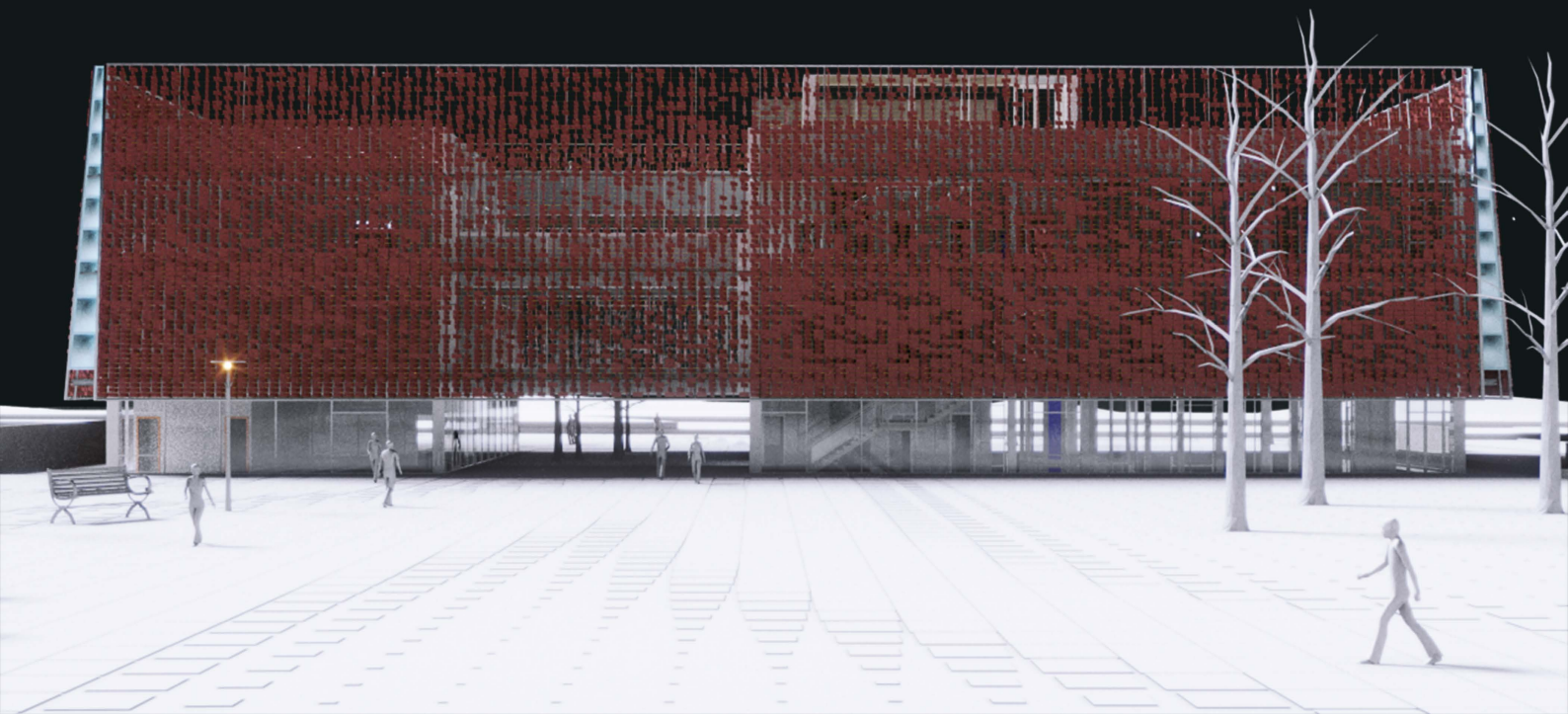
urb/bme | Architect Ahmad Aldebsi | Faculty of Architecture BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS | MŰEGYETEM 1782

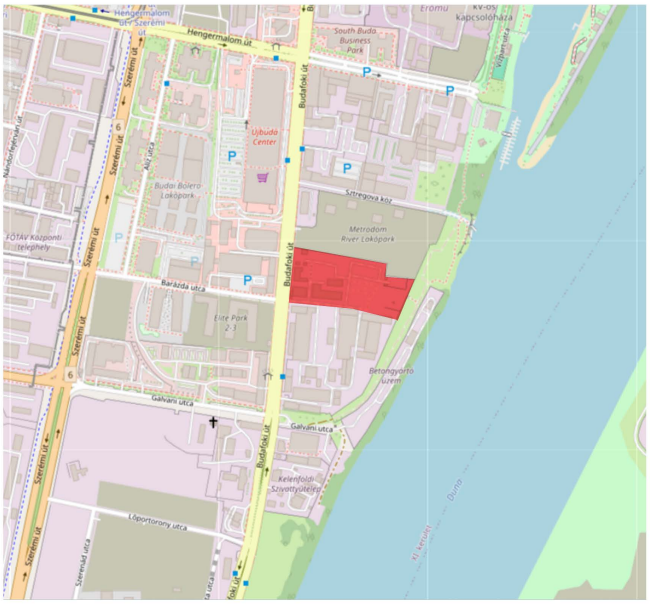
Kelenföld Community Development Center

Diploma Project

DEPARTMENT OF URBAN PLANNING AND DESIGN



Function. Urban Regeneration (1st phase) / Public building design (2nd phase).
Location. District XI Kelenföld, Budapest, Hungary
Area. 22,538.41 m²
Overview. This project aims to revitalize an abandoned plot in Kelenföld, Budapest, transforming it into a vibrant public park to serve the surrounding residential buildings. The park will provide a much-needed green space for social gatherings and recreational activities. At the far end of the park, a community development center will be constructed, serving as a hub for various community activities and services. The design of the center will create a seamless connection between the park and a green pedestrian path facing the Danube.
Site Selection. The chosen site is an abandoned plot in Kelenföld, an area characterized by undergoing residential developments. The strategic location offers an opportunity to create a central green space that enhances the quality of life for local residents and fosters community engagement.



Functional program.
Ground Floor:

Open Multifunctional Space: Designed for children's activities, providing a flexible area that can adapt to various uses and needs.
Event Hall: A versatile space accommodating up to 100 seats, suitable for community events, performances, and gatherings.
First Floor:

Exhibition and Art Galleries: Open spaces dedicated to showcasing local art and exhibitions.
Foyer Gallery: An inviting area that serves as an entry point and additional exhibition space.
Bridge to Community Lounge: Connecting the exhibition space with a community lounge, promoting interaction and relaxation.
Second Floor:

Open Co-Working Space: A shared working environment fostering collaboration and innovation.
Management Section: Offices for the administrative functions and operations of the center.
Meeting Room: A dedicated space for meetings, workshops, and group activities.
Bridge to Community Lounge: Providing additional connectivity and communal space.
Library and Study Room: Quiet areas designed for reading, studying, and research activities.
Roof:

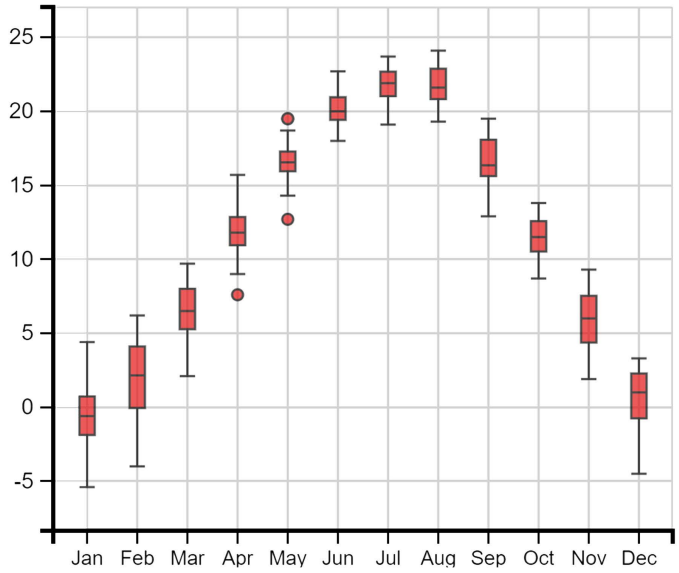
Vegetated Roof: A green roof that supports biodiversity, reduces urban heat, and manages rainwater.
Public Functions: Spaces for public gatherings, events, and recreational activities, enhancing the building's utility and community engagement.

Environmental casestudy. The warmest month is August with average max annual temperature of 15° with peak reaching 30°. The coolest month is January with
average max annual temperature of 60°. The driest Month is October and the Wettest Month is June.The most humid month is January and the least humid month is April. 73.0% average humidity
January is the most rainy days.
October the least rain occur in and average rain days are 127 days
July has the maximum hours ofthe sunlight.
December is the lowest averagehours of sunlight

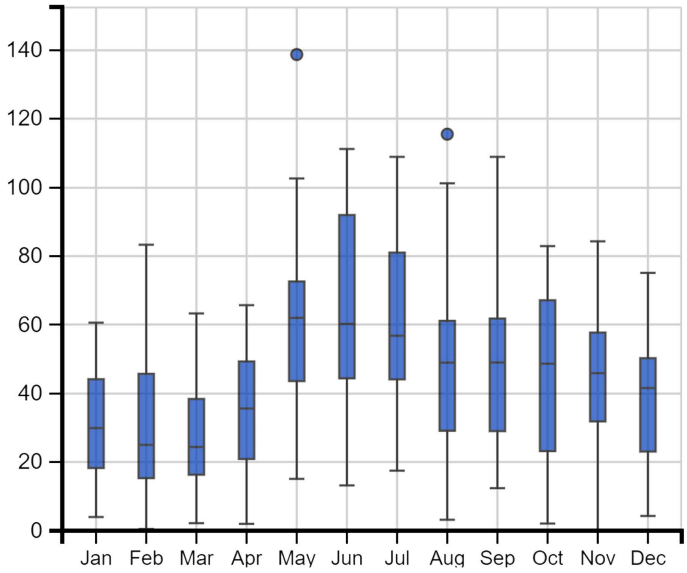
Budapest, Budapest, Hungary

47.434N, 19.154E | Elevation: 115 m | Climate Class: Cfb | Years: 1990-2019

Distribution of Temperature [°C]

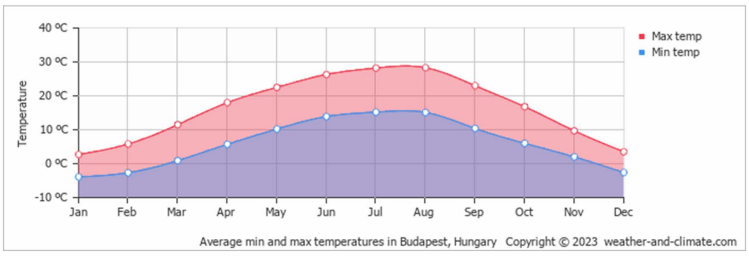


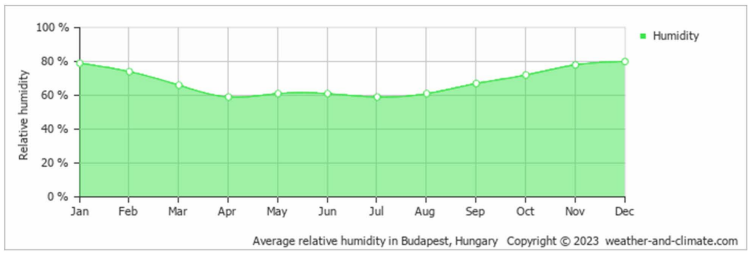
Distribution of Precipitation [mm]

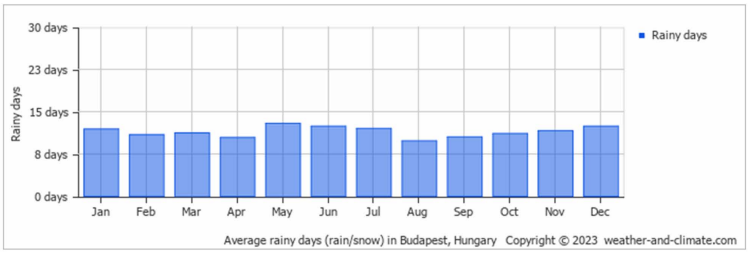


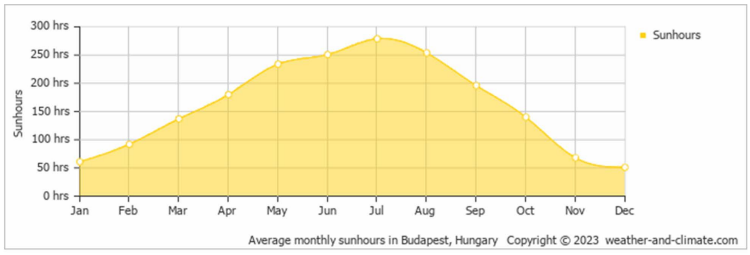
Data Source: CRU Time Series v4.05
https://catalogue.ceda.ac.uk/uuid/c26a65020a5e4b80b20018f148556681

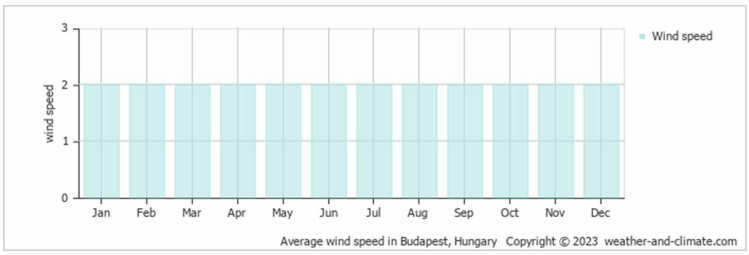
ClimateCharts.net

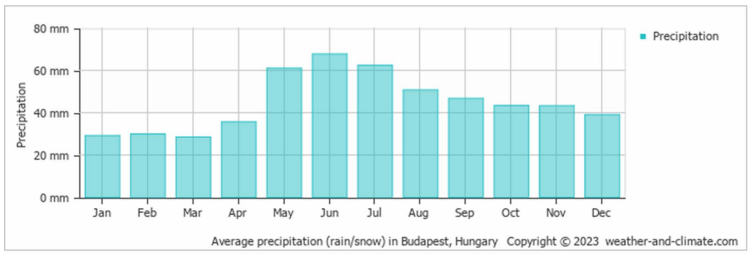













6/2000
kelenfold 2000
Image © 2024 Maxar Technologies


3/2024
kelenfold 2024
Image © 2024 Airbus

Budai Bolero lakópark
Large residential developments can sometimes lead to the displacement of existing communities or alter the social fabric of the area.

Újbuda Center
high-density developments can lead to overcrowding, traffic congestion, and strain on local infrastructure and services.

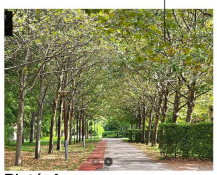
Metrodom River
dominate the local landscape, overshadowing existing buildings and altering the historic skyline.

Kelenföld power plant
This juxtaposition creates opportunities for integrating the site into the urban fabric through mixed-use developments.

Elite Park
making the area feel less accessible and less inviting for pedestrians. This can negatively impact the sense of community and the pedestrian experience.

Galvani Bridge
new bridge proposal on the danube linking Pest with Csepel, opening new opertunities for urban development of the area

Choosen Plot
the current situation is an unorganized plot facing the river, brownfield, parking for cars, two big commercial buildings.



Platánfasor
a green built linking the undergiong developments with the danube

parking area on the main road fits for 24 car

open zone infront of the public buildings for car parking and lorry cars

two buildings current function: commercial offices . prposed function : museum for place memory

underground parking entrance for vip geusts, maintanance cars, direct relation with mechanical rooms

end of the park, linking the pedestrain axix with the danube green belt through the building

green areas enrich the views from, to the center, buffer zone preventing the water fluds

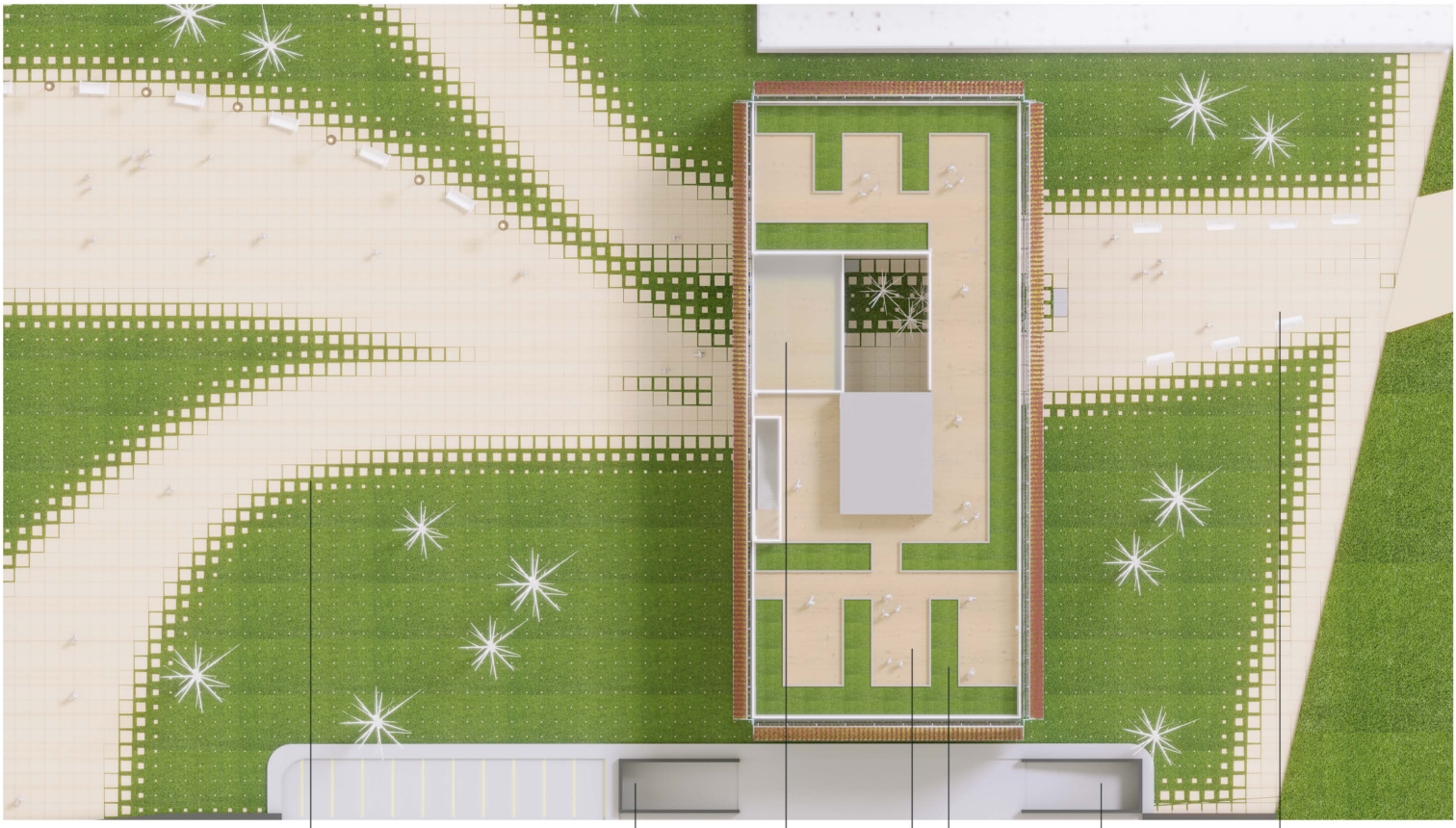
public space for park attendance, seatings , onen playground, public plaza

public space for park attendance, seatings , onen playground, public plaza

patio, walk through void in the building keeping the continuity of visual and pedestrian axis

main entrance from the main road direct relation with the center, connecting all green areastogether

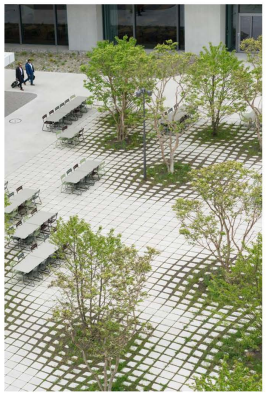
secondary entrance on the secondary axis



underground parking entrance

semi private open terrace

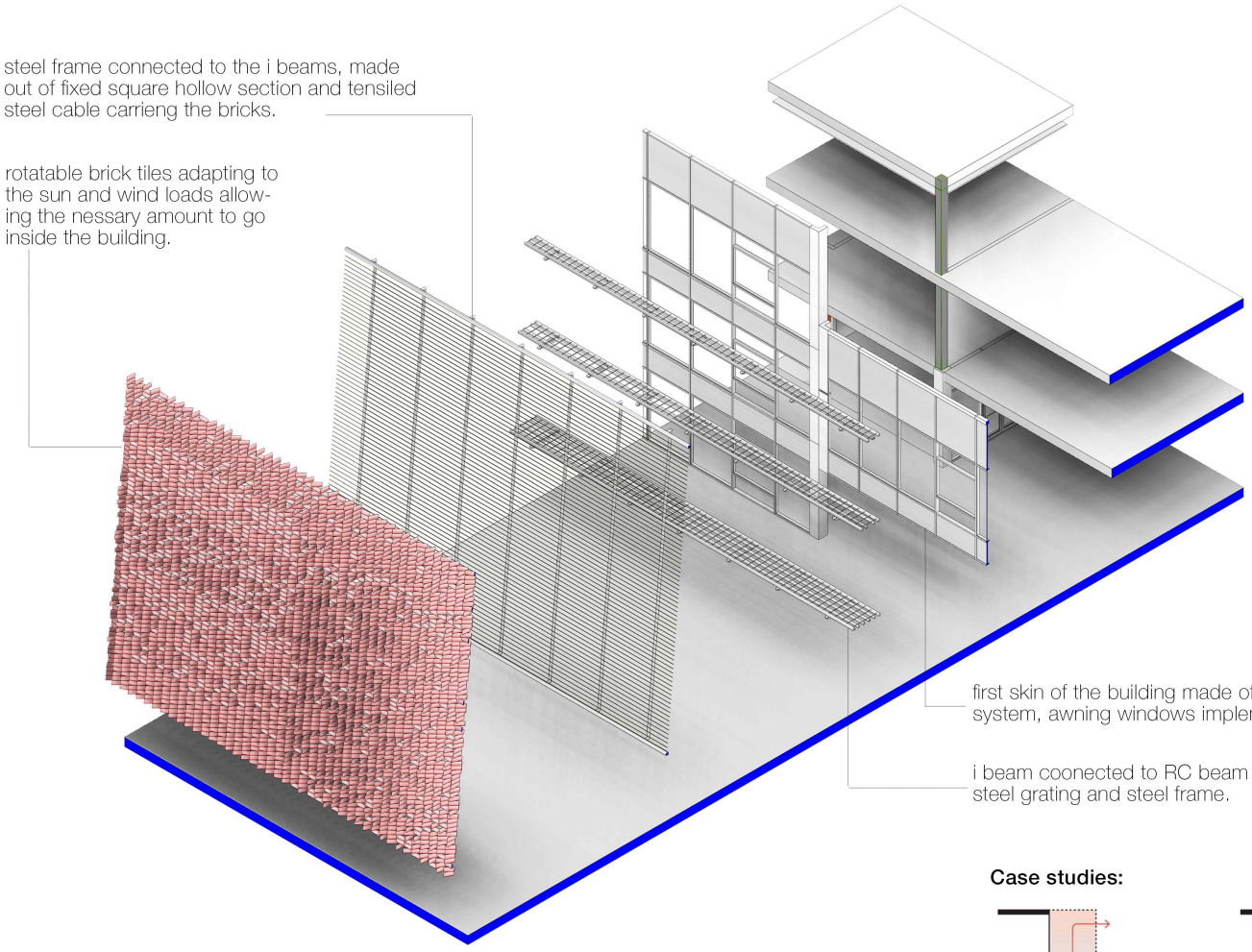
underground parking exit



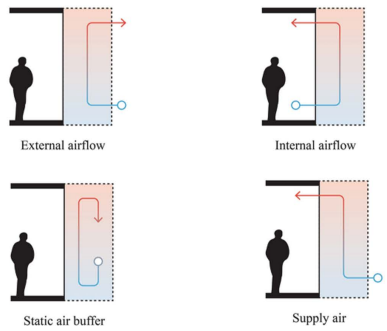
The paving design is generated using automated algorithms based on the estimated pedestrian flow, seating areas, and tree positioning

urban rooftop, open air entertainment facilities

public playground



Case studies:



key advantages of using a double skin facade (DSF) for a low-rise building:

1. Thermal Performance

Insulation: Extra layer improves temperature control, reducing heating and cooling needs.

Energy Efficiency: Lowers energy consumption, saving costs and enhancing sustainability.

2. Natural Ventilation

Airflow: Facilitates natural ventilation, improving indoor air quality.

Cooling: Utilizes cooler river air for natural cooling.

3. Acoustic Insulation

Noise Reduction: Reduces external noise from traffic and river activity, creating a quieter indoor environment.

4. Daylighting and Glare Control

Natural Light: Allows ample daylight, reducing the need for artificial lighting.

Glare Reduction: Integrates shading devices to control glare and sunlight.

5. Aesthetic and Architectural Flexibility

Design Freedom: Offers creative design options, enhancing the building's appearance.

View Preservation: Maximizes river views for occupants.

6. Environmental and Sustainability Benefits

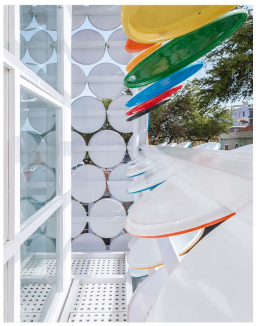
Sustainability: Promotes energy efficiency and aligns with green building practices.

Reduced Carbon Footprint: Lowers overall energy use and emissions.

7. Protection from Weather Elements

Shielding: Protects the building from wind, rain, and pollution.

Maintenance: Reduces maintenance needs by shielding the inner facade.



Renewable energy preliminary analysis.
Solution 1 - Double skin facade. Energy efficiency-Improved thermal comfort -Noise reduction-Design flexibility-Increased sustainability

How it works:

Thermal insulation: The inner layer of the double skin facade is typically made of materials with high thermal insulation properties, such as insulated glass units or thermally efficient panels. This layer helps minimize heat transfer between the exterior and interior of the building.

Ventilation: The air cavity between the layers facilitates natural ventilation. Openings or vents at the top and bottom of the facade allow fresh air to enter the cavity, and warm air to escape, creating a stack effect. This promotes air circulation and heat dissipation.

Solar shading: The outer layer of the double skin facade can incorporate shading devices such as louvers, fins, or brise-soleil. These elements help block direct sunlight, reducing solar heat gain and preventing overheating.

Night cooling: During cooler nighttime temperatures, the double skin facade can be used for night flushing. By opening the vents in the cavity, cool air can be drawn in, absorbing the building's excess heat and providing thermal comfort for the following day.

Control systems: To optimize performance, automated control systems can be integrated into the passive cooling system. These systems monitor external weather conditions, internal temperatures, and occupancy levels to adjust the ventilation and shading accordingly.