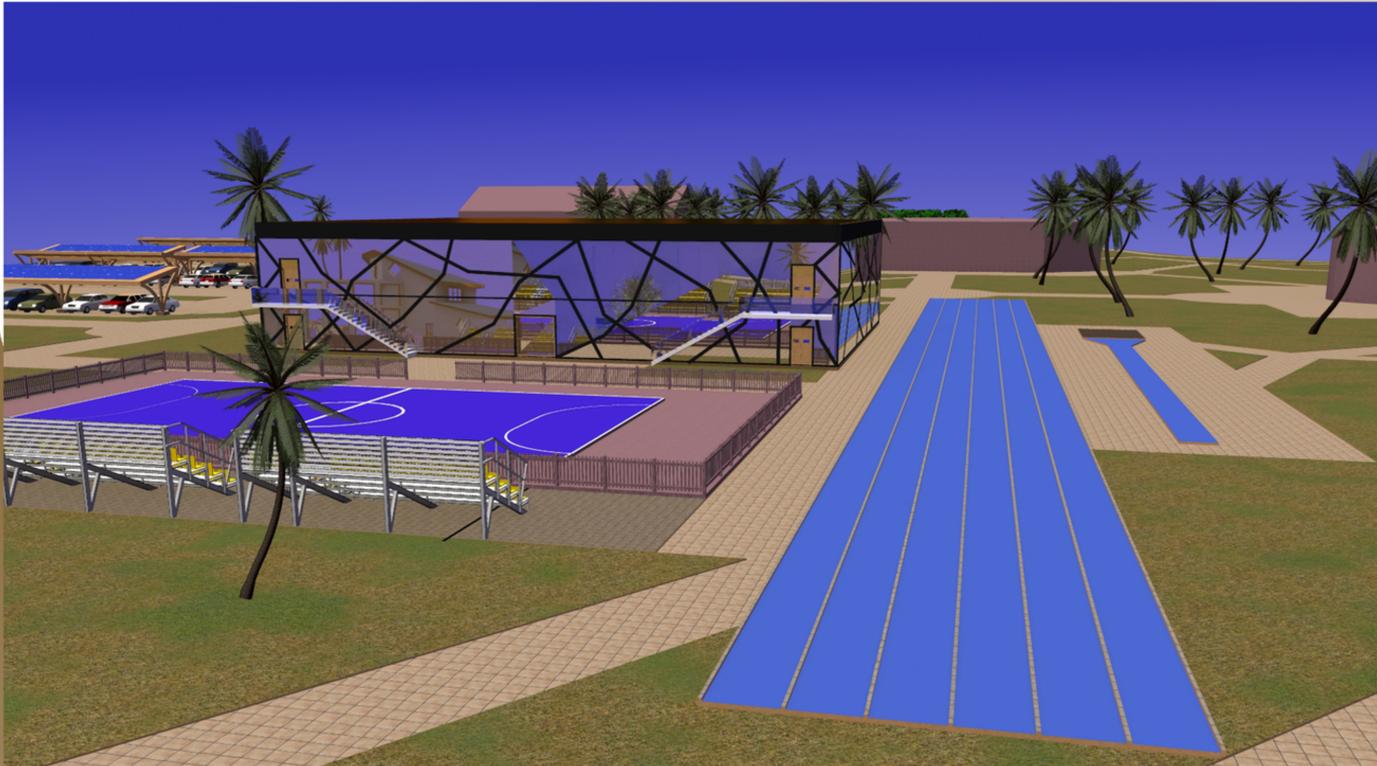


# *Architectural Design Competition*



*Architectural Competition "Tourist Hostel"  
on the Jezowa Woda mountain with  
restaurant and terraces Polonia*

*International Architectural Competition  
"Coaf Smart Center" Armavir Armenia*

*reGenerate the neighbourhood around the  
22nd street Sky train Stations New Westminster  
Canada*

*Design Competition Tarkhanovo Green Park  
city of Yoshkar-Ola Mary El Russia*

*International architecture Design competition  
Carbon positive affordable housing Stati Uniti*

*The Forge Prize 2020 Stati Uniti*

*The Forge Prize 2021 Stati Uniti*

*Maine Mass Timber Design Competition Stati Uniti*

*Resilient Homes Challenge Build Accademy Stati Uniti*

*Small lots big impacts*

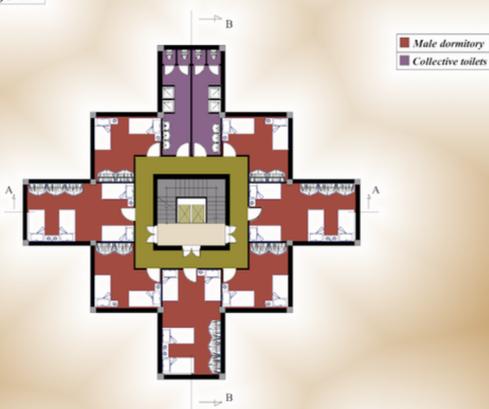
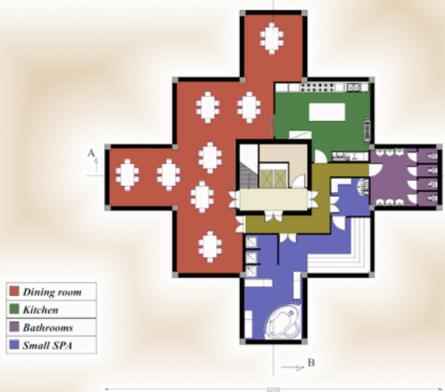
*Architectural Competition "Tourist Hostel"  
on the Jezowa Woda mountain with  
restaurant and terraces Polonia*



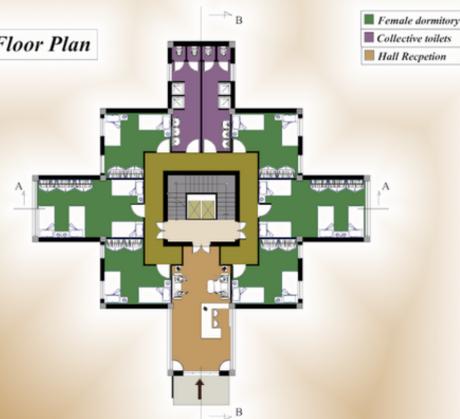
Scale 1:200

Basement Floor Plan -3,5 m

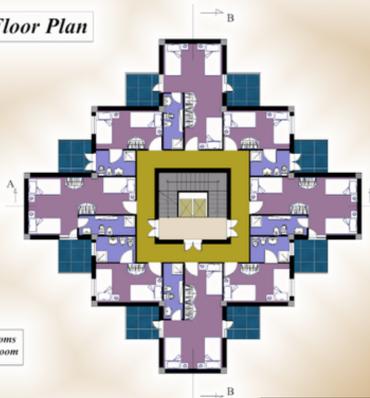
Basement Floor Plan - 7 m



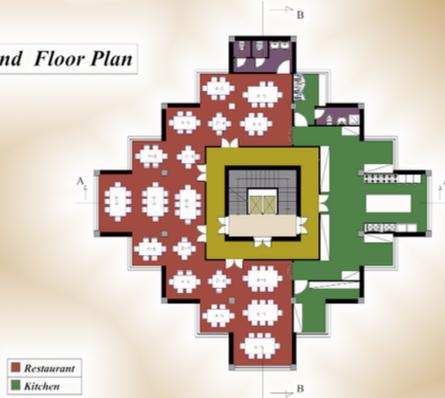
Ground Floor Plan



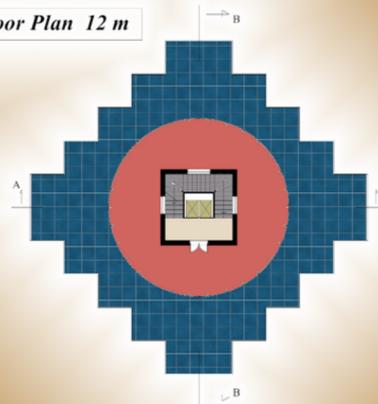
First Floor Plan



Second Floor Plan

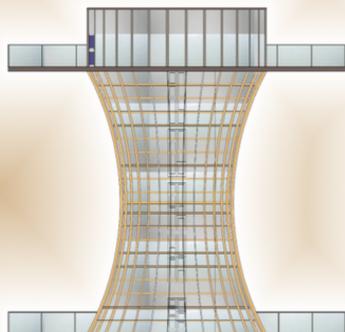
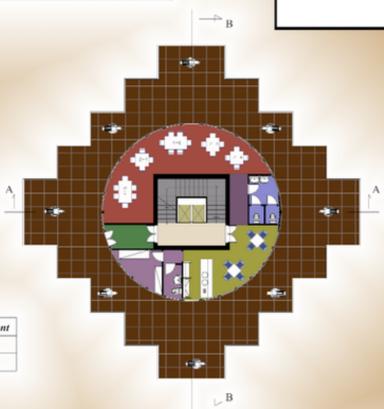


Terrace Floor Plan 12 m

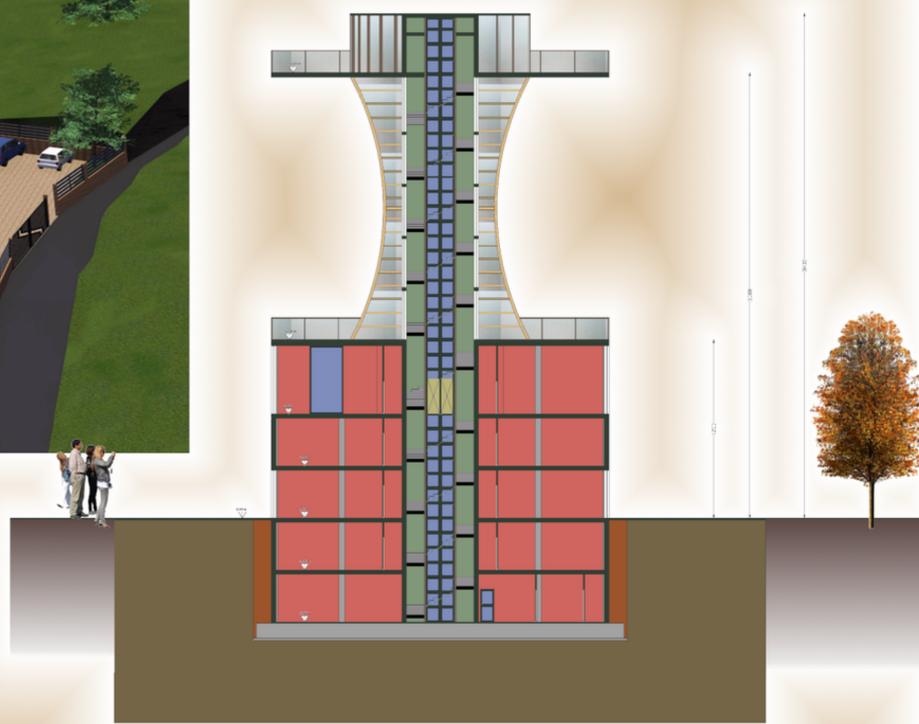


Architectural Competition " Tourist hostel on the Jeżowa Woda mountain with restaurant and observation terraces "

Panoramic Floor Plan 30 m



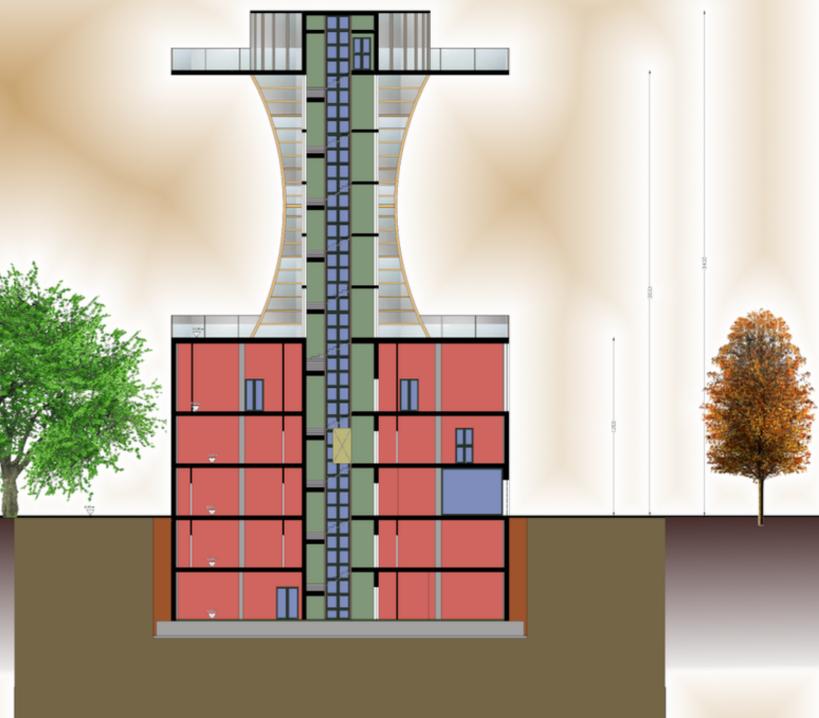
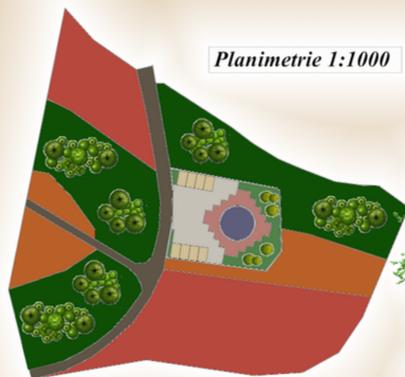
Frontal Façade



Section A-A

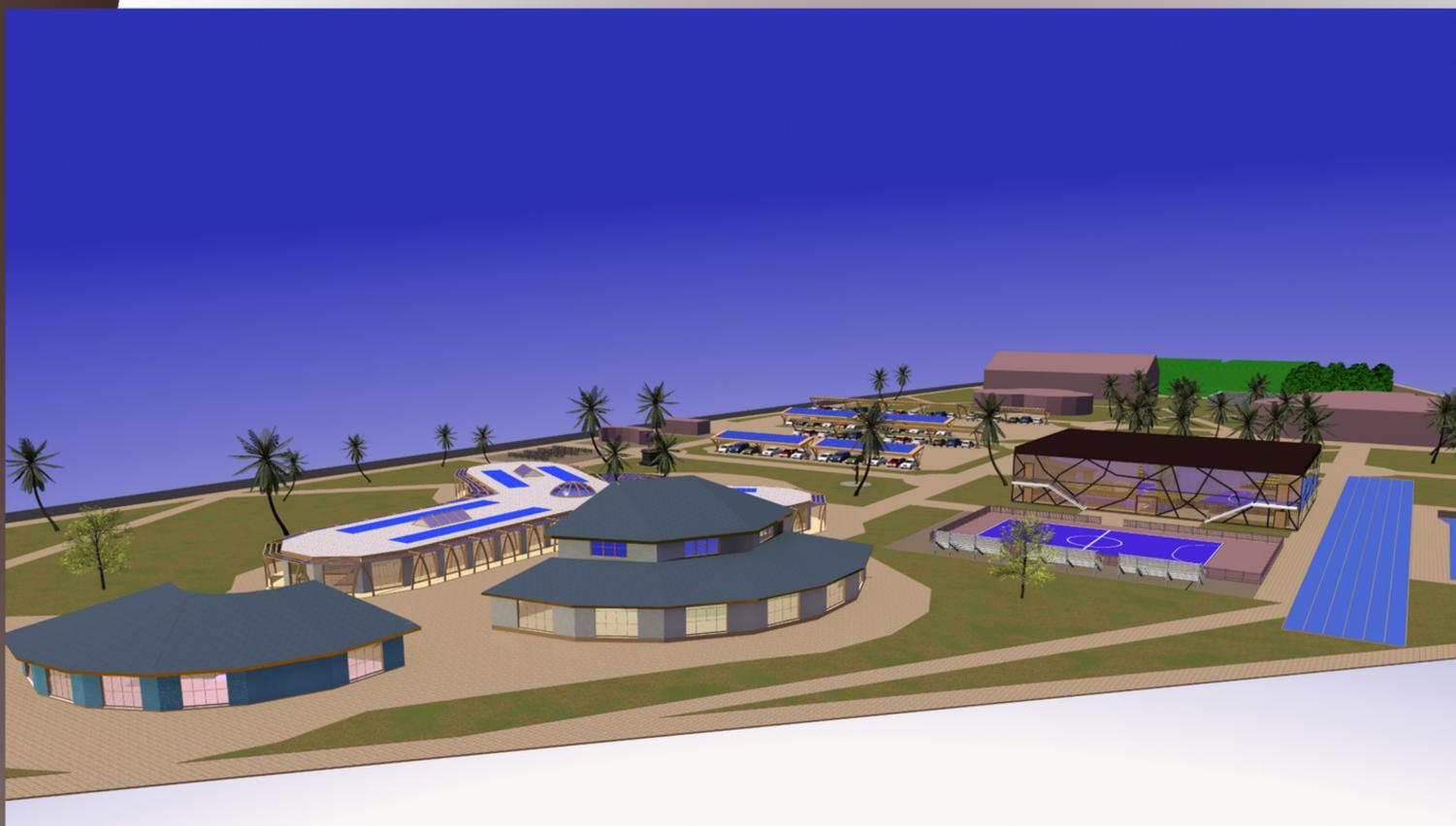


Planimetrie 1:1000



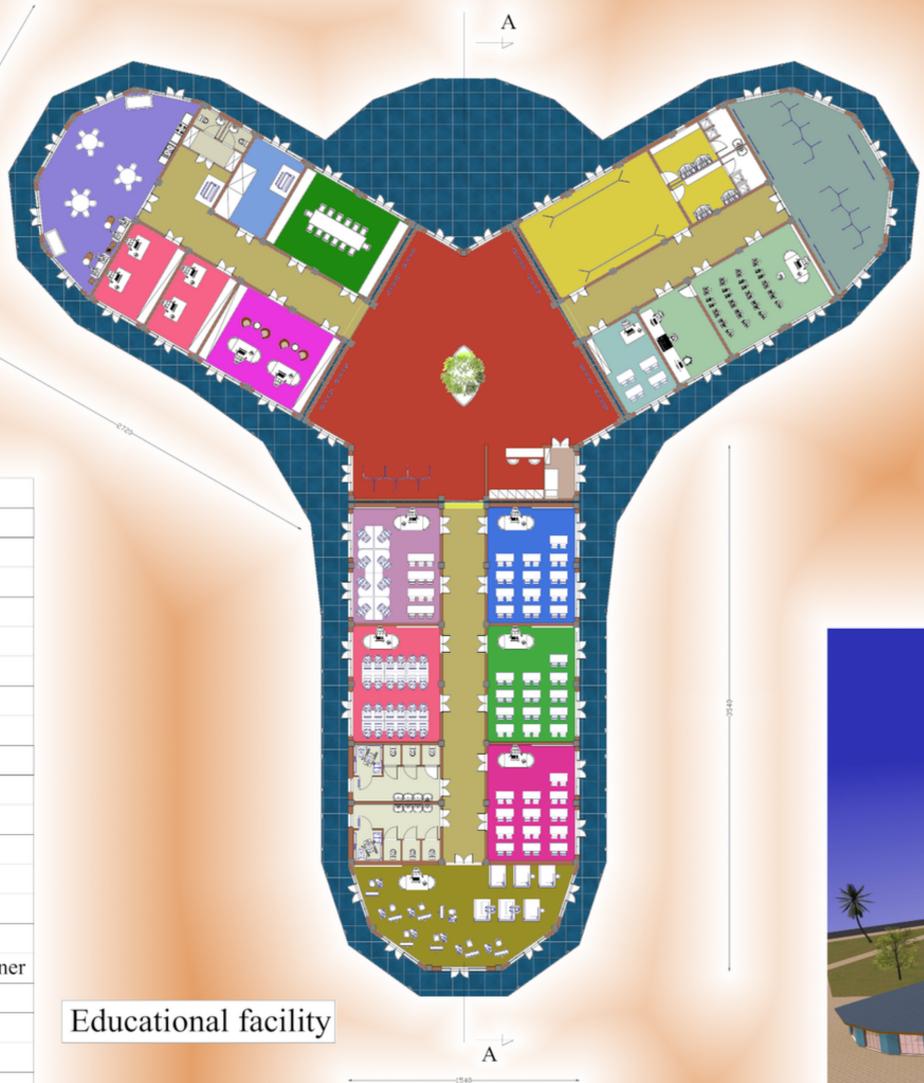
Section B-B

*International Architectural Competition  
"Coaf Smart Center" Armavir Armenia*



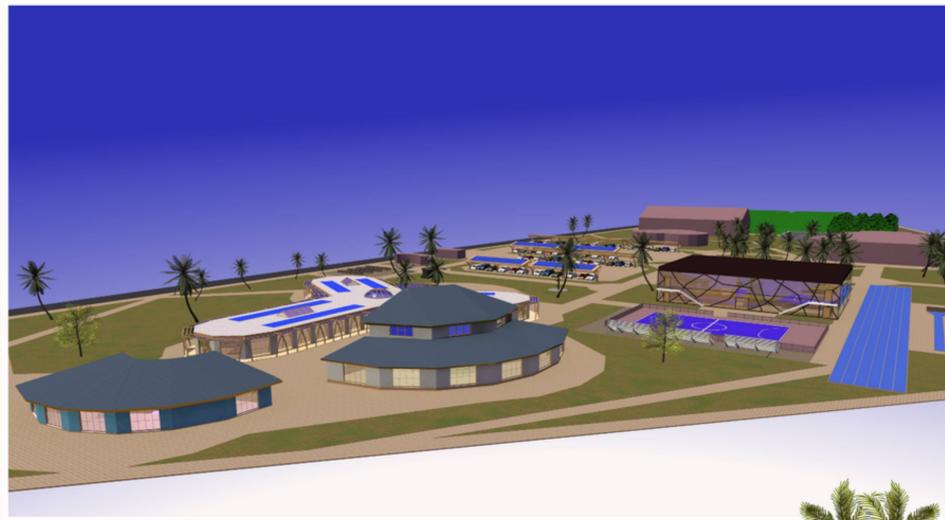
The project proposal developed concerns the detailed study of the COAF SMART CENTER, with the educational facility, the auditorium-library, the cafeteria and the sports area; the educational structure has a single floor with a reinforced concrete structure, a wooden and glass portico that recalls the Islamic arch, a flat roof where a photovoltaic system is positioned that makes the structure energy self-sufficient. The shape of the building is very simple Y which ideally represents a crossroads or a choice which way to go, but at the same time if seen from above it can represent a jewel a Collier, a shape obtained from the assembly of rectangular modules 4x6 m that define the size of a classroom about 48 square meters, for which the didactic spaces, the artistic spaces, music dance design, the digital and robotics classroom, the cultural corner, and the administrative rooms have been defined. We wanted to separate the educational area from the auditorium and the cafeteria canteen by creating separate buildings in order to distinguish the different activities. Each educational environment has a direct exit to the outside to allow rapid evacuation, the entrance and the central hall represent a welcoming and socializing space for both visitors and students with a glass-wood dome that illuminates the atrium with natural light and warms it. The inclusion of a school structure in a natural environment intended for agriculture is very educational not only improves the preparation and living conditions of students who have the opportunity to approach the use of new technologies such as computers and robotics seeing agriculture in a way different away from ancient cultural legacies linked to labor, but agricultural industrialization or the use of robotics in agriculture, at the same time bringing students closer to nature, permeating their unconscious and forming an environmental culture in their personality. Arts such as dance, music and drawing are fundamental in the development of the personality of adolescents who can express their skills and creative abilities by improving intellectual abilities, social integration and communication skills. The sports area with outdoor soccer field running track for the long jump and the 100 m gym with a basketball court where it is possible to play, aerobic yoga gymnastics not only brings students closer to a sporting practice but allows the correct development in the adolescent period of the physical build or to integrate sports and didactic activities in order to fortify both the mind and the body by removing students from forms of social deviance typical of modern society. The social function of the COAF SMART CENTER is to improve the living conditions accompanied by the improvement of the physical and mental abilities of students, bringing them closer to contemporary cultural models also using modern architecture, integrating perfectly into the existing natural and urban context, so that it is destination for visitors or tourists who go to Armavir on Mount ARARAT. In modern times, with the development of distance learning and virtual classrooms, the educational structure assumes ever greater importance for the development of the personality of students who learn to be in a group to respect its rules to socialize meet new people fundamental requirements for a growth of personality and correct social integration in any place on earth.

Ground floor Plan



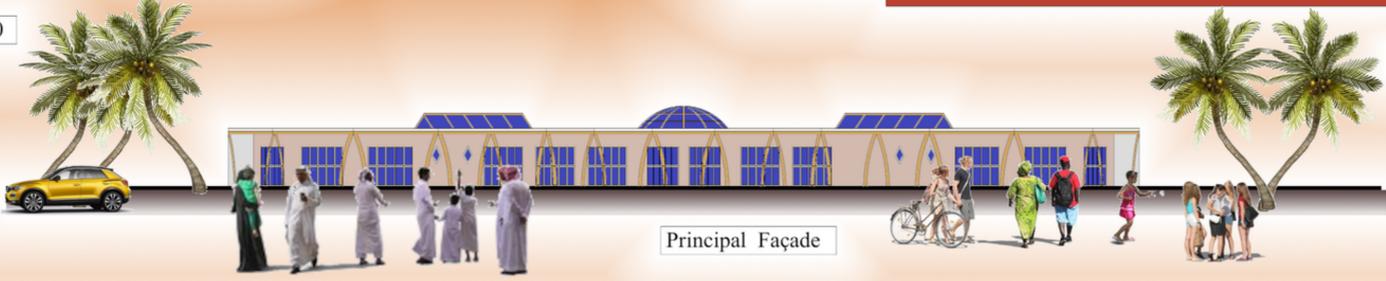
- | Coaf Smart Center         |  |
|---------------------------|--|
| Reception Area            |  |
| Hall entrance             |  |
| Programmatic rooms        |  |
| Arts Studio               |  |
| Music room                |  |
| Dance Studio              |  |
| Robotics lab              |  |
| Digital design Studio     |  |
| Cultural corner           |  |
| Stem Wing                 |  |
| Biology                   |  |
| Geography                 |  |
| Chemistry and physics     |  |
| Staff Office Area         |  |
| General Office Area       |  |
| Lounge Area Coffee corner |  |
| Meeting room              |  |
| Work cubicles             |  |
| Resource room             |  |
| Health post               |  |
| First aid                 |  |
| Education area            |  |
| Restrooms                 |  |
| Restrooms Students        |  |
| Restrooms                 |  |

Educational facility



Section A-A

Scale 1:200

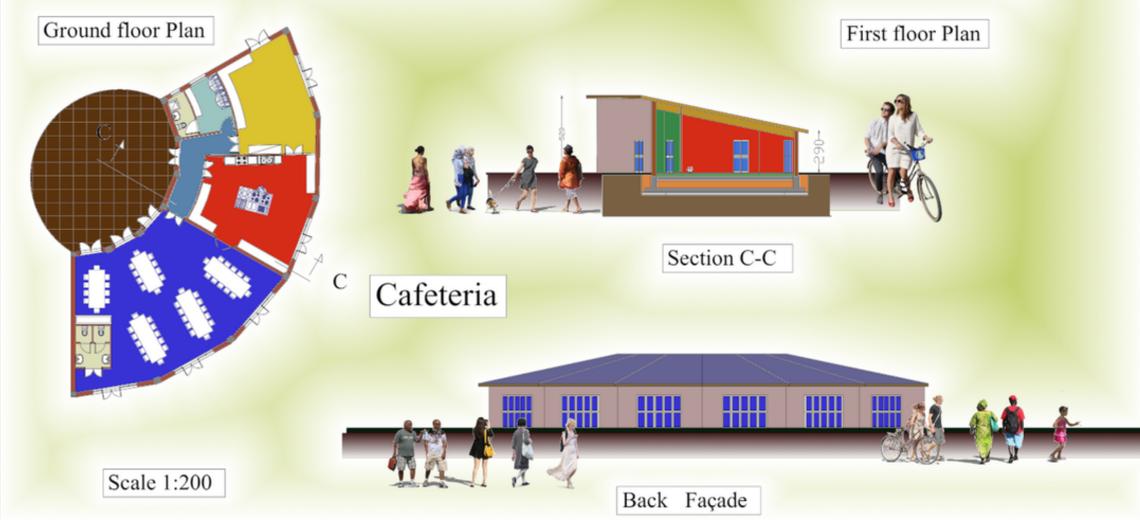
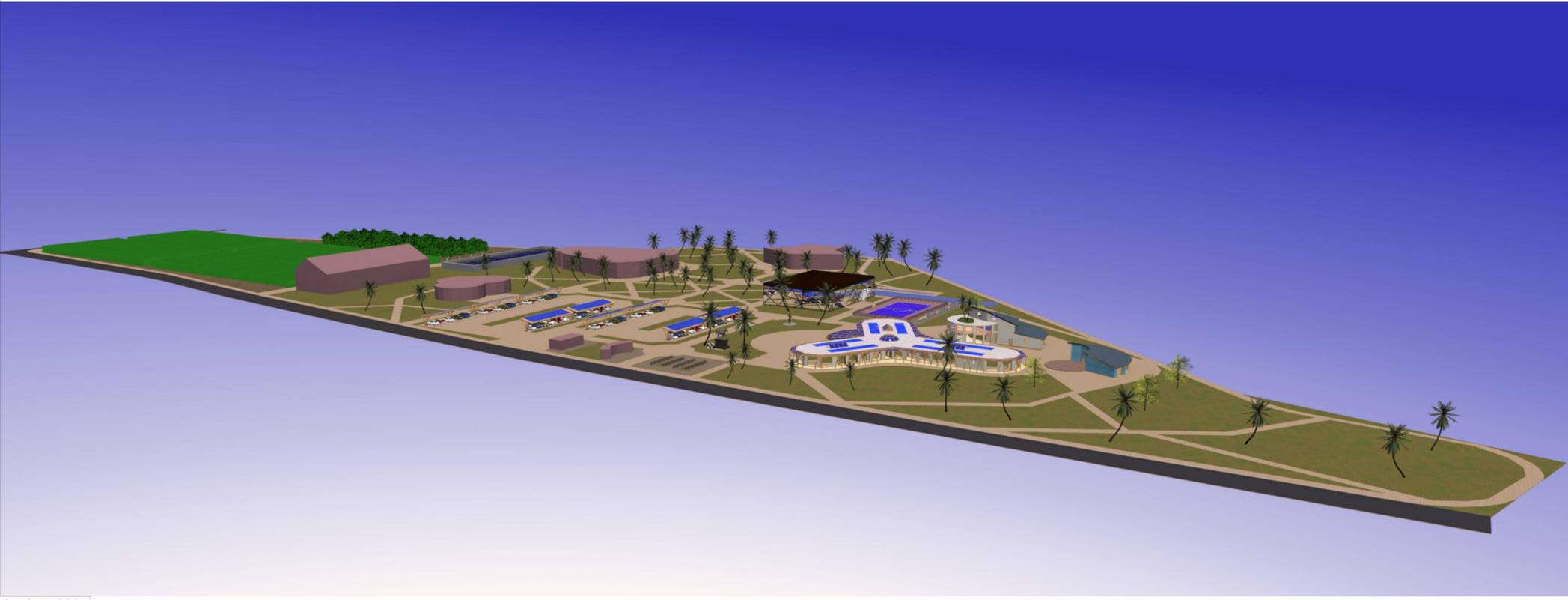
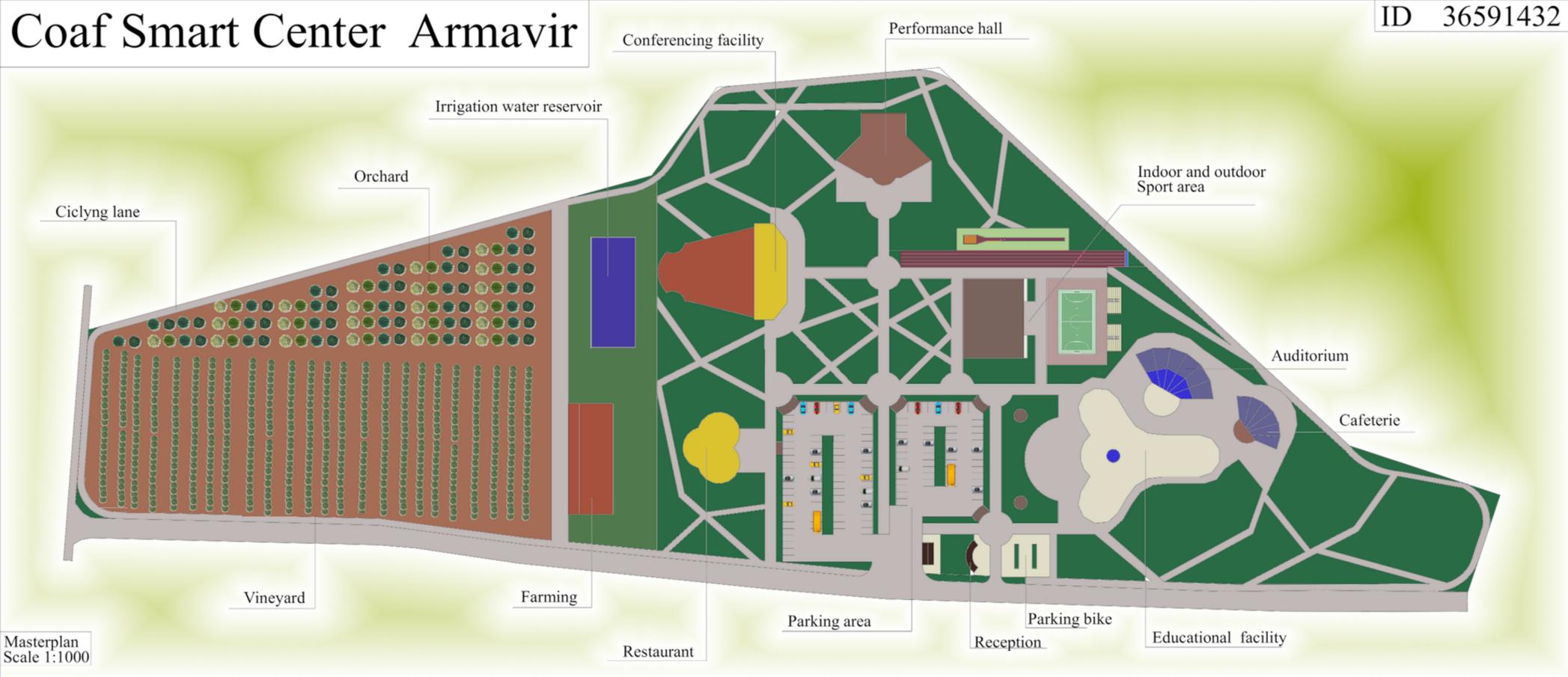


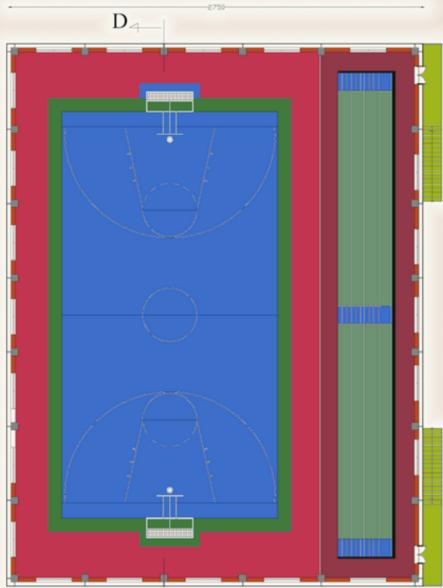
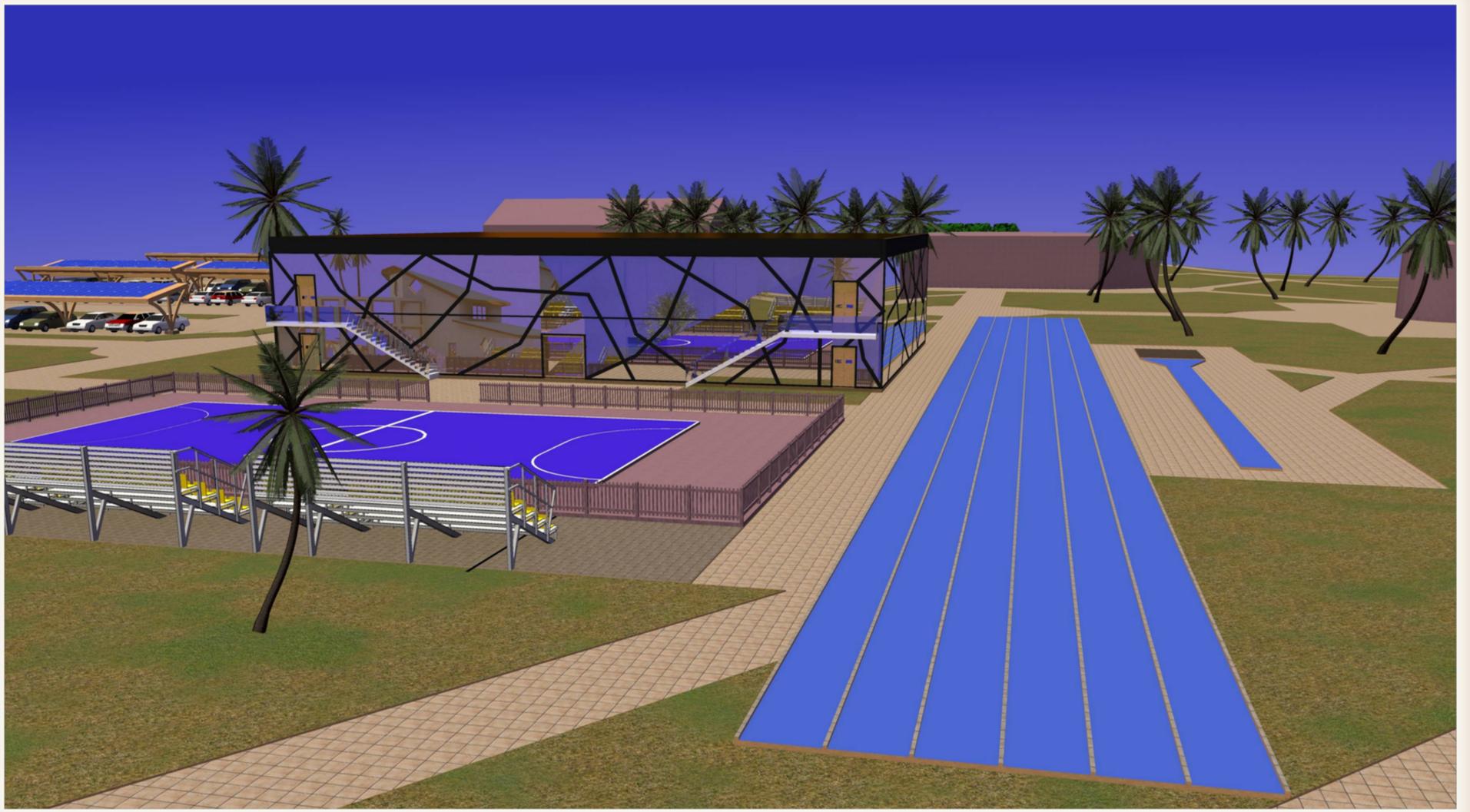
Principal Façade



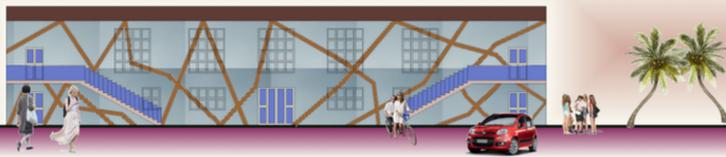
# Coaf Smart Center Armavir

ID 36591432





Sports Halls

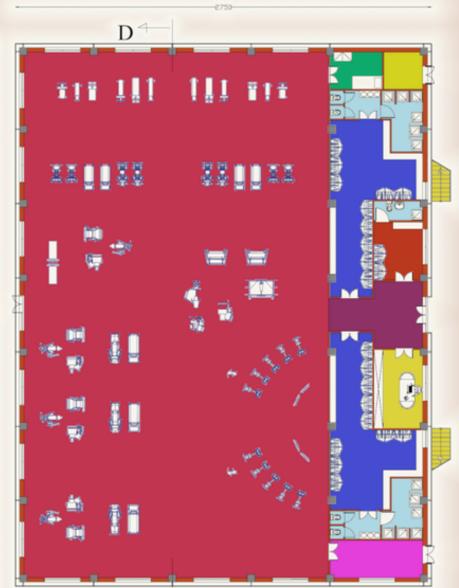


Principal Façade

Sports Halls	
■ Hall entrance	■ Restroom
■ Sports Area	■ First aid
■ Dressing room	■ Storage
■ Trainer Dressing room	■ Technical room
■ Teacher room	■ Tribune



Section D-D



Ground floor Plan

Scale 1:200

D

Tribune floor Plan

D



*reGenerate the neighbourhood around the 22nd street  
Sky train Stations New Westminster Canada*



# reGENERATE the neighbourhood around the 22nd Street Sky Train Station

## reGENERATE the neighbourhood around the 22nd Street Sky Train Station

The neighborhood subject to the competition presents urban decay resulting from the poor architecture of the existing buildings, the presence of the viaduct and the Expoline station with a reinforced concrete structure in sight. Urban decay is usually associated with marginalization, buildings in a poor state of conservation and material that creates environmental damage, generating social deviance. Typical is the degradation of the outskirts of cities where petty crime arises and develops with deviant social behavior bordering on legality. Social degradation depends above all on the social status of the people who frequent the area, their income, their cultural level, as indicated in the design brief, the income is around 82,000 dollars per year with a good standard of living. The regeneration project concerned a part of the area delimited in the brief, through the design of residential building interventions in the **Connaughts Heights** district involving 8 rectangular plots of land measuring 15x36 which had as its objective the improvement of the quality of residential building and the recovery of the viaduct through the vegetation the biophilic design.

an evolution of the typical American house with garage where artisan work such as carpentry, mechanical repairs is carried out, or the studio house with professional activity as an architect, lawyer, doctor, etc.



with much higher income; the second is a house on two floors with 4 apartments with parking spaces intended for families with lower incomes, the typical social housing. The use of ecological materials such as wood and wood-concrete, and renewable photovoltaic energy has had the function of eliminating urban decay due to bad architecture.



The difference in social status of the families staying in the two types of houses had as its objective the fusion and integration of the two

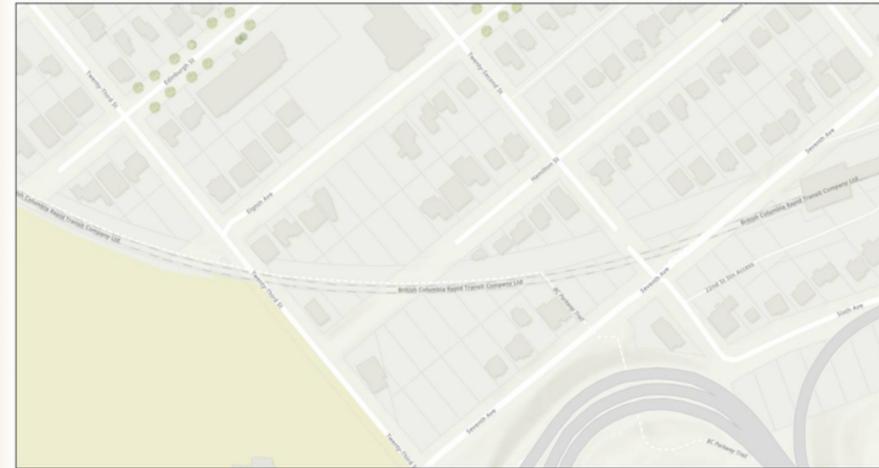
social classes so that they can merge, thus eliminating the cultural disparity and the diversity in social behavior which is the cause of urban decay. In the space in front of the viaduct, a green park with street furniture trees has been created, transforming it into an area intended for sports such as walking, reading, picnics or relaxation, a green area.

rectangular steel tubular having an elastic resistance modulus of 594 cmc is It has a tension of 1473 daN/cm<sup>2</sup>. The reinforced concrete structure of the bridge can always be covered with ecological cement such as fiber cement without distorting the material accused of degradation and environmental damage, the use of which combats global warming as the concrete in the setting and hardening phase removes both anhydride from the atmosphere carbon dioxide and carbon monoxide: the damage caused comes from the exhaust fumes of the vehicles used on the construction site.



The reinforced concrete of the railway viaduct was left exposed, creating a plexiglass semi-covering above it, also placing vegetation on the viaduct in correspondence with the parapets: the actions of the wind are contrasted by semi-tubular steel arches arranged at a distance between of 5 m to which for a wind pressure of 140 daN/sqm corresponds to a moment at the base equal to 8750 daN\*m, keeping in mind that the plastic resistant moment of a 120 x 120 mm

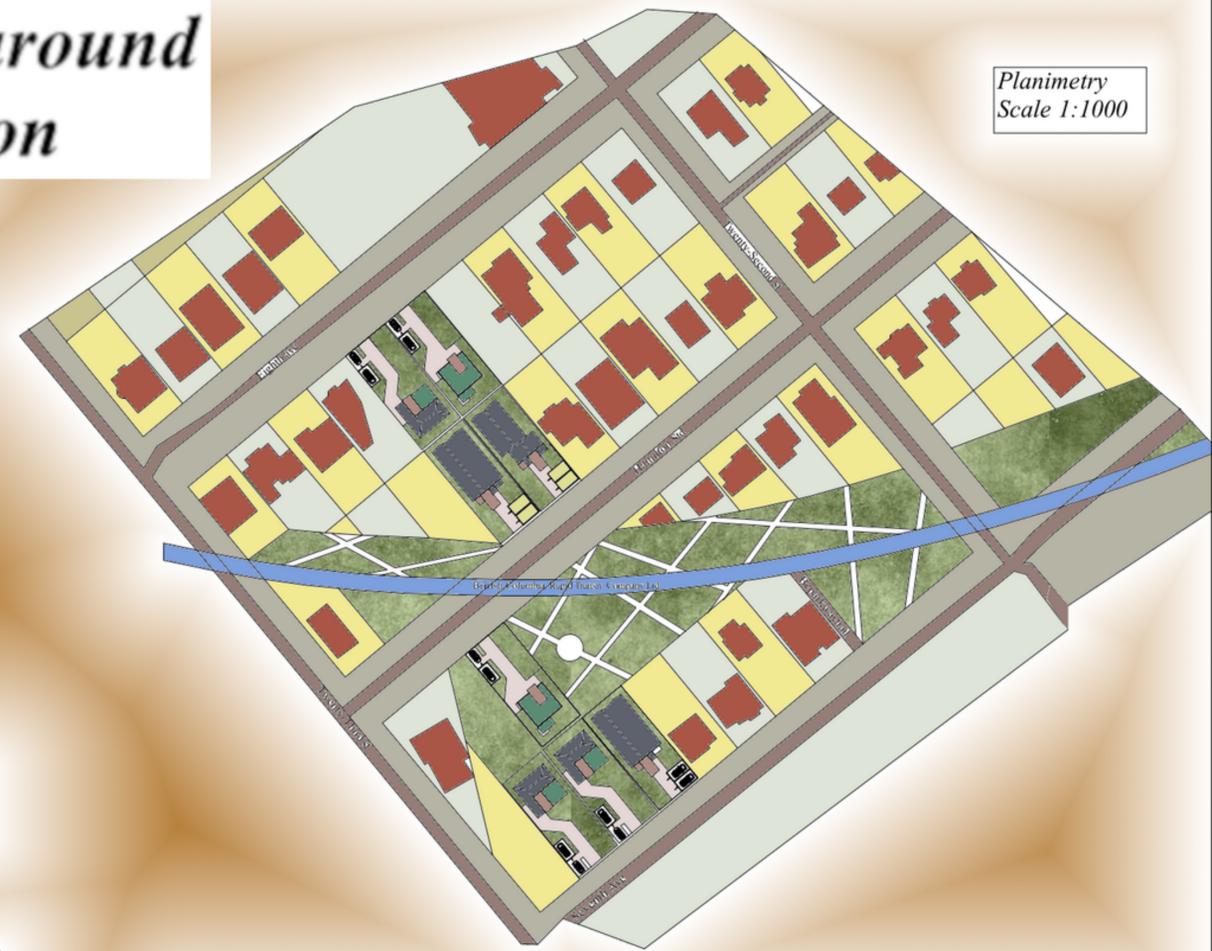
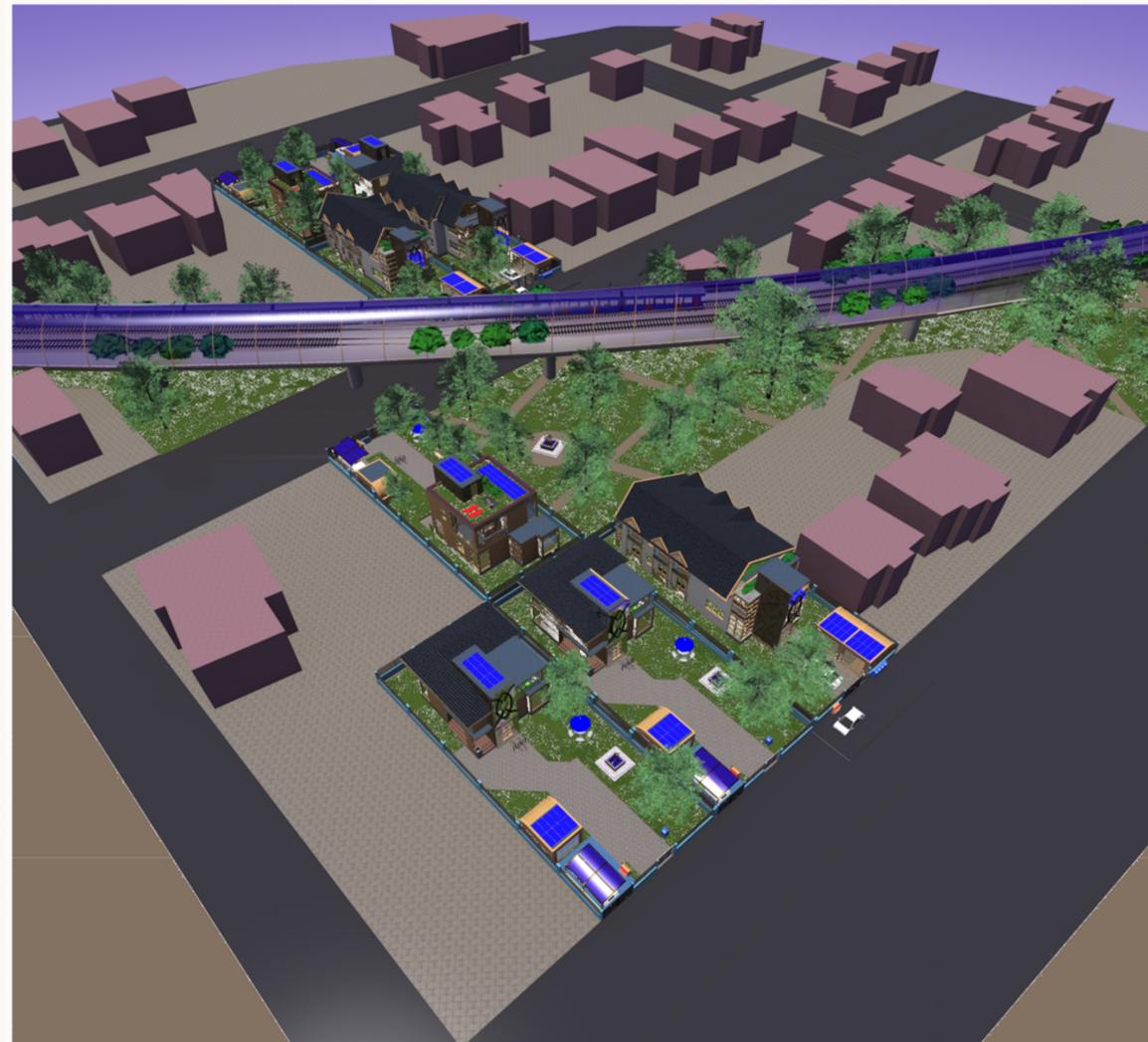
Urban degradation and social marginalization belong to unhealthy environmentalist social cultures that care more about the preservation of their power, be it political, economic or the natural and urban environment, also revealing behavioral dangers.



2024-01-09

1:2,000  
0 0.01 0.03 0.06 mi  
0 0.03 0.05 0.14 km

Cadastral Maps  
Scale 1:2000

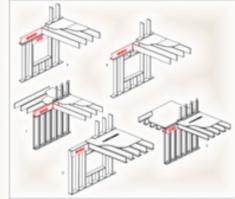


Planimetry  
Scale 1:1000



**Single family house**

The first type of single-family house follows the criteria of modular design made with a micro-lamellar wooden structure with a wooden frame made up of 25x25 cm pillars and orthogonal beams in the two directions in whose meshes the 120 cm module wooden panels **Platform frame** made with 20x4.5cm uprights and 5cm panel. By assembling the various modules we obtain the plan of our regular house both in height and in plan, whose dissymmetries are consequent recesses and loggias created inside the 4 modules.

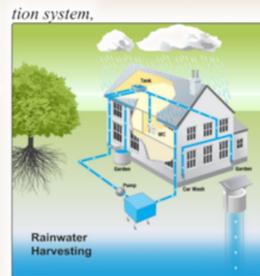


The house is divided into 3 floors, a cellar floor with an internal height of 260 cm underground for approximately 2, a first floor raised at a height of 50 cm and a first floor with a roof. On the ground floor there is the living area with entrance, dining room where you can have lunch peacefully, closet, living room and study where you can carry out professional activities

top of which is positioned a non-noisy mini wind turbine and photovoltaic modules to integrate those present on the garage. The urban planning requirements of **NR2-zoning** have been respected

- Lot size 15x36 m
- Surface S= 540 sqm
- Surface ratio 135 sqm < 0.35\*S
- Maximum height 10.67 m
- Height at the eaves 7.62 m
- Detachment from borders 2 m
- Front courtyard 0.20 ≈ 100 sqm
- Rear courtyard 0.20 ≈ 100 sqm
- Parking spaces 30 sqm
- Green road area 375 sqm

The load-bearing structure is mixed with a lower base relating to the basement made of concrete, a full slab of attic with orthogonal beams on which the wooden space frame and the platform frame panels are anchored. The wooden walls are covered with fiber cement panels, glass was used for the railings. On the main facade a wooden design was created to highlight it, obtained by assembling glass tiles measuring 50x50 cm. The wooden roof resting directly on the second deck has been insulated and waterproofed with a covering of tiles on which a photovoltaic system can be positioned. The emerging volume of the stairwell was covered with characteristic colored tiles. The house is equipped with a rainwater collection system.



an ecological island for the separate collection of waste, at the entrance with an automatic gate there is a garage with a shelter so you can have two parking spaces; the villa is accessed via a central entrance intended for pedestrians and bicycles. The remaining space is equipped with greenery with a fountain, benches, tables, plants and vegetation. The house meets the criteria of **NZEB** and **Passive-House** buildings by minimizing heat losses both through the opaque components  $K = 0.18 \text{ kW/sqm}^\circ\text{K}$ , the triple-glazed windows with transmittance  $K = 0.92 \text{ KW/sqm}^\circ\text{K}$ .



the basement level which insulates it from the ground and the roof which reduces the thermal dispersion of the casing upwards. The heating system is entirely electric, you can use an electric boiler with heating elements such as modern design radiators or directly heating elements connected directly to the electrical system without a boiler. The energy production of the photovoltaic system for 3 modules each having a power of 350 Wp on a surface area of 4.50 sqm is equal to

860 Kwh per year, so since the energy requirement for lighting, heating and cooling is equal to approximately 6000 KWh per year, a system is required according to an indicative dimensioning for architectural design of approximately 45 sqm. It is clear that this type of housing is intended for a family with a good income in line with those defined in the competition brief 82,000 dollars per year.

Scale 1:100

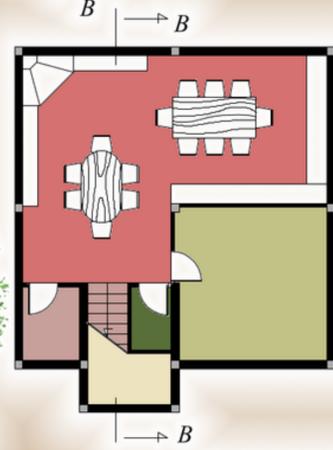


Ground floor plan

First floor plan



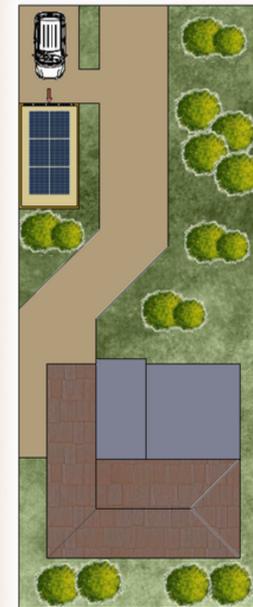
Entrance façade



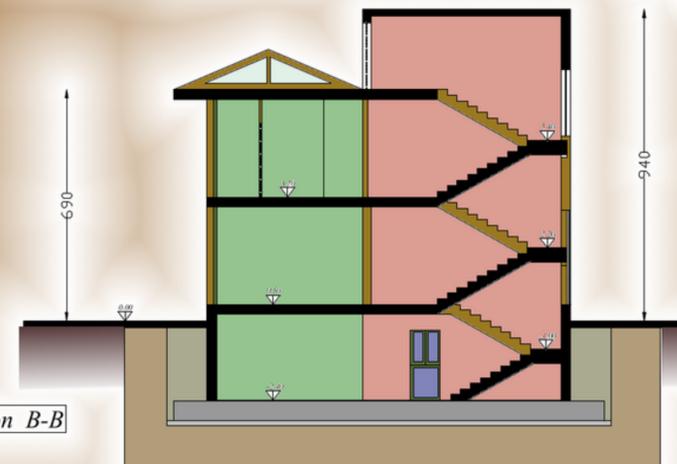
Basement floor plan



Planimetry Scale 1:200



Lateral façade



Section B-B

**Single family house**

The second typology of single-family house with its rationalist architecture and flat roof hints at minimalism in contradiction to the organic American architecture of the prairie house with hipped roof. The architectural layout is always on a modular mesh with a side of 480 cm in order to have a wooden load-bearing structure of the platform-frame type inserted in a wooden spatial frame with high resistance to both wind and earthquake actions; the basement is made of reinforced concrete and the wooden construction is placed and anchored on it at a height of 50 cm. The urban planning requirements of the NR2-Zoning of New Westminster have been largely respected

- Lot size 15 x 36 m
- Surface area of 540 sqm
- Surface ratio 135 sqm < 0.35 \*S
- Maximum height 10.67 m
- Height at the eaves 7.62 m
- Detachment from borders 2 m
- Front courtyard 0.20 = 100 sqm
- Rear courtyard 0.20 = 100 sqm
- Parking spaces 30 sqm
- Green road area 375 sqm



You can use a thermo fireplace that allows you to heat the entire house but as usual it is preferable to meet the energy needs for lighting, heating and cooling via a photovoltaic system with a surface area of 45 sqm positioned partly on

the garage and partly on the roof terrace. The platform-frame panel has thermal insulation inside, the same goes for the coffered ceiling, the requirements for opaque components are respected  $K = 0.18 \text{ KW/sqm} \text{ } ^\circ\text{K}$  transparent  $K = 0.92 \text{ KW/sqm} \text{ } ^\circ\text{K}$  and the floor isolated from the ground via the cellar which acts as an air chamber.



On the flat terrace roof which is accessed through the emerging volume of the stairwell, there is a roof garden with vegetation, a photovoltaic system, deckchairs for sunbathing in summer and a modern table. Attention must be paid both to the flexural resistance of the coffered floor due to the presence of the garden roof and to the thermal insulation in order to contain upward heat losses; a rainwater collection system has been created on the roof to prevent it from accumulating on the terrace. The house has a surface area of approximately 48 sqm, the sleeping area approximately 62 sqm net of walls, 110 sqm, to which are added the non-residential surfaces such as stairwell, entrance and terrace for a total gross surface area of approximately 190 sqm. . This type



The use of ecological materials, glass, fiber cement cladding, the use of renewable energy sources with zero energy buildings, electric mobility, charging stations for cars and bicycles, have fully achieved the climate objective, i.e. decarbonization with zero carbon emissions since heating and mobility are electric. As regards social inclusion, the

project proposals with 2 different residential typologies, the first single-family, the second multi-family with clear economic disparity, which then represents the reason for the behavioral and cultural difference integrated in the same neighborhood with adjacent lots using the same materials must necessarily of things to ensure integrity and inclusion by improving

the less well-off social class on a behavioral level, preventing phenomena of degradation and social marginalization. Very often architectural and urban interventions for social recovery are useless as there are social groups that act with these intentions or to damage the social environment by encouraging petty crime and deviance and the recovery must be entrusted to the police

The construction cost of these homes is approximately 1500-1600 \$/sqm consequently the selling price is 2500-3000 \$/sqm

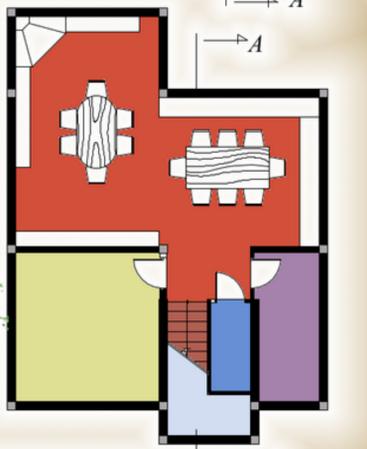
Scale 1:100



Ground floor plan



First floor plan



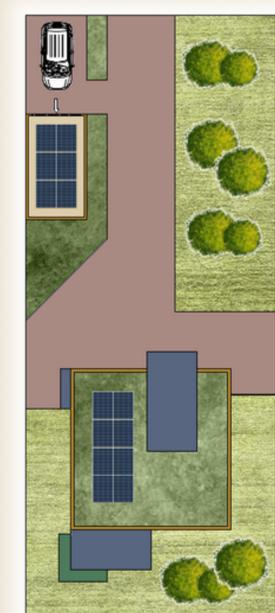
Basement floor plan



Entrance façade



Planimetry  
Scale 1:200



Section A-A



Lateral façade

## Multi-family building

The competition brief allows for derogation from the urban planning regulations of the city of New Westminster which for the area subject to the NR2-zoning intervention intended for single-family homes and carriage houses gives the following requirements:

Dimensions lot 15 x 36 m  
 Surface 540 sqm  
 Surface ratio 0.35 ≈ 190 sqm  
 Maximum height 10.67 m  
 Height at the eaves 7.62 m  
 Detachment from borders 2 m  
 Front courtyard 0.20 ≈ 100 sqm  
 Rear courtyard 0.20 ≈ 100 sqm  
 Parking spaces 35 sqm  
 Green road area 85 sqm

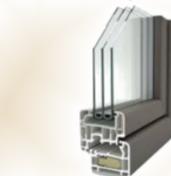
The designed building consists of 4 apartments spread over two floors with a cellar floor having a gross floor area per floor of 170 sqm excluding balconies and technical volumes such as stairs and lifts. 2 types of buildings have been designed in derogation of the urban planning requirements inserted in a somewhat restricted space which have the

exclusive residential function with work activity carried out outside the home. Each apartment consists of three bedrooms, bathroom, kitchen, dining room served by a central corridor with linear development respecting the minimum dimensions for each living space. In order to allow the corridor to be illuminated, the architecture of the house was inspired by the Open-House concept, which I am a little against for reasons of privacy, confidentiality and tranquility in the same home. The load-bearing structure was created with wood-concrete formwork blocks within which a weakly reinforced wall of 15 cm was created, a very rigid structure with a frame of beams and pillars and reinforced concrete infills invulnerable to seismic actions.

The construction technique is that of green building, with

white plaster, roofing and wooden floors with a 5 cm concrete slab, glass railing and sunshades.

The elevator shaft is made of steel and glass, even if the house has three floors it makes necessary to overcome architectural barriers for the elderly and disabled and to transport weights from the ground floor and cellar to the upper floors. The side balconies can be transformed into bow windows, with an upper hood which has the exclusive function of embellishment. The garages are made of wood and XLam panels on which there is a photovoltaic system with a surface area of approximately 60 sqm; capable of producing 853 KWh in a year in the city of New Westminster for a power of 1 KWp equal to 4.50 sqm;



the cellar floor isolates the building from the ground, significantly reducing dispersions towards the ground, the surface can be expanded by placing the photovoltaic panels

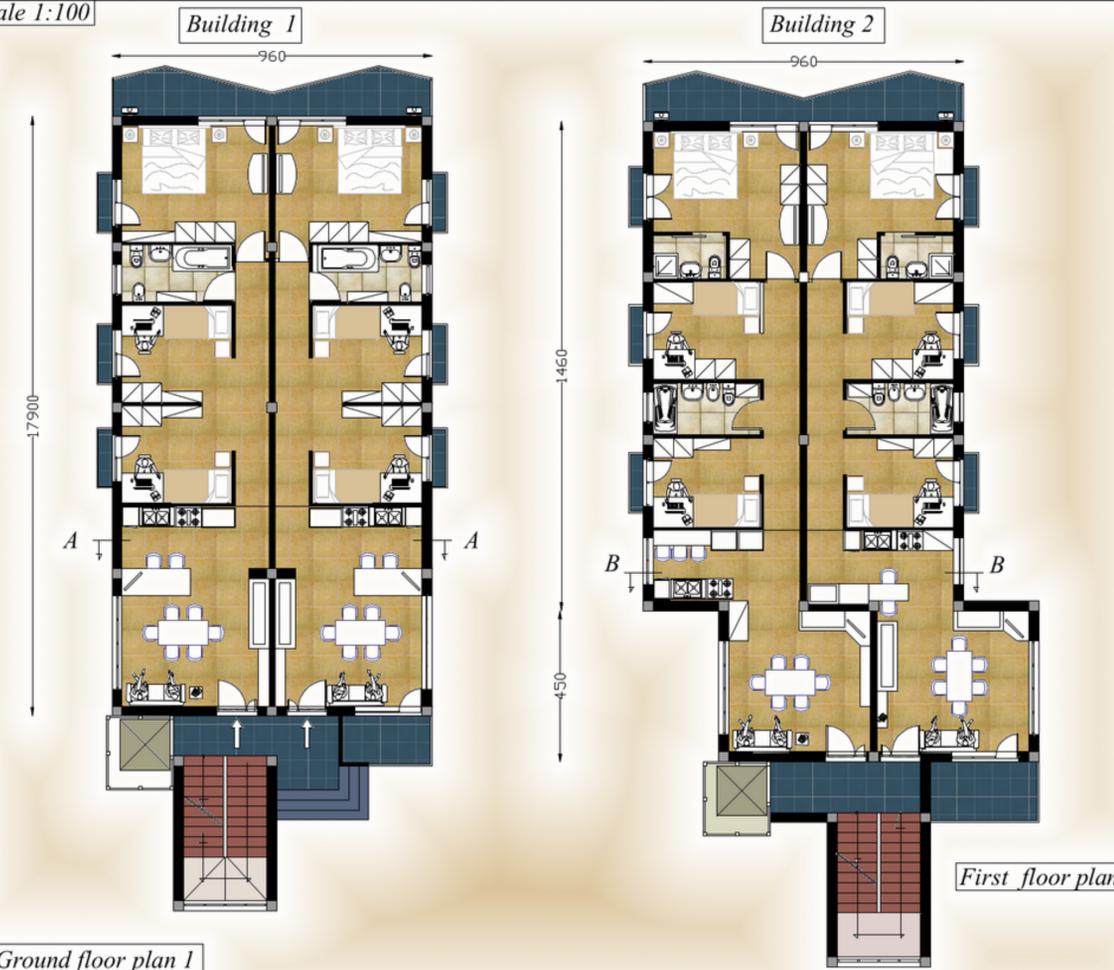
meets the passive house requirements and zero energy NZEB

in the same way the non-habitable attic with thermally insulated wooden roof reduces the thermal dispersions of the covering casing; the building

meets the passive house requirements and zero energy NZEB

The construction cost of these homes is approximately 1500-1600 \$/sqm consequently the selling price is 2500-3000 \$/sqm

Scale 1:100



Ground floor plan 1

First floor plan 2



Planimetry 1 Scale 1:200



Section A-A 1



Section B-B 2

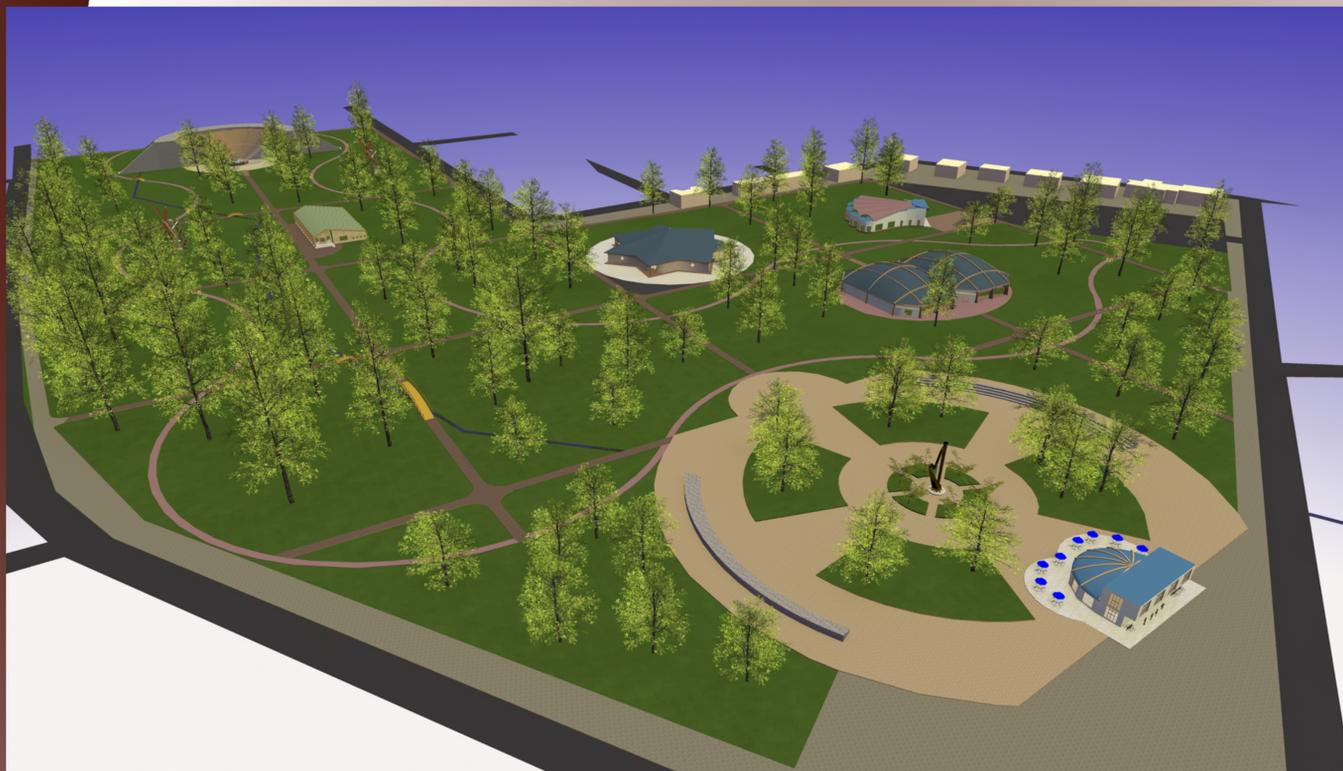


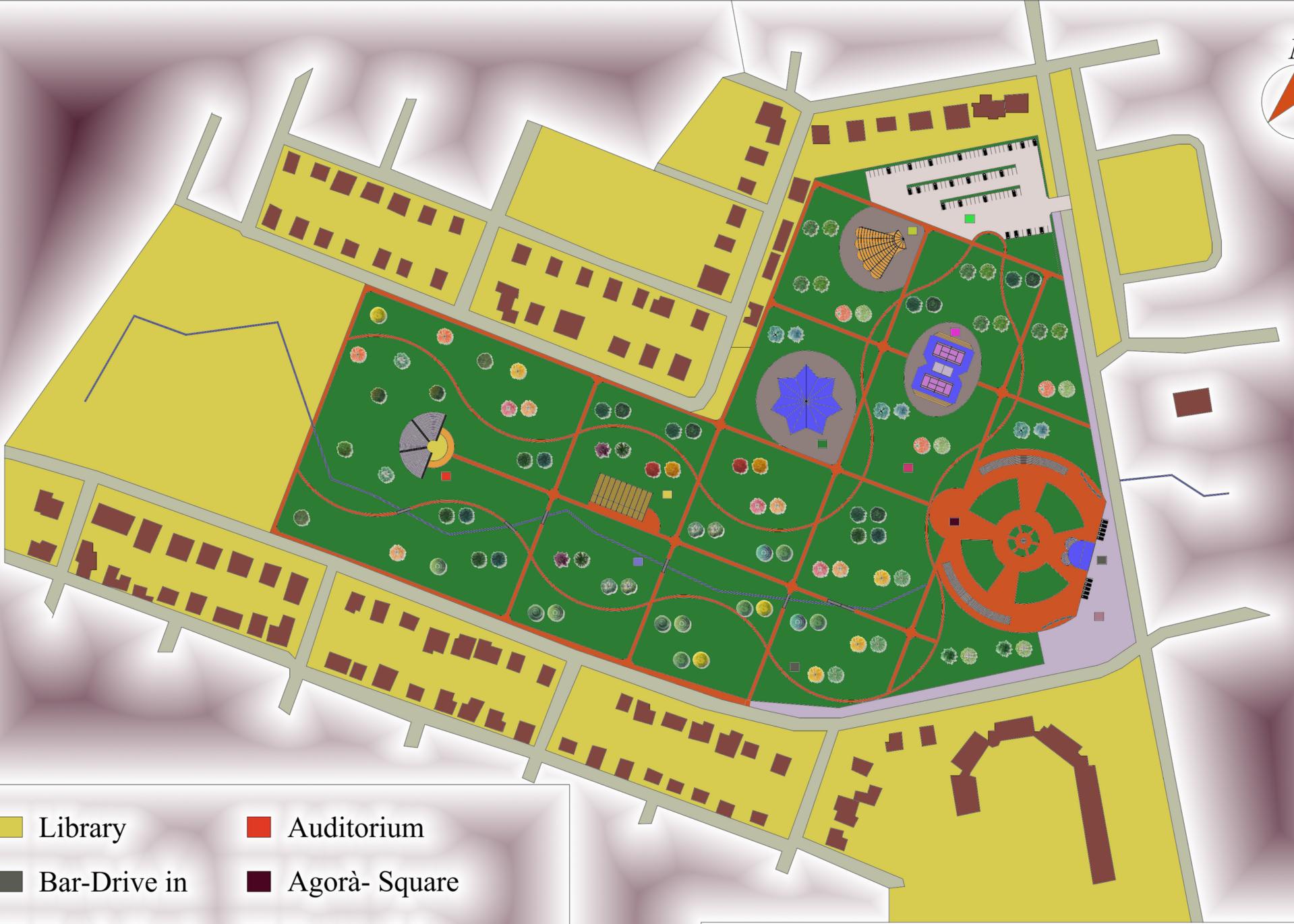
Entrance façade 1



Entrance façade 2

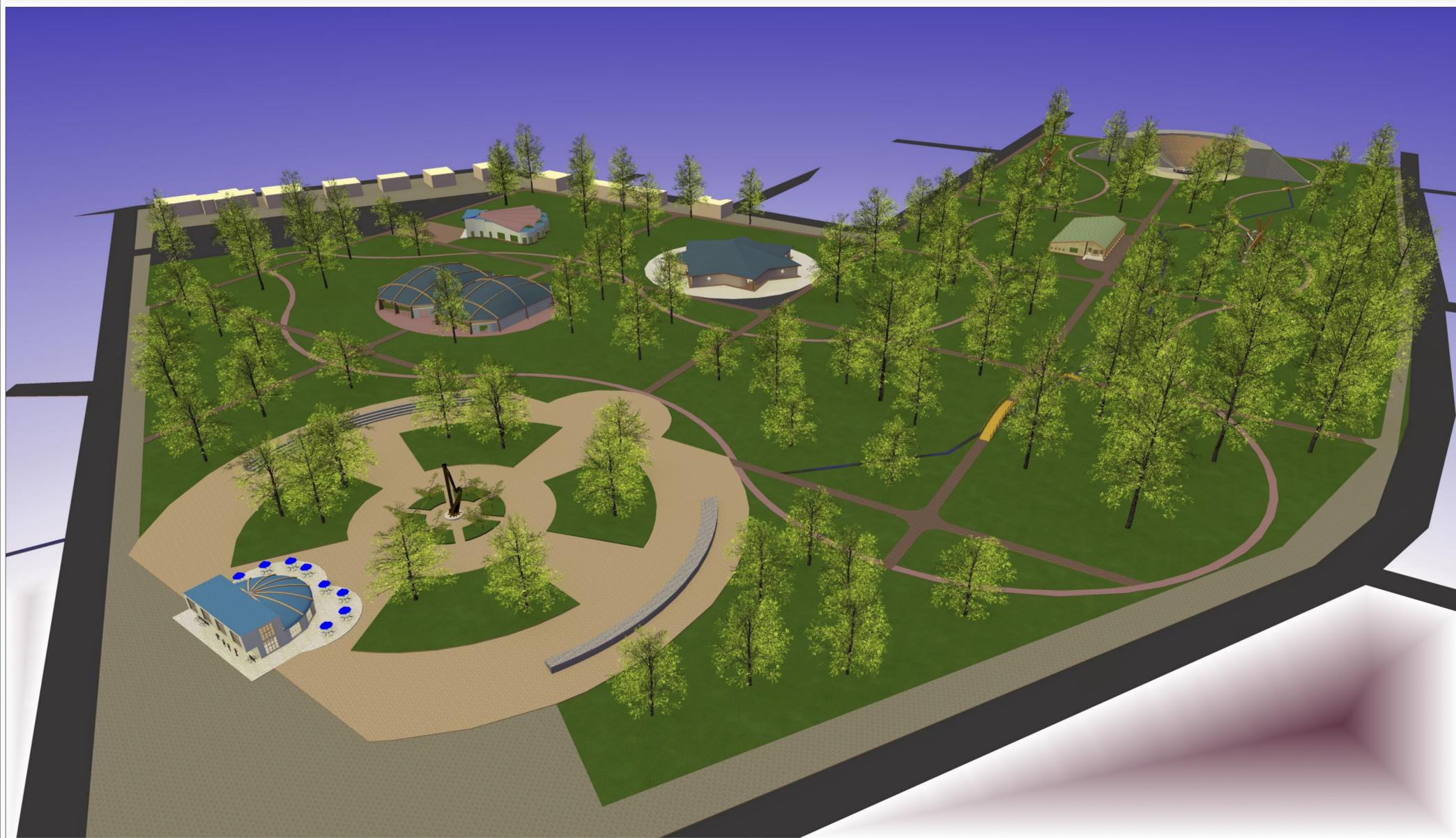
*Design Competition Tarkhanovo Green Park  
city of Yoshkar-Ola Mary El Russia*





- |              |                     |
|--------------|---------------------|
| Library      | Auditorium          |
| Bar-Drive in | Agora- Square       |
| Tennis Court | Dance -club         |
| Cyclabe lane | Wellness-centre     |
| River        | Childrens play area |
| Parking-area | Entrance            |

*Tarkhanovo Park*  
*парка Тарханово*



*International architecture Design competition  
Carbon positive affordable housing Stati Uniti*





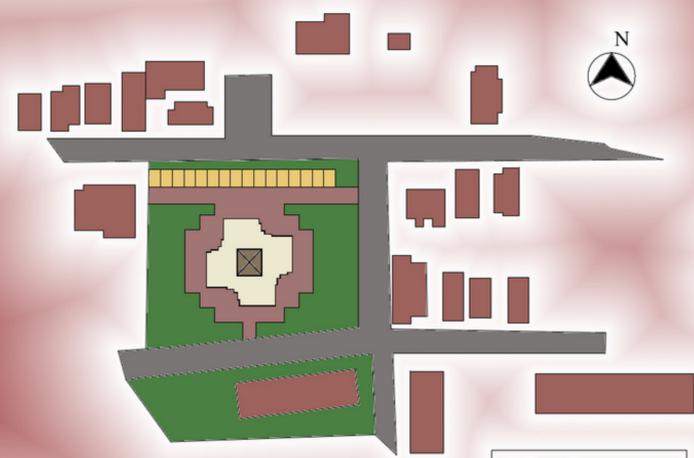
Type Floor Plan



Ground Floor Plan



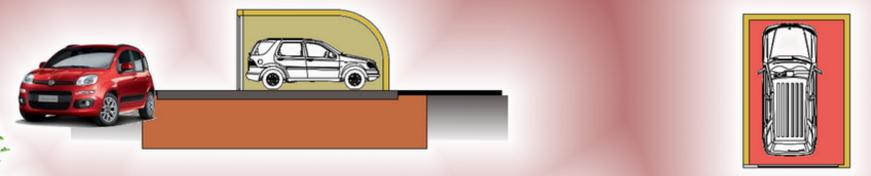
Section A-A



Planimetry  
Scale 1:1000



South elevation



Garage



East elevation

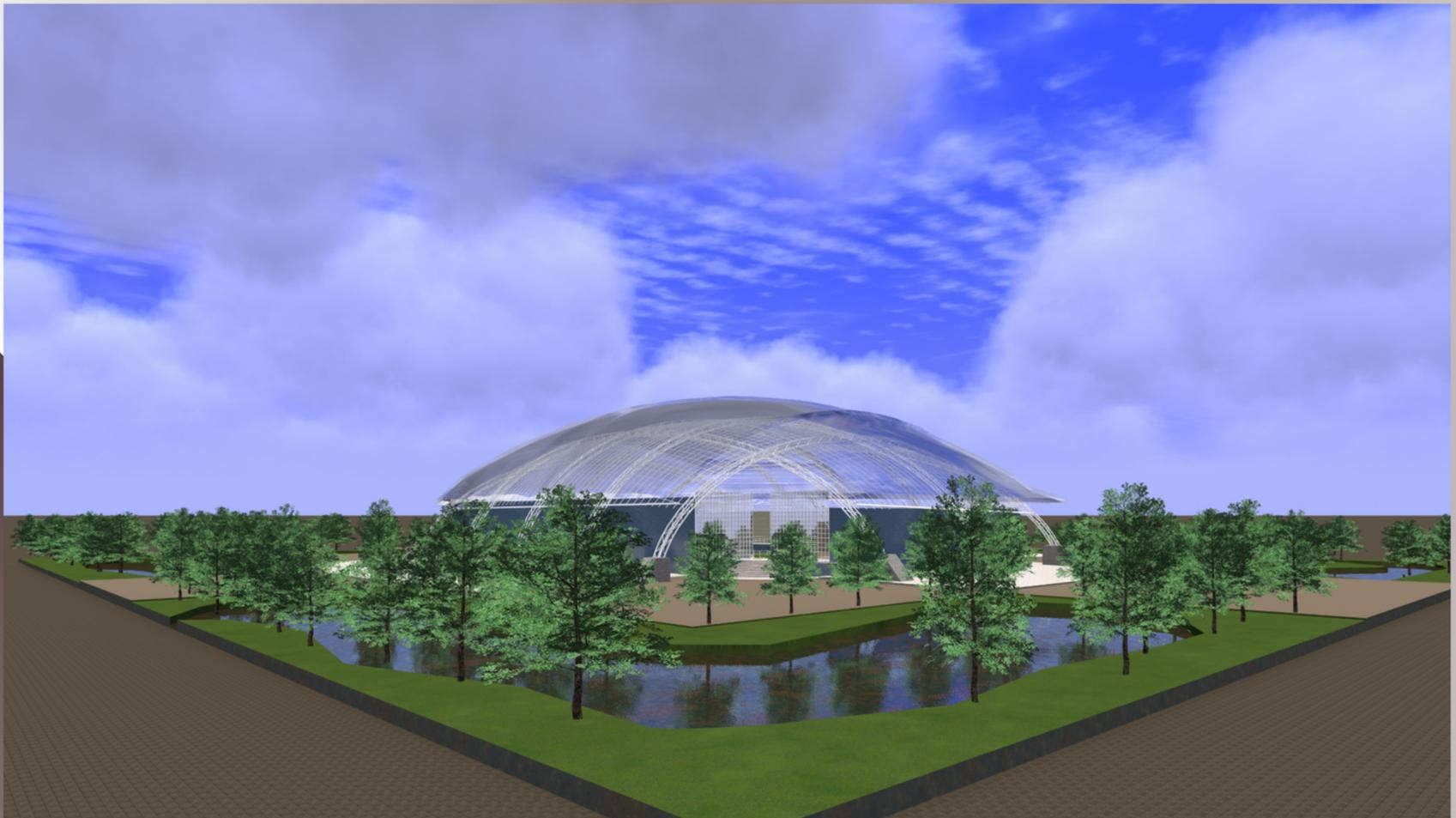


West elevation

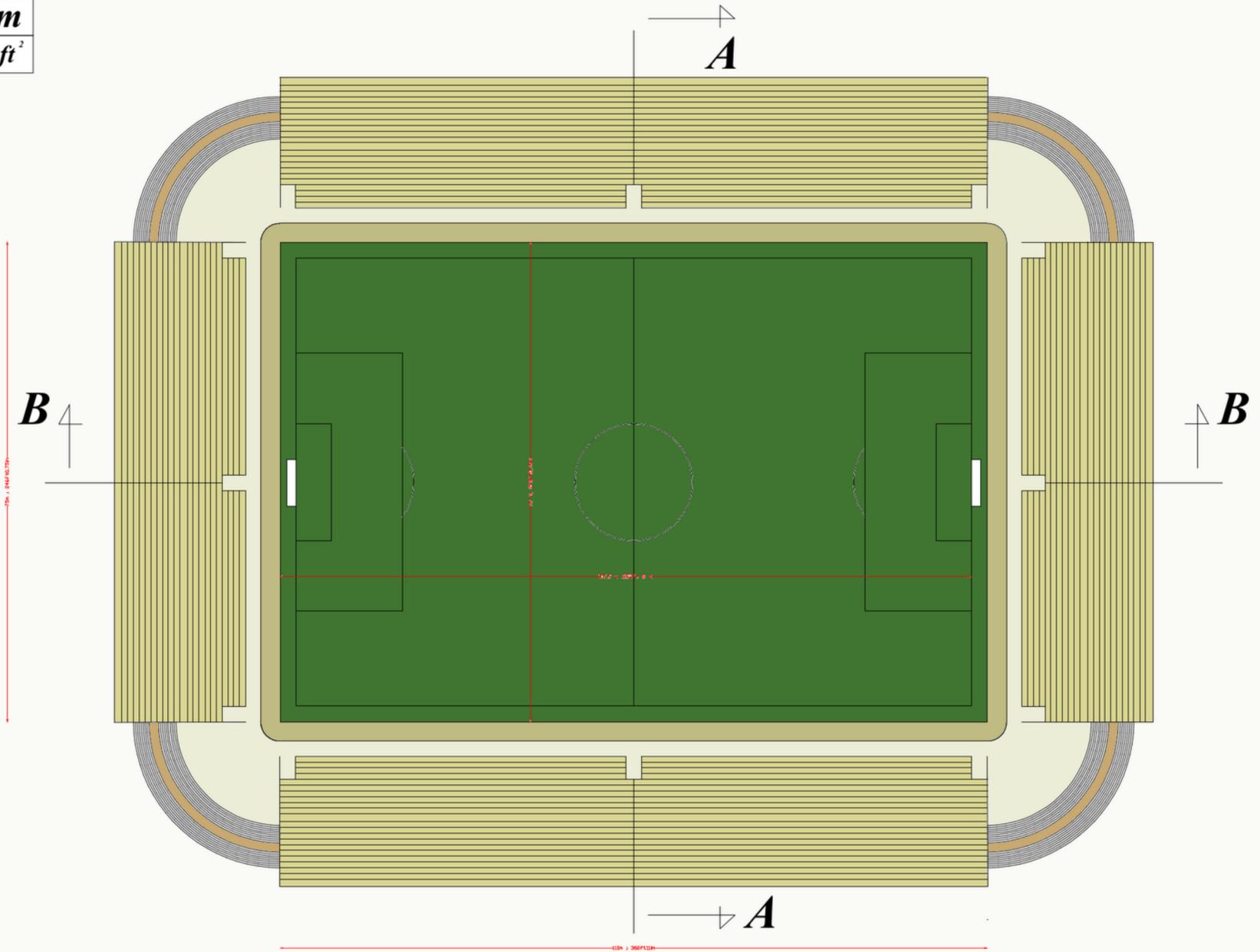




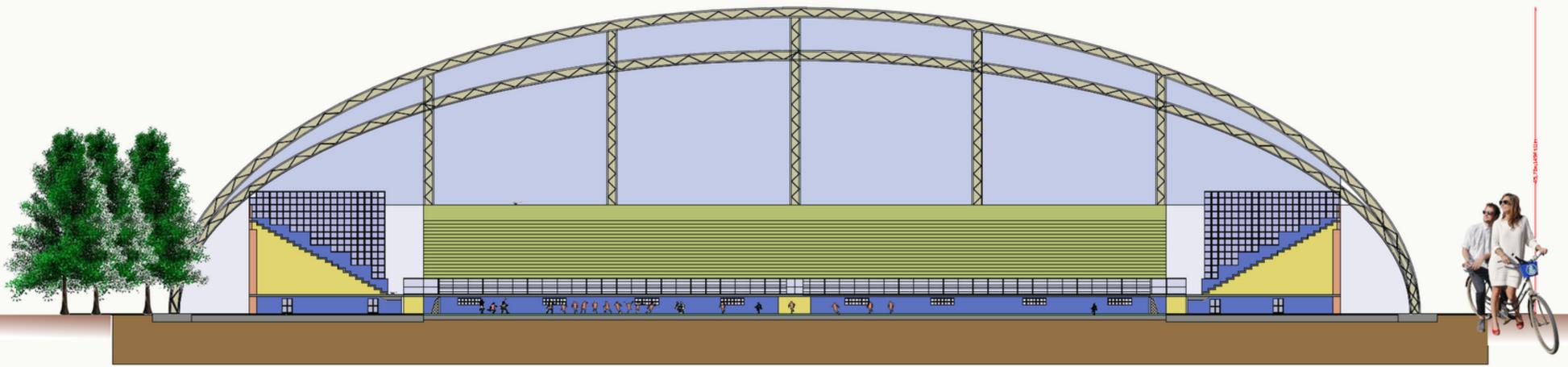
*The Forge Prize 2020 Stati Uniti*



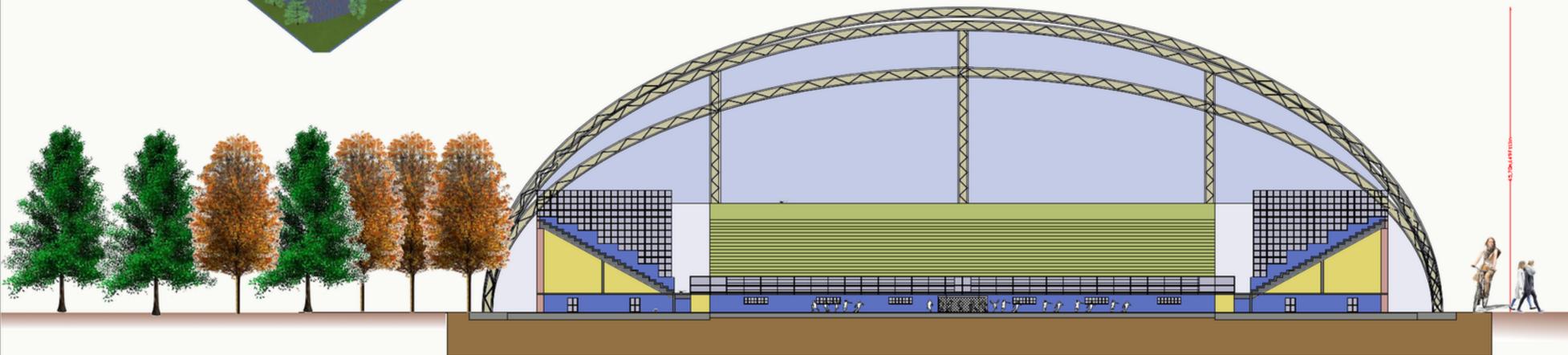
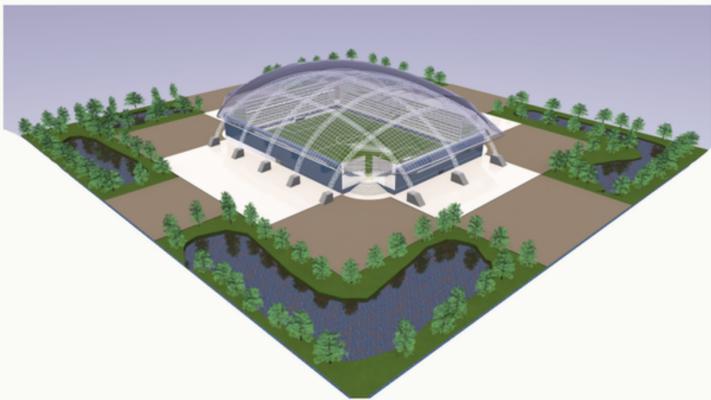
Glass Stadium  
Italy  
Stadium  
271250,5 ft<sup>2</sup>



# The Forge Prize

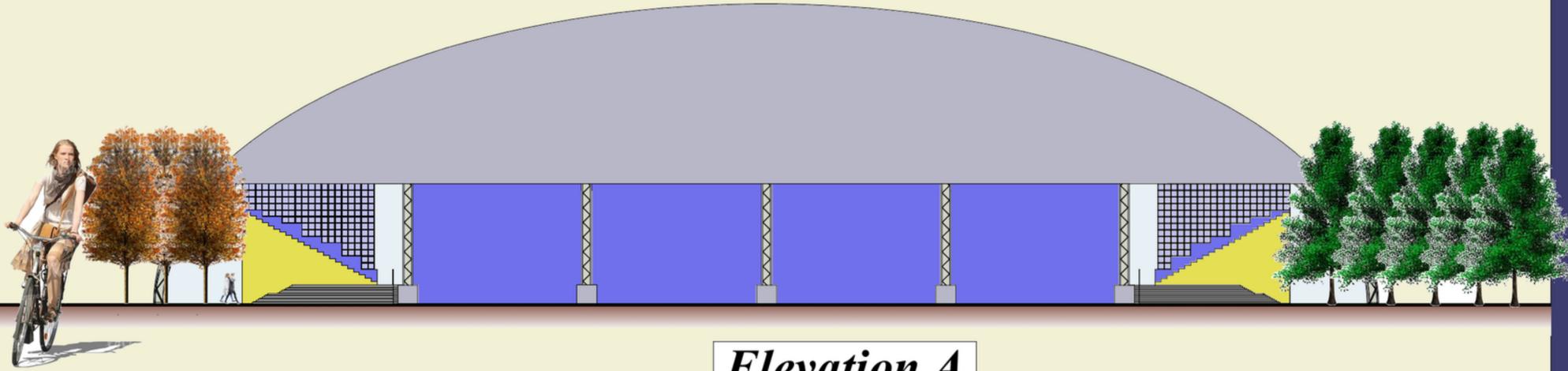


Section B-B



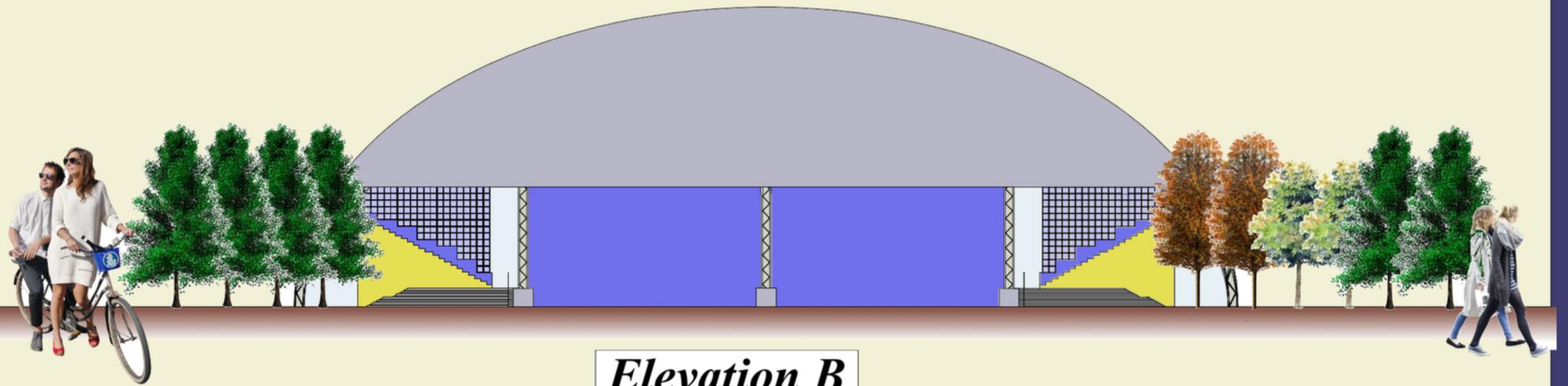
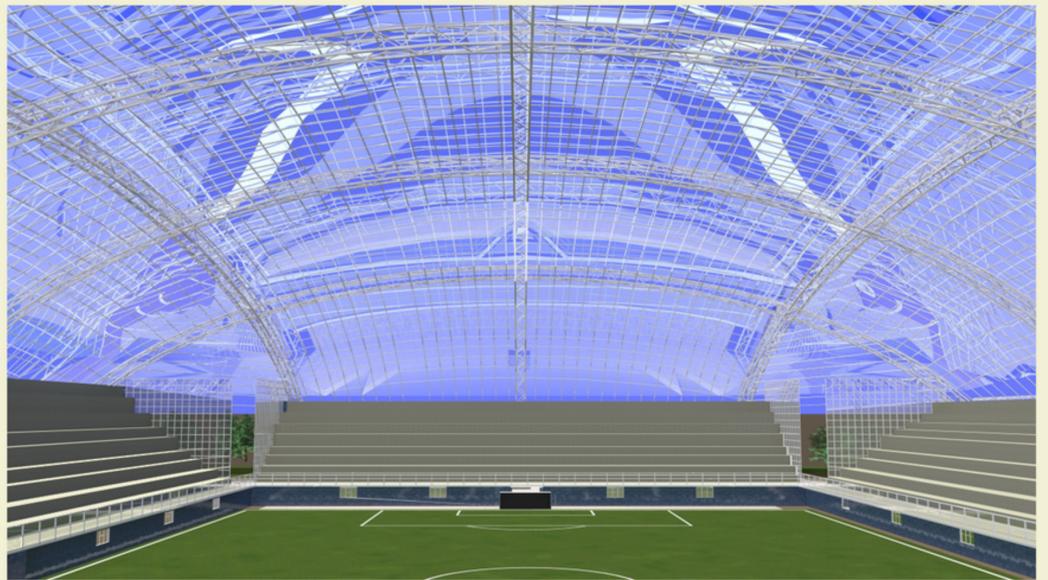
Section A-A

Glass Stadium  
Italy  
Stadium  
271250,5 ft<sup>2</sup>

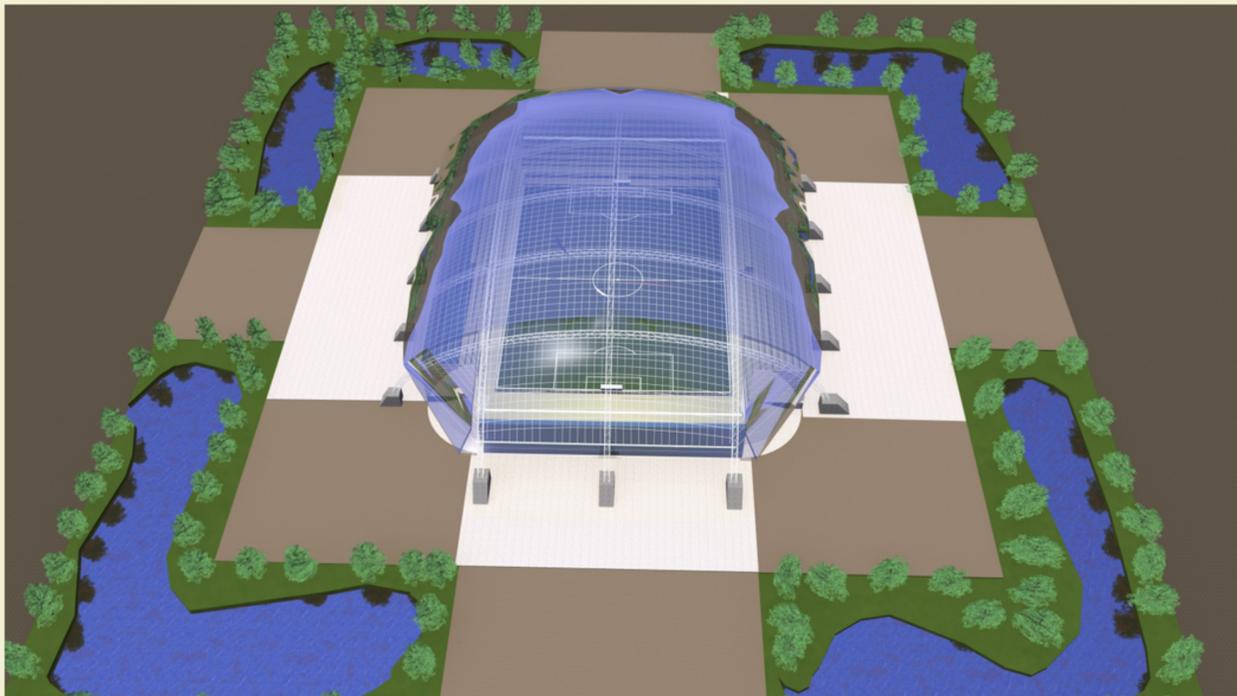


*Elevation A*

# *The Forge Prize*



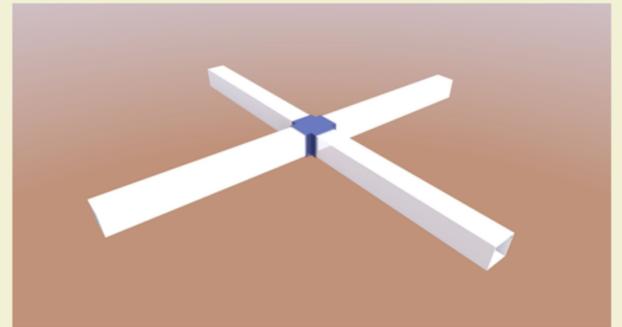
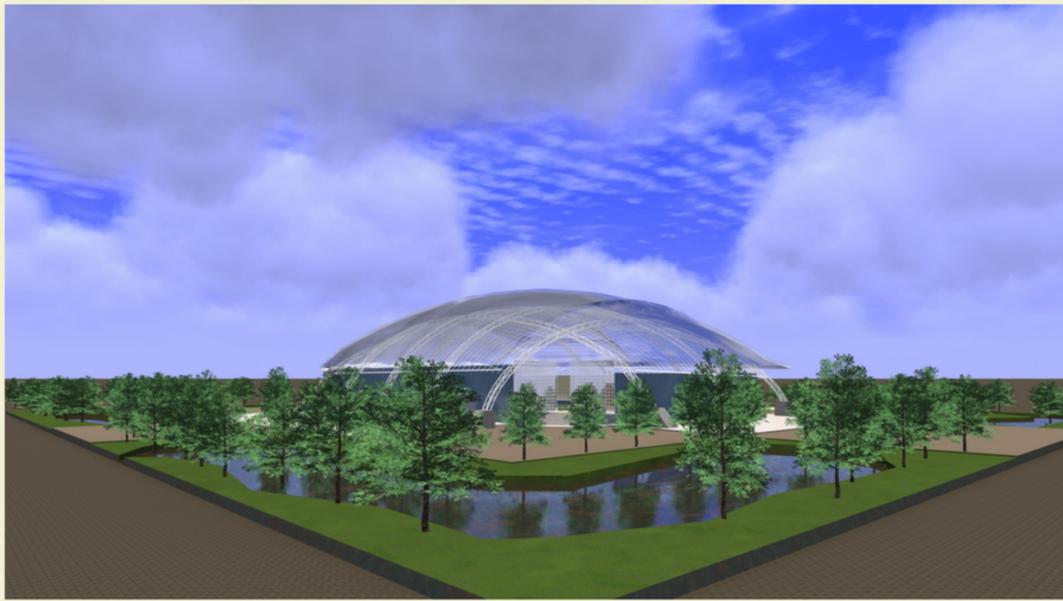
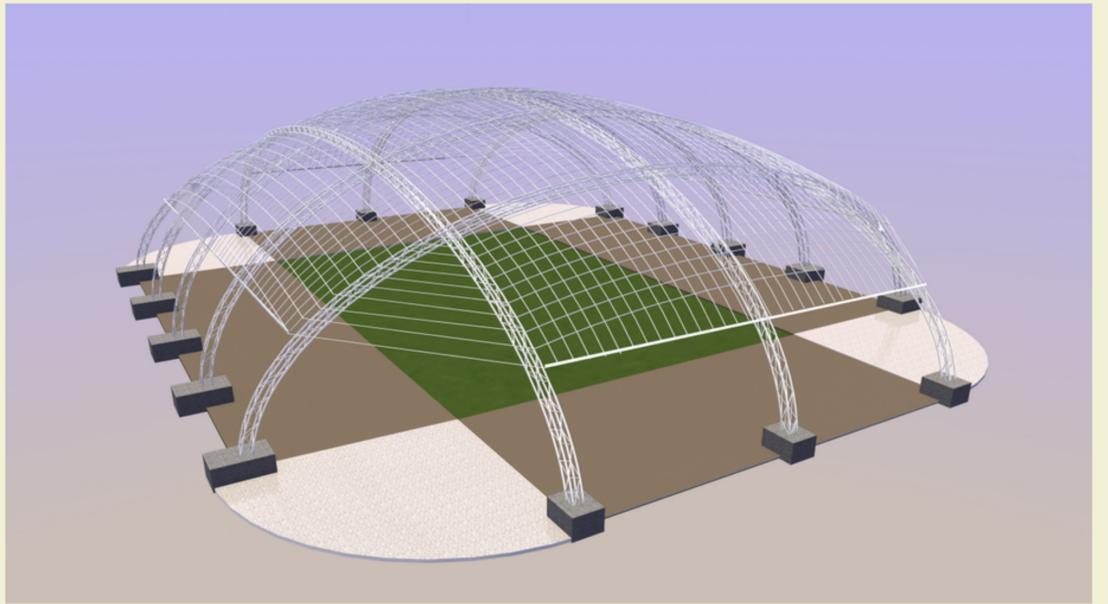
*Elevation B*



*Glass Stadium*  
*Italy*  
*Stadium*  
271250,5 ft<sup>2</sup>

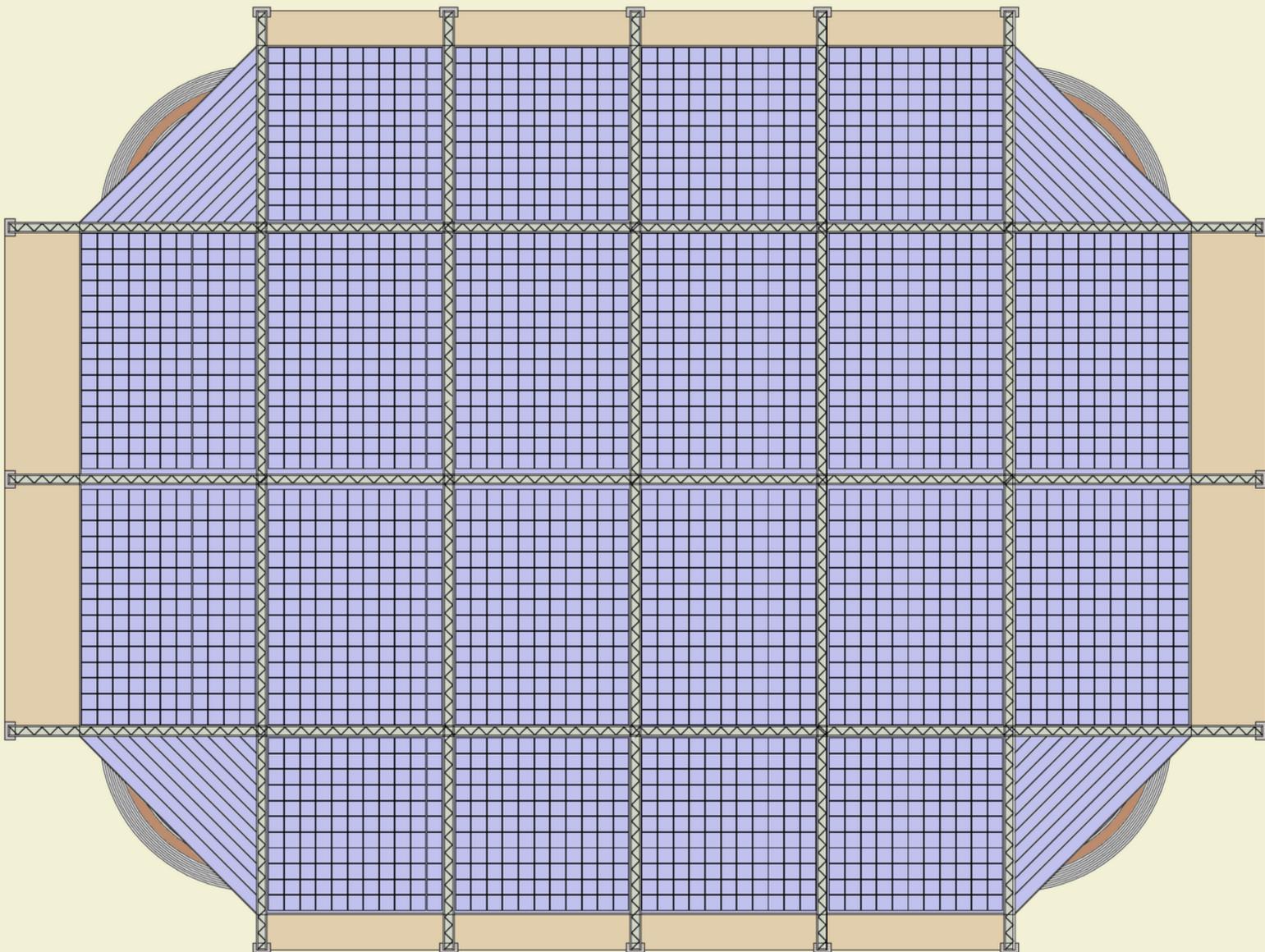


*Steel Structures*



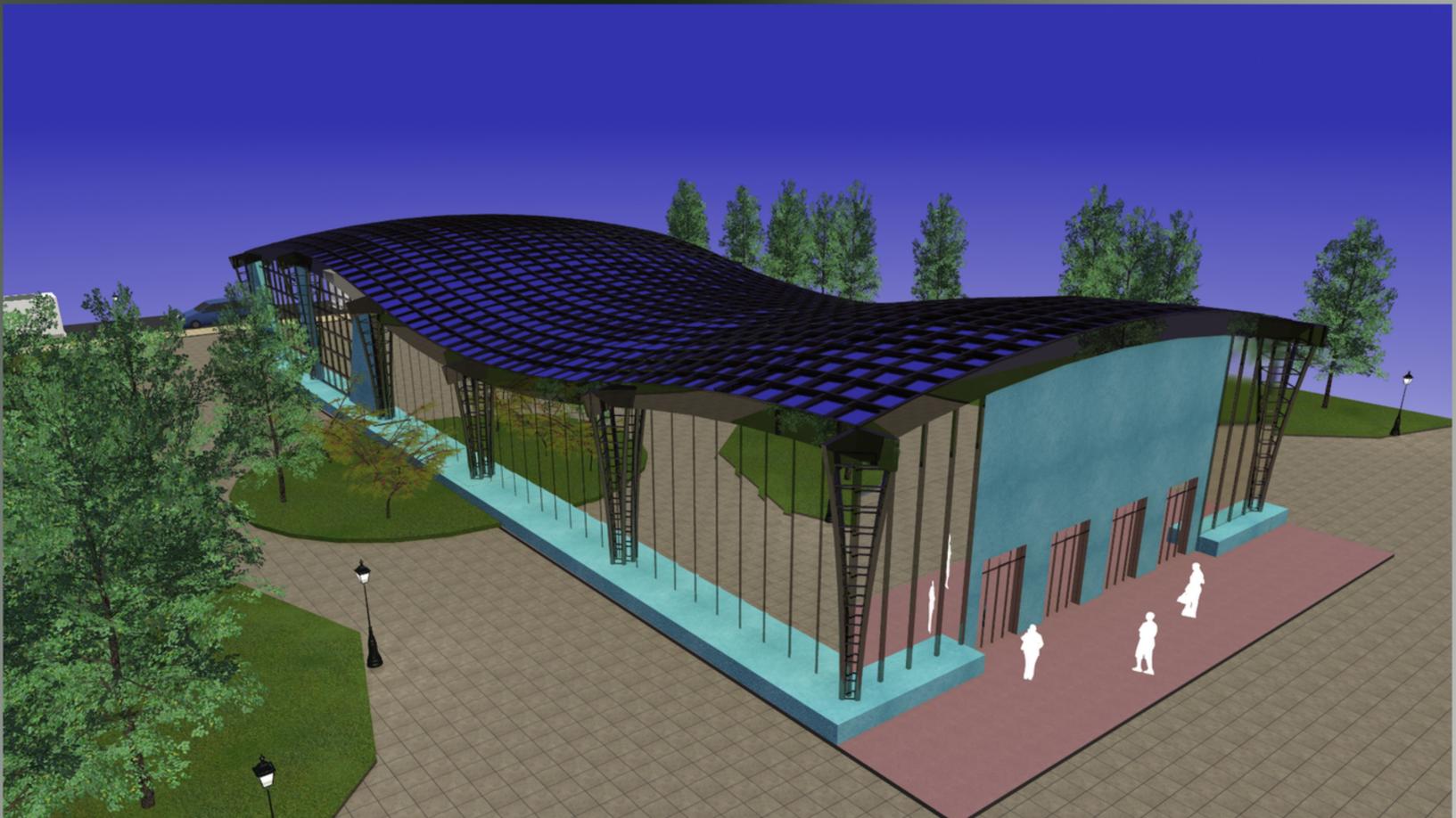
*Steel Connections*

# *The Forge Prize*



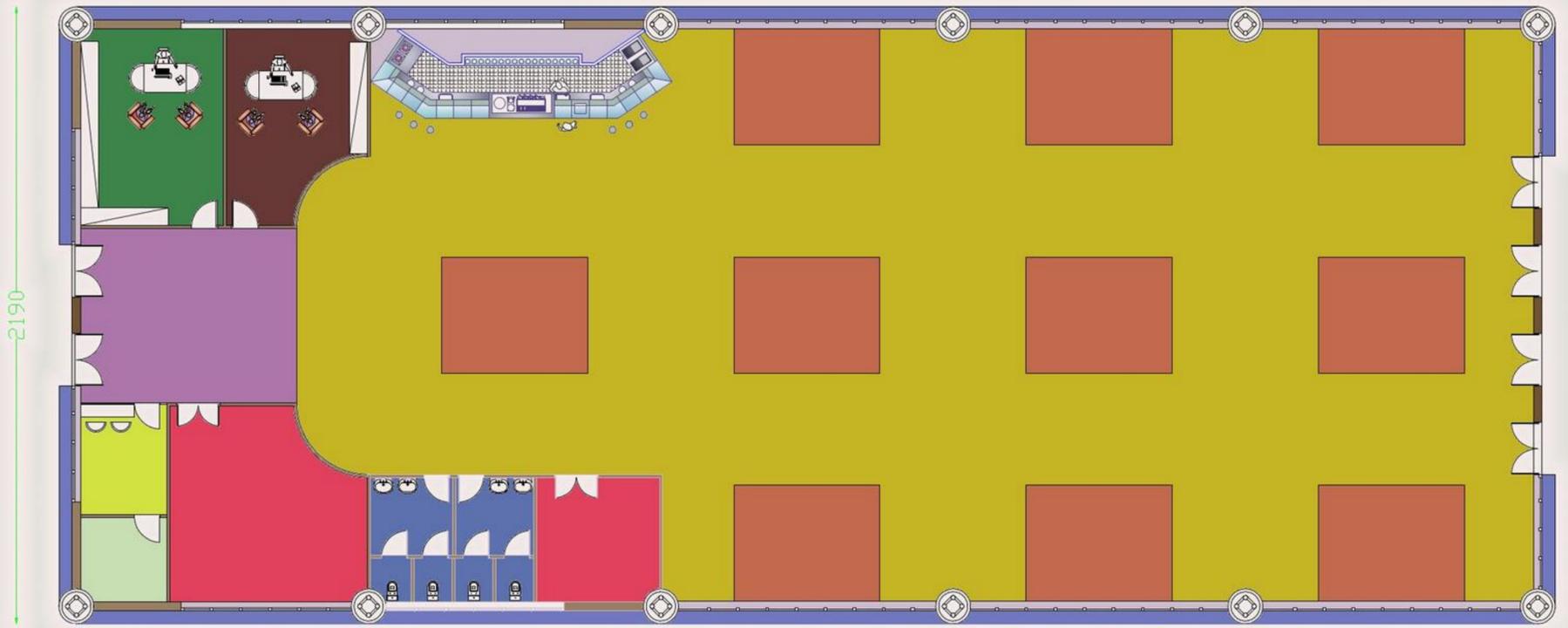
*Roof*

*The Forge Prize 2021 Stati Uniti*



C

5120



B

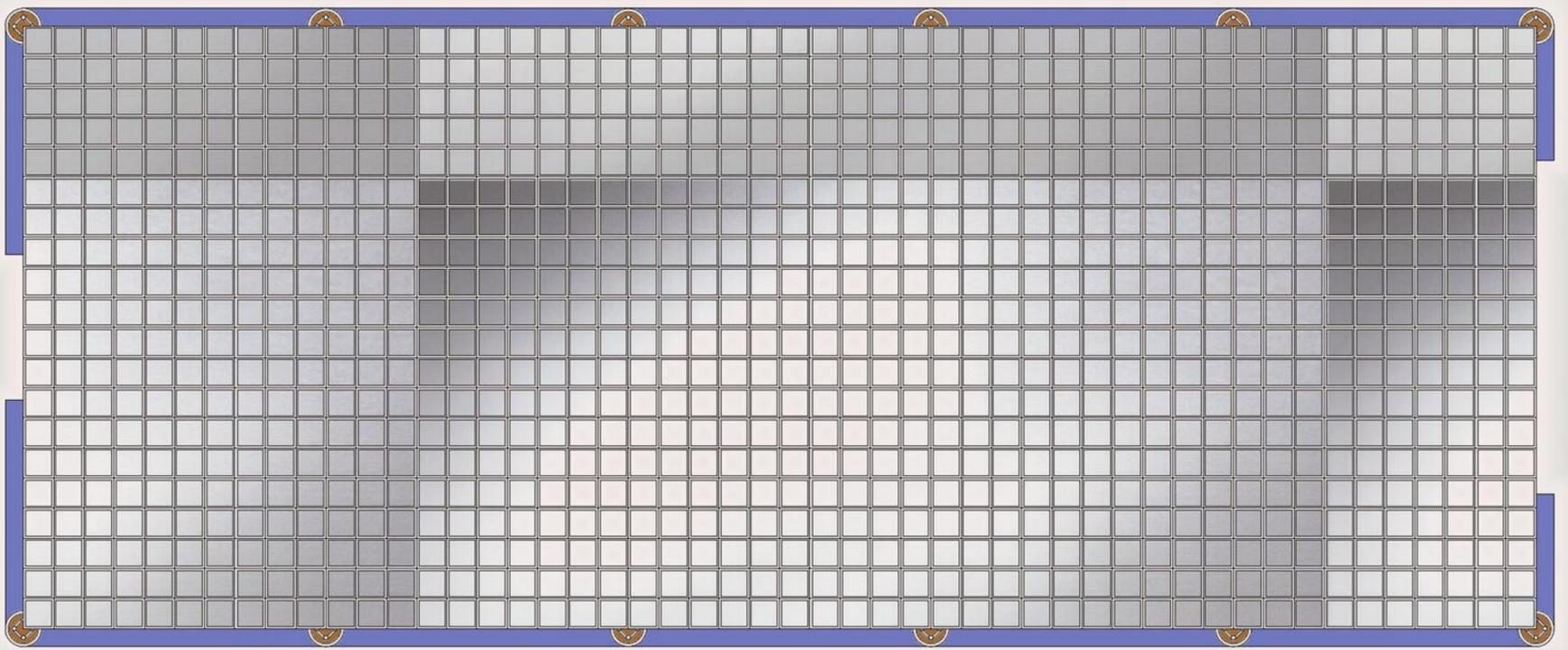
D

2190

A

Ground floor plan

Hall	Yellow
Direction	Green
Secretariat	Dark Brown
Ticket office	Yellow-Green
Toilette	Blue
Storage area	Red
Technical area	Light Green
Bar	Purple
Stand	Orange

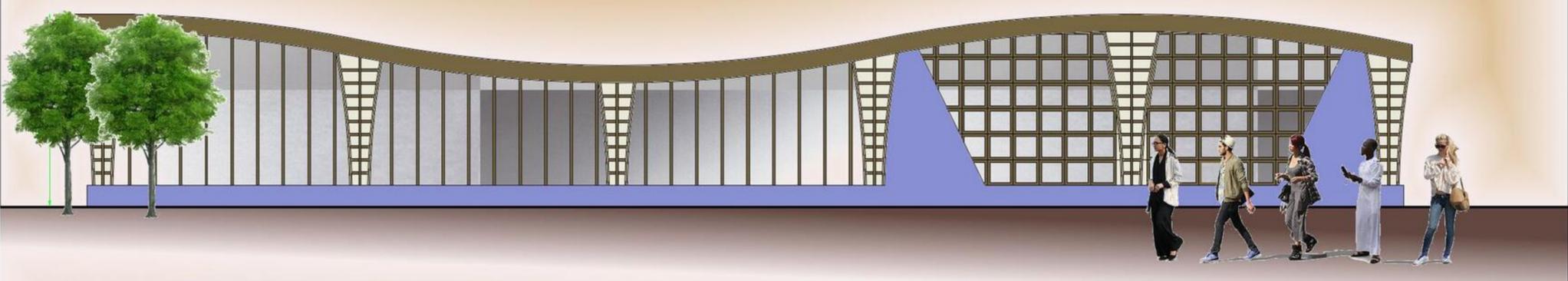


Roof plan

Scale 1:100



Elevation A



Elevation C



Elevation D



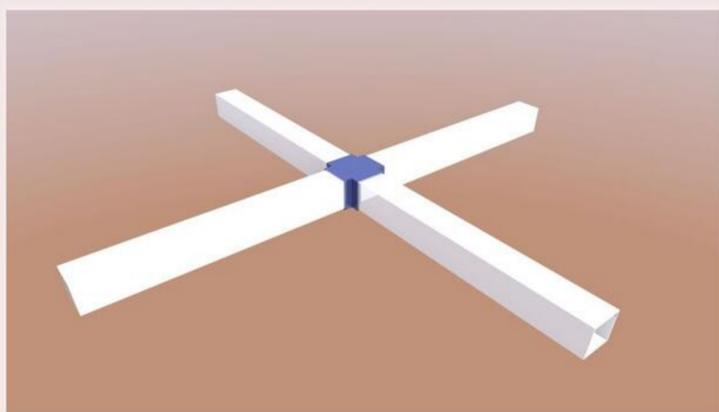
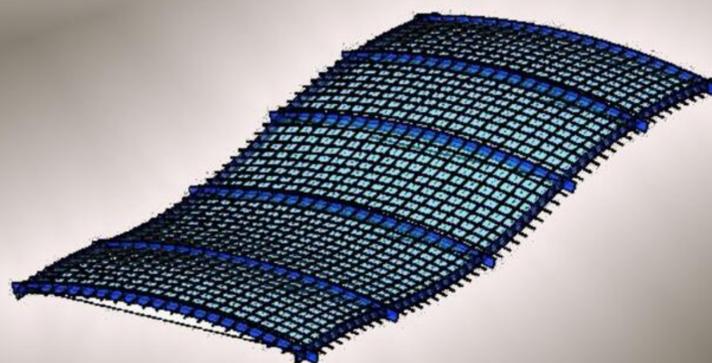
Elevation B

# Steel structures



## FEM Modeling

*Permanent load* 50 daN/m<sup>2</sup>  
*Snow load* 150 daN/m<sup>2</sup>  
*Wind load* 120 daN/m<sup>2</sup>  
*Buckling Analysis*  $\alpha = 52 > 10$   
*Vertical seismic actions*



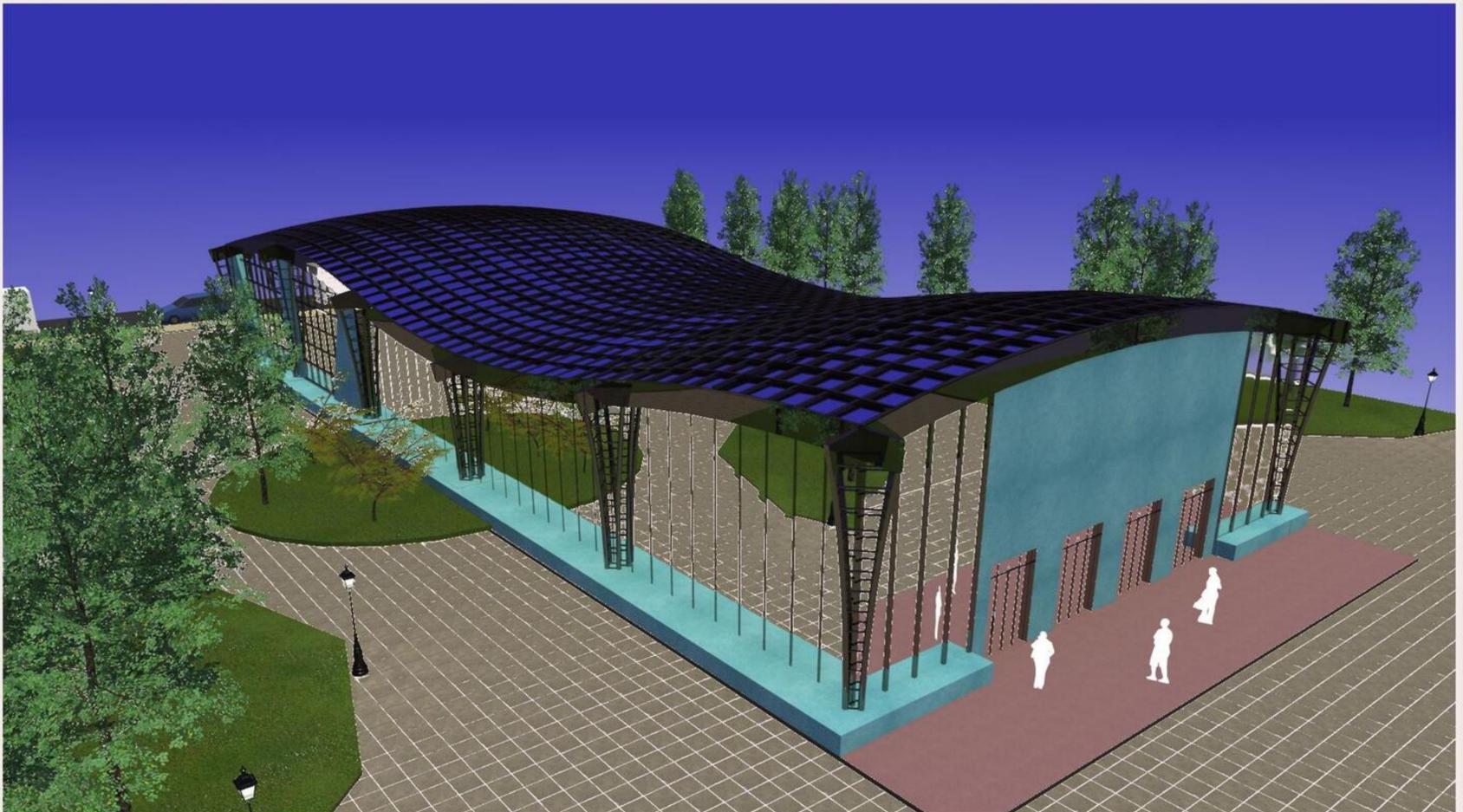
*Steel Connection*



*Column*



*External Rendering*



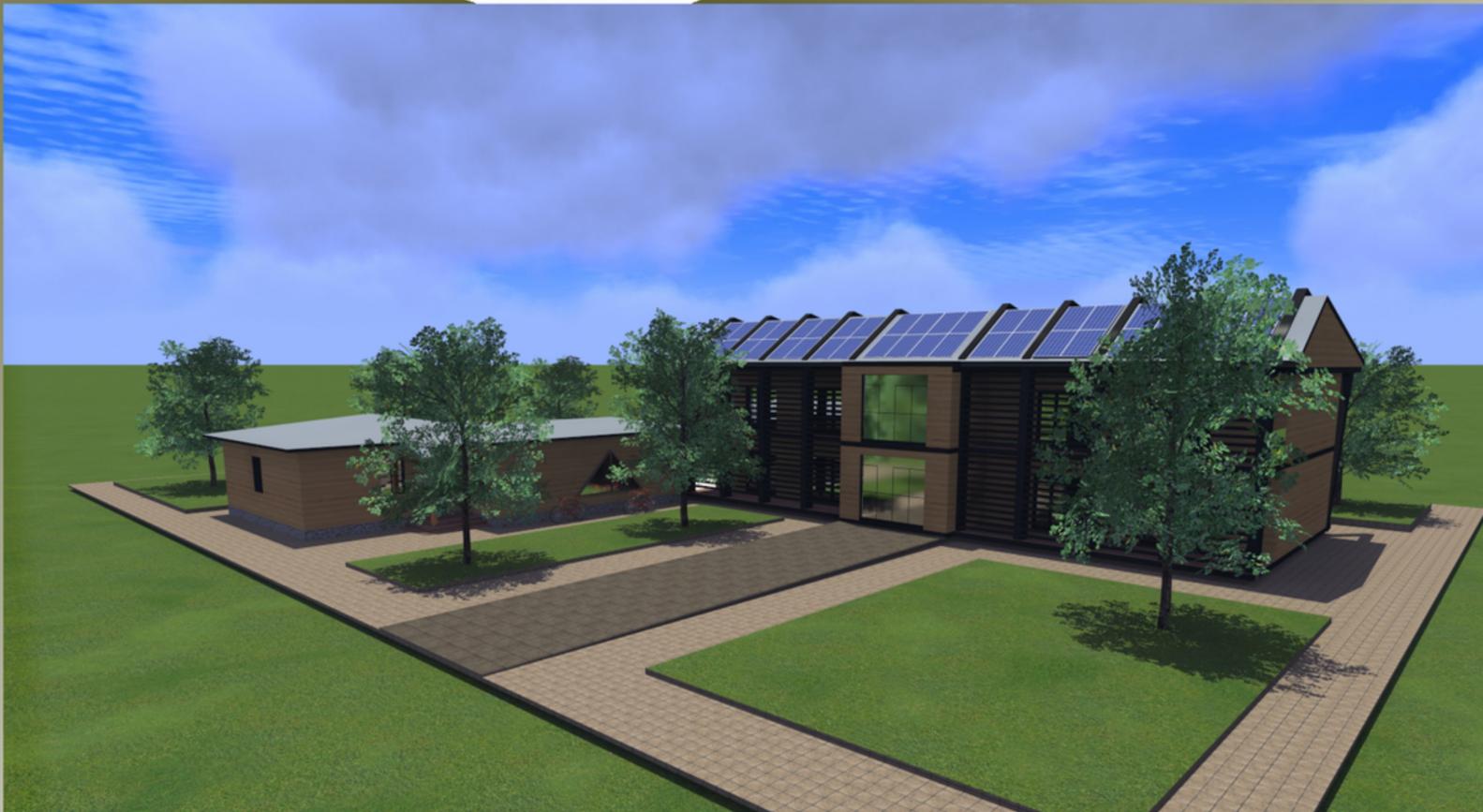
*Stand*

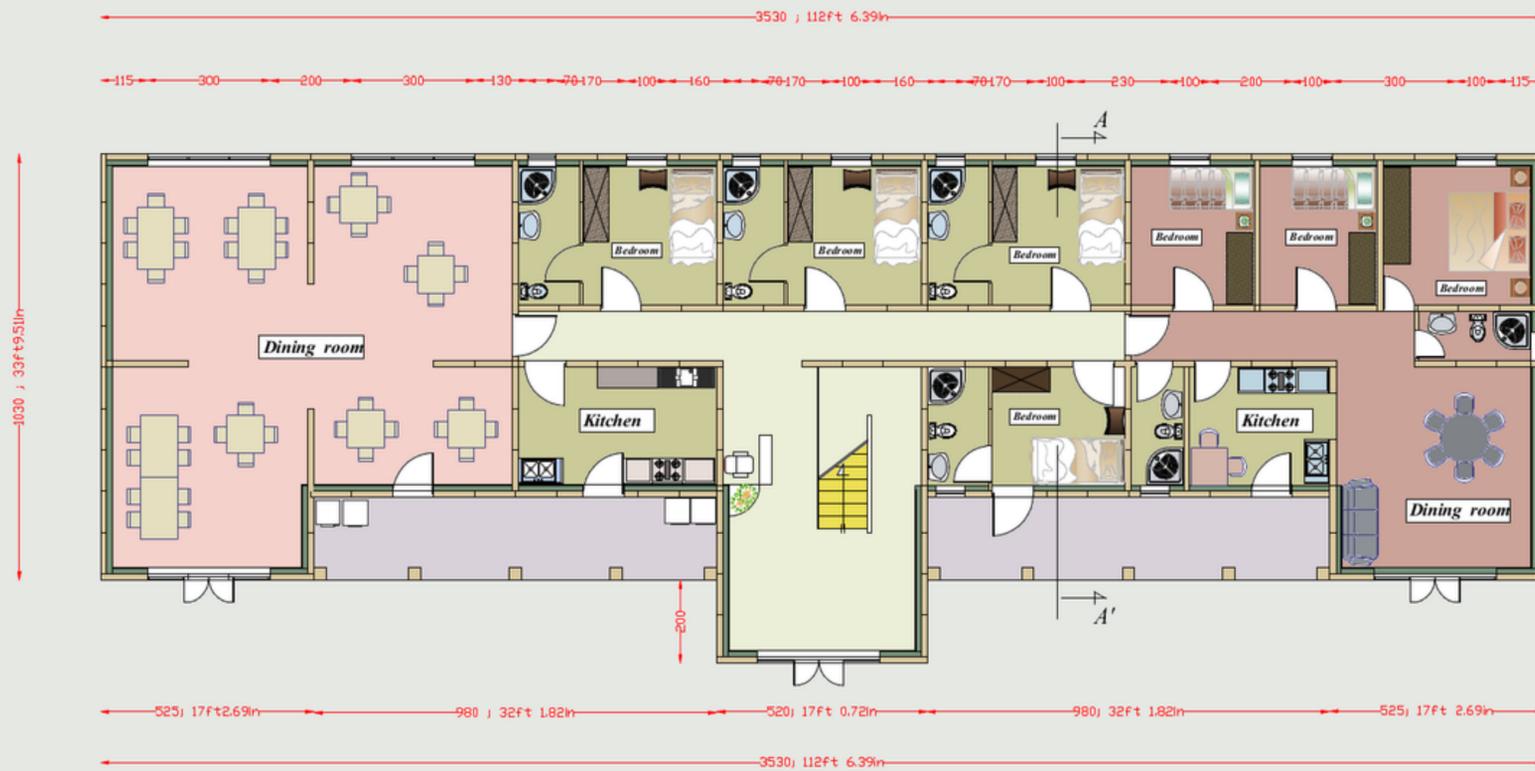


*Roof Rendering*

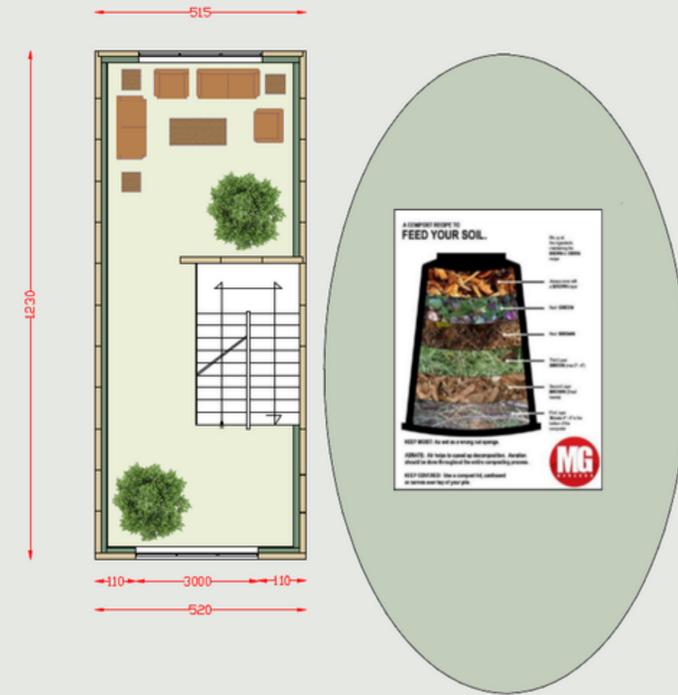


*Maine Mass Timber  
Design Competition Stati Uniti*





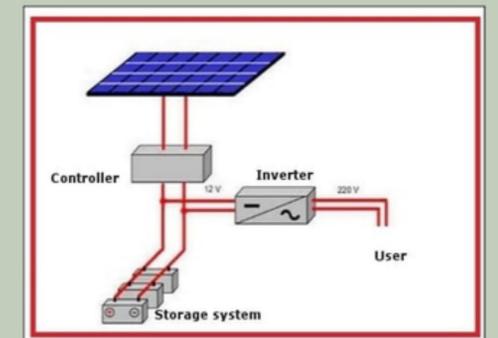
Ground floor



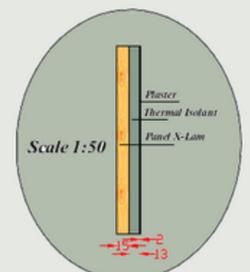
First floor



Wall section A



Elevation A



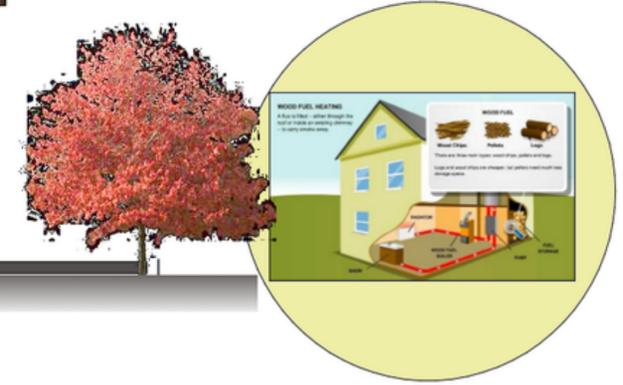
Rendering

Scale 1:100

0037



Elevation C



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Google Earth

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# *Resilient Homes Challenge Build Academy Stati Uniti*





#### Description

The idea of participating in the "RESILIENT HOMES CHALLENGE" stems from the desire to make a contribution in terms of design to the populations affected by natural disasters such as hurricanes cyclones earthquakes can provide design ideas that in some way can improve the living conditions of people proven by the discomfort resulting from natural disasters. We chose a territory like the Caribbean (Haiti) which is a high seismicity area where very often hurricanes or cyclones correspond to the first scenario assuming a wind speed of about 250 km / hr and earthquakes of the 7th degree of the richter scale with accelerations  $a_g = 2.7 \text{ m / sec}^2$ . At a wind speed of 250km / hr, there is a pressure on the walls of the building of about 300 daN / sqm, therefore buildings stressed with high horizontal forces. As a type of dwelling, the stilt system has been chosen with the first raised floor of about 1.50 m to allow the outflow of water coming from riverbeds in areas with high hydro-geological risks during cyclones and hurricanes; the material wood structure with a low specific weight and therefore reduced mass minimizes seismic actions which are actions deriving from an inertia force consequent to the movement (acceleration) of the ground. The constructive system is unusual would be preferable to a reinforced concrete construction that would give more security more stability against the actions of the wind, but would misbehave in the natural environment buildings would lose the environmental connotation. A lot of attention has been paid to structural design in order to give buildings the fundamental characteristic of resilience, ie the ability to resist wind and earthquake actions without damaging the possibility to rebuild in a short time and therefore to provide the population affected by natural disasters of the first dwellings in short motlo times solving the problem of emergency. The designed accommodation is for 4 people with a double bedroom a bathroom a kitchen and a living room that of night is transformed into a bedroom through sofas and furniture with removable beds. In the bedroom there is a space used as a cradle for any babies who in emergency situations should be protected more. The surfaces of the environments are as follows

dining room 18 sqm

bedroom 15 sqm

bathroom 7 sqm

kitchen 11,50 sqm

hallway 1.90 sqm

For a total surface of the accommodation of about 53 square meters. The house is equipped with a porch of about 27 square meters to be used as an entrance to the house and relaxation area. Wood is a poor material easily found in every area of the earth at low cost, the structure is set on a square mesh of side 150 cm in which are inserted the wooden padding panels that have a function of stiffening the building together with thermal insulation whose thickness depends on the climatic characteristics of the area, such as altitude and temperature, so as to reduce the thermal dispersions through the building envelope. On the roof a photovoltaic system has been realized with a surface of about 50 square meters able to cope with the energy consumption of the building for lighting, the use of household appliances and the heating or air conditioning that is electrically powered. The system is not equipped with accumulation batteries but is directly connected to the electricity grid present in the area, the energy produced is measured with a meter placed on the grid and taken from it to meet the needs of the accommodation.

Studio tecnico ingegneria edile  
Ing. Giuseppe Mosca  
Italy



Scale 1:50



Scale 1:50



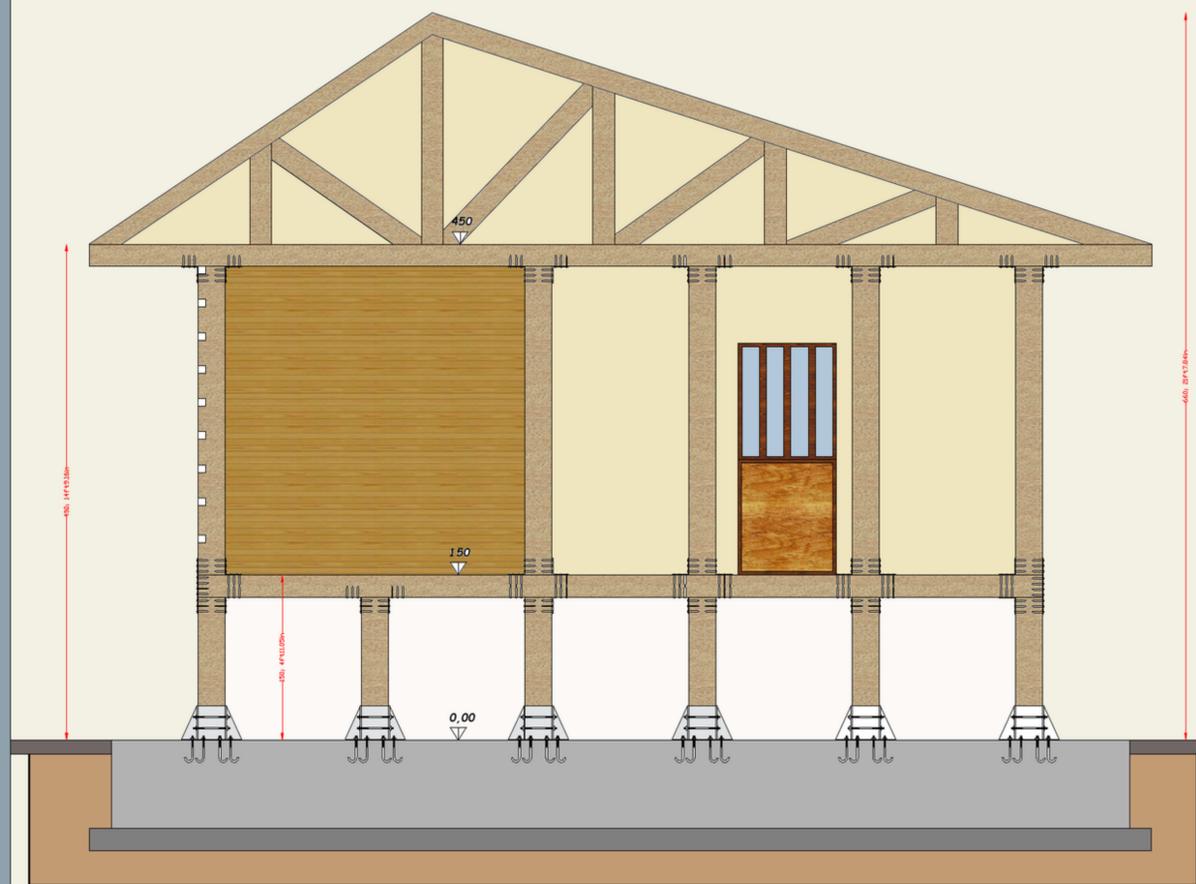
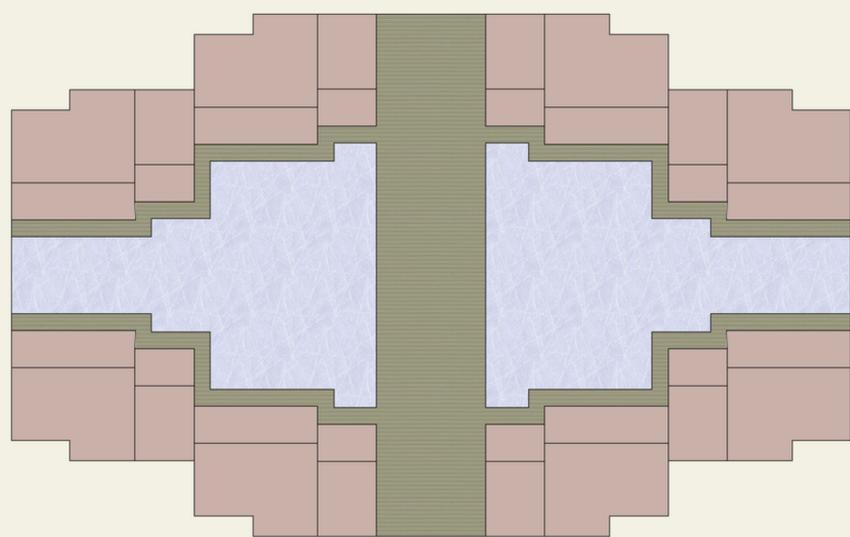
Elevation A



Elevation B

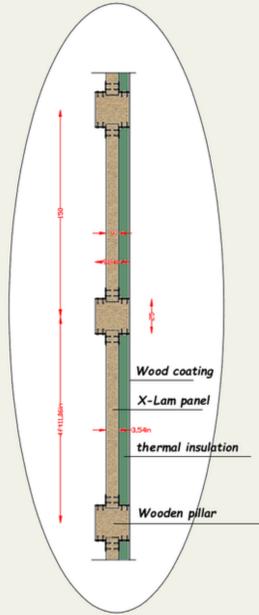
Elevation D

Planimetry 1:200



Section A-A' 1:25

The assemblage of the structure is very quick after having made the foundation slab of reinforced concrete with the relative plates in stainless steel for the pillars, the first order of wooden pillars is prepared on which the grating of beams of the first deck mounted to land. Between the squares of the grid, the X-LAM wooden panels connected to it are inserted through screws and the second order of the pillars is mounted. The second grid is placed inserted the floor panels and mounted the relative roof trusses with the covering panels: assembly takes place in a few days.



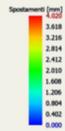
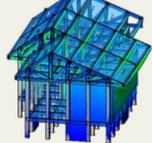
Scale 1:20



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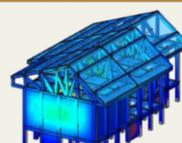
### Structural project scenario 1

Tipo diagramma Deformata  
Combinazione corrente: Scenario Set\_NT\_SLV\_SLD\_A2\_STRIGEO - C 74  
Posizione massa NF 1



WIND Y 250 km/hr P = 300 daN/mq

Tipo diagramma Deformata  
Combinazione corrente: Scenario Set\_NT\_SLV\_SLD\_A2\_STRIGEO - C 84  
Posizione massa NF 1



WIND X 250 km/hr P = 300 daN/mq

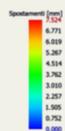
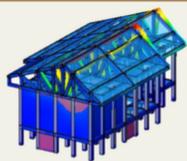


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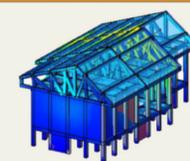
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Tipo diagramma Deformata  
Combinazione corrente: Scenario Set\_NT\_SLV\_SLD\_A2\_STRIGEO - C 124  
Posizione massa NF 1



Sisma Y  $a_g = 2,7 \text{ m/sec}^2$

Tipo diagramma Deformata  
Combinazione corrente: Scenario Set\_NT\_SLV\_SLD\_A2\_STRIGEO - C 134  
Posizione massa NF 1



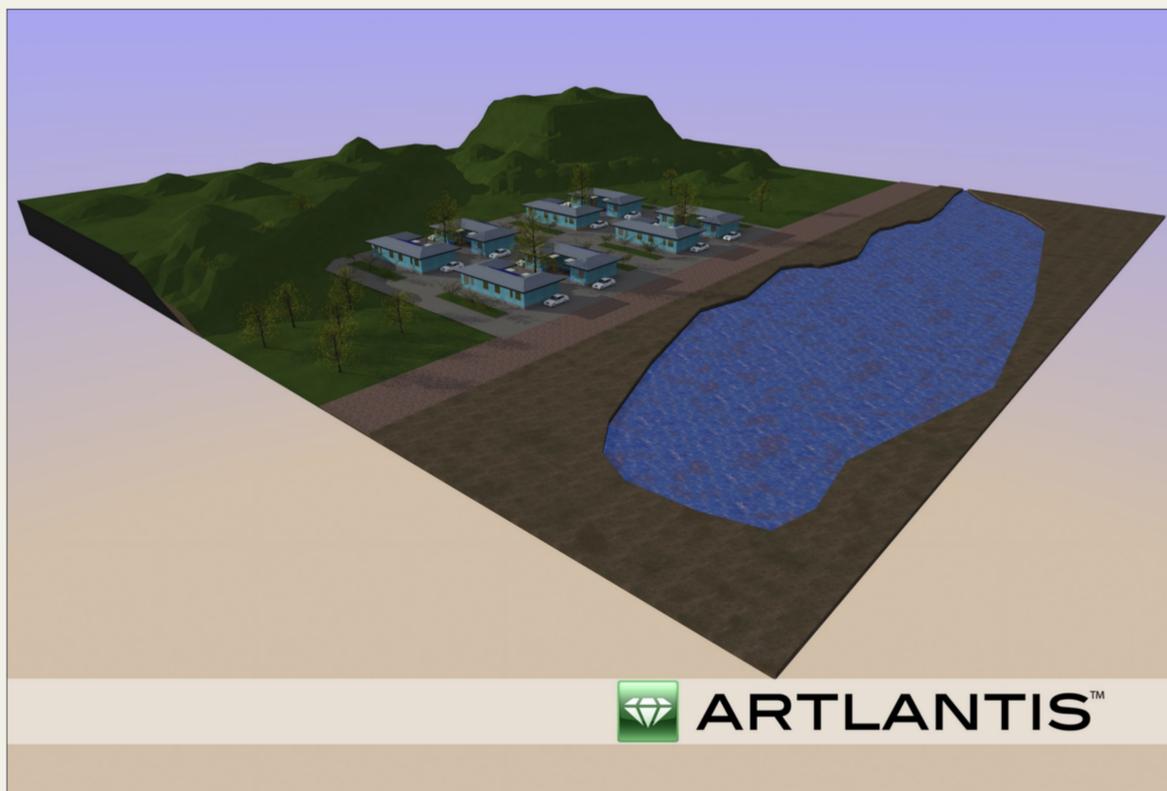
Sisma X  $a_g = 2,7 \text{ m/sec}^2$



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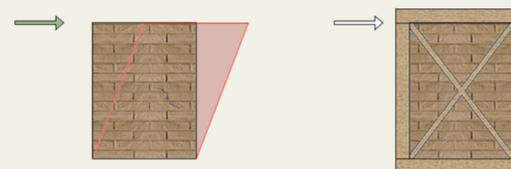


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### Description

The idea of presenting another project for a further scenario arises from the desire to provide homes that can be built even at low costs, not detached from the social context to cope with the real housing needs after a natural disaster. The reference scenario is the second characterized by strong earthquakes typical of countries such as North Nepal of India and Peru using a local construction technique that can be implemented as a new construction system for masonry buildings or to avoid the breakage of masonry infill. for reinforced concrete buildings. If we look at the lesions of a masonry panel stressed by seismic actions as it is well known, these lesions are diagonal; the mixed masonry wood construction system, typical of areas such as NORTH INDIA, involves the construction of a 70 cm regular wooden frame, obtaining braced panels with wooden diagonals inside which the masonry is inserted. In simple words the diagonal traction resulting from the horizontal seismic stress on the panel which can not cope with the masonry is made to absorb from the wooden upright.

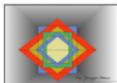


The reference acceleration is about  $3 \text{ m / sec}^2$  corresponding to an earthquake equal to the eighth grade of the richter scale. The buildings are based on the greatest simplicity nothing exceptional architecturally but necessary to cope with situations of hardship easily achievable even at low cost. The houses are developed on a mezzanine floor for 4 people with a bedroom a bathroom a kitchen and a dining room that of night is transformed into a bedroom through sofas and furniture with removable beds. The surfaces of the rooms in the house are as follows:

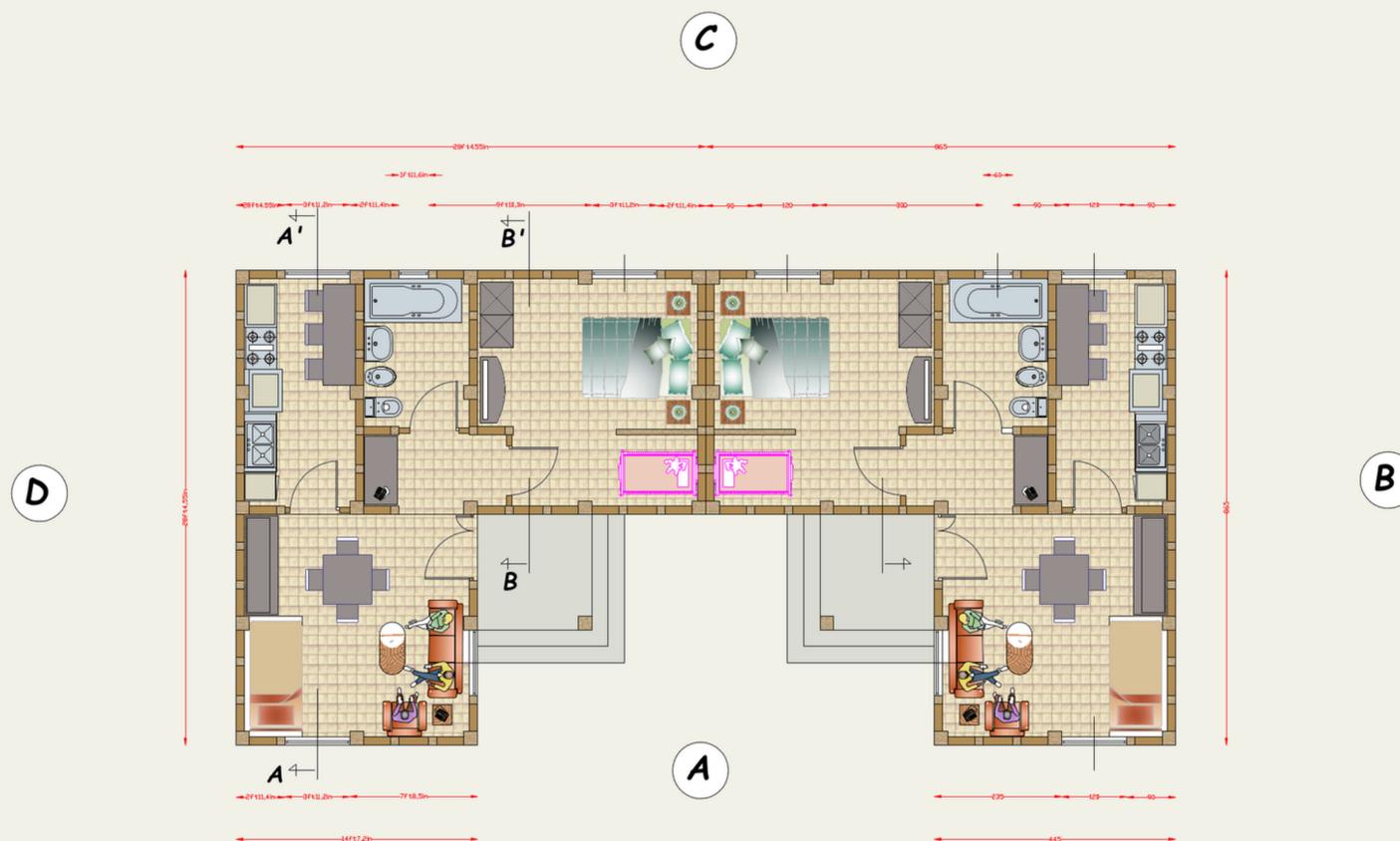
dining room 17 sqm  
 bedroom 16 sqm  
 bathroom 5 sqm  
 kitchen 8.50 sqm  
 hallway 3.40 sqm

for a total area of about 50 square meters. It has been realized an internal thermal coat with adequate thickness of insulation to cope with the low temperatures typical of mountain areas such as the Andean highlands or northern India. A photovoltaic system has been installed on the roof to limit electricity consumption; the heating can be realized with biomasses using thermal chimneys or stoves able to heat the hot water to be conveyed in the pipes of the underfloor heating system or with radiators.

Studio tecnico ingegneria edile  
 Ing. Giuseppe Mosca  
 Italy

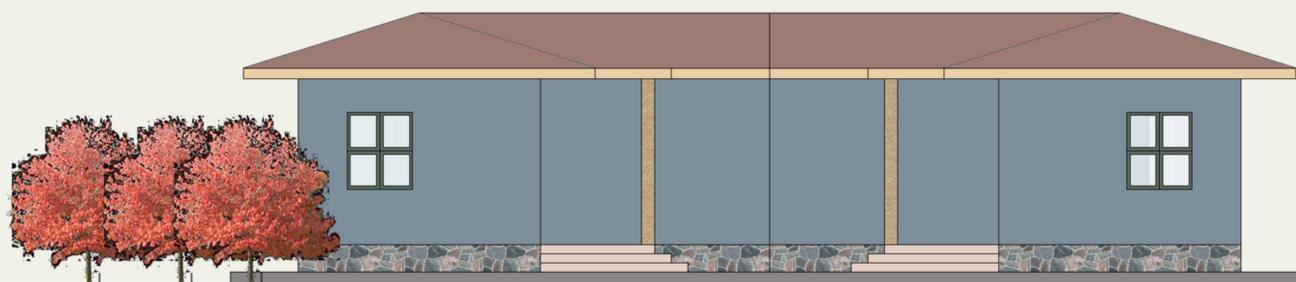


Scale 1:50

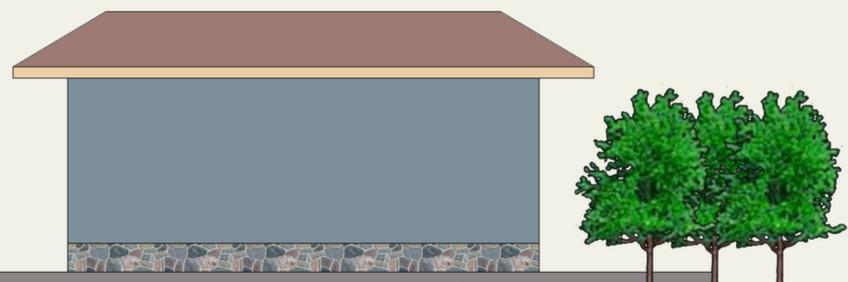


First floor plan

Scale 1:50



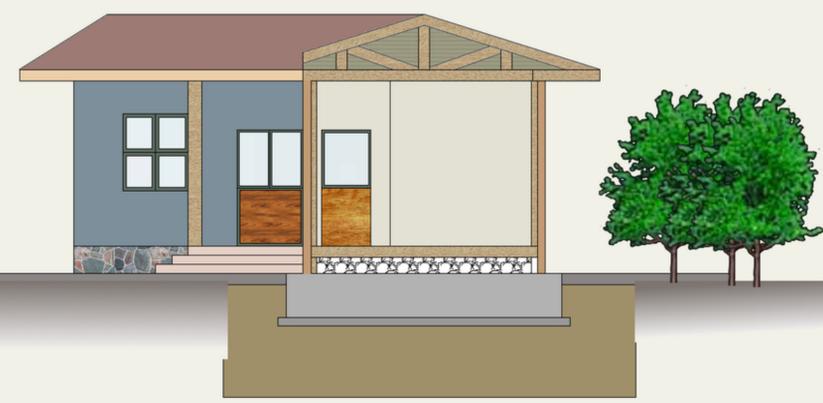
Elevation A



Elevation B

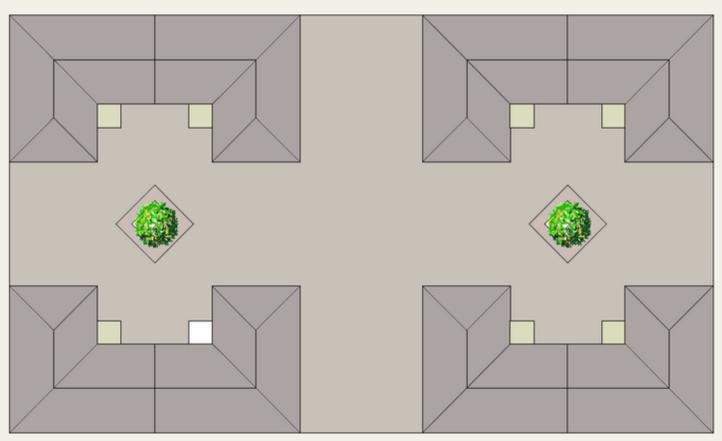


Elevation C



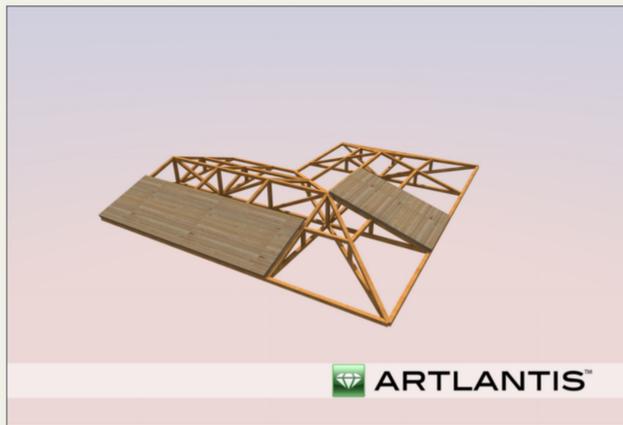
Section B-B'

Planimetry 1:200

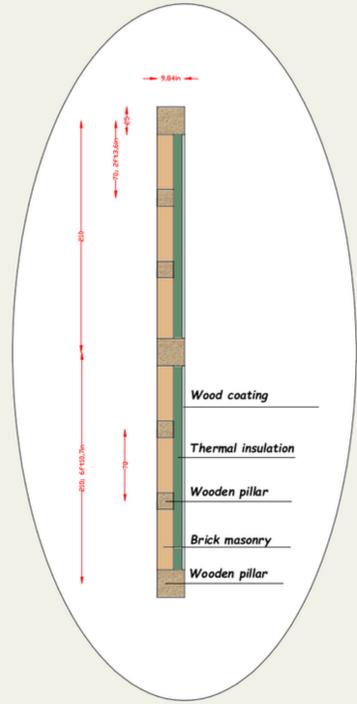


Section A-A' 1:25

The construction of the building takes place in a very short time by the construction of a foundation concrete slab with steel plates to allow the positioning of the wooden pillars and the relative structure with diagonals. In the squares are inserted brick bricks that have the function not only of tamponing but of stiffening the wooden structure and therefore minimizing the movements. The floor is made of wood with double-warped beams, on which the roof is mounted directly with wooden trusses resting on the pillars.



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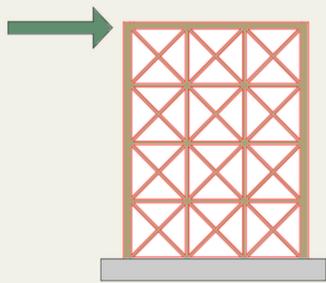


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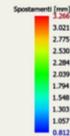
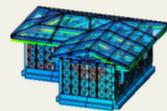


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### Structural project scenario 2

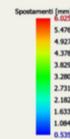
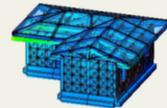


Vertical load

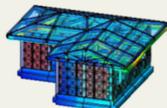


The constructive system provide a wall realized with wooden structure braced with diagonals stiffened with masonry panels has a behavior excellent against seismic actions; the constructive system can be improved using wood instead of recyclable material aluminum profiles and triangular blocks of lightened concrete creating a monolithic and very rigid masonry wall suitable also for buildings with a higher number of floors

Sisma X  $ag = 4 \text{ m/sec}^2$



Sisma Y  $ag = 4 \text{ m/sec}^2$



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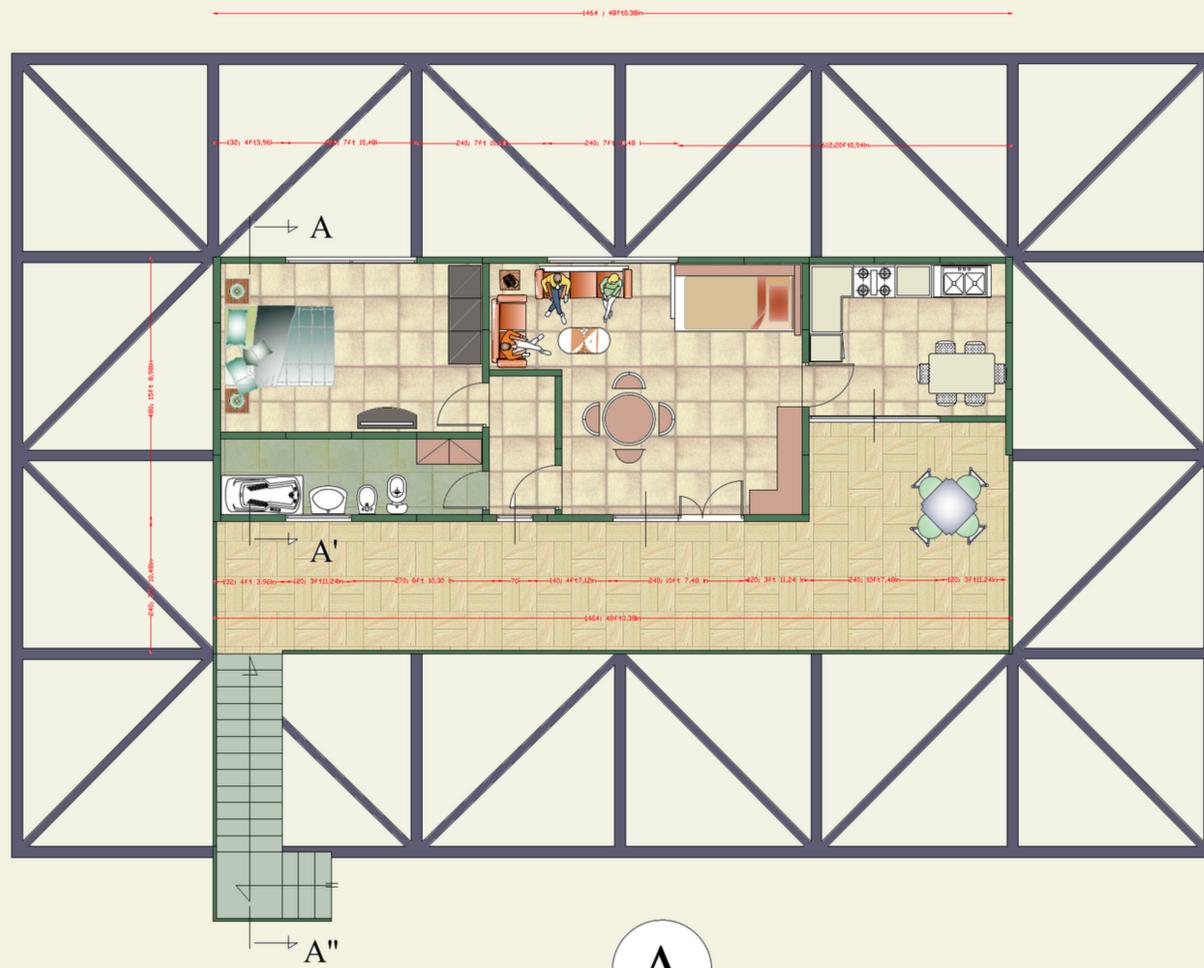
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C

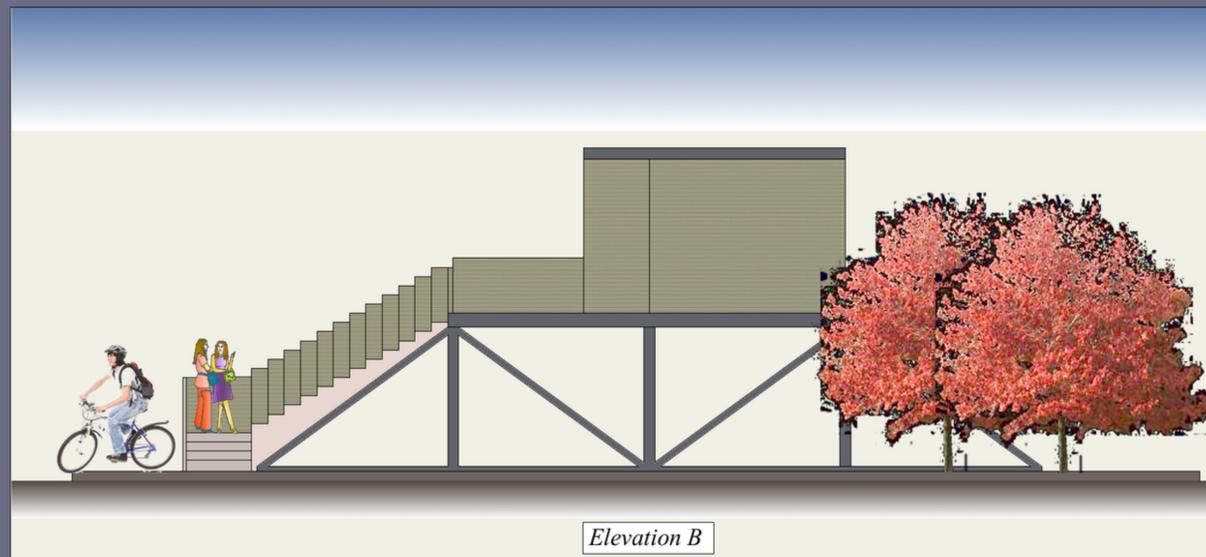
Plan first floor



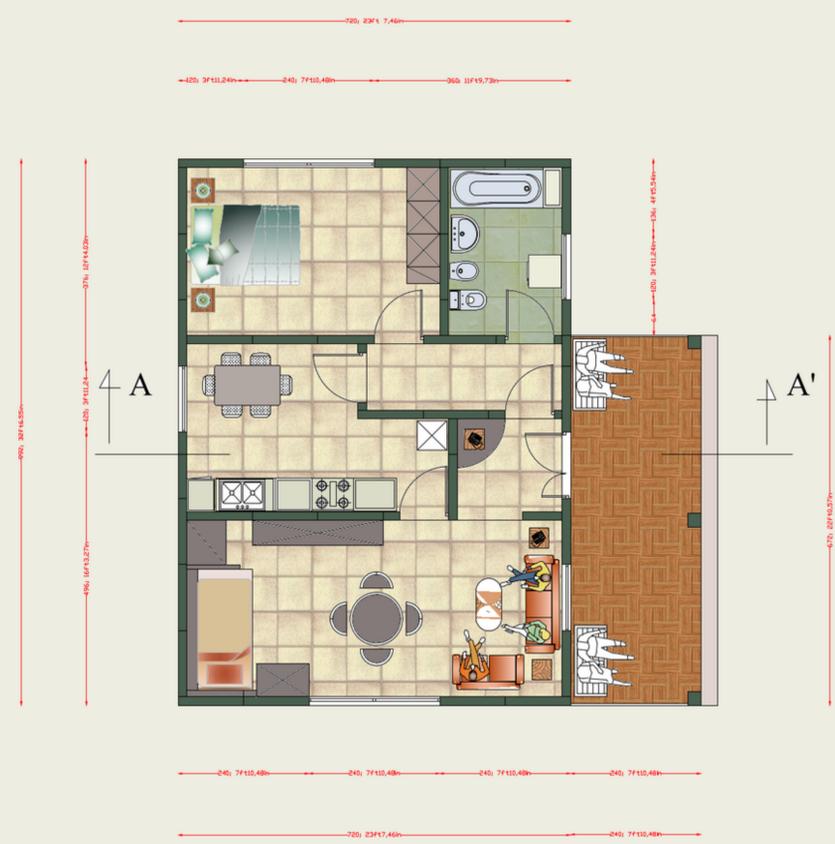
D

B

A



C

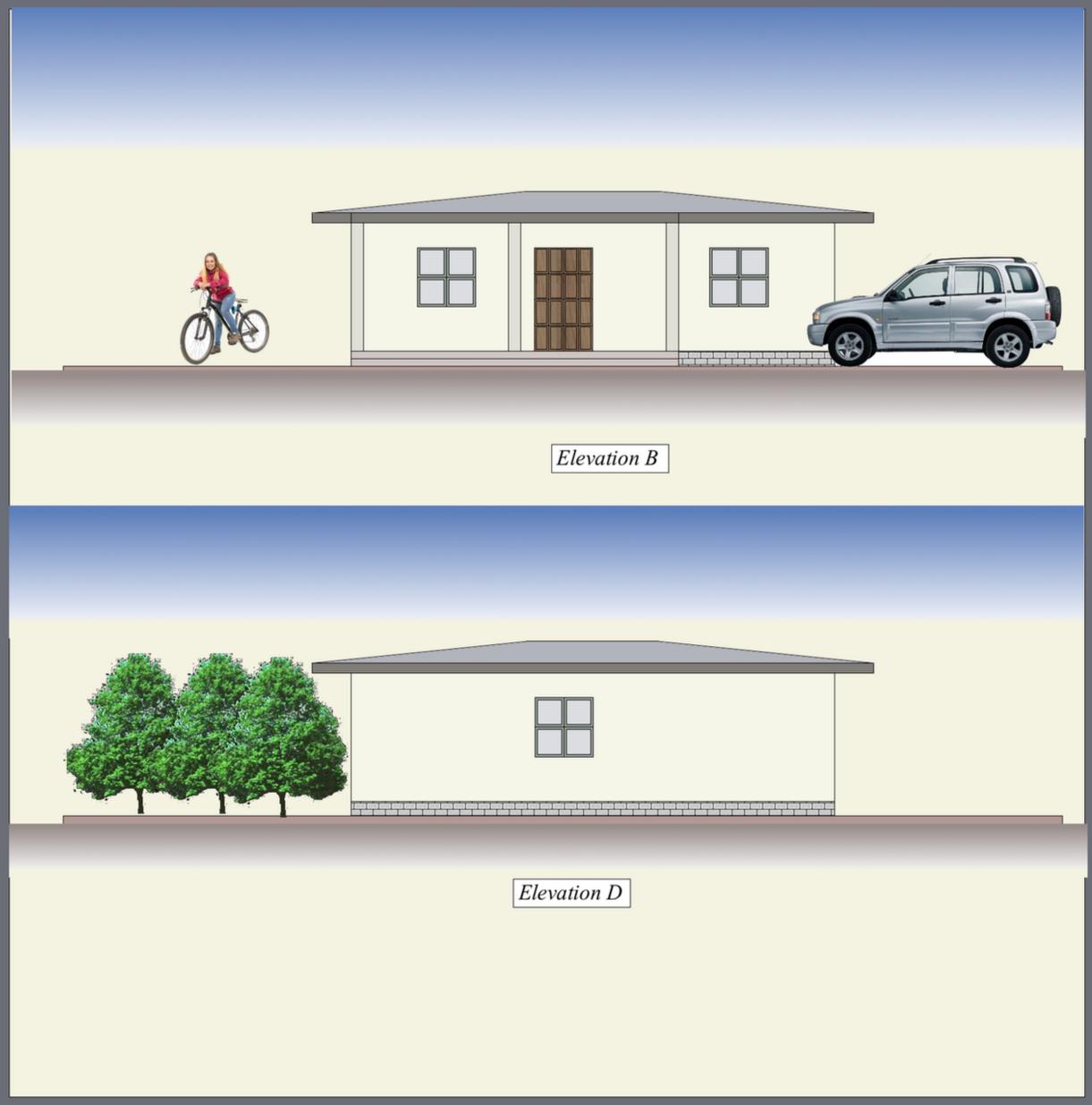


D

B

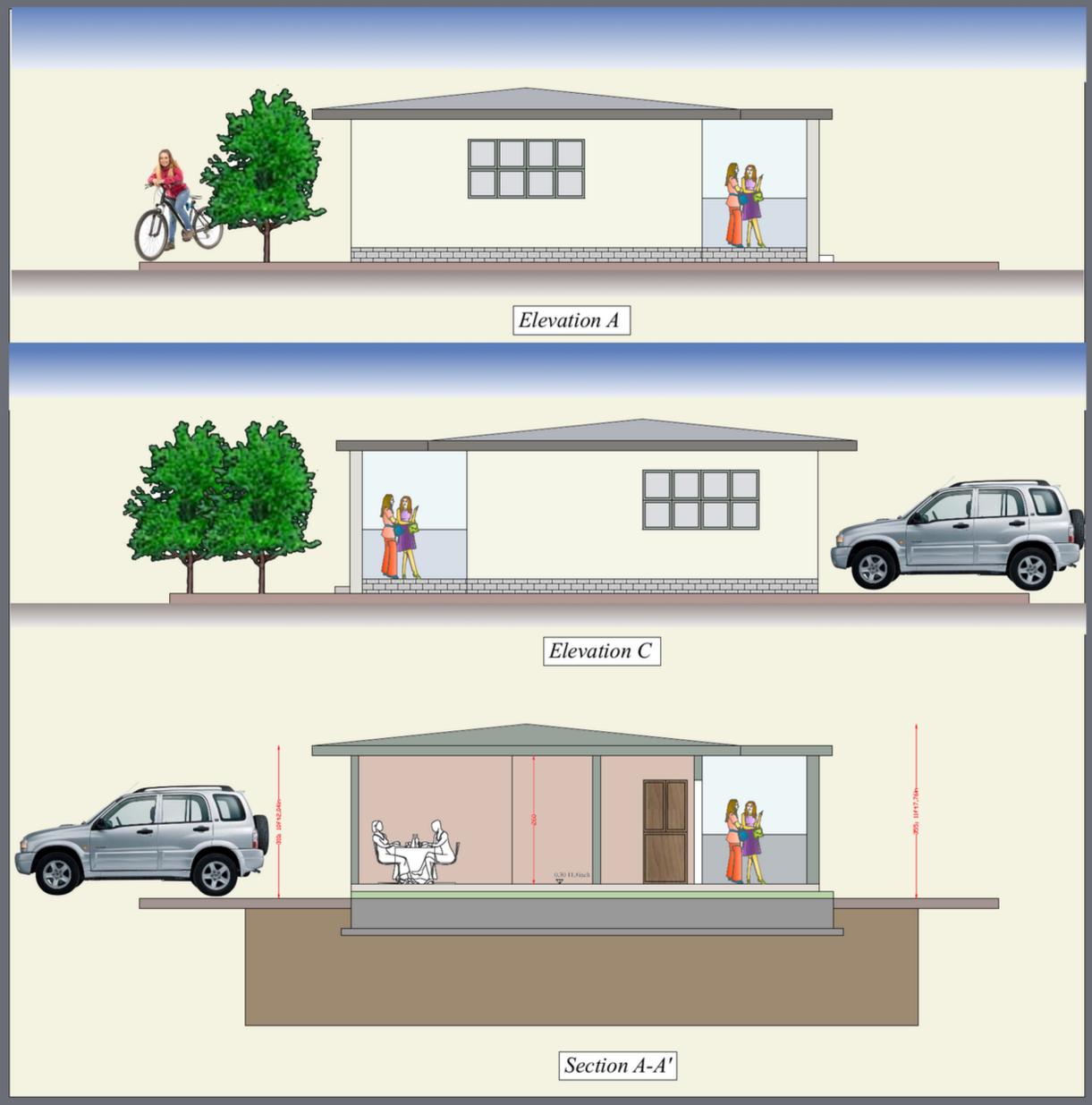
Plan ground floor

A



Elevation B

Elevation D



Elevation A

Elevation C

Section A-A'



C

400 15'4.98"

420 3'10.24" 240 7'10.50" 120 3'11.24"



A

A'

B

A

Plan first floor

D

1200 42'10.87"

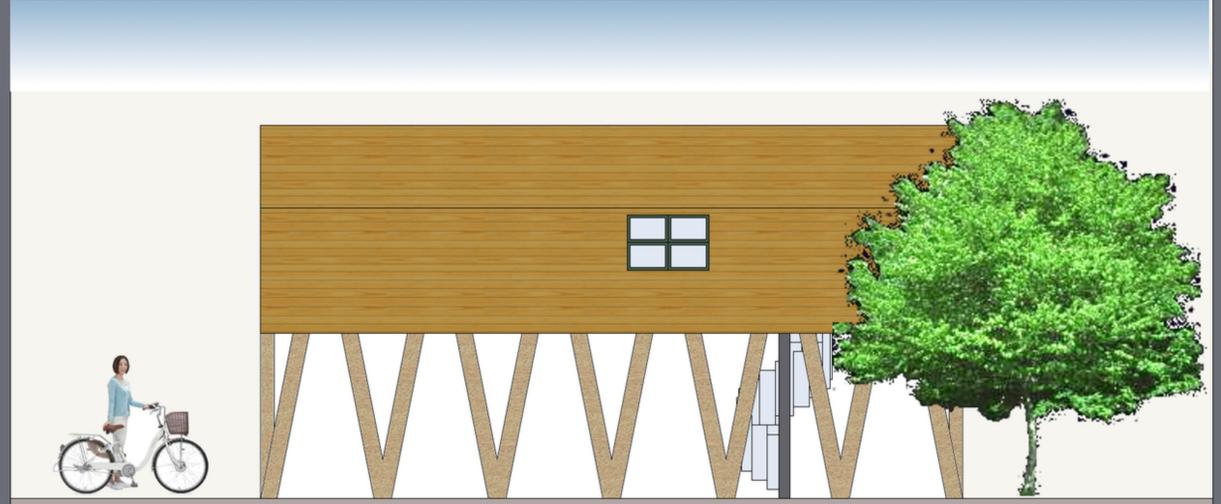
1200 42'10.87"

1200 42'10.87"

1200 42'10.87"



Elevation B

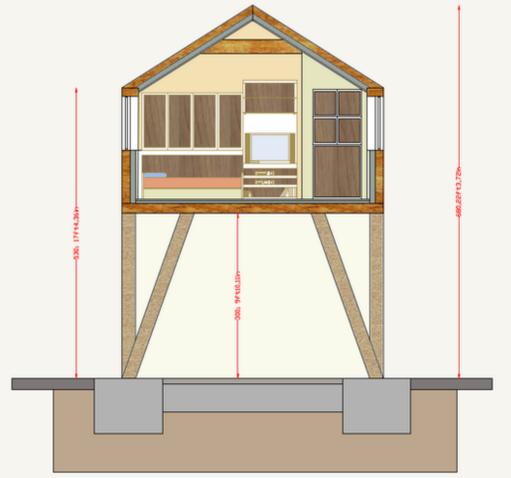
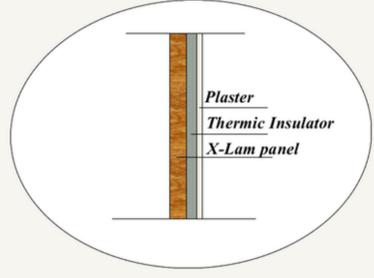


Elevation D



Elevation C

Elevation A



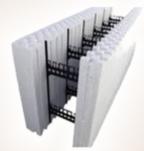
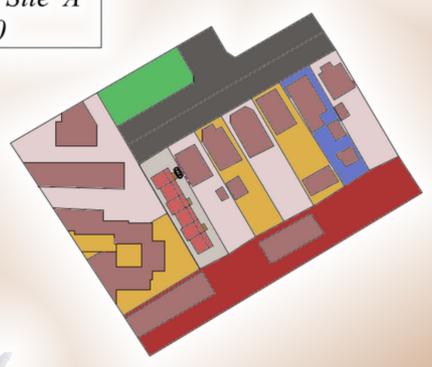
Section A-A'

*Small lots Big impacts*  
*Design competition*



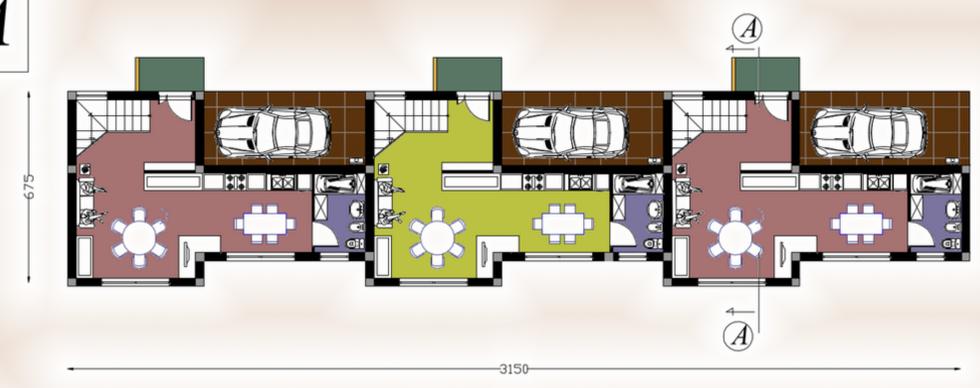
# Small Lots Big Impacts Design Competition Site A

Planimetry Site A  
Scale 1:1000



### Narrative

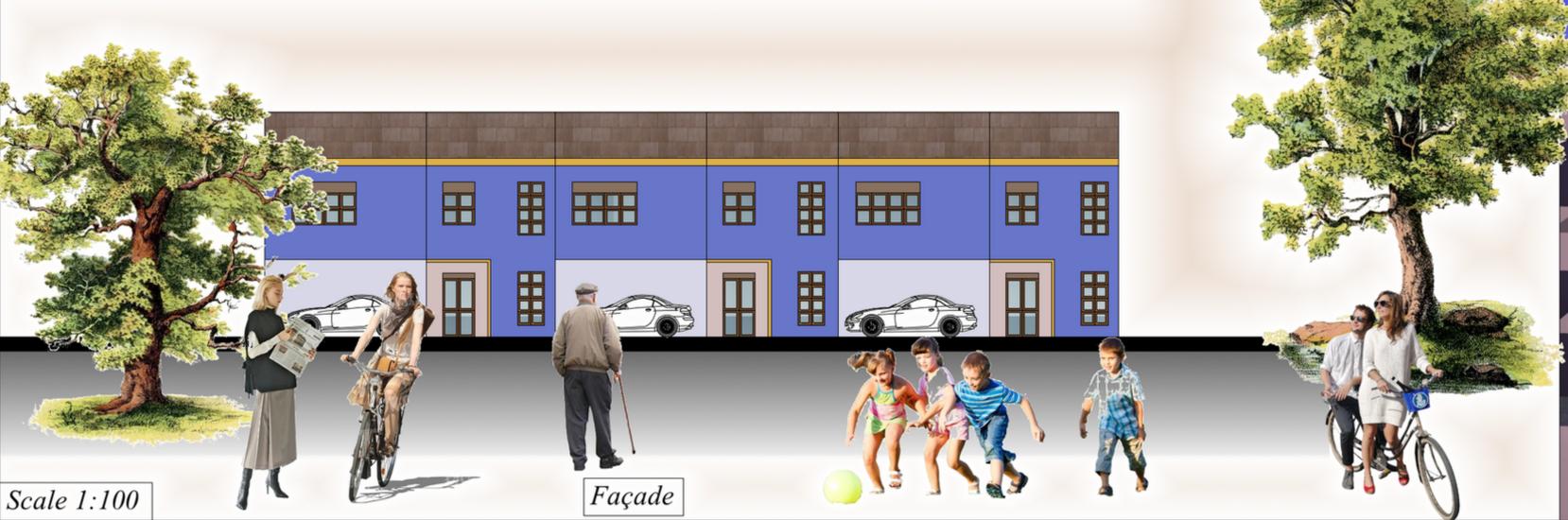
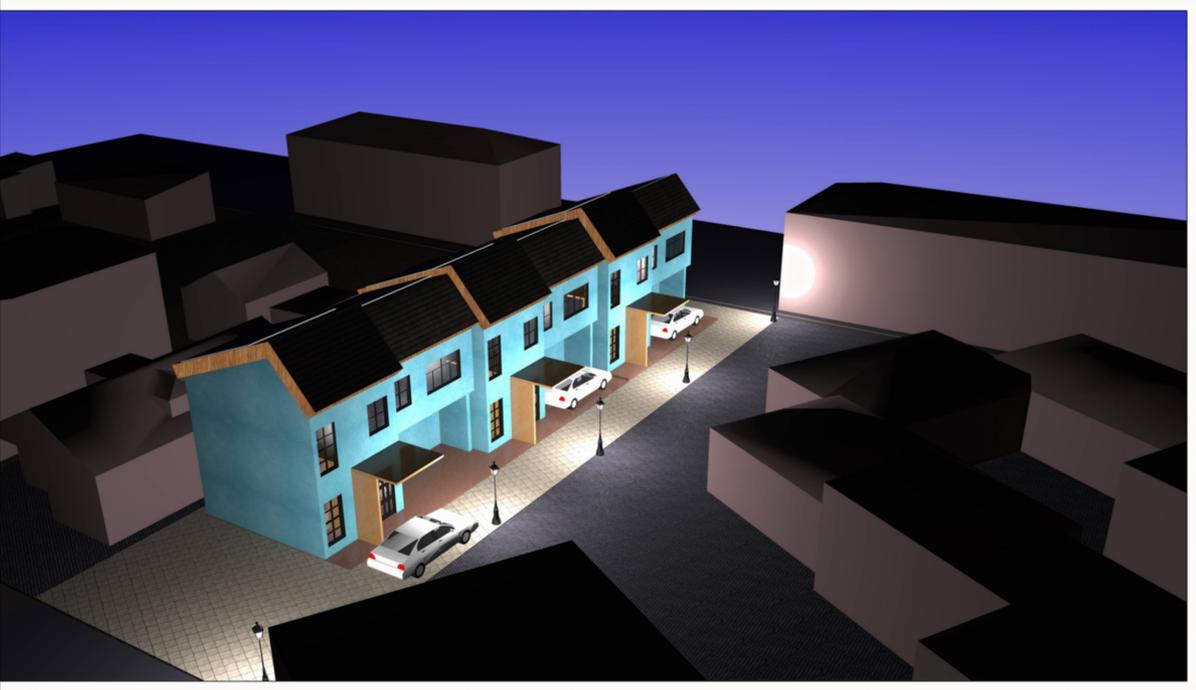
The project submitted for participation in the design competition "Small Lots Bigs Impacts" is located on site A in a lot of land with a surface area of 484 m<sup>2</sup> on a slight slope, land that will be regularized during the construction phase by providing adequate support works. A building has been located on the plot that includes three duplex apartments suitable for an average family of 4 people, with double bathroom or closet, living area on the first floor with internal staircase in the entrance area overlooking the living area and kitchen, while the upper floor is the sleeping area with a double bedroom, 2 single bedrooms and a bathroom, a functional apartment designed according to the criteria of the **open house**, with bedrooms and living room kitchen communicating in full respect of privacy. The recent fires in Los Angeles advise against using a material such as wood for structures even if the fireproof treatments make it highly resistant to fire, a concrete structure was chosen made with perfectly earthquake-proof formwork blocks with collaborating reinforced concrete infill: the construction technique involves casting the concrete into the formwork block of wood, cement and polystyrene, it can also be made with collaborating reinforced masonry infill in brick or lightweight concrete with the aim of eliminating the damage caused to the infill by earthquakes. The formwork block has a thermal insulation function and the photovoltaic system on the roof makes it an energy self-sufficient building in the passive house NZEB model; a parking space has been created on the ground floor and the architecture with the play of volumes of recesses and protrusions is quite pleasant, furthermore the wooden roof with the exposed arched beam and the internal and external glass railing make the building architecturally pleasant.



Section A-A



First floor plan



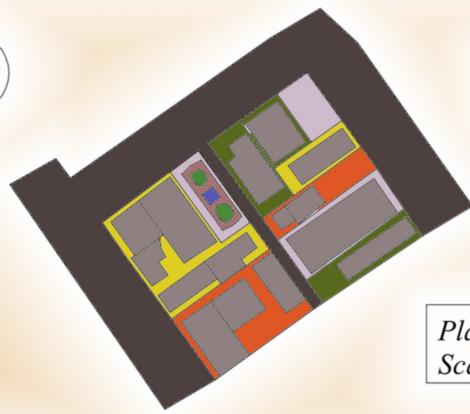
Façade

Scale 1:100

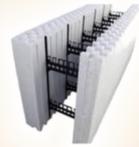




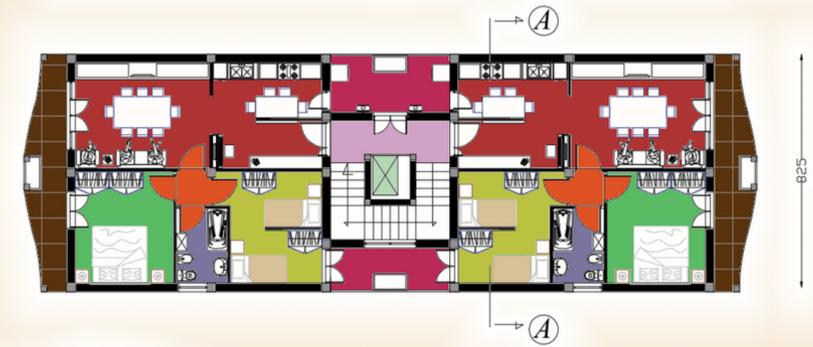
# Small Lots Big Impacts Design Competition Site C



Planimetry Site C  
Scale 1:1000



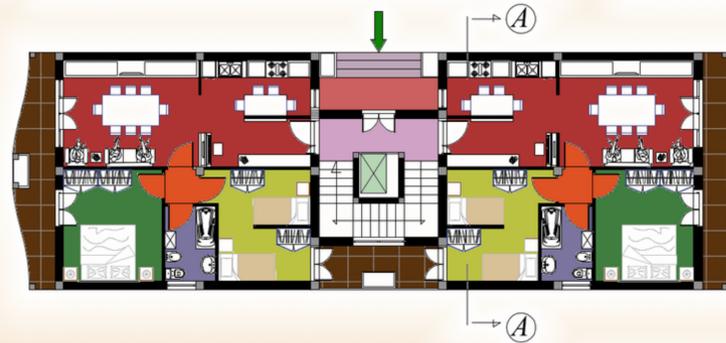
4 Storey floor plan



Section A-A

### Narrative

The project submitted for participation in the "Small Lots Big Impacts" design competition is included in site C, the lot with a surface area of approximately 384 m<sup>2</sup> adjacent to a 5-storey building has consequently given priority to the development in height by creating 5 floors above ground and a basement to be used as a storage room for the individual apartments. Each floor consists of two identical apartments served by a central staircase with lift designed according to the criteria of the open house separating the living area from the sleeping area with an entrance, kitchen and living room for the living area while the sleeping area with a double bedroom, single bedroom and bathroom. The minimum distance from the border of 3 metres has been respected on three sides while in the entrance area the building is aligned with the sidewalk. As regards the earthquake-proof load-bearing structure, it is made of reinforced concrete with collaborative infill using formwork blocks in wood, cement or polystyrene or reinforced brickwork or lightweight concrete. The 5-storey building has a total height of 17.90 m, the formwork block thermally insulates our building which is also self-sufficient in terms of energy since wind turbines have been placed on the roof terrace at a height of 20 m which exploit the kinetic energy of the wind to produce electricity making the building NZEB. The plan is rectangular, the building is regular in height and plan, the architecture has a clear modern imprint using a ventilated glass wall and parapets for the balconies and the glass roof terrace. The architecture of the building is pleasant, it can become a point of attraction for the area, a meeting place and a place for socialising, consequently its impact is not due to its size and the number of floors but to its architecture typical of glass buildings.



Ground floor plan



Façade

Scale 1:100

