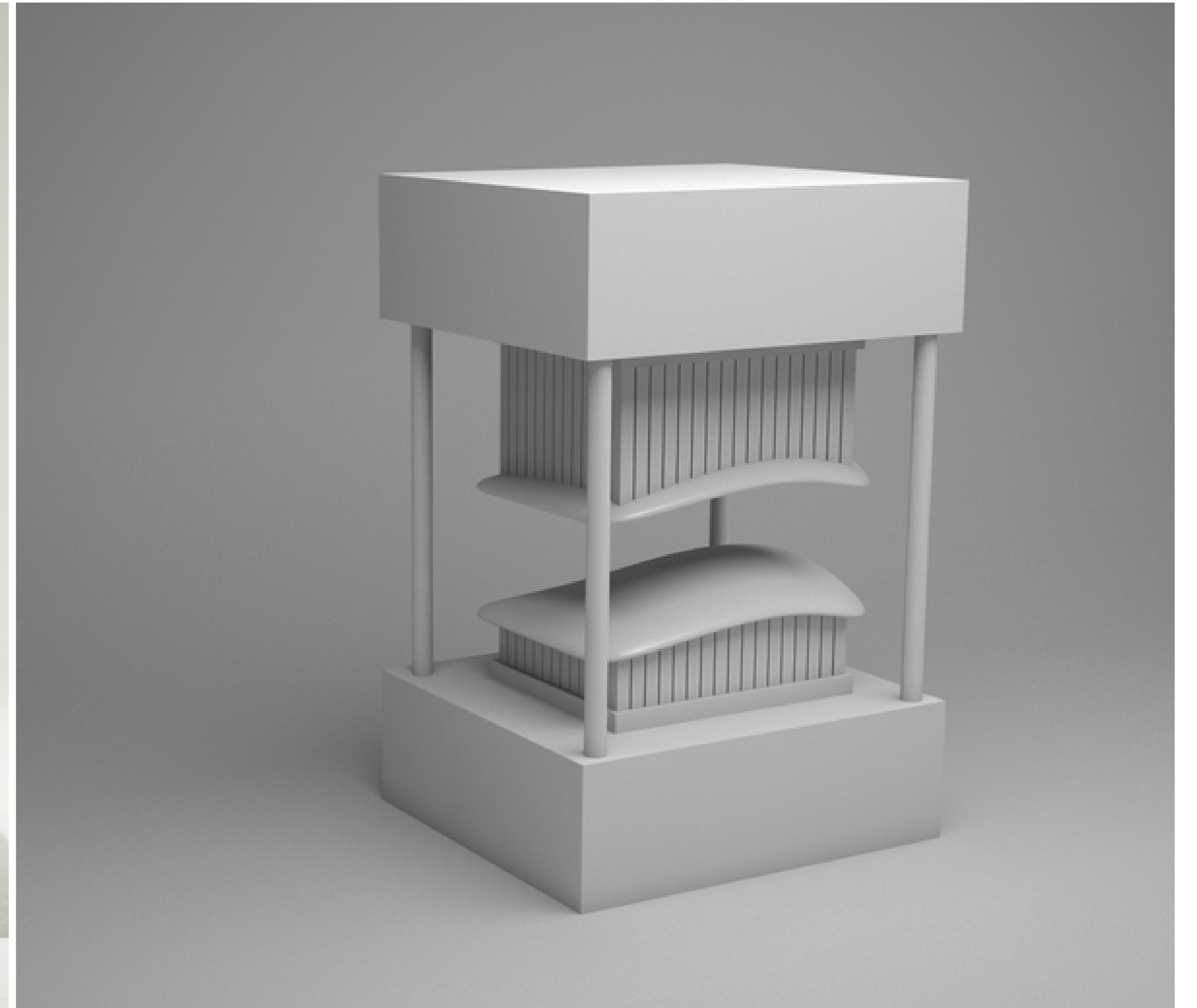
FREEFORM CLT

double curved CLT



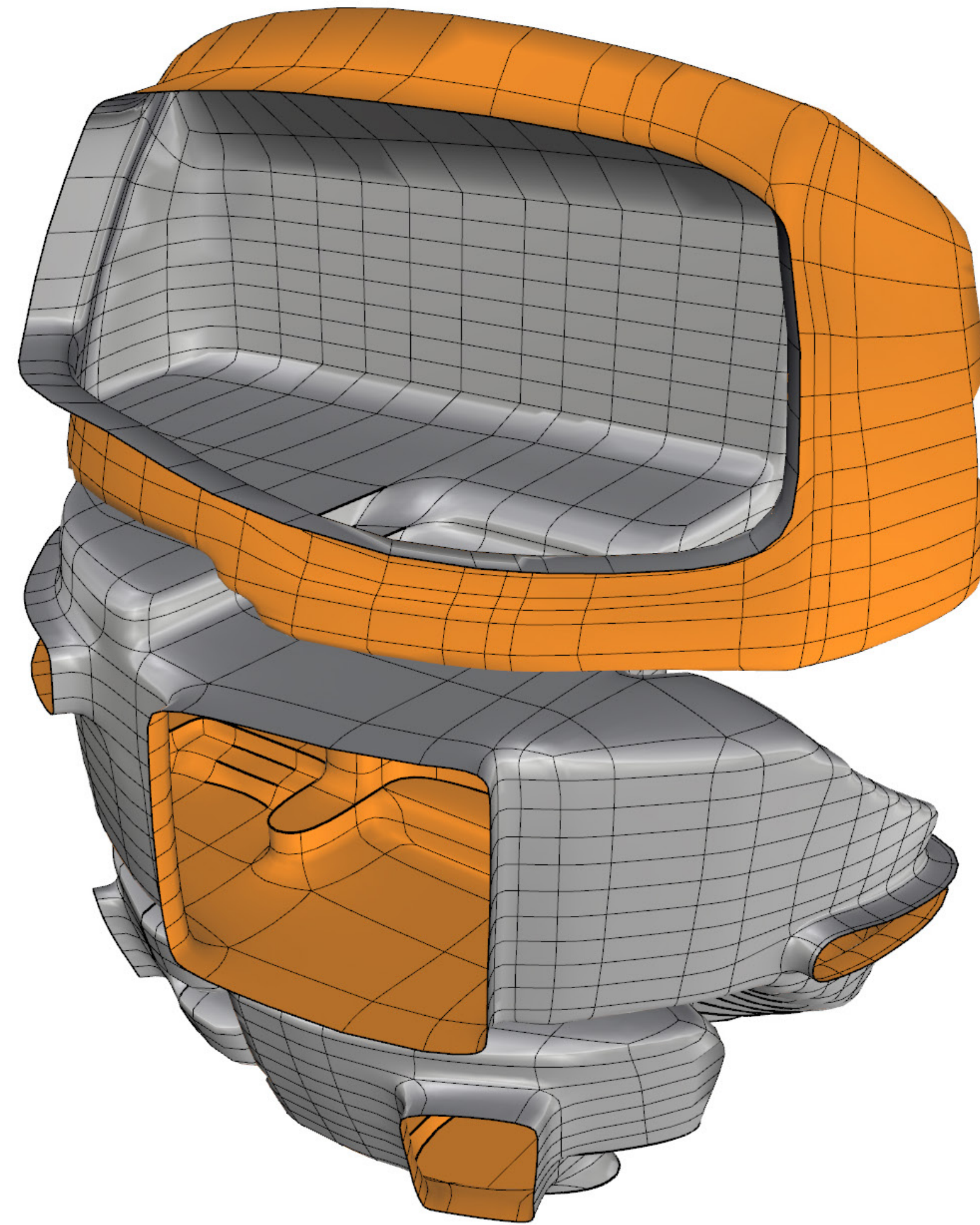
PROTOTYPE_01

double-curved & cross-laminated



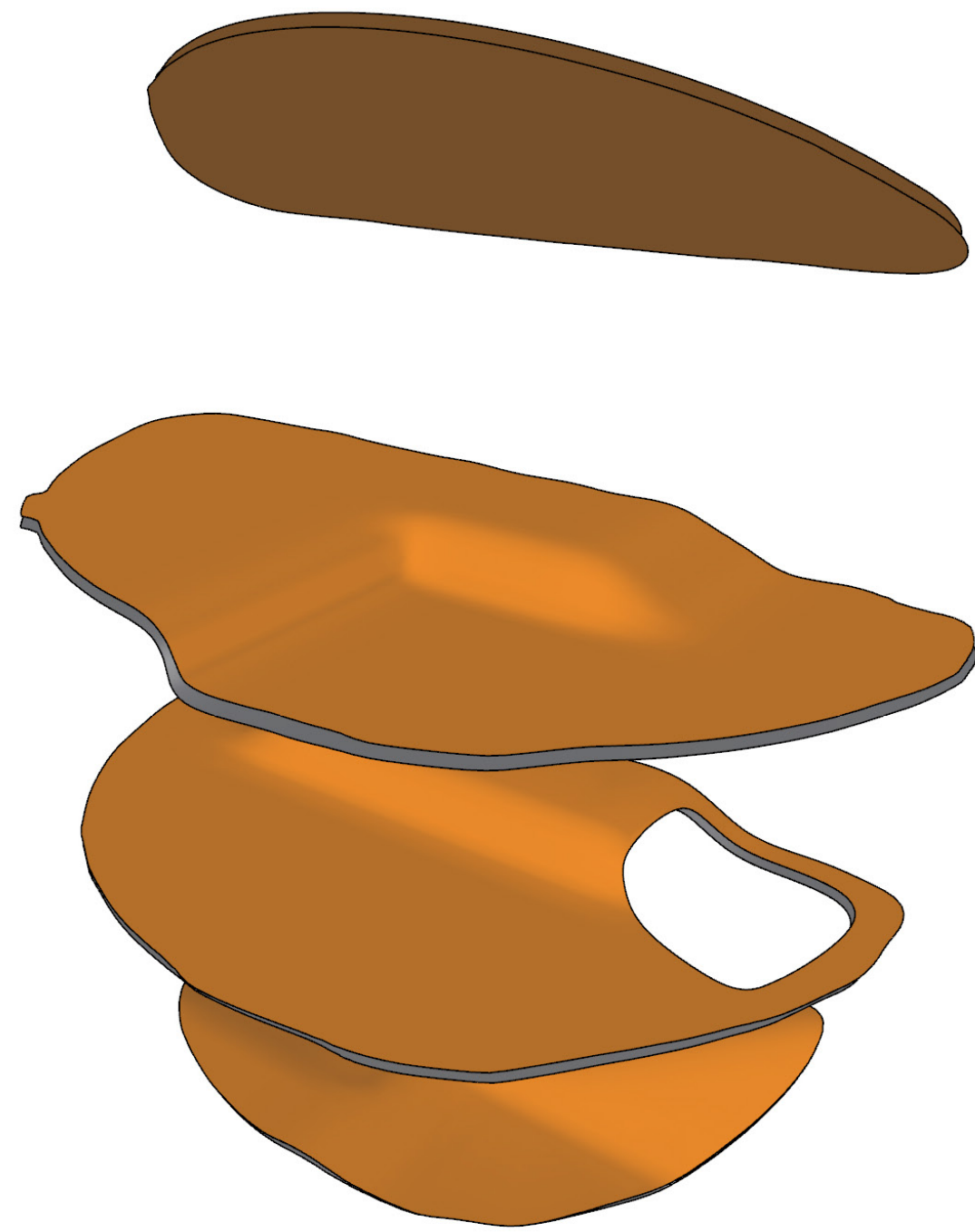
MOLDING

double curved CLT

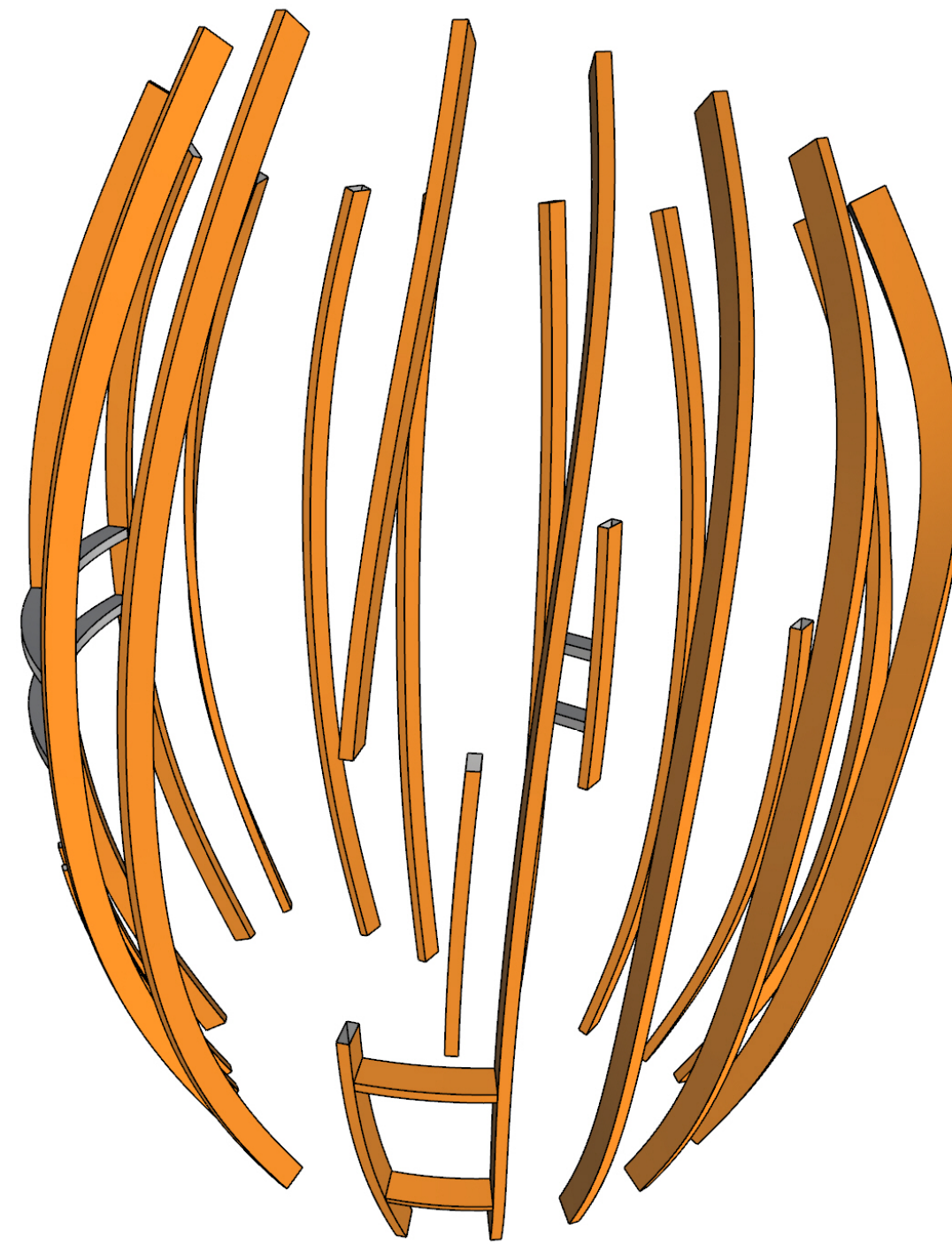


CONSTRUCTION

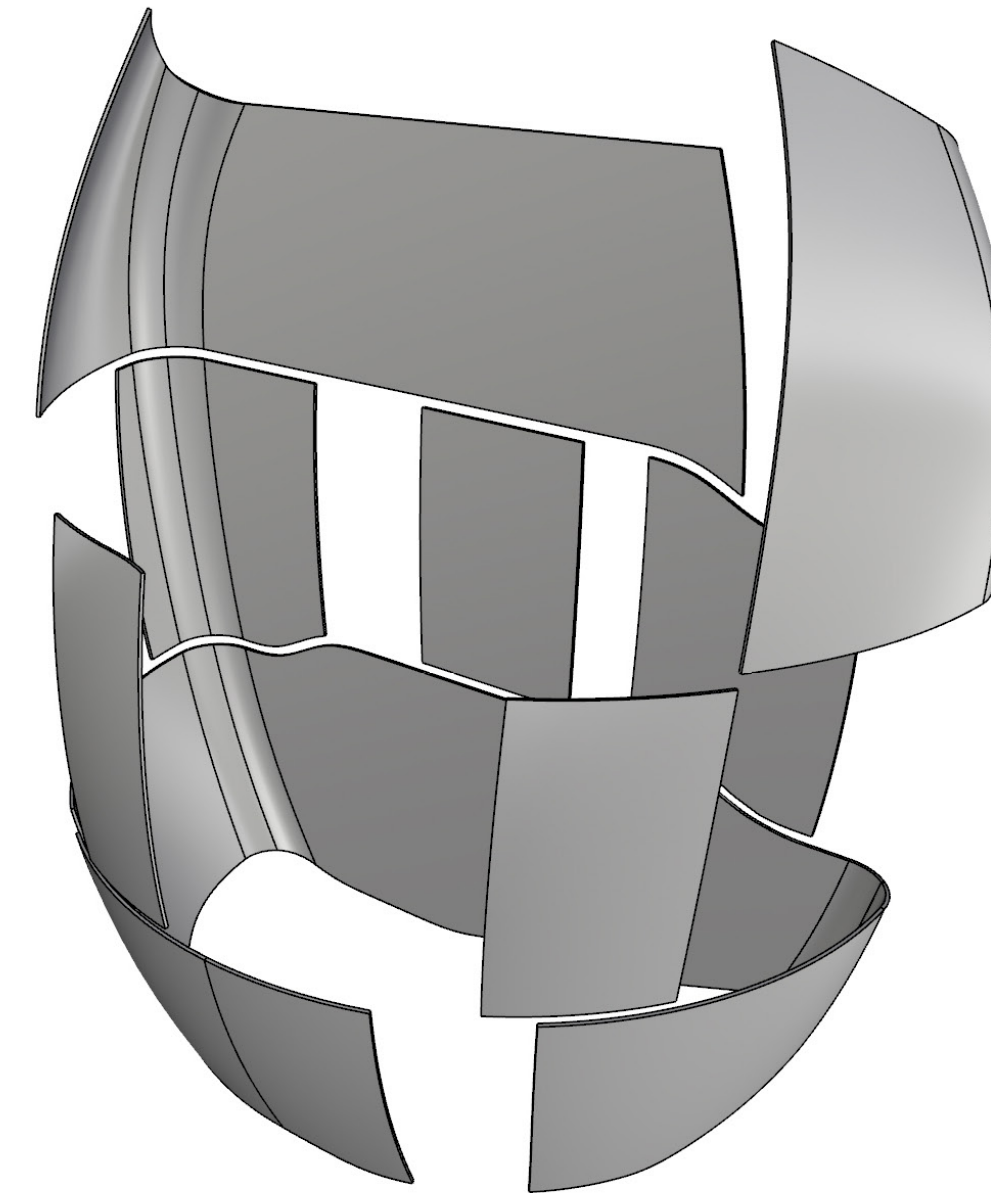
iterative subdivision



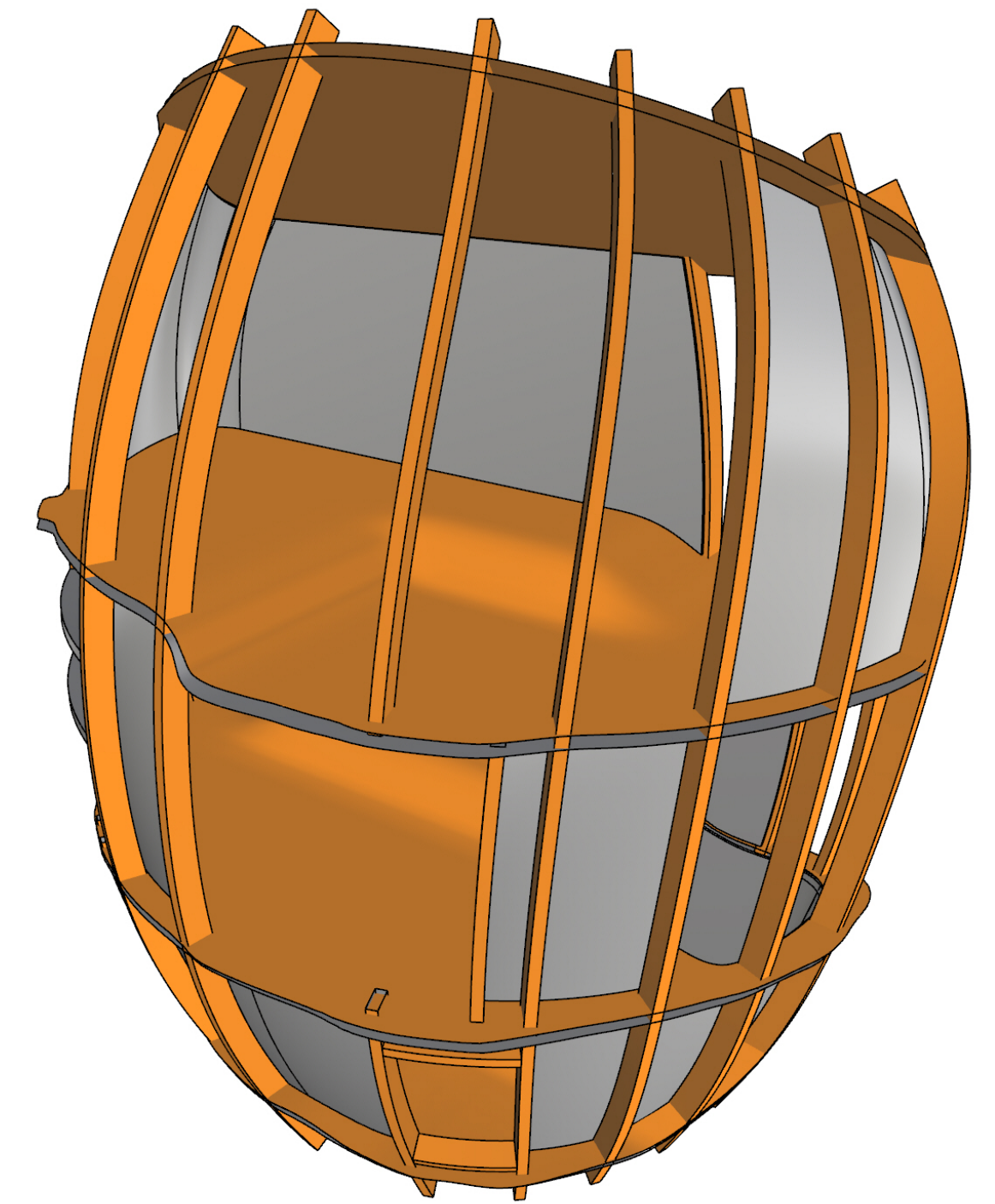
CLT floor



*freeform beams
(main vertical structure)*



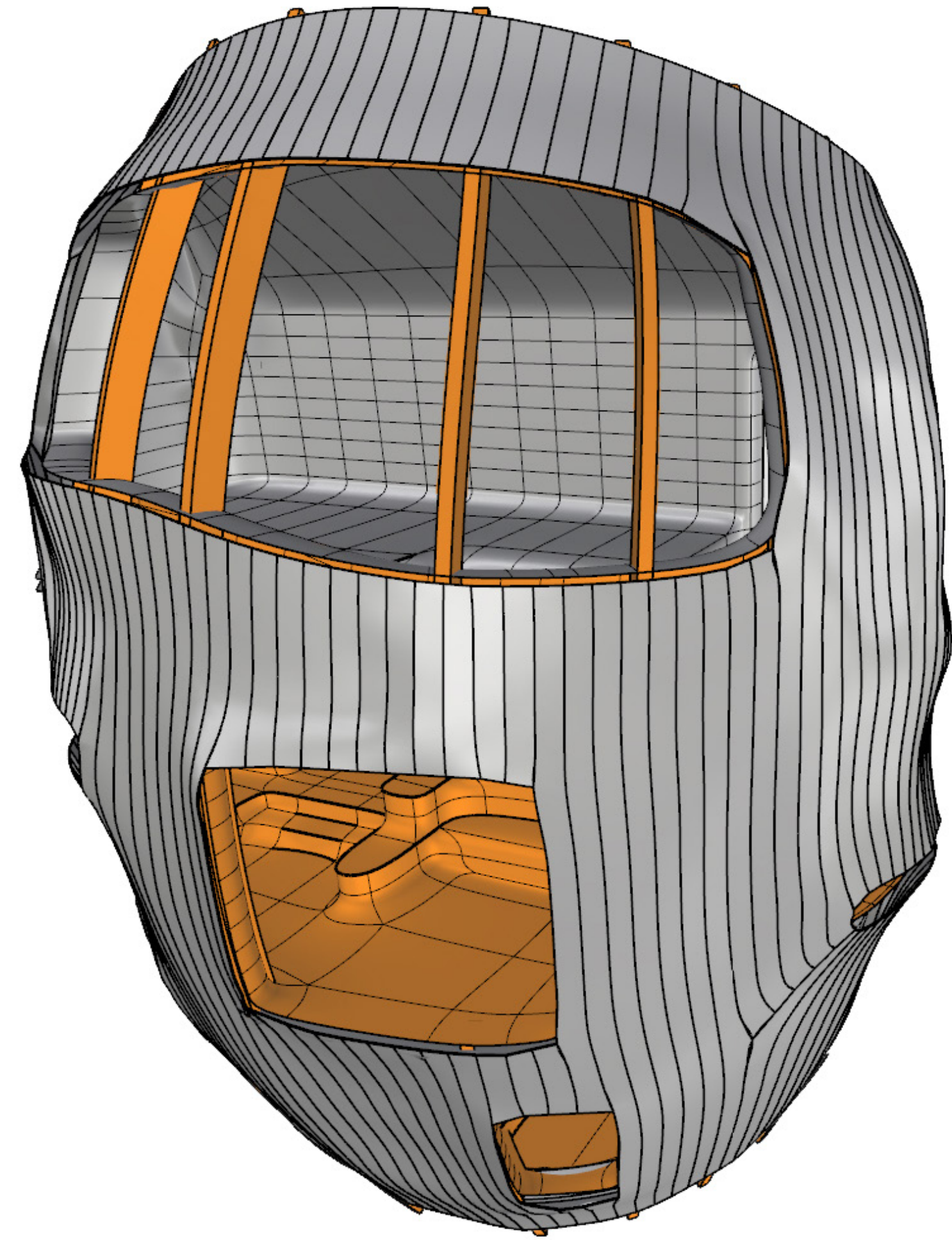
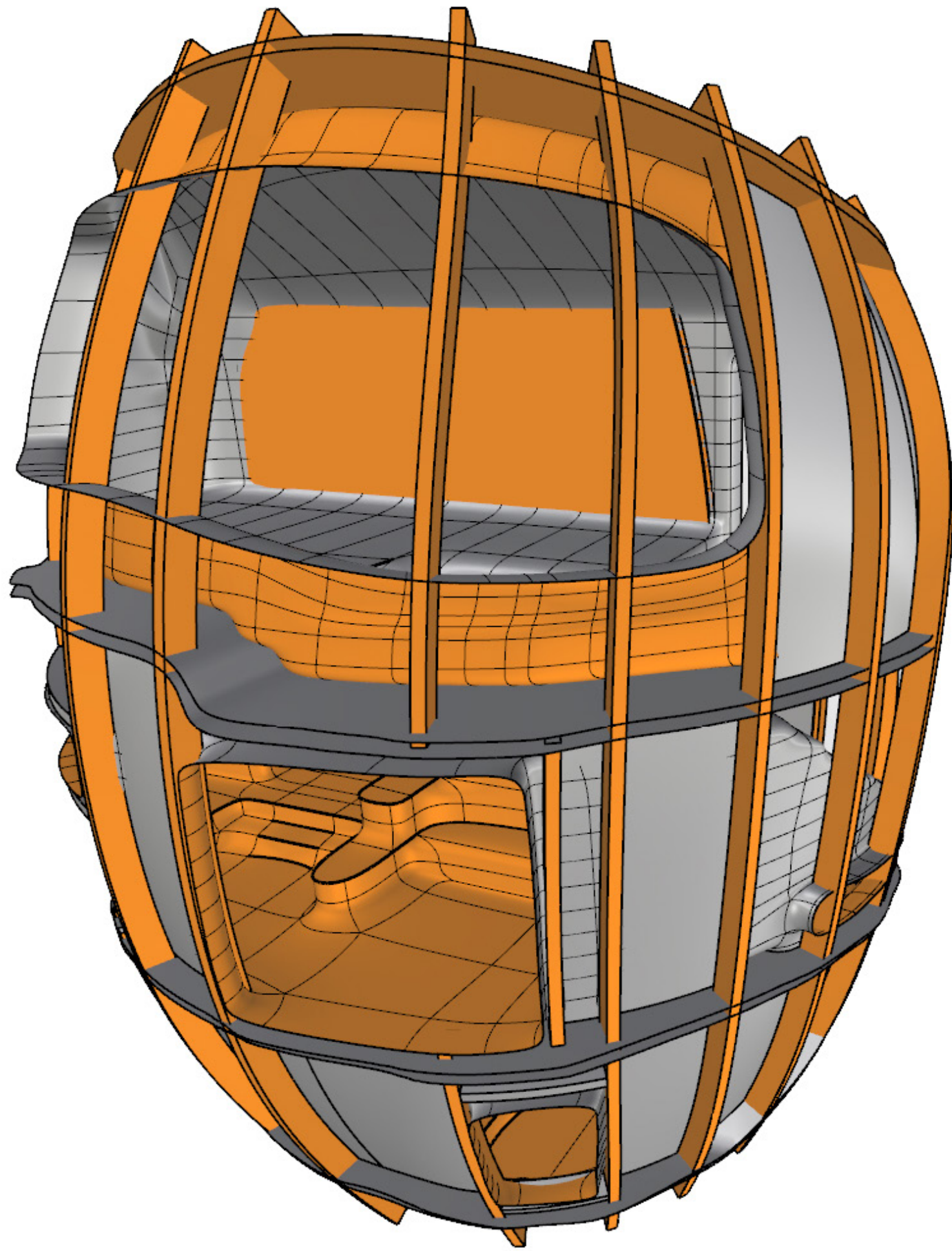
*CLT panels
(reinforcement)*



combined result

CONSTRUCTION

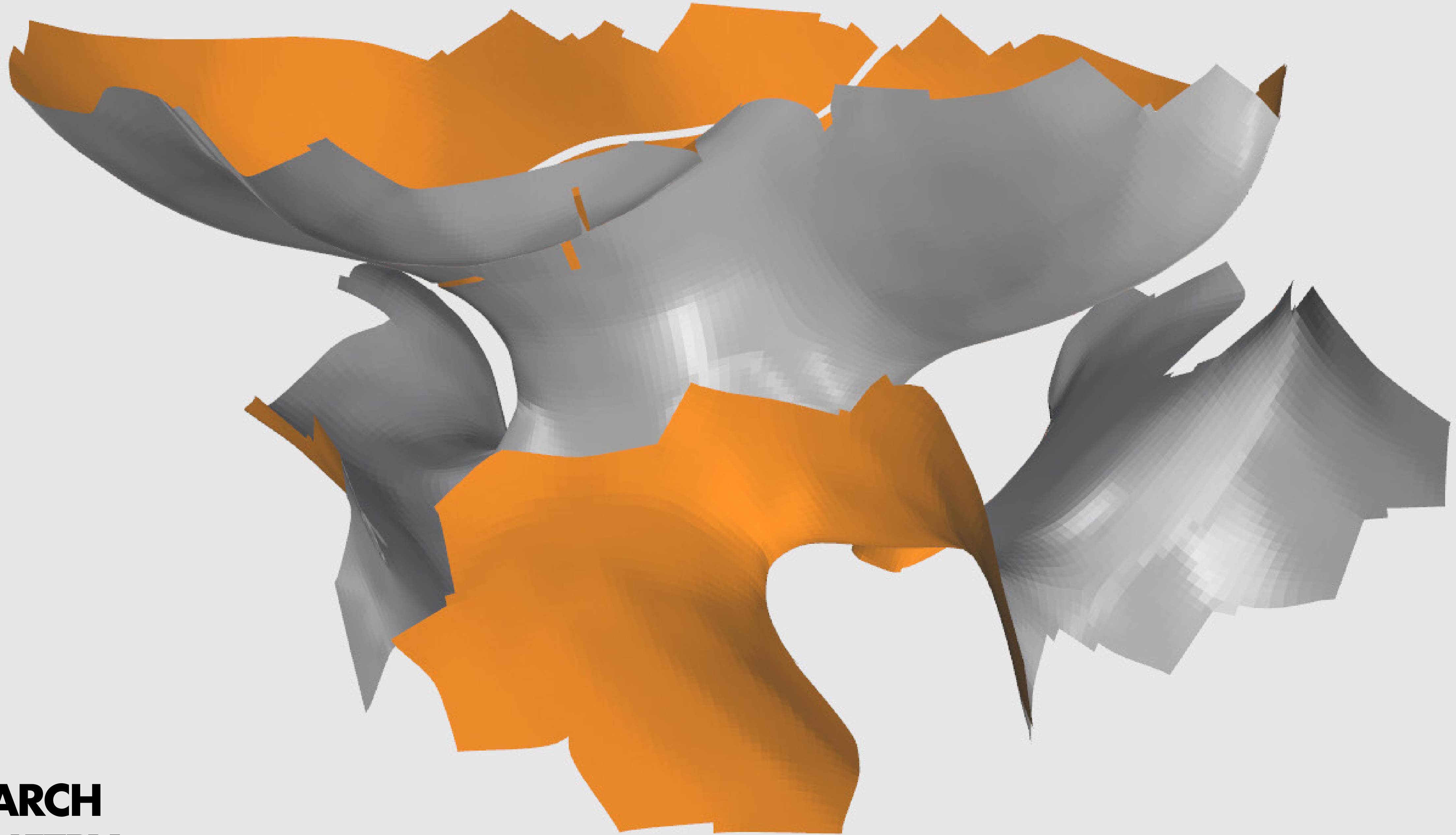
constructive elements





PROTOTYPE_02

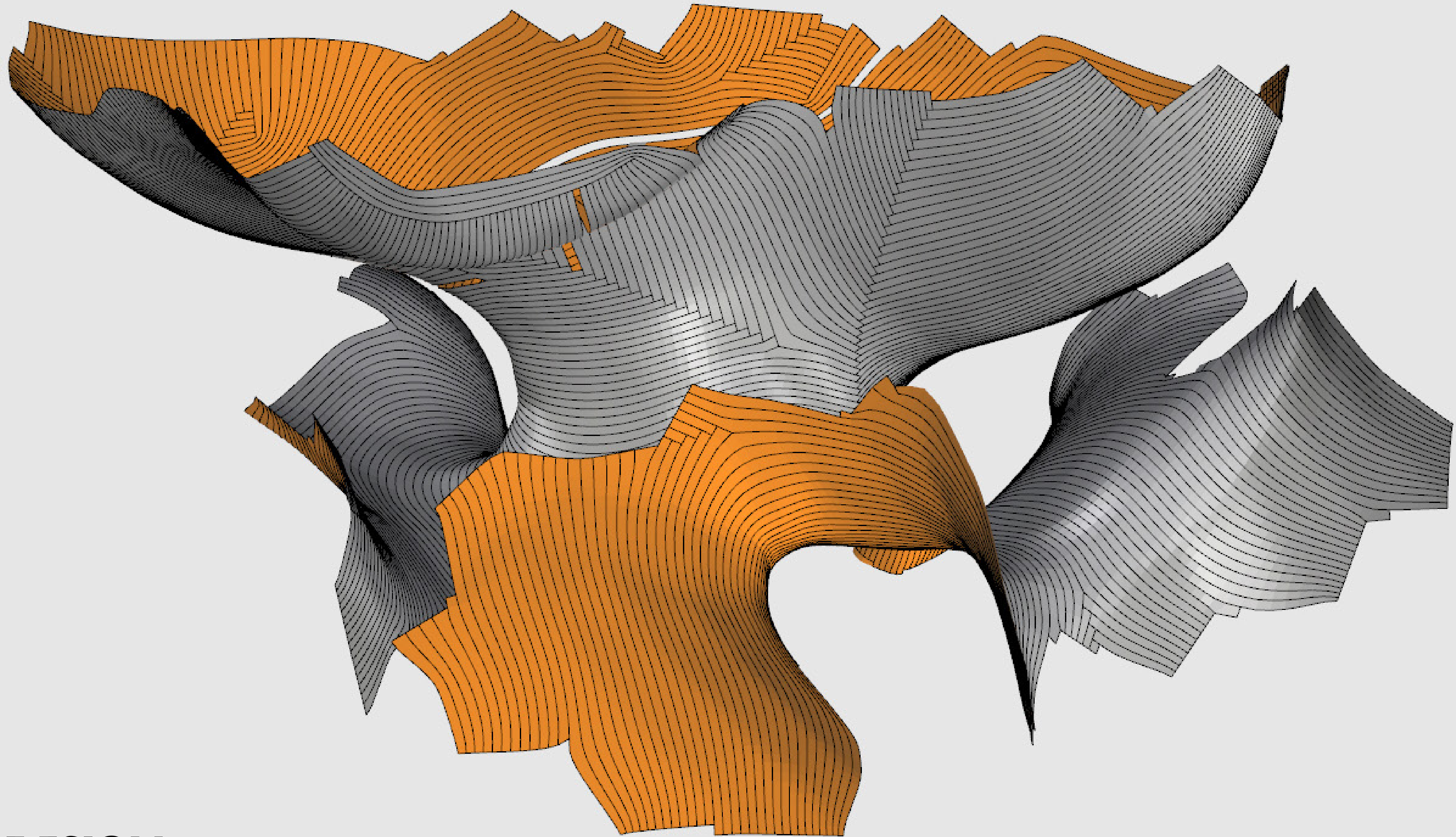
riveted wood strips



**RESEARCH
GEOMETRY**

geometric preperation

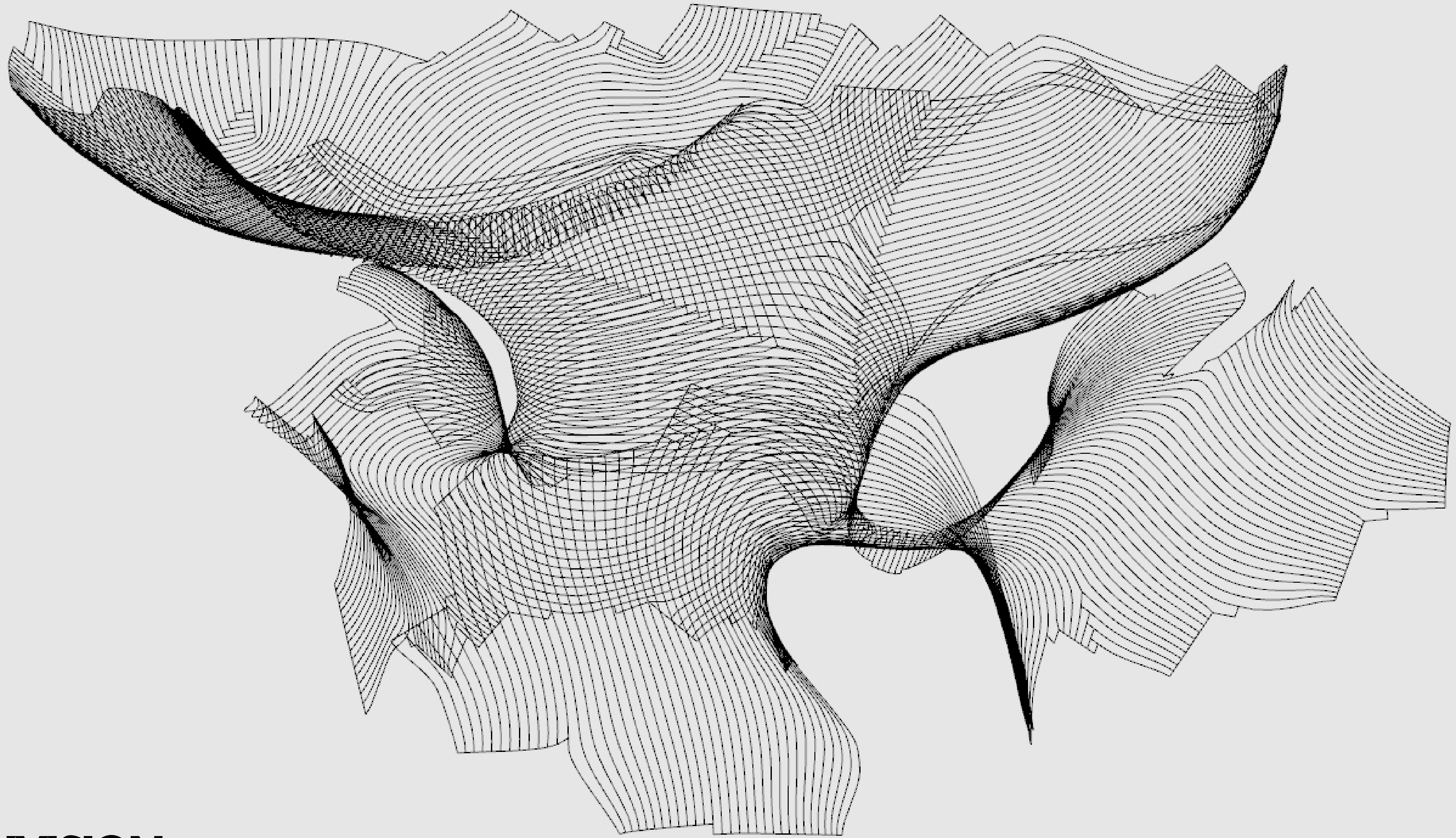




SUBDIVISION

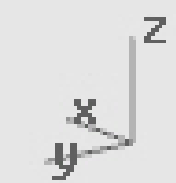
linear subdivision into strips

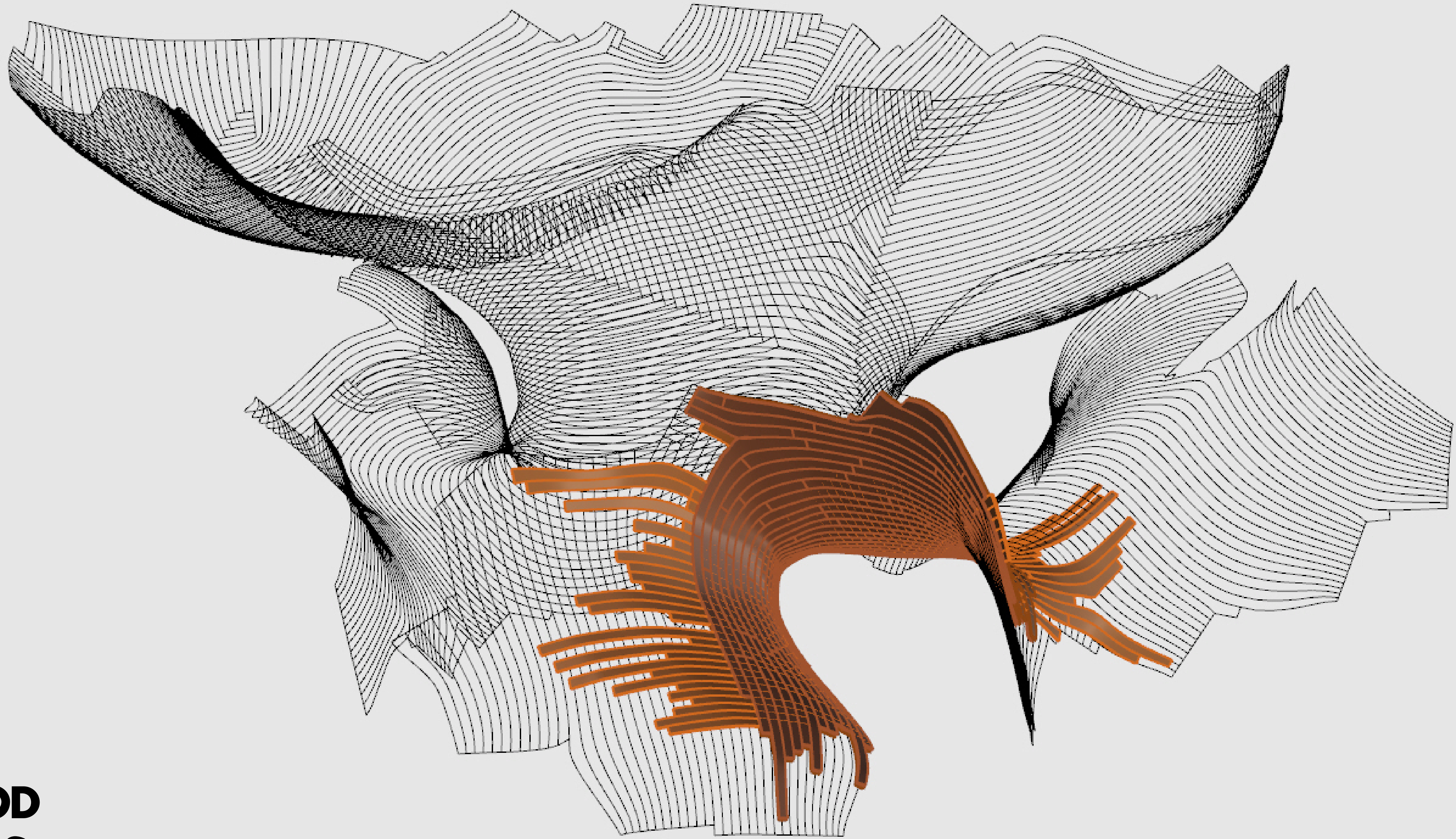




SUBDIVISION

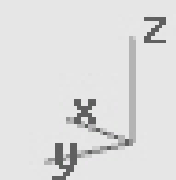
linear subdivision into strips

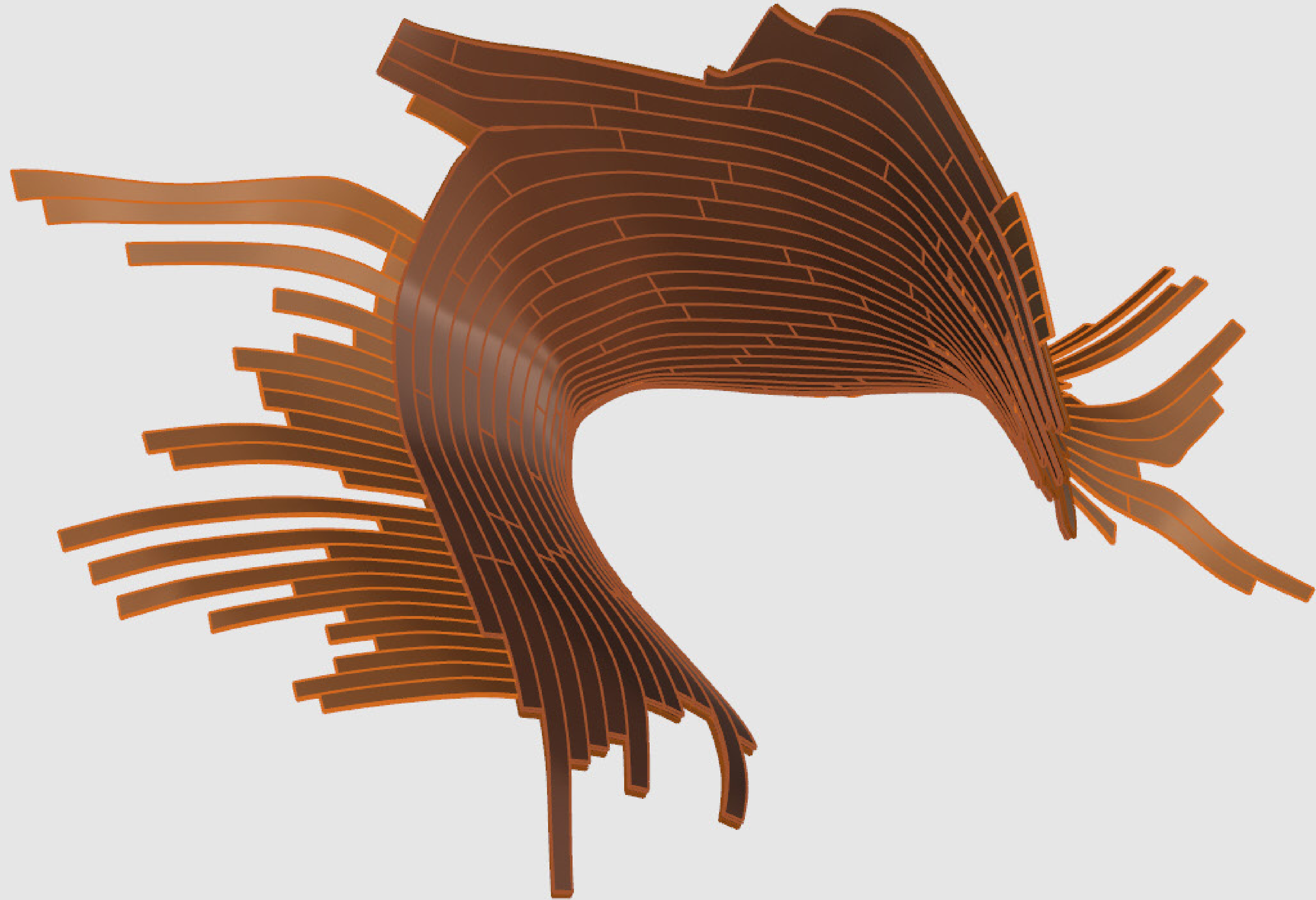




WOOD STRIPS

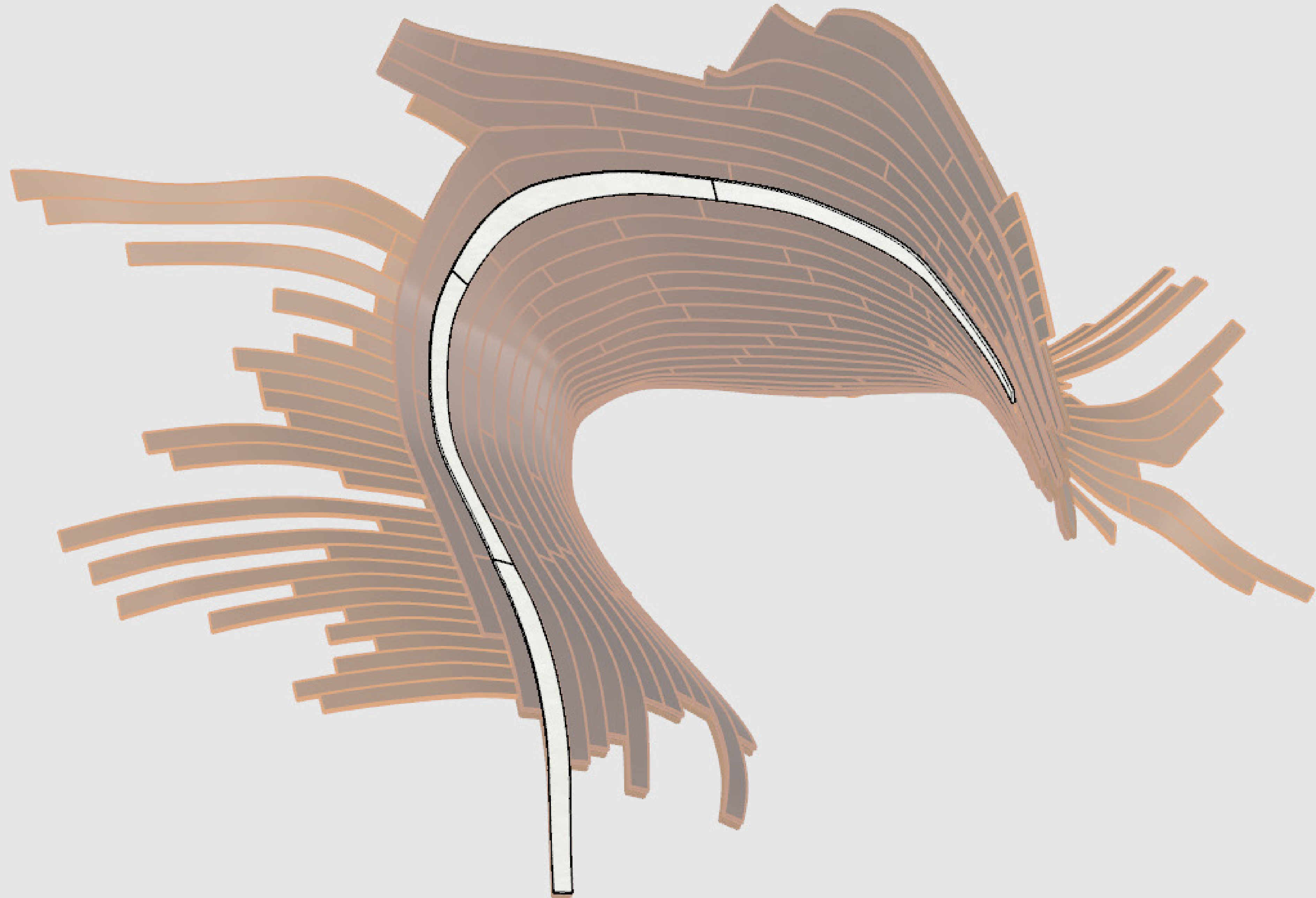
parametric thickness





WOOD STRIPS

cross layering

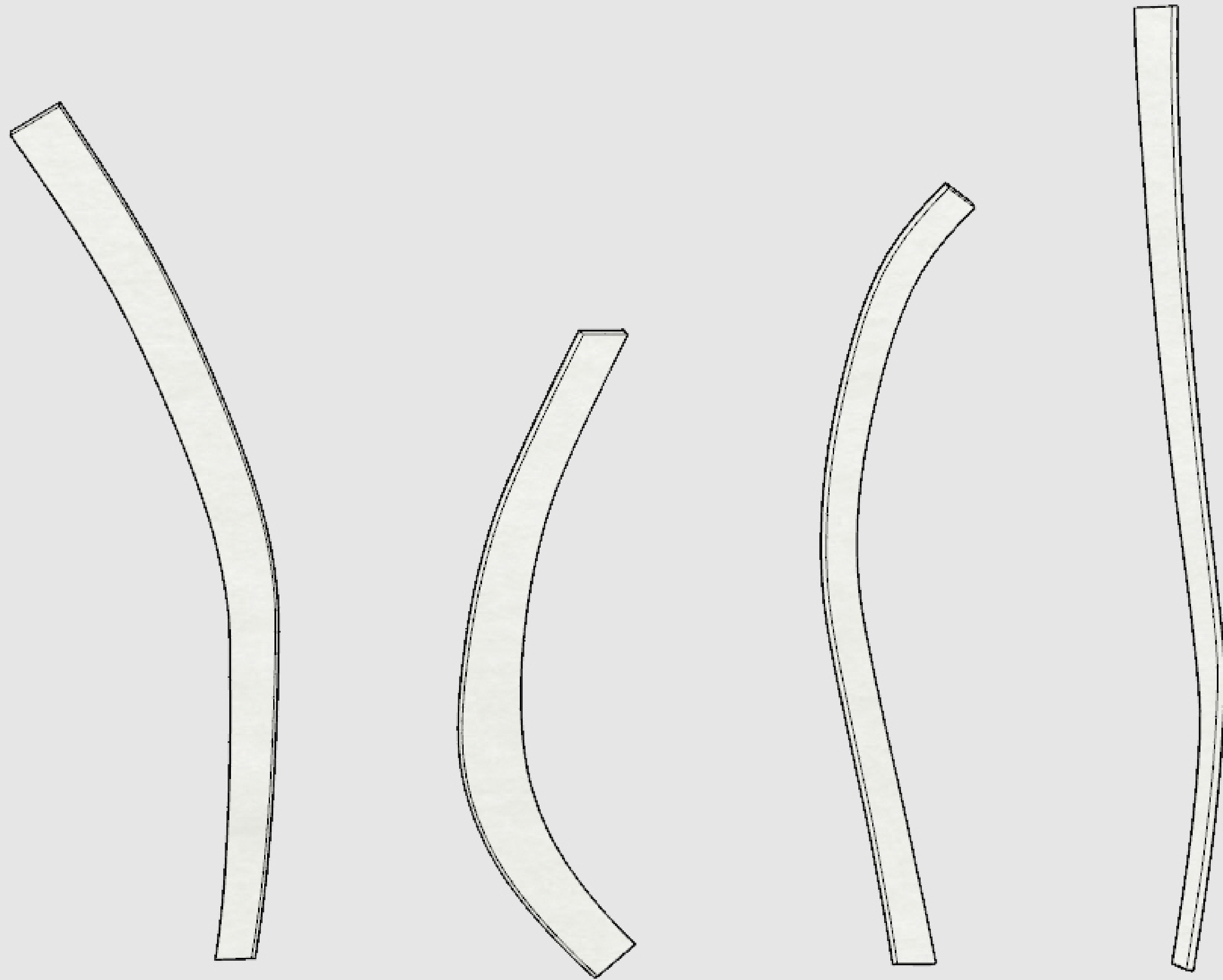


WOOD STRIPS

cross layering

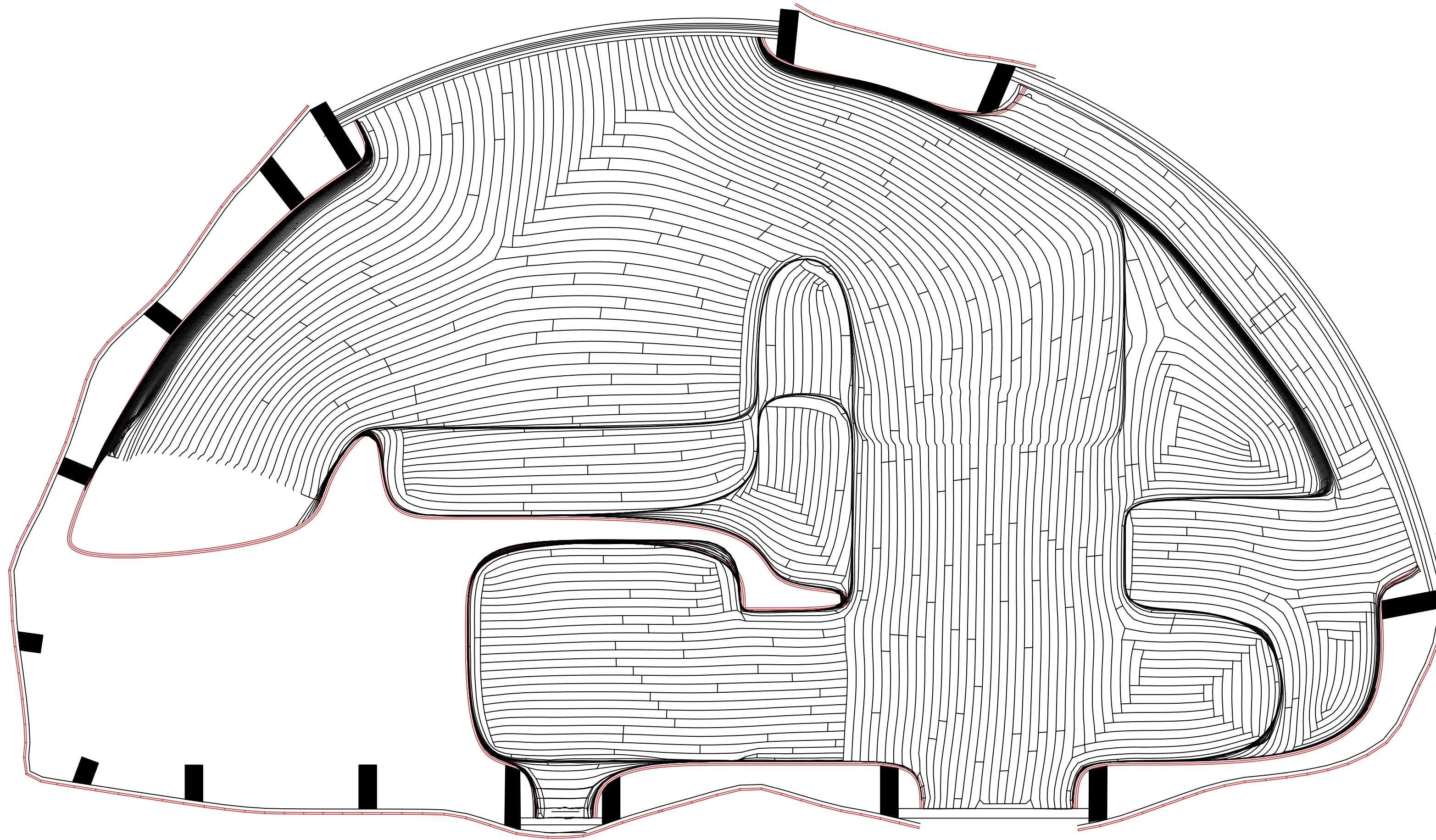
UNIQUE STRIPS

complex bended wood



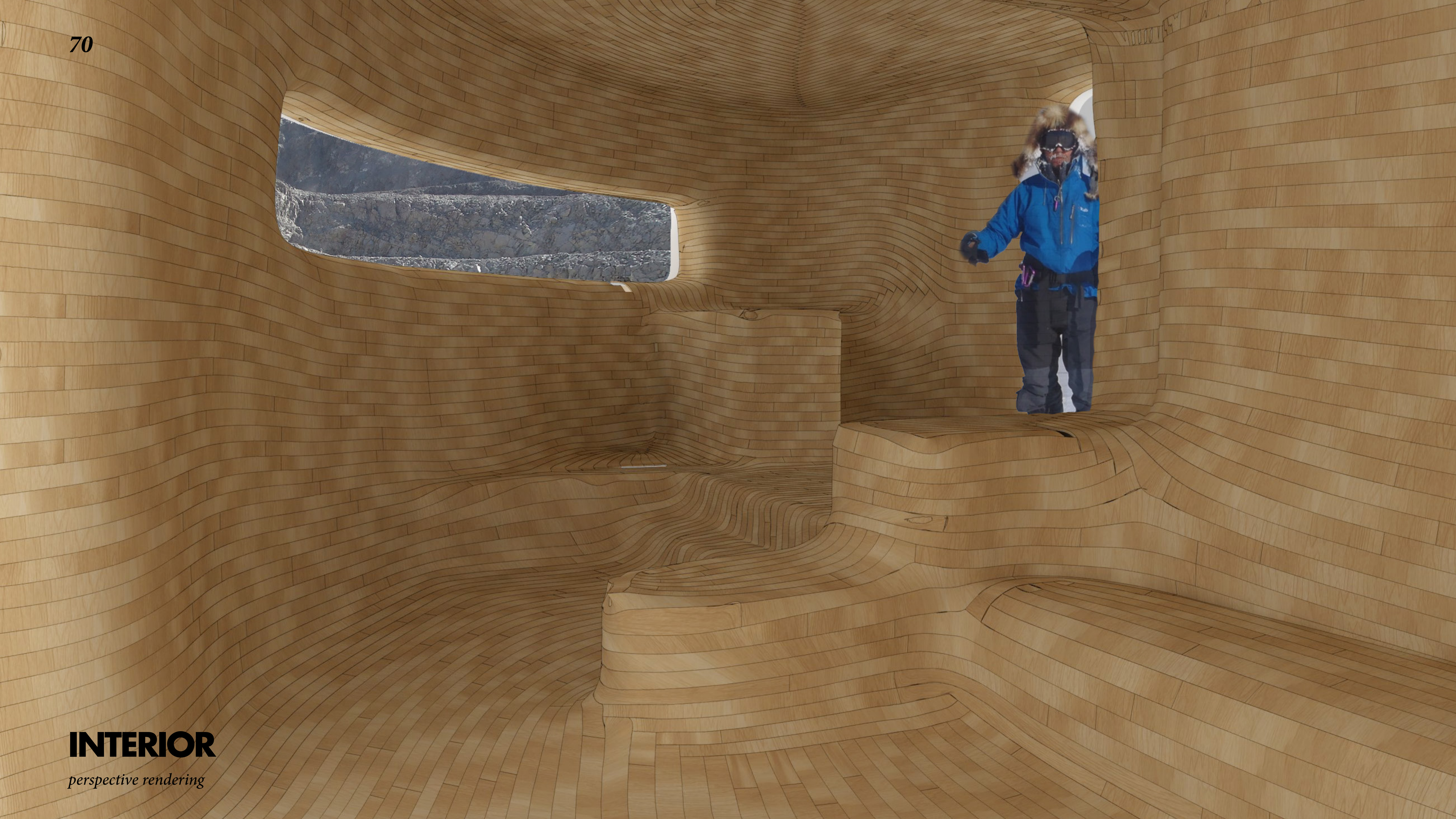
**VIDEO
STRIPS**

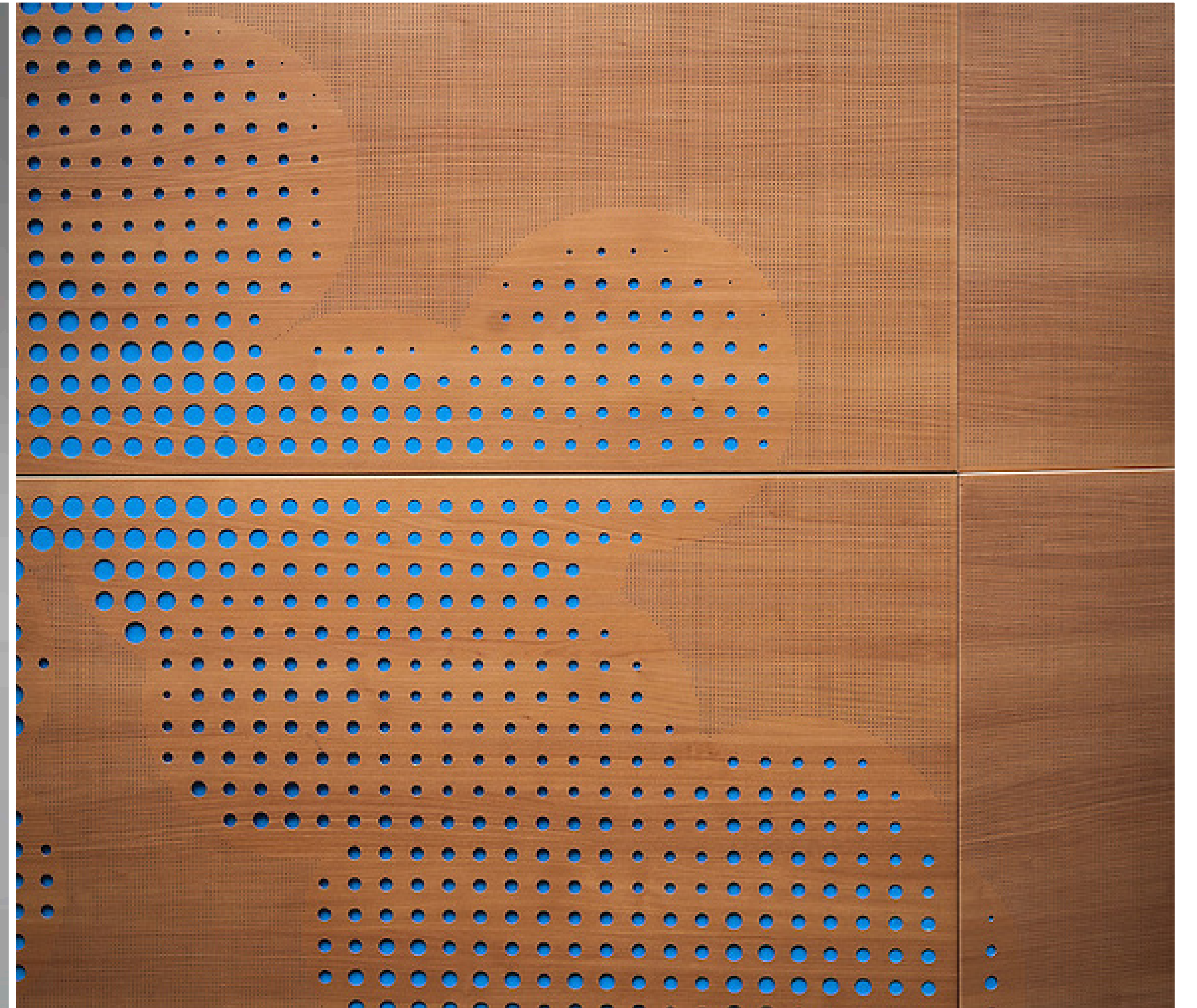
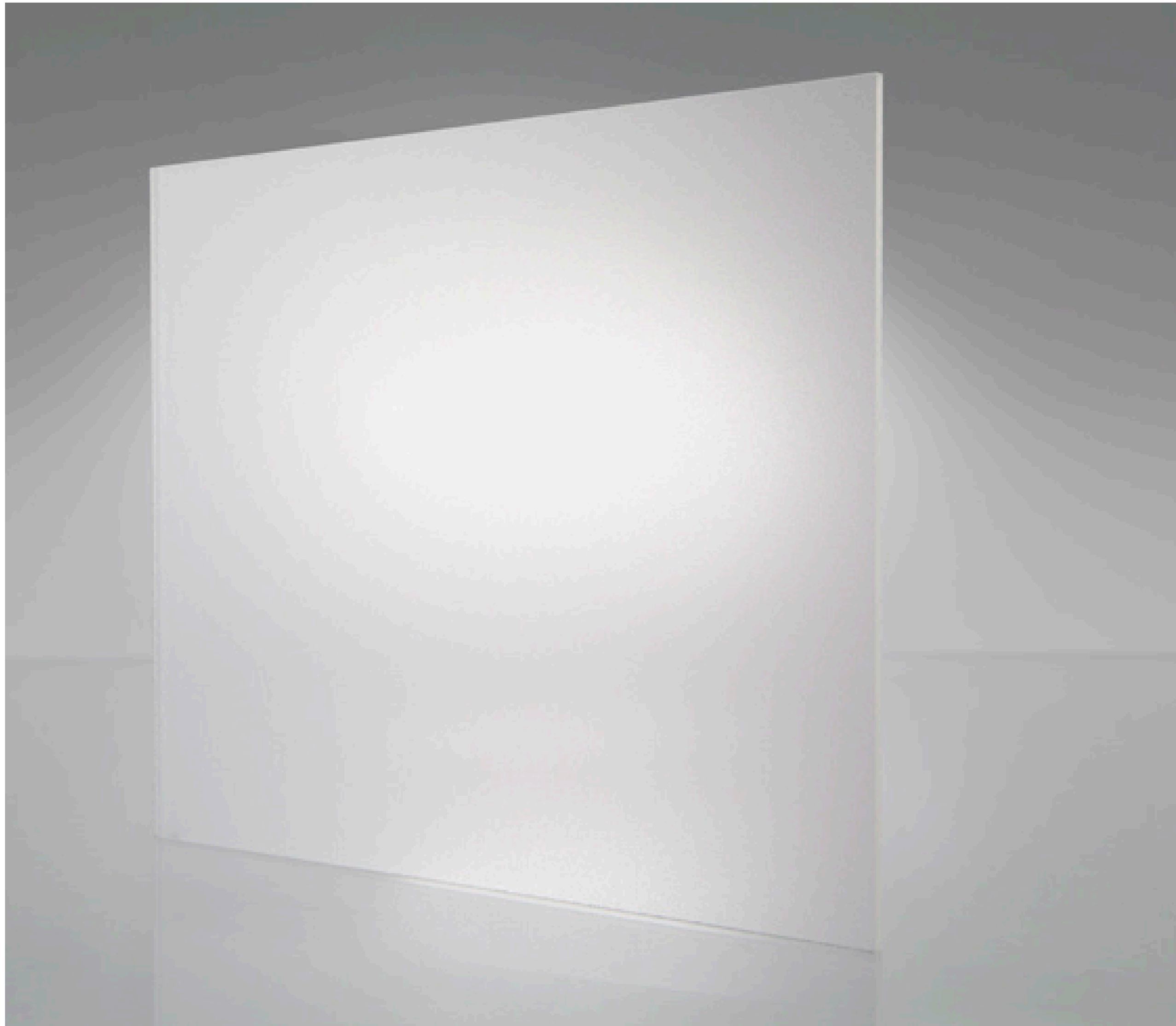
iterative subdivision



VIDEO

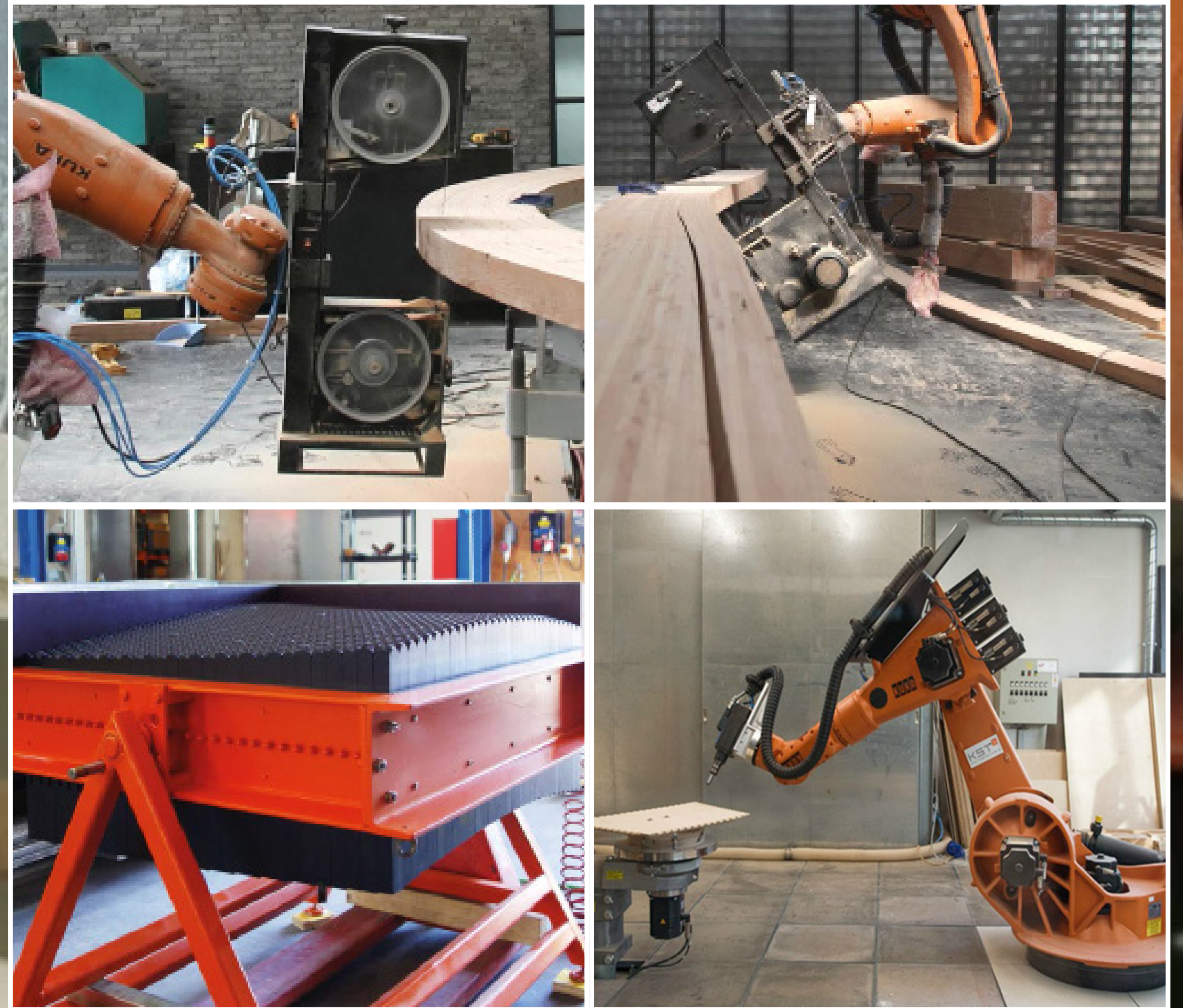
iterative subdivision





INTEGRATION INTO STRIPS

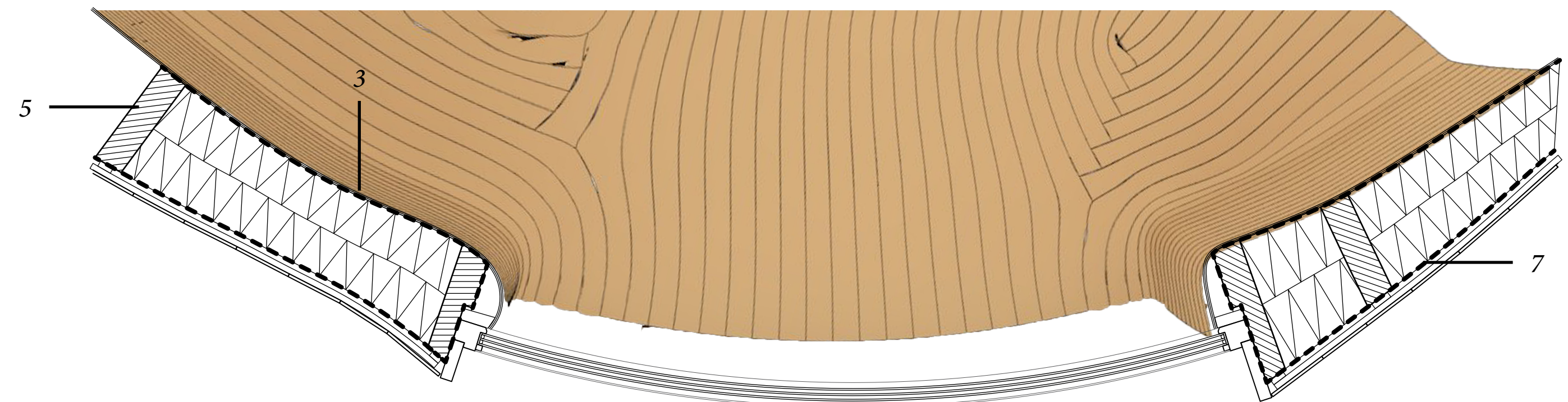
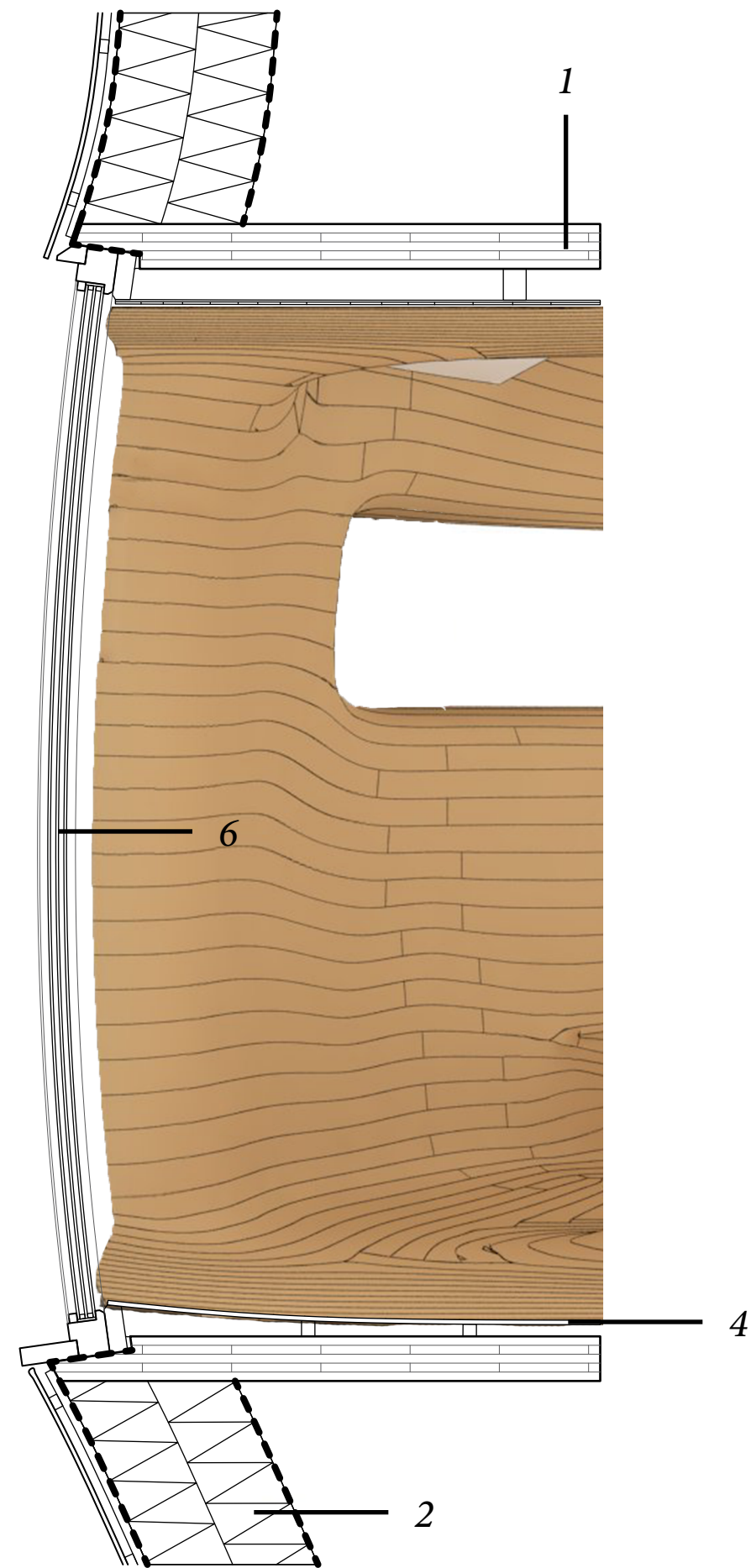
iterative subdivision



FABRICATION

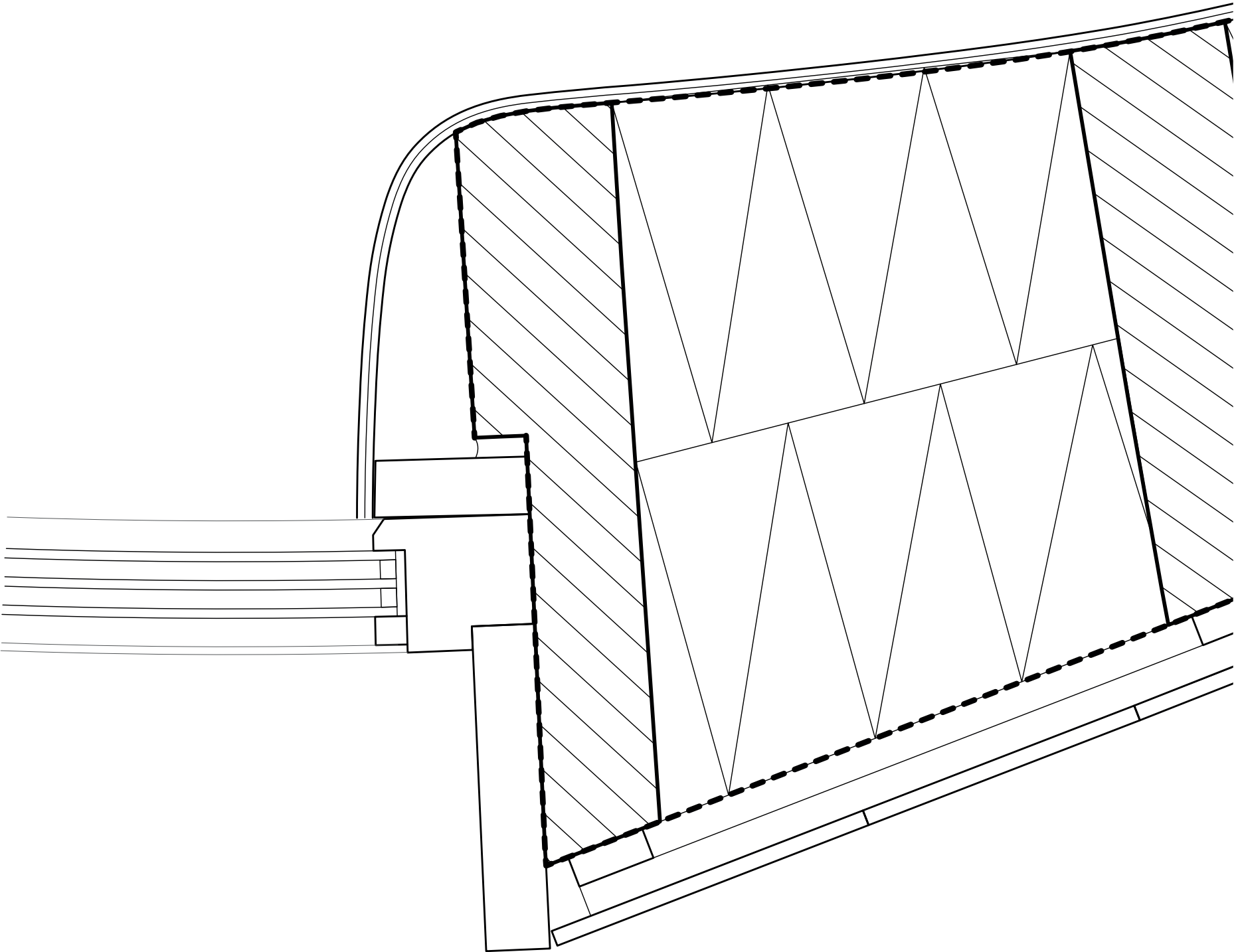
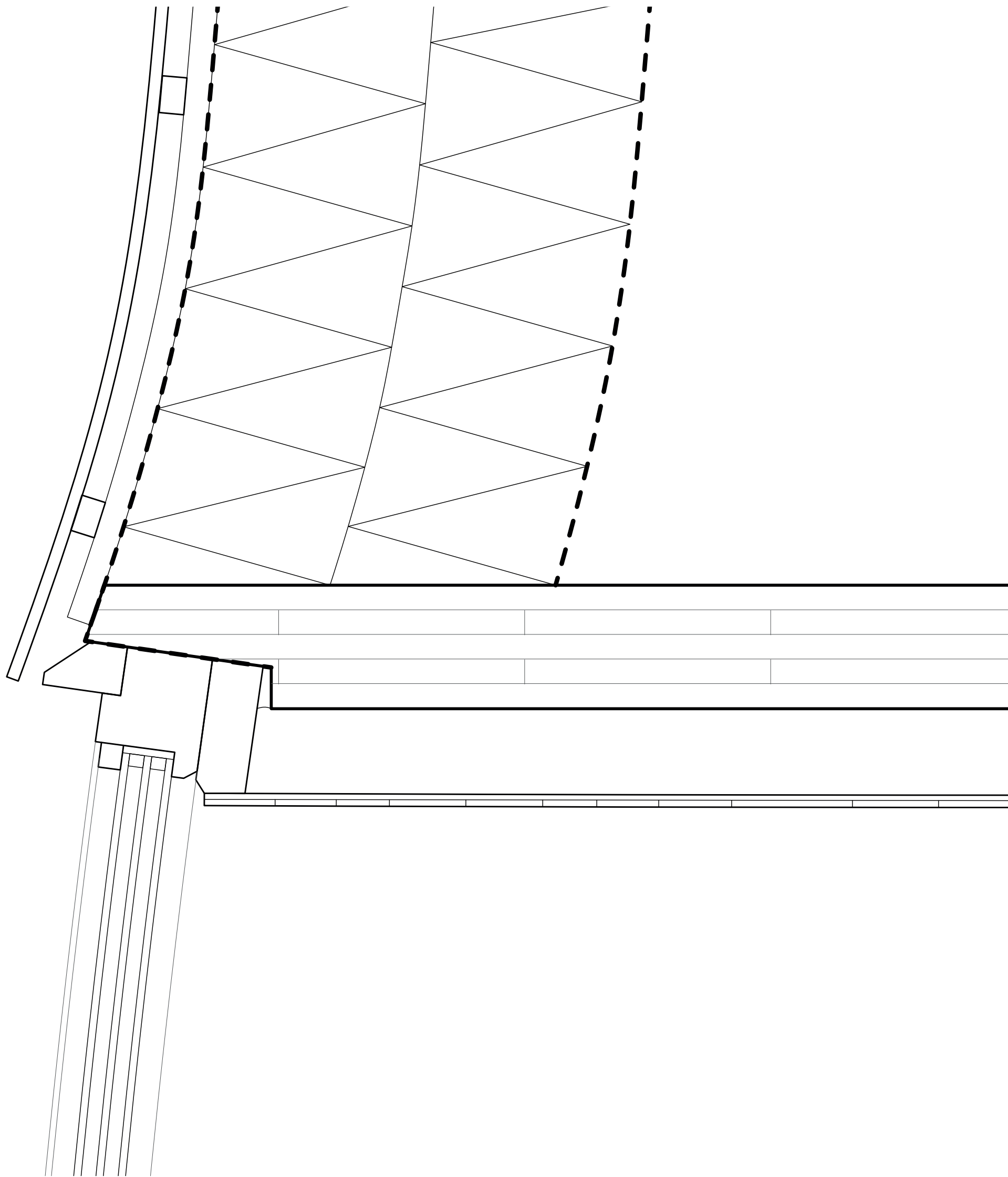
robotic milling + steam bending

- 1 100mm CLT panel
5 layer 12mm birch,
weather sealed
- 2 360 mm wood fiber insulation
 $\lambda_D 0,036 [W/(m \cdot K)]$
- 3 vapour barrier
- 4 10 mm birch strips,
riveted
- 5 beam, birch
robotically cut
- 6 high insulation window,
triple glazed
wood frameing
- 7 wind barrier



CONSTRUCTION

section 1:20





EXTERIOR
perspective impression