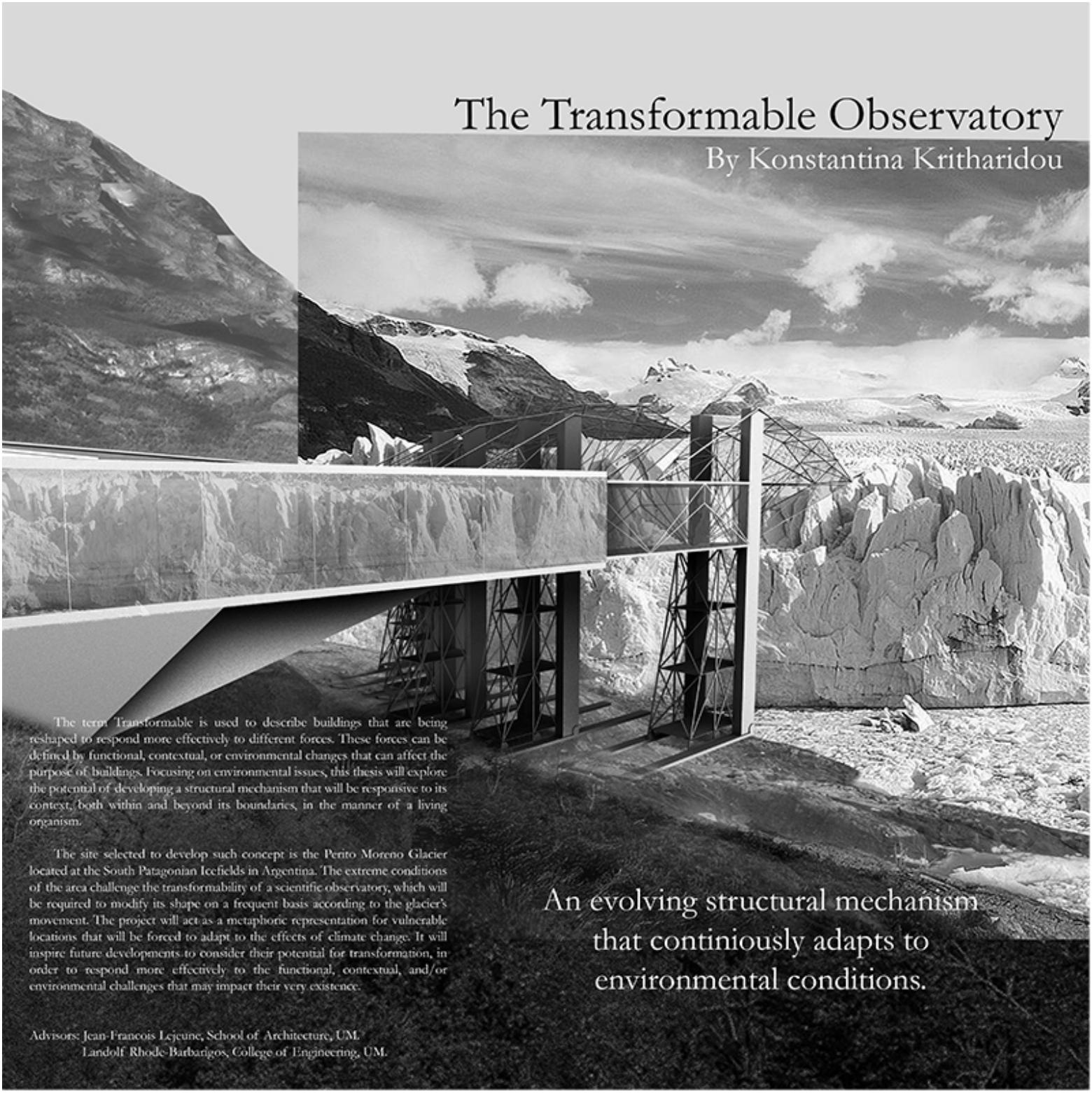
The Transformable Observatory

By Konstantina Kritharidou

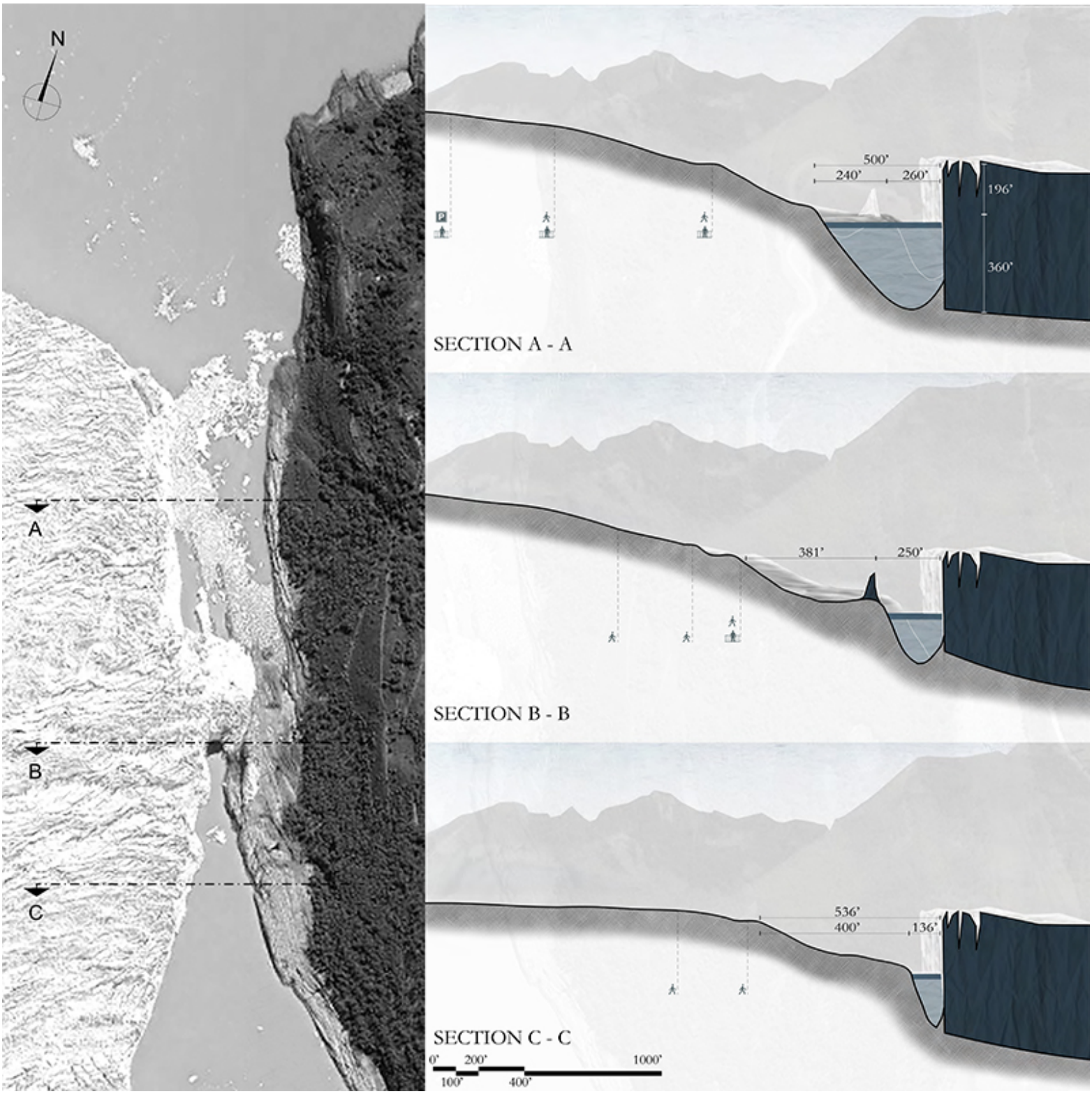


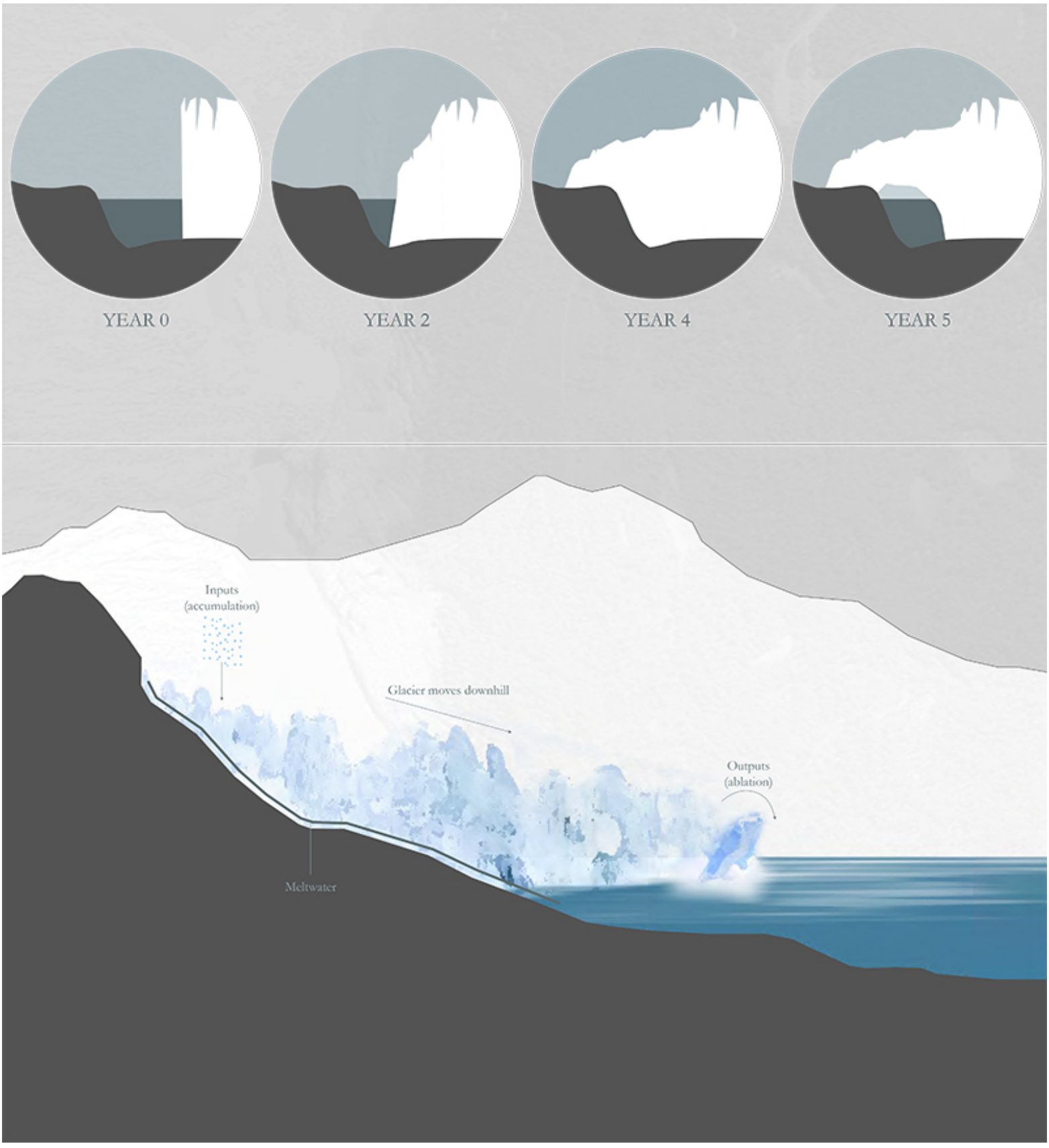
The term Transformable is used to describe buildings that are being reshaped to respond more effectively to different forces. These forces can be defined by functional, contextual, or environmental changes that can affect the purpose of buildings. Focusing on environmental issues, this thesis will explore the potential of developing a structural mechanism that will be responsive to its context, both within and beyond its boundaries, in the manner of a living organism.

The site selected to develop such concept is the Perito Moreno Glacier located at the South Patagonian Icefields in Argentina. The extreme conditions of the area challenge the transformability of a scientific observatory, which will be required to modify its shape on a frequent basis according to the glacier's movement. The project will act as a metaphoric representation for vulnerable locations that will be forced to adapt to the effects of climate change. It will inspire future developments to consider their potential for transformation, in order to respond more effectively to the functional, contextual, and/or environmental challenges that may impact their very existence.

An evolving structural mechanism that continiously adapts to environmental conditions.

Advisors: Jean-Francois Lejeune, School of Architecture, UM.
Landolf Rhode-Barbarigos, College of Engineering, UM.

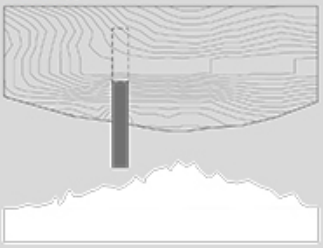

N
A
B
C
500'
240'
260'
196'
360'
SECTION A - A
381'
250'
SECTION B - B
536'
400'
136'
SECTION C - C
0'
200'
1000'
100'
400'


YEAR 0
YEAR 2
YEAR 4
YEAR 5
Inputs
(accumulation)
Glacier moves downhill
Outputs
(ablation)
Meltwater

Conceptual Structural System

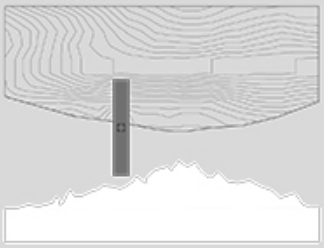
ELEVATIONS
Horizontal (Beam)

PLANS

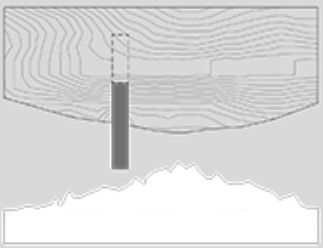


ELEVATIONS
Vertical (Column)

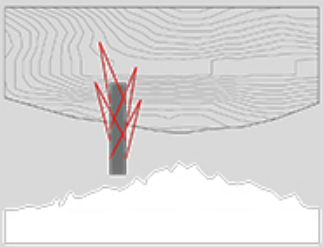
PLANS



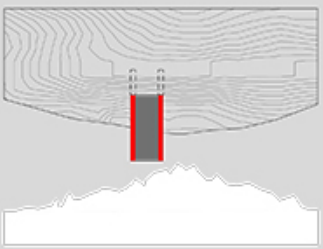
Diagonal Support



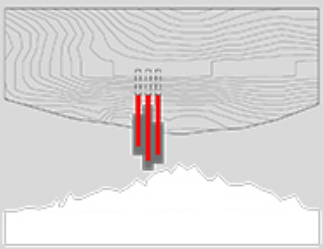
Cable Structure



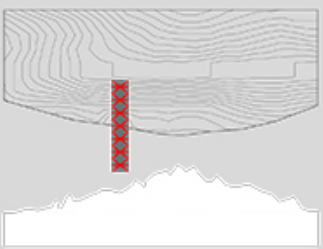
"Hang" Building from beam



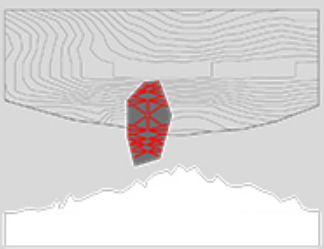
Multiple Beams



Diagrid

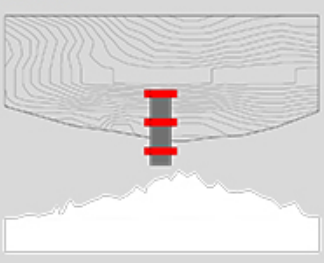


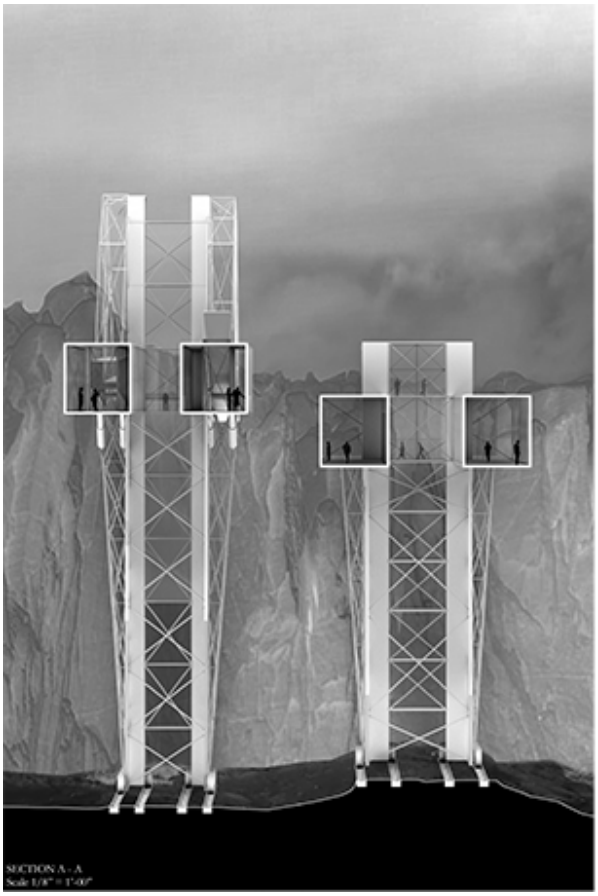
Organic Diagrid



ELEVATIONS
"Hang" Building from "TI" Structure that will also include vertical circulation

PLAN

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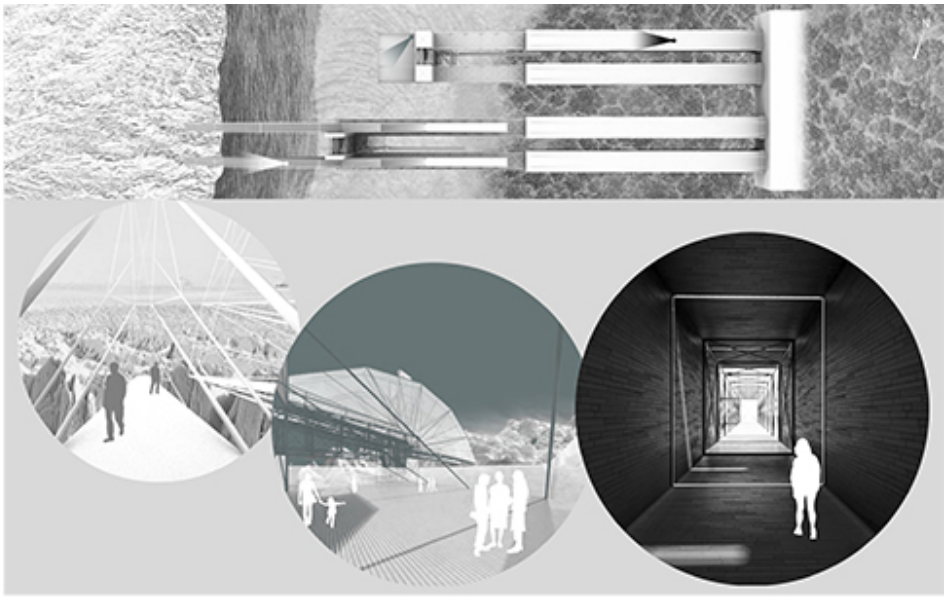
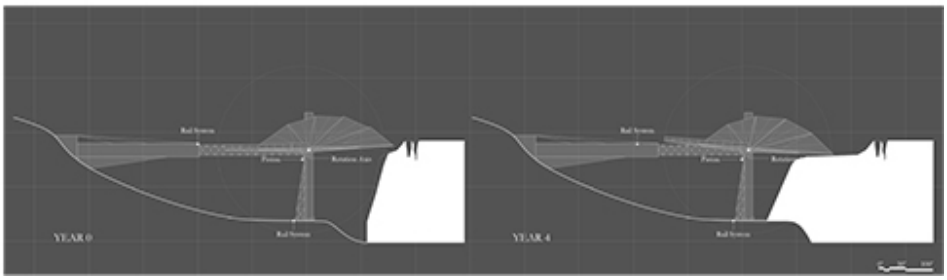
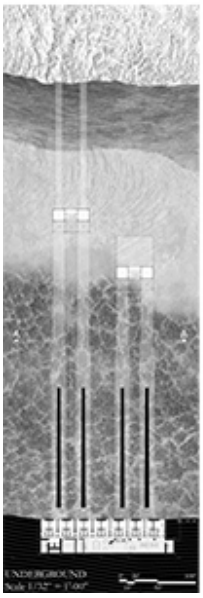
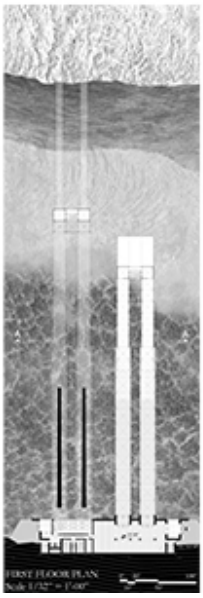
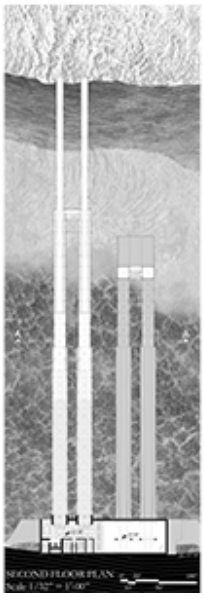
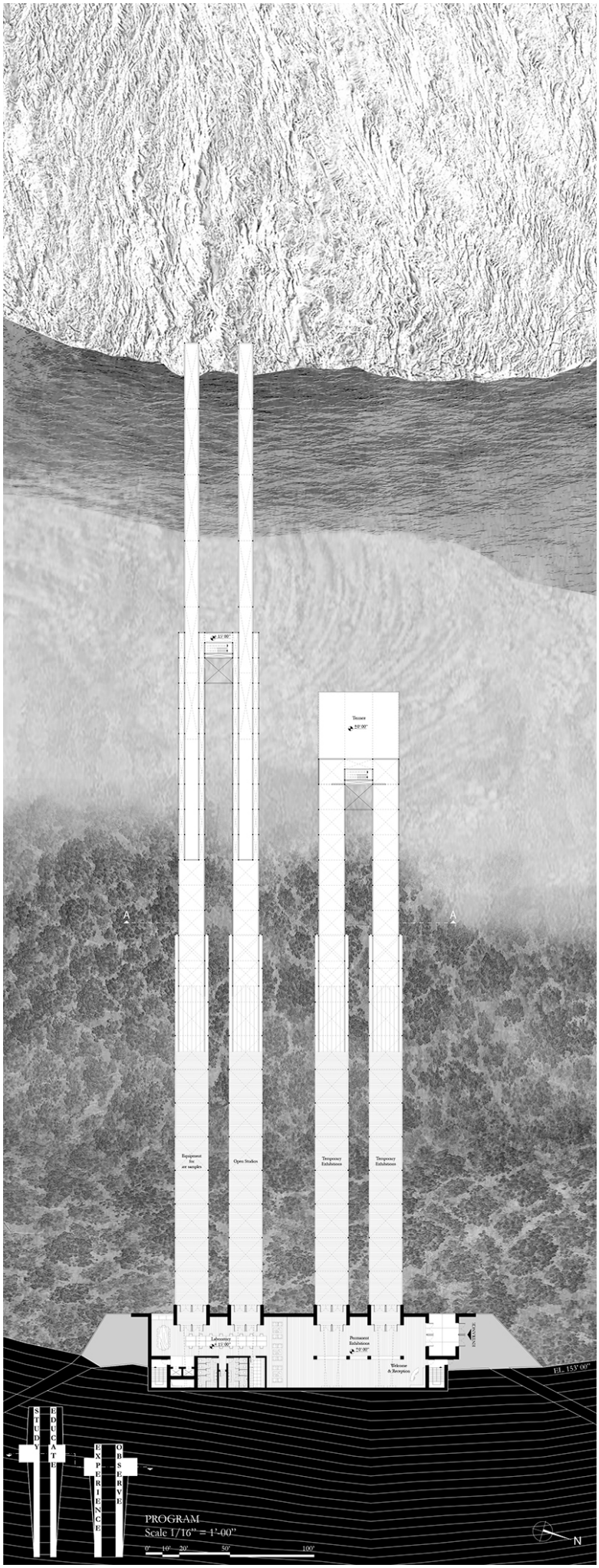


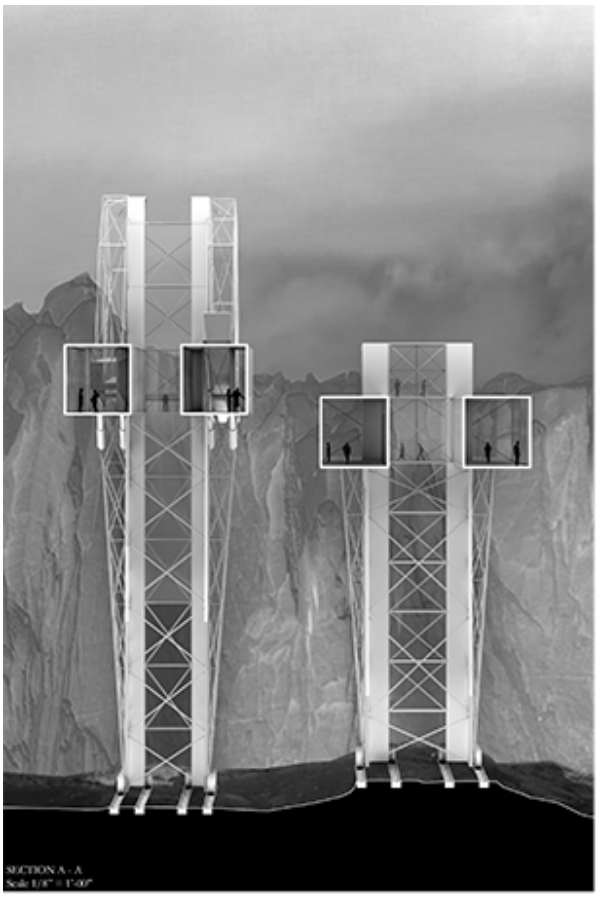

Rail System
Rotation Axis
YEAR 0
YEAR 4


UNDERGROUND


FIRST FLOOR PLAN


SECOND FLOOR PLAN


A
A
Terrace
Equipment for ace samples
Open Studios
Temporary Exhibitions
Temporary Exhibitions
Laboratory
Permanent Exhibitions
Welcome & Reception
Entrance
EL. 153' 00"
STUDY
EDUCATE
EXPERIENCE
OBSERVE
PROGRAM
Scale 1/16" = 1'-00"
0' 10' 20' 50' 100'
N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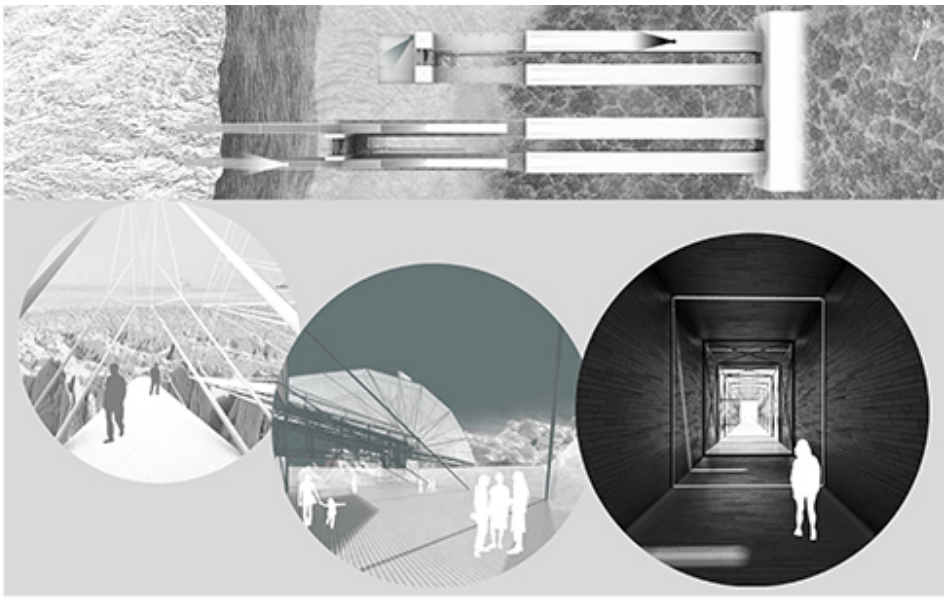
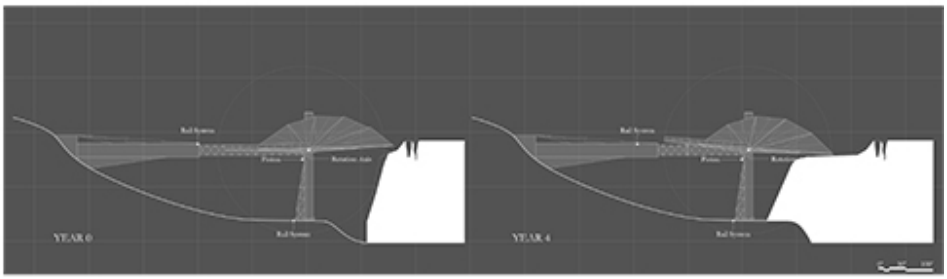
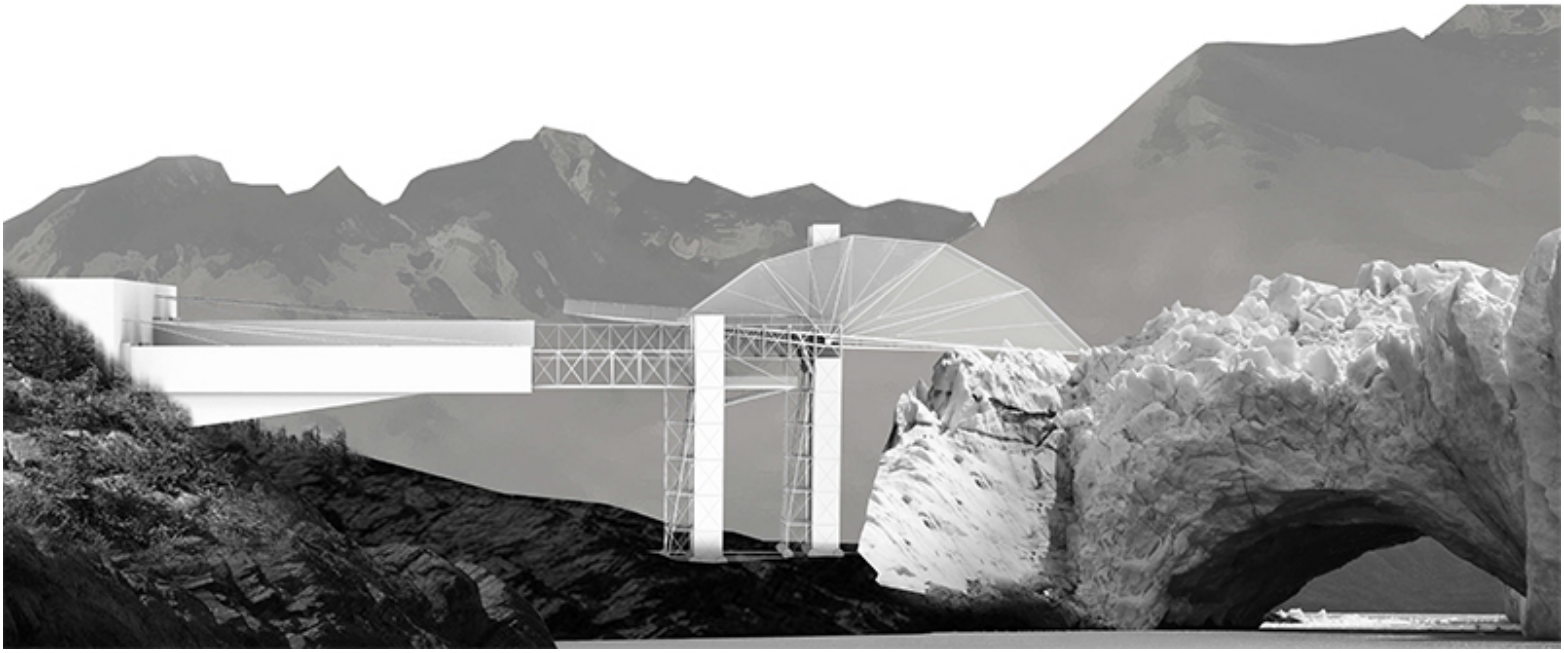
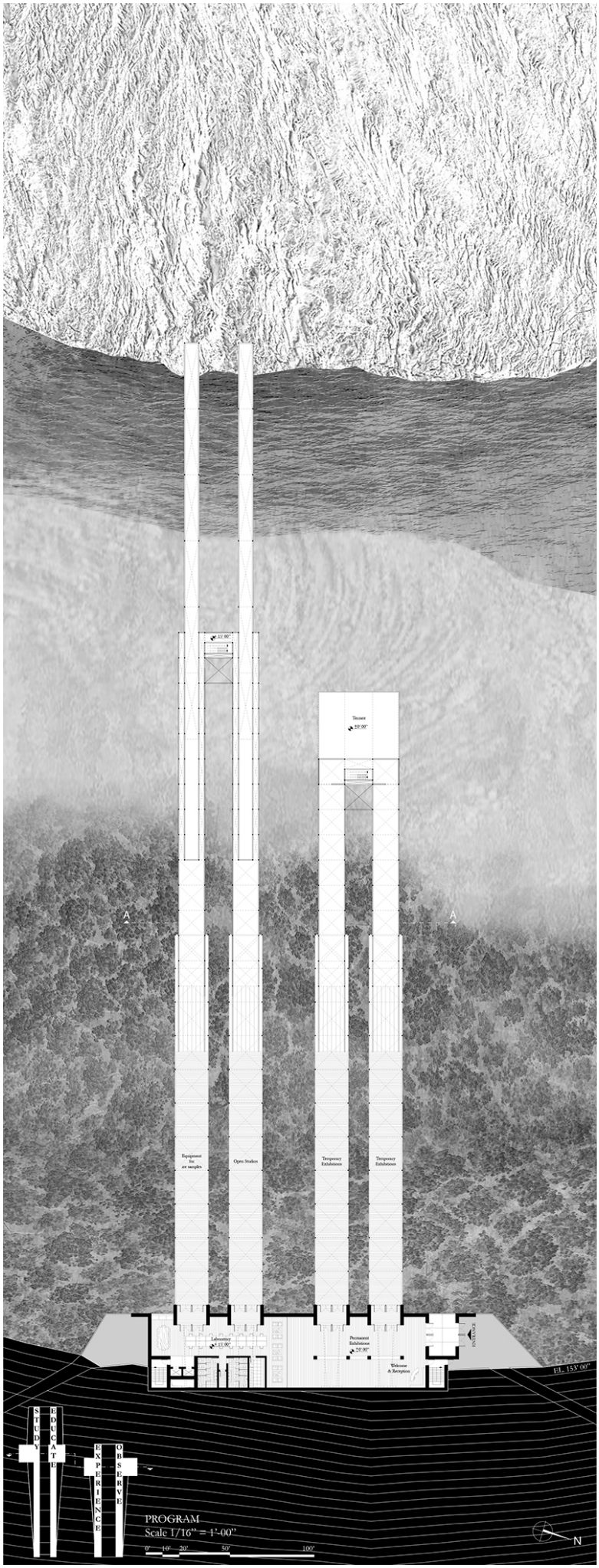



YEAR 0
YEAR 4

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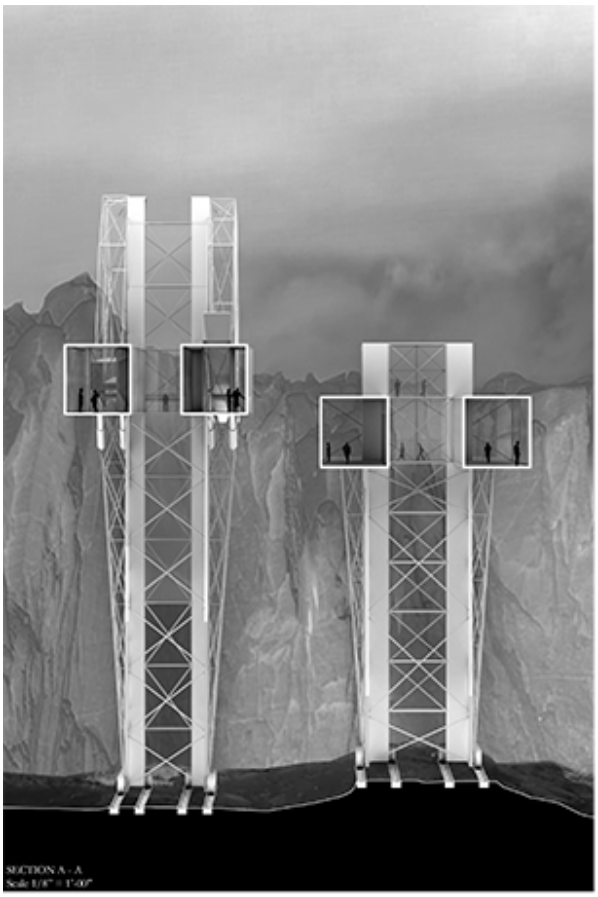
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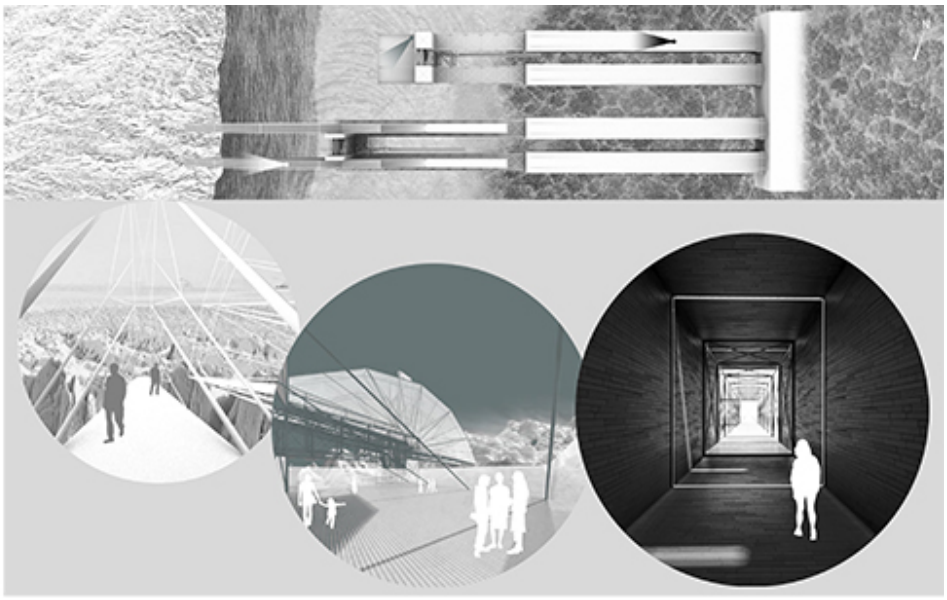

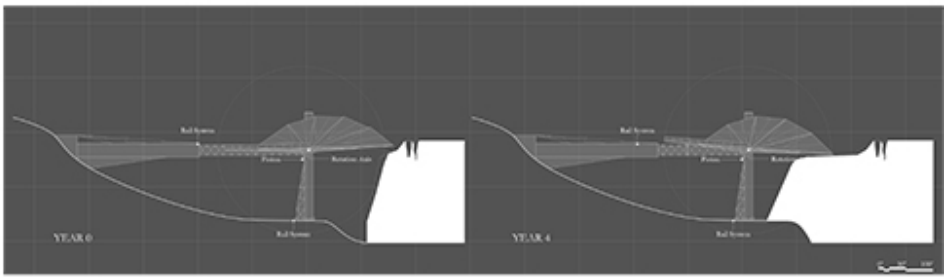
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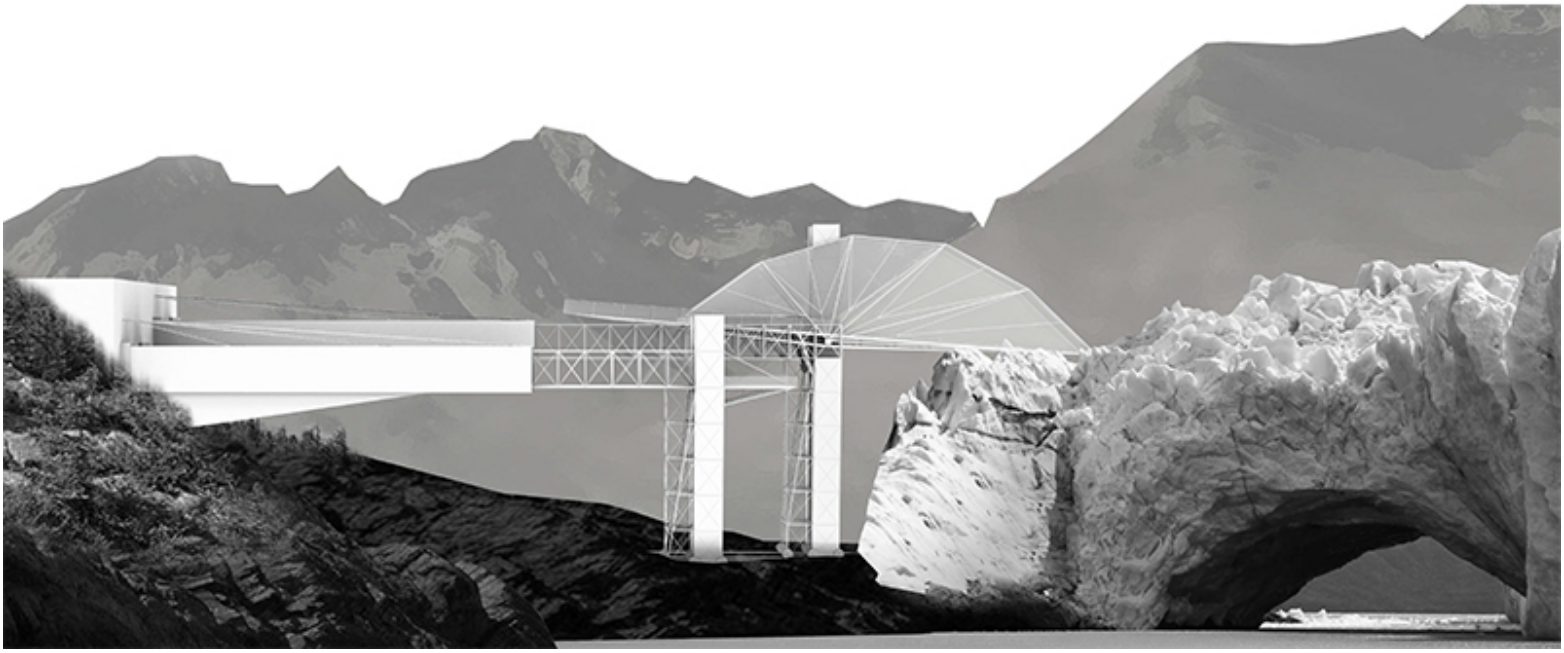

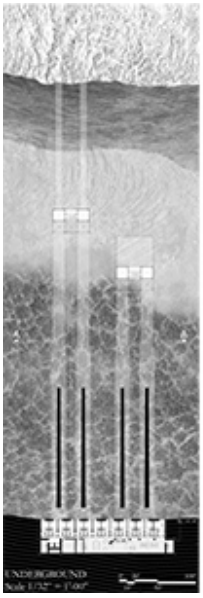
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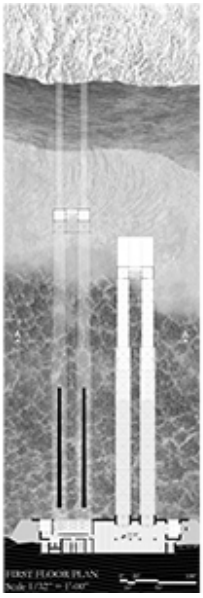
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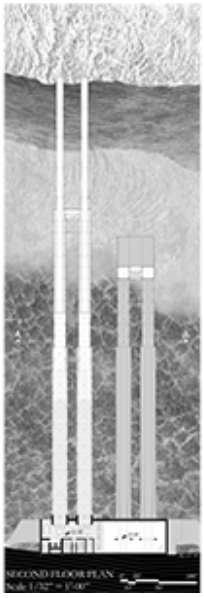
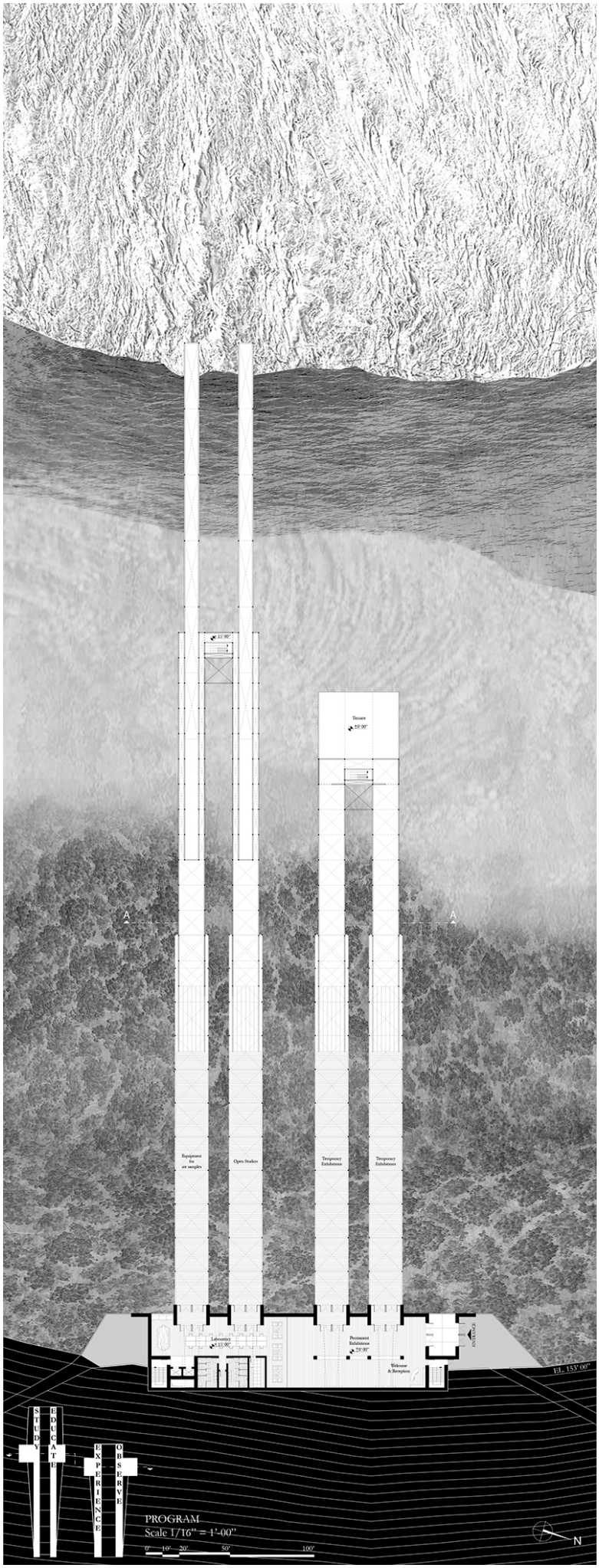

SECOND FLOOR PLAN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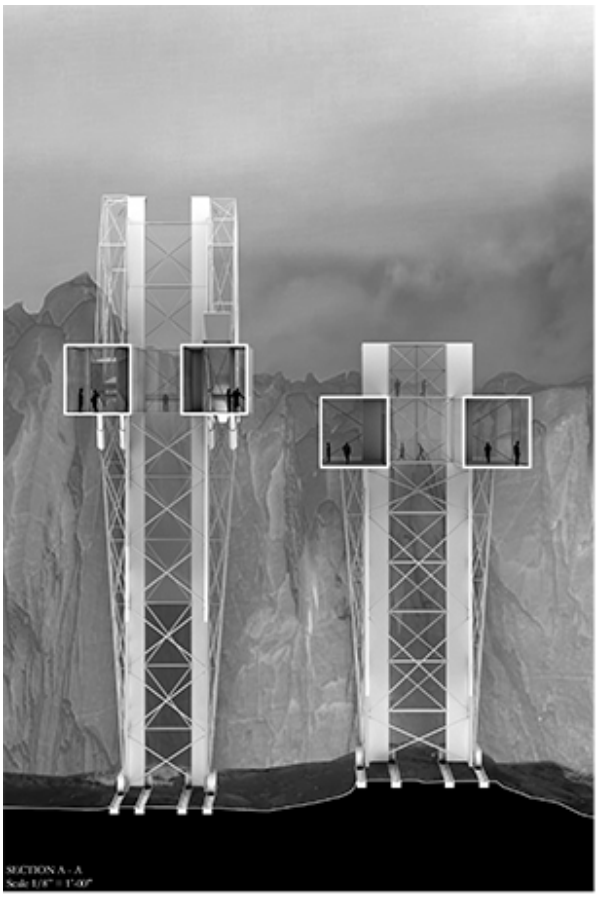
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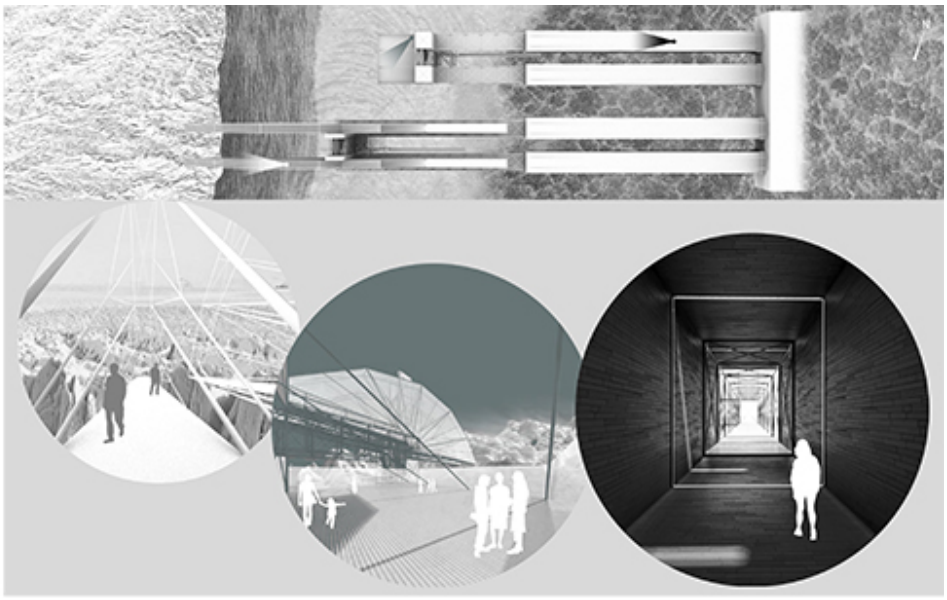

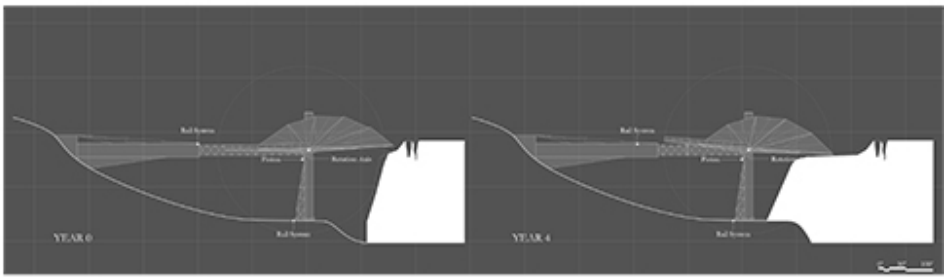
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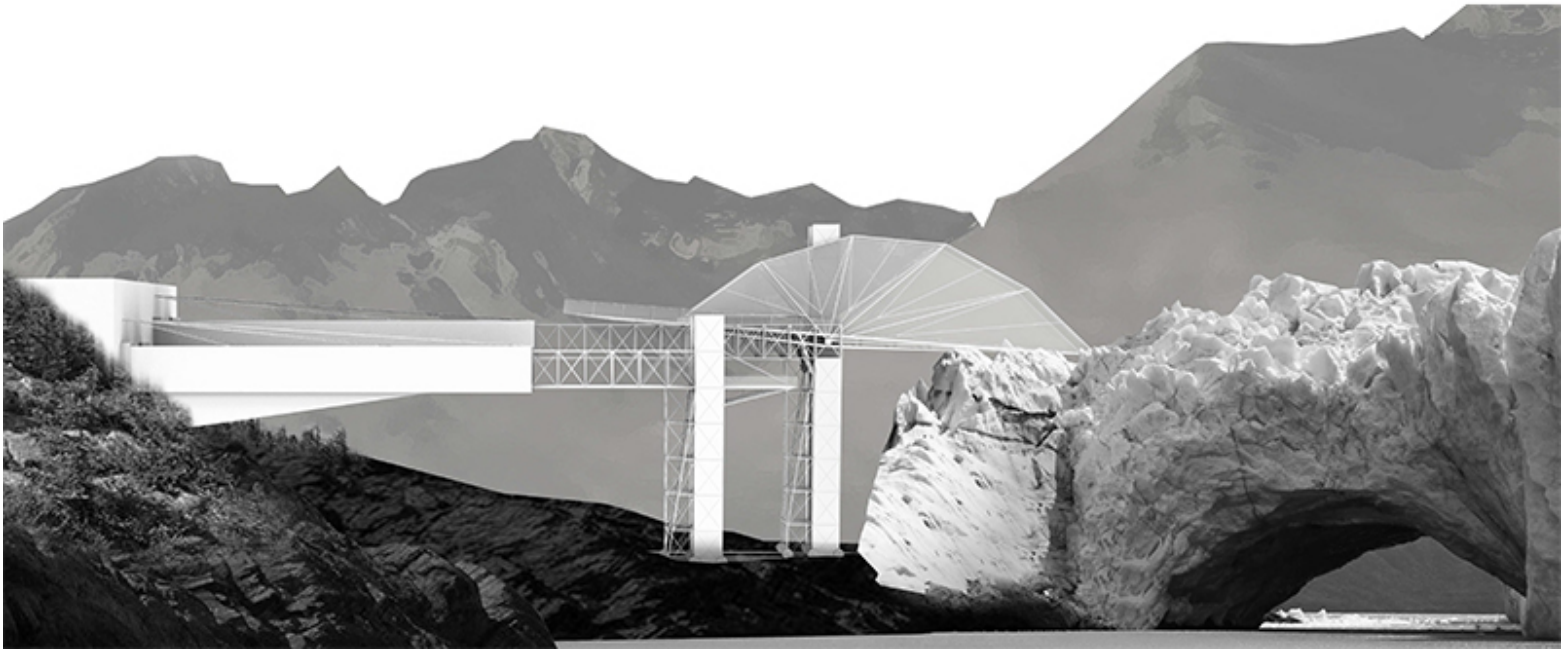

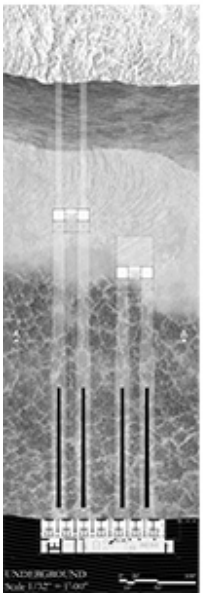
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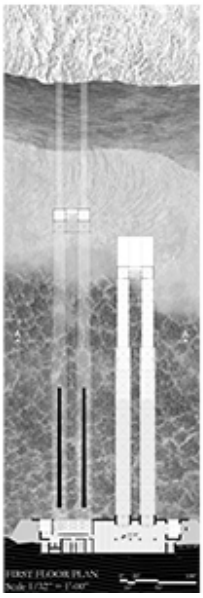
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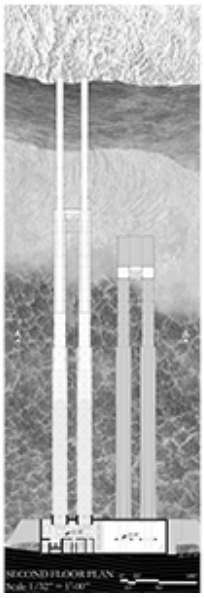
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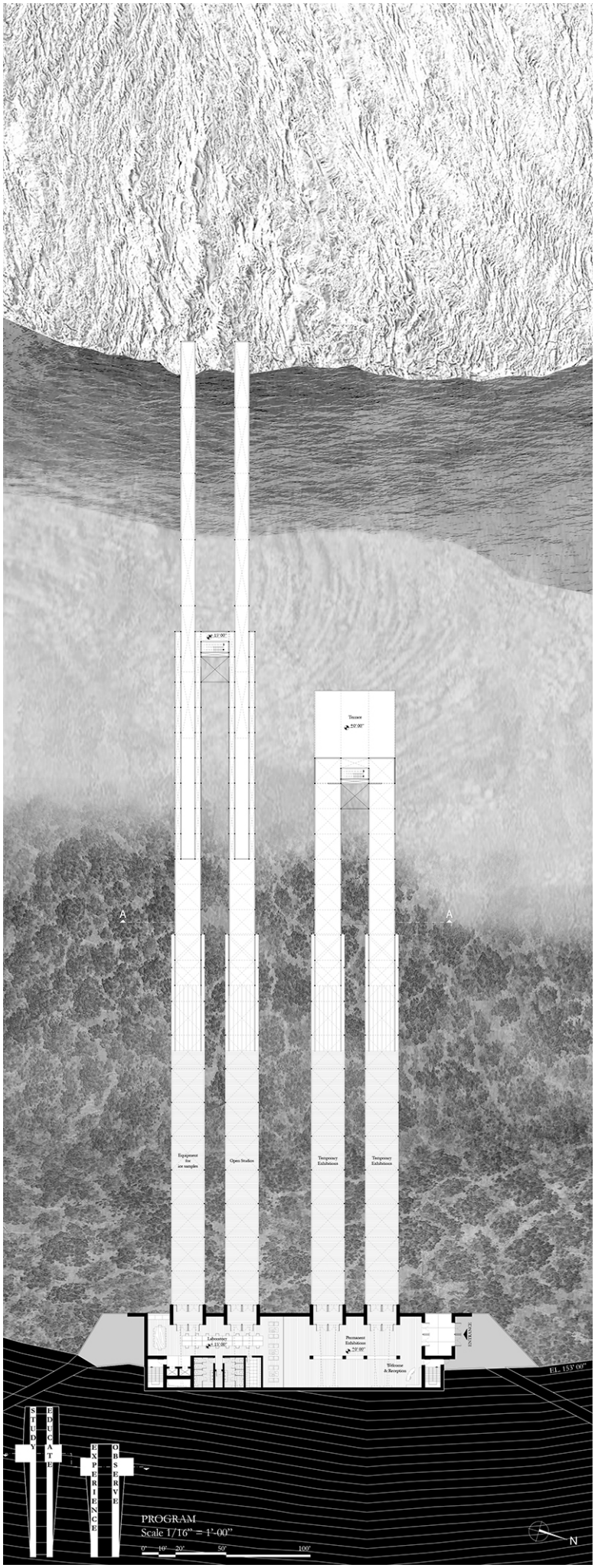
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