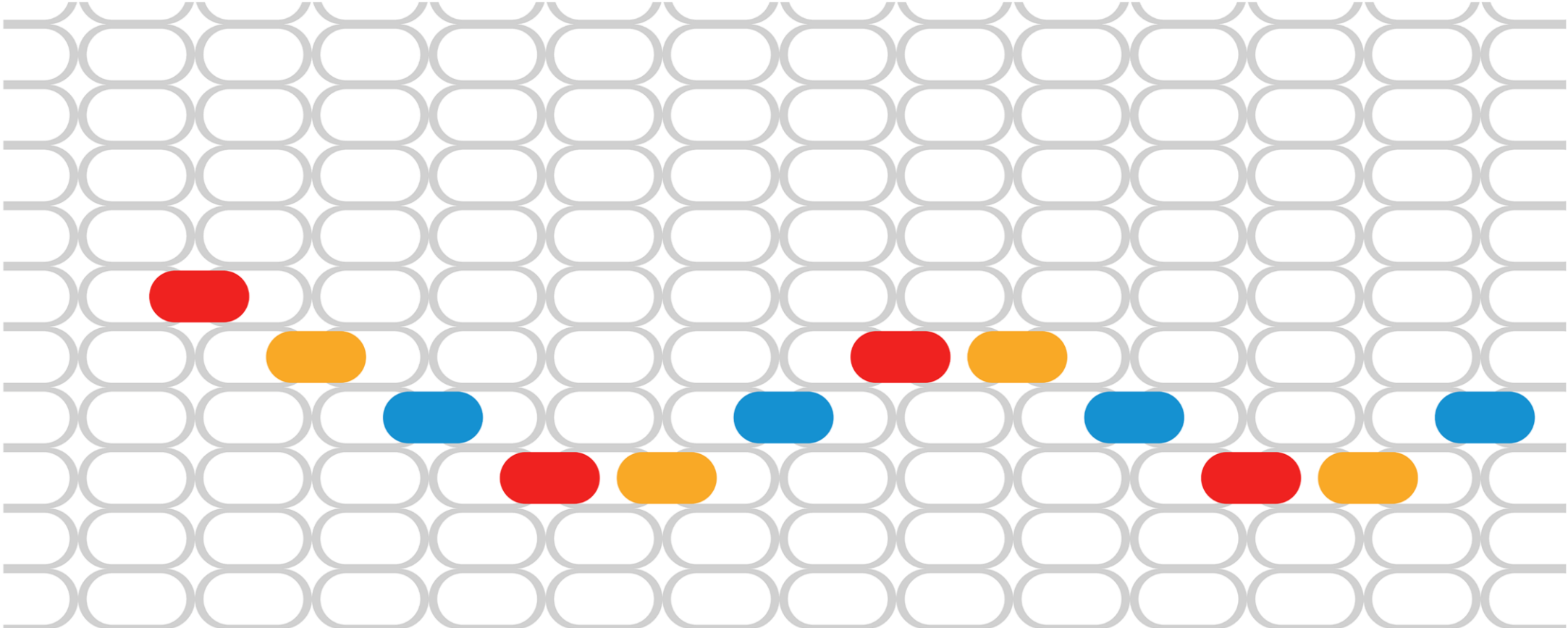
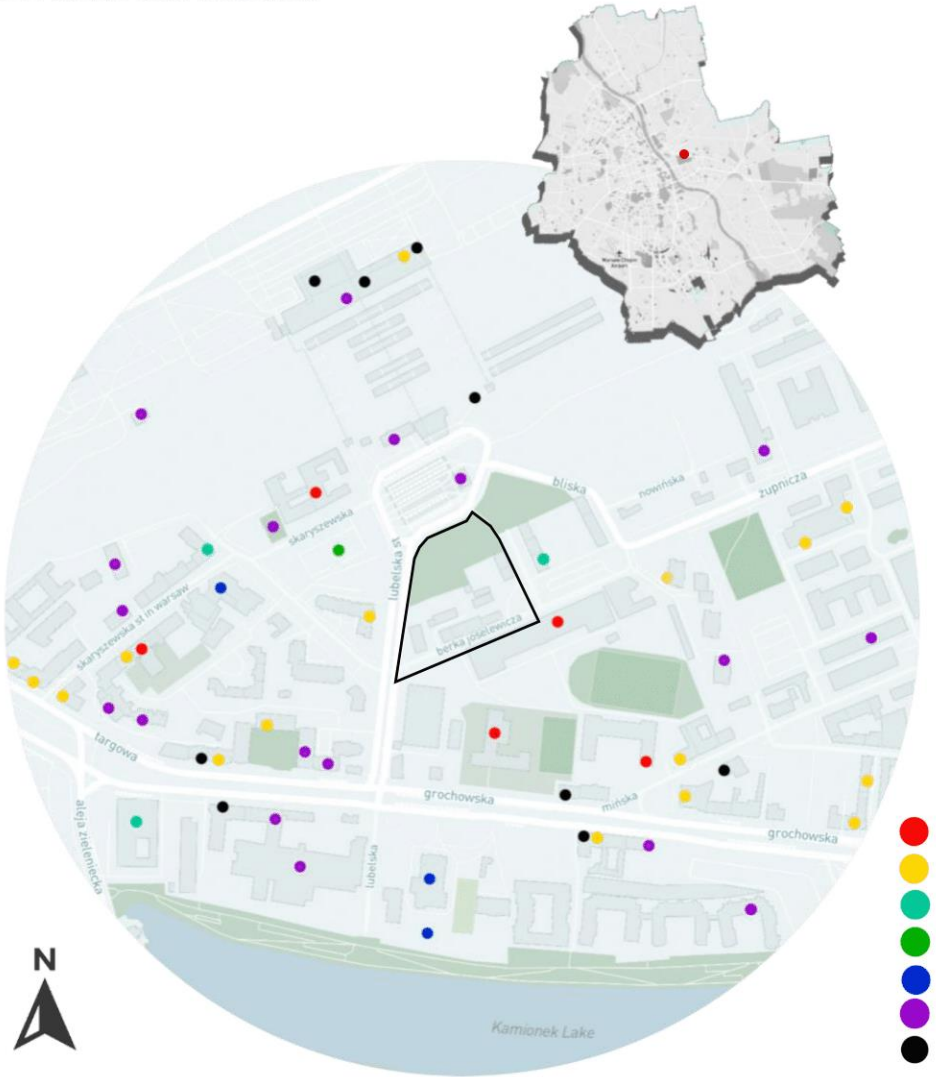


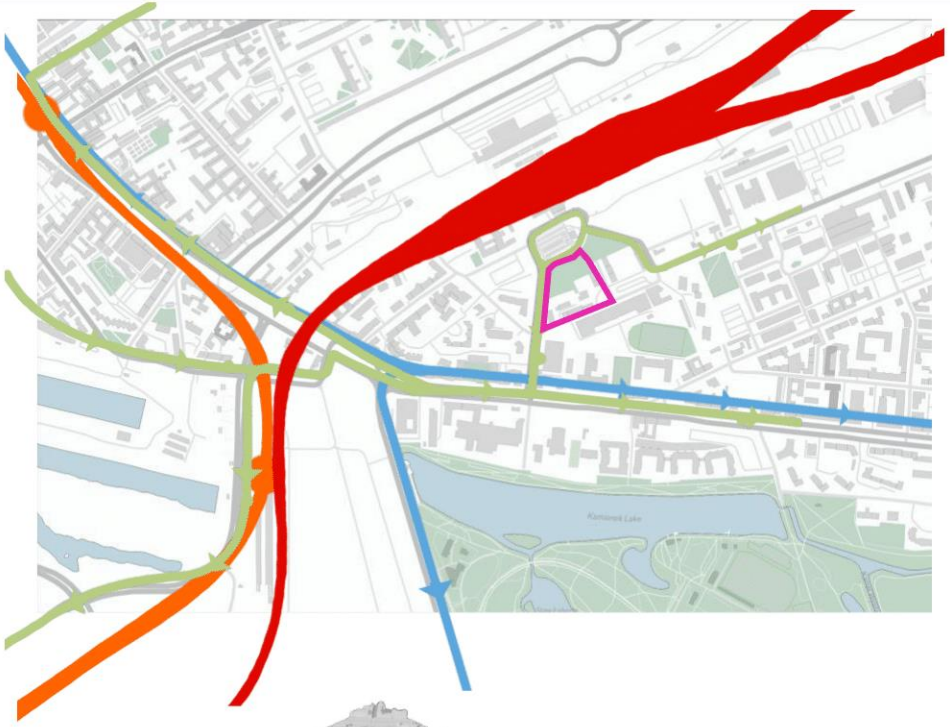
INTERNATIONAL ARCHITECTURAL STUDENT COMPETITION 2021-2022

WARSAW, POLAND

site analysis

analysis of the transport system and functional zones around the territory within walking distance (500 meters from the center)



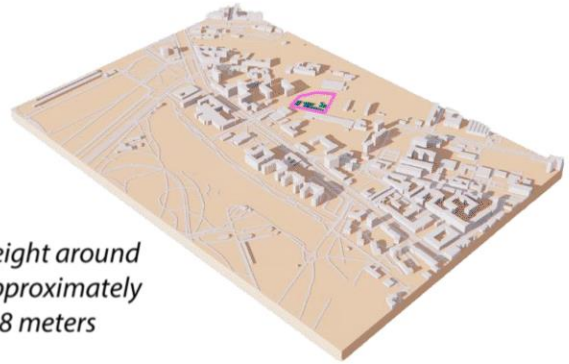


Transport system:

- *electric trains*
- *trams*
- *buses*
- *subway*

bus station is at a distance of 50-100 meters from plot, and train station is at a distance of 150-170 meters.

green zones around the plot



building height around the plot: approximately from 9 to 18 meters

- *educational institutions*
- *goods, pharmacy & comercial sector*
- *theatres & cultural facilities*
- *parking & car service*
- *churches & cemeteries*
- *offices & city halls*
- *cafe & restraunts*

Skaryszew Park(330m) and three workout zones(90m) are within walking distance.

concept, idea, shaping

history

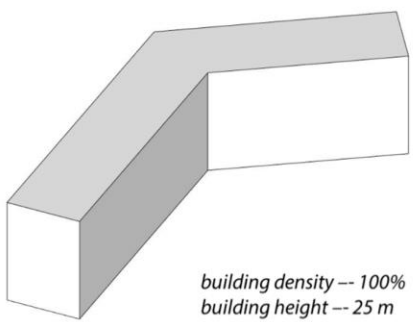
ecology

environment

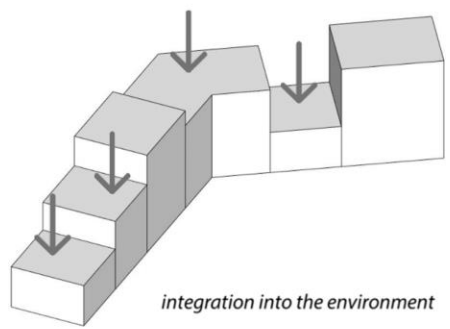
architecture

landscape

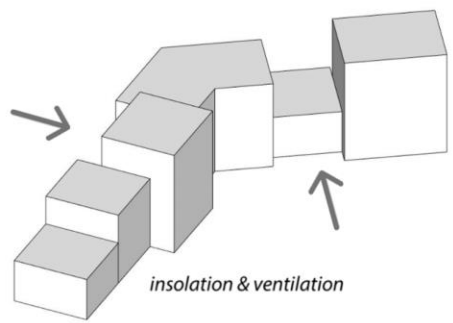
WISŁA
WARSAW



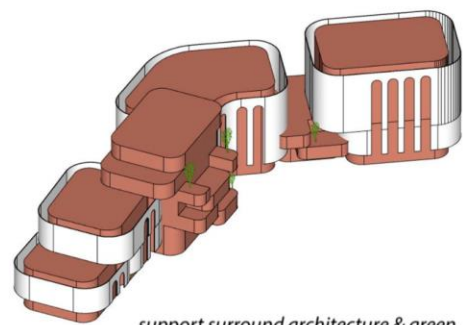
building density –- 100%
building height –- 25 m



integration into the environment



insolation & ventilation



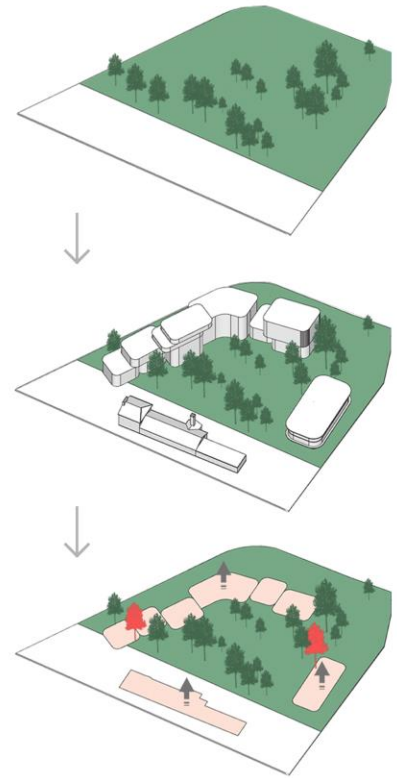
support surround architecture & green terrace

masterplan analysis

zoning, parking and public spaces for various leisure activities

Student housing
Public building
Old factory building

innovative treadmill
urban bike sharing
outdoor cinema
open terraces
rooftop restaurant
small architectural form "Student"
pond with fish
fountain
eating area
entrance / exit from the underground parking
summer cafe
ground parking



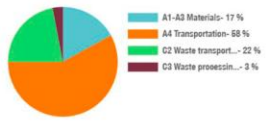
sustainable architecture concept

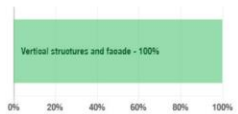
the existing green spaces were preserved to the maximum, except for 2 trees marked red

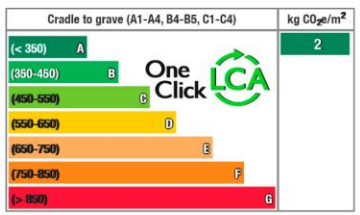
student housing

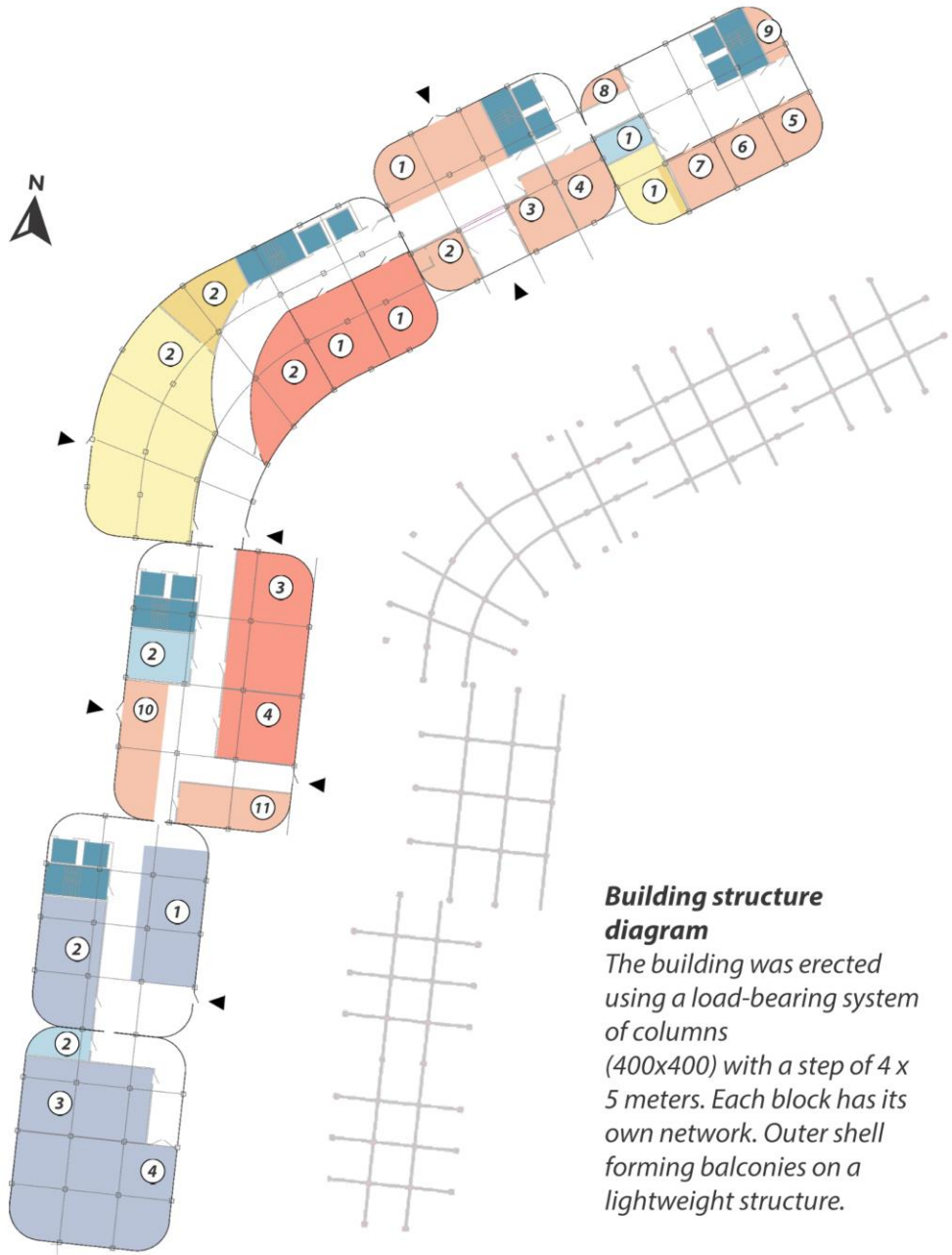
ground floor layout and form search, organization of the upper floors

calculations









Building structure diagram

The building was erected using a load-bearing system of columns (400x400) with a step of 4 x 5 meters. Each block has its own network. Outer shell forming balconies on a lightweight structure.

336.59 m2 ***administrative area***
- *1 - main lobby with reception*
- *2 - service room*
- *3 - laundry and linen warehouse*
- *4 - baggage and storage*
- *5 - accounting*
- *6 - directorate*
- *7 - administrators room*
- *8 - dressing room for employees*
- *9 - utility room*
- *10 - second foyer*
- *11 - security service room*

297.46 m2 ***common area***
- *1 - meeting rooms*
- *2 - coworking area*
- *3 - library*
- *4 - computer room*

226.37 m2 ***eating area***
- *1 - canteen for employees*
- *2 - dining room for guests*

38.29 m2 ***kitchen area***
- *1 - staff kitchen*
- *2 - kitchen for cafe*

57.02 m2 ***wet areas***
- *1 - bathroom for employees*
- *2 - bathroom for guests*

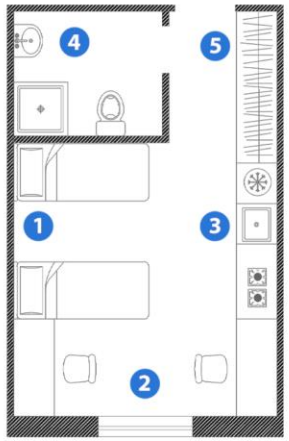
367.97 m2 ***zone of active and passive games, sports***
- *1 - table tennis, hockey, football*
- *2 - eSport zone (PS)*
- *3 - zone of group lessons*
- *4 - gym*

138.5 m2 ***elevators and stair halls***

ARCHITECTURE STUDENT CONTEST

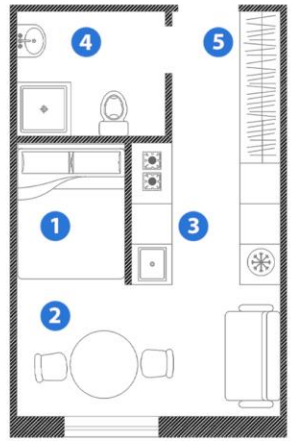
private second and higher floors

plan of the second floor and layout of individual rooms, zoning



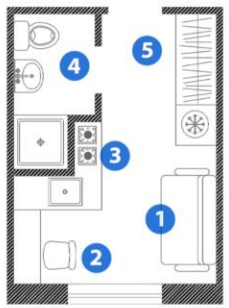
Type 1
S = 23.0 м²

1	sleeping area	11.1 м²
2	working area	8.6 м²
3	kitchenette	3.1 м²
4	bathroom/shower	3.7 м²
5	storage	0.4 м²



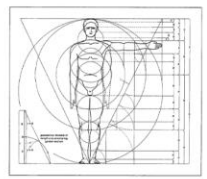
Type 1.2
S = 23.0 м²

1	sleeping area	11.1 м²
2	working area	8.6 м²
3	kitchenette	3.1 м²
4	bathroom/shower	3.7 м²
5	storage	0.4 м²

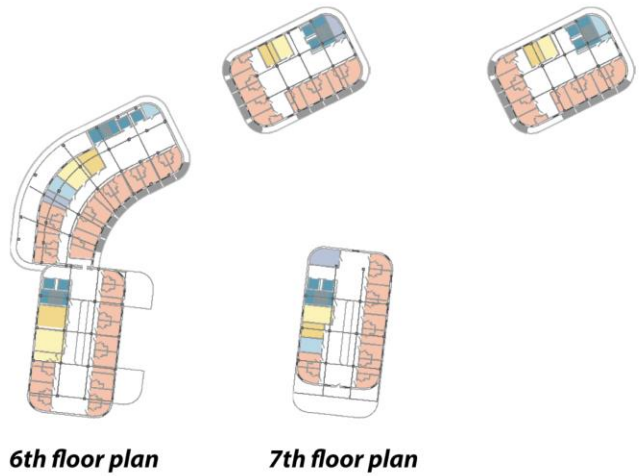


Type 2
S = 12.0 м²

1	sleeping area	4.1 м²
2	working area	4.6 м²
3	kitchenette	3.1 м²
4	bathroom/shower	3.7 м²
5	storage	0.4 м²



Ergonomics of rooms made according to Neufert.

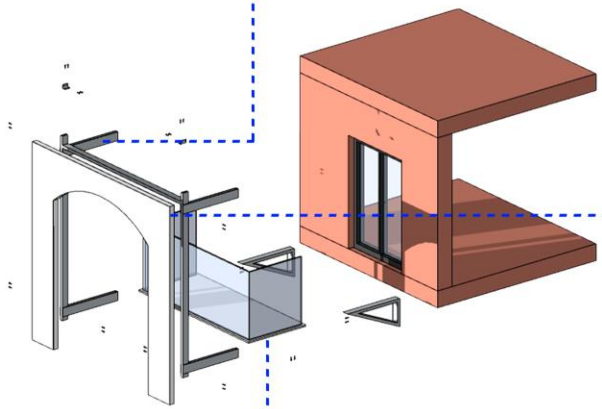


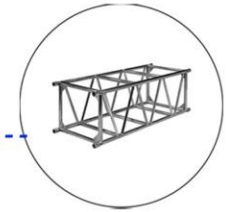
2nd floor plan **3rd floor plan** **4th floor plan** **5th floor plan**

6th floor plan **7th floor plan**

529.3 м²	***single rooms***
184.8 м²	***double rooms***
46.2 м²	***apartments (hostel)***
91.5 м²	***dining areas***
86.8 м²	***kitchen areas***
52.9 м²	***utility rooms***
66.2 м²	***laundry***
138.5 м²	***elevators and stair halls***

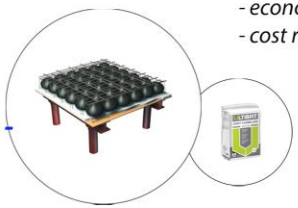
Feel



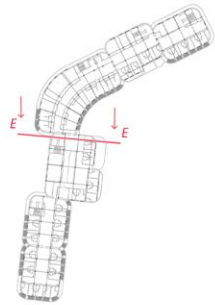


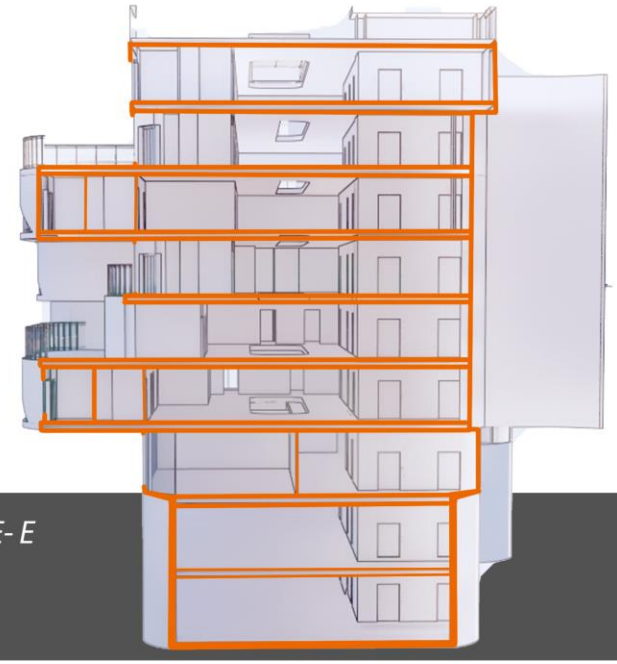
Light-alloy metal structures
Construction of balconies and second facade

Gypsum board GYPROC
Exterior cladding and facade for balconies



Bubble deck slab
- *reduces the weight of the structure by 35%;*
- *economy of materials;*
- *cost reduction;*

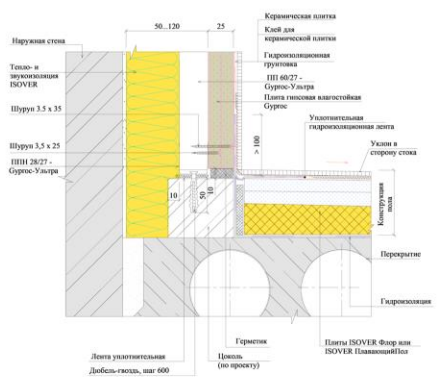




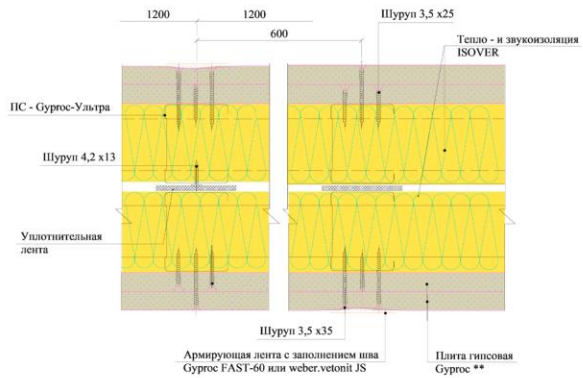
Section E- E

ARCHITECTURE STUDENT CONTEST

■ ***"Floating floor" unit on interfloor ceilings + adjoining internal lining O-MP-2GSP***

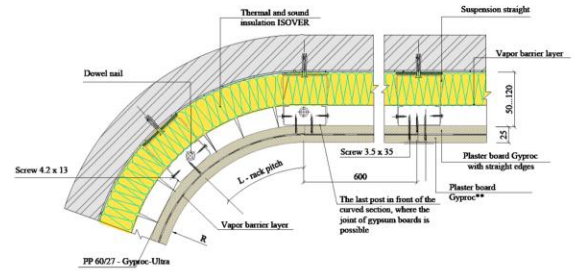


■ ***Partition S-2M-2 Multicomfort***
cross section



■ ***Ceiling P-2M-1 Multicomfort***
cross section

■ ***Convex section of the cladding***
Double skin

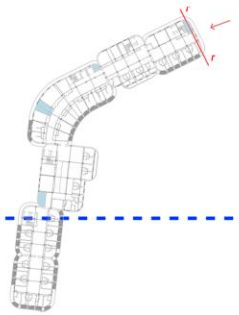


See

Breathe

Finish internal partitions in the kitchen durable Gyproc Habito sheets for fastening top drawers and household appliances.

ARCHITECTURE STUDENT CONTEST



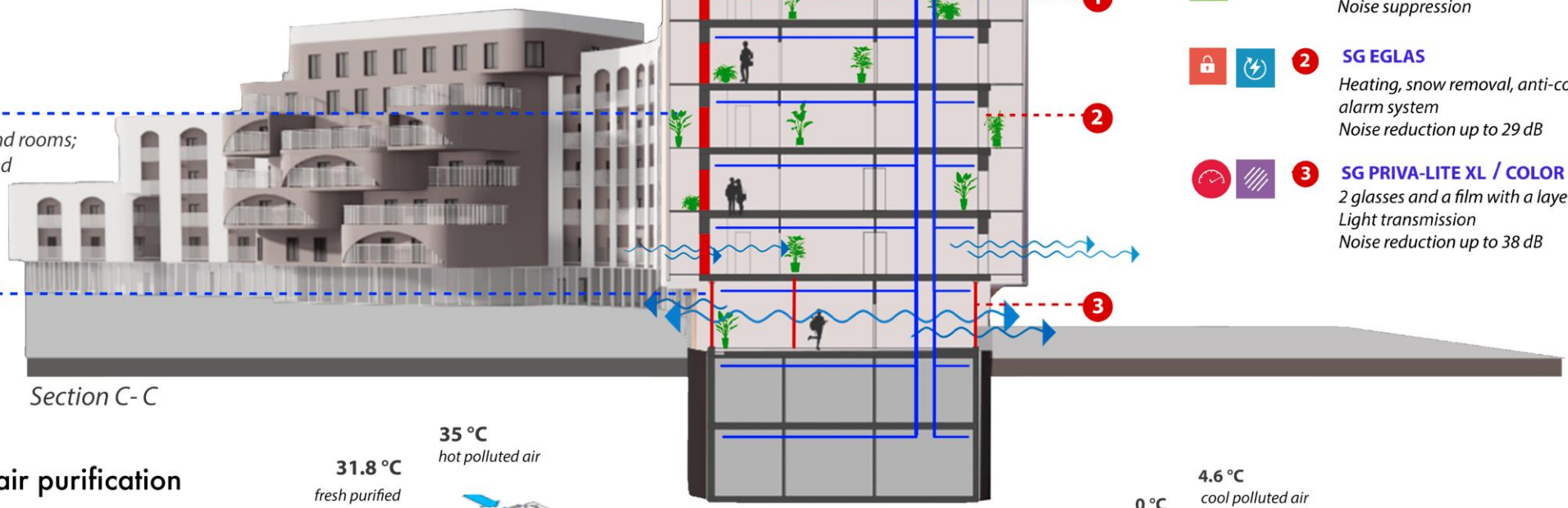
exhaust-supply ventilation

Artificial ventilation and purification: hanging heat exchanger in a soundproof box
ISOVER SHUMKA, airborne sound insulation index 63 dB;

Window and stained glass system

Natural cleansing:
- landscaping of balconies and rooms;
- large plants for corridors and small plants for rooms;

Natural ventilation:
ventilation of premises;



Section C- C

1 COOL-LITE® XTREME 61/29 (II) on glass PLANICLEAR®
Light transmission - 90%
Noise suppression

2 SG EGLAS
Heating, snow removal, anti-condensation, alarm system
Noise reduction up to 29 dB

3 SG PRIVA-LITE XL / COLOR
2 glasses and a film with a layer of liquid crystals
Light transmission
Noise reduction up to 38 dB

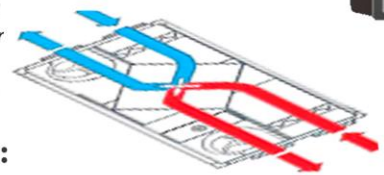
ventilation and air purification system advantages:

- air purification;
- thermoregulation of premises;
- already cooled air enters the street;
- vibration and noise are suppressed due to the location, sound insulation and suspended structures;

summer: cooling

35 °C *hot polluted air*

31.8 °C *fresh purified outdoor air*



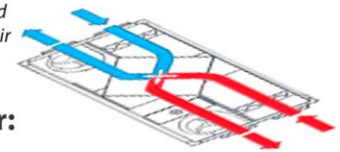
21 °C *warm polluted air removed from the premises*

24.2 °C *fresh cooled purified air enters the premises*

in winter: heating

4.6 °C *cool polluted air*

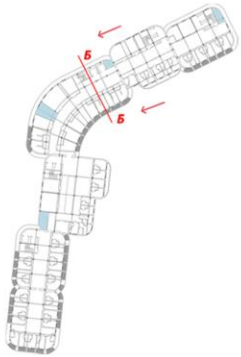
0 °C *fresh purified outdoor air*

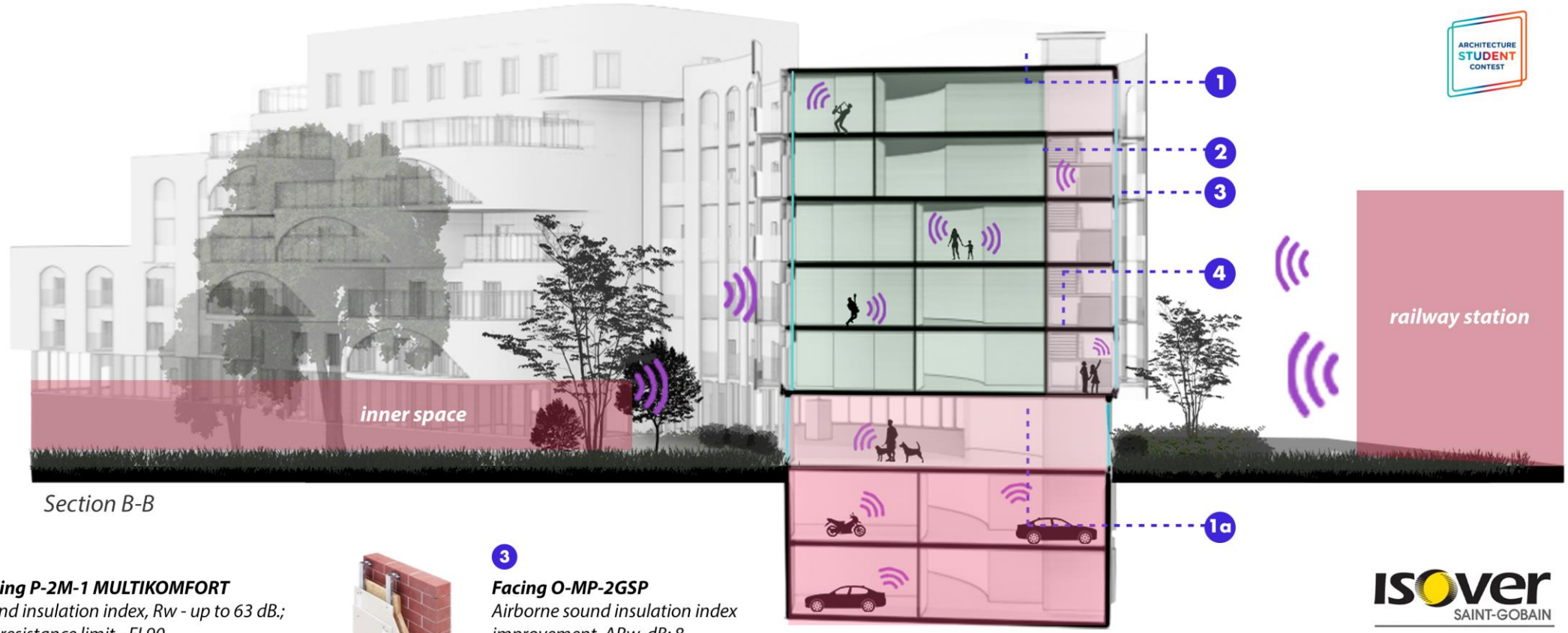


20 °C *warm polluted air removed from the premises*

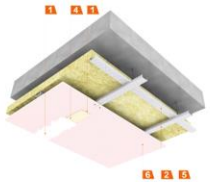
15.4 °C *fresh heated purified air enters the premises*

Hear





Section B-C



1

Ceiling P-2M-1 MULTIKOMFORT
Sound insulation index, Rw - up to 63 dB.;
Fire resistance limit - EI 90.
Moisture absorption for microclimate.

1a

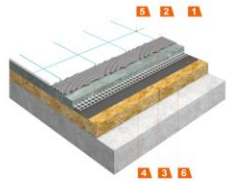
Ecophon Master A
Reinforced structure.
Sound absorption class A.

2

Partition S-2M-2MULTICOMFORT
Sound insulation index, Rw - up to 63 dB.;
Fire resistance limit - EI 90.

3

Facing O-MP-2GSP
Airborne sound insulation index improvement, ΔRw, dB: 8
Fire resistance limit: EI 30



4

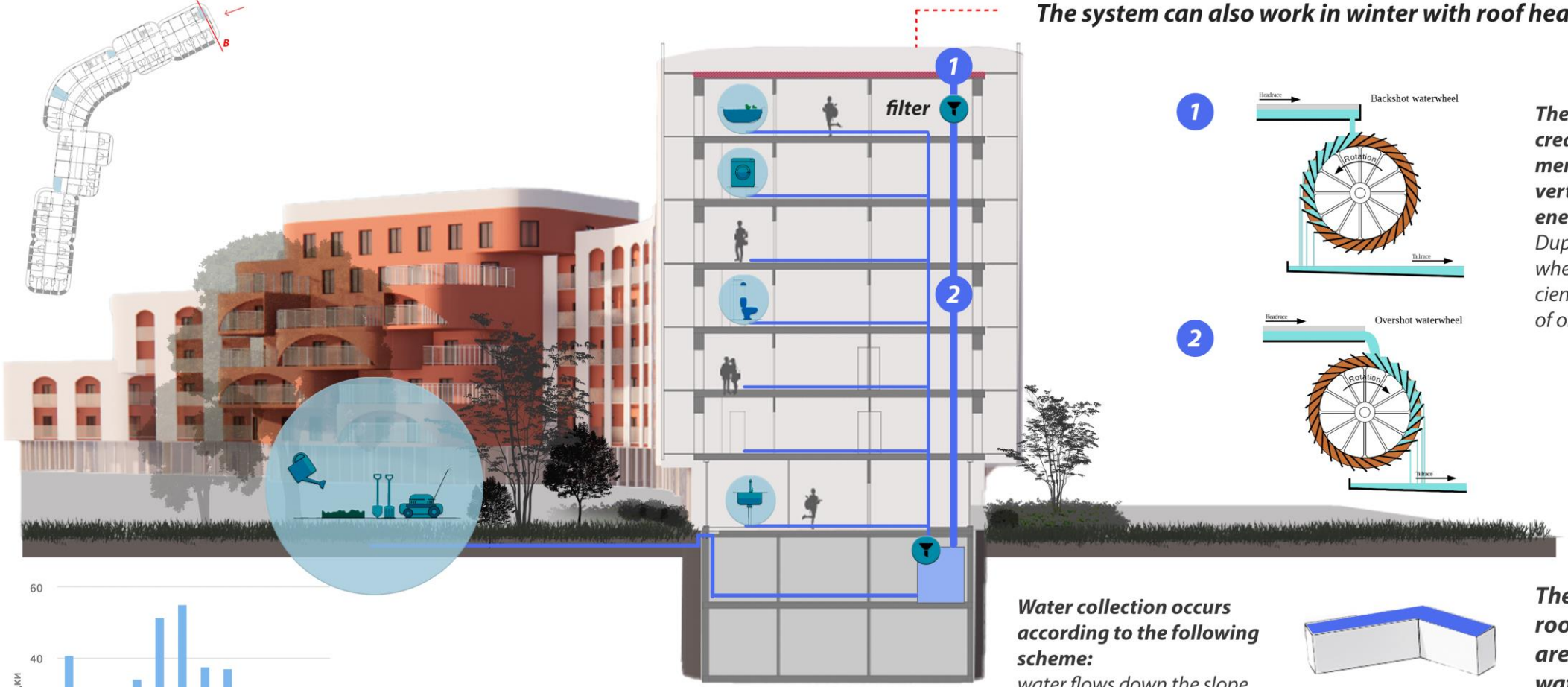
floating floor
Sound insulation index, Rw - up to 37 dB.;

private area

MAIN SOURCES OF NOISE:

- *noise from stairs and elevators*
- *sounds from the first public floor*
- *the hum of cars and motors from the parking*
- *street noise*

rainwater harvesting & rainwater energy harvesting

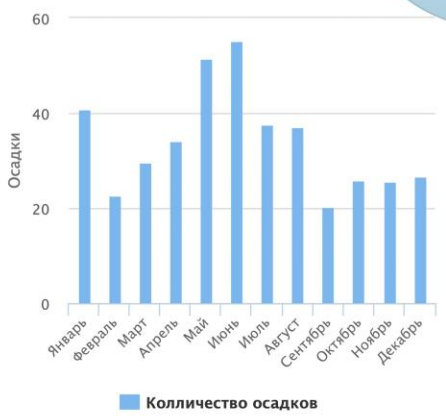


The system can also work in winter with roof heating.

1

The mechanical energy created by the movement of water is converted into electrical energy.
Duplication of water wheels doubles the efficiency, while the efficiency of one is 80-90%.

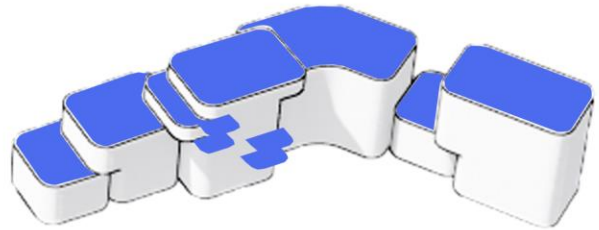
2



Judging by the climate of Warsaw, this area receives precipitation on average 11-13 days per month. The amount of precipitation is from 30 - to 40 mm.

Water collection occurs according to the following scheme:
water flows down the slope of the flat roof to the brim - is cleaned in a strainer - drained down into the sludge tanks.
The water supply also passes through a post-treatment filter.

The design of the roofs increases the area for collecting water.



factory renovation

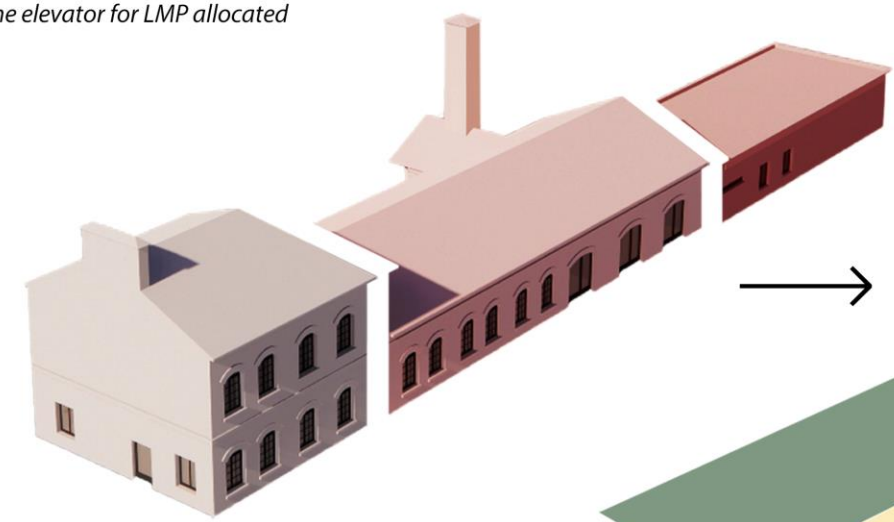
** halls on the second floor appear due to raising the second floor by 1 meter and a glass roof.*
*** proposal for the place of installation of the elevator for LMP allocated*

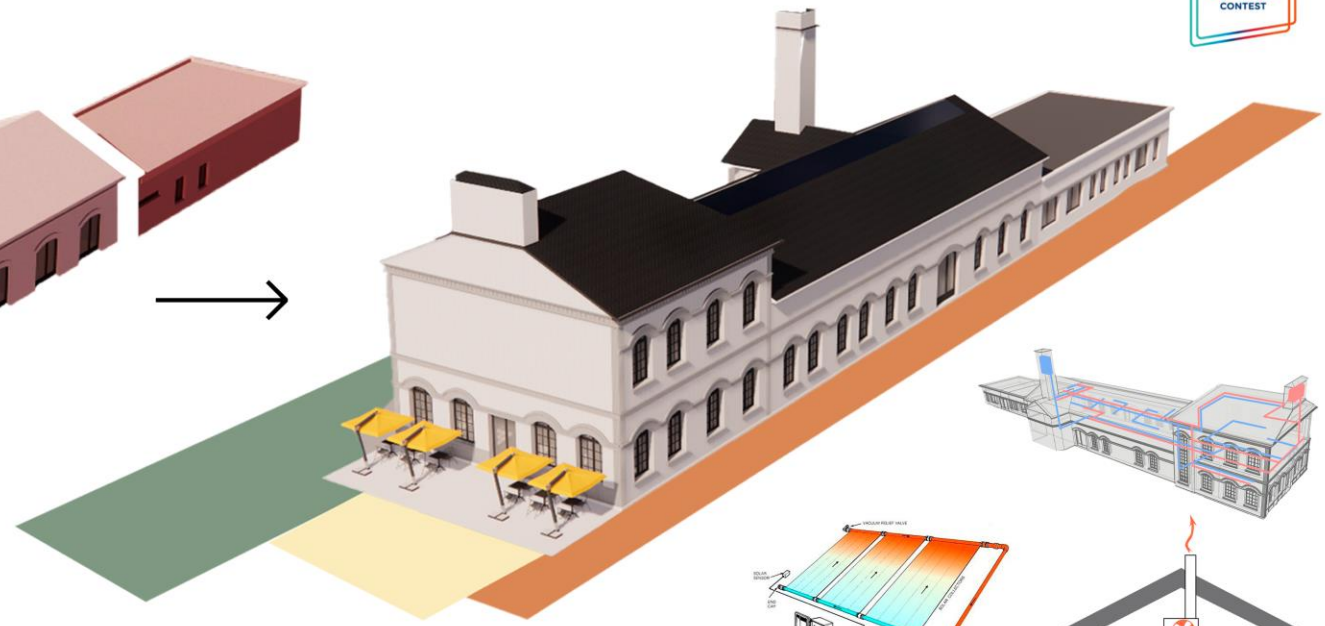
ARCHITECTURE STUDENT CONTEST

weber SAINT-GOBAIN

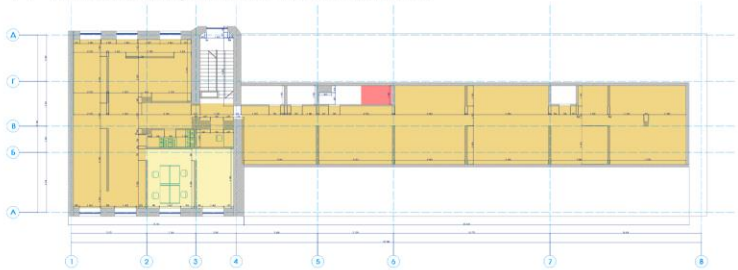
ISOVER SAINT-GOBAIN

vetonit SAINT-GOBAIN

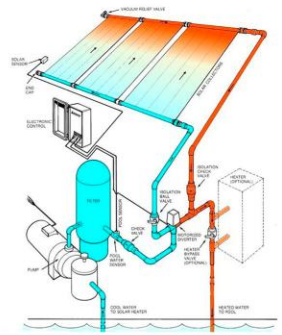


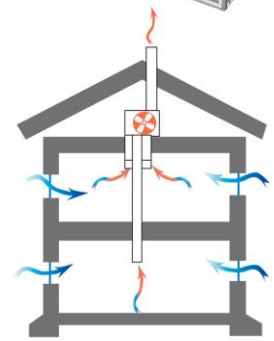


Plan of redevelopment of the first floor, M1:200

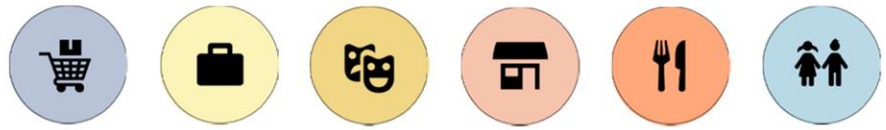


Plan of redevelopment of the second floor, M1:200





technologies and solutions from Saint-Gobain:
- ventilated roof;
- internal insulation of external walls;
- cladding with clinker tiles;
- waterproofing of the blind area;
- air exchange due to combined ventilation;
- energy efficient windows;



products *work areas* *galleries* *workshops* *food area* *children's zones*

The factory building has a combined heating and ventilation system. *Natural ventilation occurs at the expense of the hood, which "sucks out" the used air, and supplies fresh air from the street into the premises. Artificial is produced by a heat exchanger and supply and exhaust ventilation.*

public building

Air purification technology (recuperation), ventilation system, glazing are the same as in the student hostel. The building has two escape routes.

1st FLOOR PLAN

1	hall	113.3 m²
2	post office	28.9 m²
3	bank branch	69.2 m2
4	pharmacy	18.2 m2
5	coffee house	46.2 m2
6	mini market	43.3 m2
7	warehouses and refrigeration	20.8 m2
8	service lift	4.1 m2
9	service staircase	11.5 m2
10	lifts	8.2 m2
11	staircase hall	18.5 m2

2nd FLOOR PLAN

1	staircase hall	18.5 m2
2	post office	12.2 m2
3	cinema halls	69.2 m2
4	administration	16.7 m2
5	cinema warehouse	15.9 m2
6	boutiques	43.3 m2
7	boutique warehouses	59.3 m2
8	service hall	44.2 m2
9	service lift	4.1 m2
10	service stairs	11.5 m2

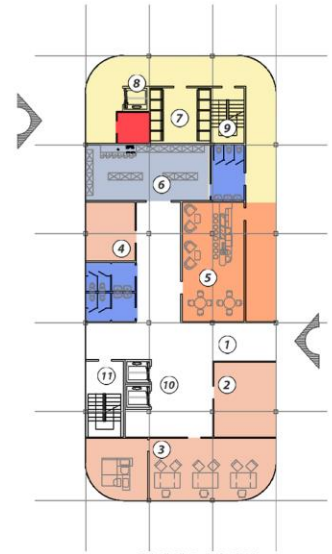
3rd FLOOR PLAN

1	staircase hall	18.5 m2
2	wardrobe	12.1 m2
3	boutique	42.7 m2
4	children's playroom	77.6 m2
5	restaurant	199.4 m2
6	bar	19.3 m2
7	office	9.5 m2
8	kitchen	69.1 m2
9	warehouse, refrigeration	20.8 m2
10	administrative	14.2 m2
11	service lift	4.2 m2
12	service stairs	11.5 m2

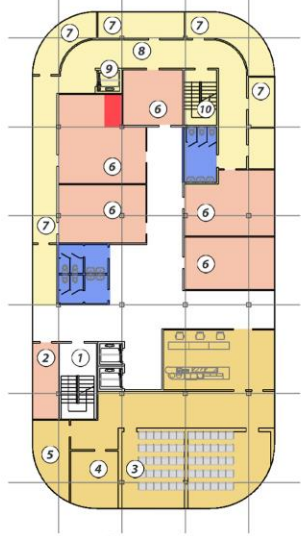
OPEN ROOF PLAN

1	summer terrace	349.59 m²
2	landscaping	384.80 m²

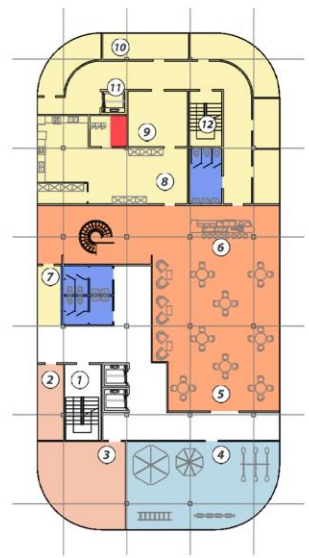
** tech. room highlighted in red*
***wet spots - blue*



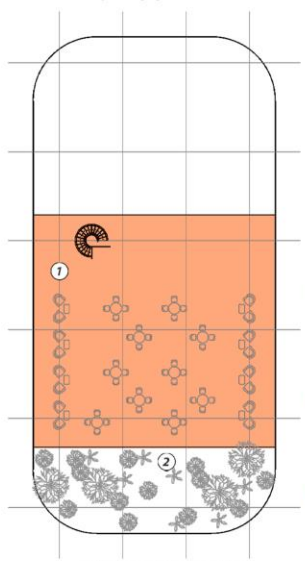
1st FLOOR PLAN



2nd FLOOR PLAN



3rd FLOOR PLAN

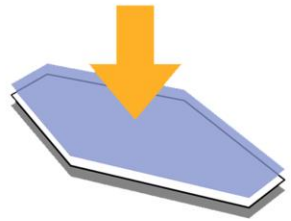


OPEN ROOF PLAN

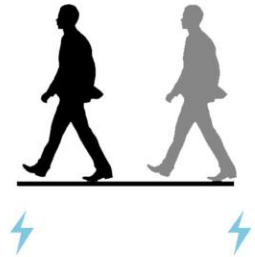
stimulating to do sport

pavegen technology + NFT

ARCHITECTURE STUDENT CONTEST



module



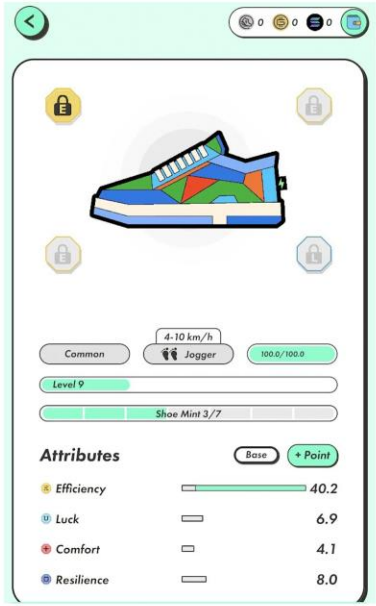
movement

electricity

lightning

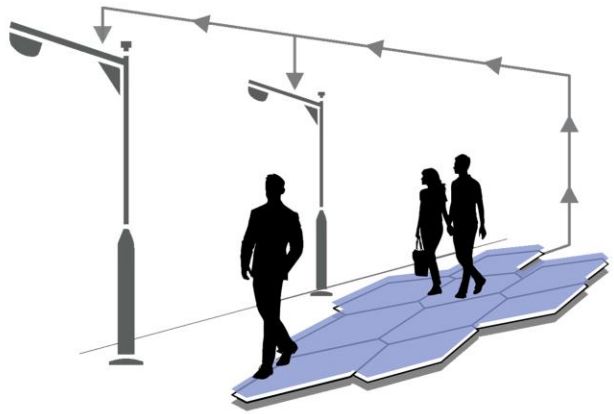
A special coating that converts mechanical movement into electricity, together with the STEPN game application, encourages the hostel guests to constantly engage in sports (jogging and walking).

1 step = 3-5 kJ
600 steps = 1800 kJ
1800 kJ = 0.5 kWh



All running shoes are unique and differ in price and performance. The cheapest pair costs about 9 SOL, which is about $1000.

1 coin = 4$
$40 for a walk (1 hour)
$85 for a run (40 minutes)



0.5 kWh = 3.5 hours

0.5 kWh = 4.5 hours

0.5 kWh = 4 times