ARCHITECTURE STUDENT CONTEST

Belgrade 2026

SAINT-GOBAIN

Team 08

DOCKLINE

ATHLETS , RIVER , STRUCTURE

Polis University Albania

Students

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Sarah Koro

Professor

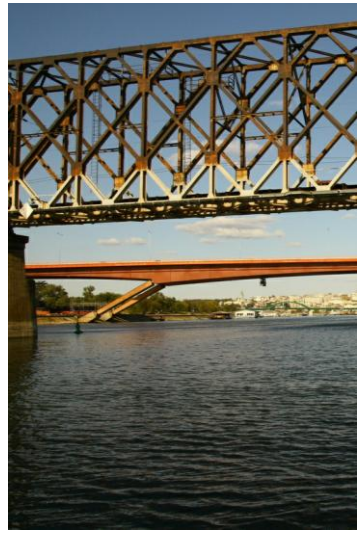
PhD:Klodjan Xhexhi

ARCHITECTURE STUDENT CONTEST

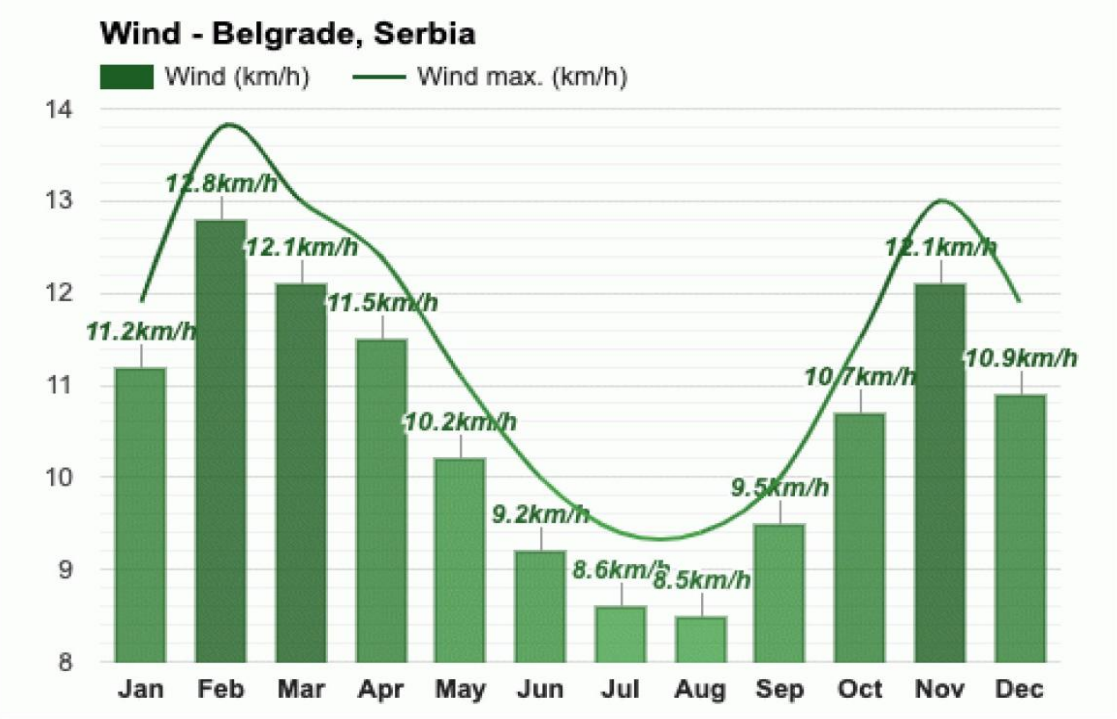
SAINT-GOBAIN

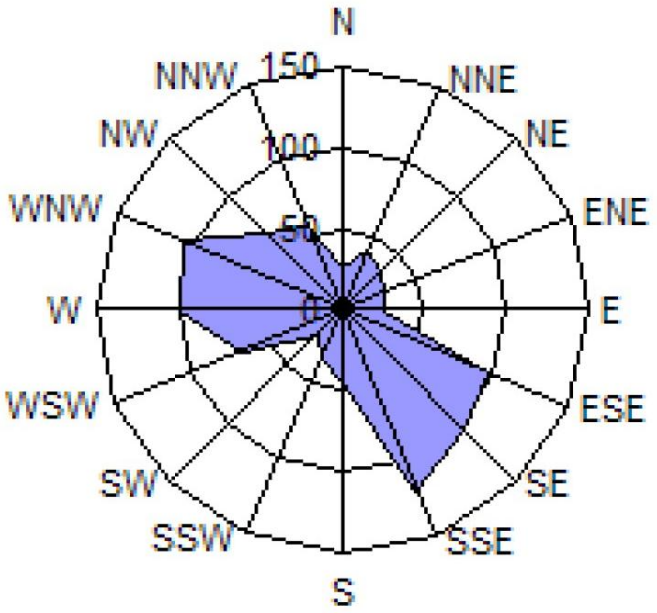
New Construction

SITE AREA



Climate





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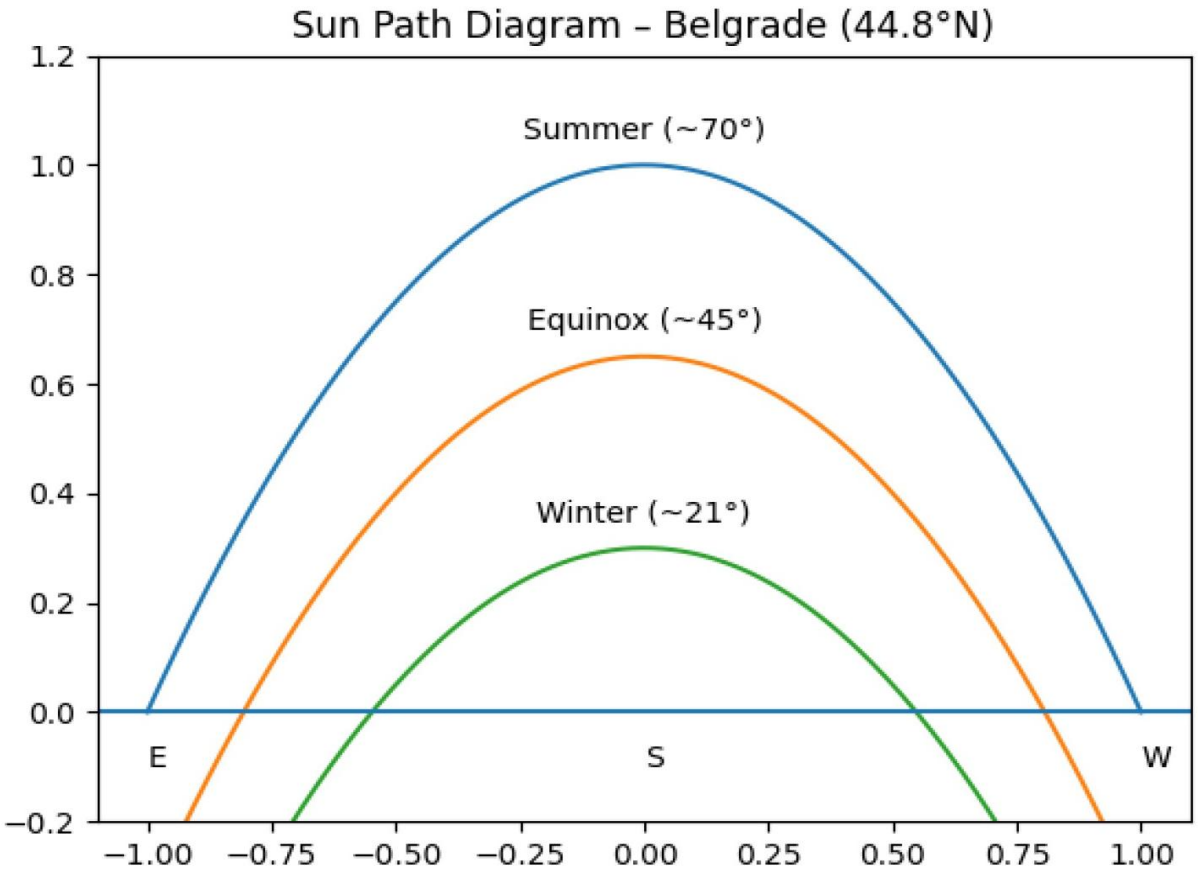
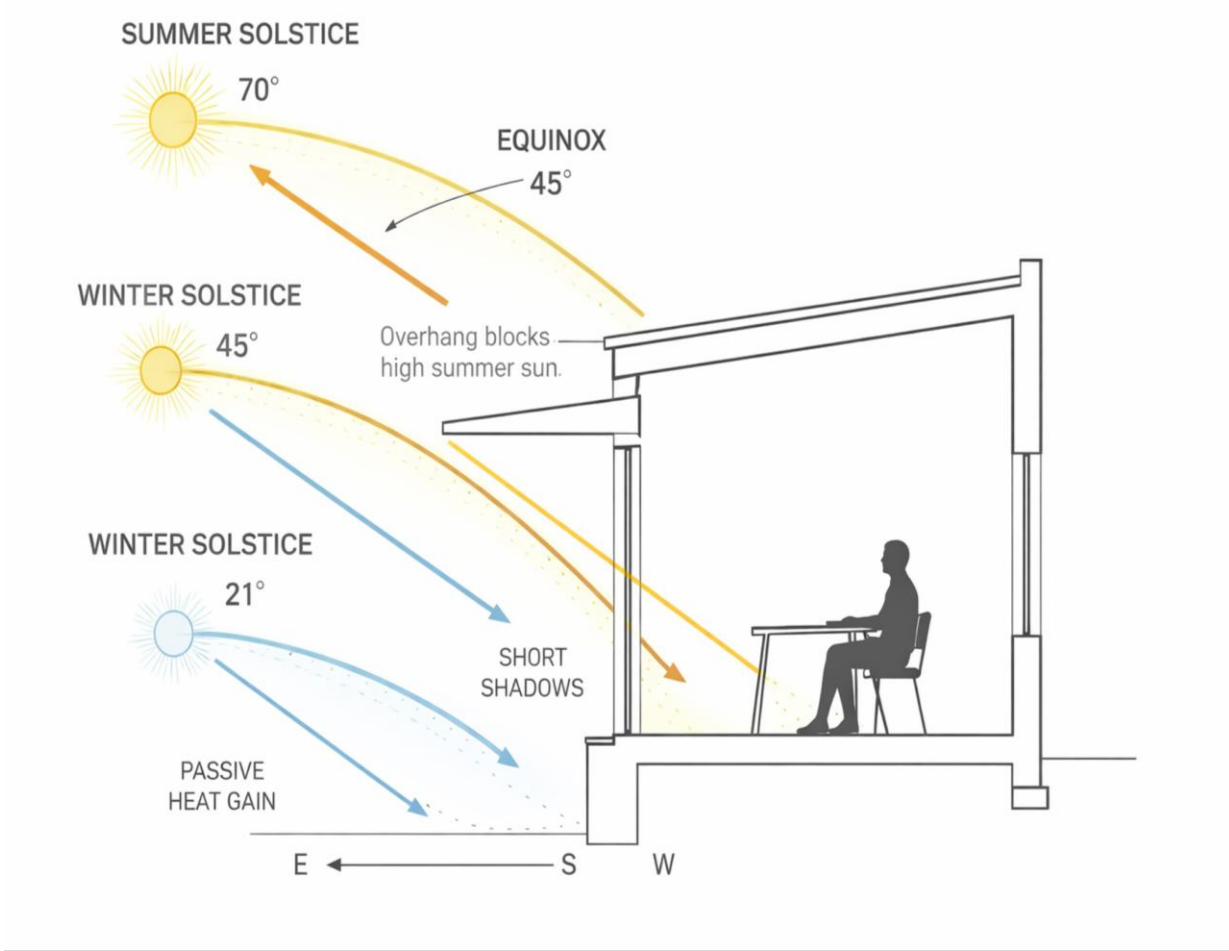
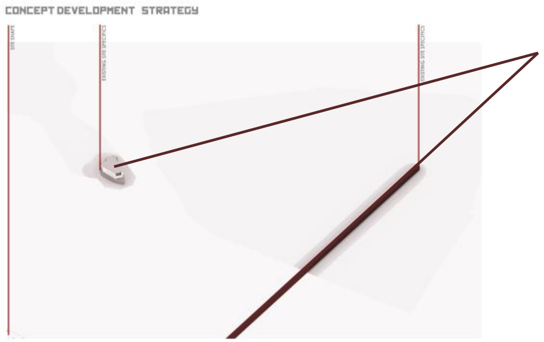
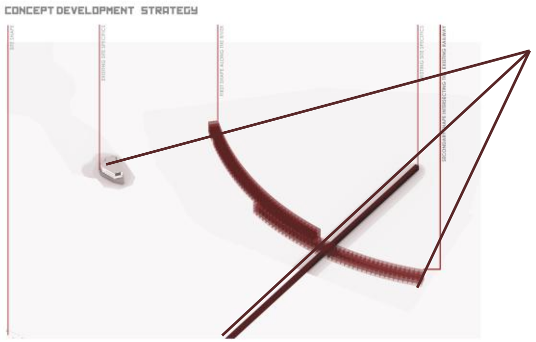
Sun path

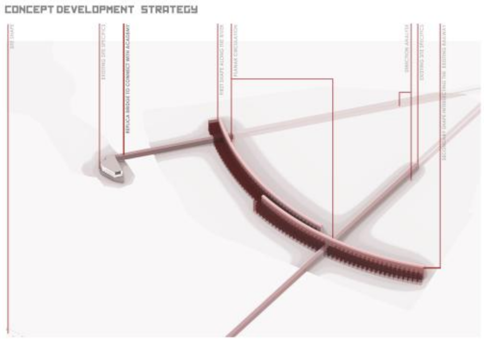

Sun Path Diagram – Belgrade (44.8°N)
Summer (~70°)
Equinox (~45°)
Winter (~21°)
E
S
W
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−1.00
−0.75
−0.50
−0.25
0.00
0.25
0.50
0.75
1.00

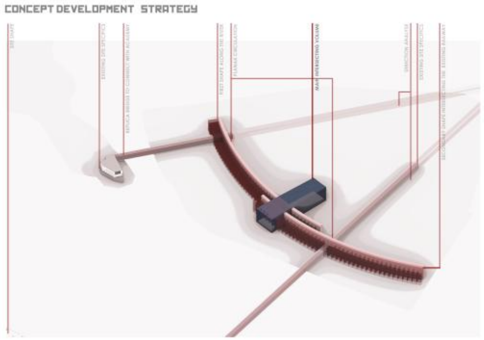

SUMMER SOLSTICE
70°
EQUINOX
45°
WINTER SOLSTICE
45°
Overhang blocks
high summer sun.
WINTER SOLSTICE
21°
SHORT
SHADOWS
PASSIVE
HEAT GAIN
E
S
W

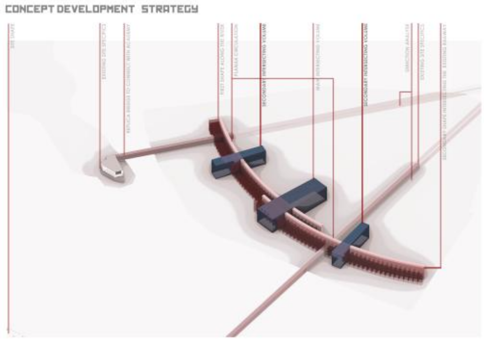
Concept

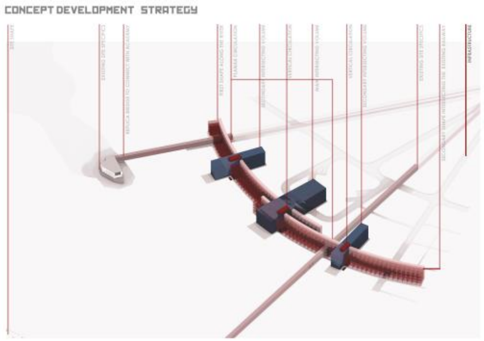

CONCEPT DEVELOPMENT STRATEGY

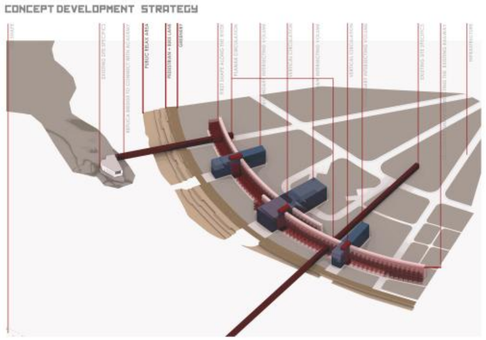

CONCEPT DEVELOPMENT STRATEGY

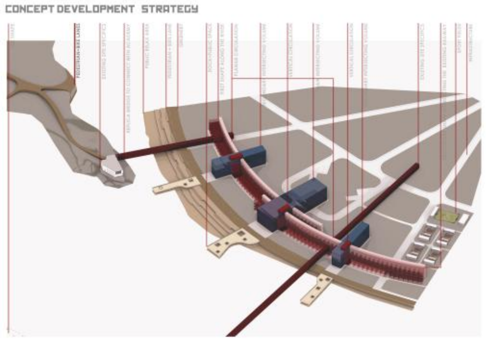

CONCEPT DEVELOPMENT STRATEGY


CONCEPT DEVELOPMENT STRATEGY

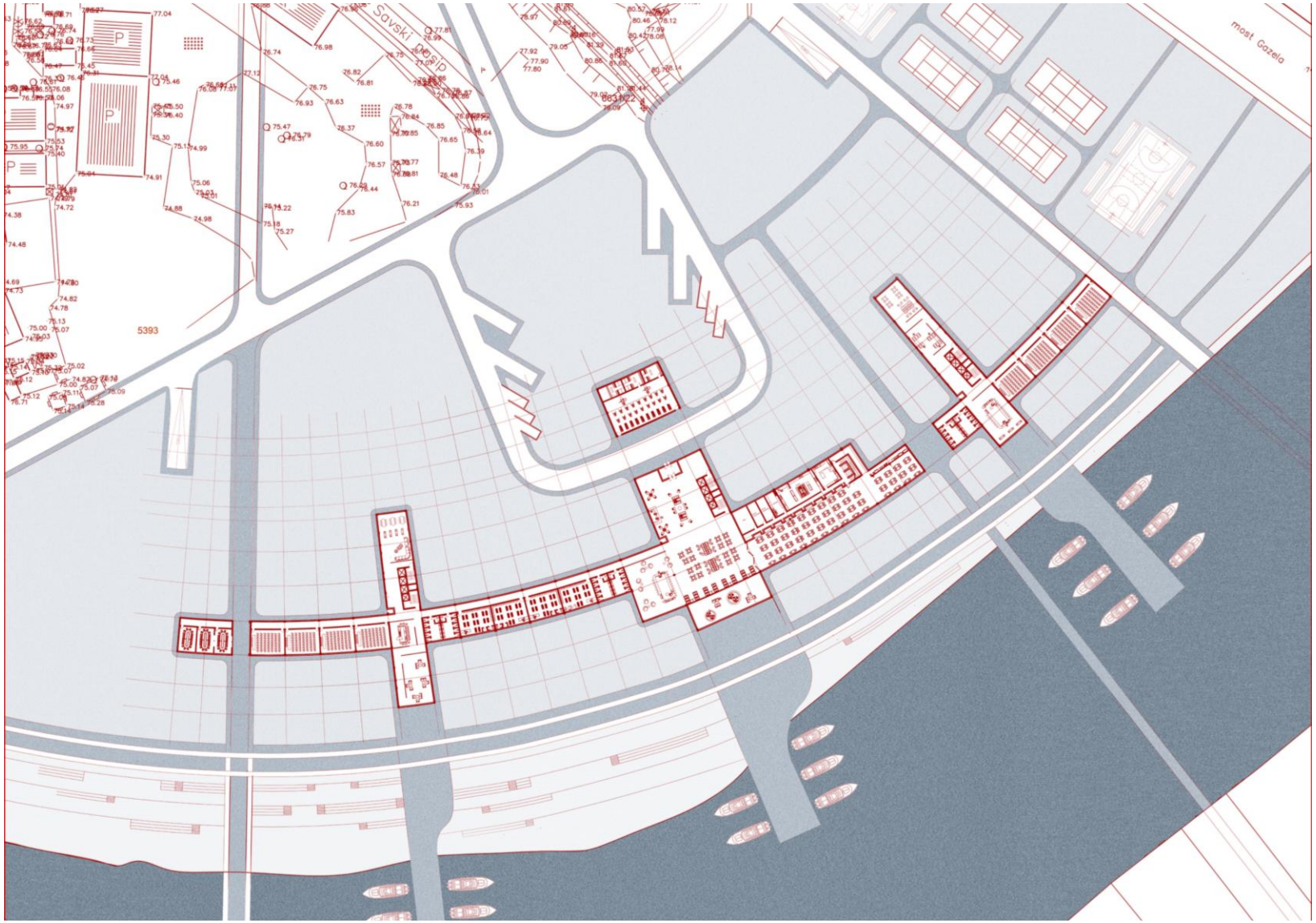

CONCEPT DEVELOPMENT STRATEGY


CONCEPT DEVELOPMENT STRATEGY

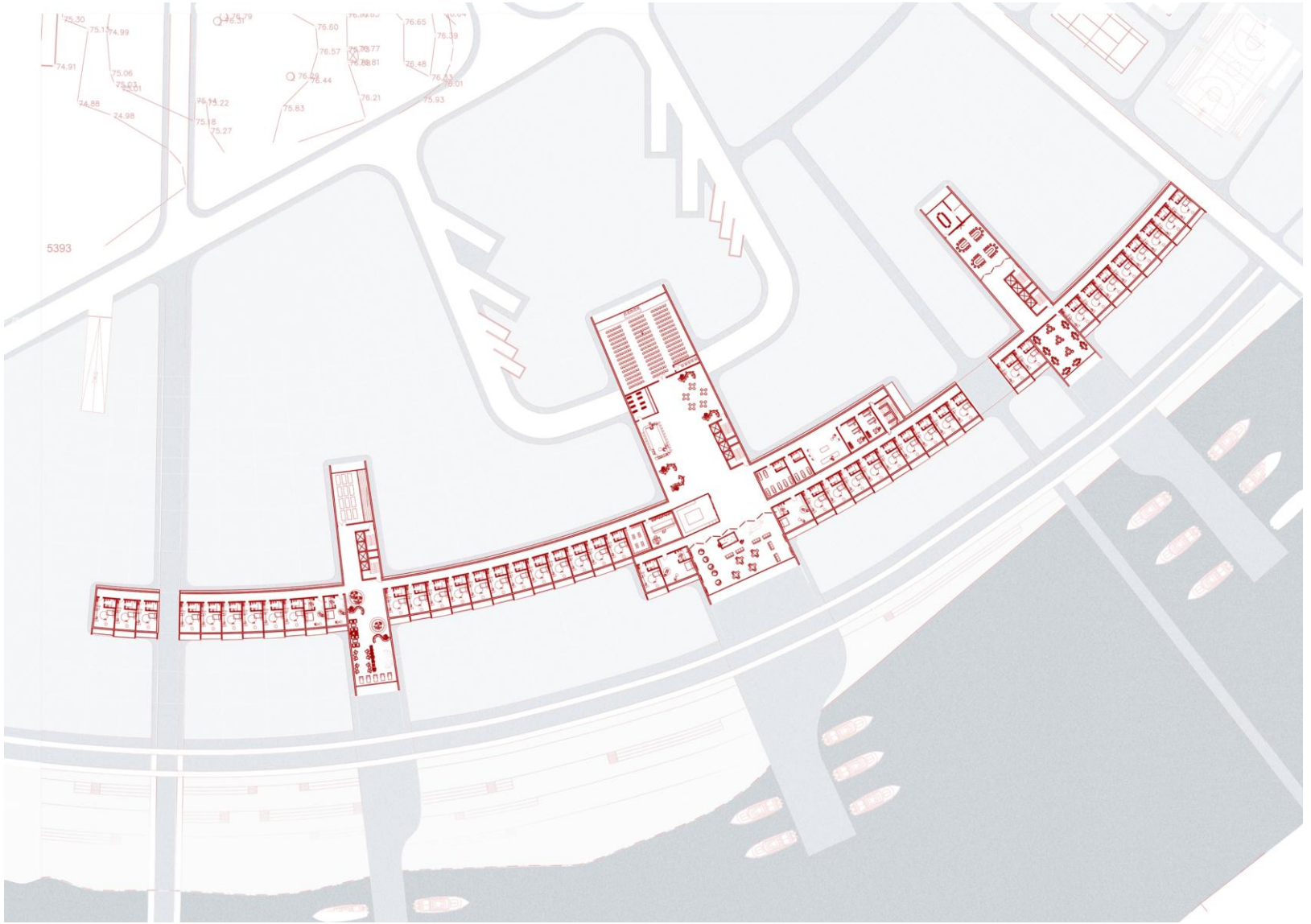

CONCEPT DEVELOPMENT STRATEGY


CONCEPT DEVELOPMENT STRATEGY

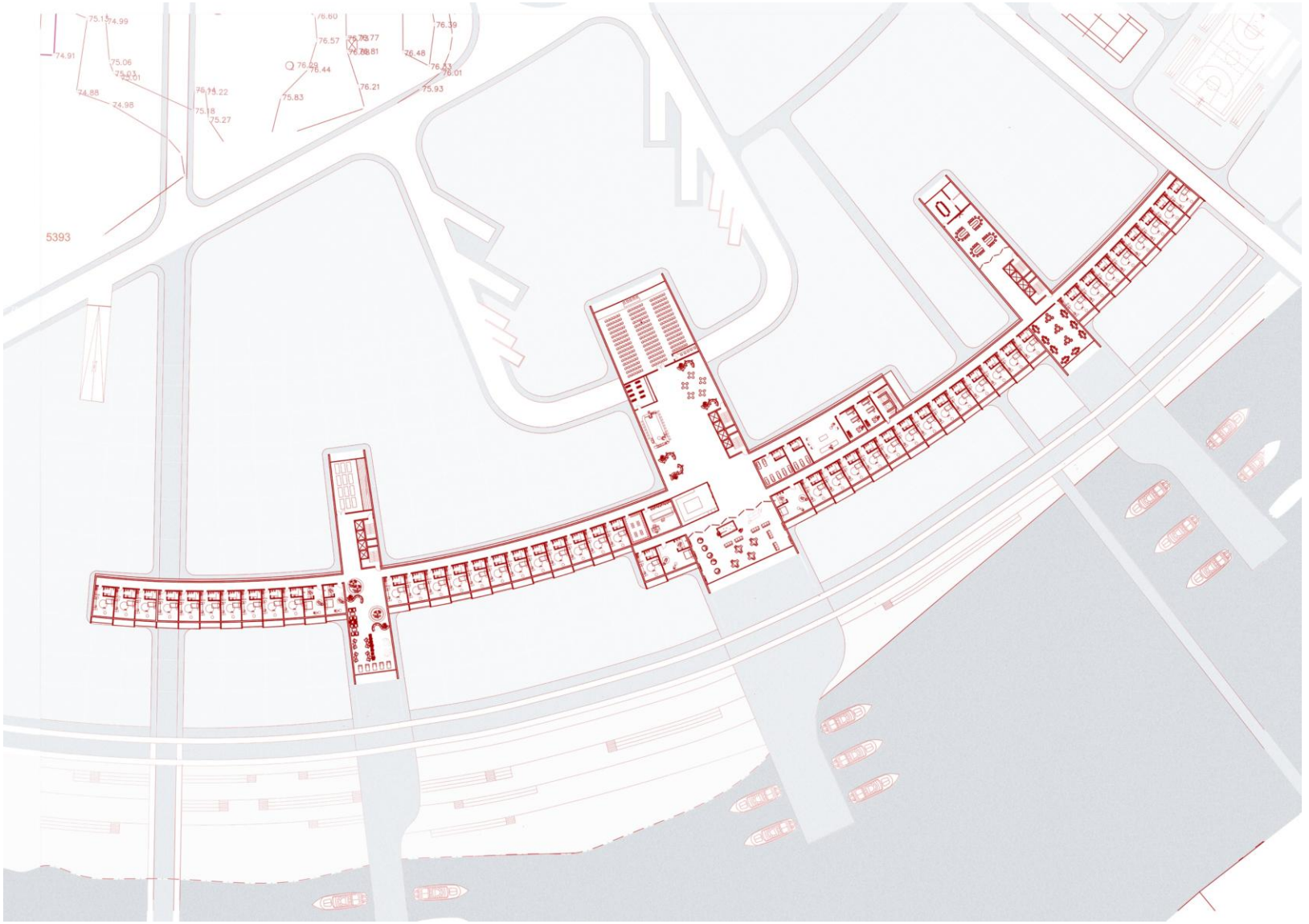
Ground floor



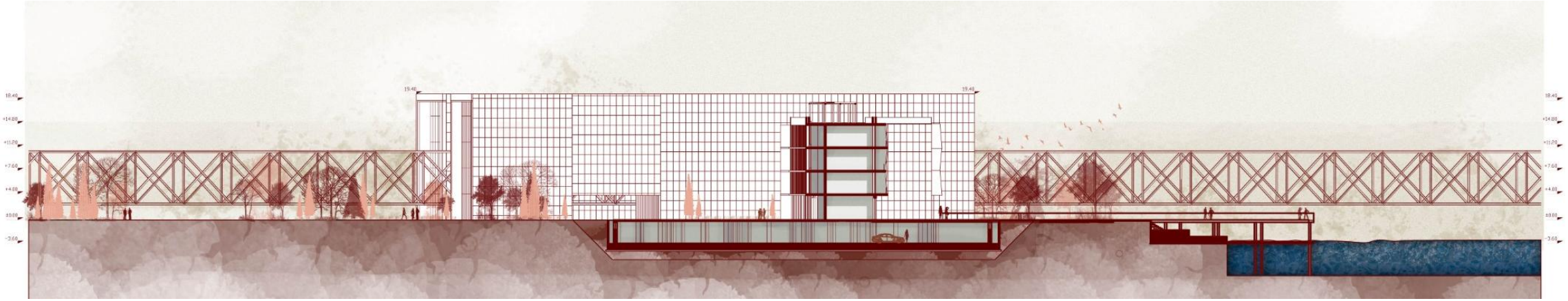
Floor plan +1



Floor plan +3



Sections



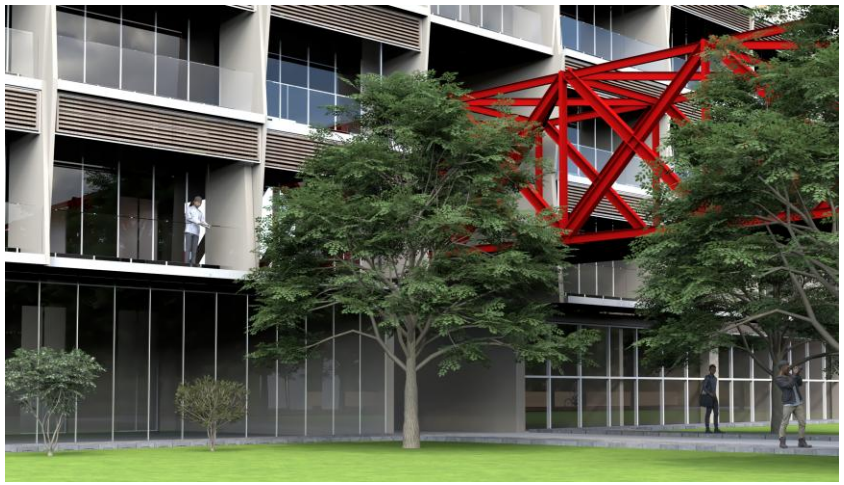
Façades

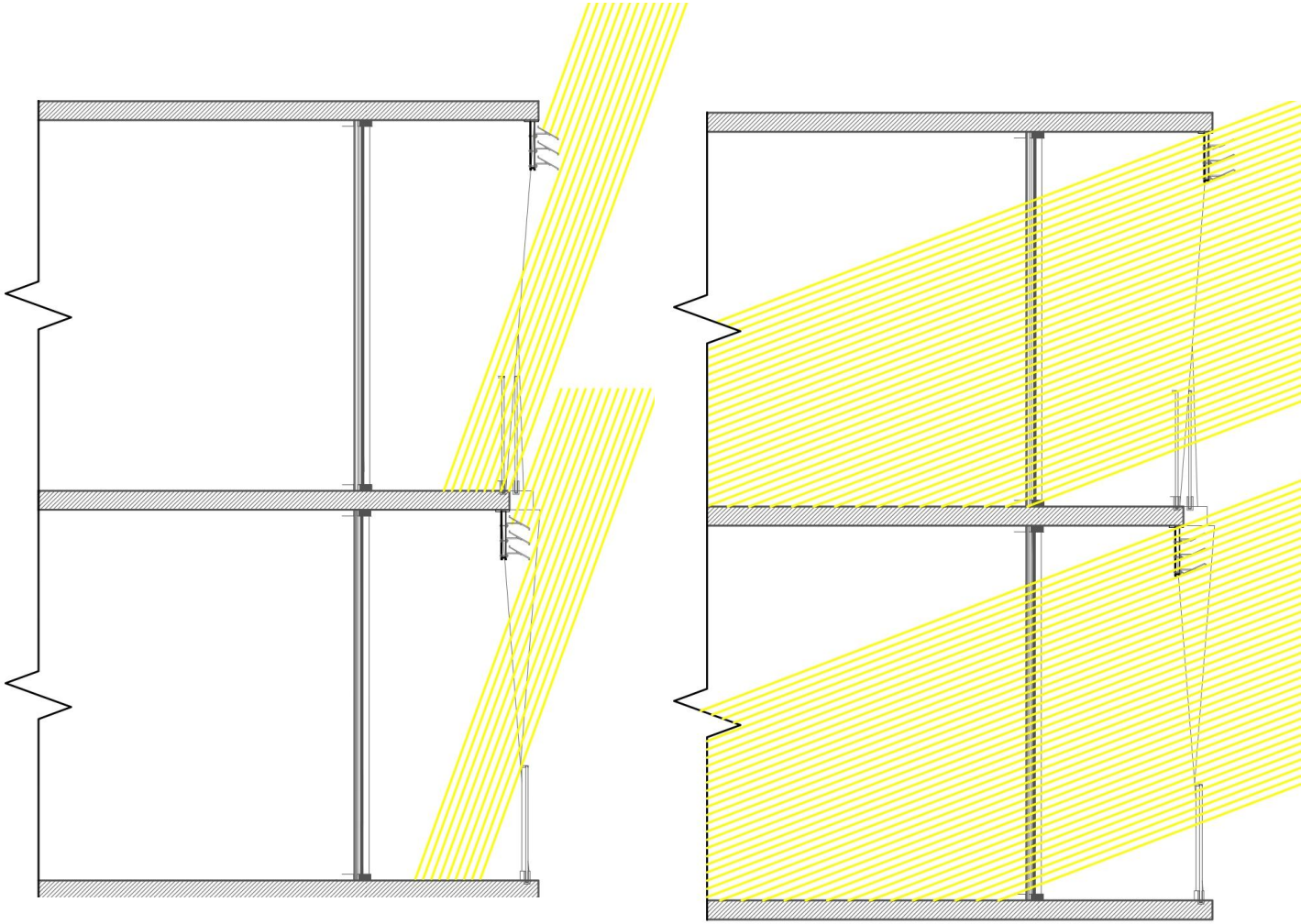
South facade

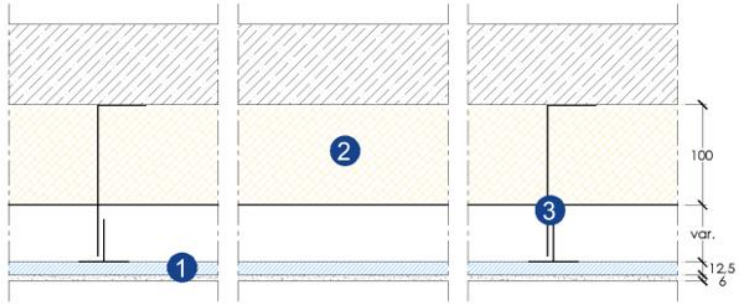
North facade

Façade details

Façade formal configuration, materials and analysis during summer and winter solstice







Façade details

Glass Configuration

Calumen

SAINT-GOBAIN

55.2 diamant SI (16 Argon 90) 6 (16 Argon 90) 44.2 SI [Swisspacer Ultimate Pro](1)

Configuration: 55.2 SI DIAMANT (16 Argon 90) 6 DIAMANT (16 Argon 90) 44.2 SI DIAMANT [Swisspacer Ultimate Pro]
Coating: COOL-LITE XTREME 70-33 #4 / PLANITHERM XN #7

Computed by: Erald Meçe Computed on: 05/05/2026 Product catalog: Albania Norms: EN410:2011

Simulated performance datas

Luminous Factors	**CIE015:2018**
Light Transmittance (TL)	63.1%
Outdoor Reflectance (RLe)	12.9%
Indoor Reflectance (RLi)	15.6%

Energy Factors	**EN410:2011**
Transmittance (TE)	26.1%
UV (Tuv)	0.0%
Outdoor Reflectance (Ree)	31.8%
Indoor Reflectance (Rei)	35.1%
Absorptance A1 (AE1)	39.2%
Absorptance A2 (AE2)	0.3%
Absorptance A3 (AE3)	2.5%

Solar Factors	**EN410:2011**
Solar Factor (g)	0.295
Shading Coefficient (SC)	0.339

Thermal Transmission	**EN673:2011**
Angle relative to the vertical	0°
Ug	0.543 W/(m2.K)

Acoustics	**EN 12758**
Acoustic simulated values	
Rw (C;Ctr)	49 (-2; -7) dB
Ra	47 dB
Ra,tr	42 dB
STC (ASTM E413)	49
OITC (ASTM E1332)	39

Color Rendering	**CIE015:2018**
Transmission (Ra)	94.1
Reflection (Ra)	88.3

Anti-Burglary	**EN356**
Burglar Resistance	P2A/NPD/P2A

Manufacturing Sizes	
Nominal Thickness	57.52 mm
Weight	61.6 kg/m²

Glazing type

Glazing 1
- DIAMANT(5mm) - Annealed
- PVB SILENCE2 foil(s)
- PLANICLEAR(5mm) - Annealed
- COOL-LITE XTREME 70-33

Cavity1
- Argon 90% 16 mm
- Swisspacer Ultimate Pro

Glazing 2
- DIAMANT(6mm) - Annealed

Cavity2
- Argon 90% 16 mm
- Swisspacer Ultimate Pro

Glazing 3
- PLANITHERM XN
- DIAMANT(4mm) - Annealed
- PVB SILENCE2 foil(s)
- DIAMANT(4mm) - Annealed

Façade

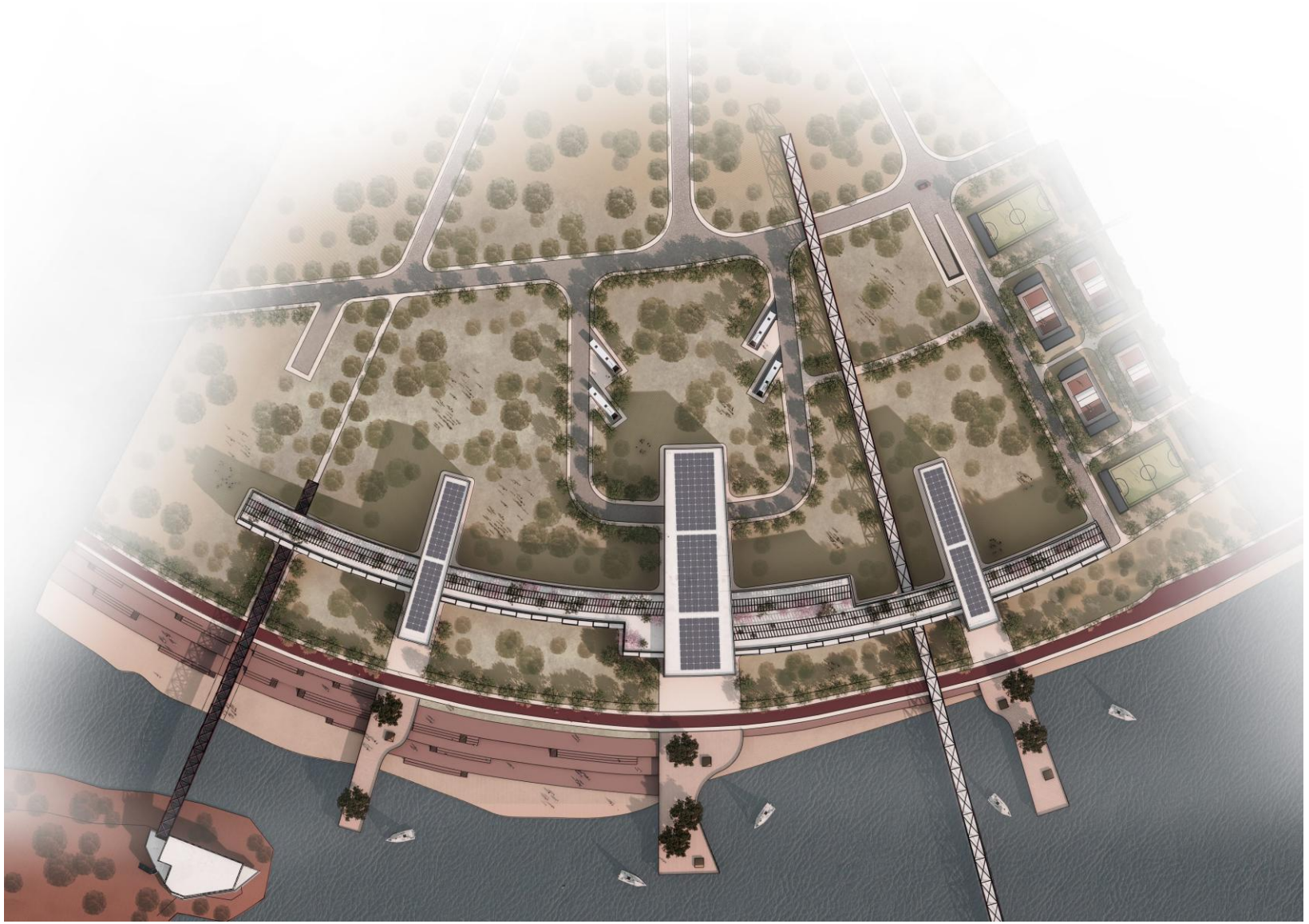
Energy production

Photovoltaic panels calculations

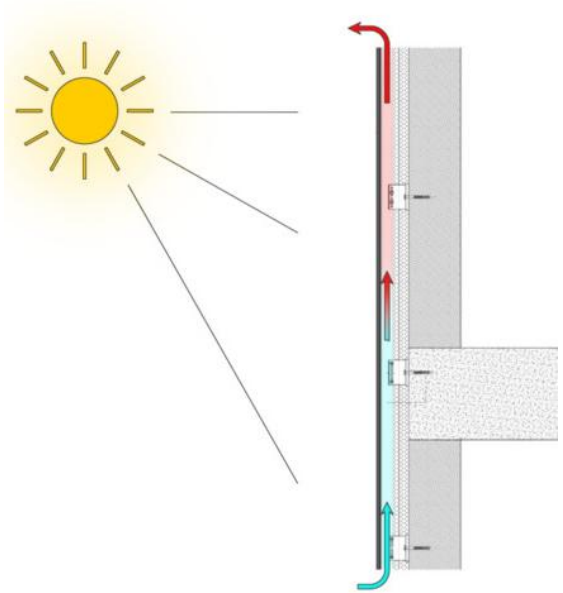
To produce energy for new construction building we proposed to use Photovoltaic panels to make sure that energy consume of building is 100% renewable and environment friendly

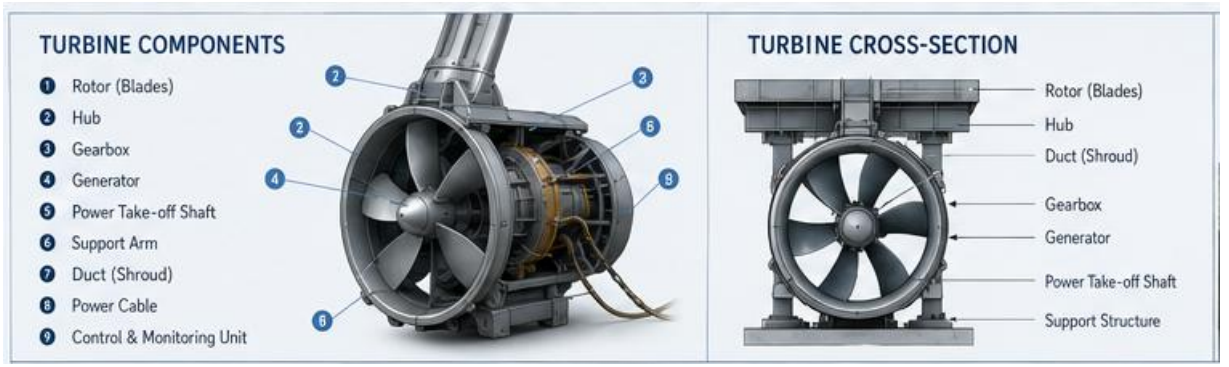
Parameter	Value	Notes
Total Area	2800m2	
Usable Area(75%)	2100m2	Moving,corners,ventilation
Panel Dimensions	2.279m*1.134m=2.58m2	
Panel NO.	814	2100/2.58m2
Total Power installed	472kWp	814*0.580kW
Annual energy production	660 000-700 000kWh	Based 1400h sun/year(Balcan avarage)
CO2 reduced/year	330 ton CO2	0.5 kg CO2 per kWh

Masterplan



Renovation





Turbine size		Parameters		Calculations
Diameter	5m	p	1000kg/m3	P=0.5*1000*19.6*(2.5)^3*0.42
Area	19.6m2	v	2.5m/s	p=64 000 W = 64 kW/h /Turbine
		Efficency	0.42	.=1536kWh/Day -->560 000 kWh/ year

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