HOUSE4226

HOUSE FOR TWO TO SIX PEOPLE

the self-fab growing house for growing families

The SELF-FAB H::4226 HOUSE is a prefabricated and energetically self-sufficient house. Its construction is based on the use of new digital technologies and is especially flexible to allow the owner design it and build it himself.

1) With this project we're trying to break the traditional line between the buyer, the builder contractor and the real state promoter. And beside this, the SELF-FAB H::4226 HOUSE is also a provocation concerning the role of the architect in a contemporary society. With the increase of new technologies, as standard cut-pieces and prefabricated structures or modules, and an easy access of the general public to them, the time and costs of production in construction scenarios can be dramatically reduced.

2) At the same time we are seeking solutions for the problematic of rural abandonment in the south of the Peninsula Iberica. The plea of the major cities, as long with the climate changes, and the abandonment of the rural practices are transforming the rural landscapes in deserts.
The hybrid character of this project – somewhere between the mobile and the static – reinforces the mutability of the stereotyped idea of «city» or «urban place». The SELF-FAB H::4226 HOUSE, although works by it self alone, is conceived to create rural communities and therefore new micro-cosmos of semi-urban life at the countryside. The non-definitive character of its constructive method generates a larger flexibility of disposal and time of permanence.

3) Based in both purposes the SELF-FAB H::4226 HOUSE tries to be a common and reasonable option for those who pretend to leave the city and live in rural communities. Far from the traditional construction process, these housing units can be built at an affordable and less expensive price.

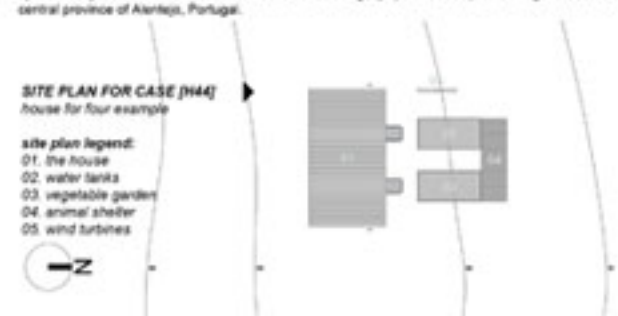
SELF FAB CONCEPT
Automatic design and self-constructed process.
The principle of the house is generated by a section line > a contour line. The client can draw a section line that fits inside the measures of the cutting-pieces machinery. Once the contour is defined, the pieces are made from a synthetic material. Although da contour line differs from one to another, the number of pieces is always the same and its way of assemblage has to be always the same: the kitchen and sanitary modules as the support base, the underground structure attached to them, the bottom and above arch structures, the floor panels, the lateral panels (exterior and interior), and the photovoltaic skin/roof-façade.

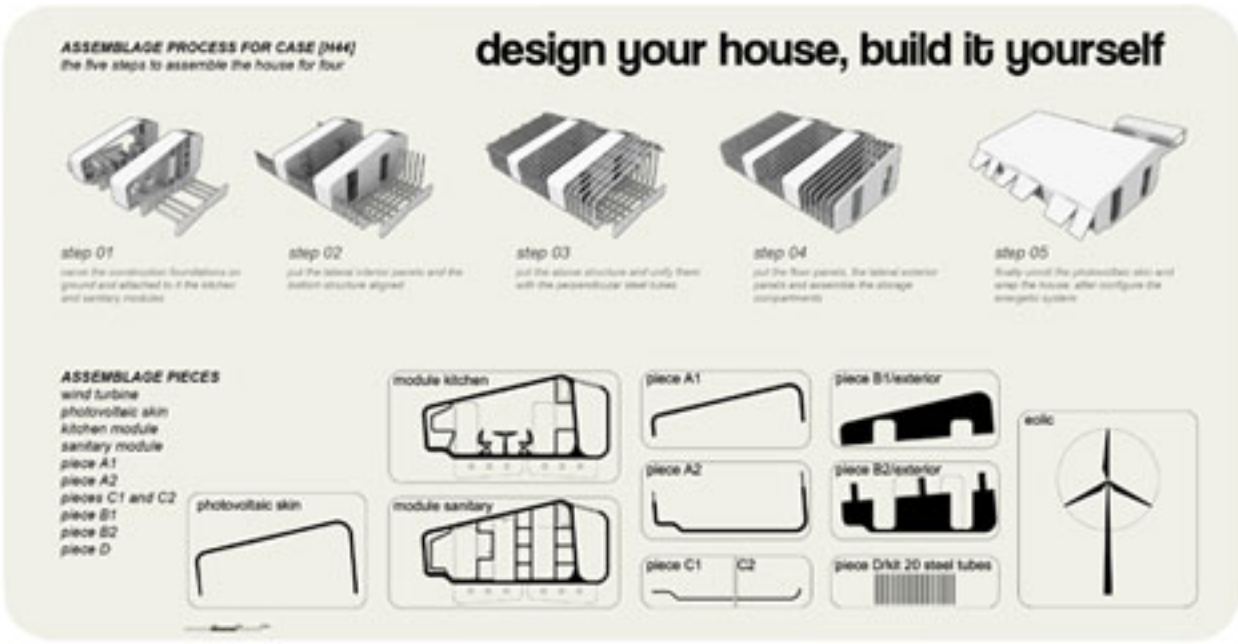
EXPANDABLE CONCEPT
In order to obtain a larger flexibility from the users, the SELF-FAB H::4226 HOUSE was developed to allow its expandability. While the family grows, the house can grow along with it. With the Self-Fab files from the initial section line, more pieces can be fabricated and therefore expand several square meters of the actual living space.

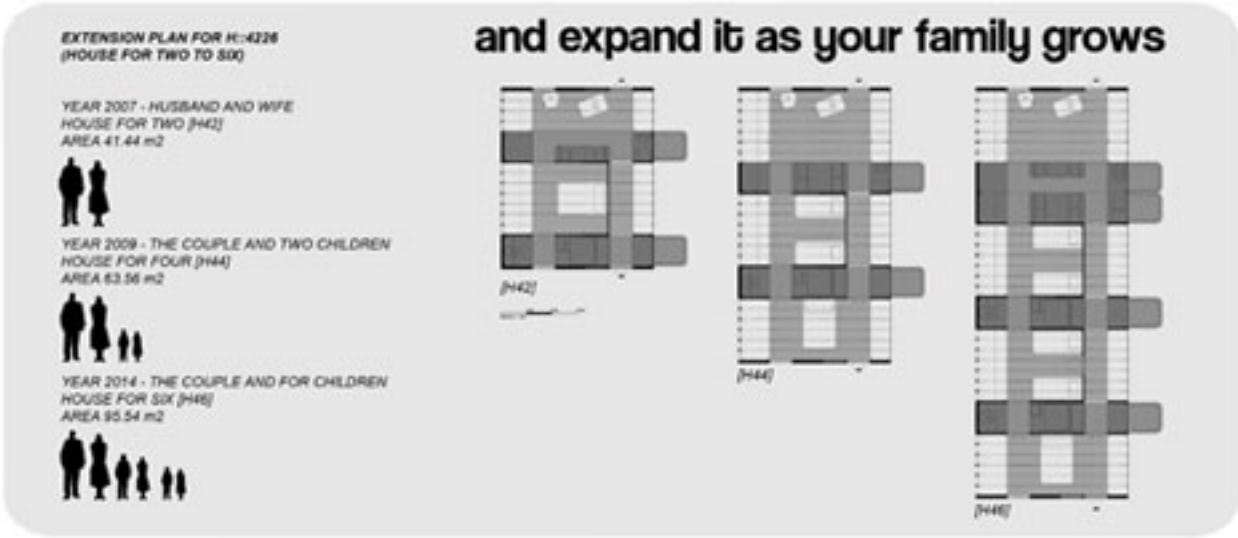
SELF SUFFICIENT CONCEPT
The house is energetically supported by eolic and solar energies. The water supply is guaranteed by the water reservoirs which storage rain water. The domestic water is filtered by an osmosis filter and the non-filtered water is used for irrigation of the vegetable garden and for the livestock animal care.
The larger amount of energy comes from the photovoltaic skin. A special material composition made of four different layers: 1) the finished plastic interior. 2) the thermal and acoustic insulating. 3) the impermeable protection. 4) the photovoltaic texture. For the specific case [H44], (house for four people), the Photovoltaic Skin (PS) area is 85m2 with 60% of opacity. With a 30º angle pointed south, the PS guarantee approximately a 9520 Kw/year.

COMMUNITY
In a self-fab community the users can share, and therefore improve, common equipment and tasks. Beside the technical equipment that provides self-sufficient resources to their own houses, the community members can add new water tanks and wind turbines for community purposes and services. They can also maintain orchards, vegetable gardens, bio-mass fields and larger animal livestock.

SITE LOCATION
Although the FAB H::4226 HOUSE is designed to operate, based on the climacteric specificities, in all the southern Peninsula Iberica, the specific site location for the implantation of the prototype is at the open country - 8 km distant of the Sº Isabel's centre village (population 650). This village is located in central province of Alentejo, Portugal.







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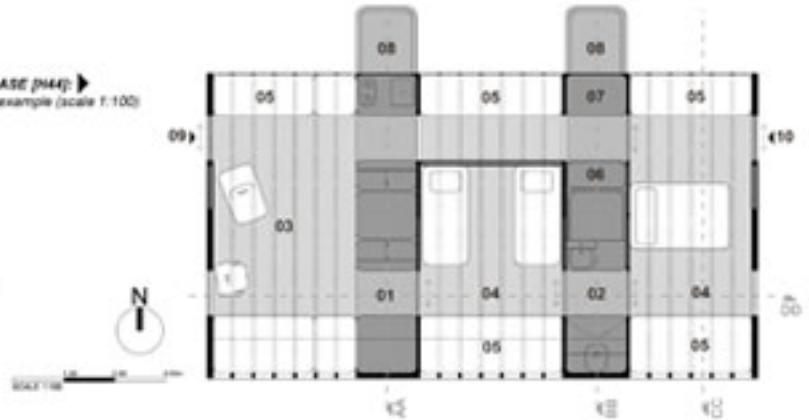
PLAN LEGEND FOR CASE [H44]:
house for four people *example (scale 1:100)*

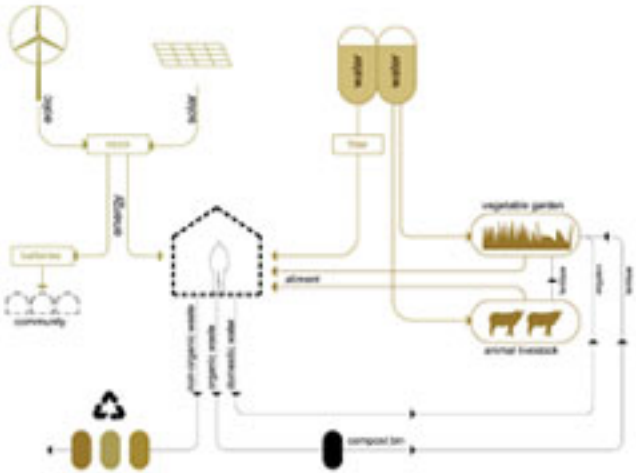
01- kitchen module
02- sanitary module
03- living area
04- sleeping area
05- storage
06- technical devices
07- recycling depot
08- water tank
09- main entrance
10- alternative entrance



ELEVATIONS FOR CASE [H44]
house for four *(scale 1:200)*

south north lateral

THE SELF-FAB H::4226 HOUSES COMMUNITY
in a self-fab community the users can share, and therefore improve, common equipment and tasks. Beside the technical equipment that provide self-sufficient resources to their one houses, the community members can add new water tanks and wind turbines for community purposes and services. They can also maintain orchards, vegetable gardens, bio-mass fields and larger animal livestock.



ENERGETIC DIAGRAM
the energetic diagram shows the energetic plan used in this version house for four people [H44]

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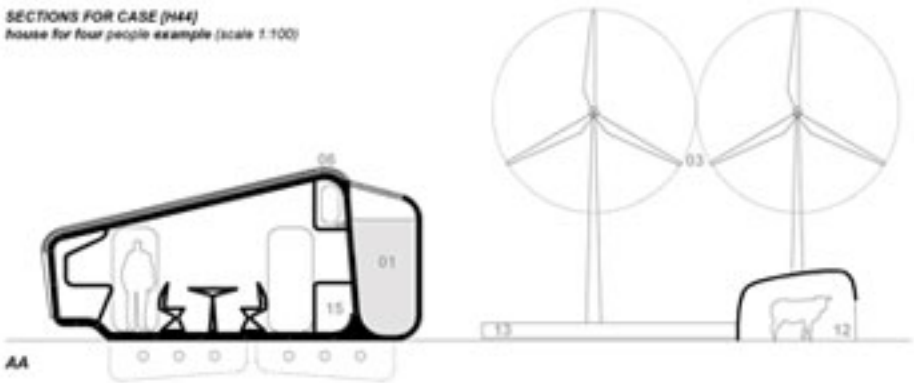
HOUSE4226

HOUSE FOR TWO TO SIX PEOPLE

the self-fab growing house for growing families

SECTIONS FOR CASE [H44]
house for four people example *(scale 1:100)*



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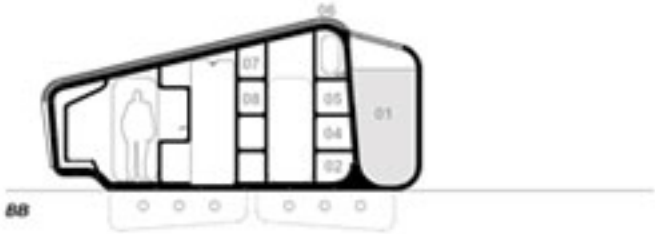

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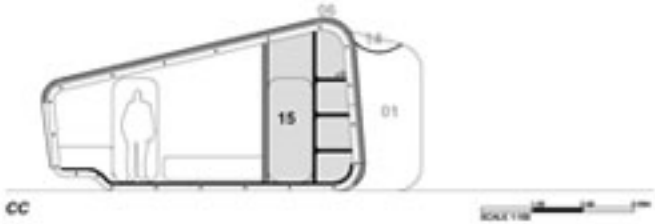
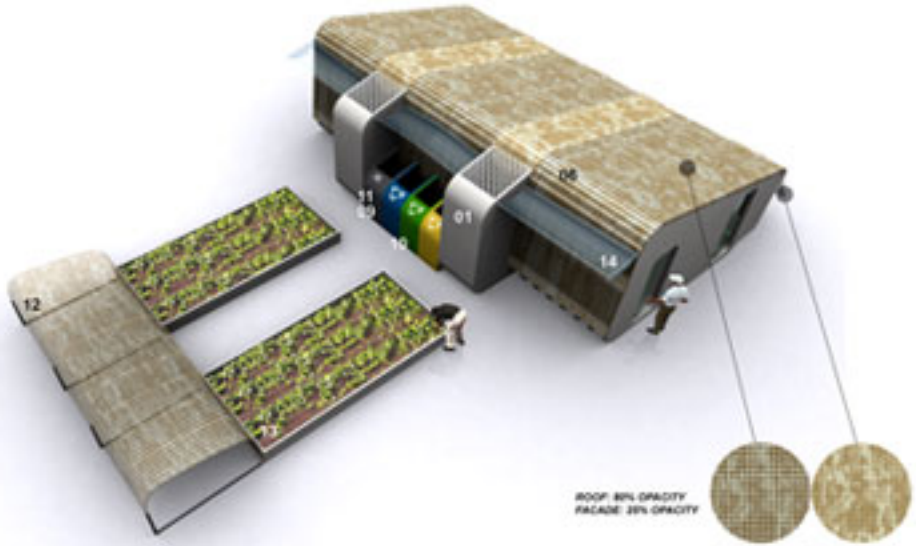


CC

LEGEND:
01- water tank
02- osmosis inversal manual filter
03- wind turbine
04- eolic generator
05- eolic energy inverter
06- photovoltaic skin
07- solar energy inverter
08- batteries
09- organic garbage depot
10- recycling depot
11- compost bin
12- animal shelter (sheeps)
13- vegetable garden
14- plastic water gutter
15- storage



ROOF: 80% OPACITY
FACADE: 20% OPACITY

PHOTOVOLTAIC SKIN
the skin is made of four different layers:
1. the finished interior
2. the thermal and acoustic insulating
3. the impermeable protection
4. the photovoltaic texture

In the specific case [H44], (house for four people), the Photovoltaic skin (PS) area is 85m2 with 80% of opacity. With a 30° angle pointed south, the PS guarantee approximately a 9520 Kw/year

ASSEMBLAGE OF ONE SELF-FAB HOUSE
members of the community assemble a house for four people

SELF-FAB HOUSE [H44] FULL ESTABLISHED
the vegetable garden in use, the animal livestock, the energetic resources from the photovoltaic skin or the wind turbines guarantee a strong autonomy to the family

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çukurova shelters

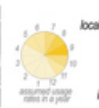
"self-sufficient self-fabricated housing programme for seasonal workers of çukurova plains

what kind of a place is çukurova? çukurova is one of the biggest agricultural regions of turkey, with great production amounts of cotton and corn. çukurova plains have the characteristics of mediterranean climate, which means hot and arid conditions at summer while the winters are warm and rainy..

who are those seasonal workers? generally at harvest time, fertile çukurova plains welcome extra man power despite inadequate living prospects to offer to seasonal workers. this inconvenient occasion leads to a difficult struggle of seeking refuge which seasonal workers are made to face with deficient possibilities. the seasonal workers who are pastoral farmers, come from nearby regions to the east. they have crowded families, also children usually contribute to the work on the fields. unpleasant living conditions contributes to even worse distribution of public services. a bid to arrange the proper housing for those people is of the leading actions can be taken to improve their current life quality.

what is all this project about? what does it have to offer? this is not a global, international, ever-true, portable, fix moduled, finished proposal. instead, it is local, vernacular, flexible, based on environmental inputs, and only for seasonal workers of çukurova plains.

it is a special combination of materials around gathered up to be something to take refuge in...



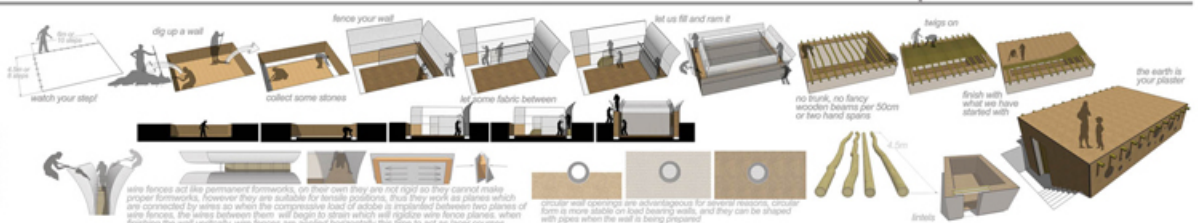
progressive the income of the user profile here is based on daily payment. that is why the project has to be gradually built, where every phase must answer some necessity with a priority sequence. it is assumed that as the time goes by the users can invest a little more of their very limited earnings to their shelters for a better life quality.

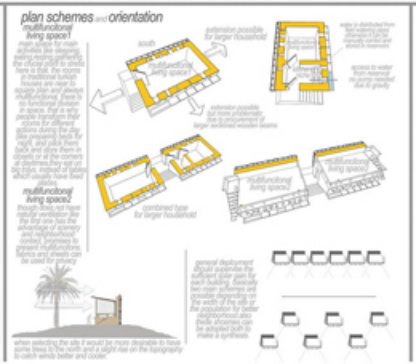
local advantages since all will be built by the users themselves, the project must take their abilities and opportunities into consideration. thus adobe is selected to be main vertical structural and envelope system. (the workers are assumed to have access to very basic agricultural tools like pickaxe, shovel... also naturally they are considered to have a close relationship with soil.) the site has access to trees where secondary structural components will be acquired from. to avoid loss of trees, wooden components are designed to be with minimum sections so that branches and twigs can be used instead of cutting trees to get large sectioned trunk wood.

infrastructure the project promises to generate limited amount of electric energy from solar and wind power. water is assumed to be collected from watering pipes of the fields. sanitation is assumed to be taken care of with communal wcs and baths.,

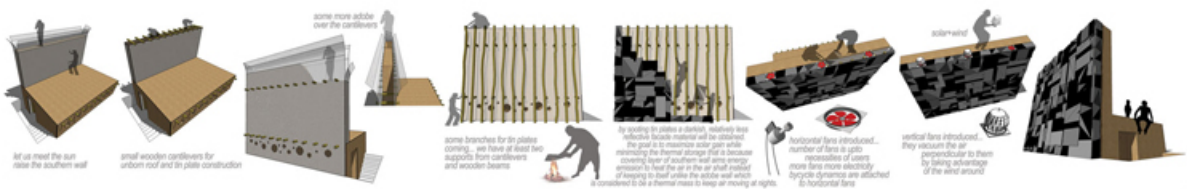
materials to be used for the first three phases

phase 1 "let me in"

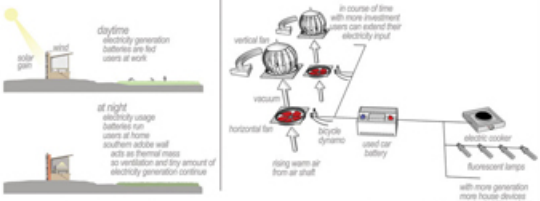


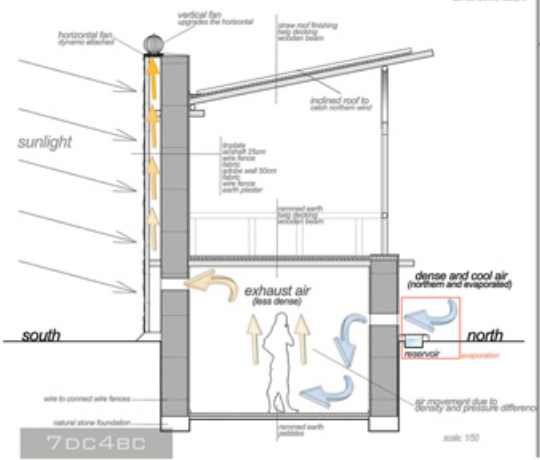


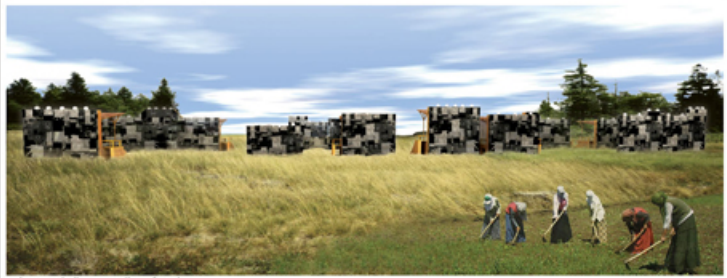
phase2
we are going to sustain it"



electricity generation and system detail







çukurova shelters southern facade

night view of çukurova shelters northern facade

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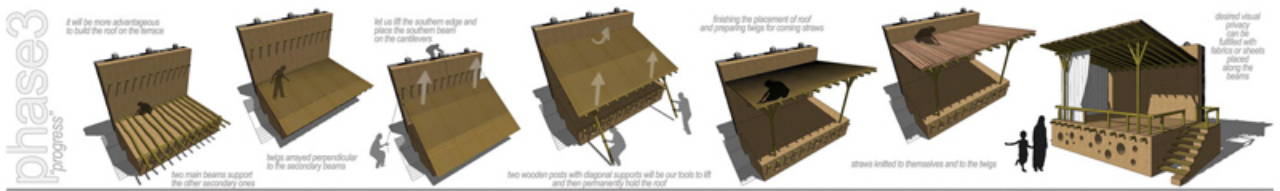
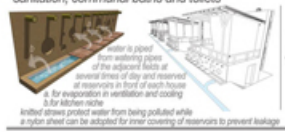
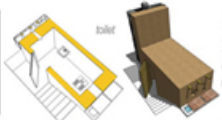
phase3 progress



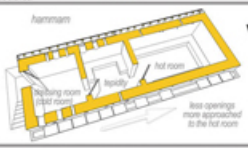
sanitation, communal baths and toilets

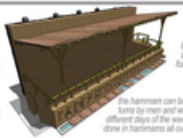


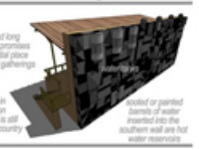


why are toilets and bathrooms are communal?

1.more practical, since there will be less sewer pits to dig and that will contribute in lowering the expenses
2.culturally familiar. in pastoral turkish houses toilets are always outside the main building. that may be because of people's cognition of feeling clean. for baths, hammams (turkish bath) are always something more than to be washed, they are places to gather and socialize. in this project such a motive is adopted for public place, to appeal to the cultural background of people



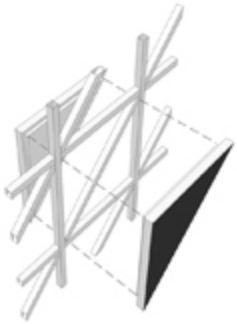




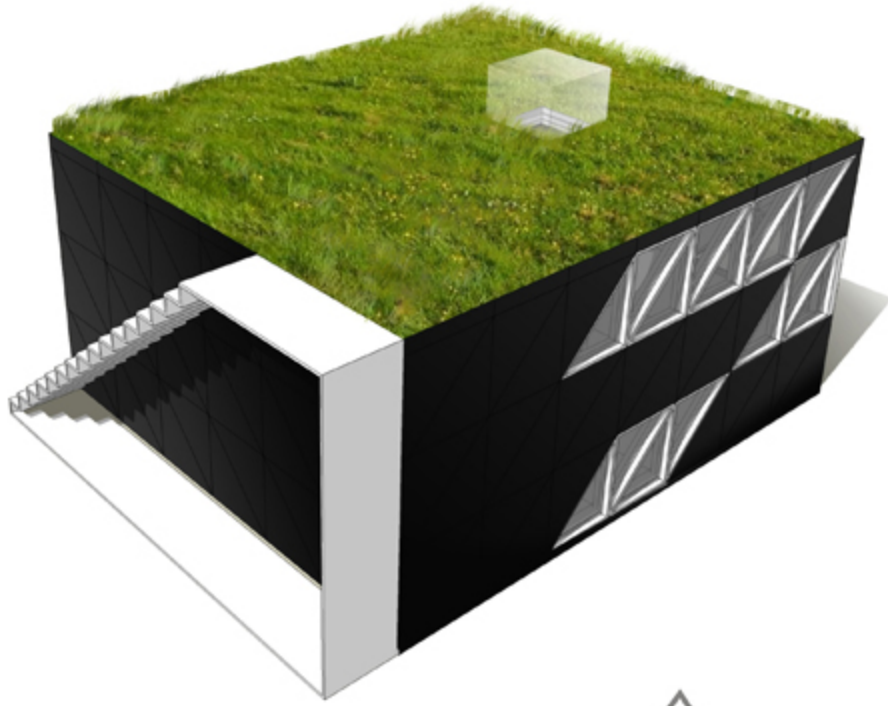
IDEA
AND CONSTRUCTION

PROJECT IDEA

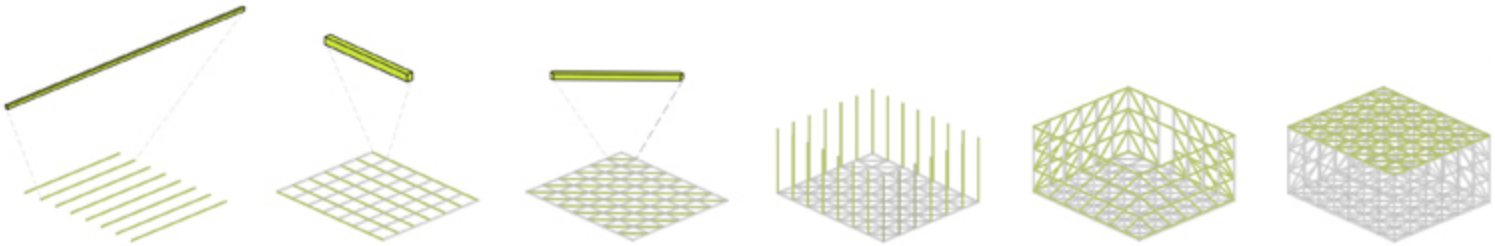
Building a house is a very intimate process. Firstly a man approached this subject using light, framework construction, which was filled afterwards, because the man was set on time.The idea of our project was to create a building, which man could quick build by himself as well as pull down and relocate. In order to this idea we used a triangle which is a statistically unchangeable as a result it is constructional independent. The construction consists of light prefabicated elements which are easy to transport and montage. A Frame of the network is filled by triangular elements, which are able to montage according to self invention.



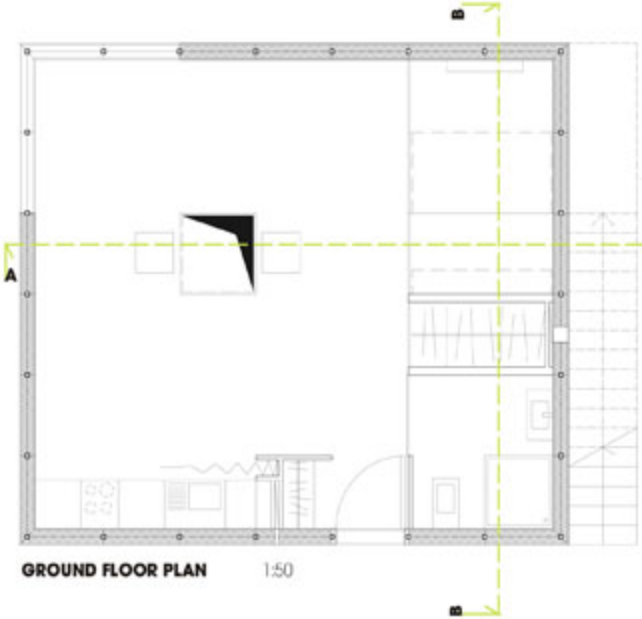
CONSTRUCTION SYSTEM DETAIL



THE SELF - FAB HOUS3



CONSTRUCTION STAGES



GROUND FLOOR PLAN 1:50

SECTION A-A 1:100

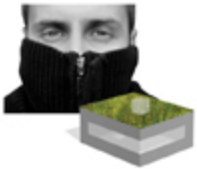
SECTION B-B 1:100

TOP VIEW 1:100

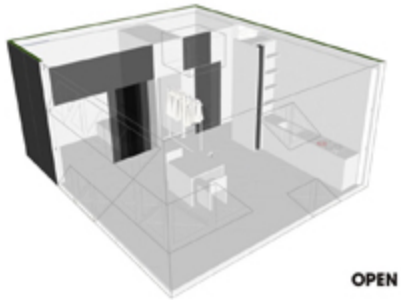
ENERGETIC SYSTEMS

The face of the elevation, which is exposed on intensive solar radiation, is for the most part transparent, while in the rest of the building we propose whole walls to reduce energetic loss. The only thing that this object needs to be efficient is a connection to water source. Our object has it's own waste- water treatment plant. The problem of gaining an electical power has been solved by using a innovative solar system devenloped by New Jersey Institute of Technology, whitch covers all triangulars in the elevation. In the building we use very efficient slit ventilation.

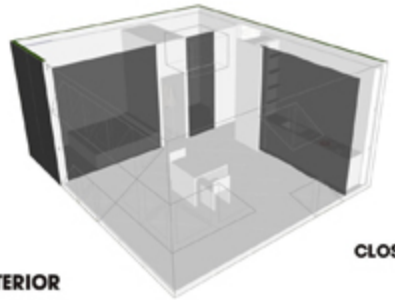
ELEVATIONS 1:100



The Project because of an constructional system adjusts to individual needs and fancy of future residents. A very important fact is an ability of creative action in order to adjust oneselfs fancies to a block of the building. It is achievable thanks to a changeable design of an elevation. Established modular system enables to determine size of the building and freely shape its structure and functional set -up. The elastic construction of building provokes us to consider the architecture which is easy to build. It enable to raise not only the single building or conglomeration of these buildings but also to create more complicated structures which join themselves both perpendicularly and horizontally. The building thanks to its universal form and various abilities of self-sufficiency is able to be located on almost every place of the world, regardless of the climate, and its resistant construction is able to endure regardless of rain, snow or earth-quake.



OPEN



CLOSED

INTERIOR

We divide small area of this buiding into zone marked out centre with using glass cube. The atmosphere in this room is crossing our mind to ancient the roman compuvium, where is run domestic life around.

THE SELF - FAB HOUS3

XL + Global

URBAN FARMING SHELTER

ECO - TOURIST HOUSING

1:3

MODEL KIT >> Self_Manufacture_Pieces

Self >> FAB >> House

L Chili River Valley +

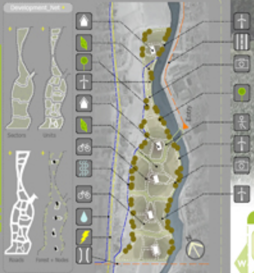
Hydrography Basins Management System (HBMS)

The Chili River Valley is located between extensives urban degraded areas with a descontrolled growth, a real threat for his destruction, because the city has given the back to the River all the time. The location presents two significant activities: the agriculture and the torism.

The main strategy merges these work sources like an unique organism, inside of an extend net of interdependent symbiotic nodes (HBMS), applicable for others agricultural zones in Peru.

So the CHACARERO (urban farmer) and the tourist work together in all phases of development (Planning, design, self-manufacture and assembled of the model kit). The building is conceived as an extension of the landcrops, and is made with tecnics, materials, and tools taken from the local context.

M Proposal Sector +



BONUS KIT !!! >> INSTRUCTIONS INSIDE THE BOX

The structures and envelopes are 100% recycled and reused, and changes according to climate variations or number of occupants. All spaces change with the time according to new needs of their inhabitants. The entire structure is a big system of heating and cooling like a biological radiator with 100% of Lo-tech performance.

Day Temperture [C°]: 22 >>Nigth Temperture [C°]: 6 >>Rel. Humidity: 30% >>Sun Hours average: 9 1/2 hrs. >>Day Wind: to W >>Nigth Wind: to E

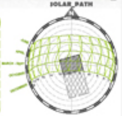
PROGRAM_Climatic Orientation +

N — W — E

Level 2	STAIRS	BEDROOM + MULTIUSE SPACE KITCHEN + DINING ROOM HYDROPONIC PLATFORMS	DRY WC
Level 1	STAIRS	SMALL FARM COMPOSTING WORKSHOP BIODIGEST ASSOCIATED CROPS	
Level 4	STAIRS	STORAGE CIRCULATION HYDROPONIC PLATFORMS	
Level 3	STAIRS	BEDROOM+MULTIUSE SPACE CIRCULATION HYDROPONIC PLATFORMS	DRY WC

S USER_Characteristics +

SOLAR_PATH



9931fe Self_Sufficient_FAB_House

THE PANELING

THE STRUCTURE

Pe01A - Pe01B > Wall-Roof > Ext. - Int.

Pe02A - Pe02B > Wall - Doors > Interiors

Pe01A - Pe01B - Pe01C >Wall> Ext. - Int.

Pe03A - Pe03B > Wall - Doors > Int.

Pe03A - Pe03B > Thermos Bottles > Ext.

Pe04A - Pe04B > Glass Bottles Wall > Ext.

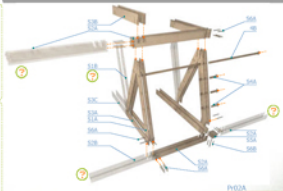
Pe04>Hydroponic Wall / Fe02>Bio-filters

Fe05 > Floors & Roofs / Fe01 > Stairs

Fe01 - Fe02A - Fe02B > Closets & Shelfs

Fe02 > Beds & Tables

>> Size's Panels



9931fe Self_Sufficient_FAB_House

The structural system(change transmissions) and paneling orientation are based in the **Castle of Cards Concept.** Composed by triangular prisms, where the paneling is fillen to the space demand (inhabitans growth) generating very stable forms, that it can increase like a big LEGO game.

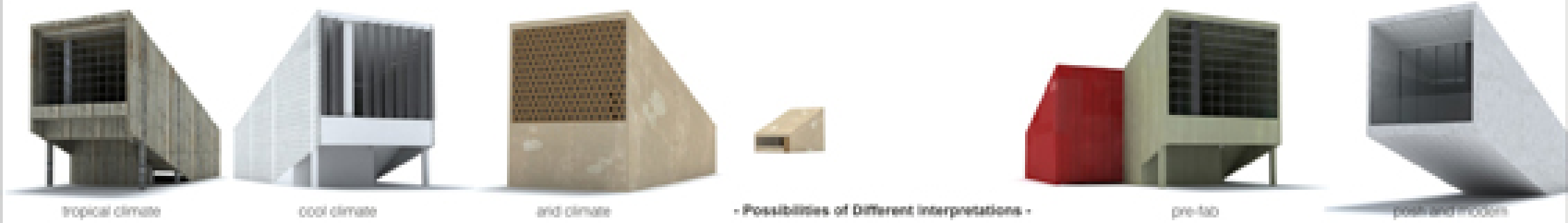
The assembled system lies in a pre self-manufacture pieces based in a digital dosing of wood substraights, with plywood products recycling from the surrounding sustainables florests, or from city's wastes. This process allows for the construct of modules and furniture. The objectives are focused on an integrated self-assembling parts without use of glue or spikes. A fitting one with one to pressure, like a big **Hi Assembling Dinosaur Toy.**


FRACTAL >> SYSTEM
House Construction:
Structure System:
Material Porosity:
CIRCULATION - 3rd LEVEL
BEDROOM / MULTISPACE - 2nd LEVEL
KITCHEN / DINING ROOM - 2nd LEVEL
3:3
>> SELF SUFFICIENT SYSTEMS
COOLING
HEATING
Water Storage
Bedrooms + Multiuse Spaces
Bathrooms - Dry WC
Kitchen
Dining Room
Workshop
Biodigest
Small Farm
Composting
Associated Crops
Sustainables Forests
Hydroponic Platforms
Thermos Radiator
Irrigation Channel (Connecting Nodes)
HEATING_SYSTEM
WINTER
SUMMER
COOLING_SYSTEM
Crossing Cooling
DRINKABLE_WATER
Hot Water
Cold Water
COMPOSTING
FARM
BIODIGEST
INPUTs
OUTPUTs
The system works with INPUTs & OUTPUTs in cyclical dynamics, when there aren't start and final. The resources re-circulate with the smallest energy and material loss, in a close improvement to itself and open process to environment.
CLOSE _ PERFORMANCE _ SYSTEM
9931fe
Self_Sufficient_FAB_House

bayanihan

/ buy-uh-nee-hun /

Rural Scene, Cagayan Province, Philippines



We boldly present this prototype to be "built by anyone and to be accessible by everyone." Our proposal is to make the concept of Self-Fab House free from any form of manufacturing that might require an industrial process. The intention is to spread the idea rather than gain from it. We propose free-sourcing or free distribution of the knowledge of reconfiguring the standards of a dwelling to become self-sufficient. The concept is to "relocate" everybody's idea of a house and encourage participation to effect a wider change we can call, **Movement Bayanihan.**

Bayanihan is a Filipino word derived from the word "bayan," meaning town, nation or community. Bayanihan literally means, "Being a bayan," and is thus used to refer to a spirit of communal community and cooperation. This is most clearly displayed in the old tradition of neighbors helping to relocate a family by getting enough volunteers to carry the whole house, and literally moving it to its new location. Since the nipa huts are now being replaced by concrete houses, the tradition is slowly disappearing.

To enliven the spirit of bayanihan, today's design and building of dwellings must be rethought. The house of today must be a model for sustainability, prompting us to develop not a design, but an archetype of a self-sufficient house. The prototype shall have an internal layout and configuration geared toward efficiency through good lighting and ventilation. The areas generally classified into two groups, namely "living spaces" and "warm spaces." Living spaces refer to the living and sleeping areas where a certain degree of comfort required is higher. The warm spaces can be described as the work areas that generate heat and humidity, such as the kitchen and the laundry areas. The configuration works by grouping the "warm spaces" on one end and the "living spaces" on the other. The "warm spaces" should open up to a large opening where it will be constantly vented. This causes a pressure imbalance in the interior, which then creates a suction effect at the "living space" that then pulls in fresh air. The effect is enhanced by raising the "warm spaces" and using the roof and the afternoon sun as catalysts. There is an option to reuse gray-water in a reservoir below the level of "warm spaces," collected from the laundry area located above the comfort room. This prototype can be used in any part of the globe that only requires minor modifications. Tropical regions can raise the floor of the "living spaces" and utilize slatted flooring that enhances the ventilation effect further by providing cool moist air from the ground. The raised structure, ala nipa hut also minimizes building footprint. Extensions for eaves address rainwater. For arid regions, the house rests on the ground. The space underneath the "warm spaces" can be used as an extra room, since it shall be enclosed. In the cooler regions, extensions and raised structure can be eliminated, provided that the configuration of "living & warm Spaces" is followed.

pre-fab then... self-fab now! fab for all!

Objective:

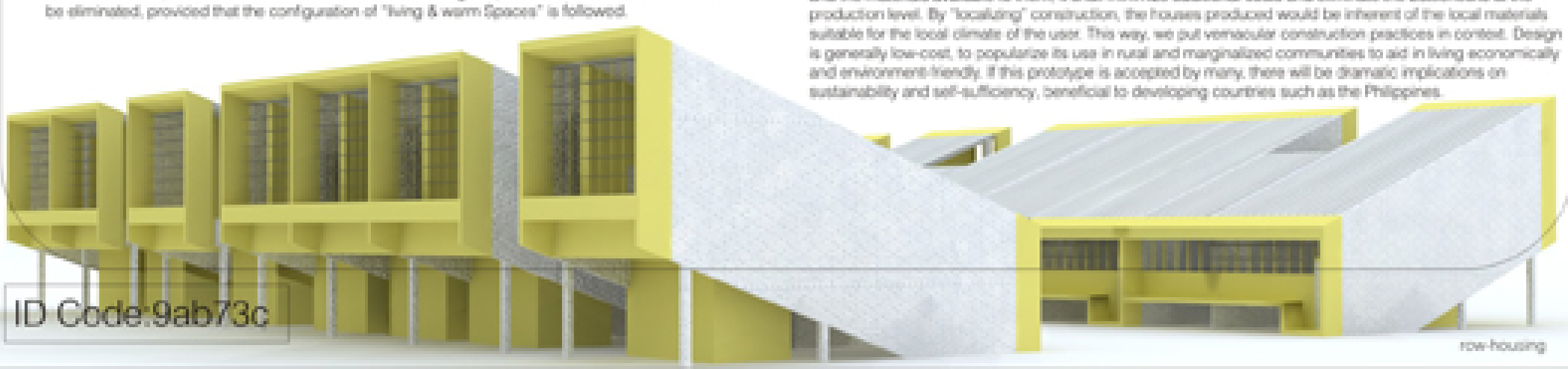
- Decentralize Production & leave it to the hands of the occupant & builder thereby maximizing potential
- To address a Worldwide Environmental Issues through sustainable housing and promote a subconscious environment friendly lifestyle

Movement Bayanihan (Distribution):

- Universal Logical Symbol based Instruction to eliminate language barriers.
- Magazine Insert, Electronic Media, Web, Print, Photocopying, Exposure through Product Packaging, Email, Spamming! Shopping Bags, Advertisements, Billboards, Etc.
- Human Scale derived anthropometric design open to parametric customization relating to human dimension regardless of size or built.
- Modular Construction with options for expansion and climate in reference to geographical location.
- A non-traditional single family dwelling unit reconfigured for good air change and day lighting.
- Simplified energy-saving design that is easy to effect.
- Designed to be spread as 2 sheets (minus the concept sheet) but sheet 2 can stand alone for mass-distribution.

Effect:

By decentralizing production and distribution, the "INSTRUCTIONS" work at the user level, reaching a wider range of people that even rural and remote areas will be able to follow. Utilizing local construction methods, and the materials available to them, it shall minimize additional costs and eliminate the bottlenecks at the production level. By "localizing" construction, the houses produced would be inherent of the local materials suitable for the local climate of the user. This way, we put vernacular construction practices in context. Design is generally low-cost, to popularize its use in rural and marginalized communities to aid in living economically and environment-friendly. If this prototype is accepted by many, there will be dramatic implications on sustainability and self-sufficiency, beneficial to developing countries such as the Philippines.



row-housing

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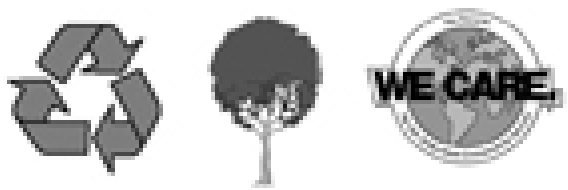
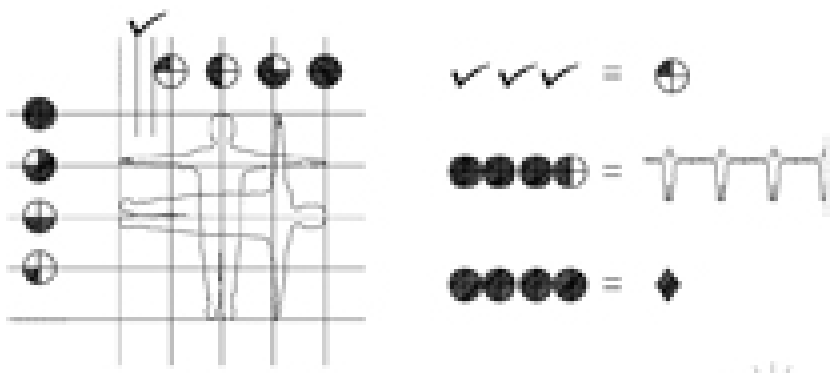
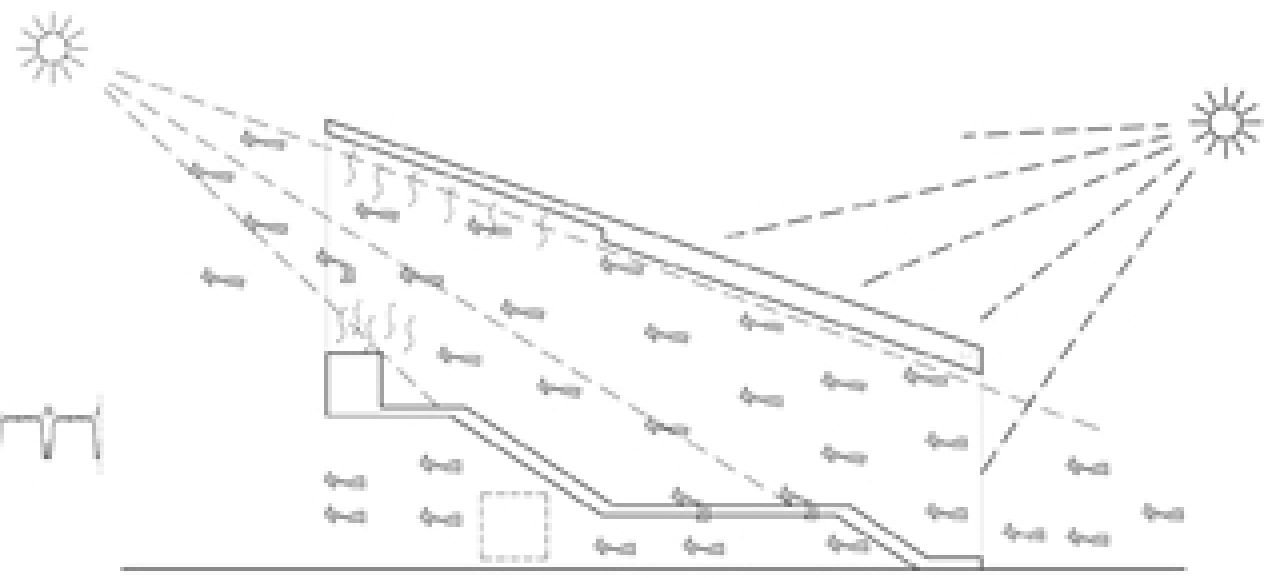
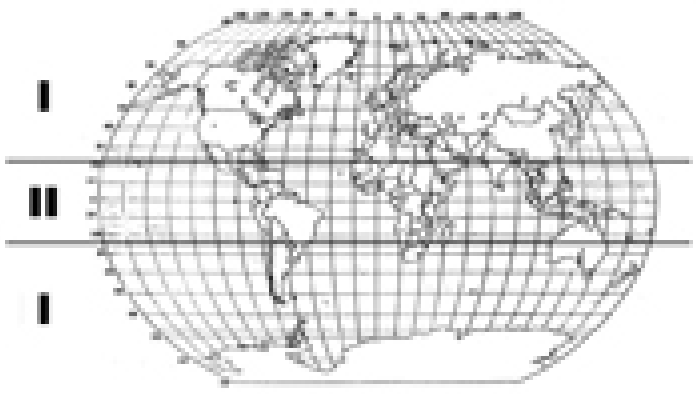
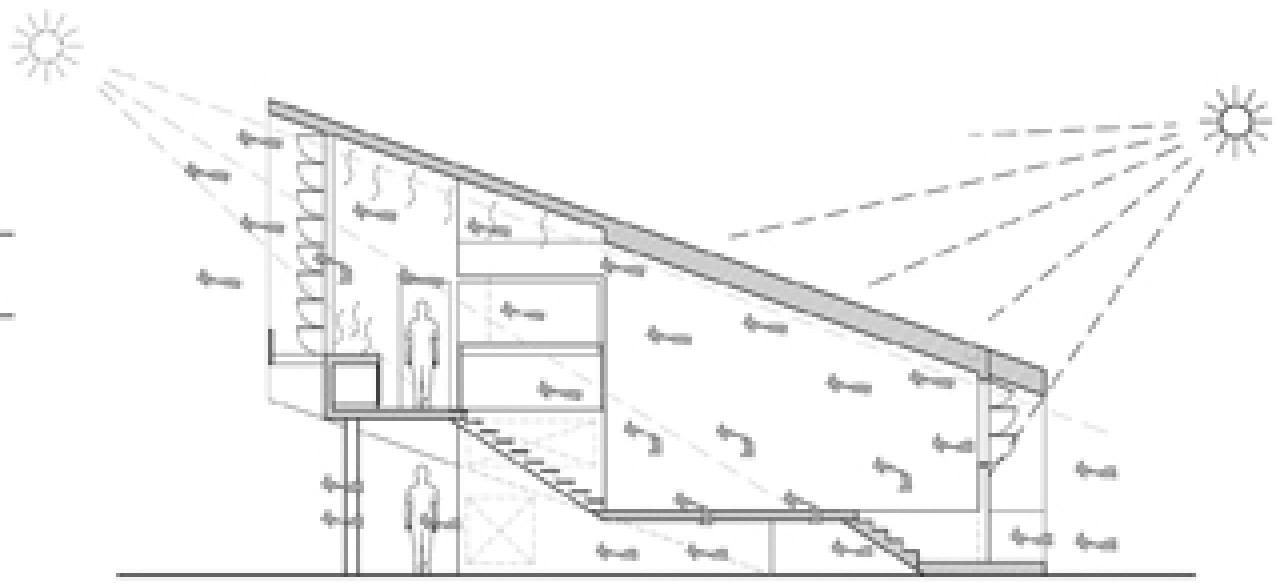






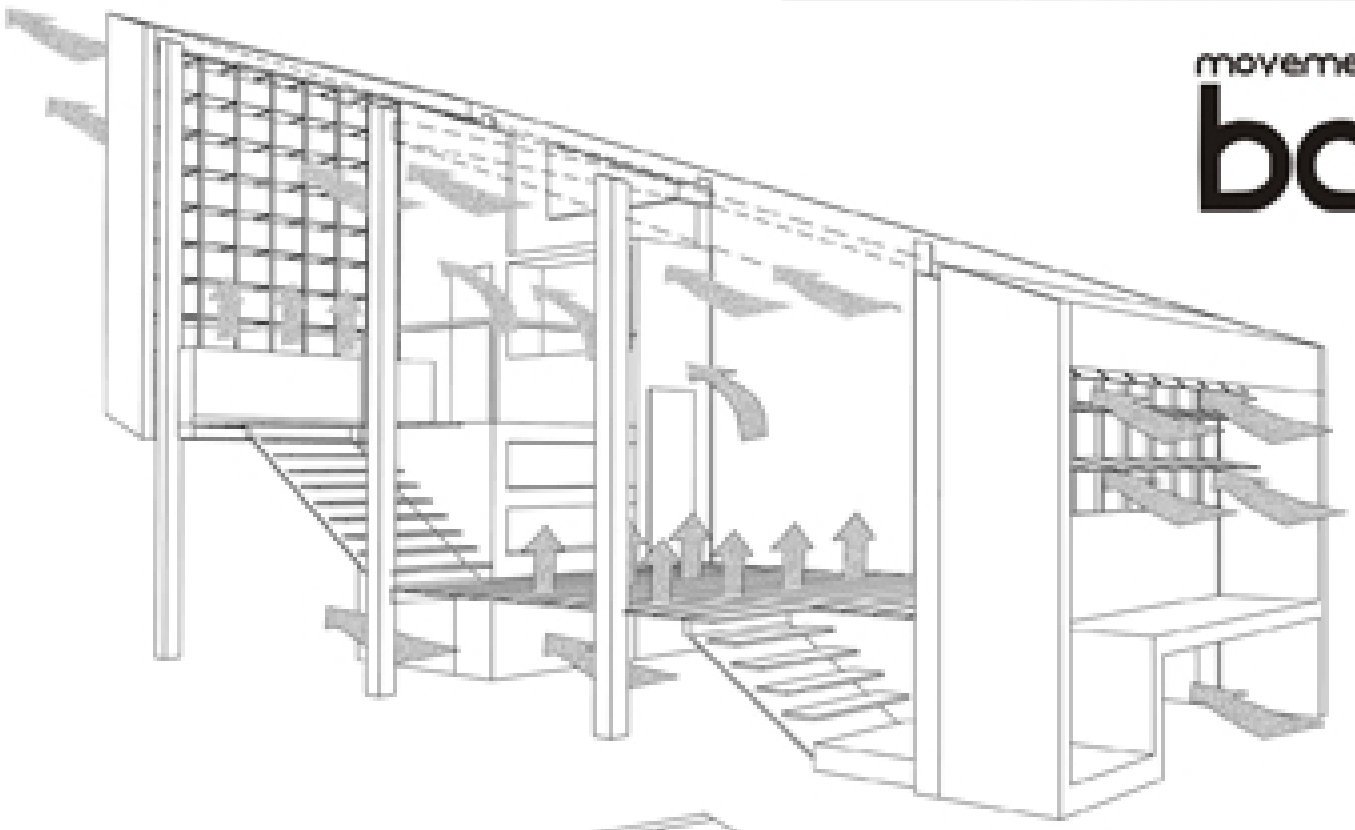


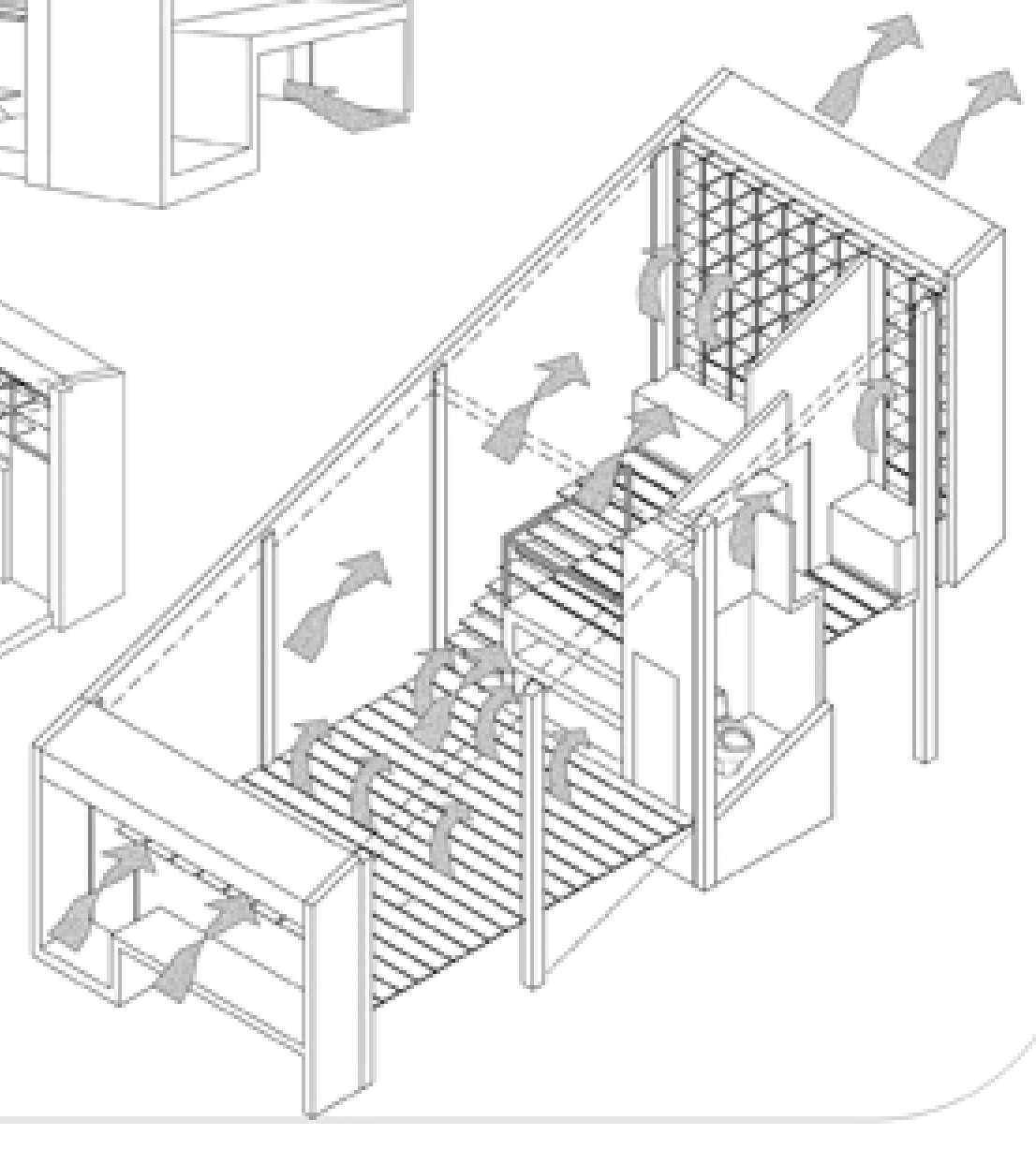


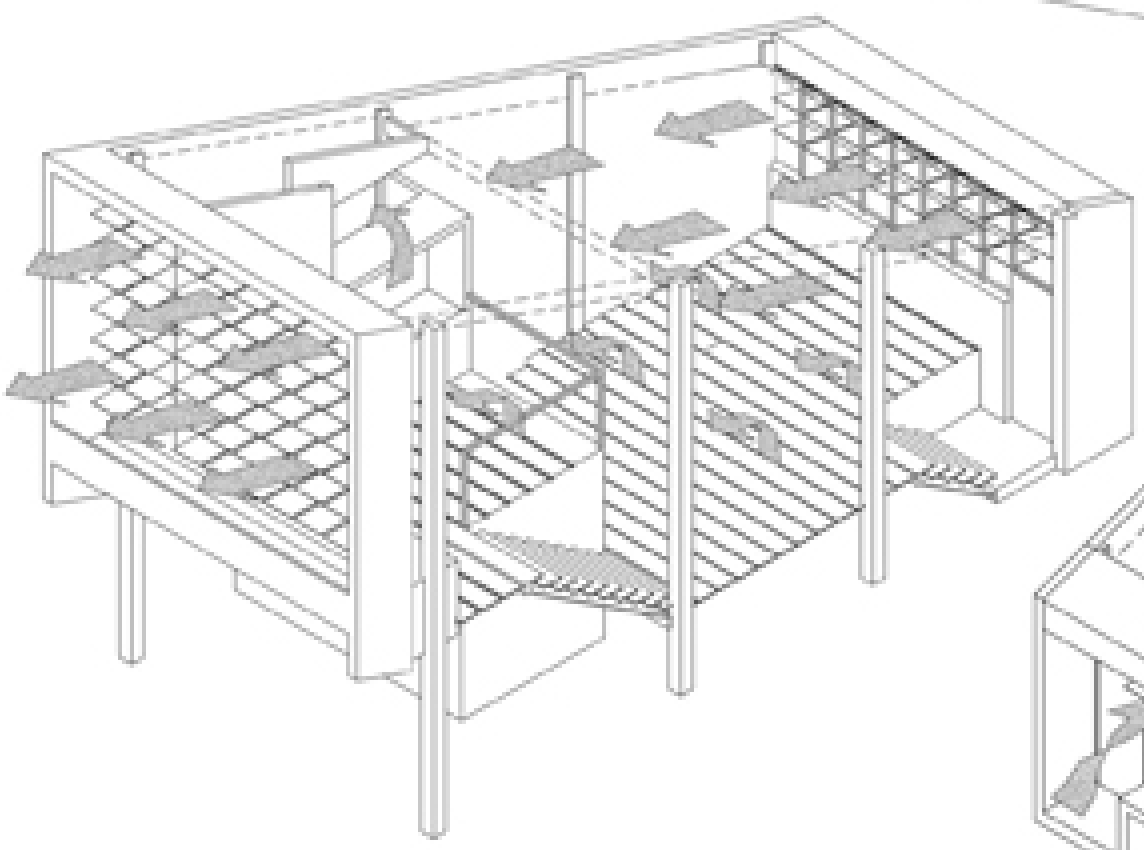
movement

bayanihan

SHEET 1







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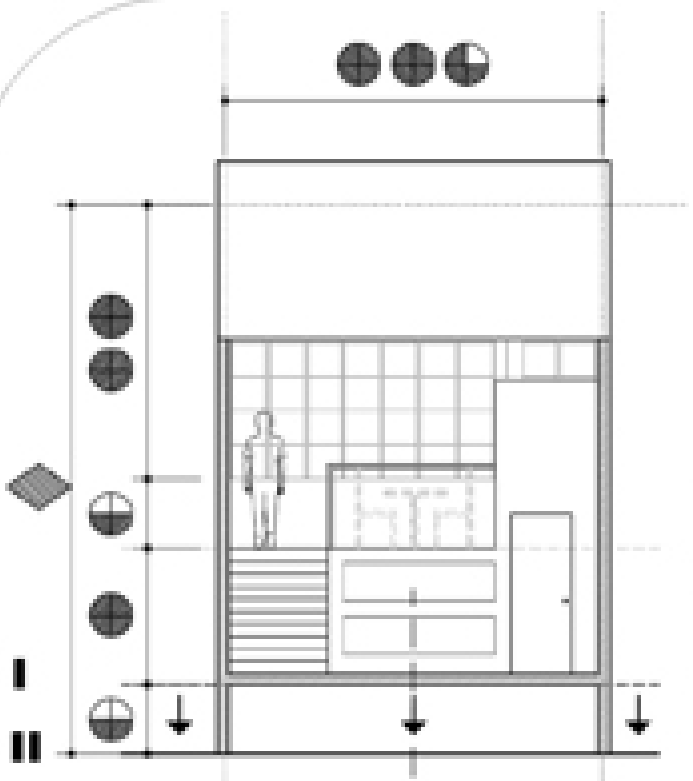
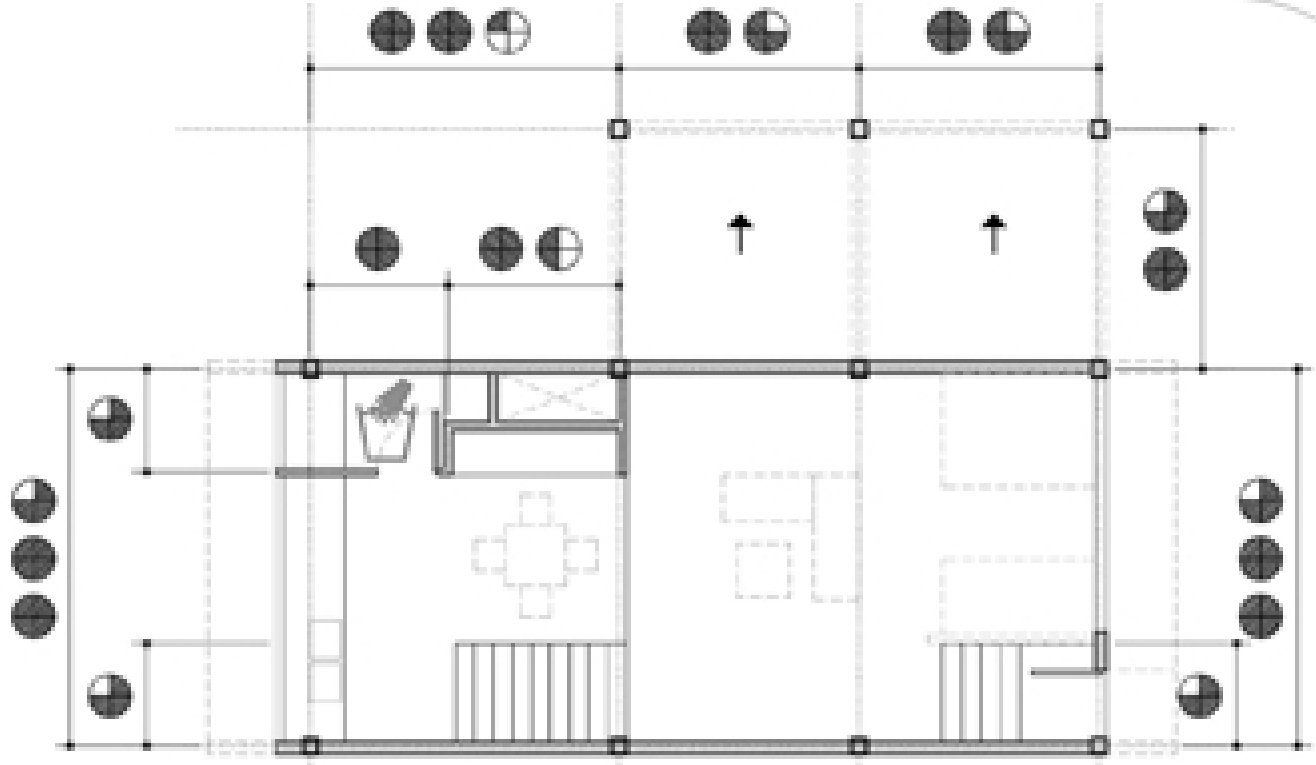
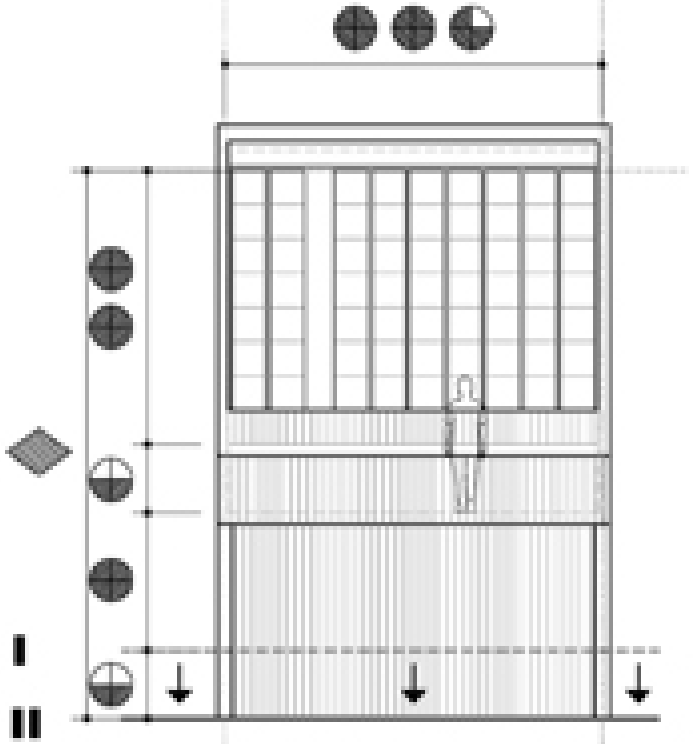
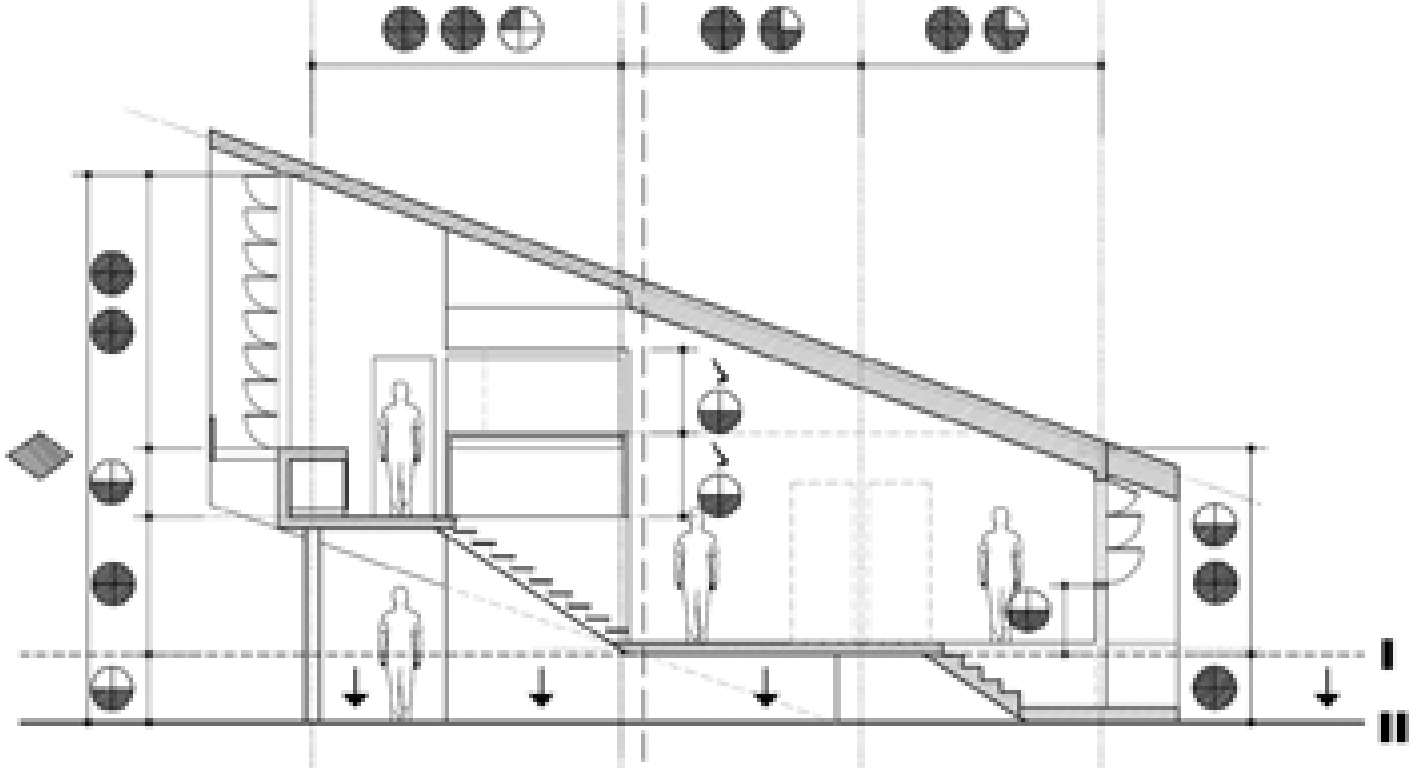




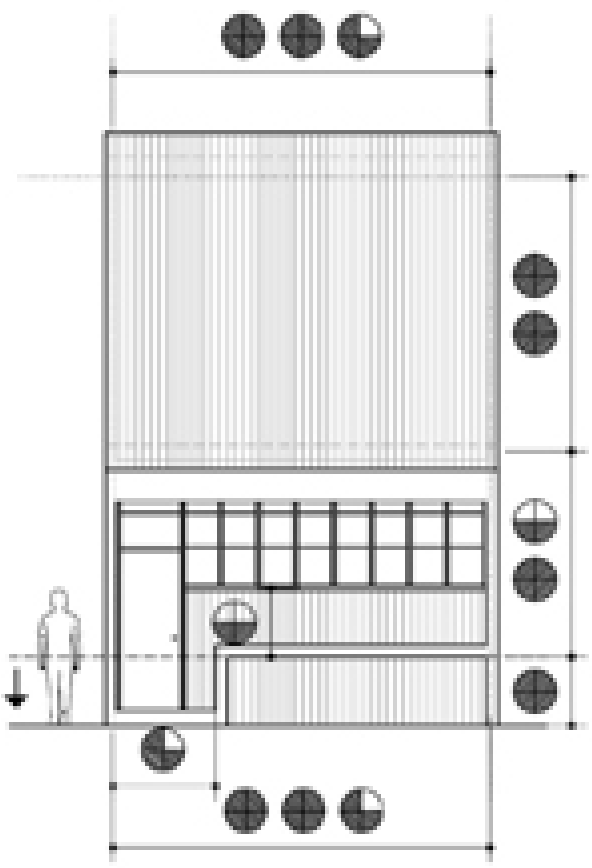


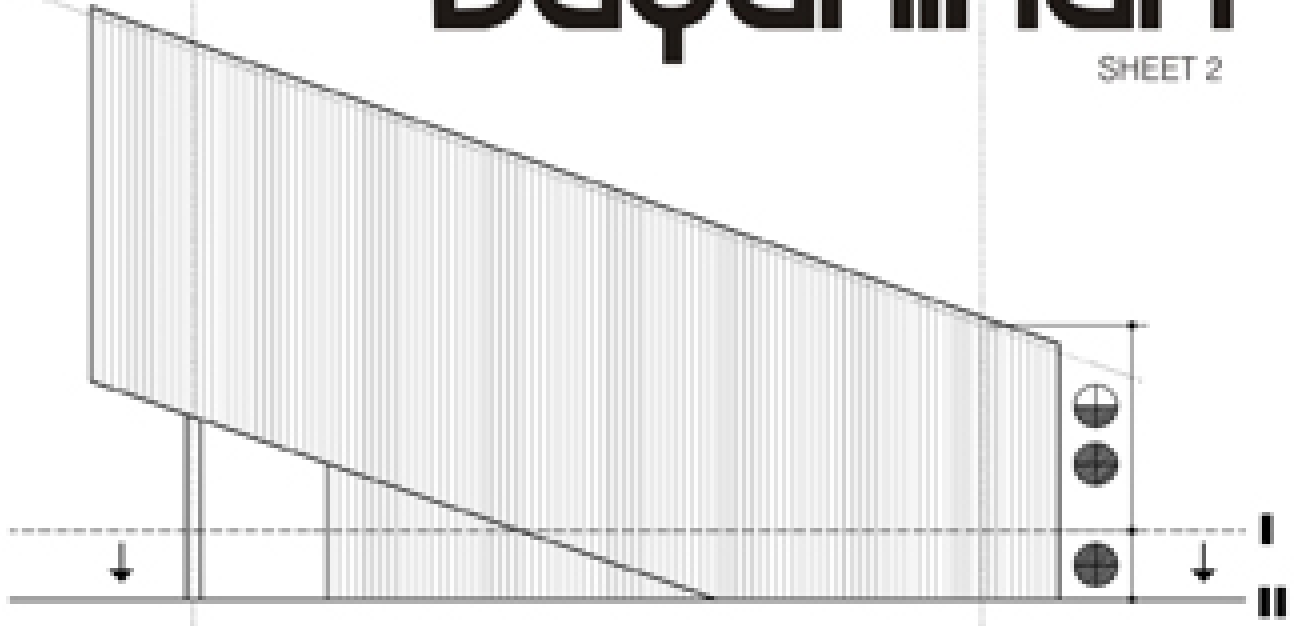


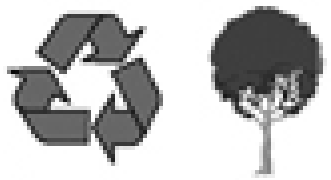
movement

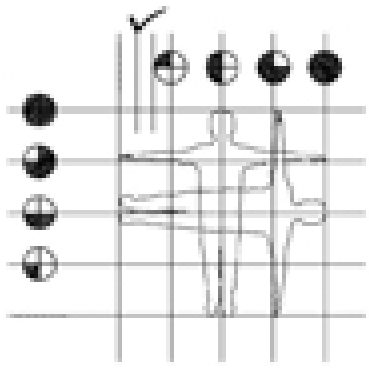
bayanihan

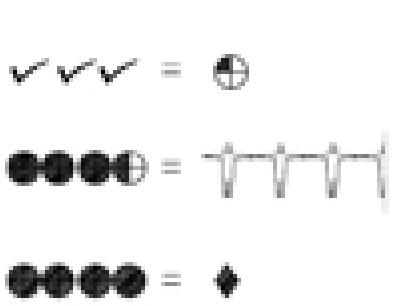
SHEET 2

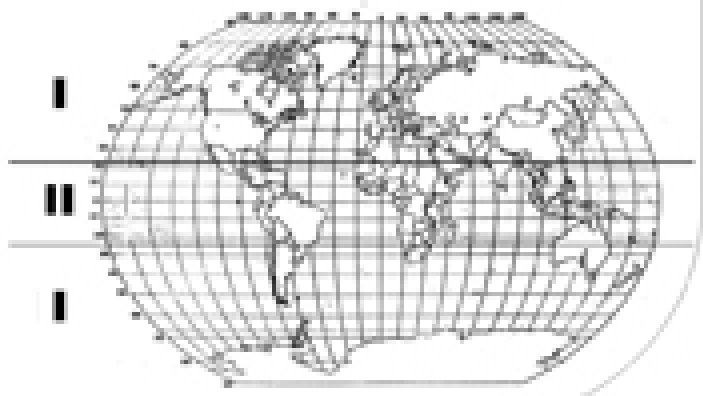












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SELF-SUFFICIENT HOUSING

THE SELF FAB HOUSE

Iaac 2nd Advanced Architecture Contest

The Institute for Advanced Architecture of Catalonia IAAC is issuing an INTERNATIONAL COMPETITION for architects, students and designers from around the world for proposals for the construction of self-sufficient dwellings in which the emphasis will be on exploring people's capacity to construct their own homes especially through the use of digital technologies

Please visit www.iaac.net for further information

RULES AND PRIZES

A. Eligibility
The competition is opened to all professionals, designers and students of architecture, urban design and landscape design.

B. Free Competition Registration
No fee or other payment will be required of those entering the competition

C. Awards
The prize (total value: €39.500,00) will distributed at the discretion of the juries following the bases scheme.
Honourable Mentions by country:
Net-Delegates

D. Digital Submission
The submission is digital through the website.
The proposals must be displayed in THREE (3) PDF files in a DIN A-3 size.

JURY MEMBERS

Vicente Guallart, Director
Willy Muller, Development Director
Lucas Cappelli, Director of Research
Marta Male-Alemany, Technology Director
Alejandro Gutiérrez, Chile
Yung Ho Chang, China
Behrokh Khoshnevis, USA
Ben van Berkel, Netherland
Bostjan Vuga Sadar, Slovenia
Branko Kolarevic, Serbia
Brett Steele, Uk
Greg Lynn, USA
Ignasi perez, Spain
Izaskun Chinchilla, Spain
J.M. Lin, Taiwan
Josep Lluís Mateo, Spain
Julio Gaeta, Uruguay
Michel Rojkind, Mexico
Neil Gershenfeld, USA
Ramon Prat , Spain
Turlif Vilbrandt, USA
Young joon Kim, Korea

CALENDAR

Closing date for registration
September 17th 2007.

Enquiries
All the grouped replies to these will be posted on the Web site before August 15th 2007

Submission of Projects
The reception of submitted projects will close on Tuesday September 18th 2007

Selection
Selection of projects by the national jury: September-October 2007

Results
Announcement of the results: October-November 2007

International presentation of the results: November 2007