Capturing Spring

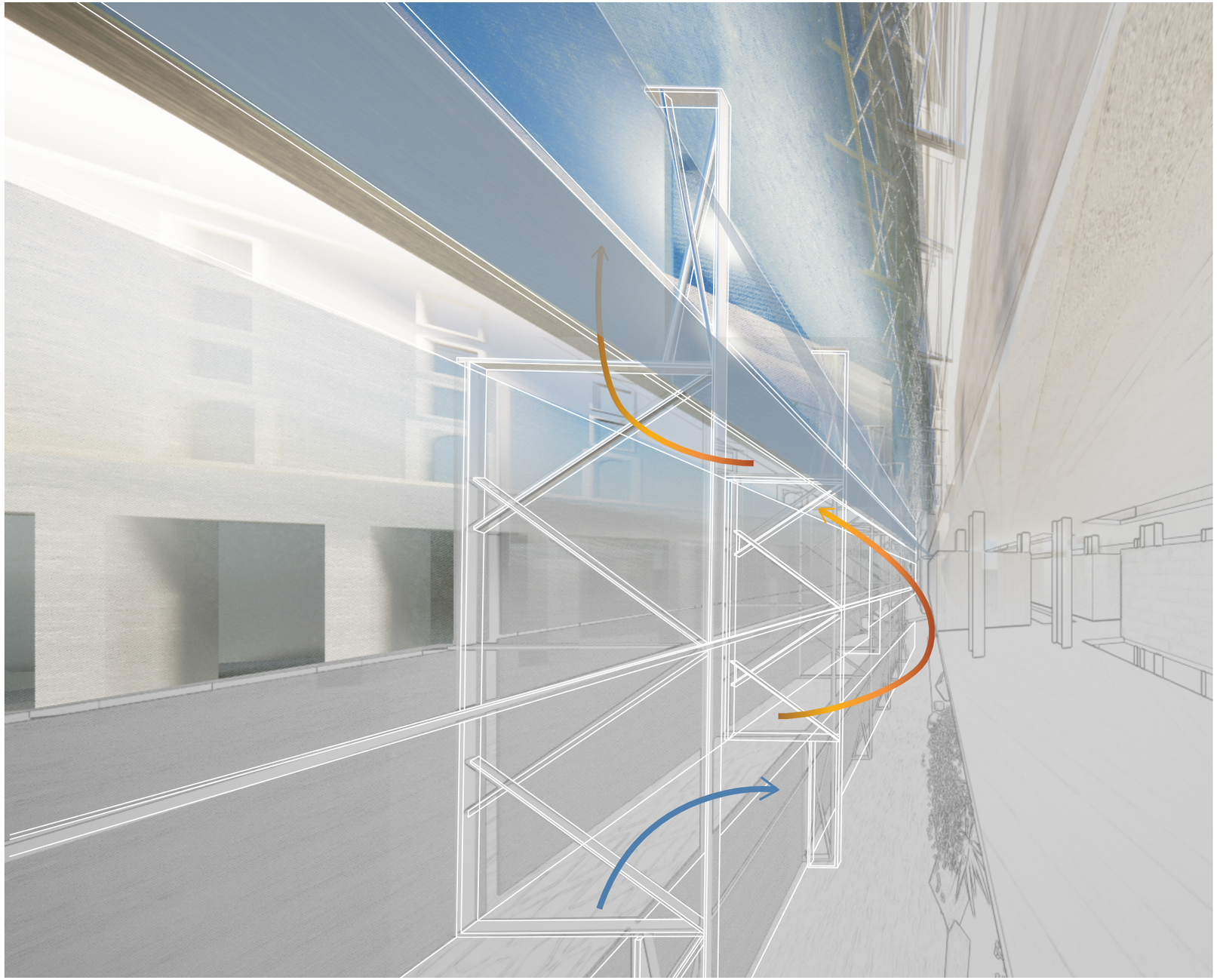
Sienna Lewis and Olivia Beck

Project Statement

The Capturing spring Hotel is located next to some of Genova's best well known points: Porta Soprana and Christopher Columbus' house. As such, the project is aimed at creating a premium experience for all who choose to stay in it. The creation of warmth embraces guests they seek comfort during the winter and provides a refreshing space to be during the heat of the summer. On the piazza level, an environment that envelopes them in trees serves as the welcoming space for guests as well as members of the public who visit to engage in shopping or dining. A children's playground, a rarity in the city of Genova makes the statement that the hotel is for all stages of life and activates the piazza space, making it a place where both adults and children may want to spend their day. Its double-skin façade creates moments of either interior or exterior focus through the use of varying opacities of frosted glass. Spaces with more opaque glass are graced by a glow that enlivens the interior while blurring any view to the exterior. Naturally, this effect creates a focus on the happenings within said space as well as privacy where it is needed (hotel rooms). Areas with more transparent glass allow views outside for guests to witness and enjoy the activity of the sprawling piazza outside, welcoming them to life in Genova.

Energy Management

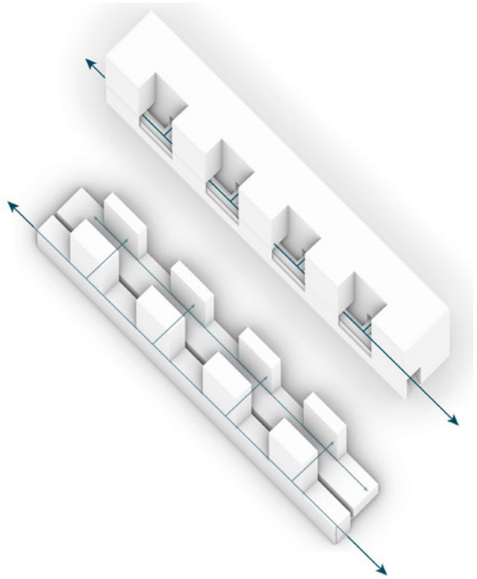
Capturing spring was born of the idea of a dwelling space inside a warm greenhouse. It makes use of a double skin glass façade that maximizes daylighting in its somewhat obscure site, Piazza Dante, Genova. This skin system harnesses the heat trapped by glass enclosure, using it as insulation during the winter and opening in the summer to facilitate stack ventilation and wind tunnel effect. Trees and shrubbery on the ground level, all sustained by collected rainwater, are used for air purification while the shell is closed, solving the potential problem of stale air. During the summer, the soil from those trees also allows for evaporative cooling. With maximized use of natural lighting, and passive temperature control, Capturing Spring minimizes its carbon footprint by reducing the power it takes off the grid. It is powered by Spring.



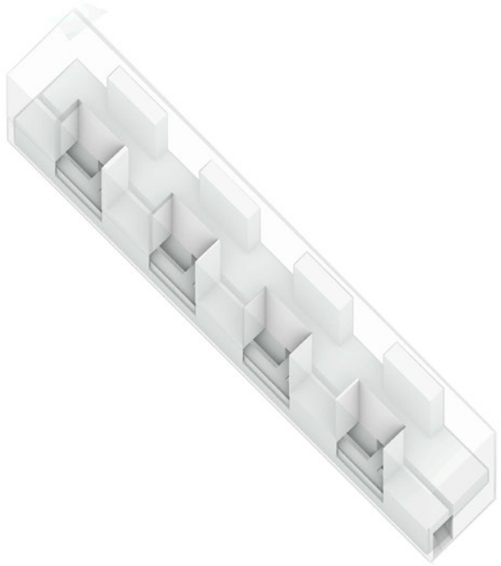
Precedent Analysis

Faculty of Economics, University of Basel

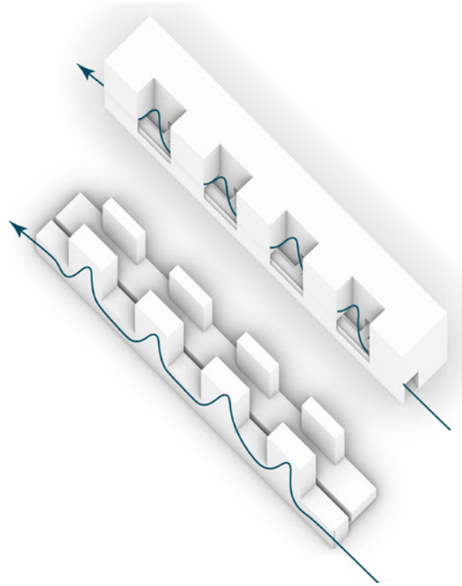
Architekten Basel Zürich & Jakob Steib Zürich



Site plan shows orientation of building. seems to be deliberately oriented with openings against main wind direction. Diagram above shows tunnel effect runnin SE no NW. Prevailing windflows in the exact opposite direction.



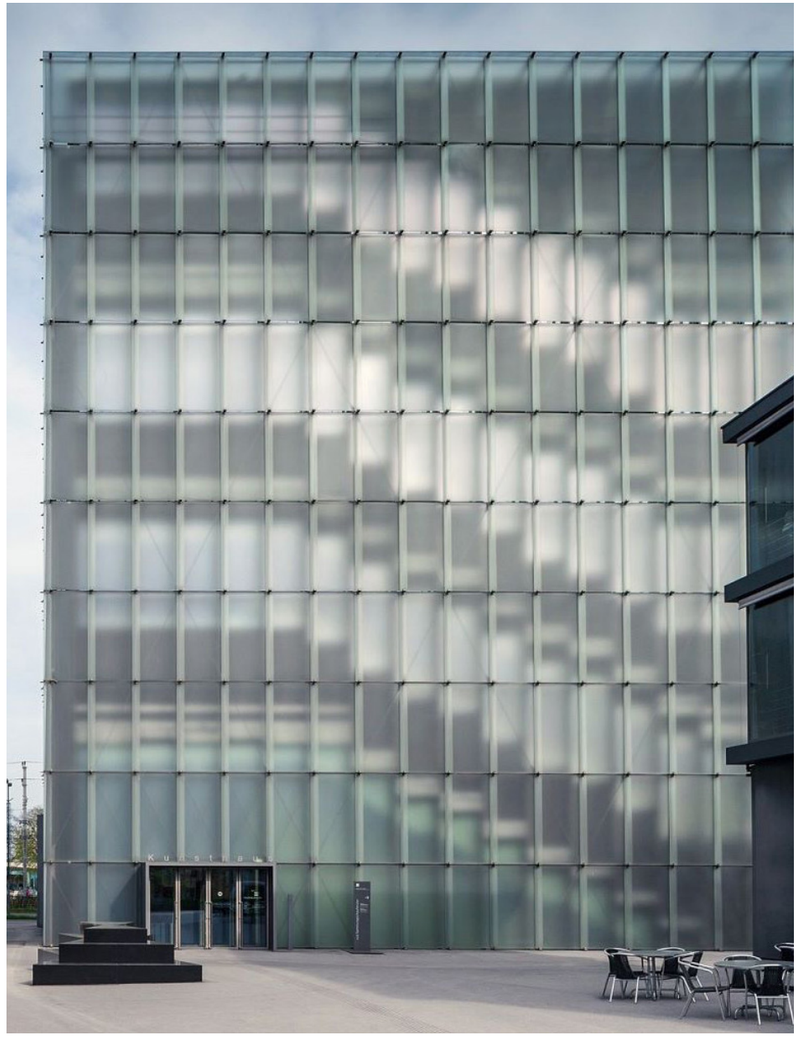
Circulation through this building takes place in enclosed spaces, some open to the sky, and others fully covered. A series of intersecting pathways and the manipulation of ceiling height creates opportunity for interesting airflow.

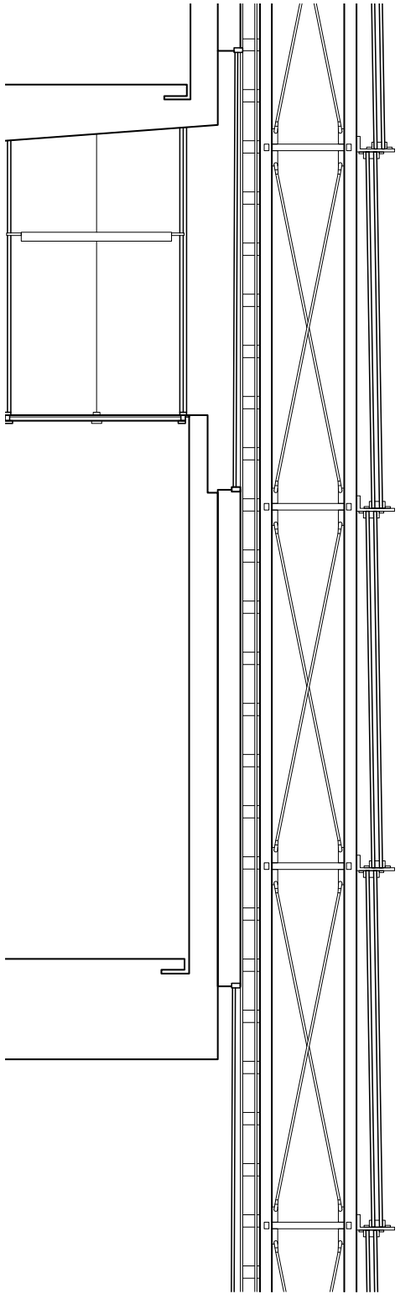


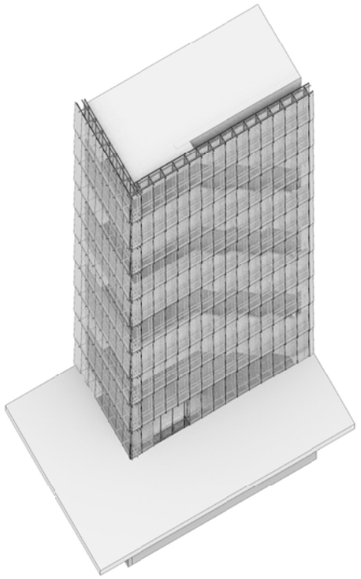
Precedent Analysis

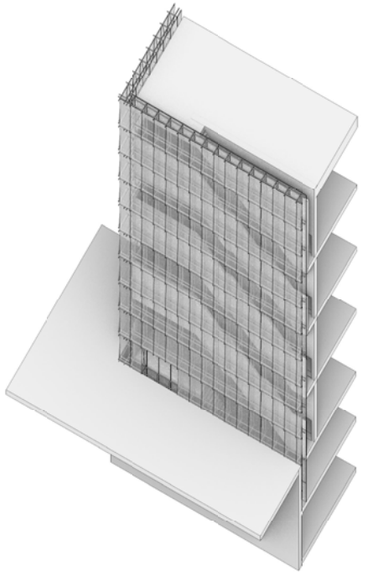
Kunsthaus Bregens

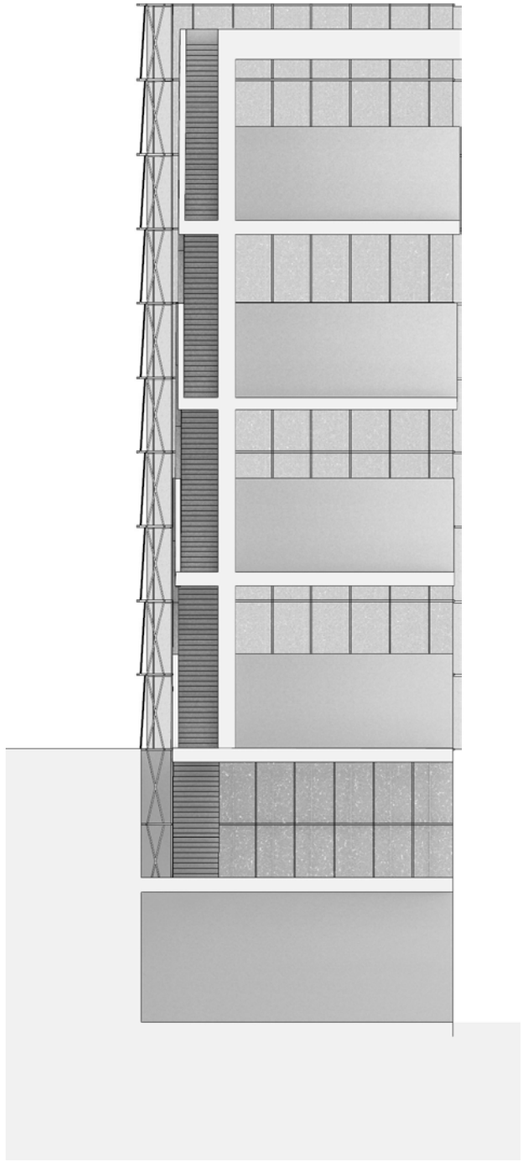
Location: Austria
Architect: Peter Zumthor



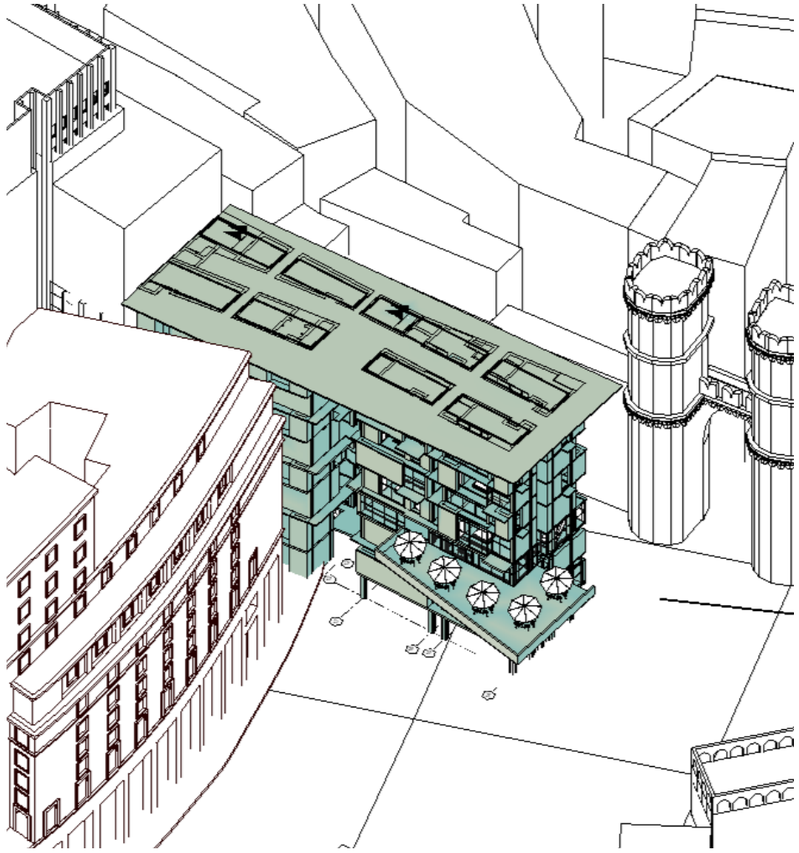


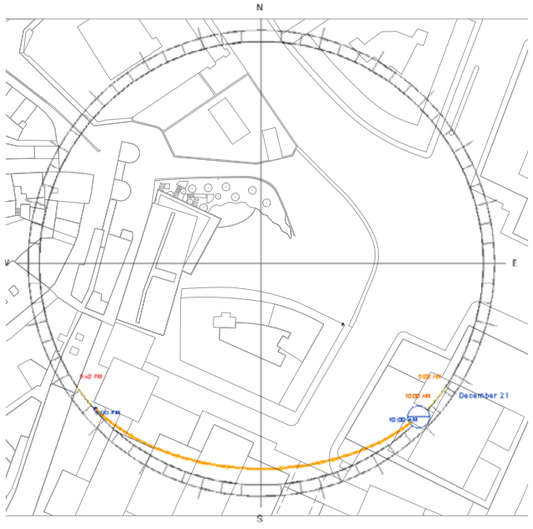






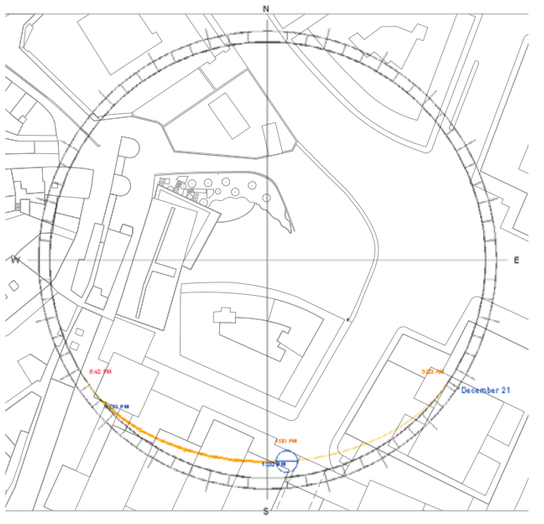
Site Analysis





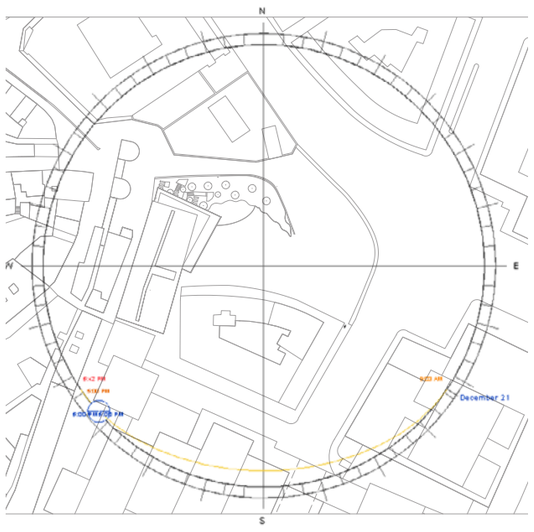
Azimuth: 315 degrees

Altitude:12.5 degrees



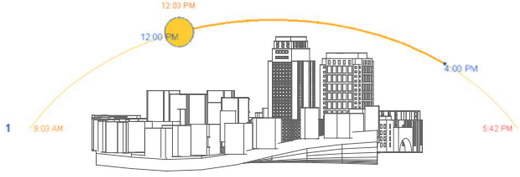
Azimuth: 275 degrees

Altitude: 67 degrees

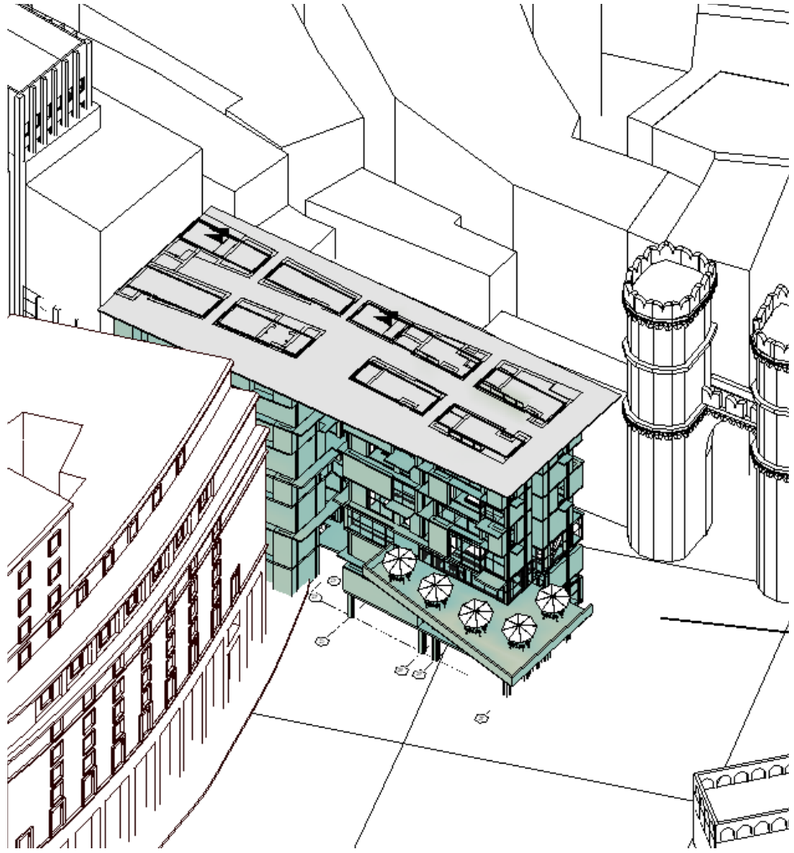


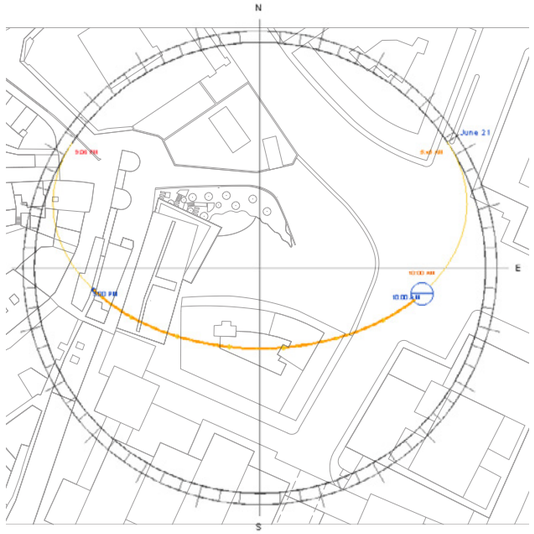
Azimuth: 222 degrees

Altitude: 140 degrees



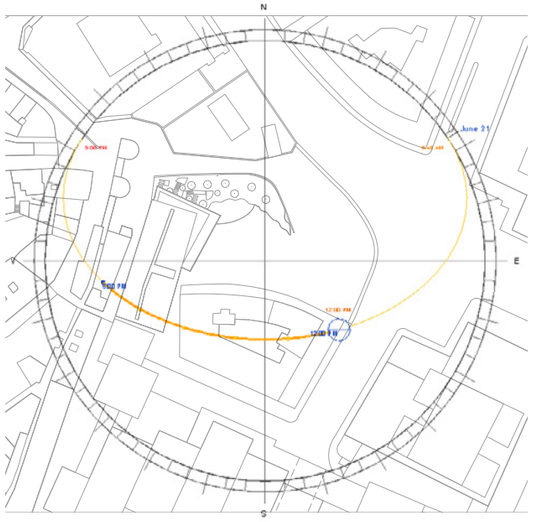
Site Analysis





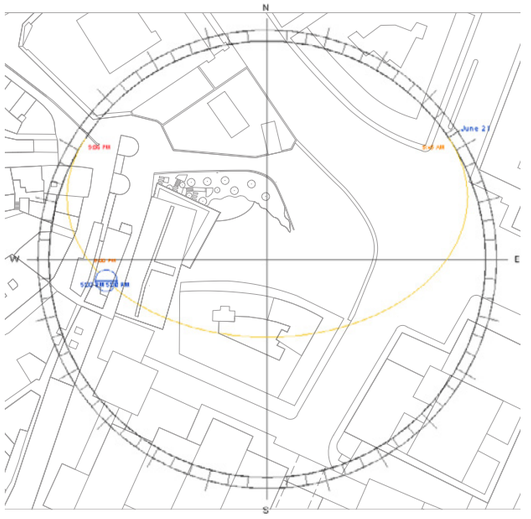
Azimuth: 355 degrees

Altitude: 47 degrees



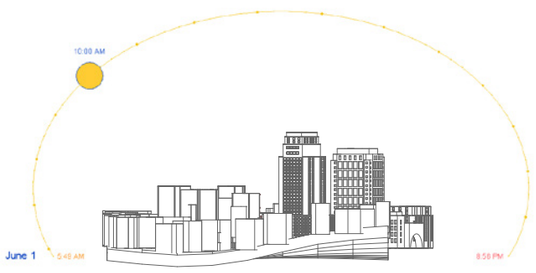
Azimuth: 305 degrees

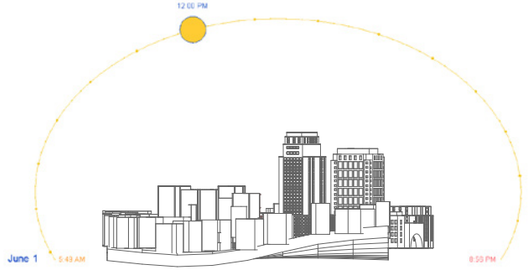
Altitude: 75 degrees

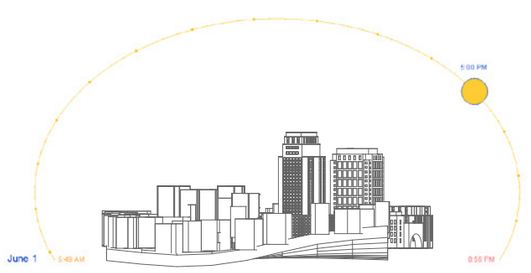


Azimuth:190 degrees

Altitude: 128 degrees





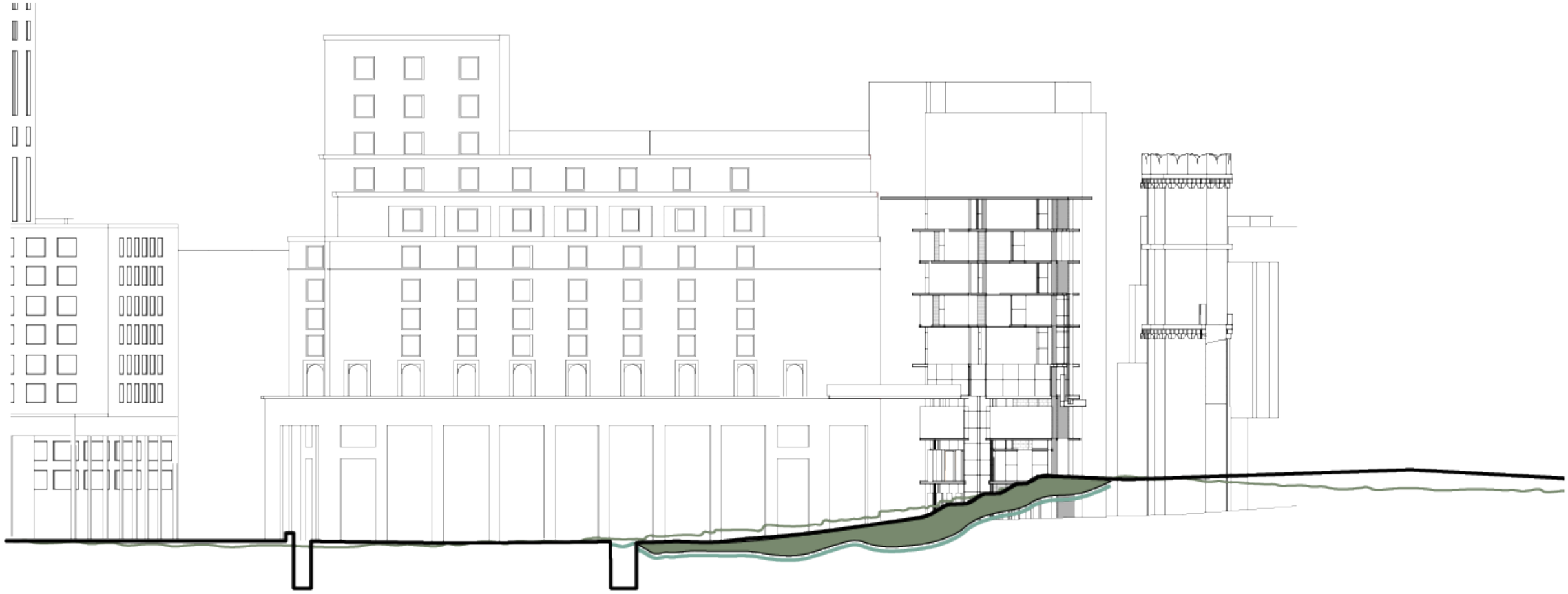


Site Analysis

Wind

Site Analysis

Site Section

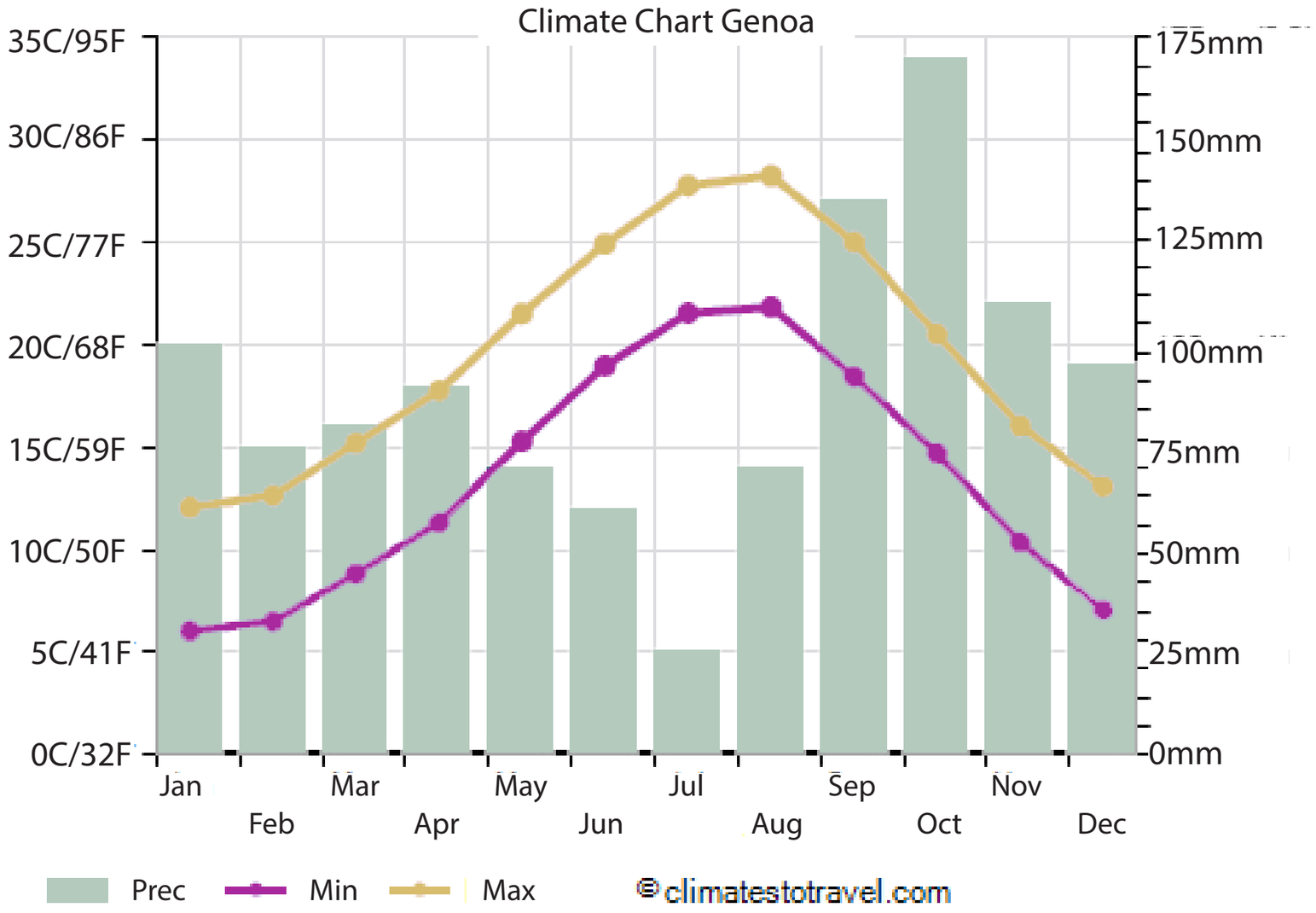


Site Analysis

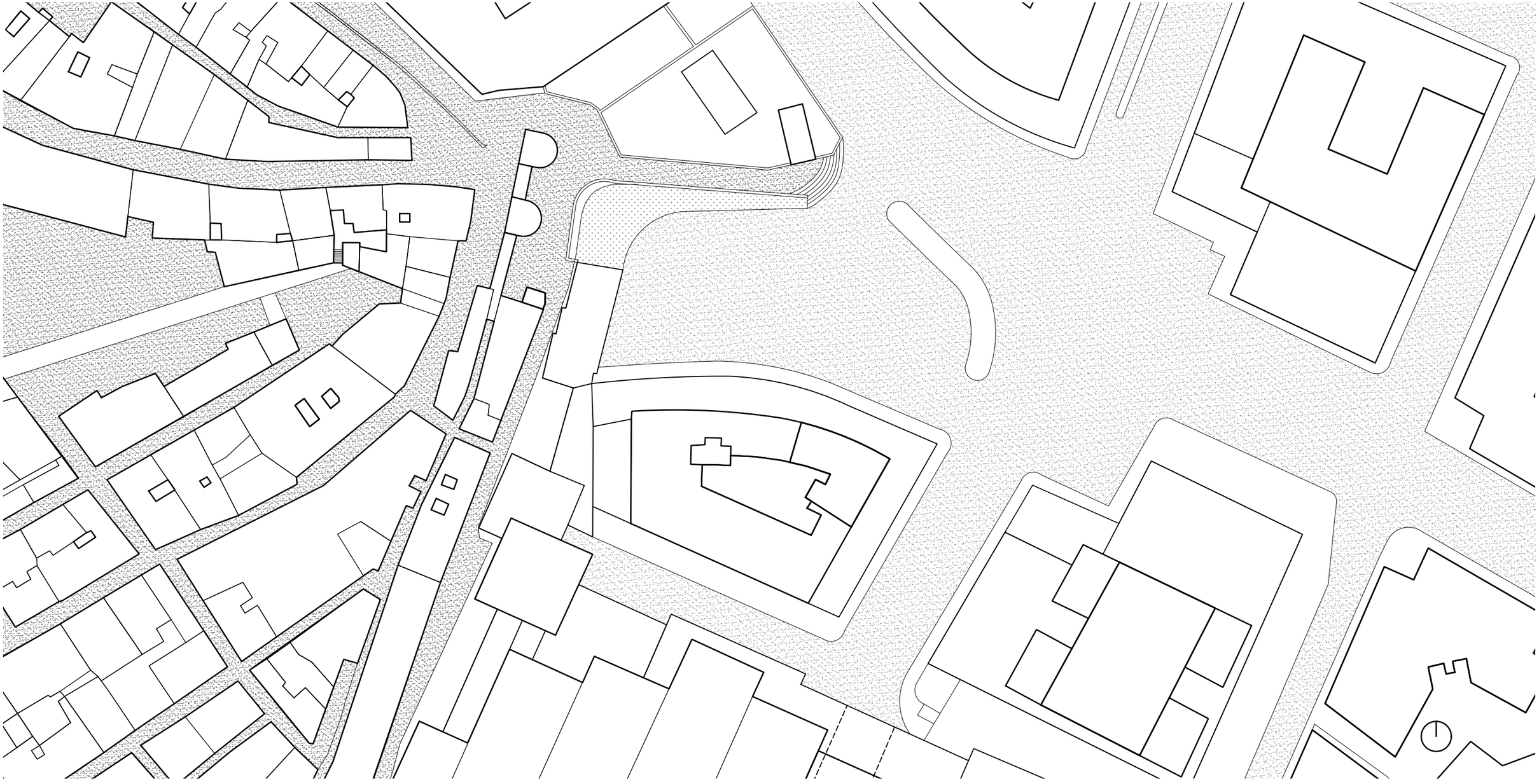
Heat

January is the coldest month of the year.
Average temperature is of 9.1 °C (48.3 °F)

August, the hottest month of the year
The average temperature is of 25.1 °C (77 °F)



Original Site Plan

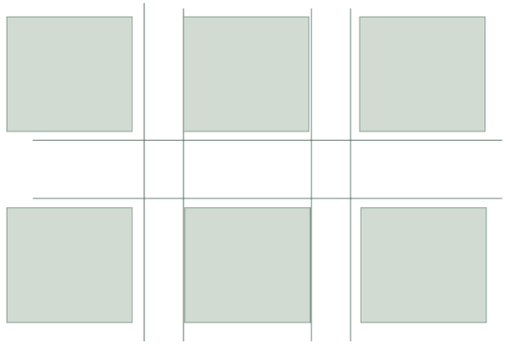


Energy Usage

Minimized energy use for temperature control

Typical enclosed area of building

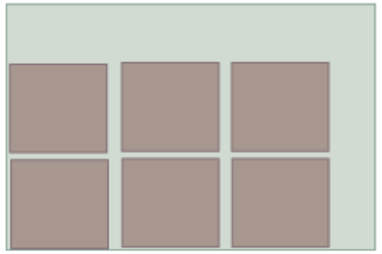
Building form to allow wind ventilation and minimal power usage



Shorter, smaller enclosures

Cooling/ Heating Load 85% Lower

High glass roof

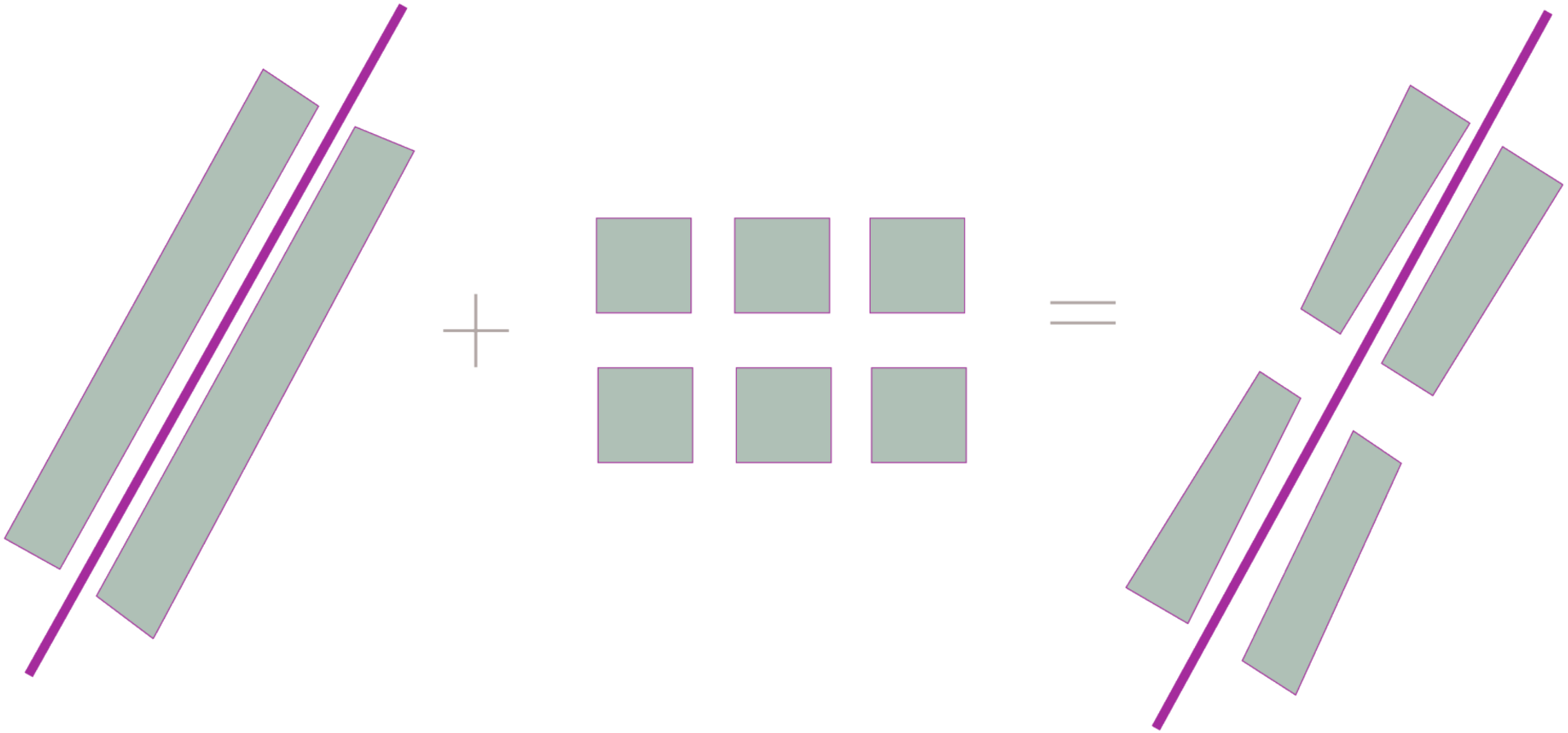


enclosed space including hallways

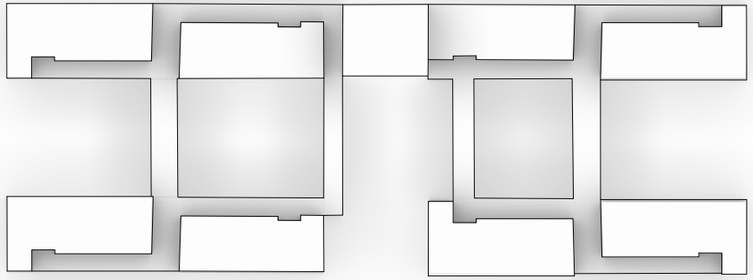
Shorter ceiling under glass enclosure

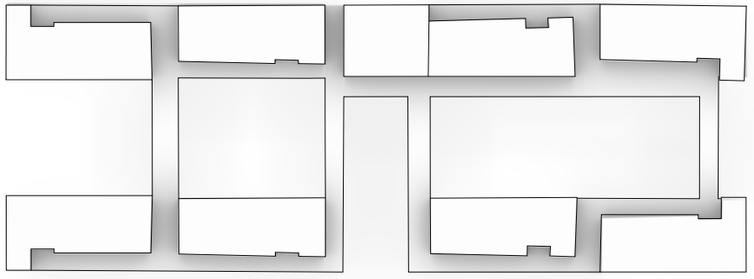
Smaller masses to cool

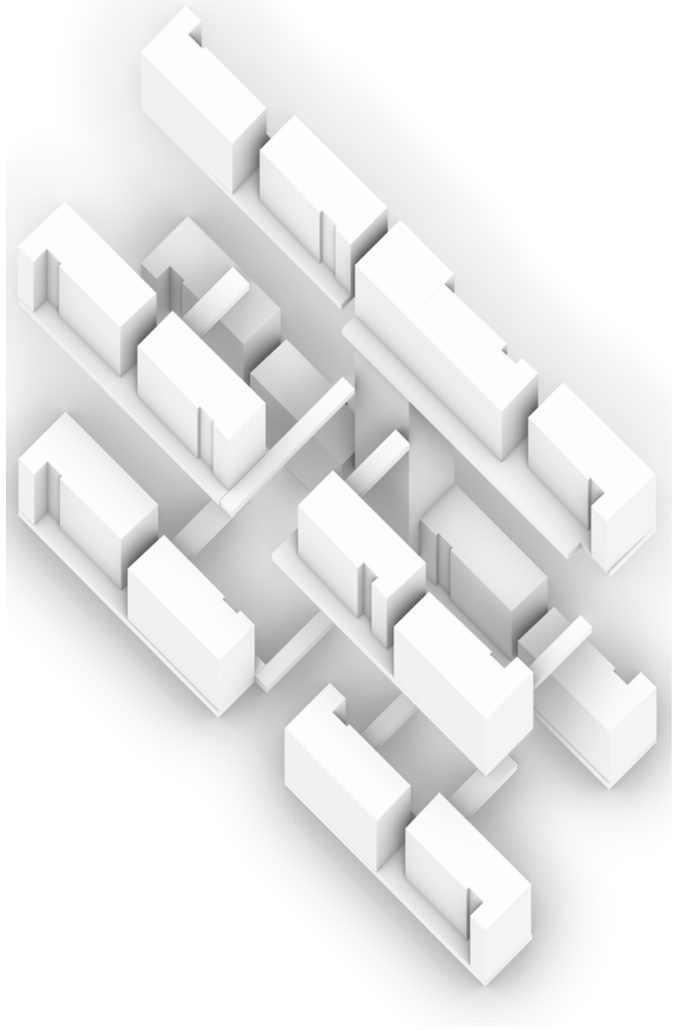
Form Evolution

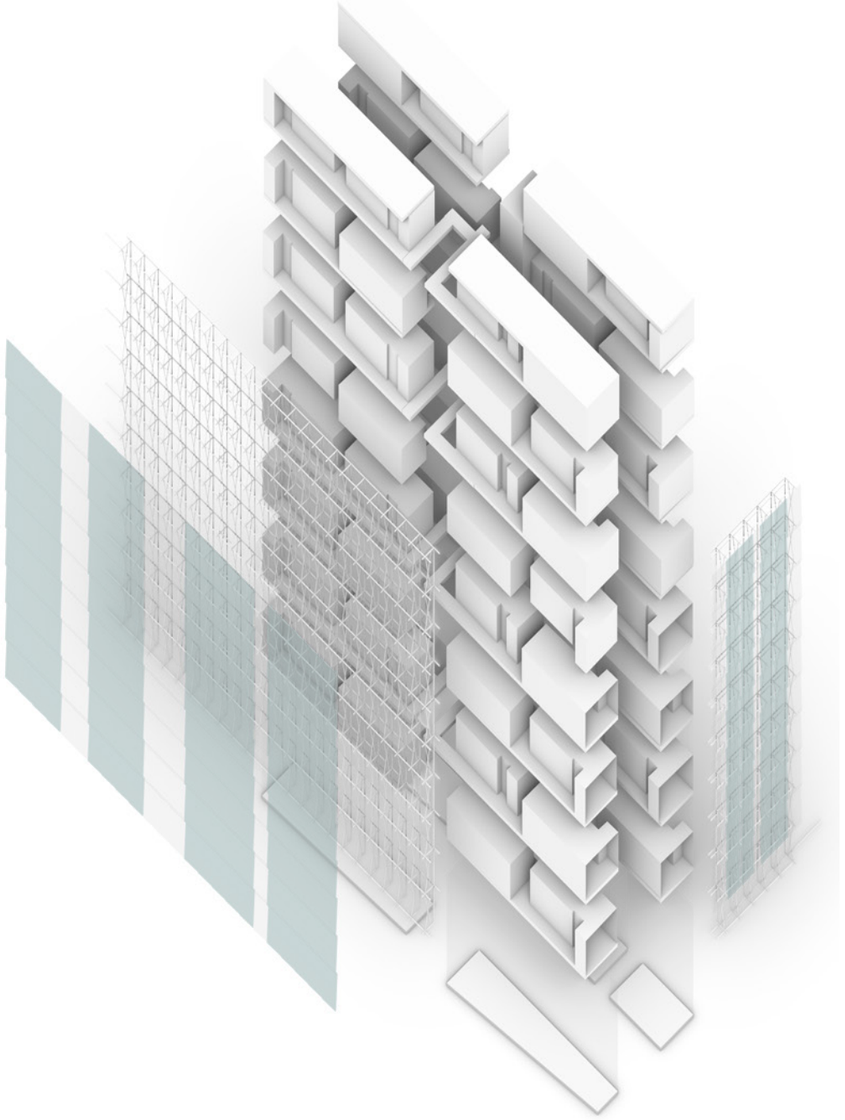


Massing









Program

Public Spaces:
Lobby, guest services, waiting area, executive center

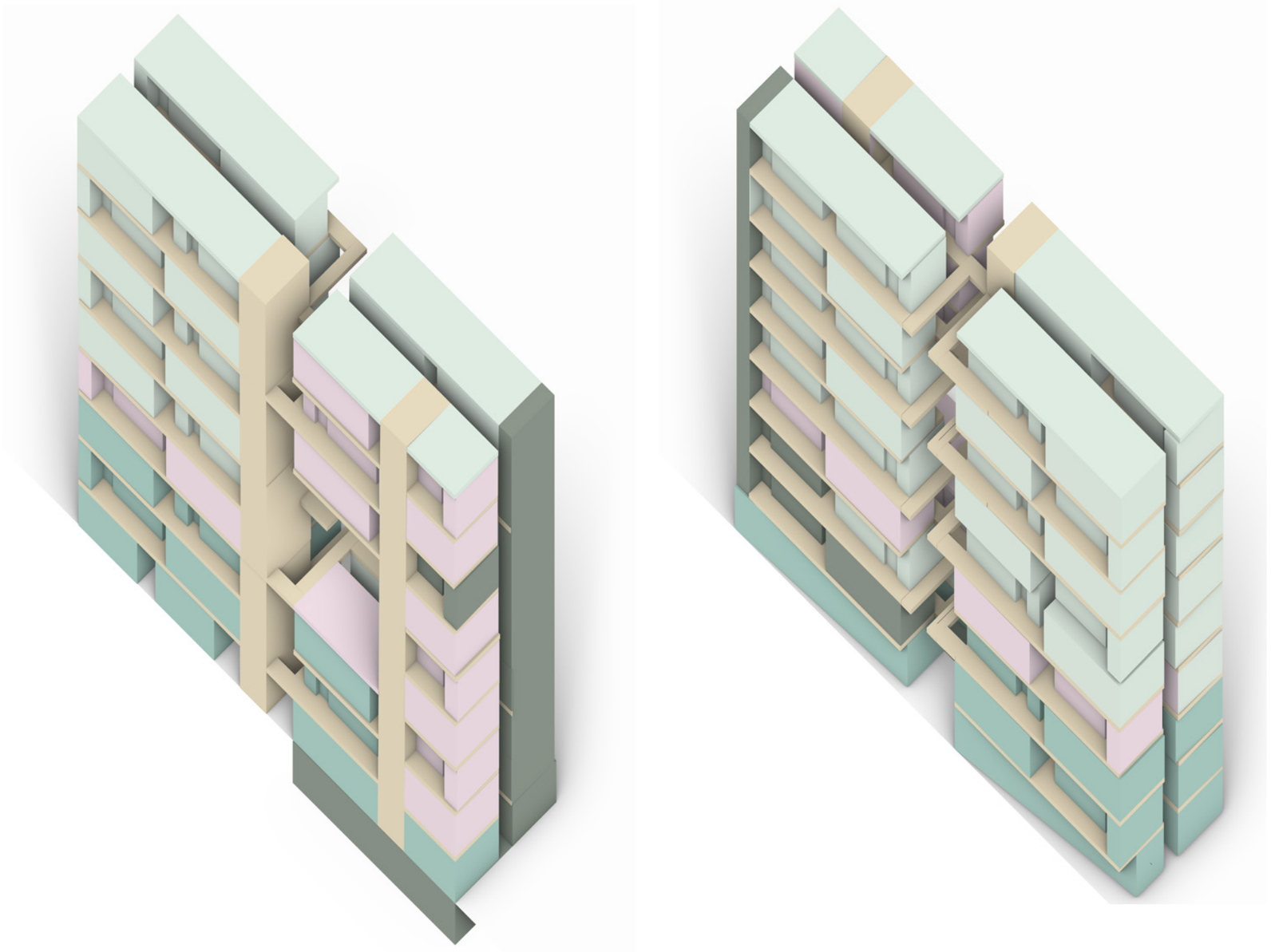
Hotel Rooms

Public Spaces Lower Levels:
Restaurants, cafes, retail

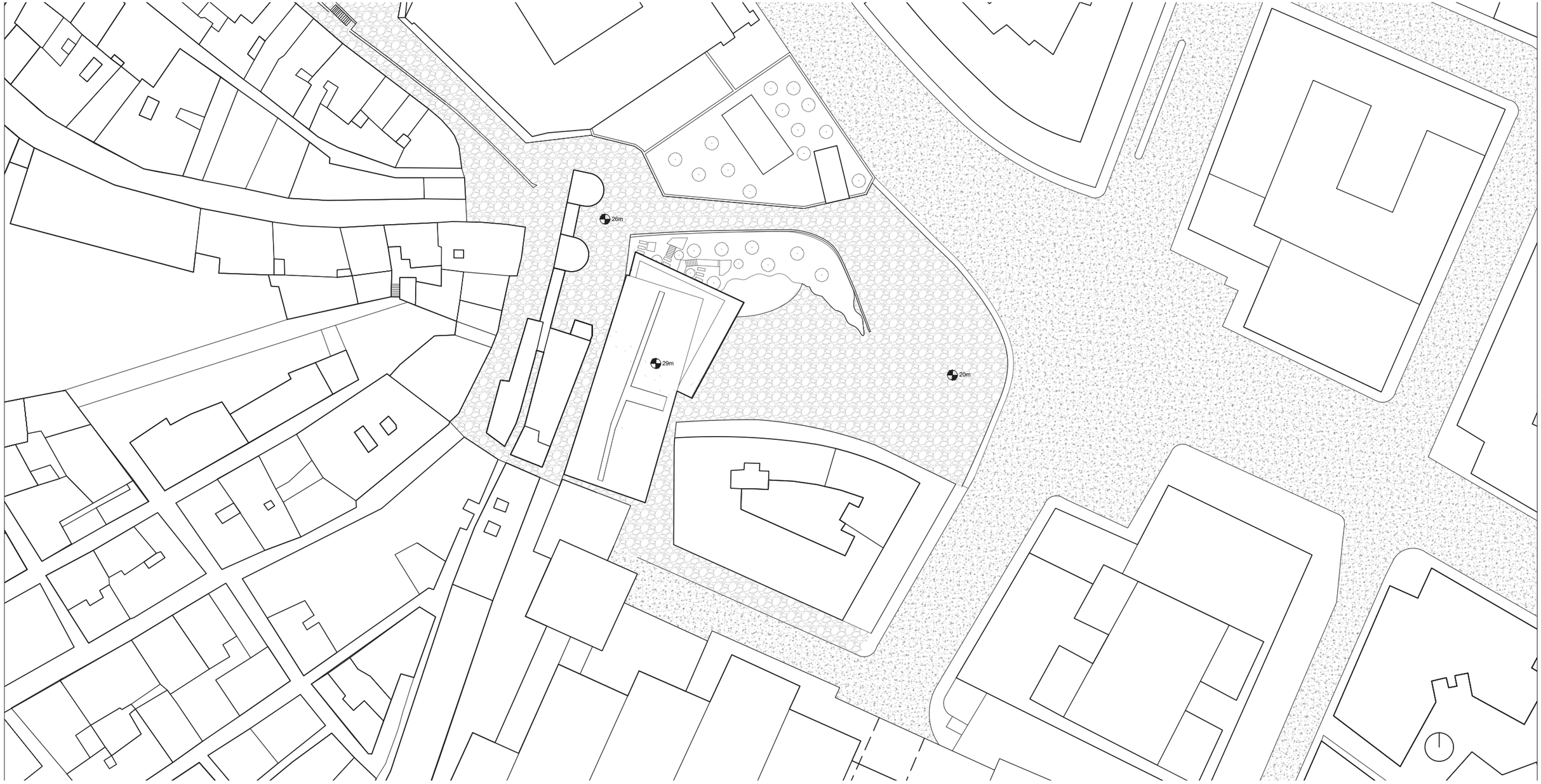
Circulation

Back of House:
Management offices, laundry, janitorial, luggage storage room

Underground deliveries and garbage removal, service rooms

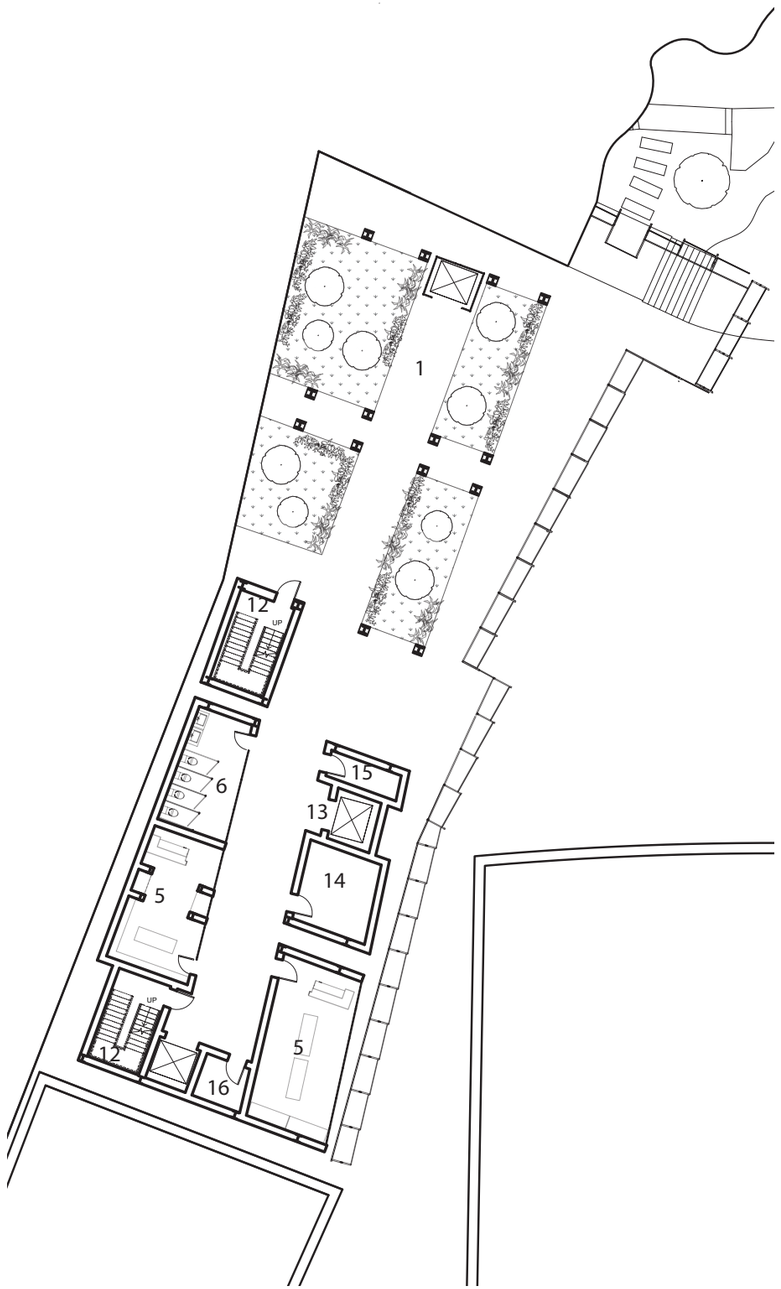


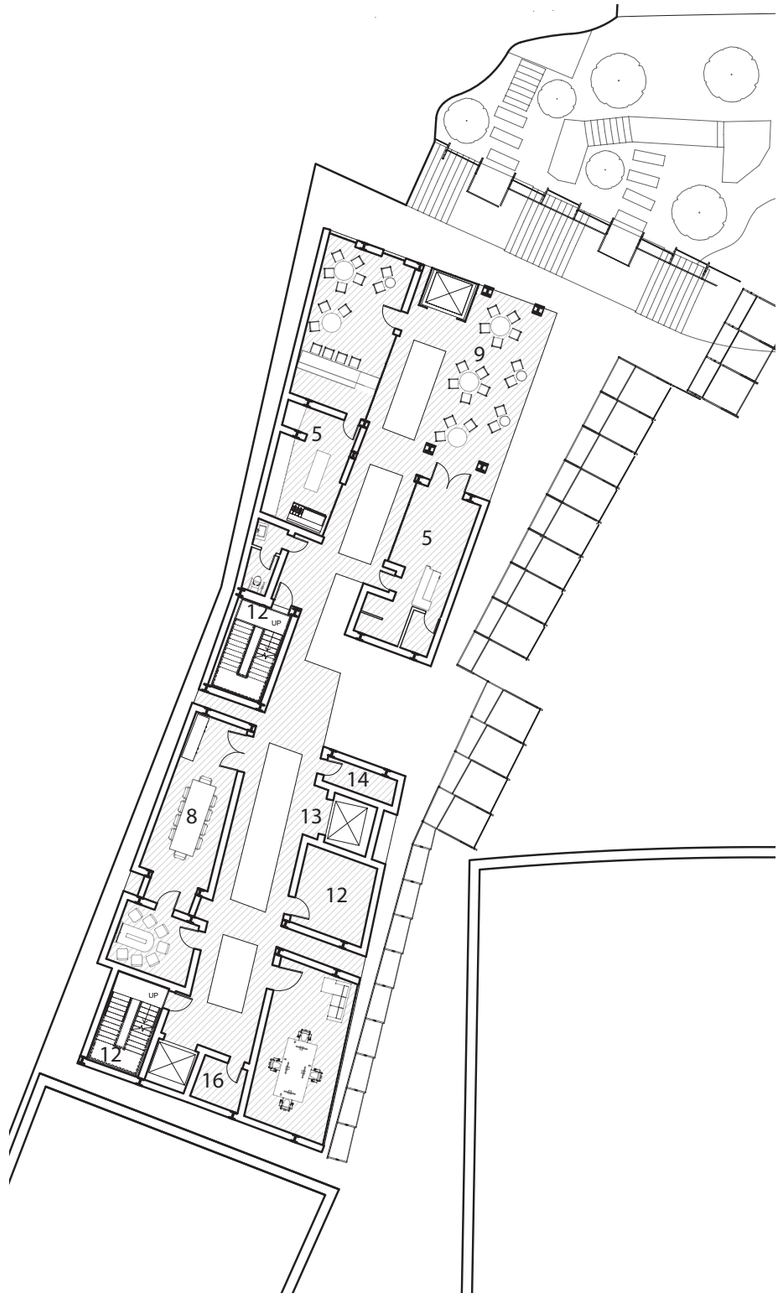
Site Plan



Plan

1 - Interior Garden
2 - Bedroom
3 - Private Bathroom
4 - Lobby
5 - Retail Spaces
6 - Public Restrooms
7 - Kitchen
8 - Conference room
9 - Study/ Work Lounge
10 - Management
11 - Presentation room
12 - Emergency Stairs
13 - Elevator
14 - Storage
15 - Mechanical Room
16 - Janitorial
17 - Dining
18 - Lounge Spaces





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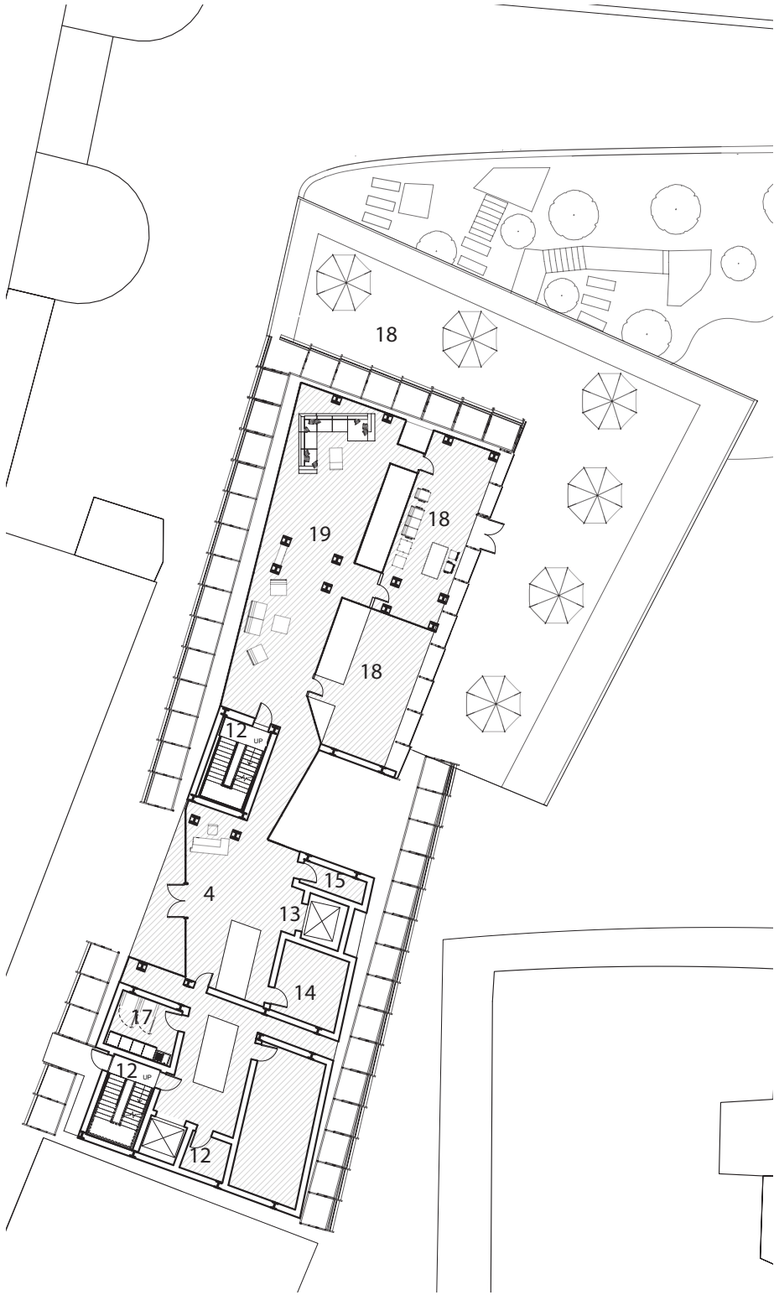
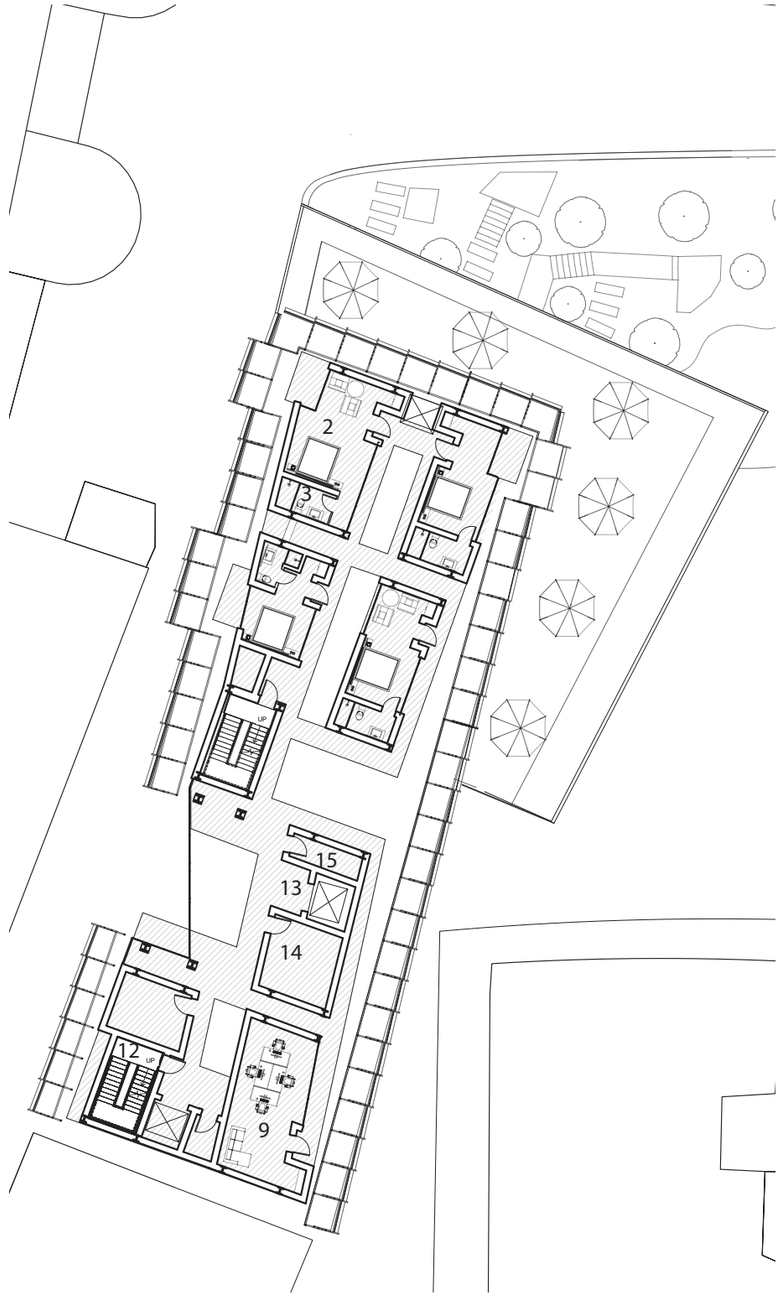
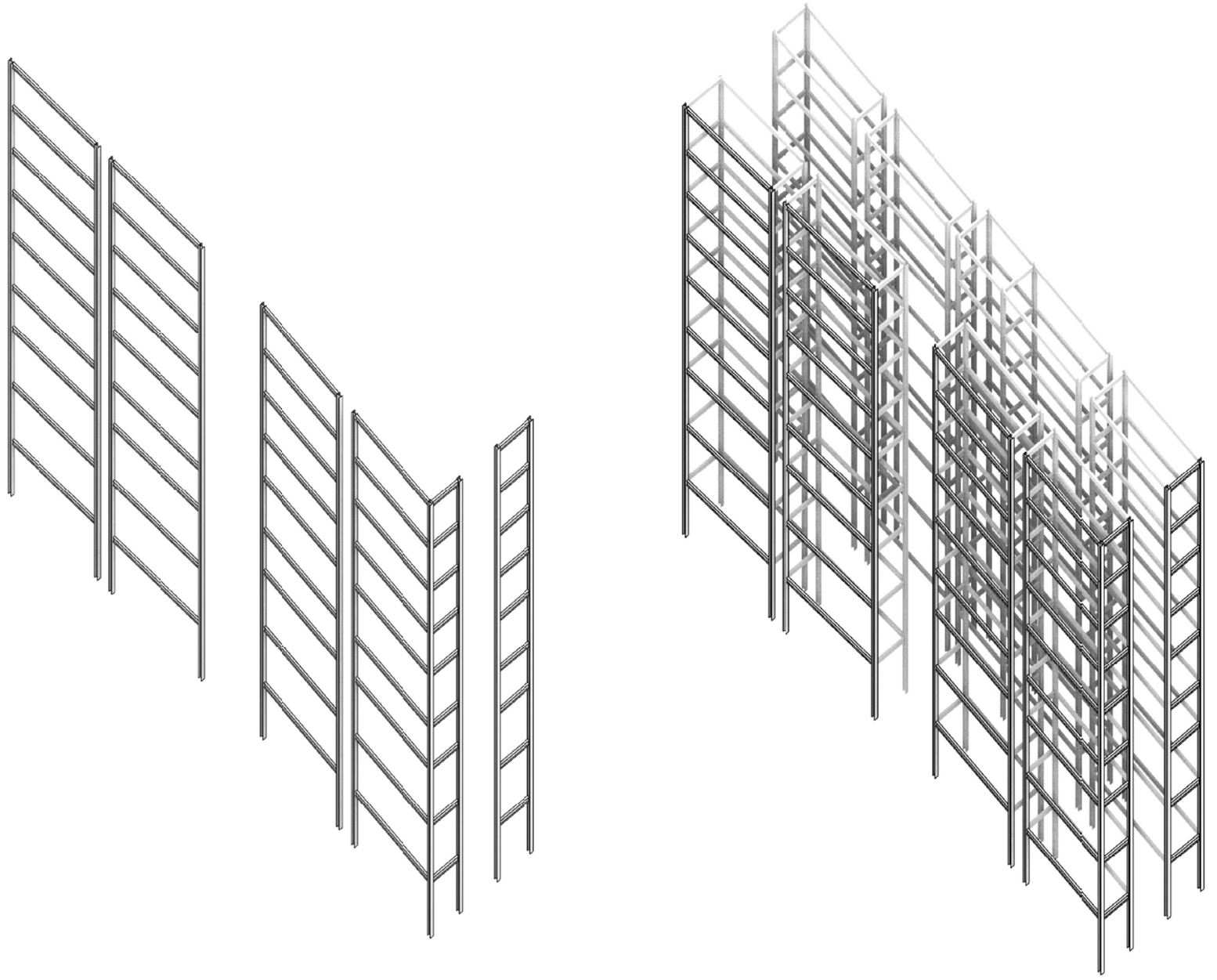




Structural Grid

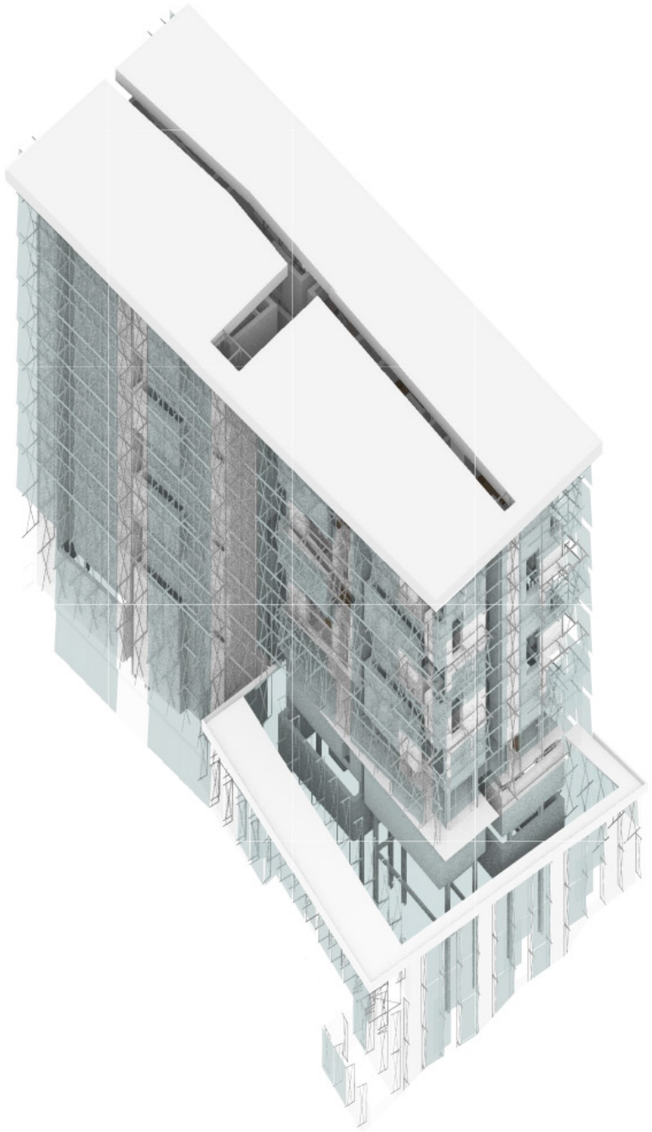
Structural Axonometric

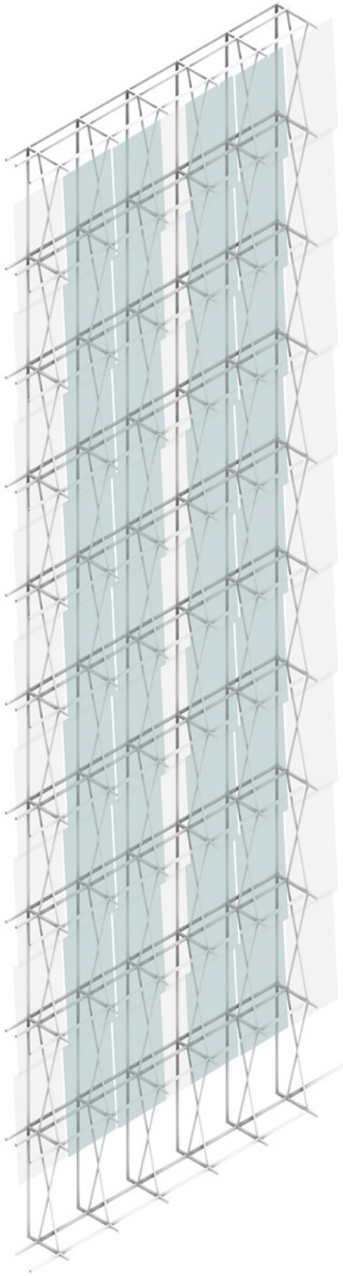
Structure is composed of two different grid systems to allow for light corridors.

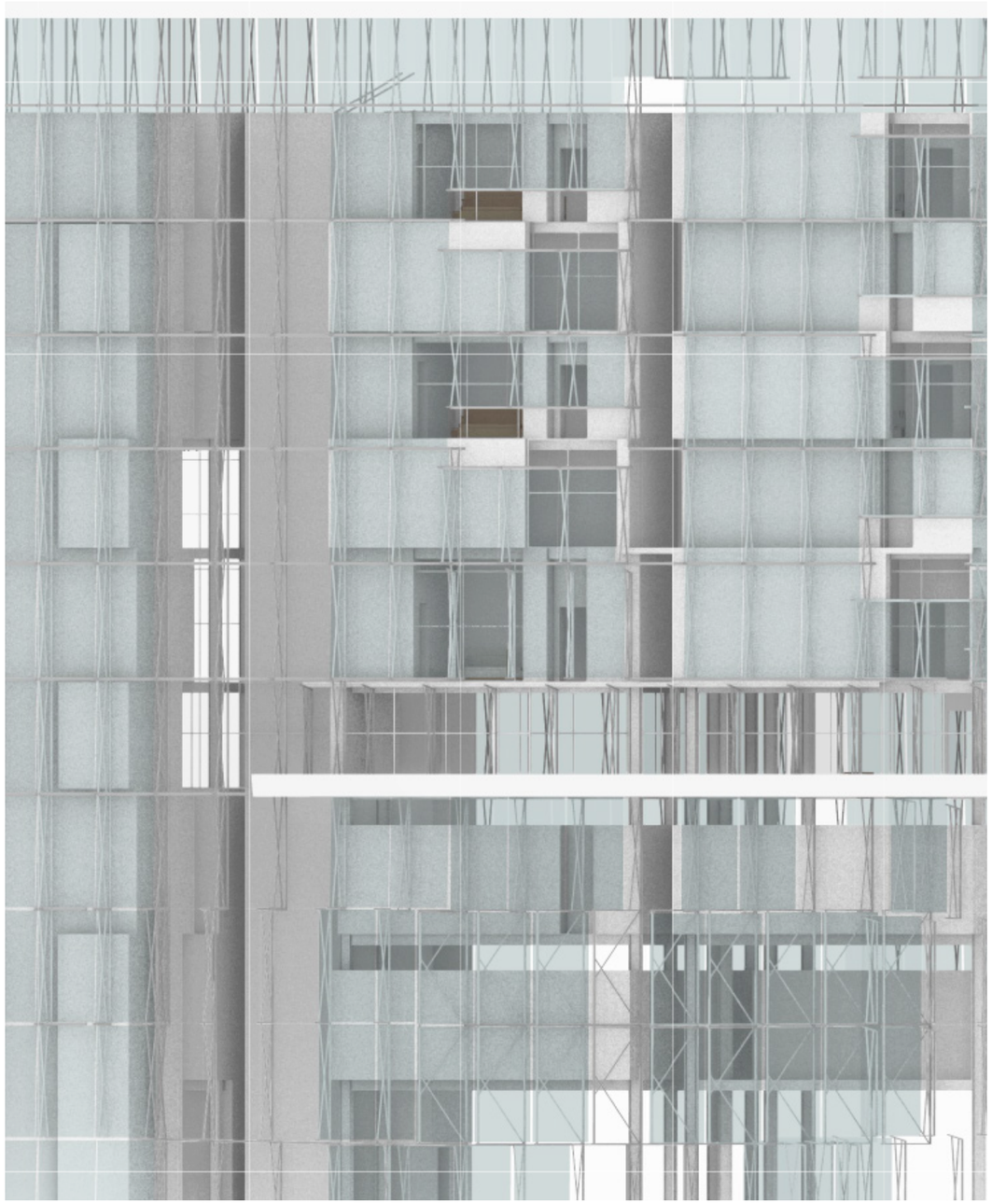


Long Section

Solar Response





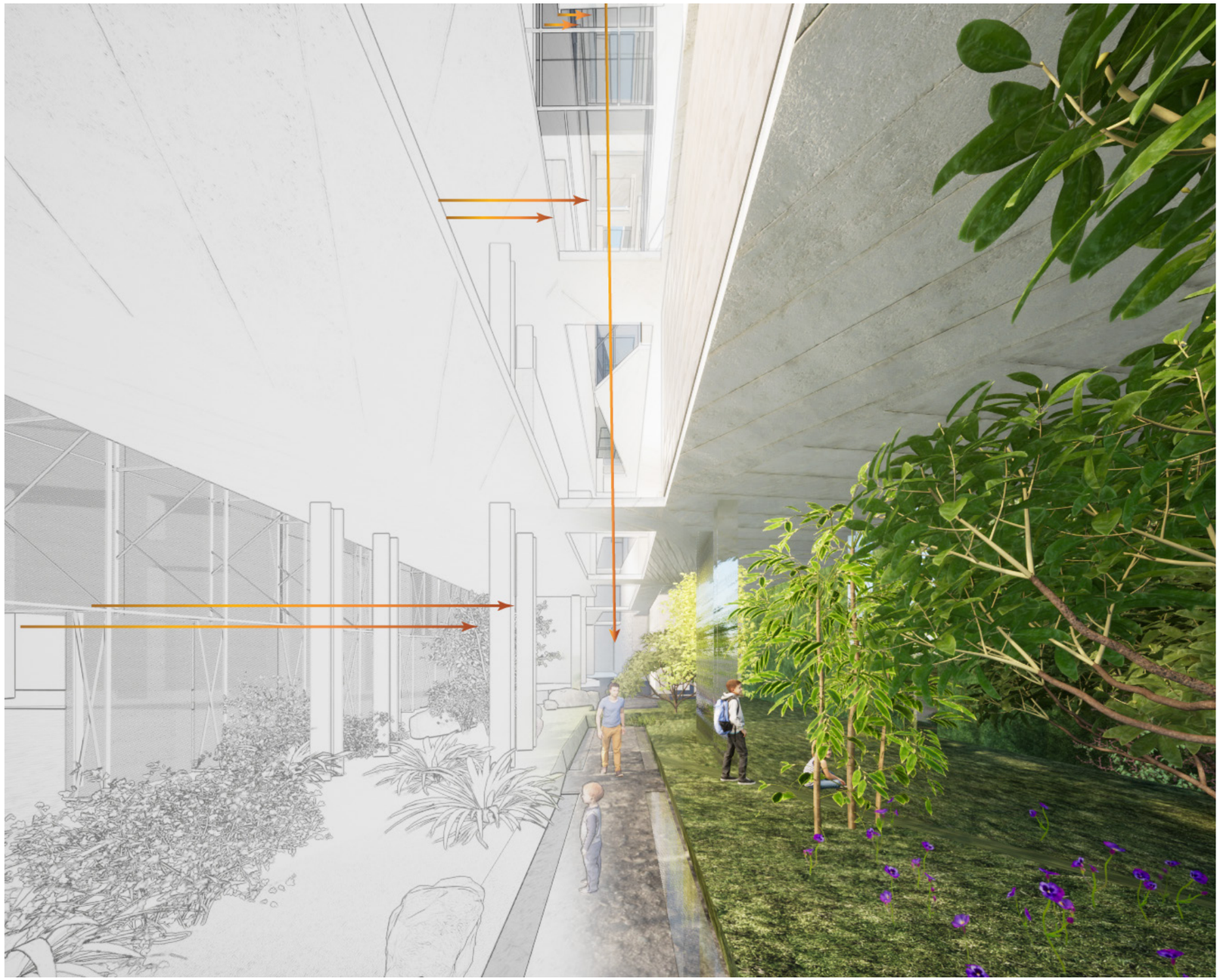


Solar Response

Light Corridor

Gap through the center of the project allows for a wind and light corridor, distributing light to the spaces below.

the first floor is also open to glass which encourages more light to reach the vegetation of the first floor.



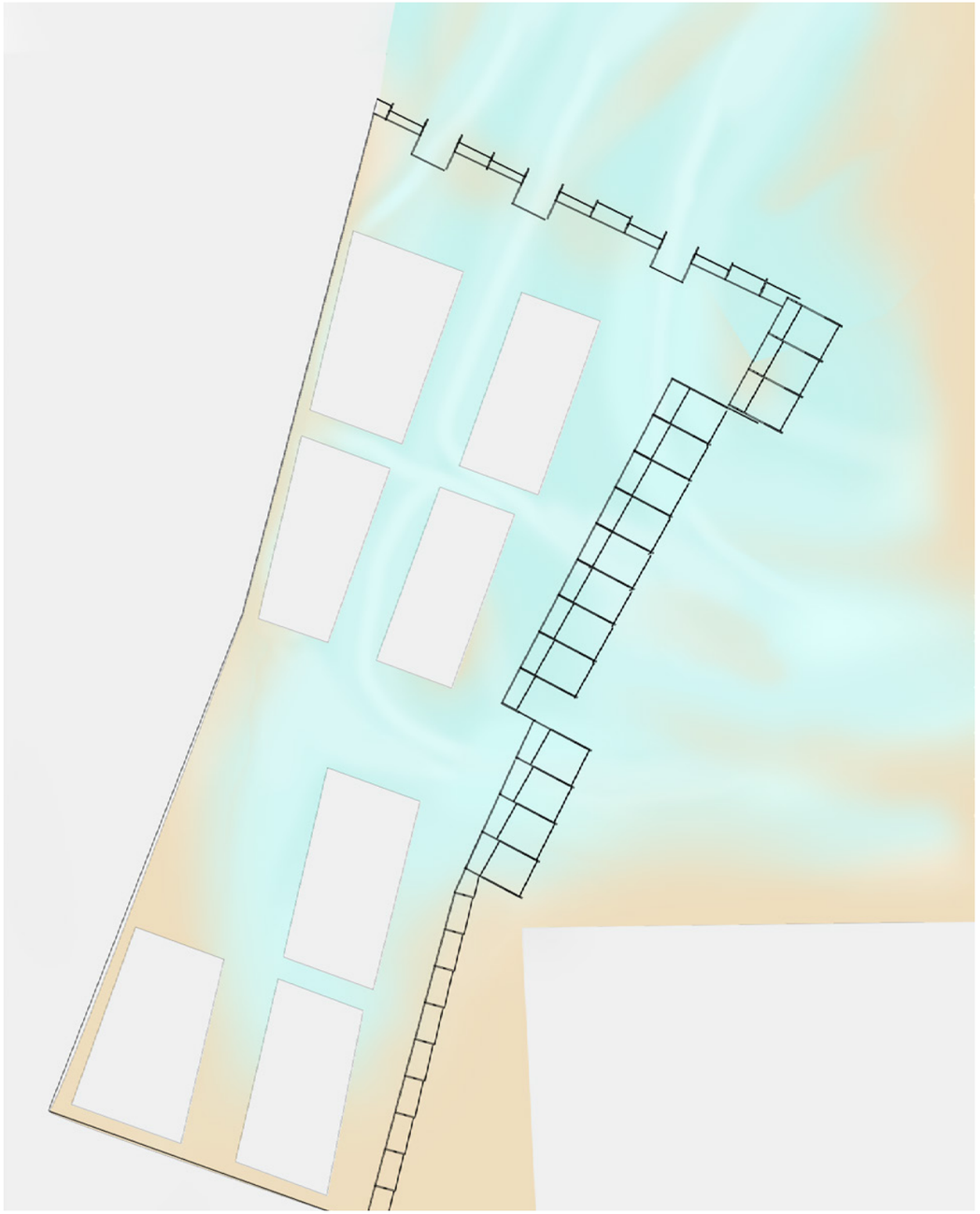
Temperature Analysis

Open Shell: Summer Solstice

Wind tunnel effect cools on average 7 degrees Fahrenheit
vegetation cools a space by 2 to 9 degrees Fahreinheit

Average temperature inside shell
73F or 22.78C

Average temperature outside
shell 80.6F or 27C

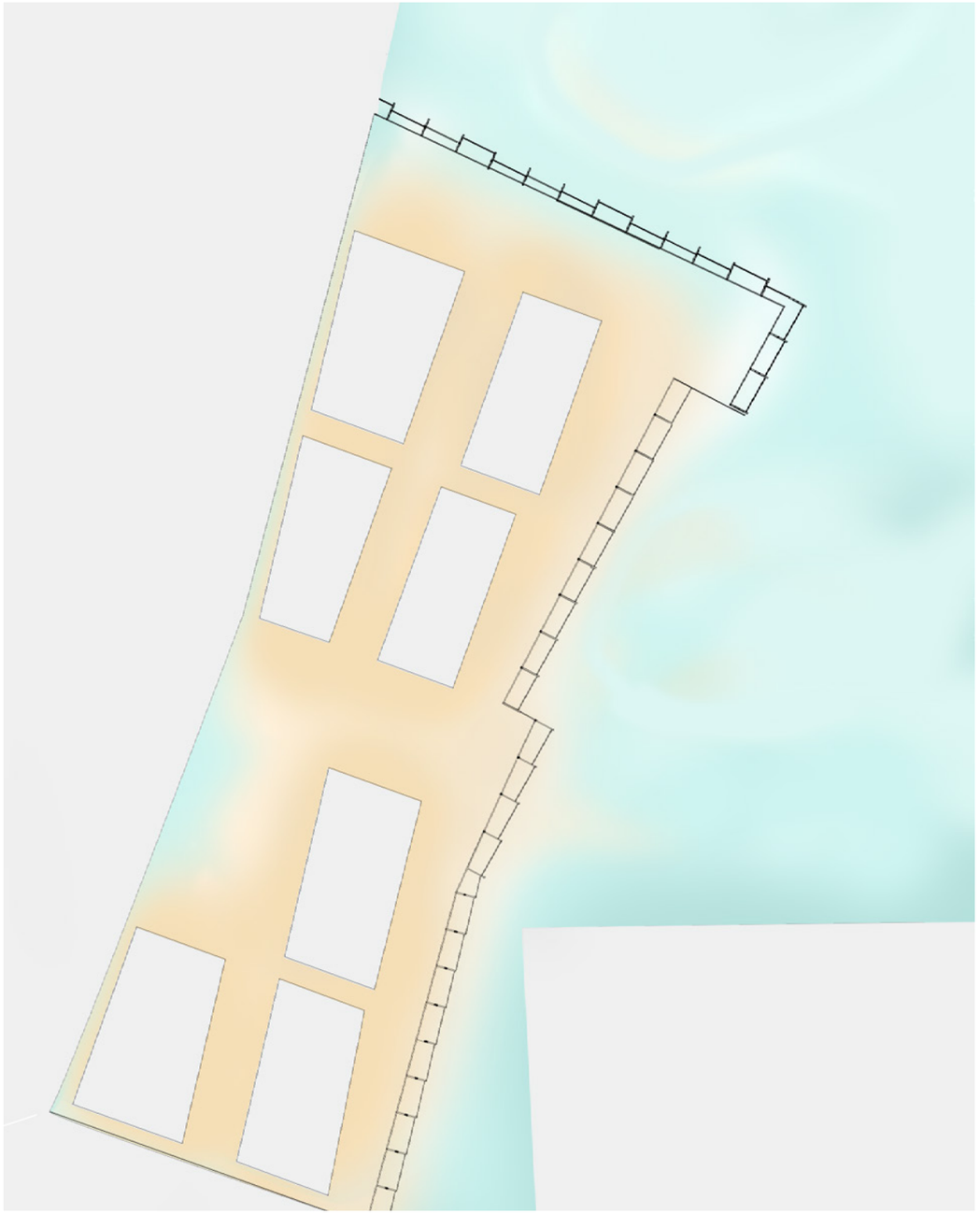


Temperature analysis

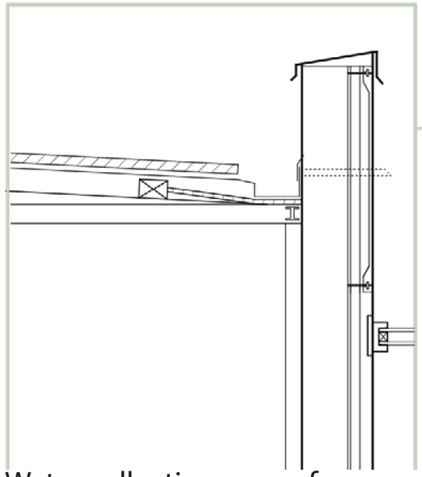
Closed Shell: Winter Solstice

Average temperature inside shell
78 degrees Fahrenheit

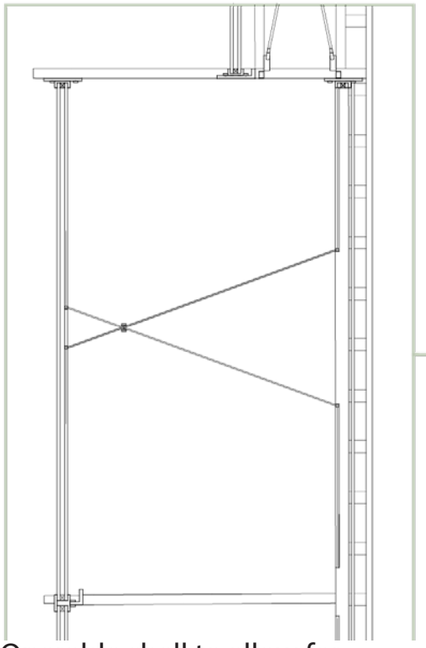
Average temperature outside
shell 48 degrees Fahrenheit



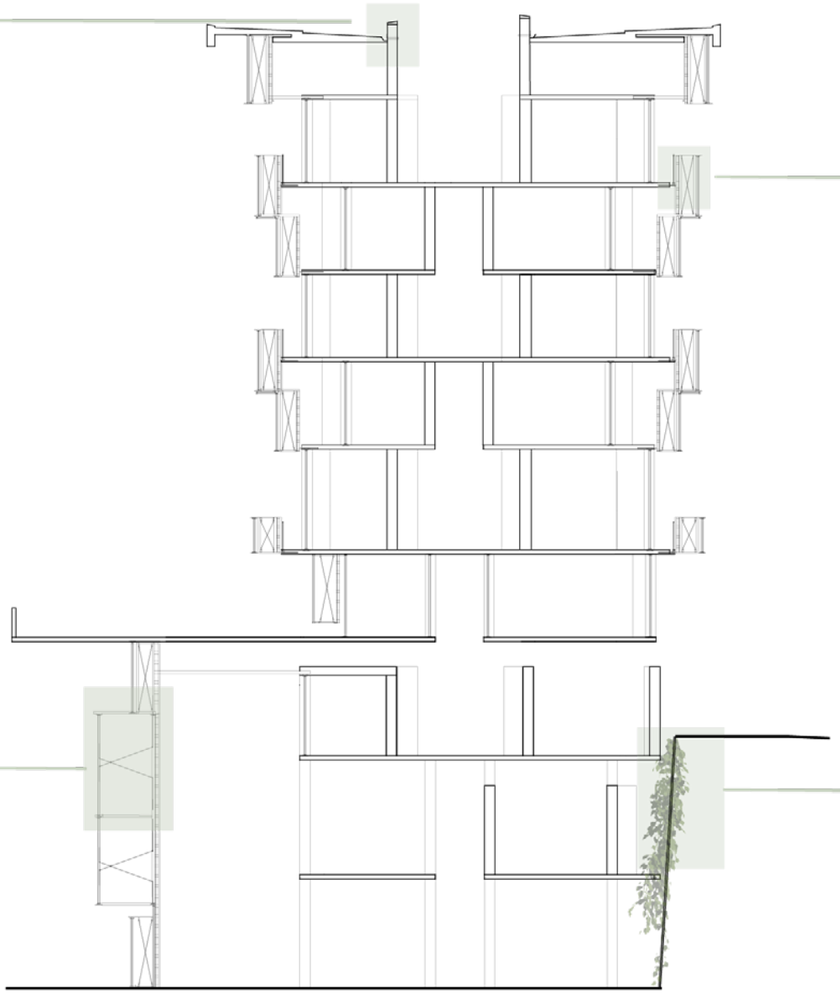
Energy Management Strategies

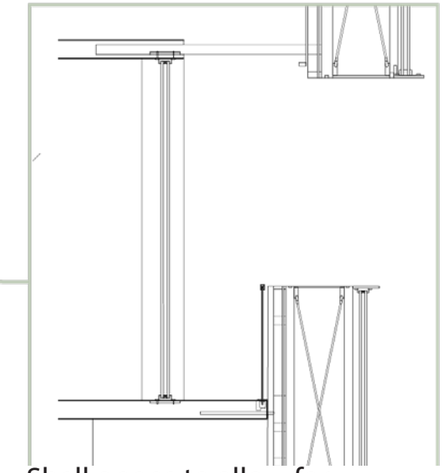


Water collection on roof



Operable shell to allow for ventilation





Shell opens to allow for balconies

Green wall at base of project