LA CASCATA

IX

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GENOVA // SPRING 2023
ARCHITECTURAL DESIGN STUDIO IX

VISUAL REFERENCES

BARCELONA, SPAIN

Turó de la Peira's Sports Center, a solar-powered complex covered in a lush green facade. The building's innovative hydroponic system includes a rainwater collection system that irrigates the vegetation year-round

CONCEPTUAL LANDSCAPE

Cascading landscape seems to create a "spilling efffect" , fitting for the design of piazza Dante given the sudden change in grade

CARLO SCARPA AT THE QUERINI STAMPALIA FOUNDATION

These geometric travertine steps once again display an effect of cascading and spilling, fitting for such an aquatic city like venice. Additionally the mass and material of this detail inspired the form in our design process

STADTGARDEN, STUTTGART, GERMANY

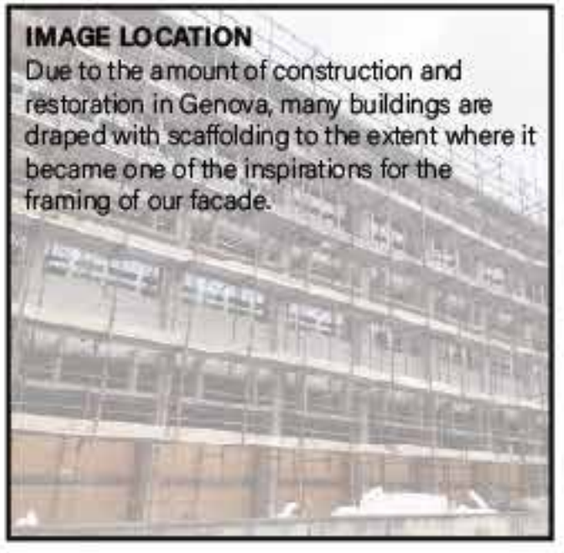
This centralized park offers many thoughtful details of hardscape that engage the the public domain, this improved our overall design for the main piazza space

CITY LIFE RESIDENCE, MILAN, ITALY

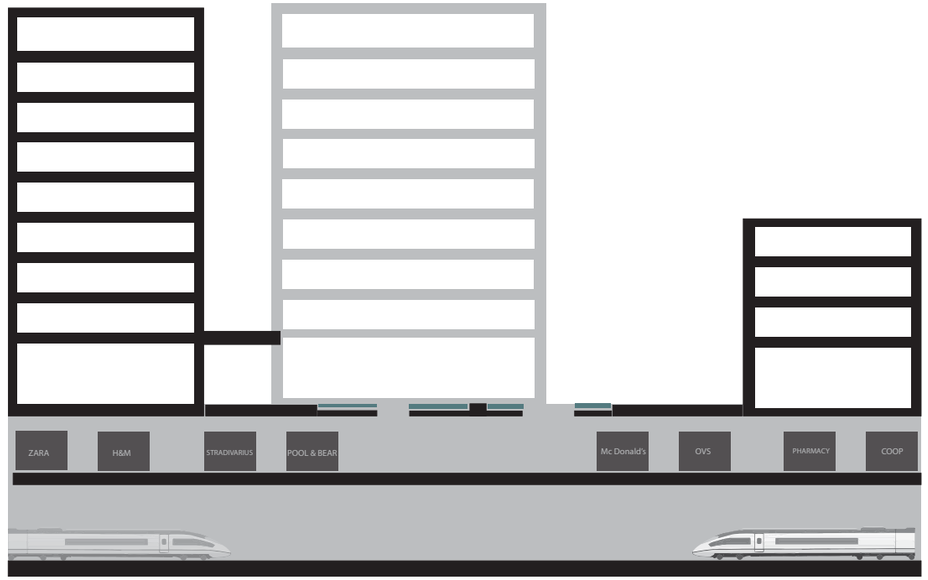
We drew inspiration from the gentile moves of Zaha Hadid's form and facade of this urban housing project, the overlapping and shifting of elements creates a formal texture that brings variation to the exterior

IMAGE LOCATION

Due to the amount of construction and restoration in Genova, many buildings are draped with scaffolding to the extent where it became one of the inspirations for the framing of our facade.

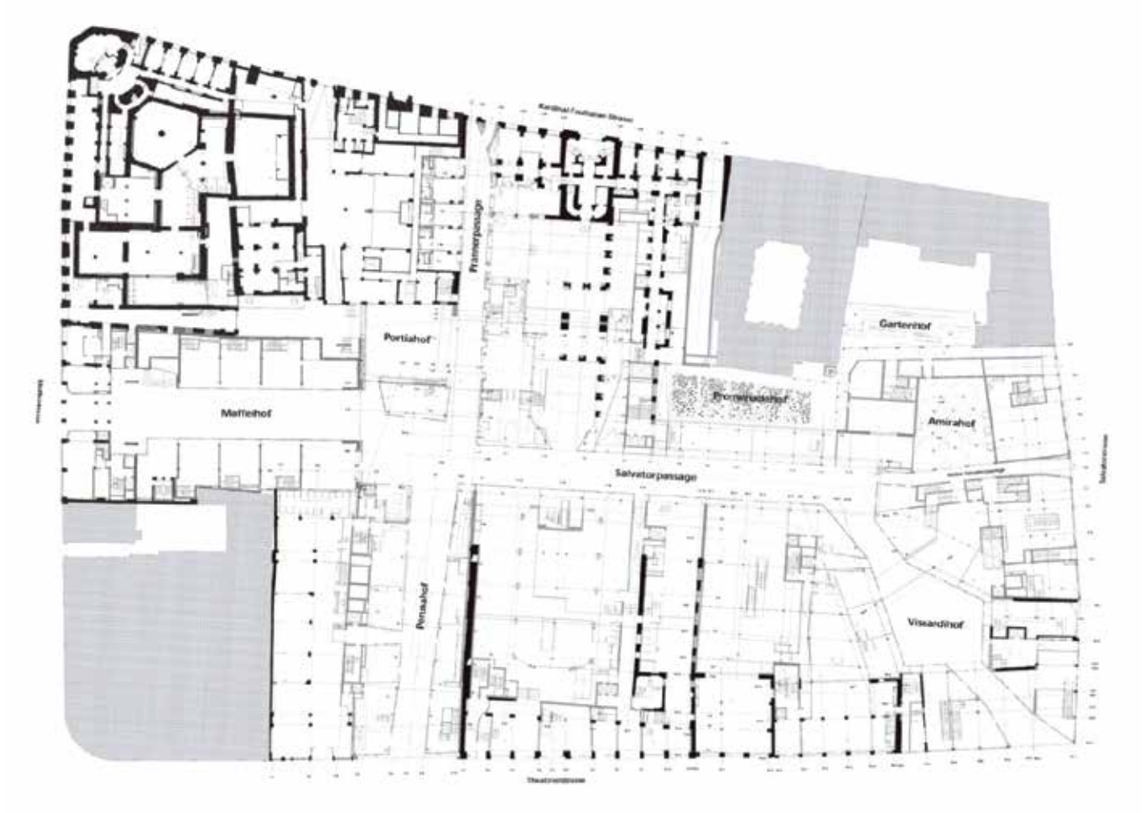


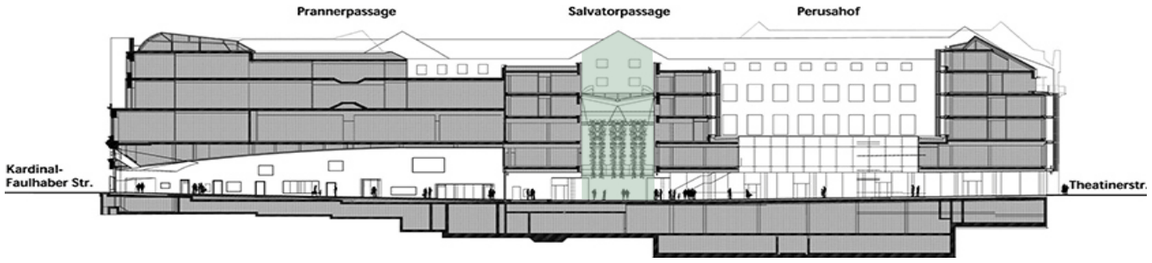
PIAZA GAE AULENTI MILANO



The Gae Aulenti Piazza is a stylish and beautiful space with sculptural features including a continuous flowing circle of seating surrounding a vast reflecting pool, 60 metres in diameter that reflects the colours of the changing seasons and surrounding buildings. The pool cascades down two floors, the sound of which mitigates the noise pollution of surrounding roads, and creating three beautiful oval cascades that bring daylight and natural ventilation to spaces below. The light wells that it creates connect the square with the retail floor and car parking below, whilst also allowing light and air to penetrate the surrounding towers' deep footprints.

FUNF HOFE MUNICH





FONDAZIONE QUERINI STAMPALIA

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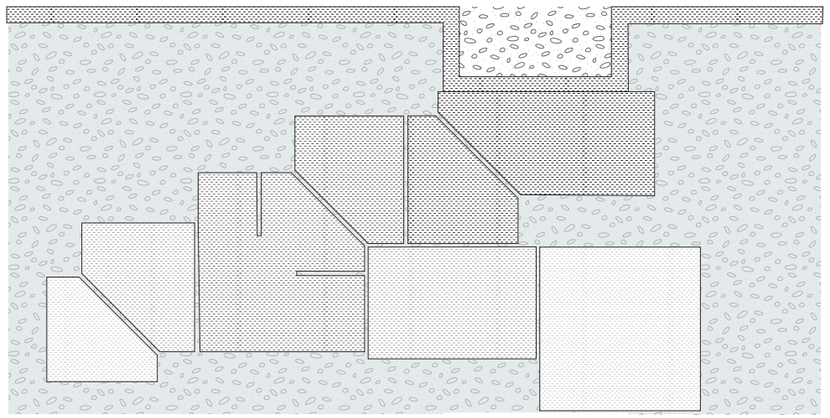
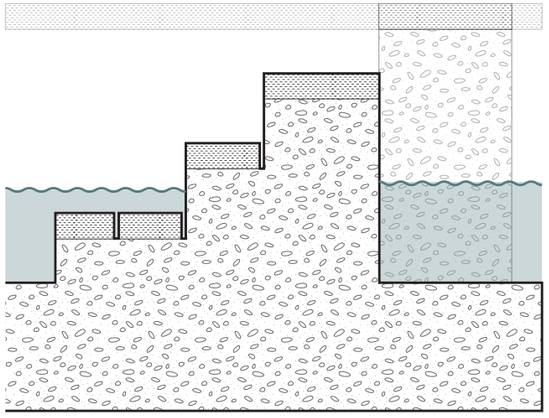
Plan

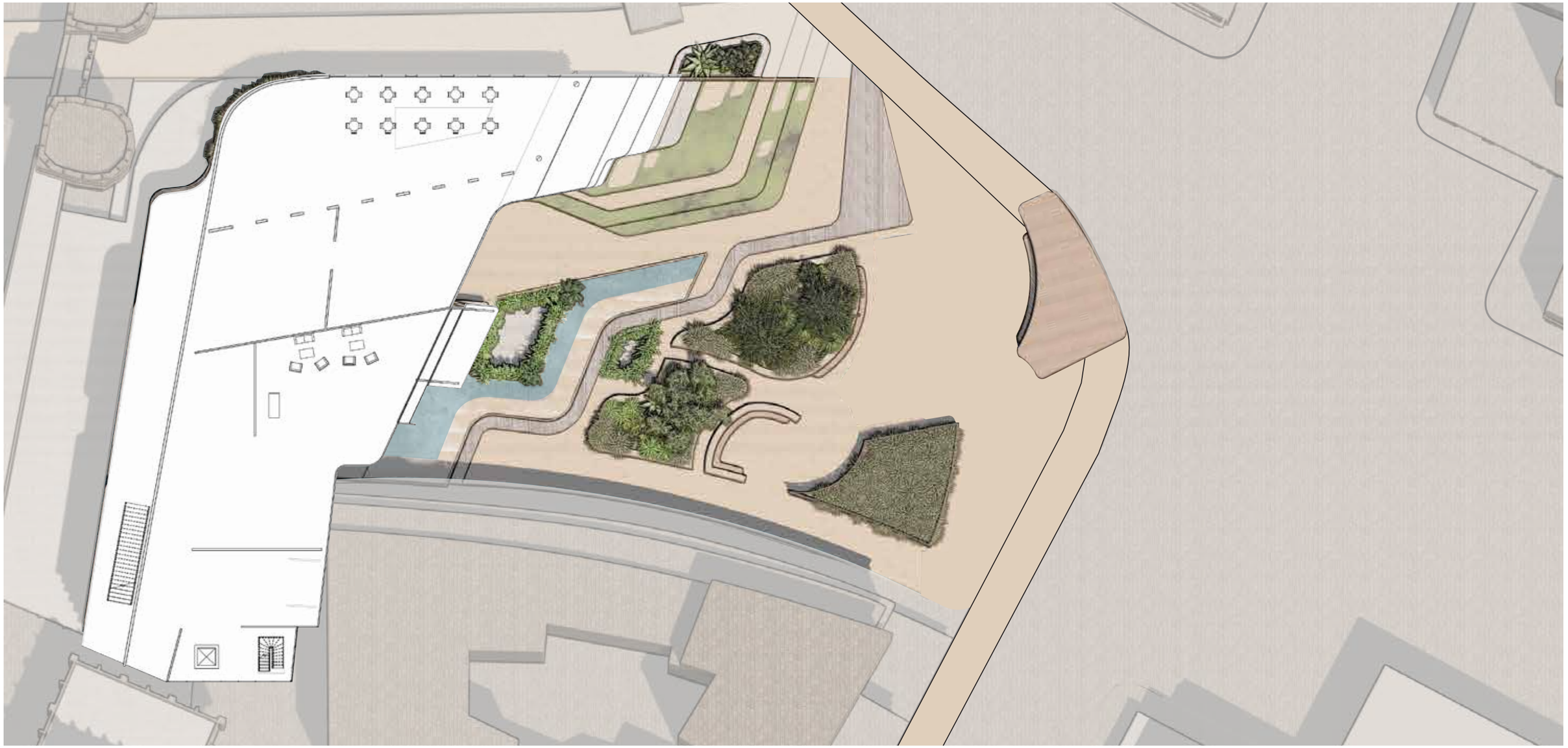




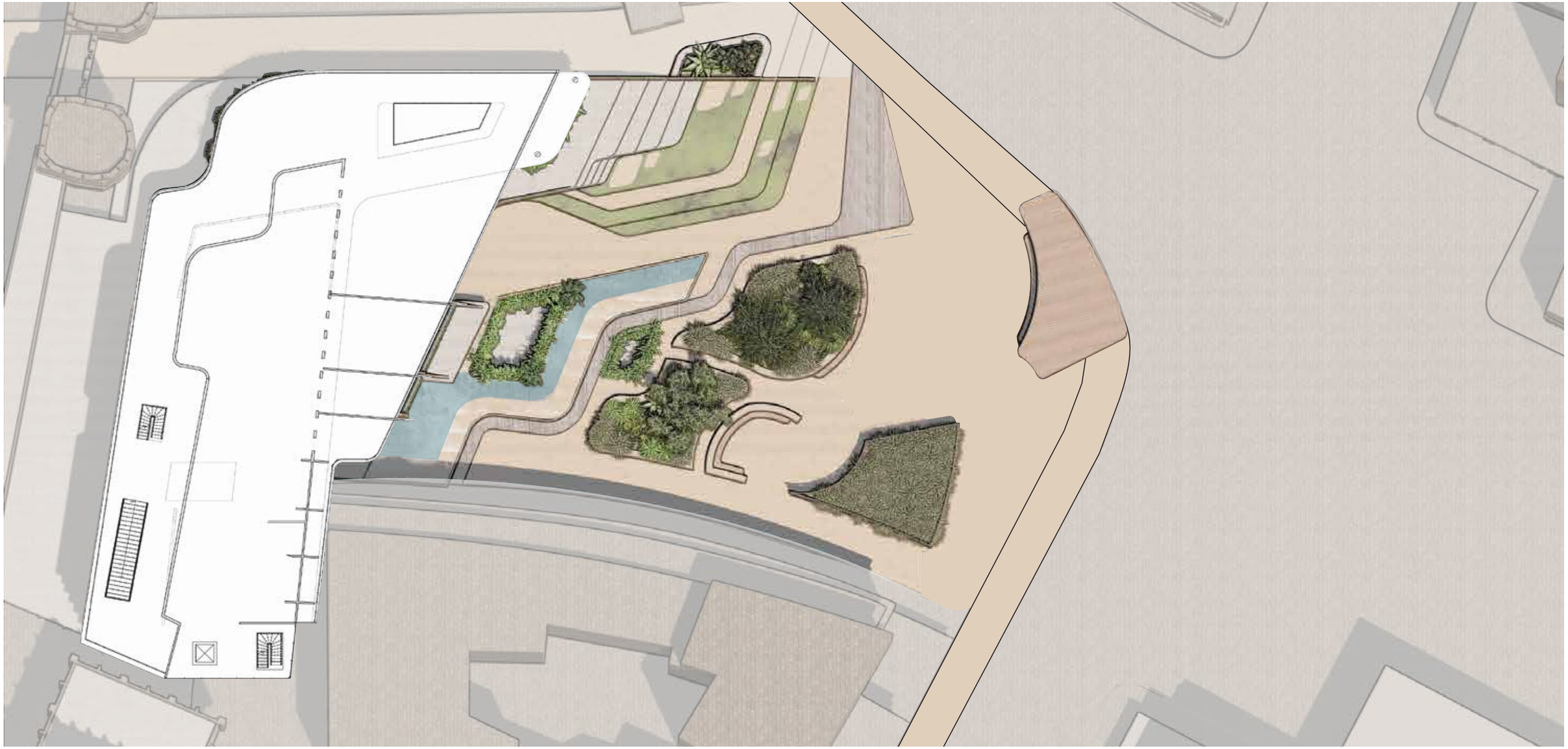
SITE PLAN

PROPOSED PLAN

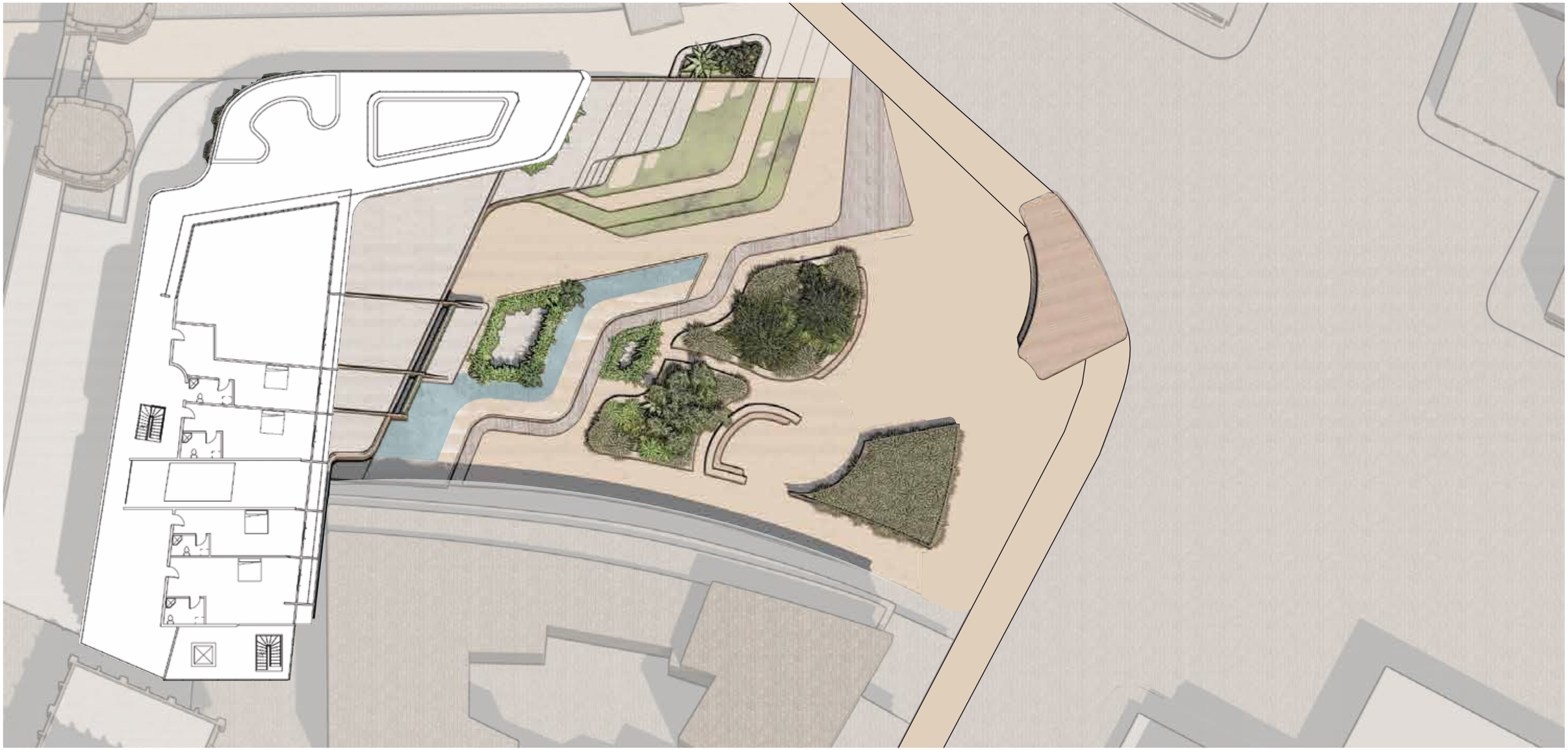
HOTEL LOBBY AND RESTAURANT SPACE



COMMERCIAL SPACE

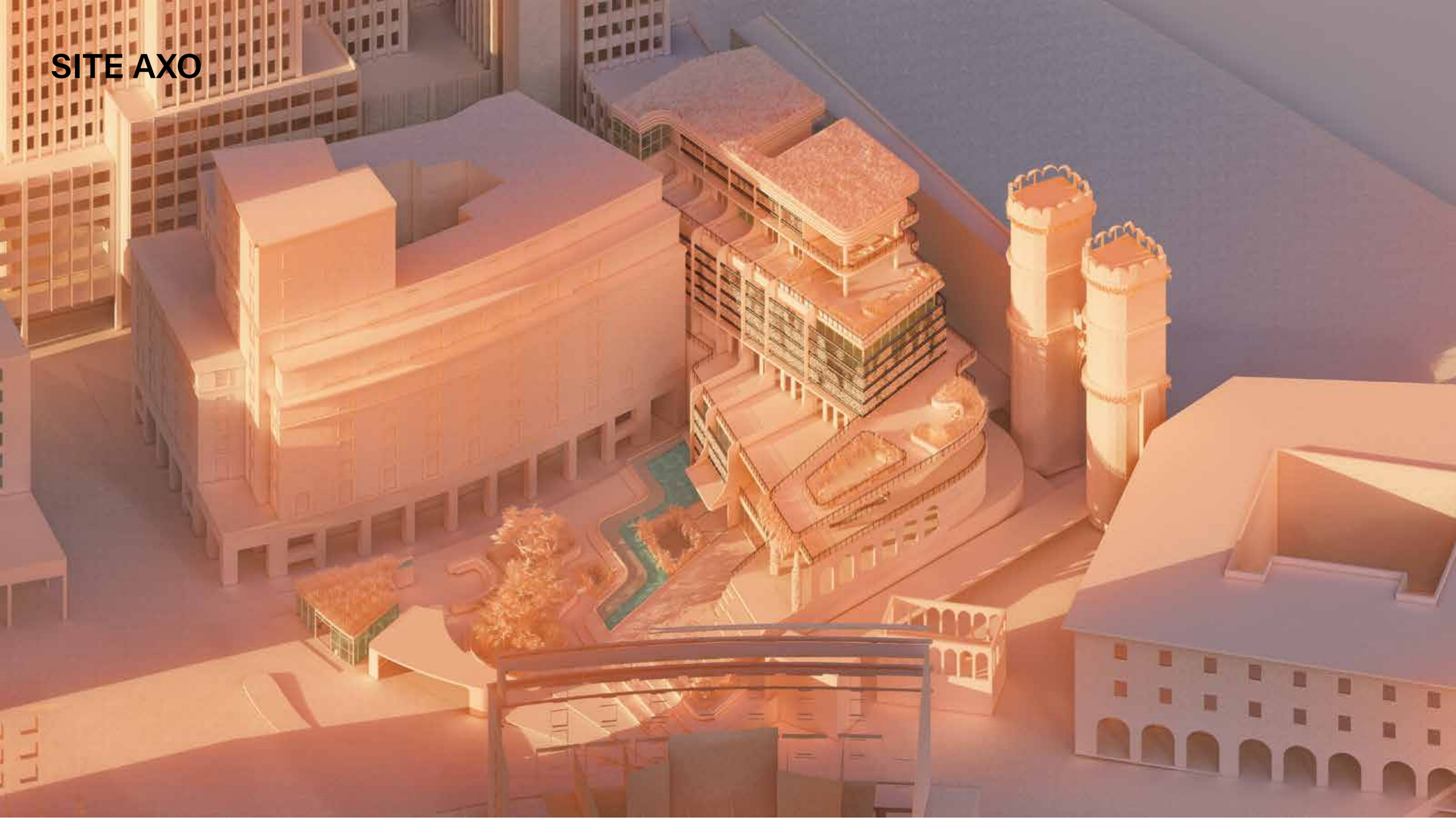


HOTEL SPACE

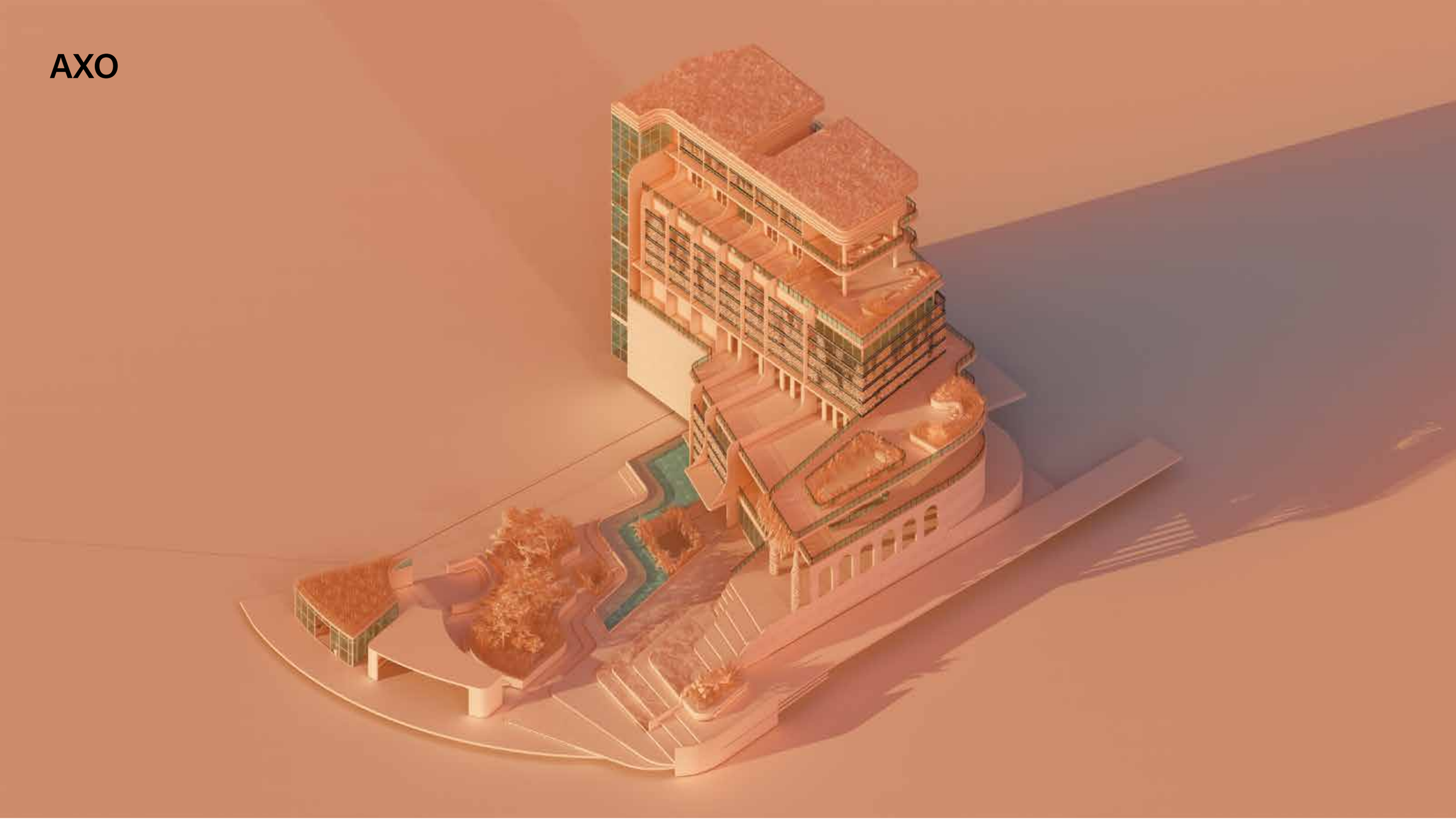


HOTEL SPACE

SITE AXO

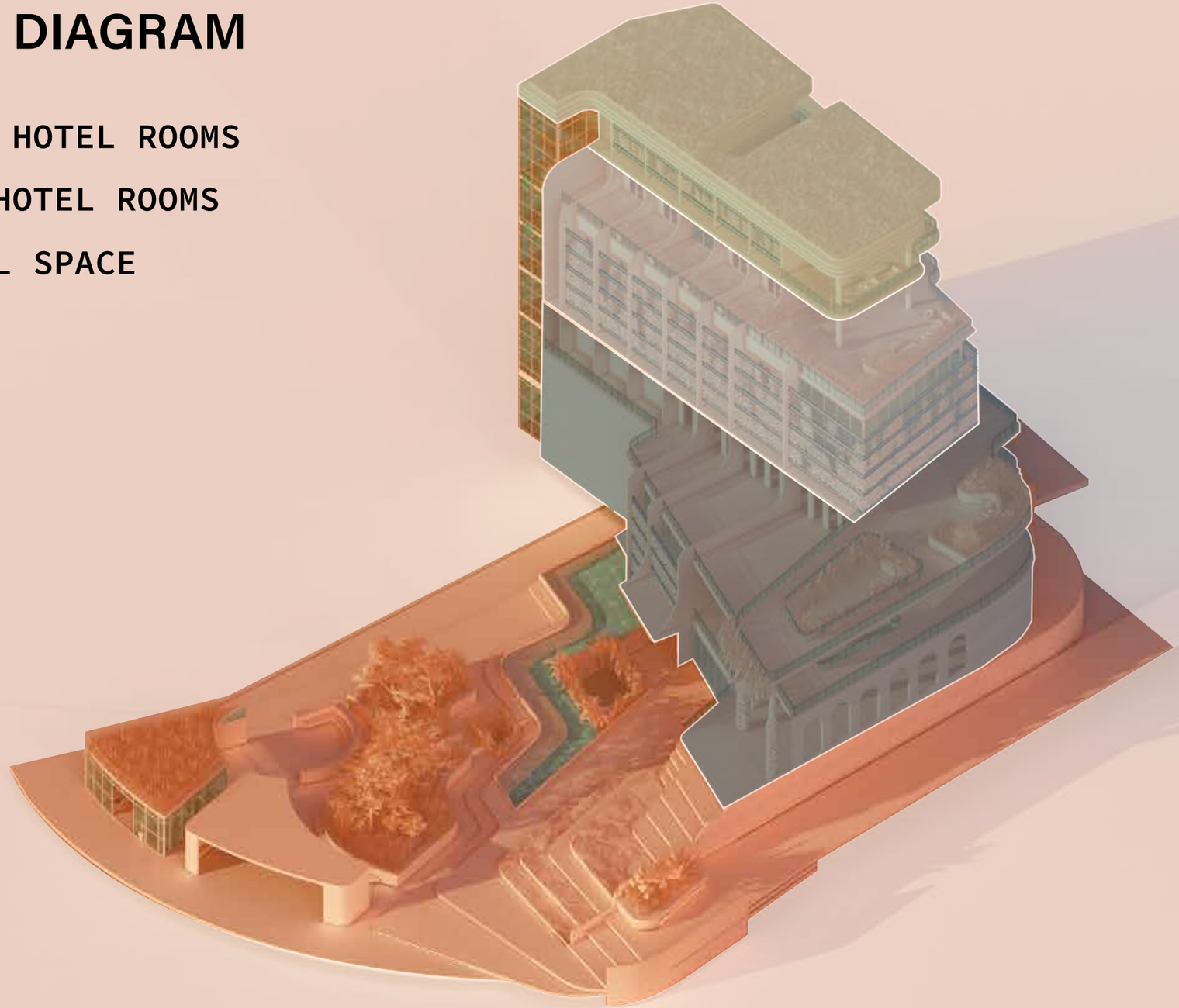


AXO

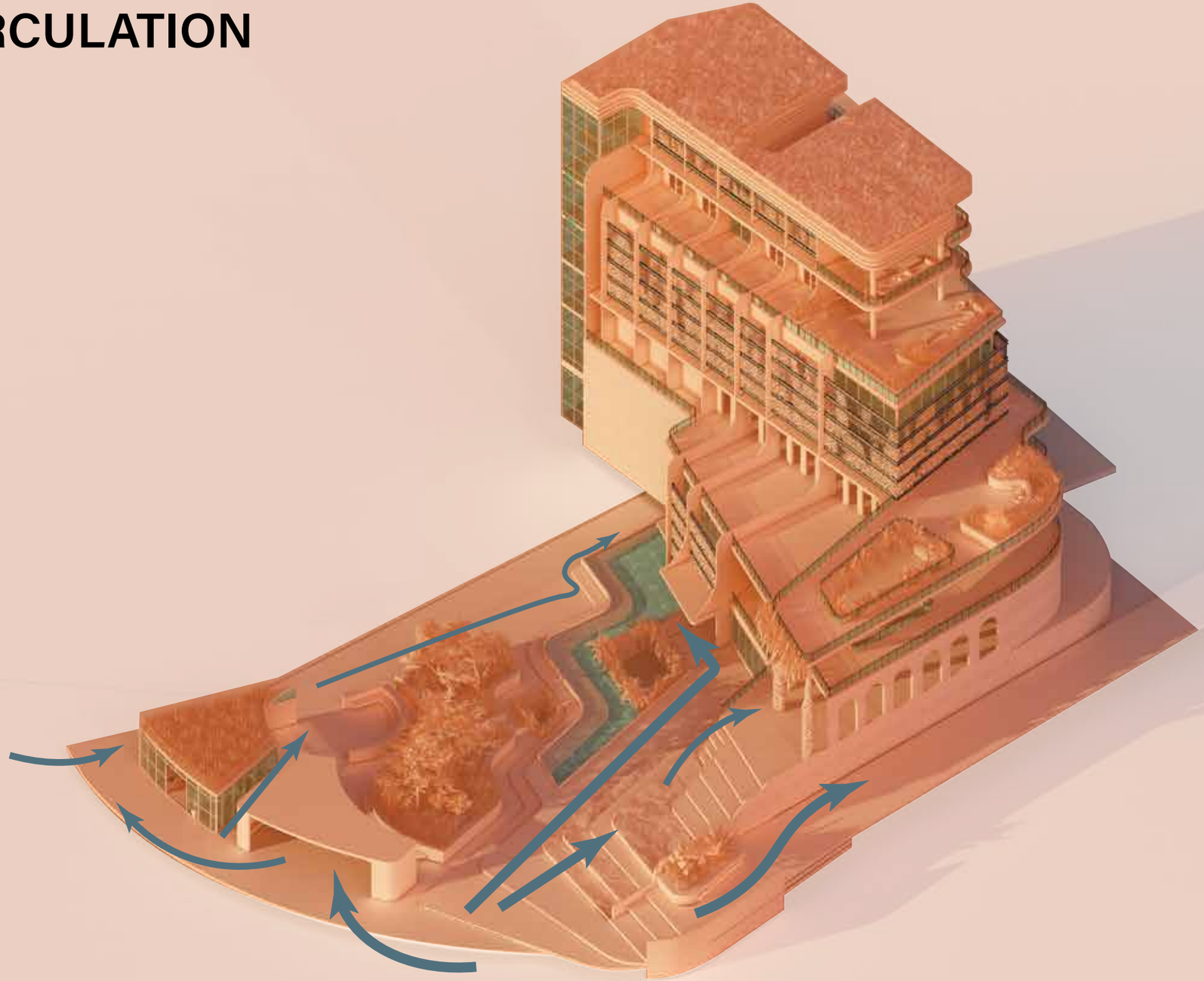


PROGRAM DIAGRAM

- PENTHOUSE HOTEL ROOMS
- STANDART HOTEL ROOMS
- COMMERCIAL SPACE



SITE CIRCULATION



PERCIPITATION ON SITE

AVARAGE ANNUAL PERCIPATION

Genoa is a city with a significant rainfall. Even in the driest month there is a lot of rain. This climate is considered to be Cfb according to the Köppen-Geiger climate classification. In Genoa, the average annual temperature is 12.5 °C | 54.5 °F. About 1315 mm | 51.8 inch of precipitation falls annually.

WATER NEEDS

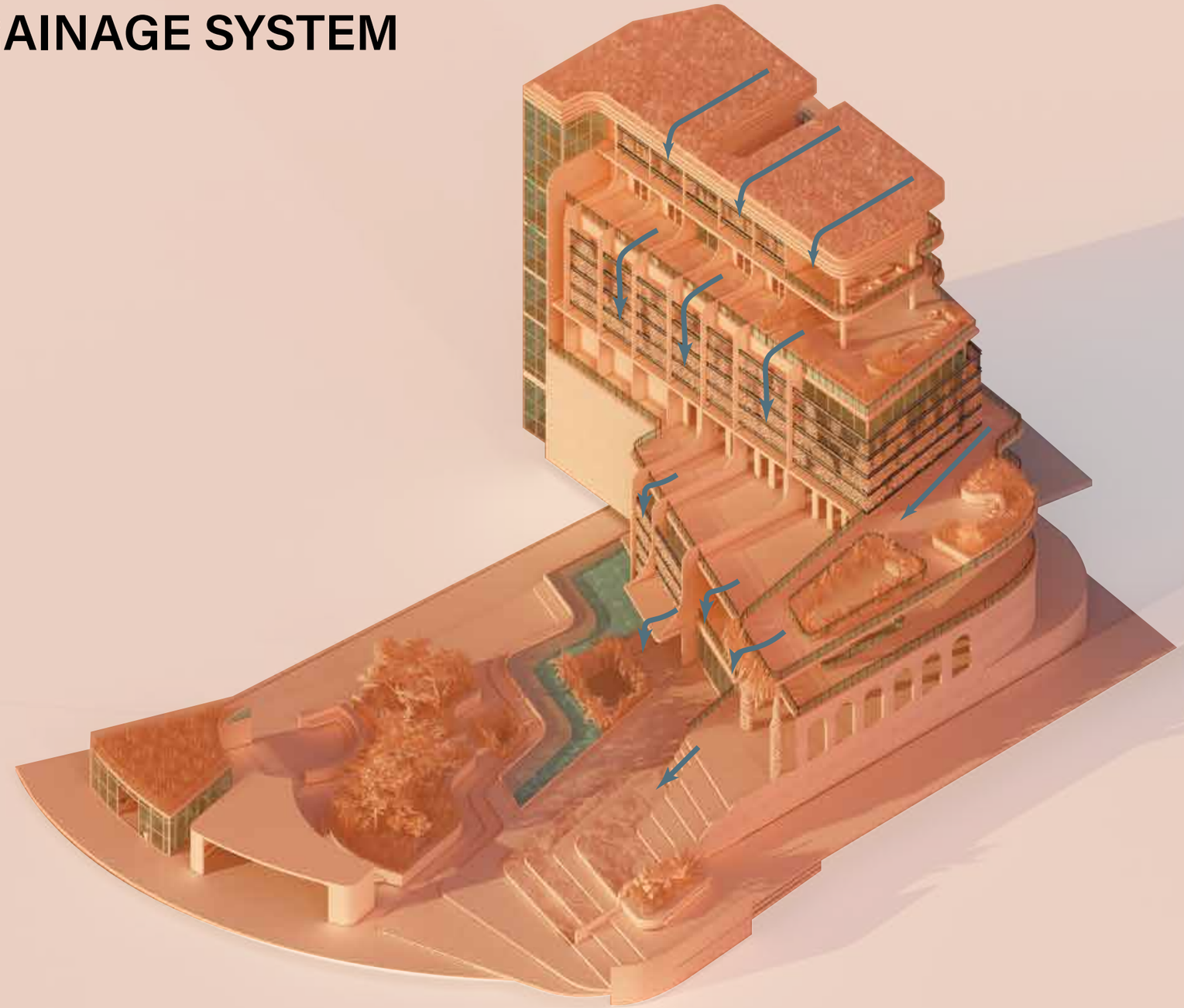
The site area is 2808 sqm. With roungly half being used for green spaces. The water accumulated would equal approximetely 3 million liters a year. One sqm of green spaes planted with shrubs would need 33 liters of water per week. The total area watered would be 1000 sqm requiring (33 L x 52 weeks x 1000 sqm) 1.7 million L per year.

TOTAL AREA
2808 sqm x
ANNUAL RAINFALL
1315 mm =
RAIN WATER ACCUMULATED
3.69 million L

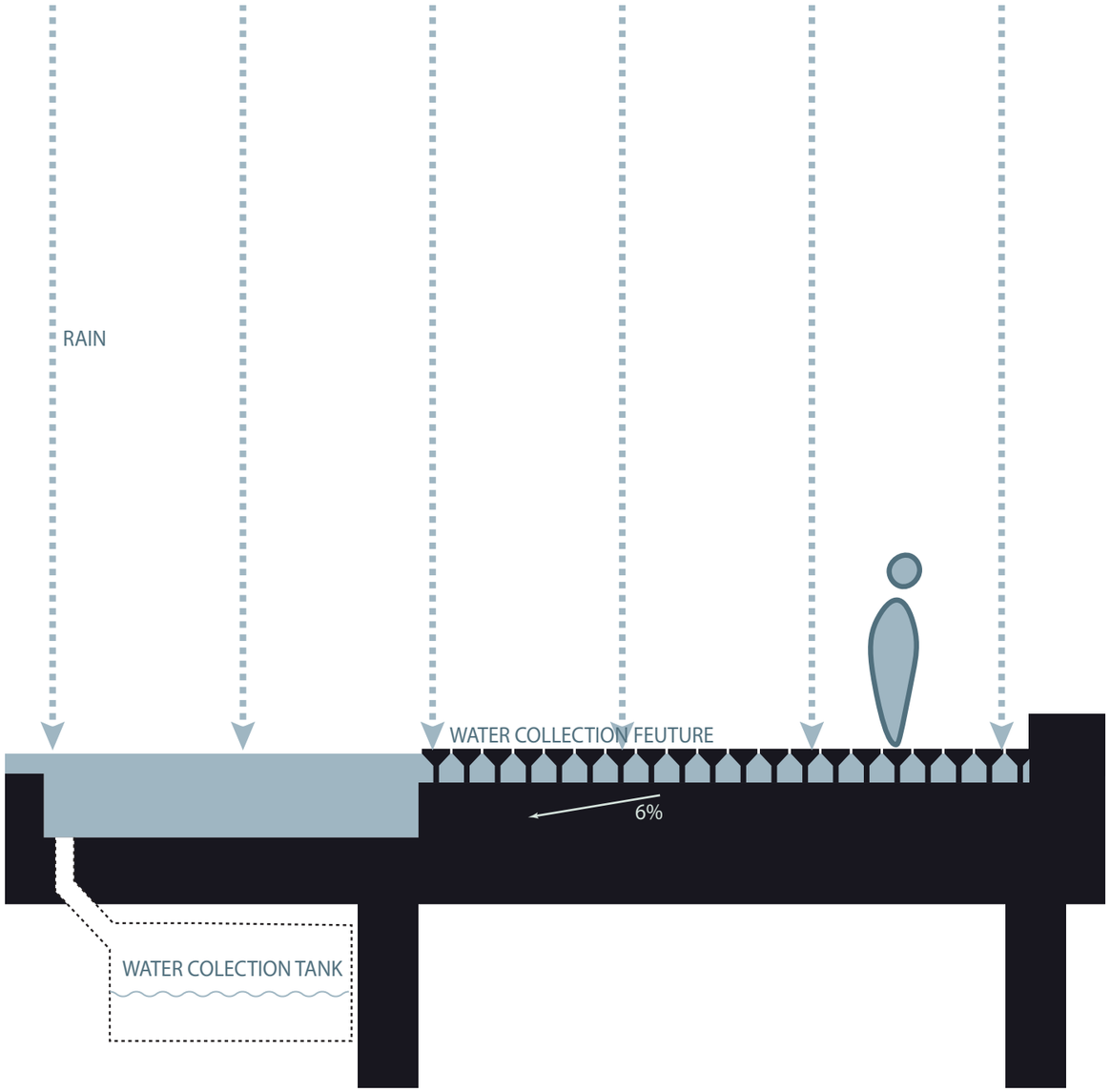
WATER PER WEEK
33 L x
WEEKS
52 x
MAX AREA PLANTED
1000sqm =
RAIN WATER NEEDED
1.7 million L

WATER COLLECTED
3.69 million L =
WATER NEEDED
1.7 million L

WATER DRAINAGE SYSTEM

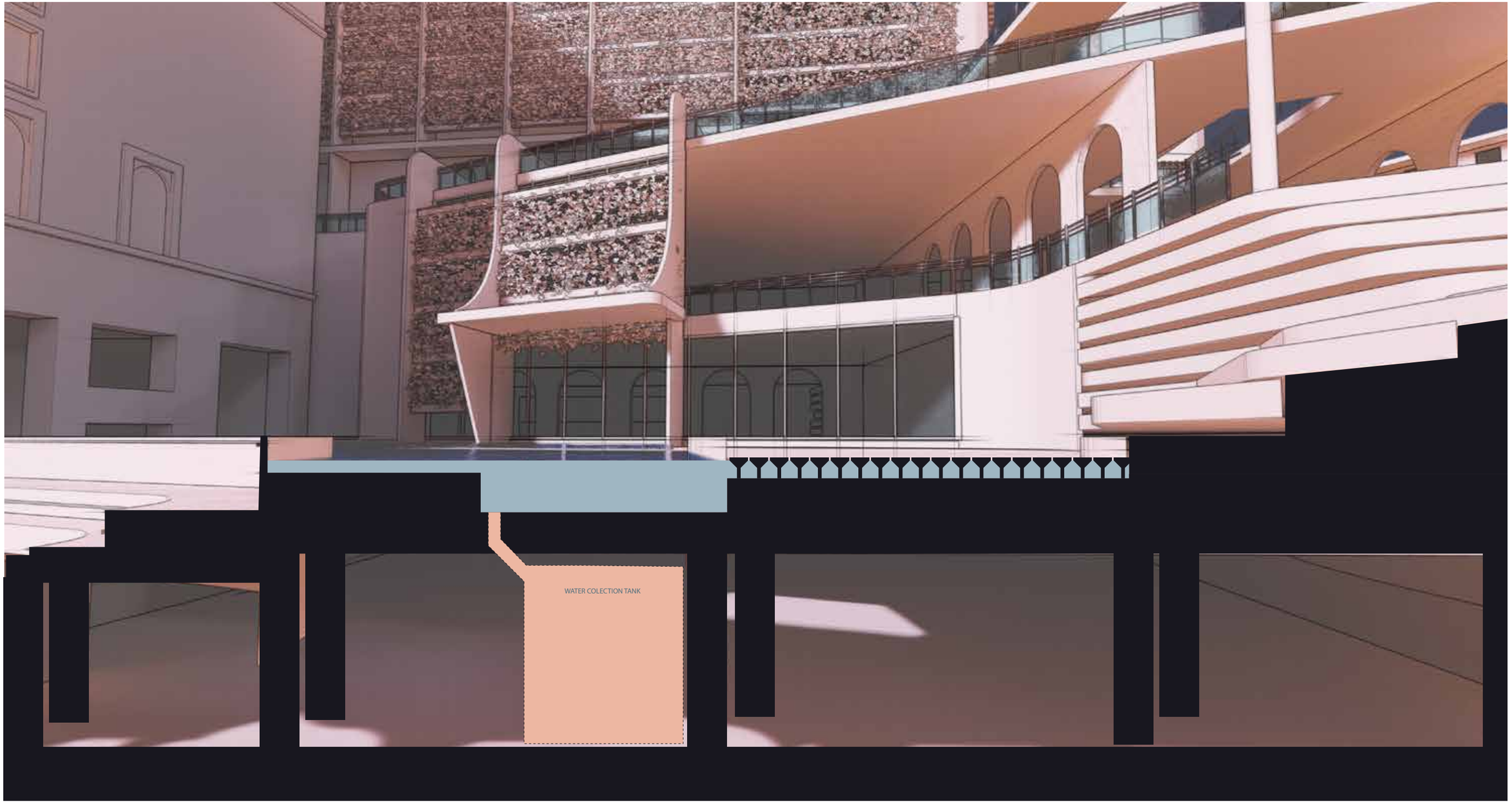


DOUBLE FLOOR SYSTEM



WATER COLLECTION SYSTEM

The double floor system allows for water collection directly on site. The rain water enters into the surface gaps in the surface above the canal system. From the catchment system water travels to the gutter and into the water collection and filtration tank due to a 6% slope. Due to custom design the top surface of water catchment system is completely walkable and even usable for rolling a suitcase, but still lets the water go through and be collected below.


WATER COLECTION TANK

SUNPATH

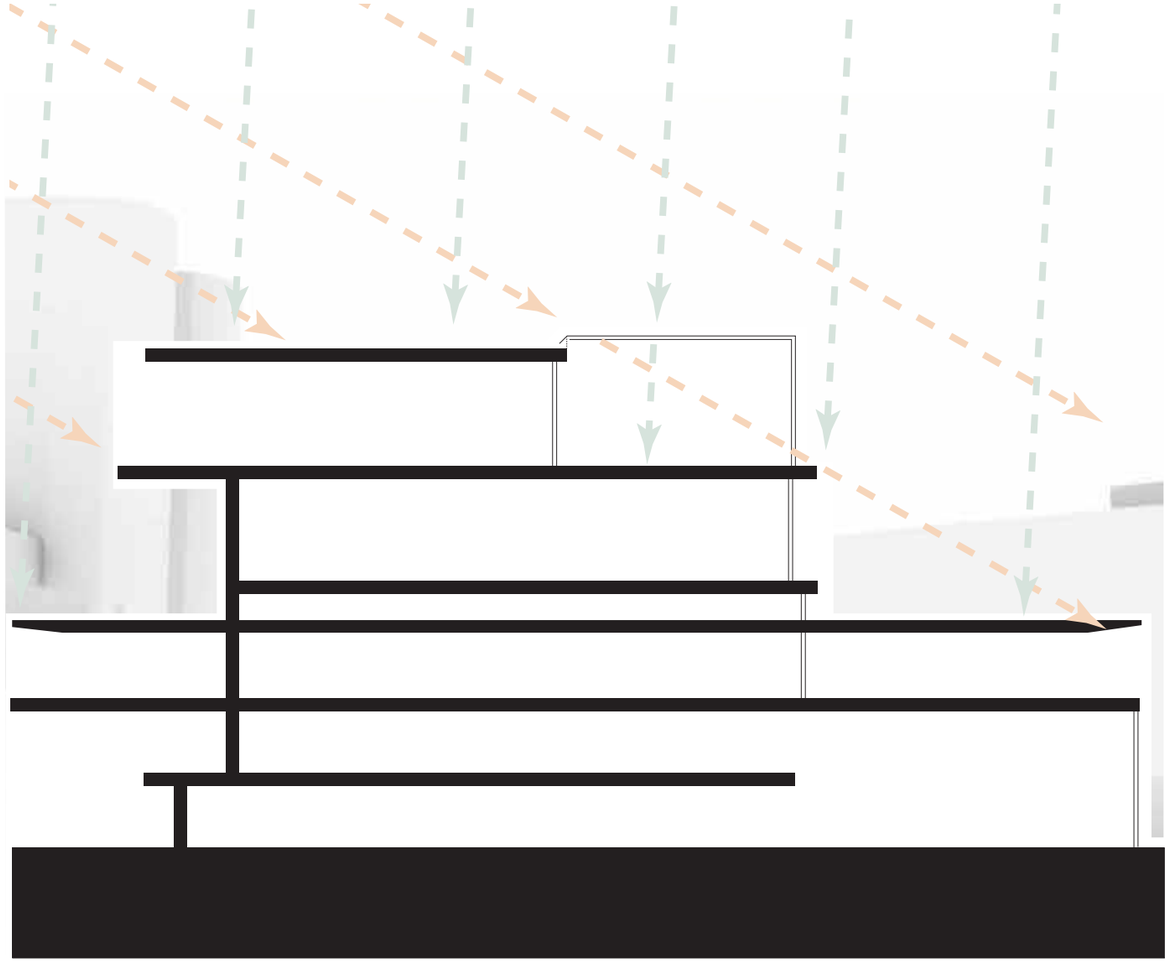
SUMMER

The summer soltice brings moderate amount of sun in the hours between 10am and 4pm.

WINTER

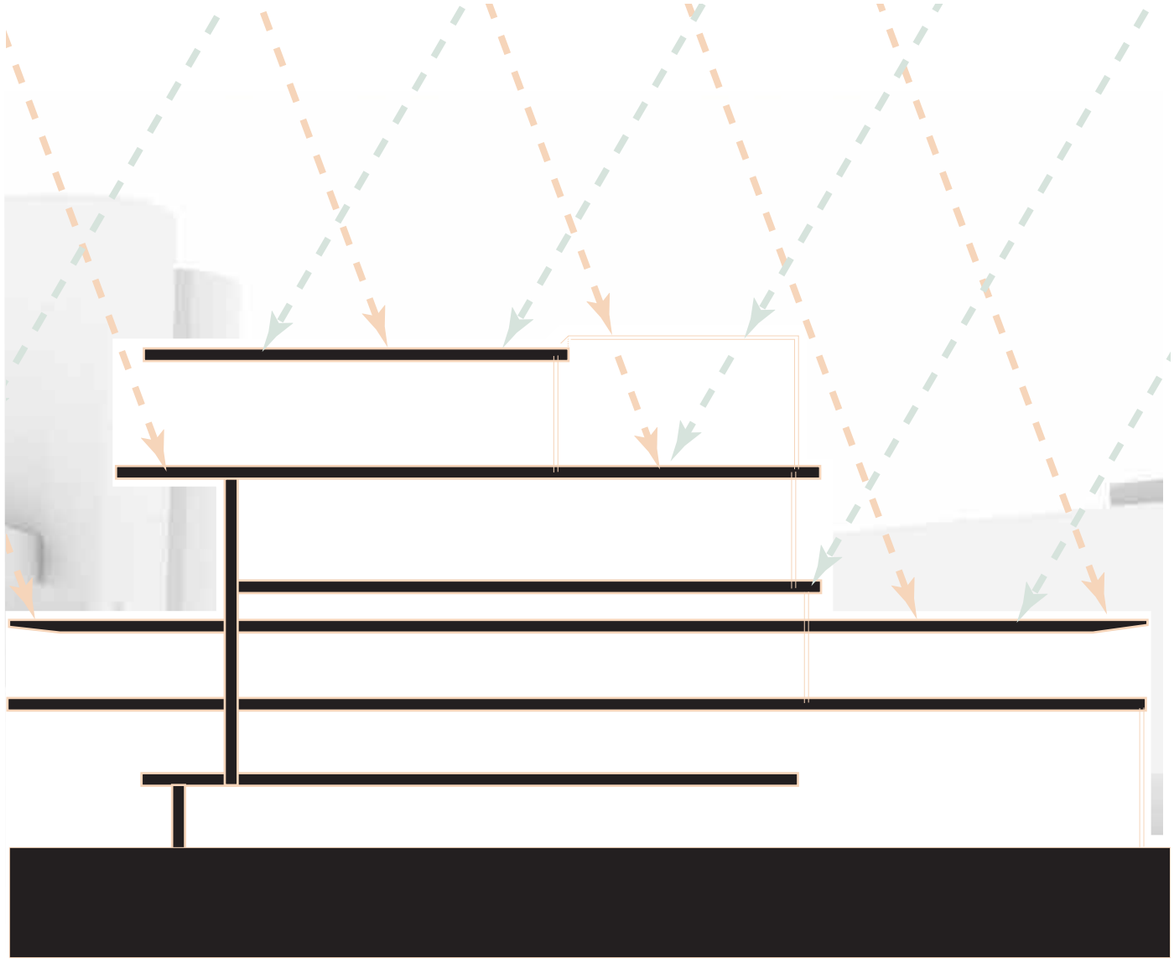
The winter soltice brings little to no sun in the hours between 10am and 4pm.

SUN ELEVATION



SUMMER

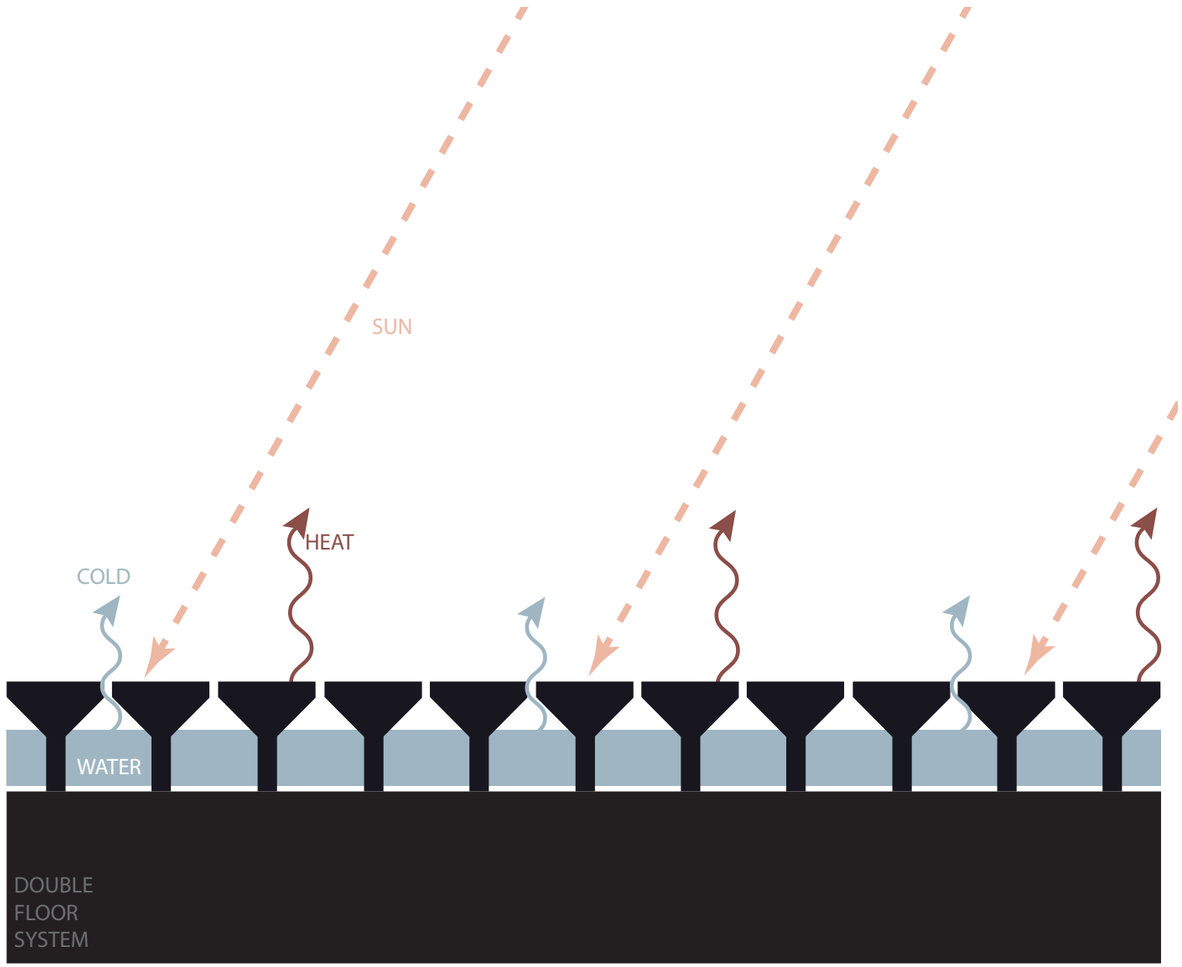
The summer soltice brings moderate amount of sun in the hours between 10am and 4pm.



WINTER

The winter soltice brings little to no sun in the hours between 10am and 4pm.

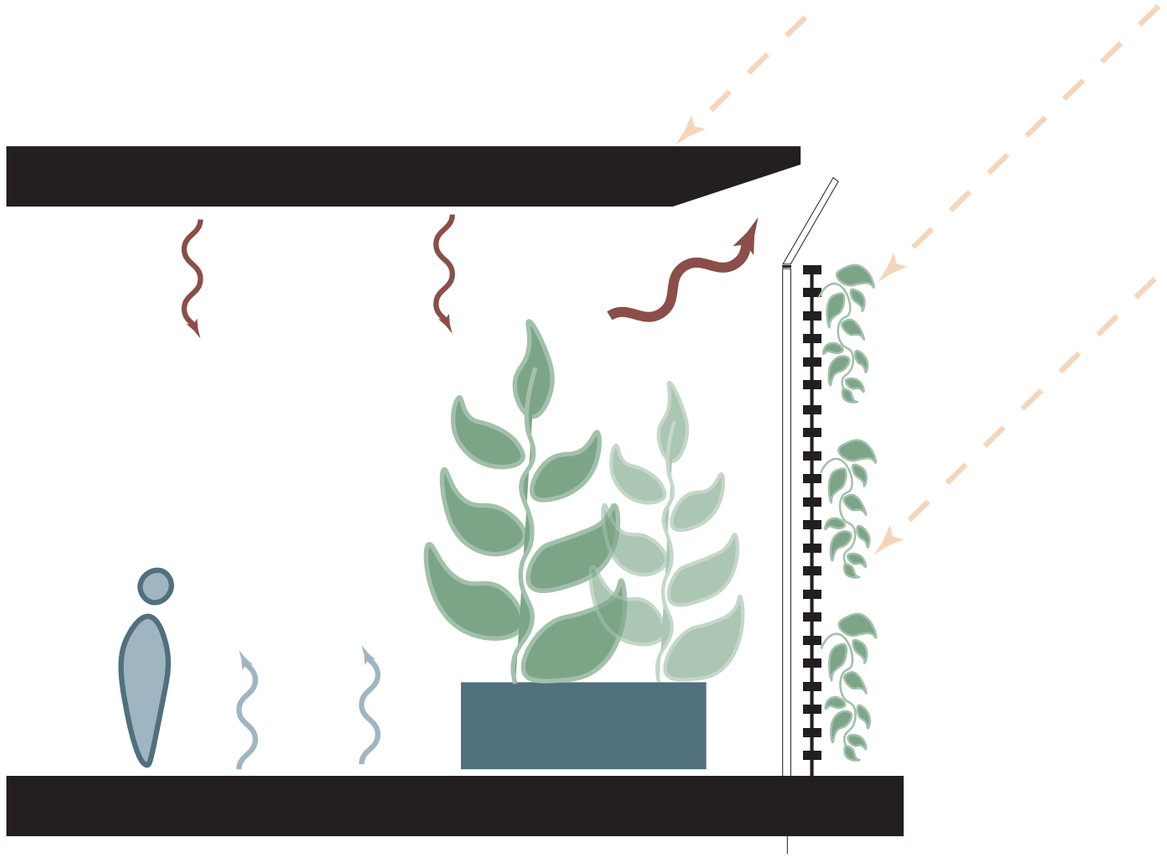
DOUBLE FLOOR SYSTEM



DOUBLE FLOOR HEAT PREVENTION SYSTEM

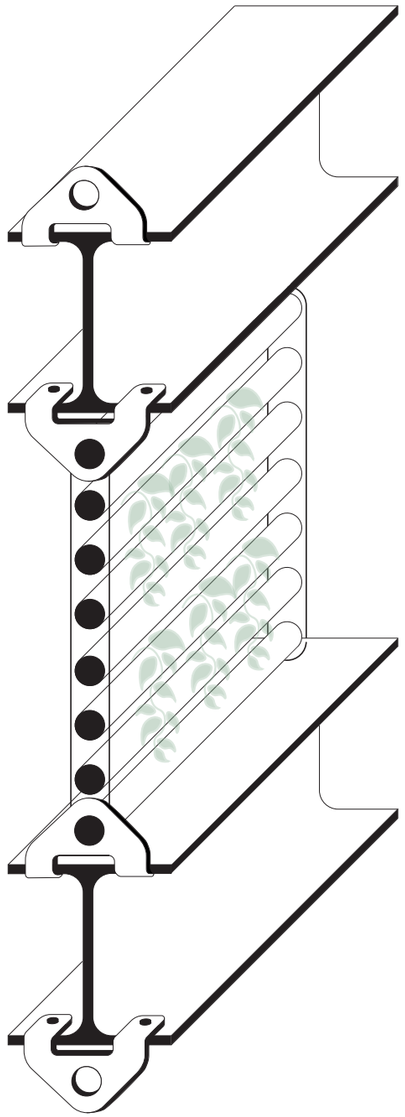
The custom design of the floor allows for water collection, while also providing evaporative colling. The heat trasnfer of solar gaine is decreased, due to sunrays heating the floor and only transfering solar heat to the top pad. The main mass of the floor slab remains cool due to water and no acces to direct sun rays.

SOLAR HEAT GAIN PREVENTION SYSTEM



DOUBLE GLASS FACADE

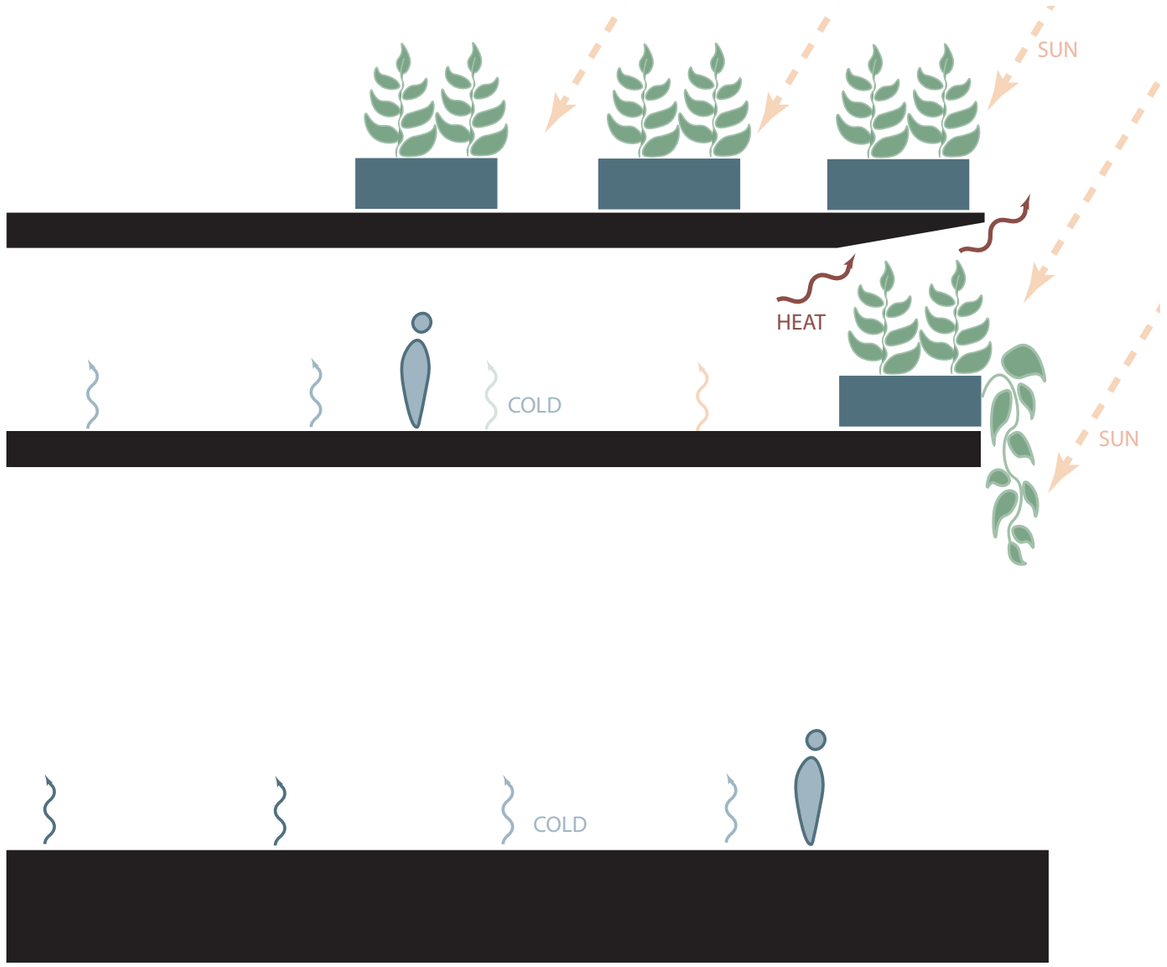
Smart design that protects from solar heat gain and provides a variety of spaces to inhabit. Solar heat gain is absord by the otter shell, keeping the indoors cooler. The excess heat accumulated is let out by the rotatng top shelf.



CUSTOM LOUVRE SYSTEM

SOLAR HEAT GAIN PREVENTION SYSTEM

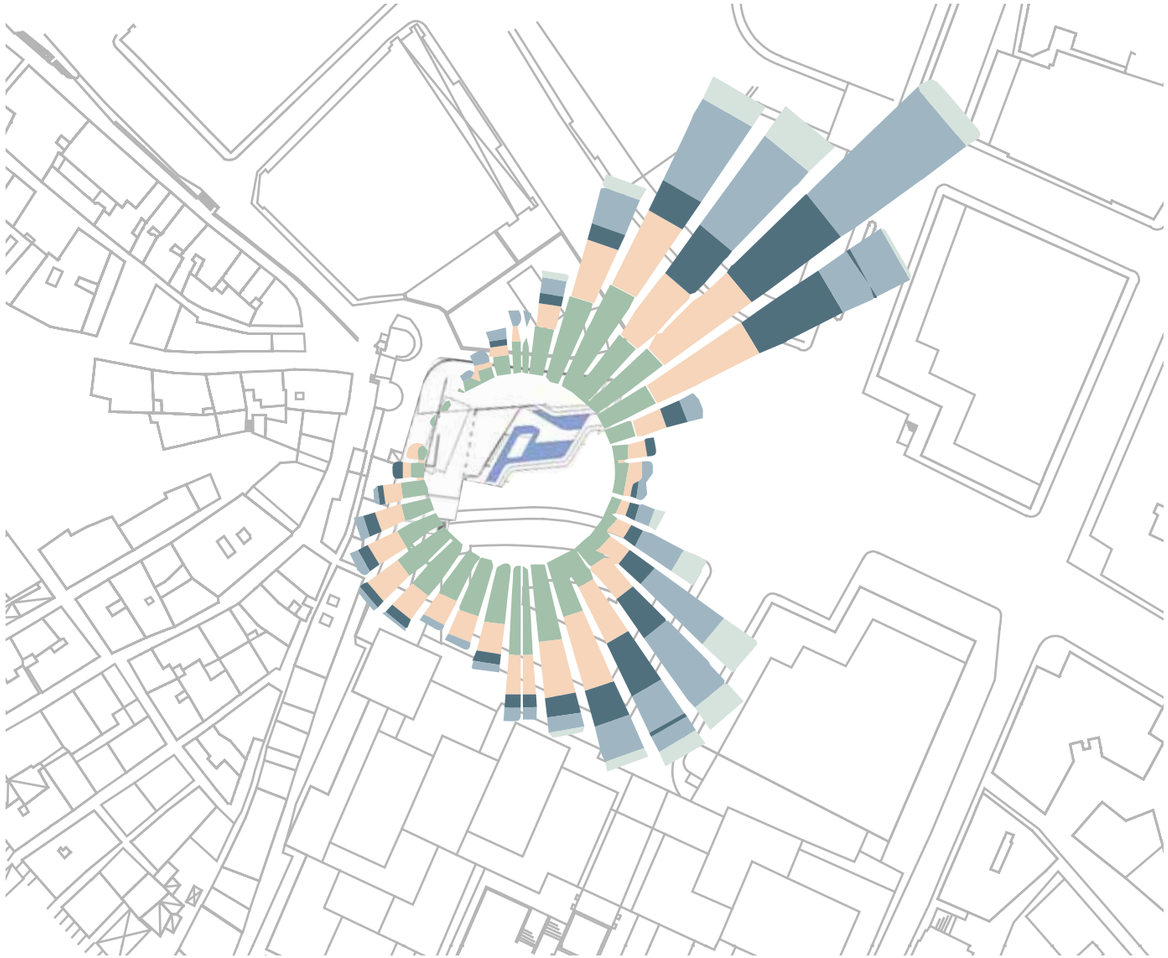
SOLAR HEAT GAIN PREVENTION SYSTEM



DOUBLE FLOOR HEAT PREVENTION SYSTEM

The design that is invented to absorb and release the solar heat gain. The upper terrace is protected by a layer of greenery. The terrace bellow is incased from receiving direct sunlight and is open air to allow circulation of heat and cold. the indoor space on the first floor is double glass facade is protected from heat gain from above.

WINDS



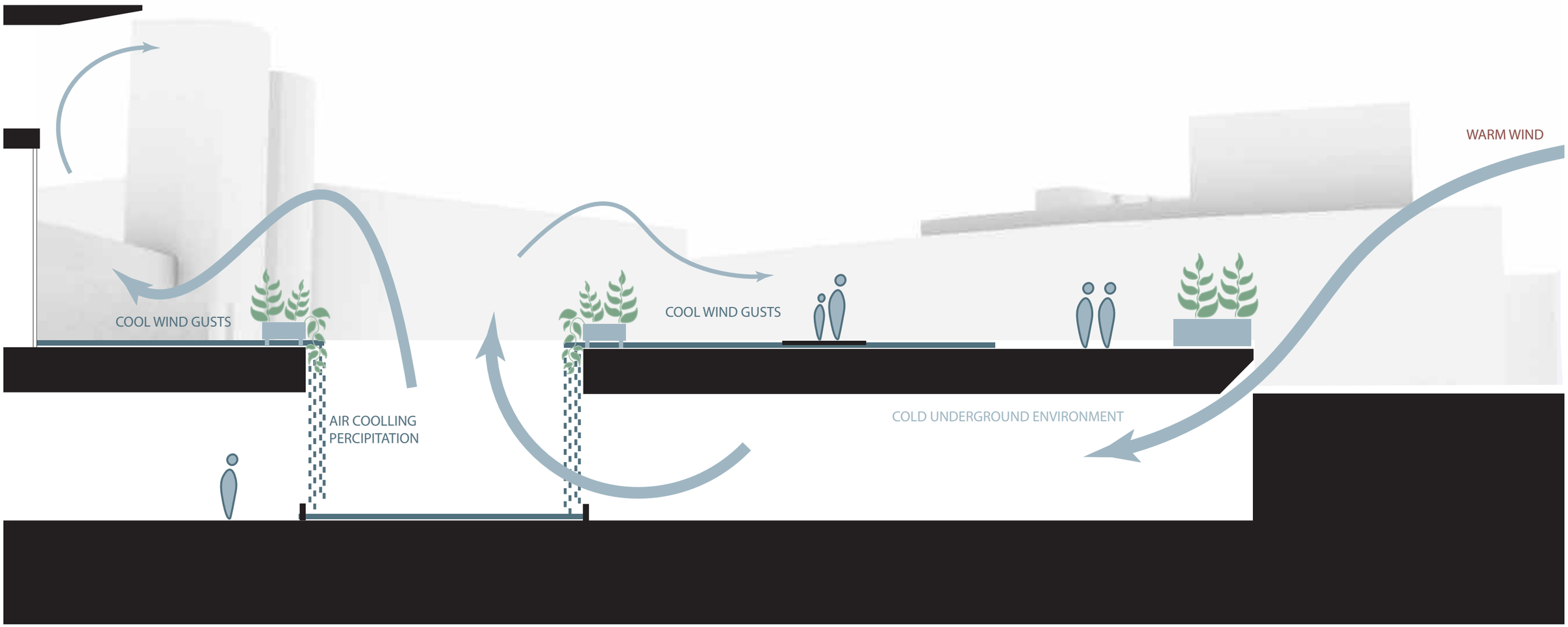
SUMMER

The summer season brings NE and SE wind predomenantly at 57 mph. The wind approaches the piazza and has a cooling effect on the environment.

WINTER

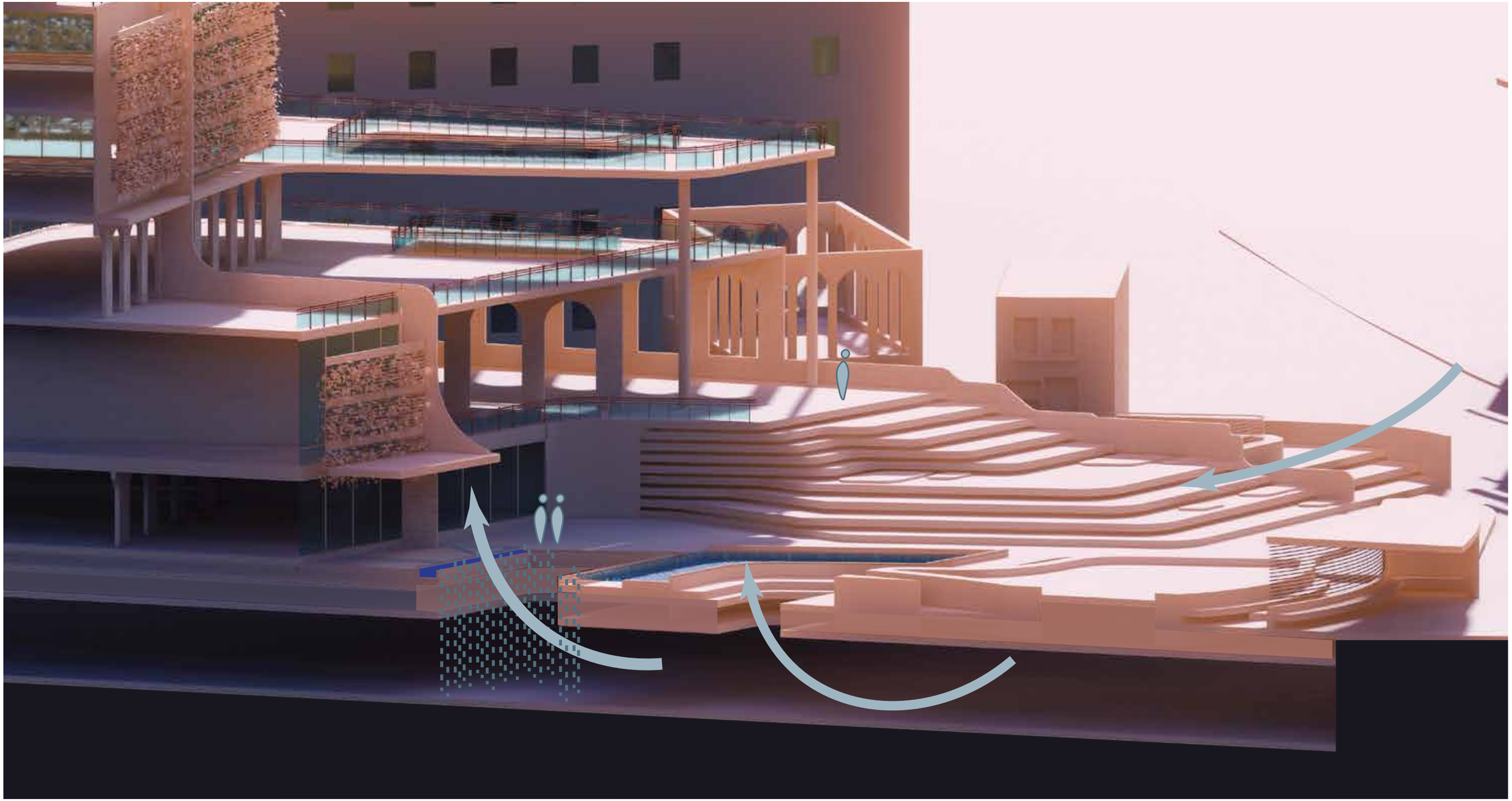
The winter season brings NE winds at predomenantly 5-7 mph. The wind approaches the piazza and has a lesser cooling effect then in the summer season.

SUSTAINABLE COOLING SYSTEM



WIND TUNNEL COOLING SYSTEM

The warm air is succed into the undeground space, passes the moisture gap, cools down and is released onto the courtyard space. the cool breeze eliviates the summer heat for pedestrians as well as cools down the facade of the building and enters into the openings.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AERIAL VIEW