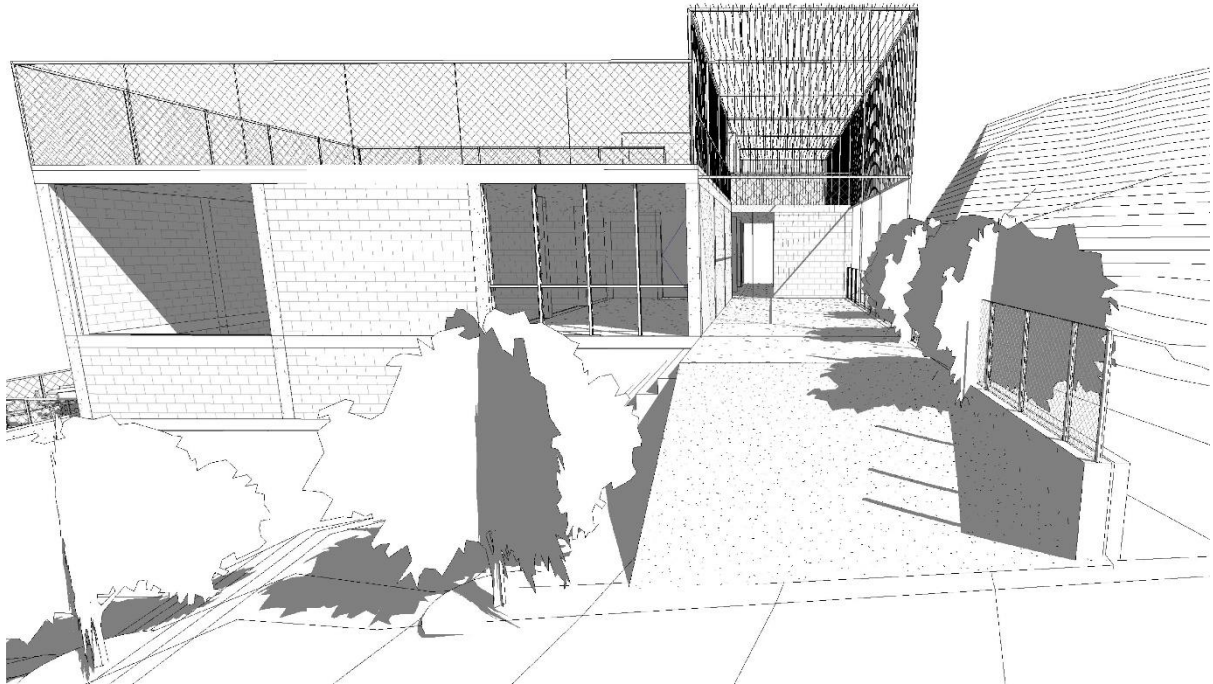




FFRL CENTER OF PEACE LEBANON
DOCUMENT C- ARCHITECTURAL PROGRAMING AND SCHEMATIC DESIGN



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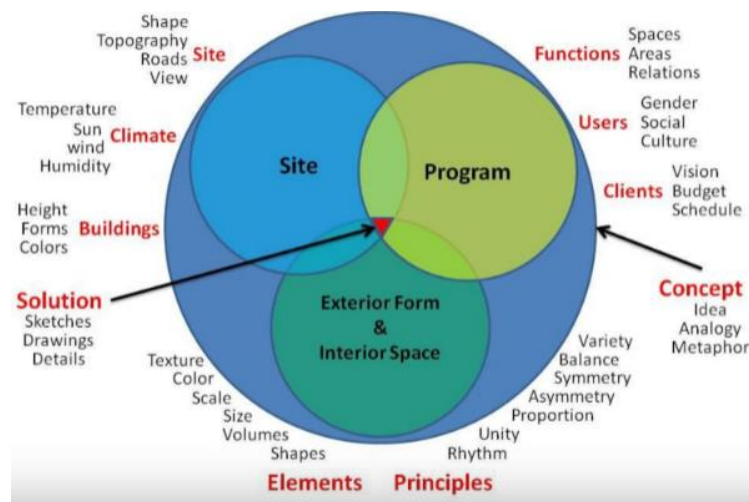
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I. THE ARCHITECTURAL STUDY FRAMEWORK

'Any fool can add; it takes a genius to subtract'

This study involves the identification, analysis and proposition for designing the FFRL new Center of Peace and Reconciliation in Lebanon.

- Considerations include function, form, space, cost, quality, time, flexibility, regulations and standards, , energy conservation and sustainability, health and safety, security, comfort, aesthetics, and countless technical requirements...



II. THE ORGANIZATION MISSION AND GOALS

1 Human/ activities and characteristics

1.1.1 Nature of organization its activities

FFRL is a locally led, diverse community of peace-seekers working primarily with the emerging generation in Lebanon to transform conflict and prevent violence. We work through our unique forgiveness and peace journey curriculum as we lead participants on a journey towards encountering God, exploring the self and understanding the 'other'. In doing so we seek to build bridges between Lebanon's many diverse communities so as to strengthen social cohesion and enable a path towards peace and reconciliation.

<http://www.ffrlebanon.org/>

1.1.2 EXECUTIVE SUMMARY AND OBJECTIVES

The present paragraph is an extract of a document edited by the foundation for forgiveness and reconciliation in Lebanon- J.Aeaves and R.Taleb

'FFRL is a locally led, diverse community of peace-seekers working primarily with the emerging generation in Lebanon to transform conflict and prevent violence.

As a country made up of no less than 17 different socio-religious sects, religion is therefore a key identity marker for people in Lebanon as well as being a cause for division and violence. As a faith-based organization, one of FFRL's primary goals is to build bridges between these many diverse communities so as to strengthen social cohesion and build resilient relationships for a more thriving and peaceful future. At the core of our work is a heart for unity within the church and to see it mobilized as a key actor for peace in Lebanon and around the world, we therefore work through the local church in Lebanon and focus on empowering and equipping youth to be an emerging generation of peacemakers.

Our projects focus on the social and psychological well-being of young people in a country that is plagued by sectarianism and a history of violence. We believe in the participation and empowerment of young people, not only for the future as they take up their various roles and responsibilities in society, but with regards to relevant issues that concern them now.

The emerging generation does not possess the baggage of the past and they are naturally future-orientated. We seek to educate them in the past so as to learn from and prevent repeating cycles of violence and division, whilst equipping them for a future defined by justice, peace and reconciliation.

Lebanon can be the beacon of hope in a largely destabilized region. Recent political protests have shown this to be true, as Lebanon's diverse people groups have come together nonviolently to unite around common goals as they seek justice and

reform; as is often the way in such revolutions, young people are at the forefront. However, at the same time there are general feelings of hopelessness amongst youths in Lebanon with regards to the current situation, they are in need of opportunities to support and empower them for a more positive future that is not defined by division, violence or economic hardship'

1.1.3 THE VISION

Underpinning the initial and continuing vision is a true sense of community, that this center would not just be a project or a place for programs and activities to happen, but a living community that seeks to grow, learn and serve the surrounding communities together.

It is FFRL's hope that whether people come from near or far, this would be a place known for its hospitality to all who enter, no matter who they are or where they come from. FFRL wants to build this center because we recognize the huge need for having a dedicated space for mutual encounter between diverse communities in Lebanon.

Up until now FFR have worked through local churches, centers and by hiring various venues. However, there is a growing need to have our own unique space. Having our own center would allow us to create a mutual, safe space for diverse communities to gather, be that for workshops, camps, conferences etc. It is also core to how we work, we want to be centered around the community, this is difficult to do when we are moving from location to location. We receive a number of outreach teams each year who assist in our work, this would therefore also enable us to have a large base that could accommodate them, whilst also being the center of operations for our projects.

The local communities that we work with in Sidon are very supportive of the idea of having our own center. Similarly, the local Bishop and Sheikh have expressed support in such a center being established in the area.

1.1.4 IMPORTANT CONSTRAINTS OR OPPORTUNITIES

The center would also act as a safe environment to the more vulnerable and impoverished communities that we work.

Underpinning our vision for this center is our long term, sustainable goal of opening up the building to be a resource for the varying needs and desires of local communities. What this means is that beyond using the center for FFRL's our own peace-building programs, we want the center to be a prospect for education, social enterprise and economic development.

As well as this, the center will be a renowned peacebuilding hub for other communities, organization and institutions from across the region to utilize; a truly unique prospect in Lebanon and something which local communities can take pride in as a beacon of hope where diversity is embraced and peacefulness is given space to flourish.'

1.1.5 LEADERSHIP

- Ramy Taleb – Director
- Roula Taleb – Programme Coordinator/Administrator
- Gilbert Al Khoury- head coach Play for Peace sports initiative and schools' curriculum facilitator
- Walter S. Nicora: Community Nursing and Community Counselling

<http://www.ffrlebanon.org/staff/>

1.2 Number of person using the facilities

| Total number of users | Today | Tomorrow |
|-----------------------|-----------------------|--------------|
| | 90 visitors +10 stuff | 150+15 stuff |

1.3 Activities in which they are likely to engage

| | Activities | Required place | Required spaces |
|----------|--|-------------------------------|---|
| A | Team building | Exercise indoor and outdoor | Workshop and or a lecture room outdoor landscape+ services and facilities: kitchen + restroom |
| B | Peace leadership camps | Exercise indoor and outdoor | Same activity A+ Accommodation+ camping |
| C | A 5month training program offered by DTS school | Indoor and outdoor activities | Same activity A+ Accommodation |
| D | Play for peace: training youth on futsal and how to advocate for peace | Futsal court | Futsal court |

III. NEEDS DEFINITION

1.1 PROJECT DELIVERY AND OUTPUTS

| DELIVERY | OUTPUTS- GOALS |
|---|--|
| <i>Offering a mutually shared and nurturing space</i> | <i>Fostering common ground and understanding between these diverse and divided communities</i> |
| <i>Providing training & development/</i> | <i>Achieving conflict transformation and violence prevention</i> |
| <i>Creating a valued source of optimism and opportunity</i> | <i>Serving both the physical and the spiritual needs of the local communities and people</i> |
| <i>Addressing the serious sectarian division in Lebanon</i> | <i>/ Building, and then, sustaining the vital bridges between these local communities</i> |
| <i>Positioning a physical home for FFRL and its core projects</i> | <i>Continuing our Foundation's unique forgiveness and peace journey curriculum; a journey we've been implementing with divided communities in Lebanon for past few years</i> |

1.2 SPECIAL USER NEEDS

1.2.1 COMMUNITY ORIENTATED SPACE:

When considering profit-generating initiatives, FFRL will build on the vision of making the center a very relational, community orientated space and establishing a Centre that's self-sustaining and not reliant on external funding. The Lebanese economy has long been reliant on income from overseas; for the current economic situation to improve it needs more locally-led, thriving business prospects. FFRL therefore believes a self-sustaining business model that also benefits local communities would be a good influence to surrounding communities/society in general. Maximizing usage of center's floor space and timetable to the communities' needs is crucial to this.

1.2.1.1 Play for Peace football project:

Making the Centre the base for FFRL's sports initiative and enlarging this program by welcoming others to host football tournaments/sports events for clubs & communities from throughout Lebanon will bring in additional income for Centre use & elevate the Project's profile.

1.2.1.2 Conferences, events, camps:

FFRL will promote the Centre as a key venue - something unique and needed within the target area. FFRL will utilize their network with religious institutions/other NGO's in Lebanon and throughout the Middle East to promote this. This will not only support extra income but also help to build a wider network with other institutions, organizations and communities, and involve them in our peacebuilding initiatives contributing to our peacebuilding aims within the wider ME region.

1.2.1.3 Accommodation:

FFRL will pursue the operational plan of having accommodation available for staff and volunteers. For this, the Centre will receive small contributions towards rental/living costs. As mentioned previously FFRL already receives many teams of

volunteers each year. As well as providing for visiting volunteers, we aim to make accommodation available that could be hired privately for uses such as conferences/camps/retreats etc, thus contributing to income for the center.

1.2.1.4 Community café:

A community café will generate steady income whilst also providing job opportunities for the local community. Hand-in-hand with this a food outreach program/soup kitchen project could operate to support the needs of local impoverished communities.

Language courses and education hub: With the large number of international volunteers that FFRL receive each year, it would be easy to host language courses and basic education programs for local community members, particularly refugees coming from underdeveloped and impoverished areas.

1.2.1.5 Arts/media hub:

To provide another alternative space for young people who're lacking in opportunities to be empowered and apply themselves creatively. We want to provide opportunities that give the youth a voice on society and we believe that art is one such mechanism to do this. IT also reflects back to our peacebuilding curriculum that encourages practical ways to deal with anger and hurt – creativity is one such means of dealing and expressing potentially damaging emotions restoratively.

1.2.2 PROJECT PHASES

The project is to be executed in two phases. Preliminary works are to be mutualized as much as possible. Infrastructure, utilities, pads and soil preparation for both phases are to be integrated since the beginning if the allocated budget allows it. This is to be detailed in the COST ESTIMATION CHAPTRE.

1.2.2.1 Project main functions and allocated phases

| Department | | PHASE 1 | PHASE 2 |
|------------|--------------------------------|--------------------------------------|--|
| A | Administration | 3 persons | No extension |
| | Workshops / conference | 90 persons | Possible outdoor extension |
| | Dining room | 30 persons | + 60 persons |
| | Kitchen +facilities | Adapted for future needs/ 90 persons | |
| B | Accommodation services | Kitchenette/ showers/ restrooms | Adaptation of number to future extension |
| | Accommodation | 4 dormitories 4p/dorm | 10 dormitories 4p/dorm |
| C | Community cafeteria | | 90 persons |
| | Services + facilities | | Adapted to use |
| | Art and cultural space | | 30 persons |
| | Venue | 90 persons | + 100 persons |
| D | Parking | | 25 to 30 cars |
| | Camping and outdoor activities | 20 persons | + 50 persons |

1.2.2.2 SPACES ADJACENCY MATRIX (phase 1 and 2)

| | Administration | Workshops conference | Dining room | Kitchen +facilities | Dormitories services | Dormitories | Community cafeteria | Services + facilities | Art and cultural space | Outdoor venue | Parking | Camping and outdoor activities |
|--------------------------------|----------------|----------------------|-------------|---------------------|----------------------|-------------|---------------------|-----------------------|------------------------|---------------|---------|--------------------------------|
| Administration | | Should | Should | Should | | Should | Should | Should | Should | Should | Should | Should |
| Workshops conference | | | Must | Must | Maybe | Maybe | Maybe | Should | Maybe | Should | Maybe | Maybe |
| Dining room | Should | Should | | Must | Maybe | Maybe | | | | Should | Maybe | |
| Kitchen +facilities | | | Must | | | | | | | Maybe | | |
| Dormitories services | | | | | | Must | | | | | | |
| Dormitories | | Should | Should | Should | Must | | | | | | | |
| Community cafeteria | | | | | | | | Must | Must | Must | Must | |
| Services + facilities | | | | | | | Must | | | Must | Should | |
| Art and cultural space | | | | | | | | Must | | | | |
| Outdoor venue | | | | | | | Must | Must | | | Should | |
| Parking | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Should | Should | Should | Should | | Should |
| Camping and outdoor activities | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe | Maybe |

| | |
|--------|--------|
| Must | Must |
| Should | Should |
| Maybe | Maybe |

IV. SUSTAINABILITY AND DESIGN CONSIDERATIONS

1 STRATEGIES AND GOALS

1.1.1 Design for Sustainability

A sustainable building is a structure that is designed, built, renovated, operated or reused in a resource-efficient manner. Sustainable buildings are designed to meet certain objectives such as protecting occupants' health and well-being, improving employee's productivity, using energy, water, and other resources more efficiently, and reducing impacts on the environment

1.1.1.1 Use Durable and local Materials while reducing the number of material by optimizing building component

Rethink, Reuse, Reduce, and ultimately Recycle. It is these 4 R's that embody the concept of selecting the project materials.

RETHINK is about changing how we think about things. It's about rethinking merely aesthetic design decisions and minor luxuries to investing in **more sustainable practices** that can impact the life of the building. It means working with more local materials, seeking to understand the most diverse design constraints, and finally making better, more informed decisions.

REDUCING mean decreasing waste generation at the site by opting for dry building systems. Reducing may be particularly effective when the need for cooling or heating is eliminated by correctly specifying materials, or the carbon footprint is significantly decreased by utilizing a material produced closer to the job site.

Hence the project revisits the traditional masonry work but by using a new sustainable and high energy efficient material that do not necessarily required a plaster finishing.

Using the TAKARA hollow blocks allows us, while achieving a sustainable architecture, to reduce construction waste, reducing construction time (isolation, wall, and plastering in one element) while offering an innovative design reclaiming a modern identity.





Anticipate and optimize the flow of mechanical and electrical supplies allows avoiding the permanent use of false ceilings as much as possible. This offers to the living spaces a volume of 3.00 m height instead of 2.7. The spatial quality of these spaces is increased.

REUSE is addressed in the reuse of materials such as: recycled timber palettes, local bamboo, steel trellis used traditionally for vine shading, OSB timber for partition walls, etc.

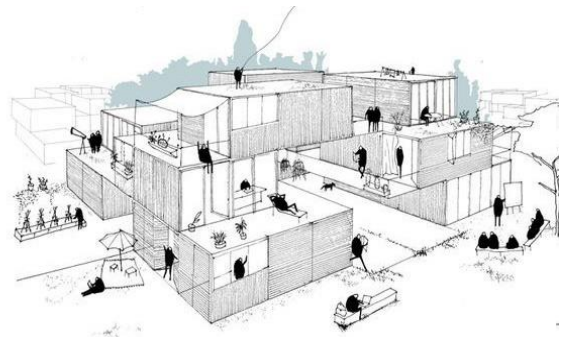
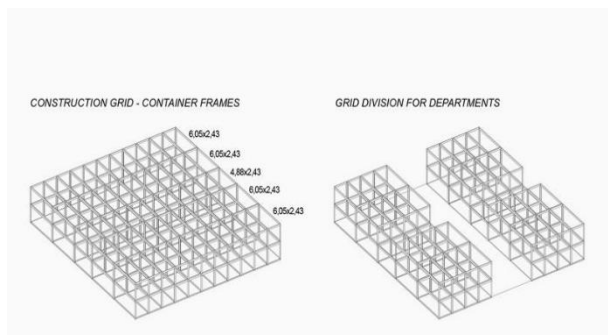
1.1.1.2 Designing a Modular Architecture

Modular design or “modularity in design” is a design approach that subdivides a system into smaller parts called modules or skids that can be independently created and then used in different systems.

A modular system is characterized by functional partitioning into discrete scalable and reusable modules, rigorous use of well-defined modular interfaces and makes use of industry standards for interfaces.

The benefits of modular design are flexibility in design and reduction in cost.

Modularity means using the same module in multiple configurations enabling a large variety of designs without using many types of components. This modularity brings several advantages such as reduced capital requirements and economies. Through modularity, we can achieve various designs, while achieving low-cost for development, as well as cost savings in design and construction.



1.1.1.3 Adopting only local techniques of construction using local materials and workforce

By adopting a responsible design strategy, we participate in empowering the communities by employing a mainly local workforce and utilizing local materials. By providing training opportunities for local workers and artisans, and by using materials sourced on site whenever possible, we transform the project into a tool for sustainable progress. The project might involve local people in all phases of the construction process, making sure the project is designed for the community. This also ensures that the local community knows how to physically maintain the buildings themselves.

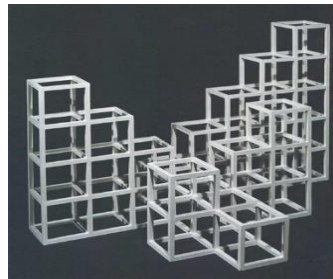
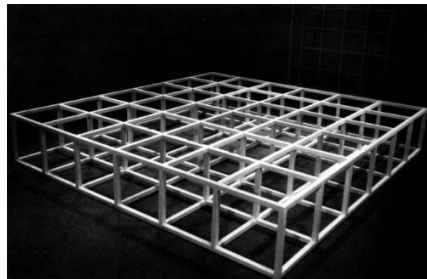
We need to ask about the human handprints in the built environment, which is a thing made by people that includes materials extracted by people, and is ultimately used by people.



1.1.1.4 Avoid Over-Designing- Structural efficiency

Standardizing the superstructure and the enclosure:

A regular structural grid not only saves time on site in terms of marking out and layout, but also saves both areas and material. This standardization offers the possibility of pre-manufacturing the columns and beams as much as possible in the workshop and lightening the worksite on site.



1.1.1.5 Optimize usable areas and reducing circulation.

Adopting a clean geometry, prioritizing functions, and grouping or aligning technical elements allows surfaces to be optimized. The gain in surface area can therefore be attributed to living spaces.

- **Increasing space efficiency:**

The 'clean geometry' and the regular grid allows us reaching a high level of efficiency in this project; Total built up area= Total circulation= etc.... / ratio=...GSF/NSG/USABLE AREA

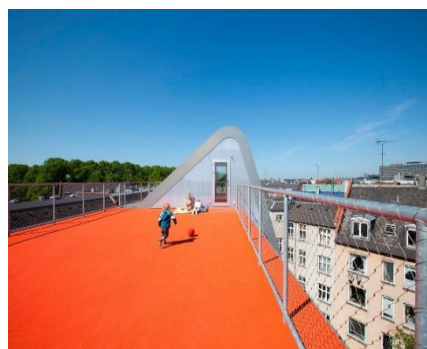
- **Using the fifth façade of the building:**

The program expresses the need of a football pitch. The playing field (pitch) should be 100–130 yards (90–120 meters) long and 50–100 yards (45–90 meters) wide. For international matches, it must be 110–120 yards long and 70–80 yards wide. Women, children, and mature players may play a shorter game on a smaller field. The standard dimensions for these smaller pitches are 15 x 10 m, 20 x 13 m (German Football Association, i.e. DFB, dimensions), 30 x 15 m and 40 x 20 m.

Given the slope of the site and the importance of the cut and fill works needed, we thought about adapting the roof of the building for receiving a small football pitch. Even if this operation requires some adaptation of the highest slab, this remains much cheaper than the slope adaptation.

Both, the roof of the conference room in phase 1, and the cafeteria and art space in phase 2, can receive this activity.

If the football pitch taking place on the roof of phase 1 building, the roof of the building in phase 2 can be dedicated to an open terrace cafeteria dedicated for events in summer and spring semesters.



1.1.1.6 Using the slope to integrate a shaded parking

Integrating the parking under the building 2, allows us to benefit from the building's footprint to reduce the parking visual impact and cost on the infrastructure.

1.1.1.7 Involve the youth in the project development construction and maintenance to improve cost efficiency and enhance the building appropriation by its users.

Other than reducing construction cost, designing a modular architecture allows the users to participate and achieve several missions during and after the construction. By integrating the youth in the construction process, they do not only learn to work together, but they also appropriate the project as their own achievement. Hence, the building became a common home for all. Adopting simple design and light material in the construction allows the users to participate in the construction of the interior partition walls, fixing and maintaining the bamboo cladding and the shading structure, and painting the walls.

The youth can also participate in the furniture making. This can be made of reused materials like timber recyclable palette. Besides reducing the equipment cost, youth will learn the process of using recycled materials, waste management, and design possibilities with low budget. This process might also lead to offer open workshops for the community addressing the awareness on material waste and the strategies of reusing them. Beds, tables, terrace furniture, auditorium seats, outdoor terrace decks...all can be made by the youth using recycled timber palettes.



1.1.2 DESIGN CONSIDERATIONS

1.1.2.1 Environmental

1.1.2.1.1 Reduce Water Consumption

It's good to be aware of how much water our daily activities are consuming:

- The toilet: A dual flush cistern uses 3 liters for a half flush and 6 liters for a full flush. A single flush cistern uses 9 to 11 liters per flush.
- The shower: A water-efficient showerhead uses approximately 9 liters per minute. An older style showerhead uses approximately 19 liters per minute - that's 10 liters more!

Having a daily 5-minute shower with an older style showerhead uses about 36,500 liters of water a year. Knowing that the center will be used by an increasing number of guests, water consumption and water heating are two major parameters to be considered at the early stage of design.

For the center of peace and reconciliation, given the rain average in the area of Jezzine (see graph in site analyses hard and soft data), rainwater harvesting seems an inevitable option. Rainwater harvesting allows the collection and storage of rain, rather than allowing it to run off. Rainwater is collected from the roofs and redirected to tanks. The collected water can be used include watering gardens, livestock, irrigation and domestic use with proper treatment.

1.1.2.1.2 Promote energy efficiency

Energy efficient buildings can be defined as buildings that are designed to provide a significant reduction of the energy need for heating and cooling, independently of the energy and of the equipment chosen to heat or cool the building.





1.1.2.1.3 Reducing Cooling Loads and Reducing Solar Gain

- **Building orientation**
 - The buildings are oriented so as to minimize heat gain yet providing passive-solar heating during the winter and year-round daylighting.
- **Using the existing trees and other mineral material to shade the buildings**
 - Plantation and bamboo sunscreen are used to provide shade on the east and west sides of the building and the roof, where heat gain is greatest. Trellises are effective at providing shade on the east and west side of the project. Vegetation around the buildings can also serve to cool the exterior through evapotranspiration.
- **Minimizing the size of windows on east and west; limit size on south**
 - Unless well shaded, the west-facing window area are small to minimize summer heat gain. The East South window are below 12% of the floor area
- **Using low-solar-transmittance glazing to reduce solar gain**
 - Windows glazing selected are low-solar-heat-gain-coefficient or low-shading-coefficient glass to reduce solar heat gain.
- **Shading windows with architectural features**
 - Est-South-facing windows are shaded from the summer sun using an overhangs trellis structure filled with bamboo. The overhangs extend on both sides of the window to provide effective shading throughout the day. For South west and west windows, wing walls composed by the same feature are used for providing shading.

1.1.2.1.4 Reducing Conductive Heat Gain

- **By Providing adequate insulation levels.**

Wall insulation level is optimized to reduce winter heat loss and reducing summertime heat gain. To reduce conductive heat gain, insulation in the roof or ceiling is applied depending on the area.

To minimize heat loss, the walls are isolated, the higher the R-value of the insulation materials, the less heat will be lost. The recommended R-values for this project are:

- Under unheated basement slabs: r10
- Under heated basement slabs: r20
- Basement walls and headers: r20
- Above grade walls: r24.

- **Adopting a reflective and light-colored roof surface.**

Radiant barriers are generally not cost-effective. The costs and benefits should be weighed against those of additional insulation or a reflective roof surface. Two inches of insulation is roughly comparable to a radiant barrier in blocking heat gain. But choosing a reflective roof surface will keep out more heat gain than a radiant barrier.

Conductive heat gain through the building envelope can be significantly reduced by making outer surfaces more reflective. Light-colored wall siding is beneficial, but the most effective is the reflective roofing.

1.1.2.1.5 Reducing Infiltration and Ventilation Heat Gain

- **Designing a tight envelope.**

Due to the adopted modular system, the buildings' envelopes are tight which reduce both sensible and latent infiltrative heat gain.

- **Avoid the inappropriate use of ventilation fans.**

With good air flow, whole-house ventilation can be done effectively with air temperatures as high as 28°C. Ventilation for indoor air quality maintenance will also increase cooling loads, but the air exchange rate is far lower than ventilation for cooling. Ceiling fans should be used only when the rooms are occupied to reduce heat gains from fan motors.

- **Improve electrical efficiency.**

Install energy-efficient lighting, refrigerators, office equipment, and other electrical loads. Doubling the energy efficiency of lighting, for example, will reduce heat gain from lighting by 50%.

Lights, appliances, and electronics can consume a lot of electricity! Using the most efficient products will help reduce the energy consumption on a day to day basis.

As far as lighting goes, LED's cost a bit more up front but they are more energy efficient and last for up to 25,000 hours.

1.1.3 NORMS AND STANDARDS

The project is to be designed with respect to codes and standards published by the National Council of Governments on Building Codes and Standards (NCGBCS).

The project shall be constructed in accordance with the latest developments in "intelligent building" theory. According to that theory, the architectural structure, the whole range of technical installations, the internal services and the management procedures are to be integrated in such a way as to give the occupants of the building a working atmosphere that meets the specific objectives of suitability, low cost, safety, comfort and efficiency, while minimizing the impact on the environment. So from the planning phase until the keys are handed over, the building should be seen as an organic collection of elements designed in the light of its intended use and the activities to be performed in it.

V. **THE CONTEXT**

1.1 **Site location**

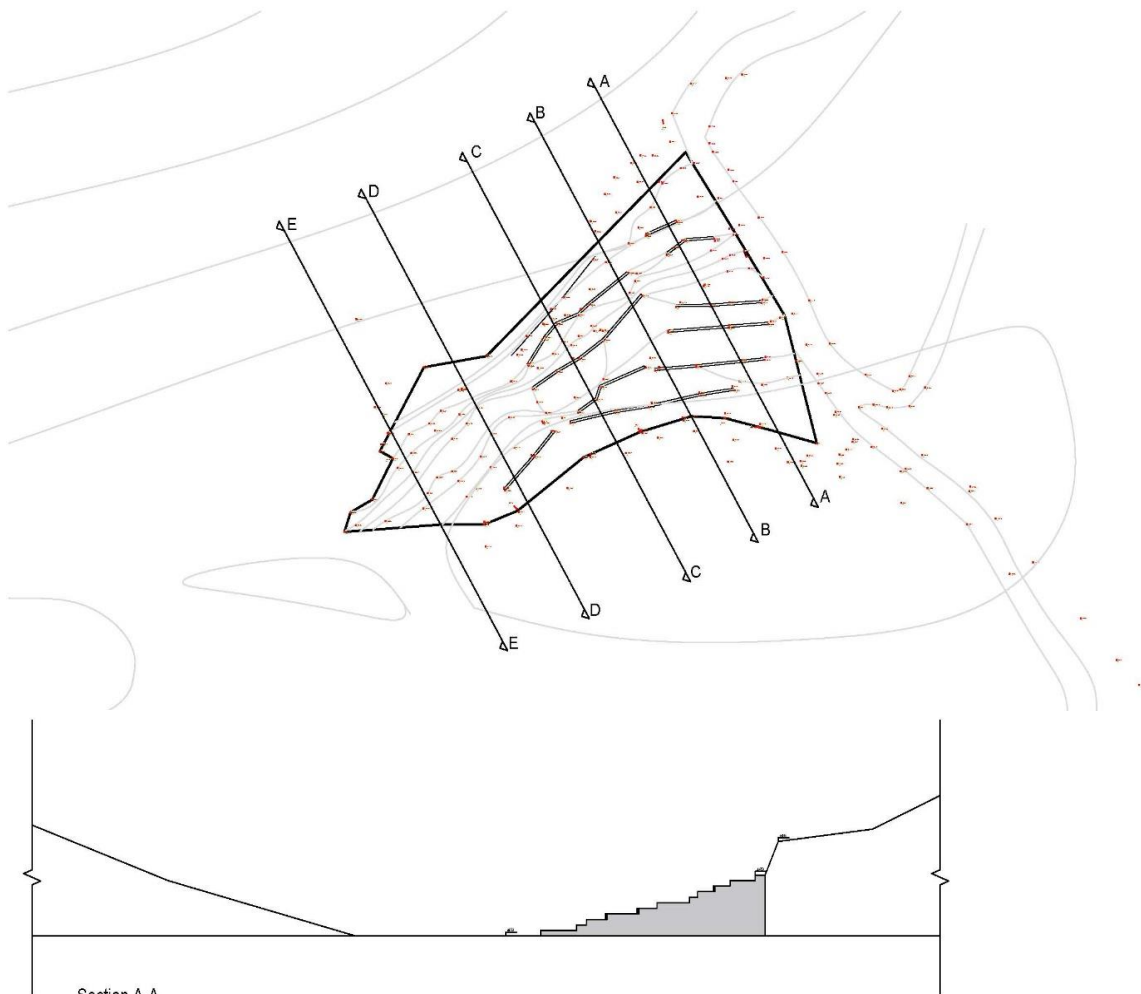
The selected site for building the new Centre of peace and reconciliation in Lebanon is located in Safariya, Jezzine, in the South Governorate 6644, Lebanon. / GPS Coordinate 33.552, 35.4946

<https://www.openstreetmap.org/#map=16/33.5520/35.4946&layers=CN>

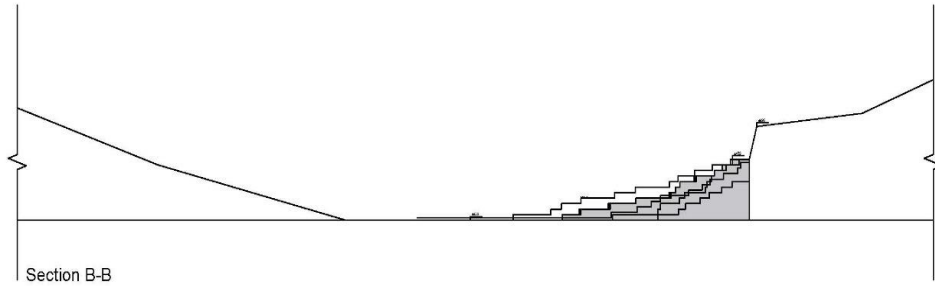


1.2 **Site Topography**

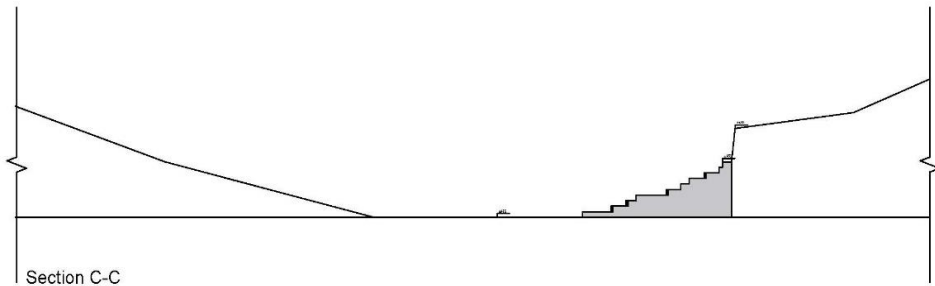
The site is characterized by its slope:



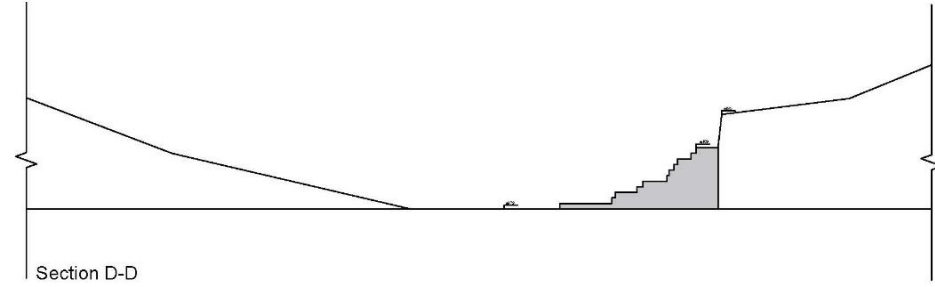
The slope for section A-A is: 22.6%.



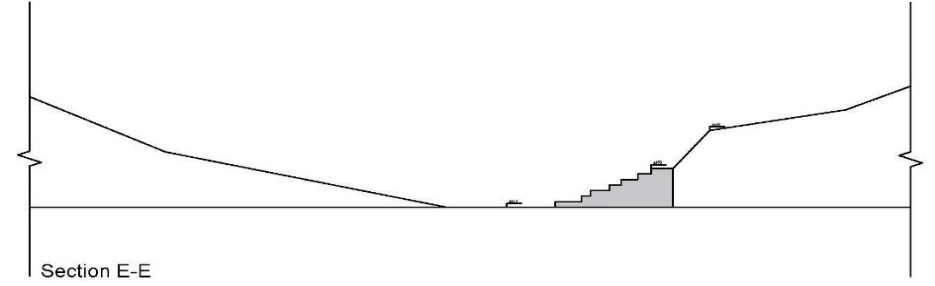
Section B-B
The slope for section B-B is 28.6%.



Section C-C
The slope for section C-C is 35%.



Section D-D
The slope for section D-D is 22.7%.



Section E-E
The slope for section E-E is 37.2%.

1.3 Natural and man made features

The terrain is rich natural features.

The man-made stone retaining wall divided the site in several platforms leading to different slopes along the site. After excavation works, these stone will be collected to be used as facades cladding and as natural retaining walls for the new platforms in camping and garden zones.

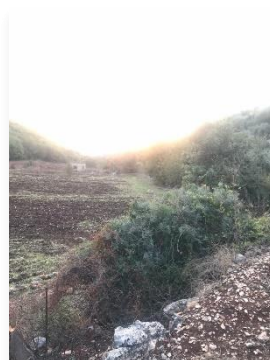
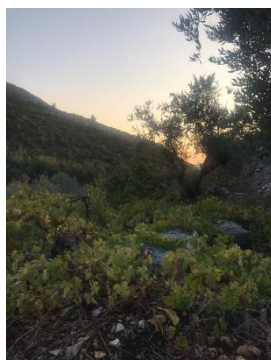
The site contains 52 olive trees plant and one fig tree plant; Given the age and size of the olive trees their displacement is possible. 21 olive trees are uprooted and displaced towards the camping, terraces and garden area.

27 Versus in the Bible mentioned the olive trees, hence saving these trees was a major parameter in deciding the buildings location in order to minimize their displacement. In that reason Building I is composed around a patio preserving an existing olive tree. This symbolic gesture is a statement highlighting that nature prevails on man-made constructions. The site is reach in colors, textures and materials, these elements will be revisited in the project, making the buildings like emerging from the ground like if they had been always here.



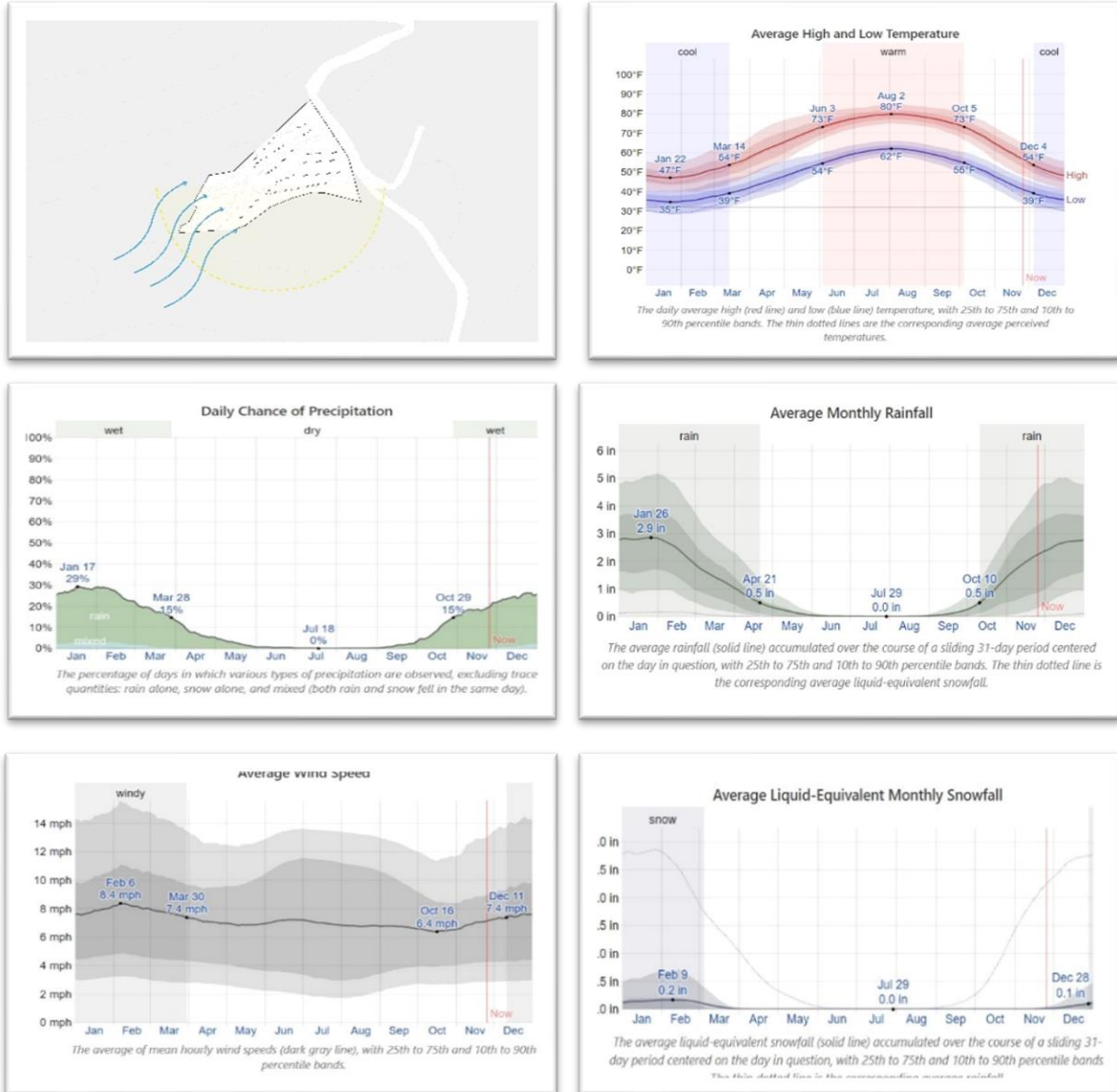
1.4 Views

Adding to the above, the views from the site are variables and generous; to the south an agriculture valley were we can see the changing colors with seasons. To the west, a view towards the see allows the site to benefit from a sunset scene. The cascade typology of the project generates several terraces were users allows people to admire these scenes.



1.5 Natural environment: Rain fall, wind, sun orientation

The analyses of existing sun, wind speed and orientation, the period and average of rain water precipitation are essential parameters on deciding on the buildings locations and orientation. These parameters are used as natural and free elements in reducing the heat gain and loss in the building while adapting the enclosure and opening of the project. The buildings benefits from the wind speed and orientation in a very beneficial way for the ventilation needed for the building. Given the decreasing average in rain water falls a system of rainwater harvesting is a must in this project.



1.6 Administrative regulations on site:

The total area of the site is 2509 m2. Based on the document communicated by the local administration;

- Maximum height 9m -The road slope adjacent to the property is used as the building's height point, hence the maximum height of the project is 6m.

VI. THE FORM

1.1 PROJECT STRATEGIES

For the center of peace and reconciliation, our strategies for design is a 'Bottom up' approach. This approach assumes that we can have a striking form and meet the program requirements. Our objective is not targeting a language or a style, but simply meeting the project outcomes.

1.1.1 Optimizing the Location of Facilities on Site

THE LOGIC BEHIND THE ALLOCATION OF PROGRAM COMPONENTS ON SITE, FOLLOWS THE LOGIC OF WHY, WHERE, HOW. This is decided on several criterial:

- Minimizing the soil excavation; slope, level, function.
- Reducing damage on the site; less displaced trees, minimizing retaining walls.
- Anticipating construction methodology; related to the construction phases and construction site planning.
- Seeking proximity with the street; reducing distance with the public utilities, sewage, electricity...
- Minimizing the impact of future extension on the existing activities; dust, noise, safety, site accessibility.
- Considering building size: the biggest building behind, not to block the views of the previously build.
- Considering the function itself; the less public building behind the more public one.
- Taking in consideration the worst scenario; If the next phase is delayed or not executed. The upper building will always overlook the site and benefit from the landscape.

1.1.2 Meeting 'responsible design' objectives:

OPTIMIZING THE CUT AND FILL - SHOWING

Quantifying excavated soil and rocks;

- Reusing the maximum in the site, creating platforms for camping and parking, filling around the building after construction... Reducing to the maximum of evacuated soil.
- Reusing the excavated stones (existing walls+ those in the soil) in creating new bearing walls for the new filled Answering program requirements while achieving energy savings, and improving environmental quality.

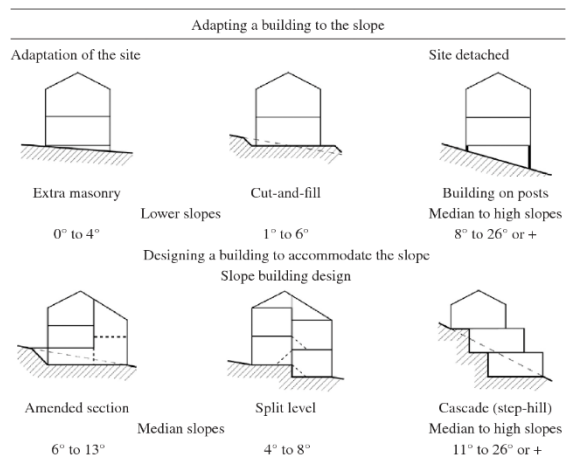
1.1.3 BUILDING WITH THE SLOPE

Compared the thermal performance and construction costs of one slope-integrated and one above ground to the slope-integrated design, the latter one achieves a better thermal behavior and provides a better thermal comfort throughout the whole year. The results of the scientific studies regarding this matter show that the slope-integrated design is better than the above ground design, as it provides cooling savings of 25% and total energy demand savings of 42% over the course of the study. The construction cost analysis indicates that the above-ground design is only 8% cheaper to construct than the slope-integrated design.

Giving that the site present a slope between 22.6 and 37.2 degrees, adopting a cascade typology with connected volume might generates an average saving of energy between 7 and 15%. Far from being a new way to control building thermal comfort, slope settlements are one of the earliest settlement configurations, having been used since the Neolithic period. Generally, these configurations provided natural advantages due to their use of south face oriented terrains that attenuate local climactic conditions. Ground-integrated constructions in slope hills minimize flood's impact, provides better ventilation, can provide better light access and achieve the best thermal performance in Lebanon's moderate climate

Table 6: Slope effect - annual savings (%) per model according to slope integration.

| Models | Levels of slope integration | | | | | |
|------------------------------------|-----------------------------|-------------|-------------|-------------|-------|--------------|
| | 0° | 10° | 20° | 30° | 40° | 50° |
| SlopeBD 01 | 0.00 | 18.81 | 28.03 | 32.43 | 35.09 | 36.35 |
| SlopeBD 02 | 0.00 | 4.65 | 19.27 | 27.58 | 32.26 | 33.53 |
| SlopeBD 03 | 0.00 | 1.93 | 5.23 | 15.81 | 17.22 | 17.63 |
| SlopeBD 04 | 0.00 | 2.22 | 3.85 | 11.00 | 15.22 | 16.97 |
| SlopeBD 05 | 0.00 | 4.17 | 7.07 | 10.47 | 13.50 | 15.93 |
| Average savings % per Slope integ. | 0.00 | 6.36 | 12.69 | 19.46 | 22.66 | 24.08 |
| Average increase range % | 0.00 | 6.36 | 6.33 | 6.77 | 3.2 | 1.42 |



VII. THE PROPOSAL

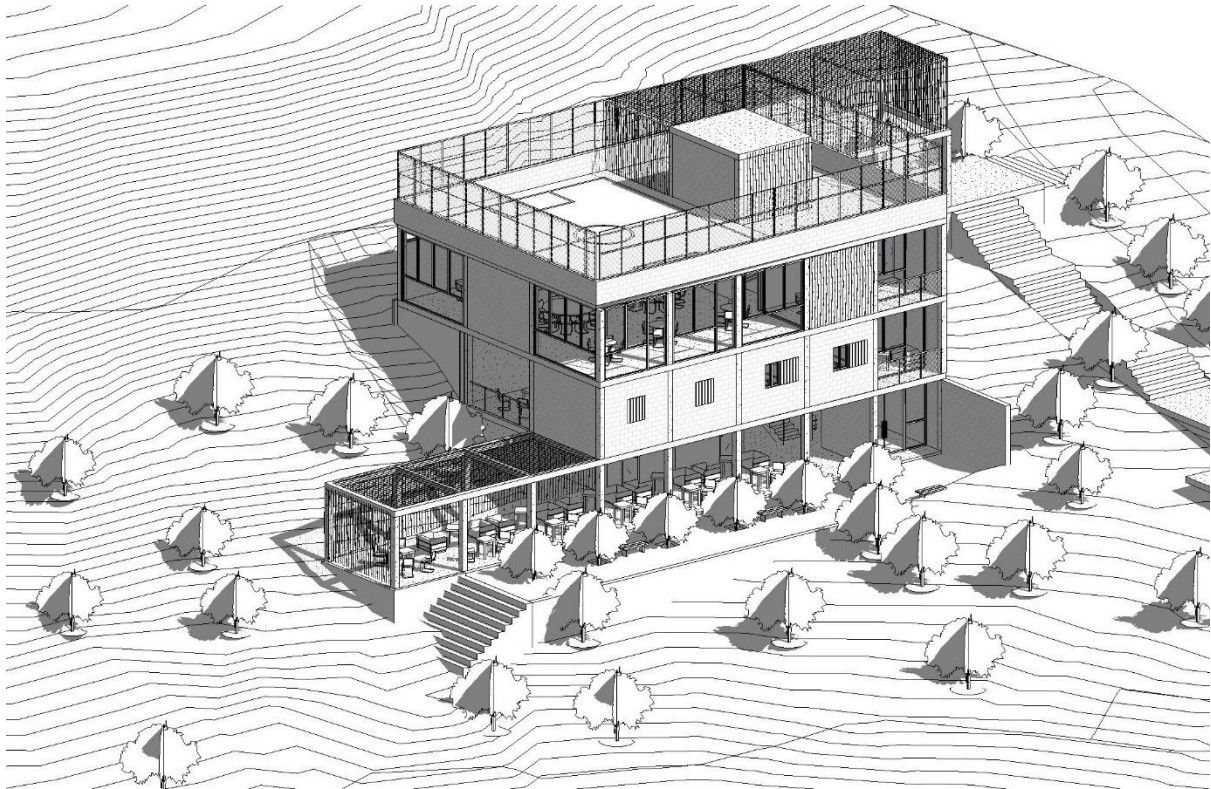
1.1 THE PROJECT COMPOSITION

The project is composed of three levels following the natural slope of the terrain.

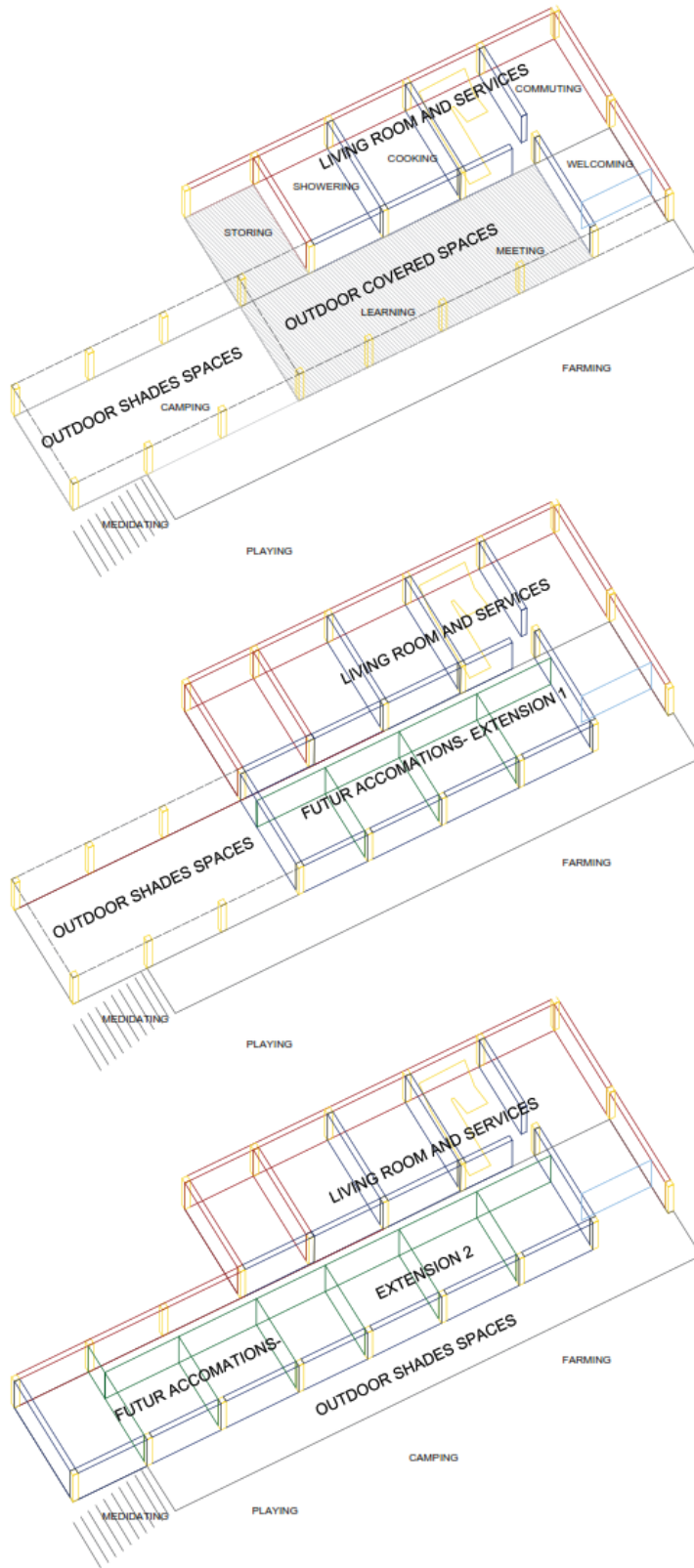
The lowest level is partially closed, offering indoor services and outdoor activities. The slab is extended towards the landscape hosting camping zones. The columns and beams are equally extended to the outside offering future possible extensions.

The intermediate floor (level 1) hosts the accommodations, kitchen and restrooms as well as a common living space. The second-floor (main entrance level from the topmost part of the site) hosts a multifunctional hall; a welcoming and modular space that can be adapted upon user's needs. This floor is designed on the bases of a co-working space, where users can modulate and adapt the setting depending on their needs.

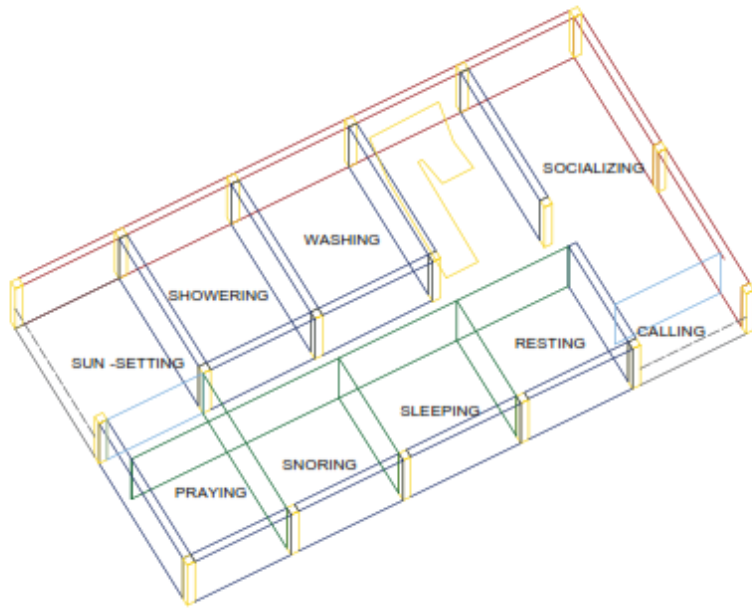
The building roof becomes the logical extension of the activities taking place indoor; day sport activities, night gathering and grills can take place on this fifth façade offering a vast view to the valley and to the sun set.



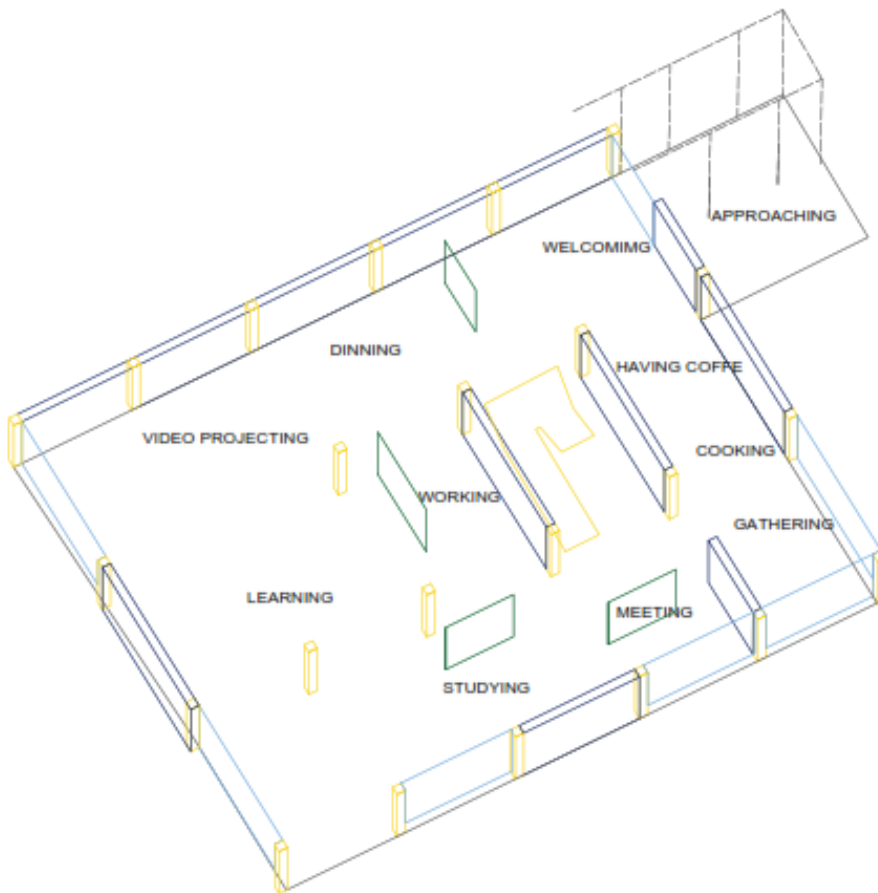
The ground floor level, showing future extensions.



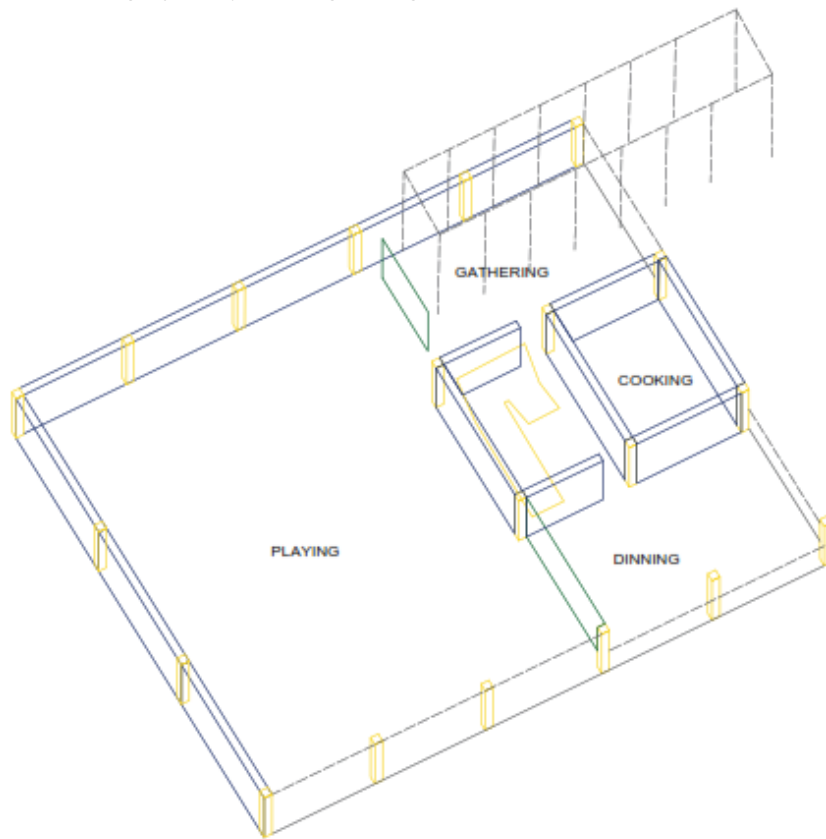
The first floor level – accommodation and related services- phase 1



The second floor level – Multipurpose hall



The roof- the living façade- Sports and gathering



VIII. ARCHITECTURAL DRAWINGS

