GREEN SOCIAL HOUSING PROJECT PROGRAM IN LEBANON

Conceptual Design and Technical Documentation for Single-Detached Dwelling

NEW TECHNOLOGY CENTER

Document prepared by New Technology Center at the request of Green Future Lebanon Holding

Green Social Housing Project Program in Lebanon

Preamble

Given document represents a project of establishment of ecological (green) housing in various municipalities of Lebanon. The project is prepared by New Technology Center (www.woodservice.ge) at a request of Green Future Lebanon Holding (customer).

The preparation of document was based on the letter of Founder of Green Future Lebanon Holding - Mr. Bernard Ammoun on November 22, 2013. Based on the letter the design offer should include:

1- Structure design using Posi-Joist for wall, floor and roof taking into account extra loads and contribution of the concrete fill to the structural strength. Several special requirements also to maintain a continuous flow for the concrete mix throughout the walls and roof

2- MEP detailed shop drawings

3- Detailed BOQ for all house components (equipment list will be provided)

4- Detailed specifications

Interest of customer is construction of 1500 residential houses for various groups of society in different municipalities of Lebanon. Housing shall satisfy standards of sustainable construction and represent low emission buildings. Project is commercial and involves 70 % financing of costs by a beneficiary with the remaining costs co-financed by UNDP and Lebanese government.

Housing is designed taking into account ethnographic, geographic and geophysics requirements of Lebanon. Construction methodologies are based on British and European building codes.

Choice of construction methodologies was carried out considering opportunities of implementing European building technologies (prefabricated building components, doors, windows, inter-storey and roof trusses, wall panels, domestic and construction waste recycling etc) in Lebanon through arrangement of appropriate training courses.

Project is based on a single house case and is composed to optimize consumption of water resources, production of carbon emission, waste management, consumption of electricity, values of environment friendly and healthy housing during construction and habitation periods.

Statement from the authors

First of all we would like to note that in green construction process serious attention is paid to proper selection of building materials and technologies. Further if we are aiming to taking a path of going for LEED (or similar) certification we should be attentive to the use of materials produced in combustion chambers (concrete, metal, artificial stones and other) while taking into consideration construction norms.

Due to this when selecting construction methodologies for NAGEEB project an attention should be paid to economical as well as technological aspects of each methodology.

We would like to note Posijoist system is created for production of floor panels. It provides excellent results when bearing spans length is in 4-6.5 m range and communication shafts are required. Use of this system in floor significantly decreases transfer of sound waves and provides a good acoustic barrier. Considering the economical aspects use of this system is justified as costs of accomplishment of the adequate technical outcome using solid or glued timber components is 17% higher than in Posijoist system.

Other advantages and characteristics of this system include:

- Posi beams are sheer stiffer
- Posi beams can be manufactured with trimmable ends; this will enable the manufacturer to set a grid himself and adjust lengths at the building site. Trimmable ends mean higher tolerance towards error in sizing
- Trimmable ends give flexibility of 400 mm on each side of Posi beam, in total 800 mm
- Posi beams vibrate less and give more solid feel for the floor.

As stated above maximal span of Posijoist is 6 m and as project involves roofing a span of more than 7.3 m and loads on the roof are increased by placement of solar absorbers for free layout design of the mansard floor it is advisable to use prefabricated roof trusses.

Very good performance is achieved by a hybrid of Posijoist with concrete. Use of such structure in floor panels provides a high characteristics of rigidity and acoustics.

Use of Posijoist system in wall panels as is given in COWOB technology has specific technical shortcomings that were taken into account in the project presented by us.

First of all I would like to note the fact that timber is dynamic material and is characterized by high coefficient of expansion, its volume change from winter to summer periods can reach up to 7-8%. Due to this we recommend to avoid using timber in concrete structures as changes in volume of a such extent leads to creation of cracks in concrete and eventual decomposition.

According to requirements of building physics concrete and wood structures should be used separately and connection of this two different materials should be carried out using special connectors as is shown in project of New Technology Center (fig. 1).

Fig. 1

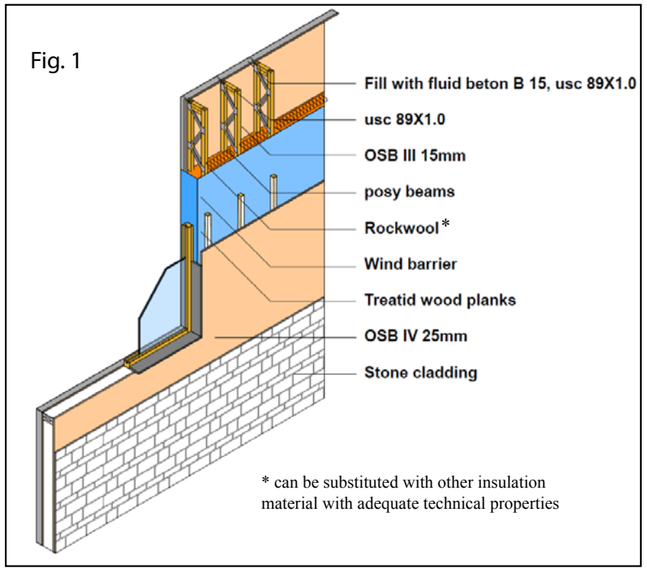
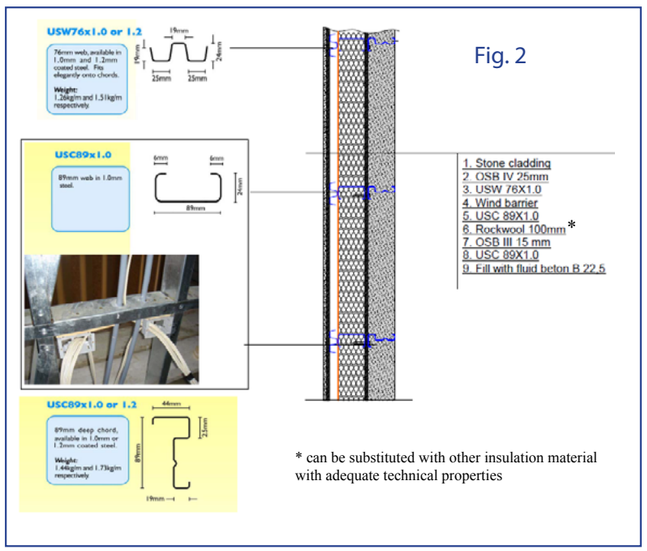


Fig. 2



Due to the fact that there is a negative psychological factor in use of timber in Posijoist systems bottom and top beams that hinders promotion of houses a positive effect could be reached by using 1.4mm thick light metal profiles (so-called Ultraspan) in wall panel structure. Use of such system will practically remove all timber from wall panel (fig. 2).

When considering economic aspects hybrid of Utraspan with concrete will provide good results as well. Its efficiency will enable 82% cost reduction compared to Posijoist system.

The only disadvantage of this system is that the metal just like concrete is produced in combustion chambers when carbon emissions occur. This fact can lead to lowering "green" rating (compared to the case of Posijoist system) of the building during LEED (or similar) certification.

However use of Ultraspan in flooring is not as efficient as Posijoist due to something called 'strong backs' in Posi beams are distributing loads better and creates better synergy of beams. They work as one piece of engineered floor. This is so etching you cannot do with ultra span.

-flip top and bottom chord of Posi beam, hence increase load taking capability; Ultra span is always stiffer.

Considering all of the above use of Ultraspan in wall panels as a fine alternative to Posijoist while still using Posijoist in flooring will provide significant financial effect on NAGEEB project.

Use of such hybrid system can be beneficial for the project considering it is meeting the demands of NAGEEB project, is in full accordance to EC norms and can provide a real competitive advantage.

Another noteworthy fact is that Ultraspan provides for first-class prospects of prefabrication of building components (wall panels). This methodology is approved and regulated by US and European norms and does not require additional registration of building codes or regulations.

Below design project offers 2 choices of wall panel framing:

a) Basic - Posijoist systemb

b) Alternative - Ultraspan Hybrid System (details and drawings of alternative offer will be marked with blue frame and blue heading)

Enclosed to the document are two BOQ's: one for basic and one for alternative offer.

1.0 Location

Since the customer plans to build 1500 houses of this type in various municipalities of Lebanon after selection of territory for construction of a single or a number of houses it is necessary to consider sustainability factors for each of particular locations.

With this end in view it is advised:

- To orientate housing for most use of daylight and reduce needs for artificial lighting. For natural ventilation purposes use of prevailing wind is suggested. In addition protection against summer sun(shading plants, various screens) must be used.
- To design appropriate landscape architecture for particular locations aimed at decreasing the heat island effects and creating places of interest (pergola, barbecue deck, belvedere, garden furniture etc) close to the building. Specific plants and vegetation adapted to the particular locations to ensure cost-efficiency of maintenance must be selected.
- While selecting the site for the settlements it is important to avoid sensitive environments like agricultural territories, extremely humid areas or other natural habitat. It is recommended to select areas like old parking lots or depots, old production territories, abandoned or inactive spaces. Compactness of settlements shall be achieved and attention to proximity of civil infrastructure (bus, railroad station, recreational zones, schools, stores and other domestic objects) must be paid.
- Ramps and infrastructure for people with disabilities (to be able to move in a wheelchair or on a bicycles) must be considered.

2.0 Indoor Quality: Heating, Ventilation and Cooling

According to construction codes and norms to provide appropriate quality of air every building requires respective natural or mechanical ventilation. In green buildings this is achieved through proper orientation, streamlined windows and specially installed mechanical ventilation systems. In addition it is necessary to attain constant temperature inside the building. Therefore to solve particular operational tasks it is required to compose proper technological scheme that provides perpetual process of energy-efficient heating-cooling-ventilation in automatic regime.

As the project involves construction of building with residential status and some areas of the house will be used for preparing food, bathing, washing etc moisture will be generated. To get rid of the excess moisture a perpetual mechanical ventilation is required.

In particular cases it will be necessary to provide high speed air flow (for example during painting of walls, large number of guests, cigarette smoke etc).

In some of houses where inhabitants lead less active lifestyle or leave home for long periods, to retain microclimate respective equipment must be disconnected for a particular period of time.

Based on the above it is important to create a healthy constant microclimate inside the designed houses. In addition it is necessary to take into consideration needs of particular groups of people that will reside in each house. Therefore power schemes and architectural plans of the housing must provide flexibility to being easily adapted to inhabitants' needs.

Given project involves usage of technological scheme that includes traditional heating system together with nontraditional (alternative) heating sources generating wind, sun, geothermal, bio-heating energy to provide cost-efficiency of technological scheme (fig. 3).

Such systems require low-temperature and high inertia radiators. As wall and floor panels of buildings are energy-efficiently connected to concrete slab according to the authors of the project it is possible to use this component for heating and cooling by modifying it into radiator. Special pipes are integrated in the floor of the first storey and 90 cm of perimeter of walls from floor level in every room that provide constant temperature inside the building throughout all four seasons of the year through automated control Building Management System (BMS).

Energetic scheme is composed in such a manner that it is possible to disconnect or add separate component at any time. This provides for satisfying the needs of low and medium as well as high income families that reside in the houses.

Fig. 3

3.0 Insulation, soundproofing and energy-efficiency

Quality of the buildings is determined not only by its size, dimensions, facing and engineering and sanitary equipment but also by an envelope of the building that protects it from cold and heat, solar radiation, precipitation and other external influences and provides acoustic barrier.

Proper structuring of a building envelope using innovative method of sustainable construction provides mitigation, avoiding of natural phenomena and catastrophes (earthquake, flood, fire, storm etc).

Exceptionally critical are rates of heat insulation, soundproofing, fire resistance, moisture resistance and seismic stability.

During design of building components attention should be paid to weights and shapes of microscopic structures of shells of materials. It is important to note that while selecting the building materials their insulation as well as energy absorption and retention qualities must be preferential.

In comparison to other building materials strength and weight ratio is an advantage of timber. Due to its hydroscopic qualities timber is one of the best insulation and soundproofing materials. Its shell structure reduces distribution of electromagnetic and other waves (acoustic wave distribution speed in timber is approximately 10 times lower that in concrete and metal).

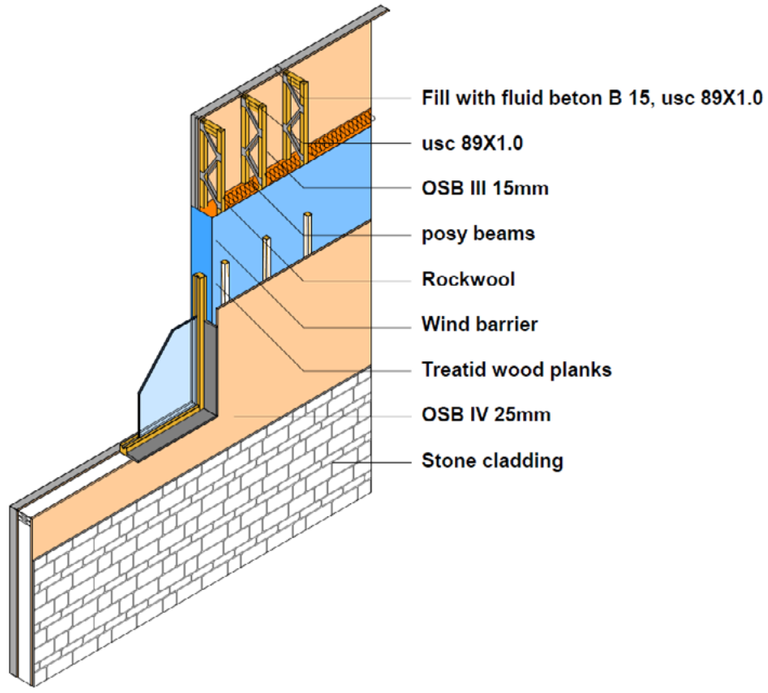
Lebanon is characterized by seismic activity that creates a significant hazard. Due to this, qualities of structural elements such as seismic resistance and light weight are of high importance. Timber frame buildings are fully meeting these requirements and sustain maximum stability during lateral shakes. To attain this, lightweight roof, wall panel and floor structures are used (timber is 7 times lighter than concrete and masonry) to convey the lateral shakes back to the ground through the walls. Noteworthy is level of elasticity of timber that significantly surpasses the same rate of concrete and masonry.

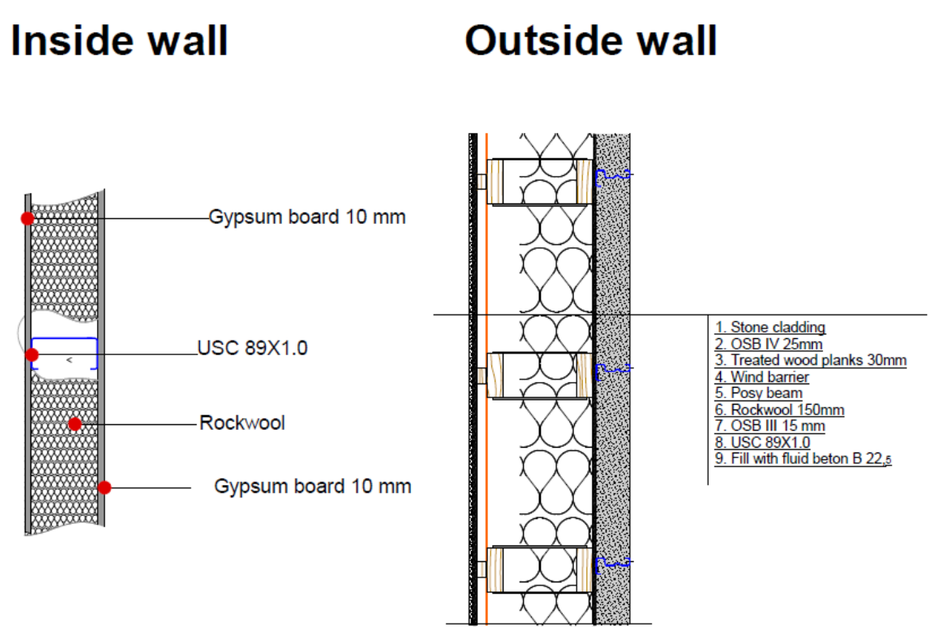
Fire represents a deadly hazard for inhabitants and structure of any building. Heat produced by fire alters structural quality of building materials and weakens the structure. As a result bearing elements of the building can lose stability and building may collapse. Considering this concrete is leaving no option and its use provides high levels of stability and fire resistance of the building. In addition concrete is characterized by high levels of energy retention which is important when aiming for energy-efficiency of the building.

Considering all of the above for this specific case design team proposed use of combined wall (concrete-posijoist(timber-metal web-timber)-stone fiber-air-composite wood-composite tile), floor and roof panels (fig. 4) that provides high levels of soundproofing and seismic stability while serving as an accumulator for heat energy.

Fig. 4

Energy efficient Wall panel structure designed specifically for Green Social Housing in Lebanon





Installation process used in this methodology is quick and easy, does not require establishment of special construction site, is cost-effective and provides high levels of energy-efficiency.

In case of proper planning high tempo of construction is achieved and the task ordered by customer is proficiently solved in the predetermined period of time.

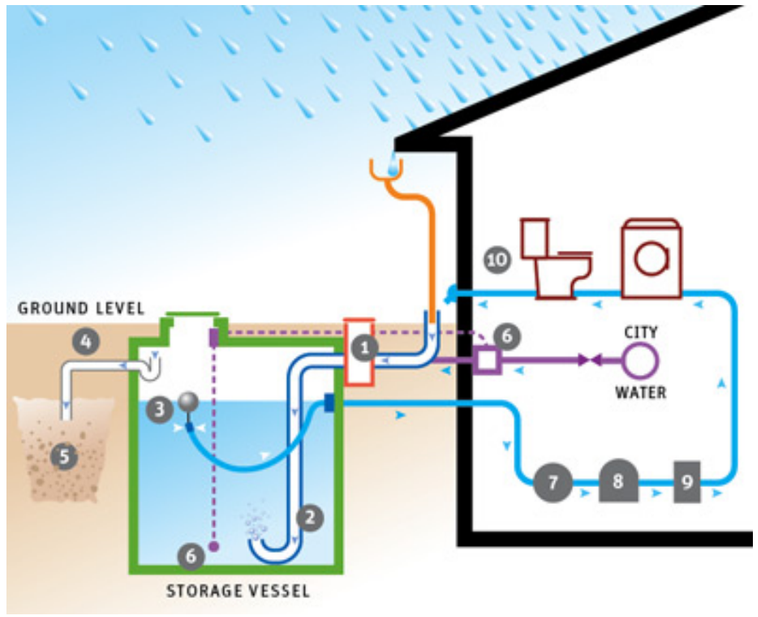
5.0 Lighting

Lighting of the building in the project is accomplished through natural (windows, skylights, solar tubes) as well as artificial (economic LED bulbs) illumination. Low emission glass panes (that meet the standards of light transmission while ensuring high levels of energy-efficiency) inside hermetic timber frames will be used for skylights.

6.0 Waste management, separation, composting during construction and inhabitation periods

To achieve high quality of construction it is necessary to optimize waste generation and provide waste separation during construction as well as inhabitation of the building. To accomplish this project envisages economic usage of water resources with help of water saving kitchen, toilet and bathroom equipment. System involves rain water collection and filtration that enables use of collected water for technical purposes. After biological and mechanical treatment waste water is further used for irrigation (fig. 5).

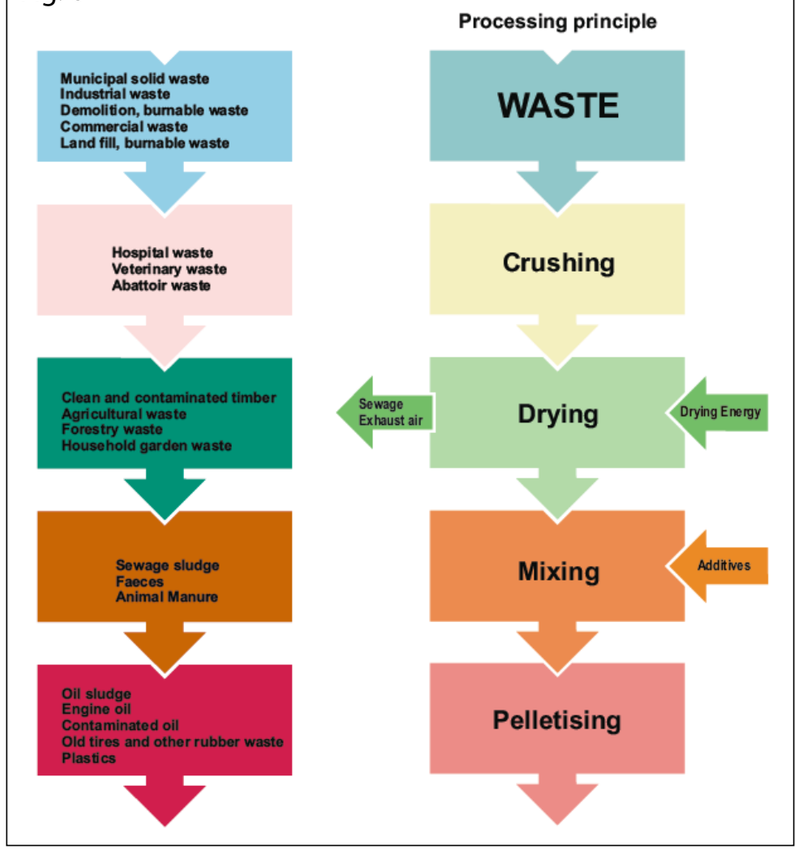
Fig. 5



1: RainKeeper self-cleaning filter.
2: Calmed inlet.
3: Floating intake.
4: Overflow Siphon.
5: Infiltration.
6: Integration controller.
7: Electronic pump control.
8: Pump.
9: Pressure tank.
10: Rainwater for washer, toilets, lawn hydrants, etc.

Building is equipped with BMS automated system that provides efficient consumption of energy and healthy indoor climate.
Interior and exterior design involves usage of recycled components of facing materials (tiles, linoleum, parquet, floor tiles, composite flooring, granite etc).
To provide separation of domestic waste building is equipped with organic matter composting, subject to recycling and non-organic waste separator.
As project involves construction of 1500 houses, 300-400 houses per year, it is expedient to establish industrial and domestic waste processing mini plant that will pick up and process construction and domestic waste during the construction process. This is easily achievable if houses are located in settlements that are 20-30 km apart.
From individual separators waste is supplied to special processing area where it is recycled for construction and domestic purposes (fig 6).

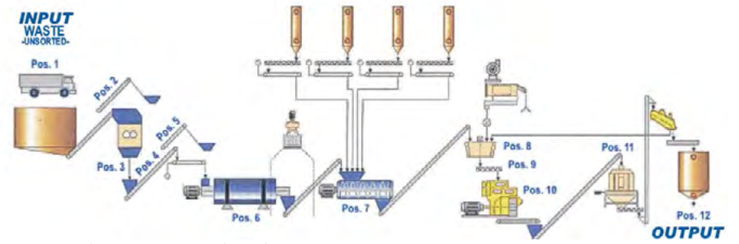
Fig. 6



Such processing ensures receiving and recycling any type of separated industrial and commercial waste (fig 7).

Fig. 7

Waste handling from start to PELLET
Technology converts unsorted household and specific types of industrial waste, in a closed system with **high efficiency and no pollution**, into pellet's with a high caloric value.



- Delivery of the waste by truck (Pos. 1) and unloaded in the hall. The delivery quantity is determined by means of weight bridges. The waste storage area (capacity one weeks production) in the hall is closed off by gates and is aerated . The waste is sorted roughly, recyclables (eg. metals) are sorted out (Pos. 2).
- In the crushing machines (Pos. 3, rotor mill) the material is milled.
- During a re-examination (Pos. 4 and 5) the Waste will be separated into light and heavy fractions.
- In the drying process (Pos. 6), the moisture content will be reduced. The collected moisture is purified by known methods (degree of cleaning: useable surface water).
- In the mixer (Pos. 7) the waste-flours are added, continuously and automatically, additives according our WP pellet system. This will complete the final product, crystalline binding of pollutants and ensuring lasting equal calorific value.
- The pellet production (Pos. 8-10) takes place in granulating presses: heated and pressed under high pressure through press filters and deposition of the material.
- Subsequently, the cooling (Pos. 11) of the pellets in counter flow will follow.
- The finished fuel pellet storage (Pos. 12) has a half months capacity. The pellets can be stored for a long time until they are needed.

Pellets
The key products of our technology are ***Pellets*** that have the calorific value of lignite and are stored indefinitely. In manufacturing, the resulting pollutants are not separated, but in the crystalline pellets bound (non-leachable), so that they can be used in all systems where lignite (coal) is used. Also by burning the pellets, the bounded pollutants cannot be released to the environment.

Residue
This permanent binding of pollutants - in the production of pellets, in combustion, as in the resulting flue gases and the residual ash.
The pollutants remain crystalline bound in the ash.
The ash can be used in construction projects such as, cement manufacture, road construction etc.

7.0 Green Construction Materials

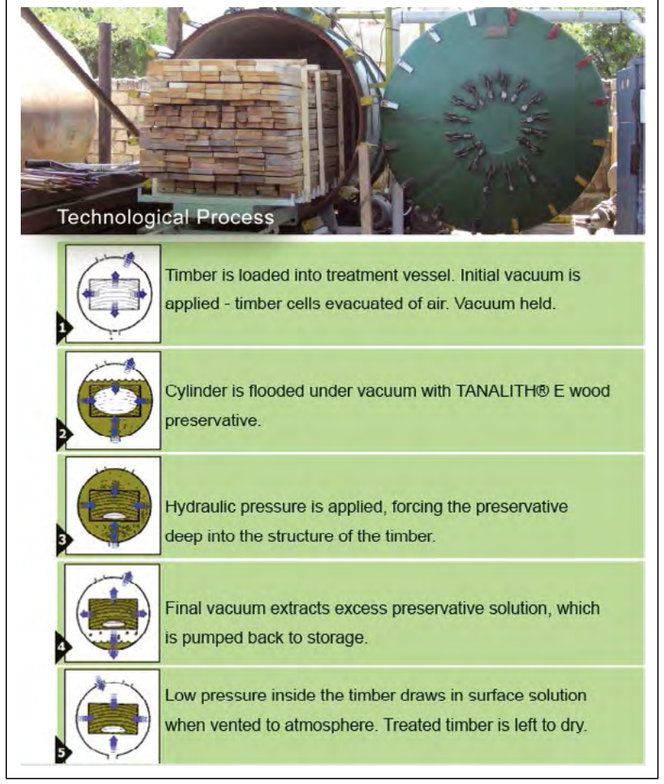
The following checklist would be applied as a matter of principle for the selection and specification of green construction materials and their use in environmentally responsible design and construction.

* Use durable products and materials: Because manufacturing is very energy-intensive, a product that lasts longer or requires less maintenance usually saves energy. Durable products also contribute less to solid waste problems.
* Choose low-maintenance building materials: Where possible, select building materials that will require little maintenance (painting, retreatment, waterproofing, etc.), or whose maintenance will have minimal environmental impact.
* Choose building materials with low embodied energy: Heavily processed or manufactured products and materials are usually more energy intensive. As long as durability and performance will not be sacrificed, low-embodied-energy materials will be chosen.
* Buy locally produced building materials: Transportation is costly in both energy use and pollution generation. Locally produced materials will be sourced. Local hardwoods, for example, are preferable to tropical woods.
* Use building products made from recycled materials: Building products made from recycled materials reduce solid waste problems, cut energy consumption in manufacturing, and save on natural resource use. An examples of materials with recycled content are cellulose insulation, floor tile made from ground glass, recycled plastic lumber, etc.
* Use salvaged building materials when possible: Reduce landfill pressure and save natural resources by using salvaged materials: lumber, millwork, certain plumbing fixtures, and hardware, for example. It will be made sure these materials are safe (test for lead paint and asbestos), and would not sacrifice energy efficiency or water efficiency by reusing old windows or sanitation equipment.
* Seek responsible wood supplies: Use lumber from independently certified well-managed forests. Avoid lumber products produced from old-growth timber unless they are certified. Engineered wood can be substituted for old-growth Douglas fir, for example. Not to buy tropical hardwoods unless the seller can document that the wood comes from well-managed forests.
* Minimize use of pressure-treated lumber: Use detailing that will prevent soil contact and rot. Where possible, use alternatives such as recycled plastic lumber. Take measures to protect workers when cutting and handling pressure-treated wood. Scraps should never be incinerated. Least toxic preservatives to be sourced and applied per latest EuroCode specifications.
* Minimize packaging waste: Avoid excessive packaging, such as plastic-wrapped plumbing fixtures or fasteners that aren't available in bulk. To instruct suppliers why are avoiding over-packaged products. Keep in mind, however, that some products must be carefully packaged to prevent damage and resulting waste.
* Avoid materials that will offgas pollutants: Solvent-based finishes, adhesives, carpeting, particleboard, and many other building products release formaldehyde and volatile organic compounds (VOCs) into the air. These chemicals can affect workers' and occupants' health as well as contribute to smog and ground-level ozone pollution outside.
* Avoid ozone-depleting chemicals in mechanical equipment and insulation: CFCs have been phased out, but their primary replacements--HCFCs--also damage the ozone layer and should be avoided where possible. Avoid foam insulation made with HCFCs. Reclaim CFCs when servicing or disposing of equipment.

Given project of housing construction involves use of green building materials. This is illustrated below with an example of the timber frame construction integrated with concrete and composite nontoxic stone components. Waste volume is optimized and is subject to recycling.

Timber is obtained from certified sources and preserved according to BSEN-351, EN 599 (fig. 8).

Fig. 8



8.0 Prospects of Obtaining Certificate and Rating from Green Buildings Certification Authorities

There is a number of certifying organizations in the world that based on various factors provide rating to the buildings. The below table provides information on general requirements of 5 leading certifying organization in the world:

Criterion	BREEAM	CASBEE	Green Star	LEED	DGNB Label
Management	+		+		+
Sustainable Sites				+	+
Indoor Environmental Quality		+	+	+	+
Quality of Service		+			+
Outdoor Environment		+			+
Energy	+	+	+	+*	+
Materials	+		+		+
Resources & Material		+		+	+
Off-Site Environment		+			(+)
Transport	+		+		+
Water	+		+	+**	+
Land Use & Ecology	+		+		+
Emissions/Pollution	+		+	+***	+
Innovation			+	+****	
Health & Well-Being	+				

* including Atmosphere
** Water Efficiency
*** included in Energy
**** including Design

BREEAM (United Kingdom) has more than 100 000 certified projects since 1990, LEED (US) more than 16 000 certified projects since 1998, DGNB (Germany) more than 1 200 certified projects since 2009, Green Star (Australia) more than 9 000 certified projects since 2002 , CASBEE (Japan) more than 2 000 certified projects since 2002.

As shown in the table the principles (Indoor environmental quality, energy, materials, water, land use and ecology, emission/pollution, innovation) that are to be used in construction of the building discussed in this document provide prospects to be certified even according to requirements of DGNB. This is ensured by use of innovative wall panels and energy-efficient heating, ventilation and cooling systems in addition to waste management, collection of atmospheric precipitation, waste water recycling, efficient orientation of the building, emission reduction, green materials, use of solar energy and other green building methodologies.

In case builder is interested in going through the certification procedures and obtaining certificate and rating from a specified authority, implementation of a given project provides this opportunity.

The building with such rating provides a strong opportunity of efficient development.

9.0 General Description of Construction Process

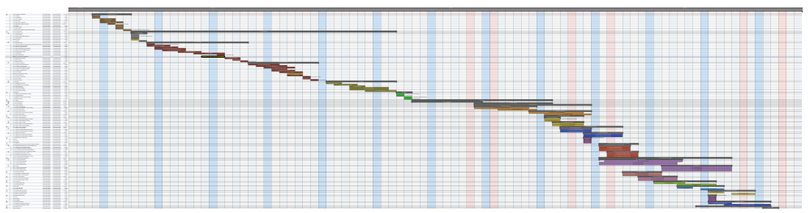
As site allocated for construction of houses presented in this project is unknown to the design team exact planning of construction process is impossible at this stage. In addition it is unknown whether the houses are built in groups or separately, if in groups what is size of each lot. Due to this construction process of a single house is discussed.

After locations and logistical schemes are streamlined construction process will be altered thoroughly. Timeline of activities and construction principles will be changed as well. However ideology of building and construction methodologies will remain the same.

Description of construction process discussed here is based on the fact that construction works are implemented by properly equipped professional building team. Construction process involves: planning of the building, production of drawings, obtaining financing, acquiring permission, mobilization, demarcation, preparation of ground and foundation, foundation and cellar wall construction, providing drainage, soil backfill, frame structuring, water supply, sewerage system installation, heating installation, electrical communication installation, exterior finishing, insulating, air and vapor isolation, interior finishing and painting.

Stage involving drawings, financing and acquiring permissions can be perceived as preliminary period that is required to prepare drawings and construction plans needed for construction of house at the specific location. During this stage construction teams will be formed. Laying of the roads to the construction site, temporary supply of electricity and other works needed for mobilization can also be implemented at this stage. However as specific location of construction site is yet unknown it is impossible to estimate time losses that may occur, provided time management does not include this stage.

As for the distribution of construction works in time activity plan is given in the Gantt chart below (click to open URL containing the pdf file). Starting date of 1st March of 2014 is conditional and provided for only estimation purposes.

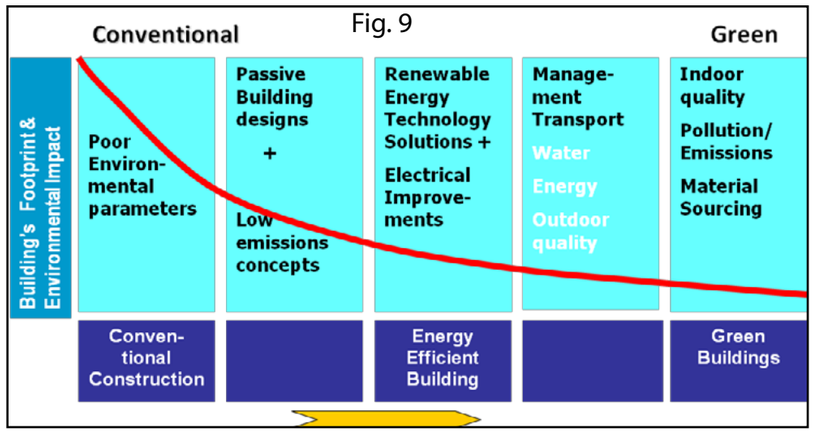


10.0 Reference Budget of Construction Component

Development of ecological (green) buildings was assisted by increasing understanding that person's health is closely related to living conditions and economics. One of the major principles of sustainable construction is its economic feasibility. This is the principle that was used as a basis in designing green housing construction in Lebanon.

Diagram (fig. 9) illustrates scale of "greenness" and shows that with increase in "greenness" of building costs of operations is reduced and healthy living conditions for inhabitants are improved.

Fig. 9



Such housing is energy-efficient and compared to conventional type operational costs are reduced by 20-30%. Given project is based on this principles.

As for the construction costs significant factor that affects them is proper planning of construction sites, logistical schemes, construction waste optimization, building teams etc.

In case various settlements are comprised of 50 or more buildings construction budget will be optimized and cost of construction per 1 sq. m. decreased by 10-15%.

Another important factor affecting the costs is the distance among various settlements. In case of proximity of the settlements logistics scheme can be improved leading to further decrease of costs by 3-5%.

Additional resource for cost reduction lies in proper organization of working teams. Increase of involvement of human resources living in municipalities close to construction sites can provide 15-20% reduction of hourly pay of construction.

Therefore proper planning of settlement locations, preparation of efficient master plan and work organization schemes, establishment of logistics center, production of prefabricated building components, use human resources from bordering municipalities can lead to reduction of construction costs per 1 sq. m. of building by 15-20% (see chapter ??? -BOQ) and become:

____ USD/m2 for building without interior finishing and refurbishment

____ USD/m2 for turnkey

11.0 Project Team

Zaal Kheladze

Project Coordinator

Doctor of Geography and Geology. Founder and General Director of New Technology Center (former Wood Service) 50 years old, Georgian. Expert in timber processing industry with 12 years of experience. Internship training at "Andersen Windows and Doors" in USA, "Nach Floor" in Germany, "Loba" and "Stauf" in Denmark.

Also timber construction and processing training in the Danish New Technologies Institution. Was the coordinator and supervisor of geophysical researches on the Trans Caucasian railway, Gali atomic power plant and Jhinvali power plant. During the last years under his supervision were set up infrastructures of Borjomi Kharagauli park, Mtatsmina amusement park, Kolkhety national reserve, Kobuleti nature reserve and many other large-scale and challenging projects, that include: Pharmaceutical factory for production of antibiotics, Poultry Farm with annual production of 15 000 tons, 300 house settlement for IDP's in Gori and Aghmashenebeli avenue Reconstruction project.

Konstantin Kocura

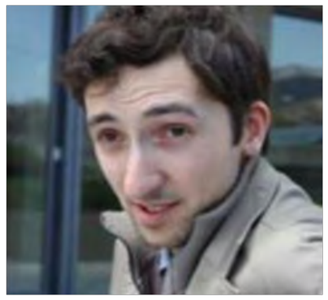
MEP Engineer/BMS Designer

Konstantin Kocura holds a bachelor degree in real estate engineer and Master's degree in business management from Vilnius Gediminas Technical University. Has Electrical installations Job and Technical Project Supervisor Certificate (up to 1000V) By Ministry of Environment of the Republic of Lithuania. Konstantin has an extensive proffesional experience in Building automation engineering and Project management for HVAC automation and BMS. Some of his most challenging and large-scale projects include:

- Four "MAXIMA" commercial centres in Riga, Latvia – overall plot 78000 sq. m. Complete centralized building management system for ventilation, central heating, air conditioning, external and internal lighting, electrical power supply peaks prevention.
- "Snaige Techprominvest" refrigerators factory in Kaliningrad, Russia. Complete centralized building management system for HVAC
- "Digital Television Systems" assembly plant in Gousev, Russia 15000 sq. m. Complete centralized building management system for ventilation
-455 MW combined cycle gas turbine project at Lithuanian power plant, Elektrenai, Lithuania, complete centralized building management system for HVAC.

Thomas Ulrich
Construction Methodology Expert

Tomas is a professional construction manager and concrete work specialist. Has an excellent knowledge of underground and on ground building machinery and techniques. Has taken training courses in health and safety management and coordination. Has a professional working experience of 25 years as the construction manager and coordinator of various large constructions in Germany and whole Europe. Worked as a coordinator and the person in charge of such large projects as the construction of the Hamburg N3 airport terminal, roof installations on residential complexes on the territory of Hamburg port etc. Also was a coordinator and person in charge for the concrete works of the Dizburg and the construction works of residential complexes in Sofia/Bulgaria. Thomas worked as construction manager in the project of 300 house construction in Gori financed by GIZ.



Giorgi Jamarjashvili
Architect

Is an architect by profession. Is a master of Green Building Architecture and Urban Planning.
From 2007 Giorgi is employed by Wood Service and manages Design and Construction Engineering Department.
Giorgi has completed training course on operation of RoofCon/TrussCon software used for design and engineering of timber truss roofs and wood frame construction.
Over the years of his work in the company Giorgi took leading role in implementing many projects, including Pharmaceutical Factory in Tsilkani Village, Aragvi Adventure Center etc. He provided supervisory and consulting for projects implemented by Wood Service: Settlement of Internally Displaced Persons and Multifunctional Center in Gori, New Technology Center, and Roofing of houses on Aghmashenebeli Avenue etc.
Giorgi has also took part in composing of Wood Frame House Construction Guide published by Wood Service in 2010.
Giorgi was a member of architects' team that worked on New Technology Center building, that received Green Building awards by a number of authorities including Ministry of Economy and Sustainable Development of Georgia, Union of Architects of Georgia and Ministry of Environmental Protection of Georgia.

Archil Papava
Marketing, Administrational and Project Management Support

Marketing professional, employed by Wood Service since 2005. Has more than 8 years experience in sales, marketing, vendor negotiations and management at the senior executive level. Skilled in developing and executing marketing and sales strategies and campaigns, planning and supervising ATL and BTL promotion, planning and managing various projects. Creating, executing and adjusting project plans, managing project's work flows and performance for construction contracts, launching of new products and upgrading of quality control systems within office and production facility.
Has participated in the following training programs: Waste Management by USAID in CA, USA; Commercial Timber Production and Sawmills by Derome in Varberg, Sweden; Clean Development Mechanism (CDM) by Econ and Norsk Energy (Norway) in Tbilisi, Georgia; Timber Preservatives and Treatment Technologies by Arch Timber Protection in Castleford, UK; Innovative engineering solutions by MiTek Industries in Birmingham, UK; Engineered flooring by Weitzer-Parkett in Graz, Austria; Floor sanding machinery by Lägler in Güglingen-Frauenzimmern, Germany.

Giorgi Giorgadze
Technical Consulting

Giorgi Giorgadze is experienced Urban Architecture Expert. He is an international consultant for UNDP/Kazakhstan in elaboration of the master plan for development of municipal housing infrastructure of the small cities. He worked as an expert for European Consulting for Developing Countries (ECFDC), was a head specialist in Urban Planning Service and Architectural Service of Tbilisi city hall. Currently is a full time professor at College of Engineering of Ilia State University providing lectures on Designing Management, Investment Planning.

Mamuka Gvilava
Environmental Expert

Mamuka Gvilava is specialized in a wide range of environmental subjects with more than 10 years of experience gained with cooperative projects in Georgia and in the Black Sea region. Physicist with education and science degree, expanded his field of activities to environmental and social subjects, such as integrated coastal management, environmental informatics (GIS & RS, with particular experience in setting up the coastal monitoring and information systems for Georgia), environmental and social impact assessment, as well as the application of green design and development methodologies. He combines his practical hands-on experience in environmental management and research with wider scope of policy advice serving the Ministry of Environment as the National Focal Point on Integrated Coastal Zone Management (ICZM) and the Georgian Member of the ICZM Advisory Group to the Black Sea Commission.

Udo Dagenbach
Urbanist (Landscape architect)

State approved landscape gardener, Certified Landscape Architect by Technical University (Berlin) in 1986, student of Japanese sculptor Professor Makoto Fujiwara, member of architectural association of Berlin (Nr. 05738), awarded with German landscape architecture price 2007 from BDLA (1. Prize), received daylight spaces award 2007 - international architecture and design competition (1. Prize) and Made in Germany - Best of Contemporary architecture (2. Prize), is member of bdla - Bund Deutscher Landschaftsarchitekten and IFLA - International Federation of Landscape.
Some of his projects include design for Moabit Prison Historical Park and Imchenplatz in Berlin, Garden von Ehren in Hamburg, Taganskiy Park in Moscow and Imperial Wall Paper Garden in St.Petersburg.

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Green social housing programme in Lebanon

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Architectural part A 1-15
Constructive part K 1-18
Roof construction R 1-10
MAP engineering M 1-12

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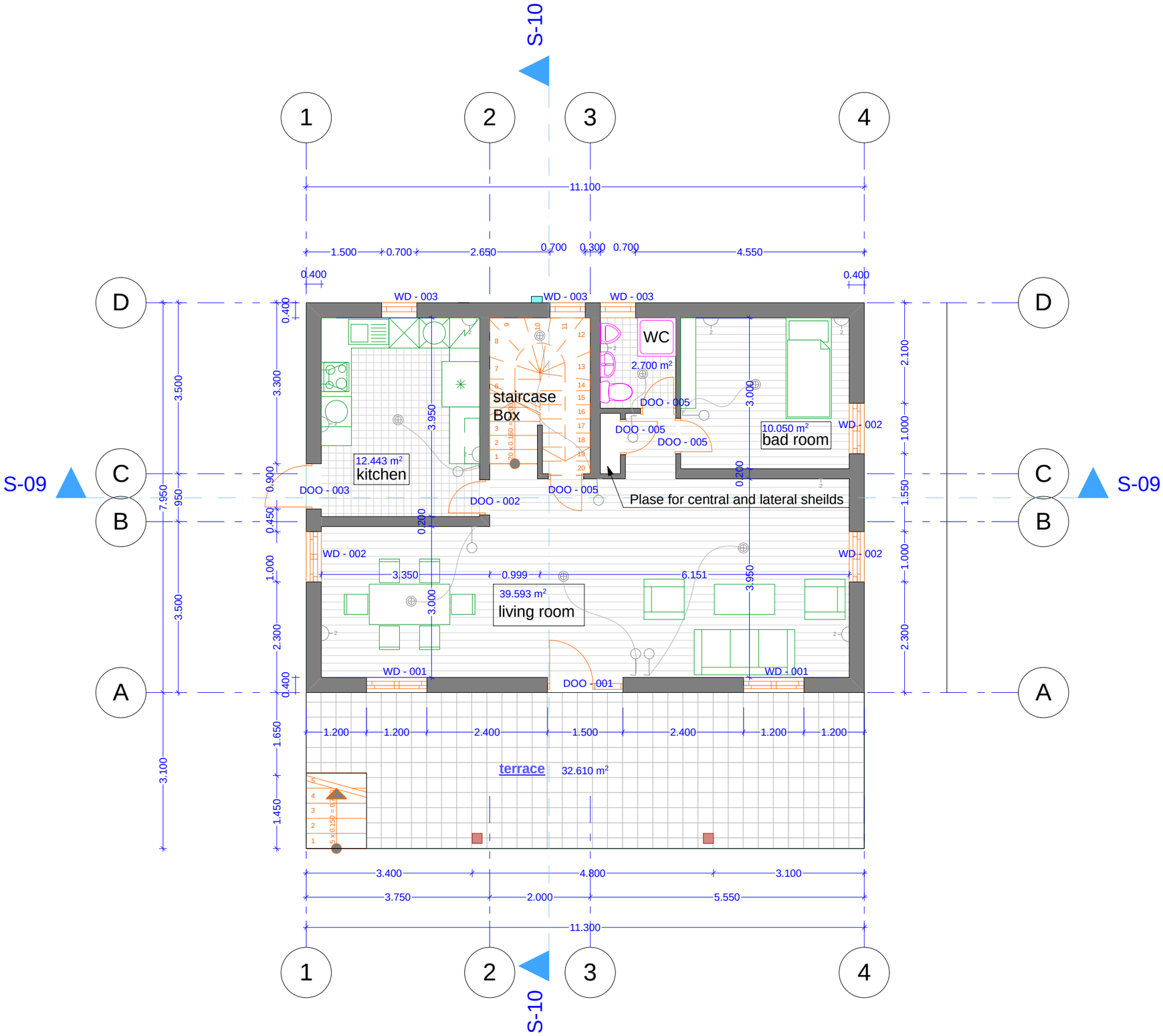
Architectural part

A-1 ground floor plan
A-2 first floor plan
A-3 attic floor plan
A-4 roof plan
A-5 section 1-4
A-6 section A-D
A-7 visualization
A-8 visualization
A-9 visualization
A-10 facade 1-4
A-11 facade A-D
A-12 facade 4-1
A-13 facade D-A
A-14 specification of doors and windows
A-15 specification of sunshade



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TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON.

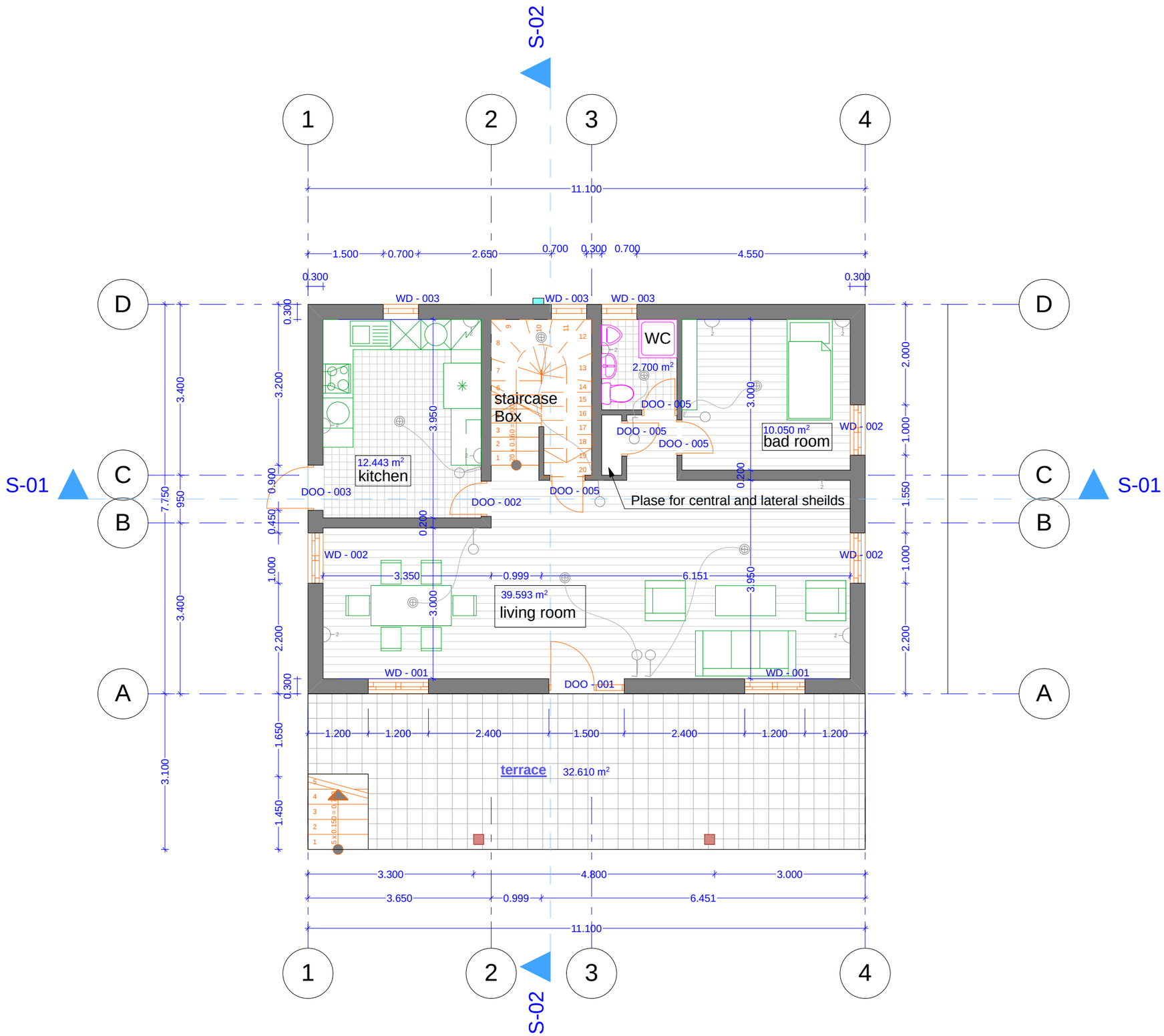
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: ground floor plan

PROJECT №:		A-1
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON.

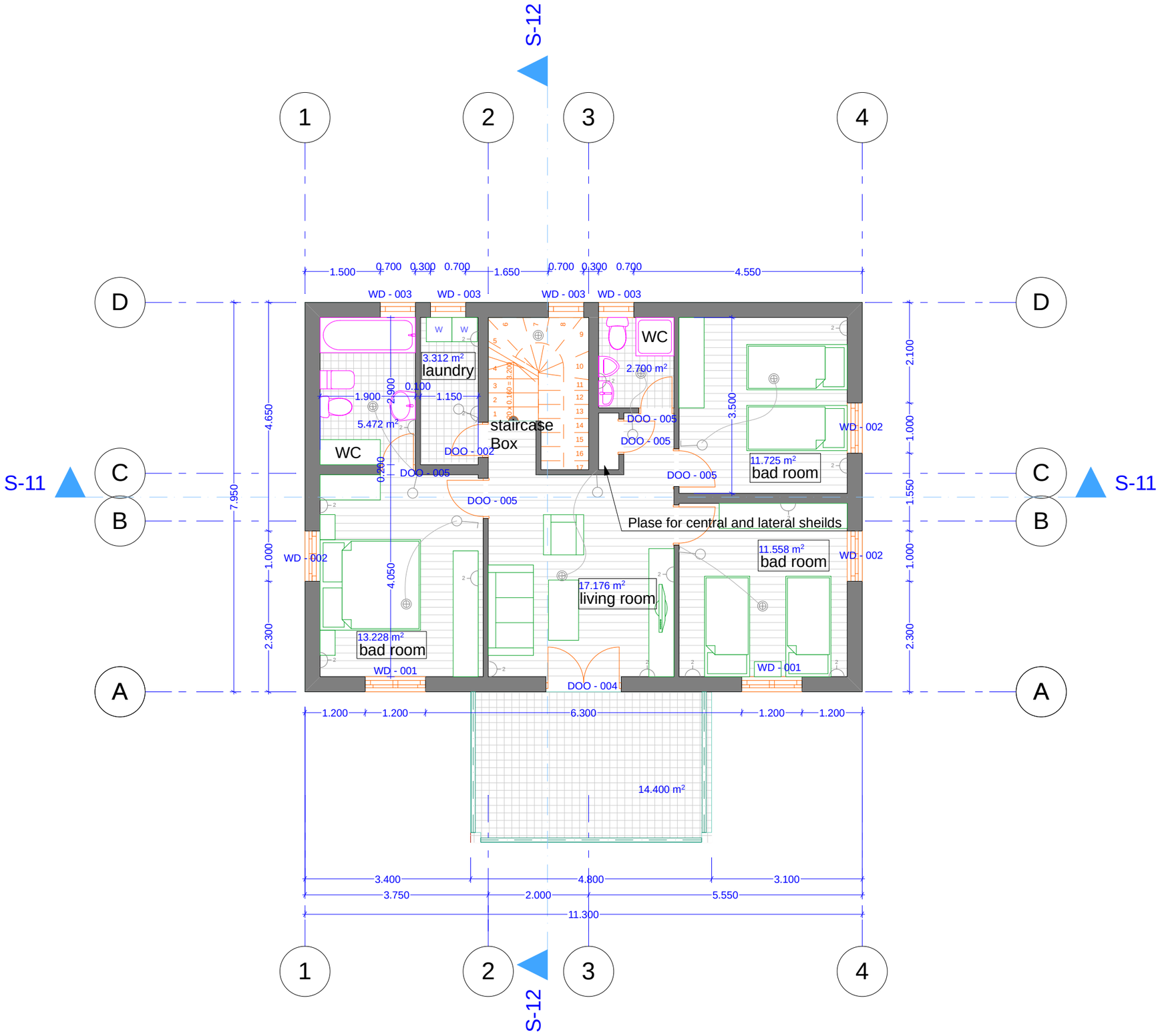
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	ground floor plan

PROJECT №:	
FORMAT :	A3
SCALE :	1:75
DATE :	20.12.2013

A-1 Alternative



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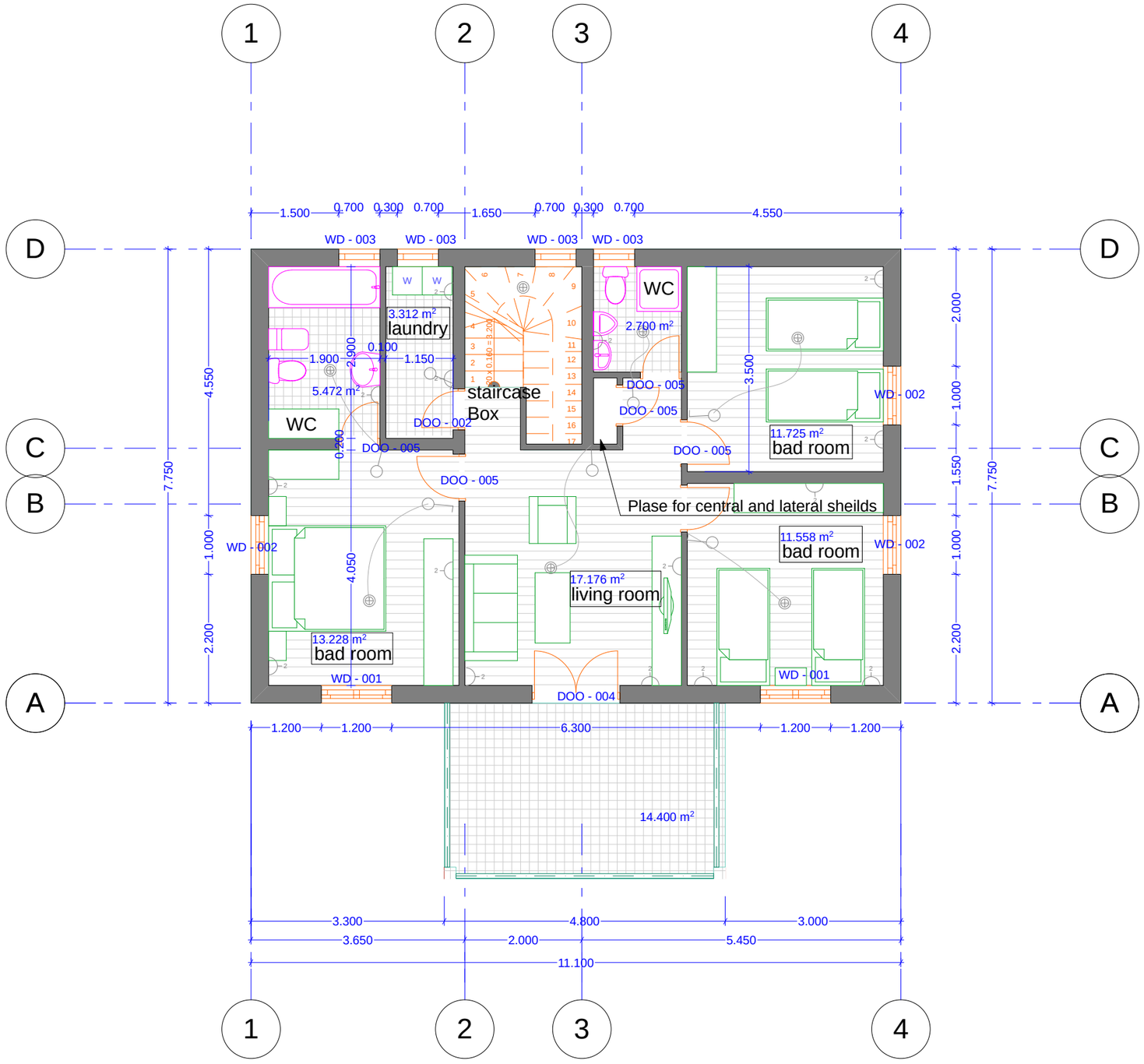
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	first floor plan

PROJECT №:		A-2
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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TEL: +995 32 333650

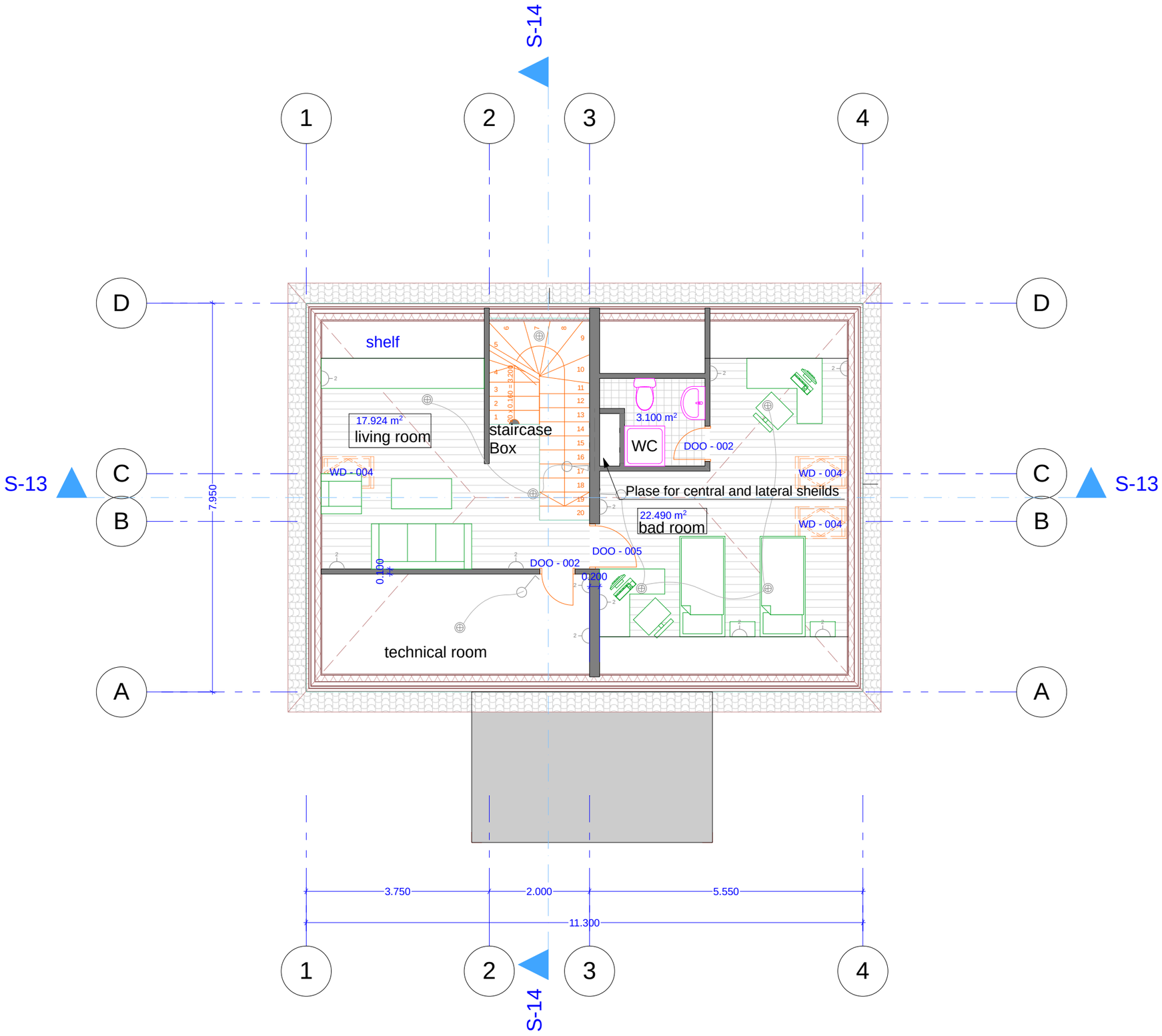
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	first floor plan

PROJECT №:		A-2 Alternative
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON

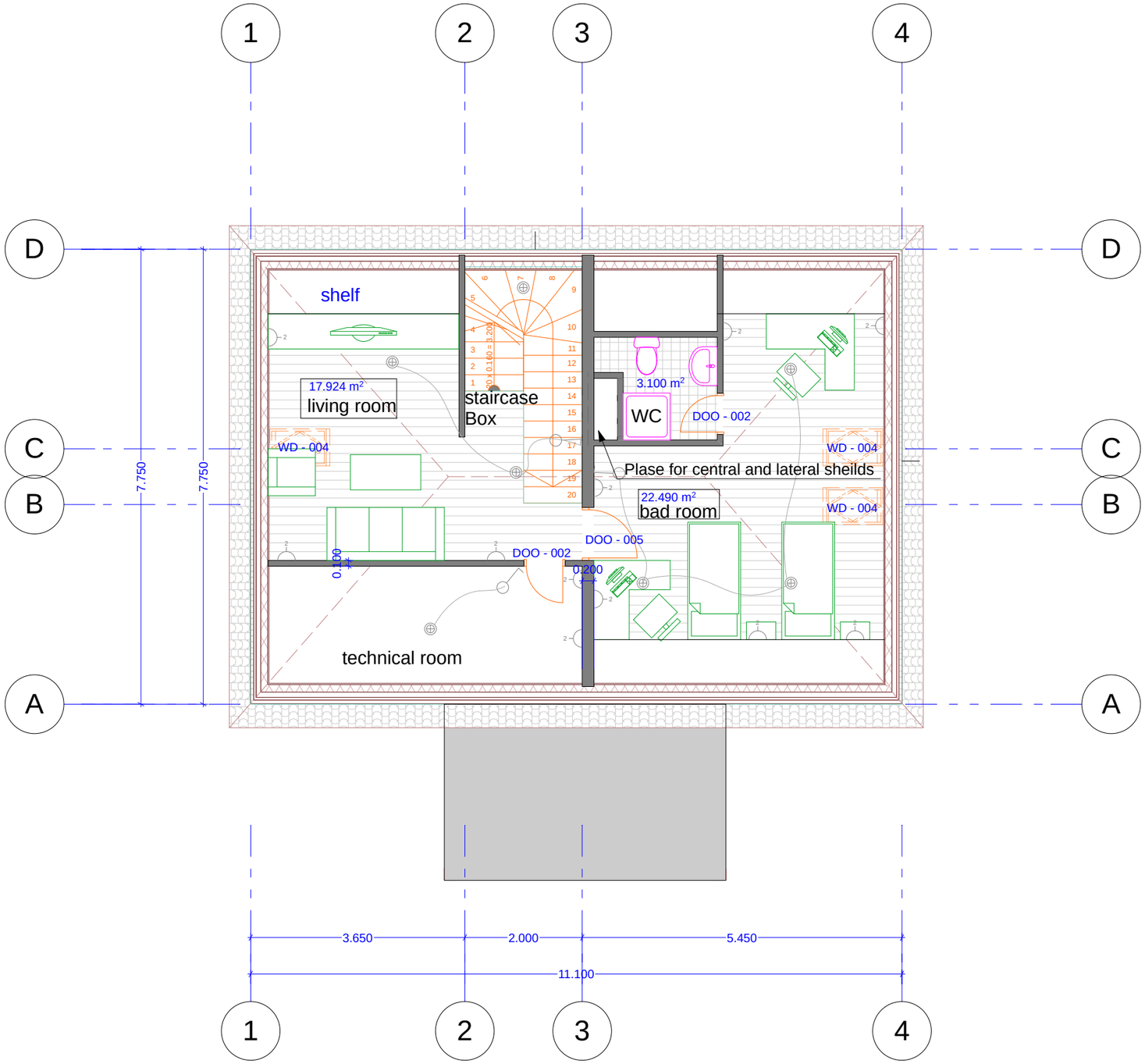
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: attic floor plan

PROJECT №:		A-3
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON

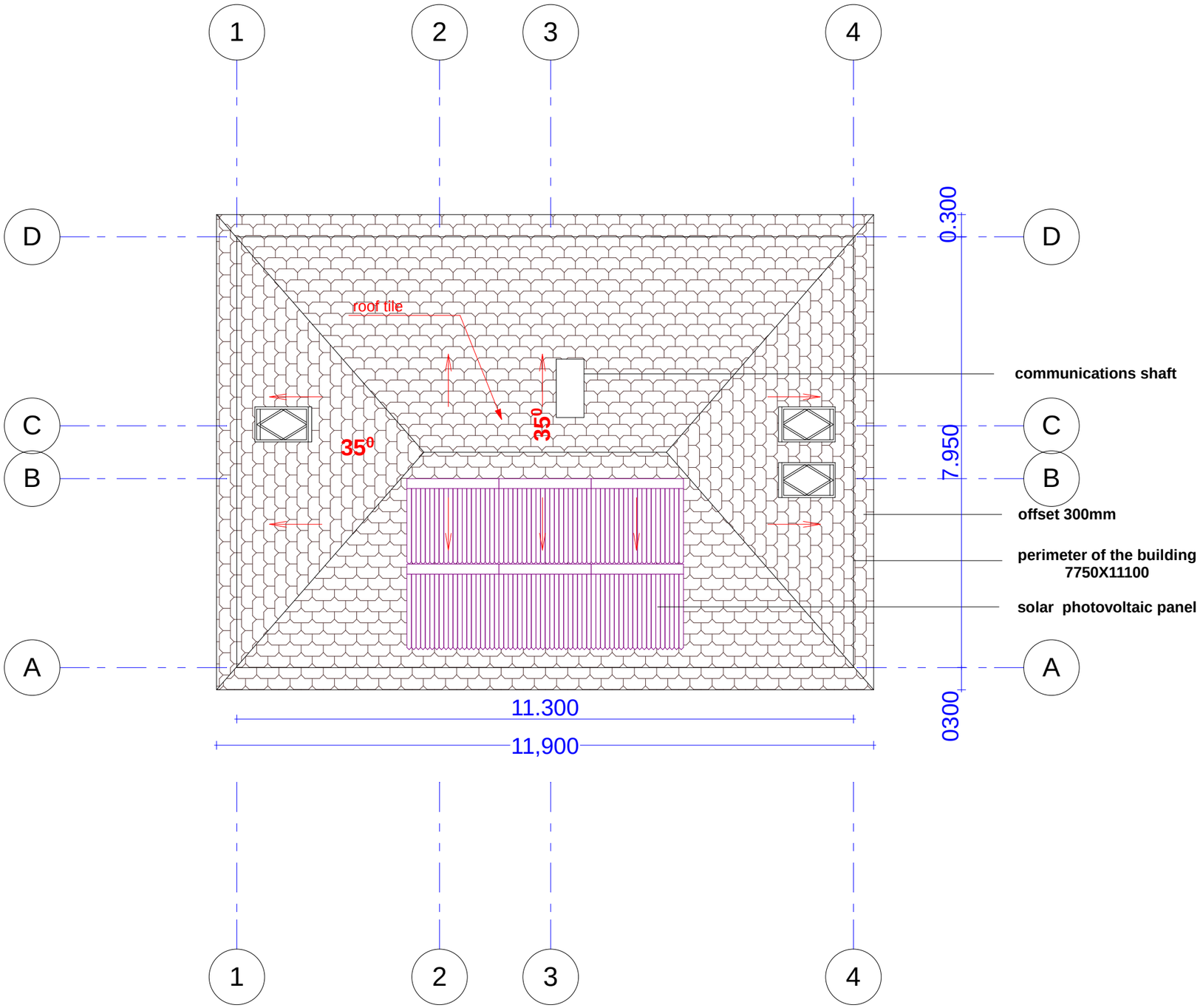
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: attic floor plan

PROJECT №:		A-3 Alternative
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON

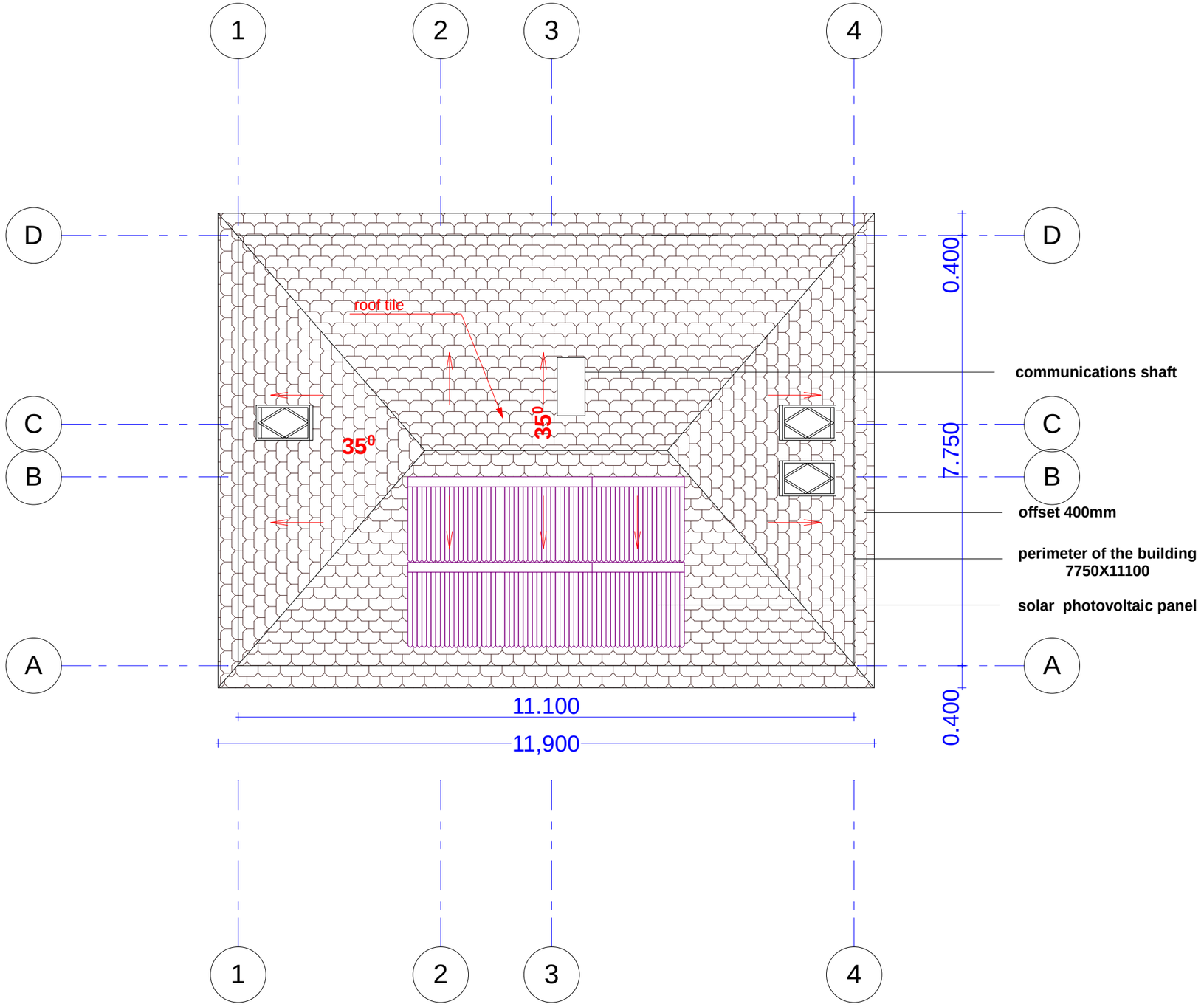
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: roof plan

PROJECT №:		A-4
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	



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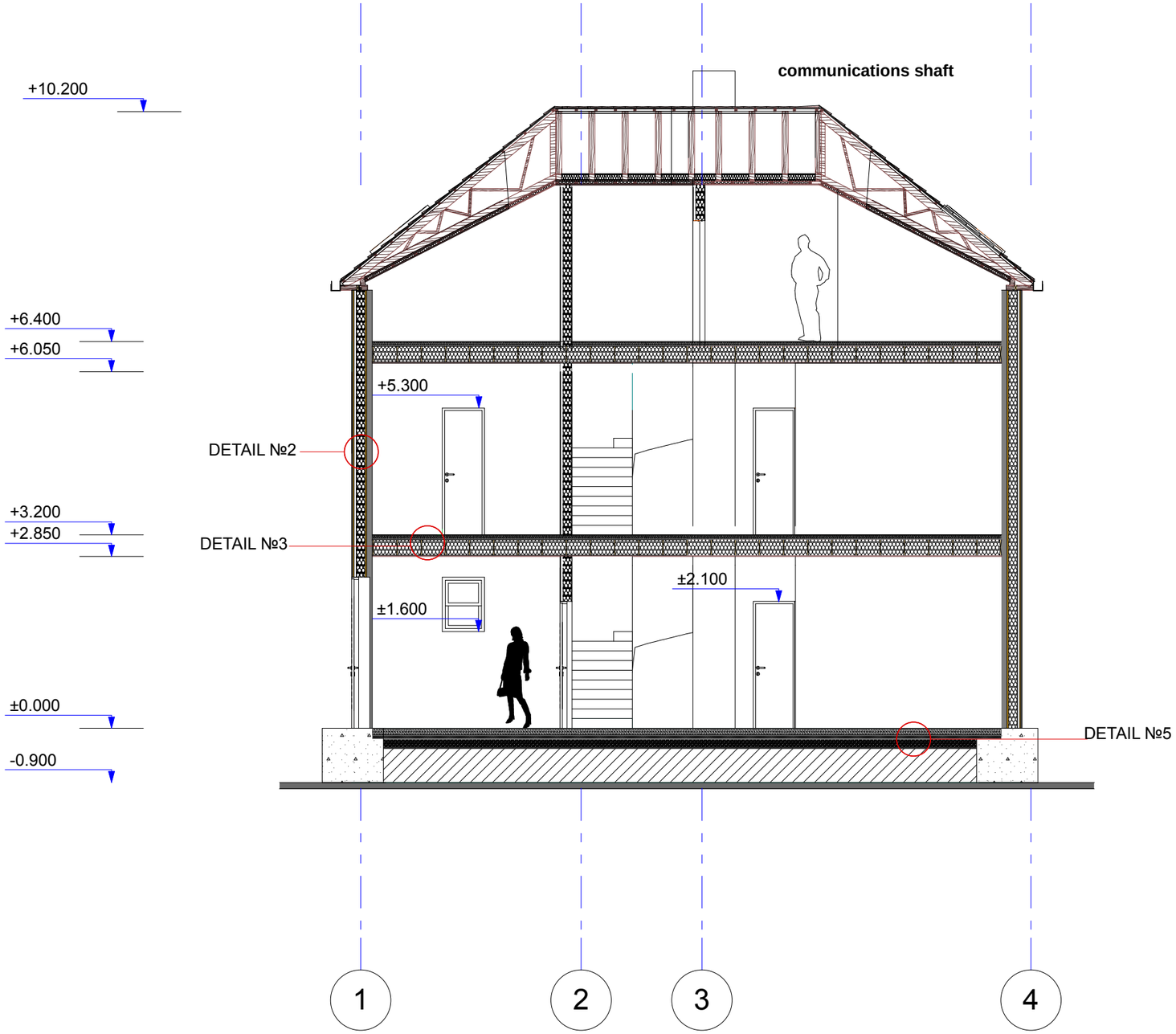
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	roof plan

PROJECT №:		A-4 Alternative
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	



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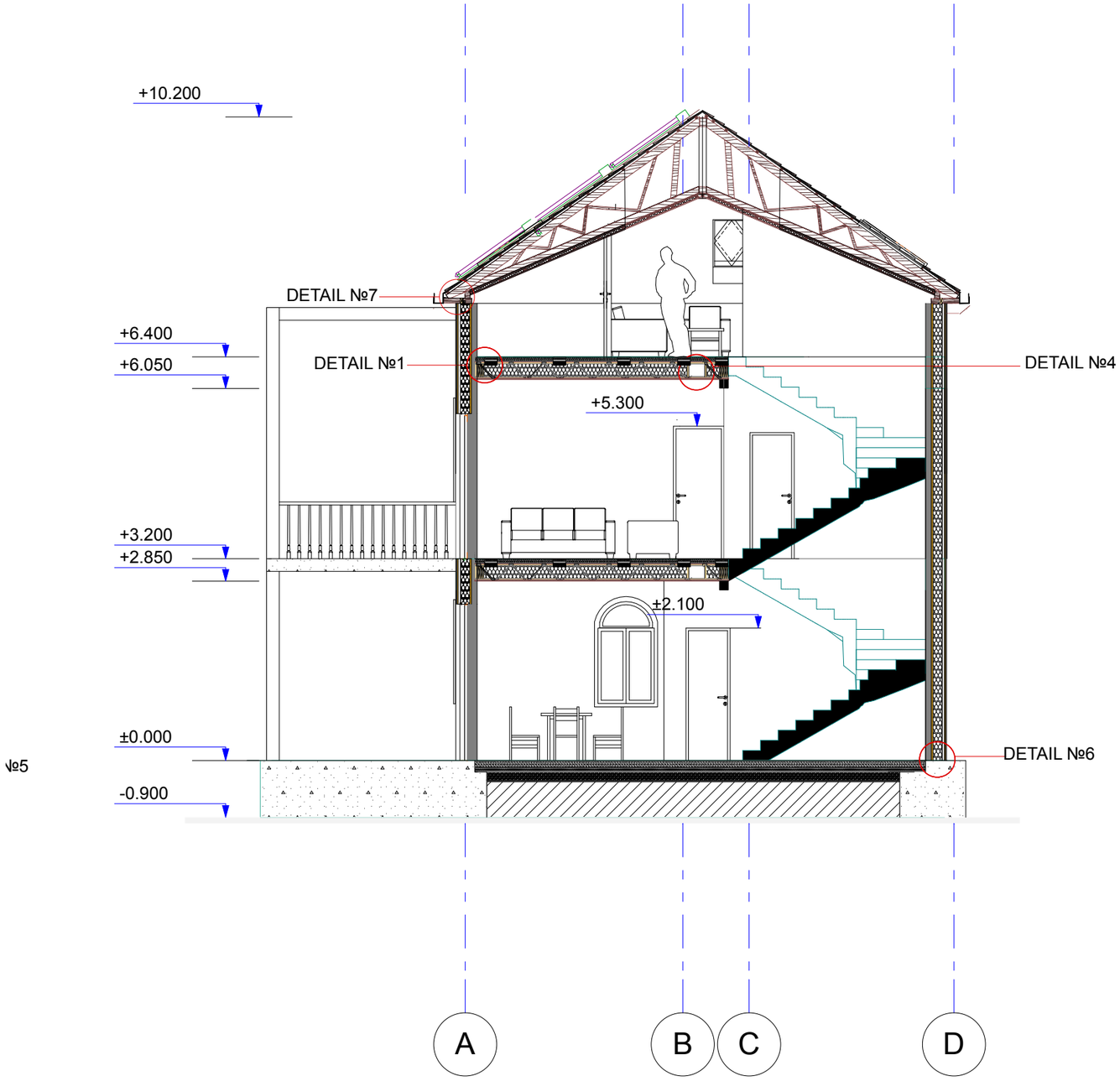
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	section 1-4

PROJECT №:		A-5
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	



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PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	section A-D

PROJECT №:	8.1.7	A-6
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: visualization

PROJECT №:		A-7
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	

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PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: visualization

PROJECT №:		A-8
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	

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PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: visualization

PROJECT №:	8.1.1	A-9
FORMAT :	A3	
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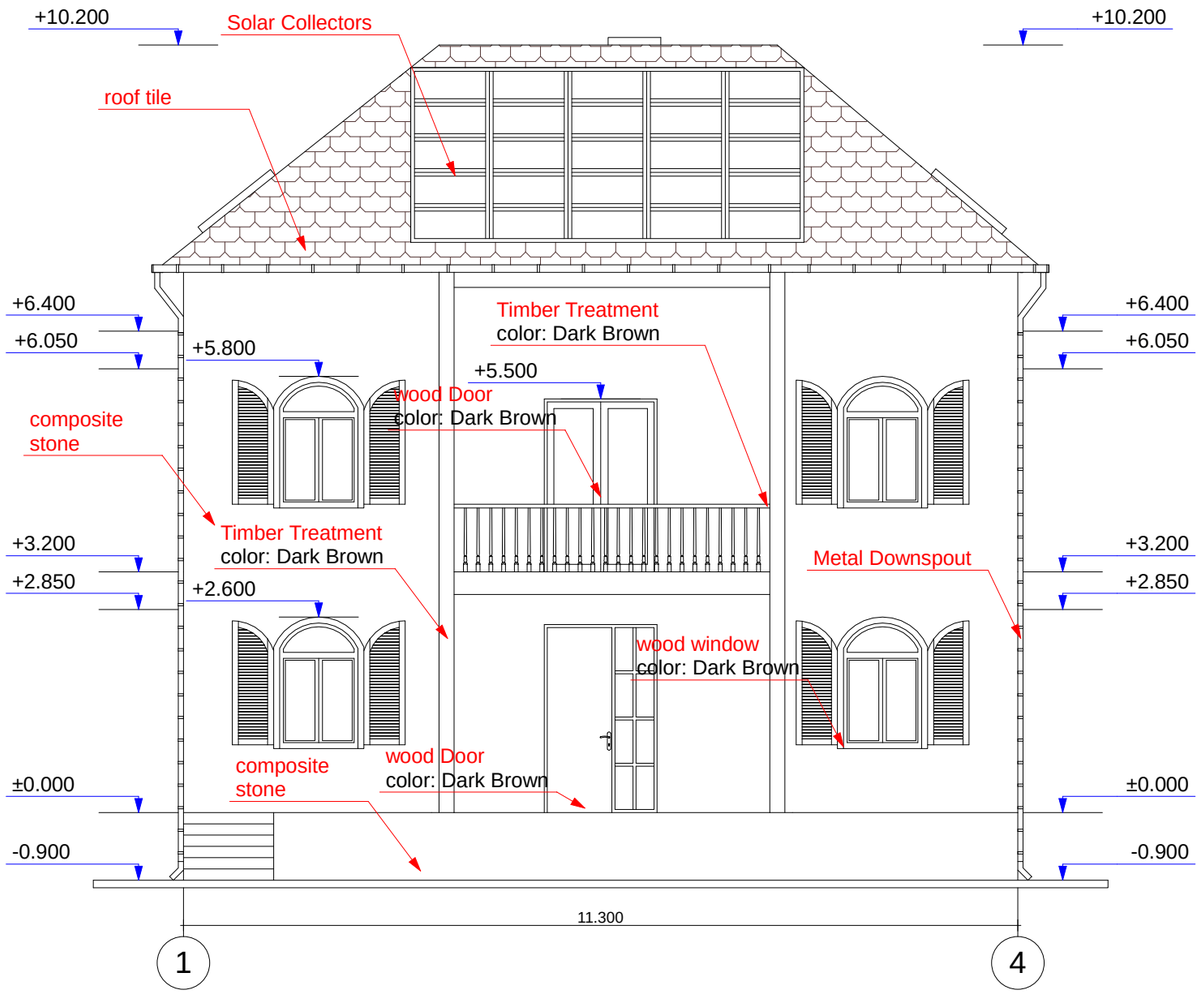
DATE :	20.12.2013	



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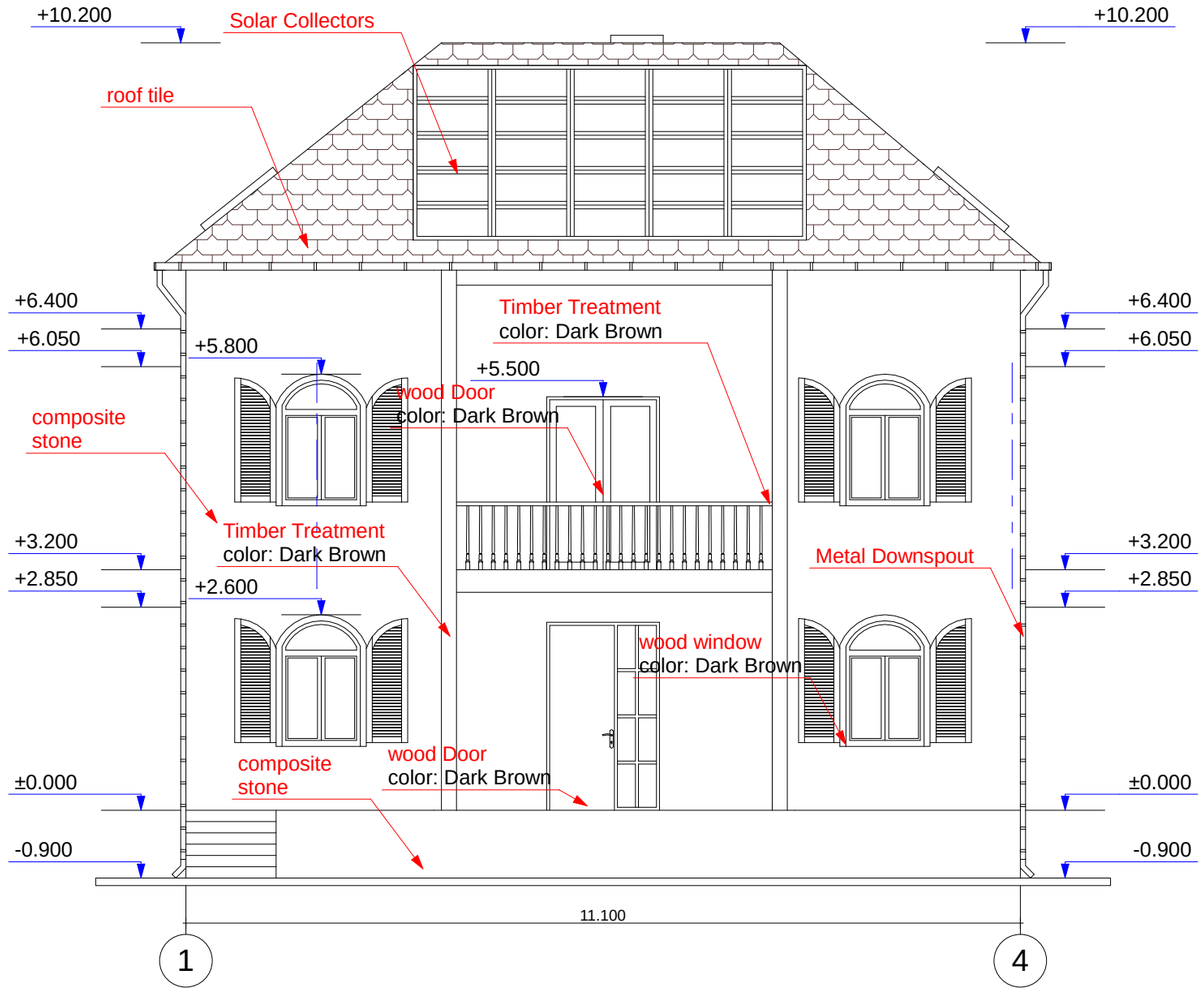
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	facade 1-4

PROJECT №:		A-10
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	facade 1-4

PROJECT №:		A-10 Alternative
FORMAT :	A3	
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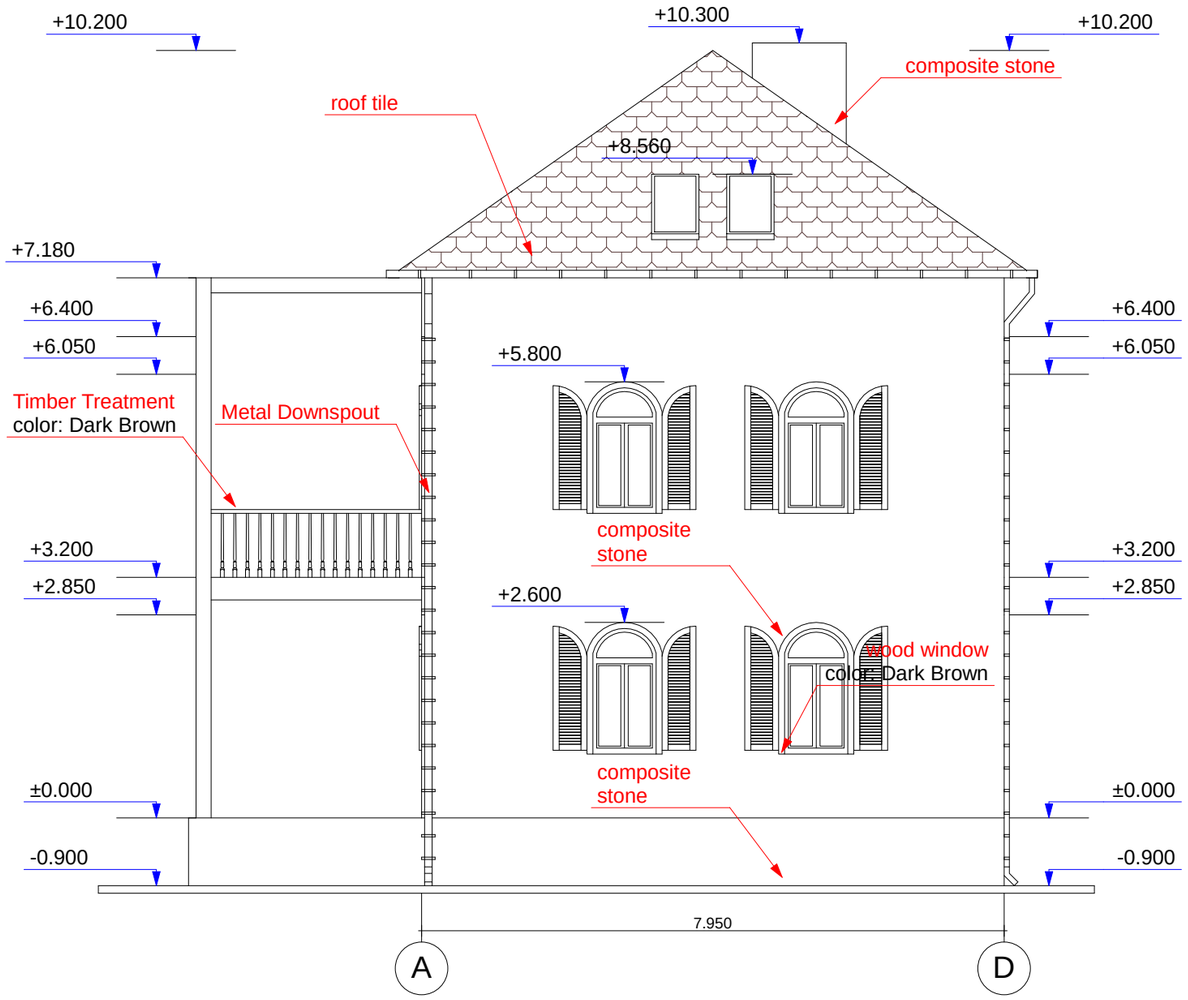

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	facade A-D

PROJECT №:		A-11
FORMAT :	A3	
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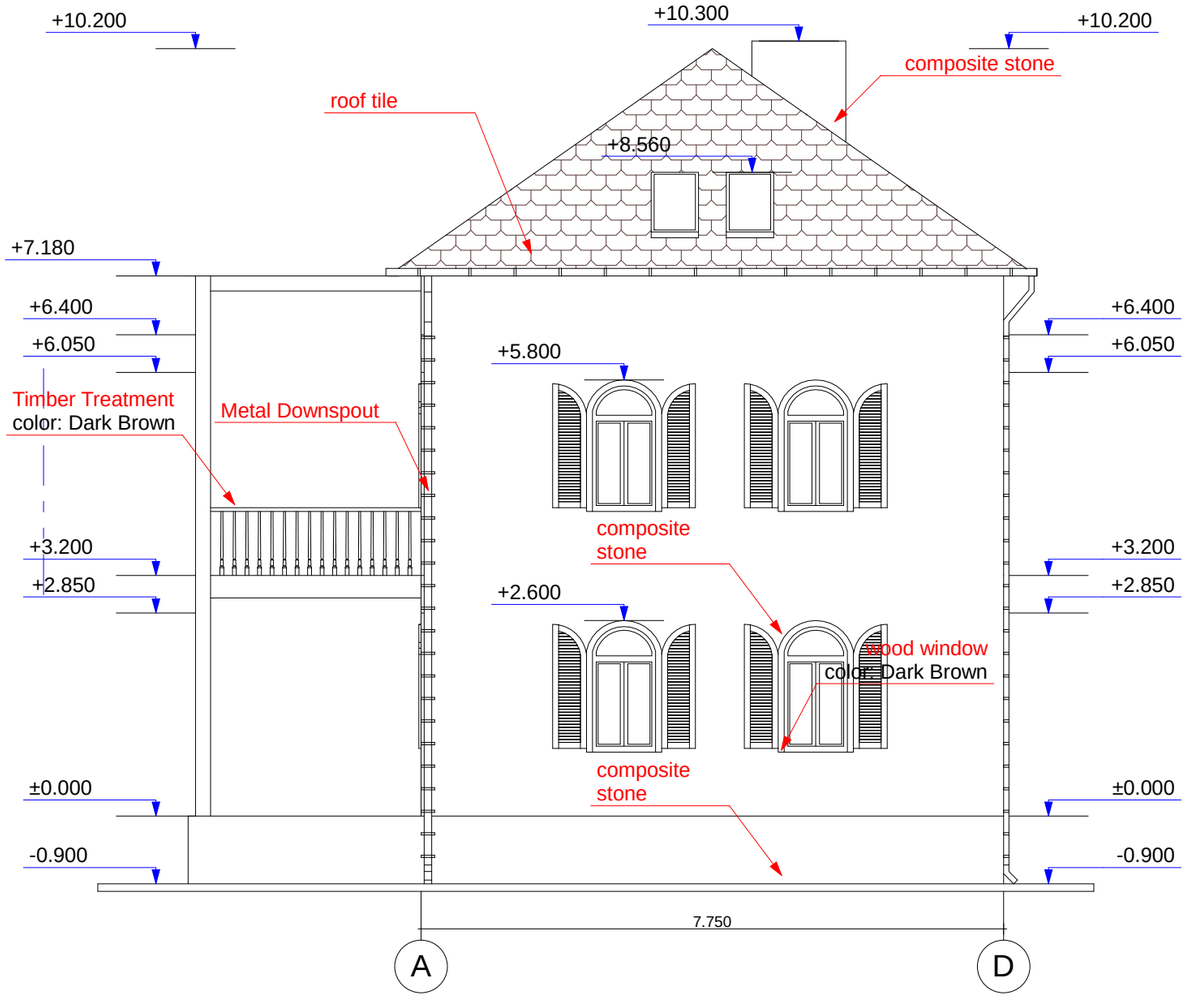
DATE :	20.12.2013	



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TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	facade A-D

PROJECT №:		A-11 Alternative
FORMAT :	A3	
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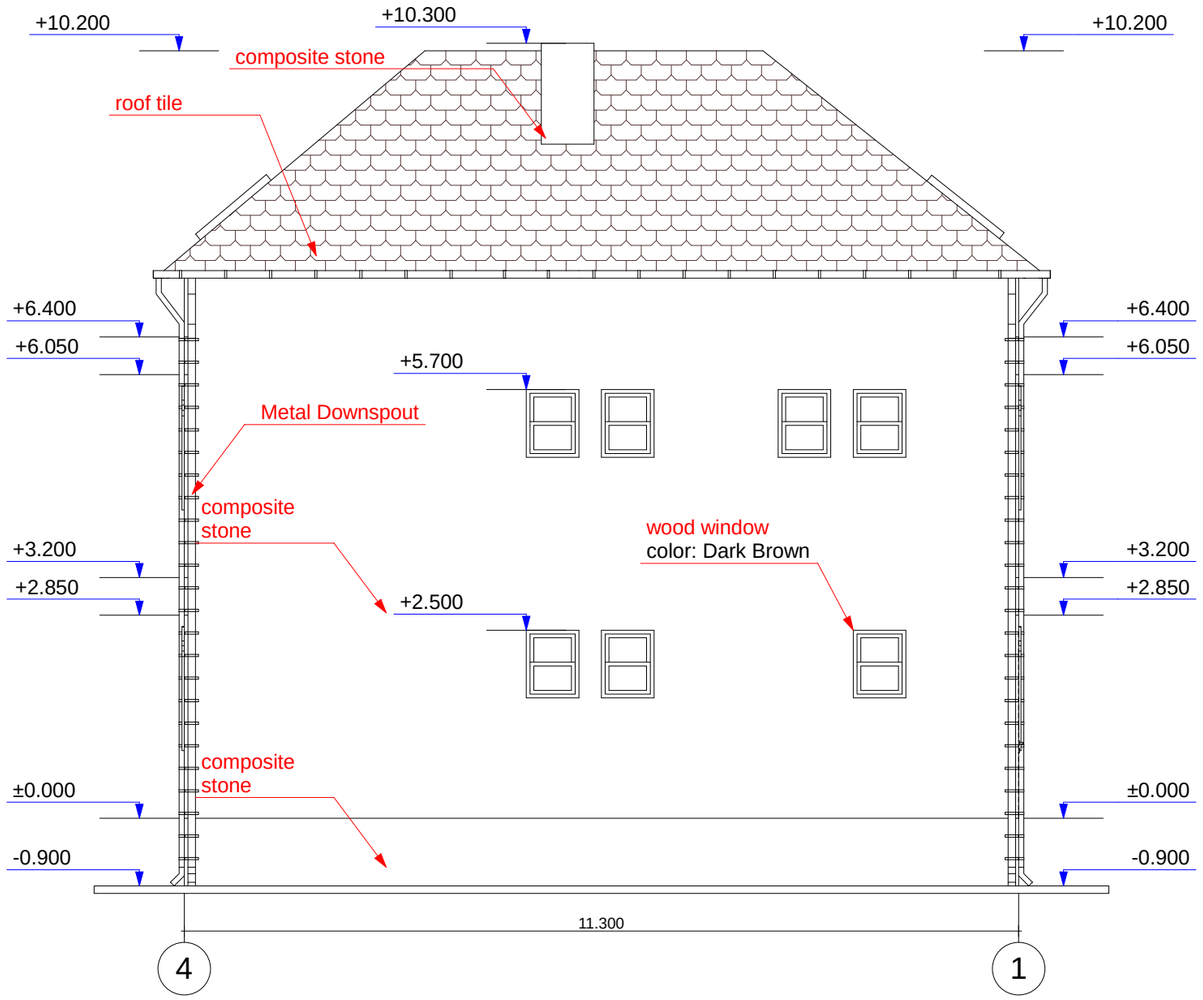

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: facade 4-1

PROJECT №:		A-12
FORMAT :	A3	
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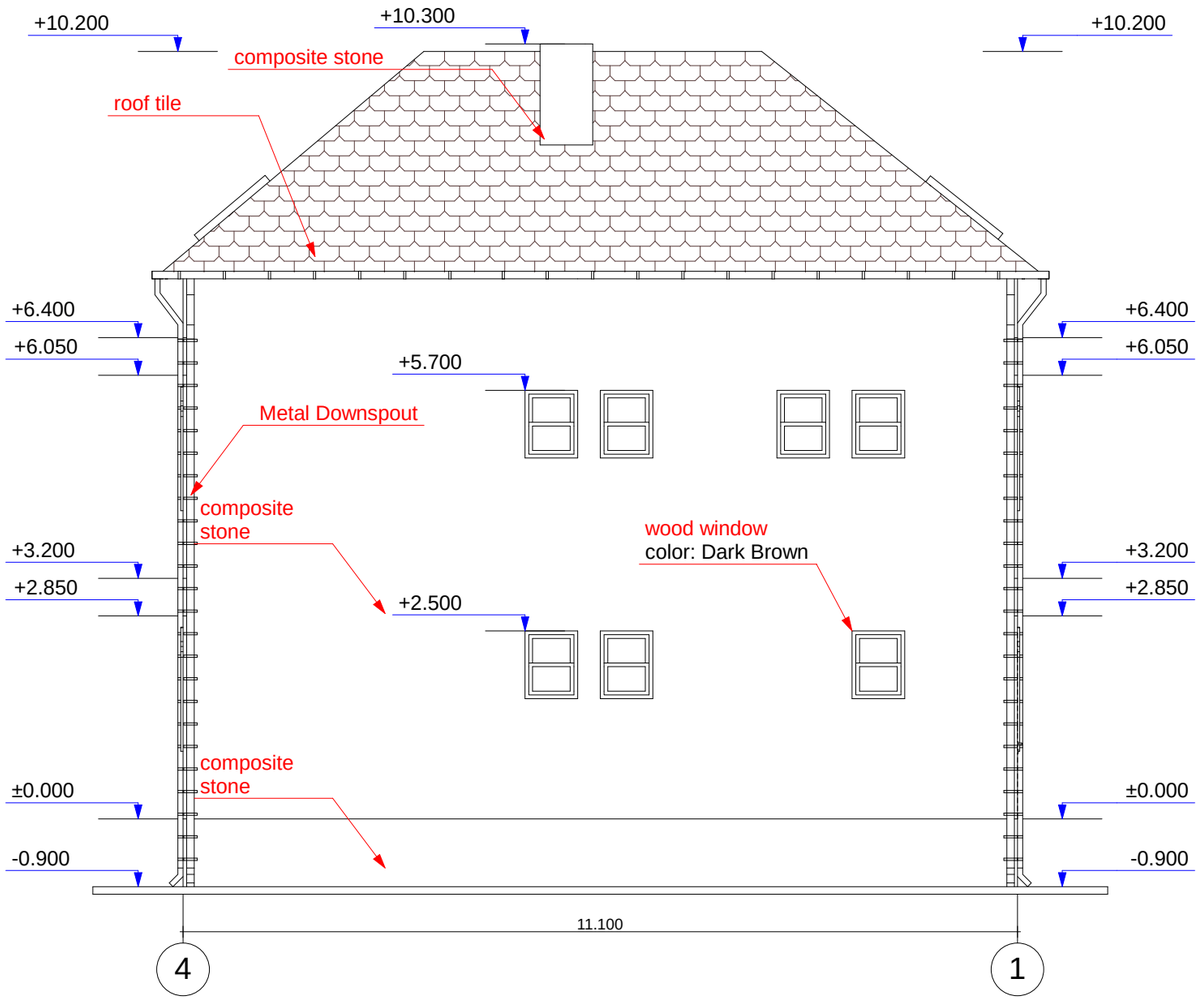

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: facade 4-1

PROJECT №:		A-12 Alternative
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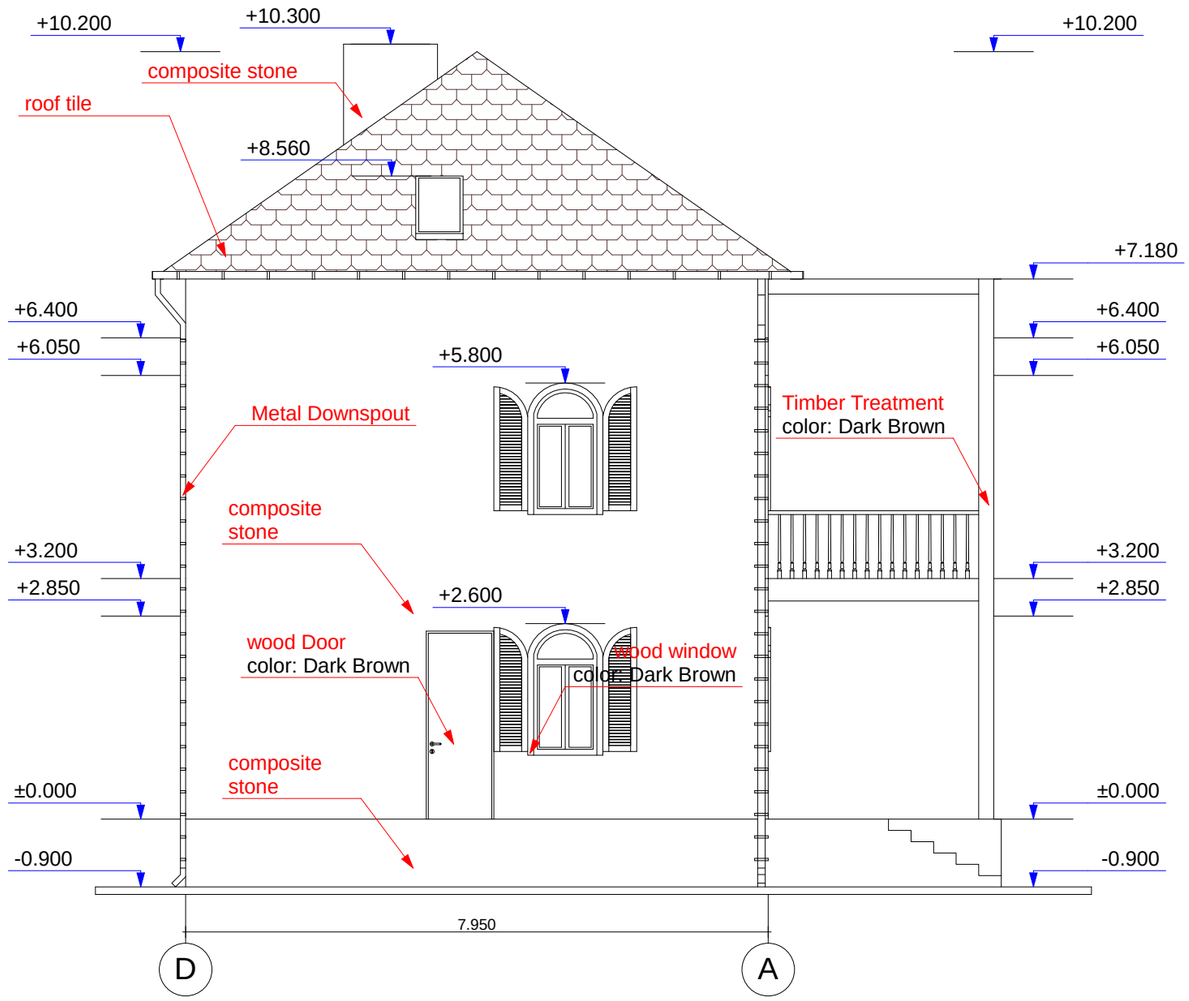

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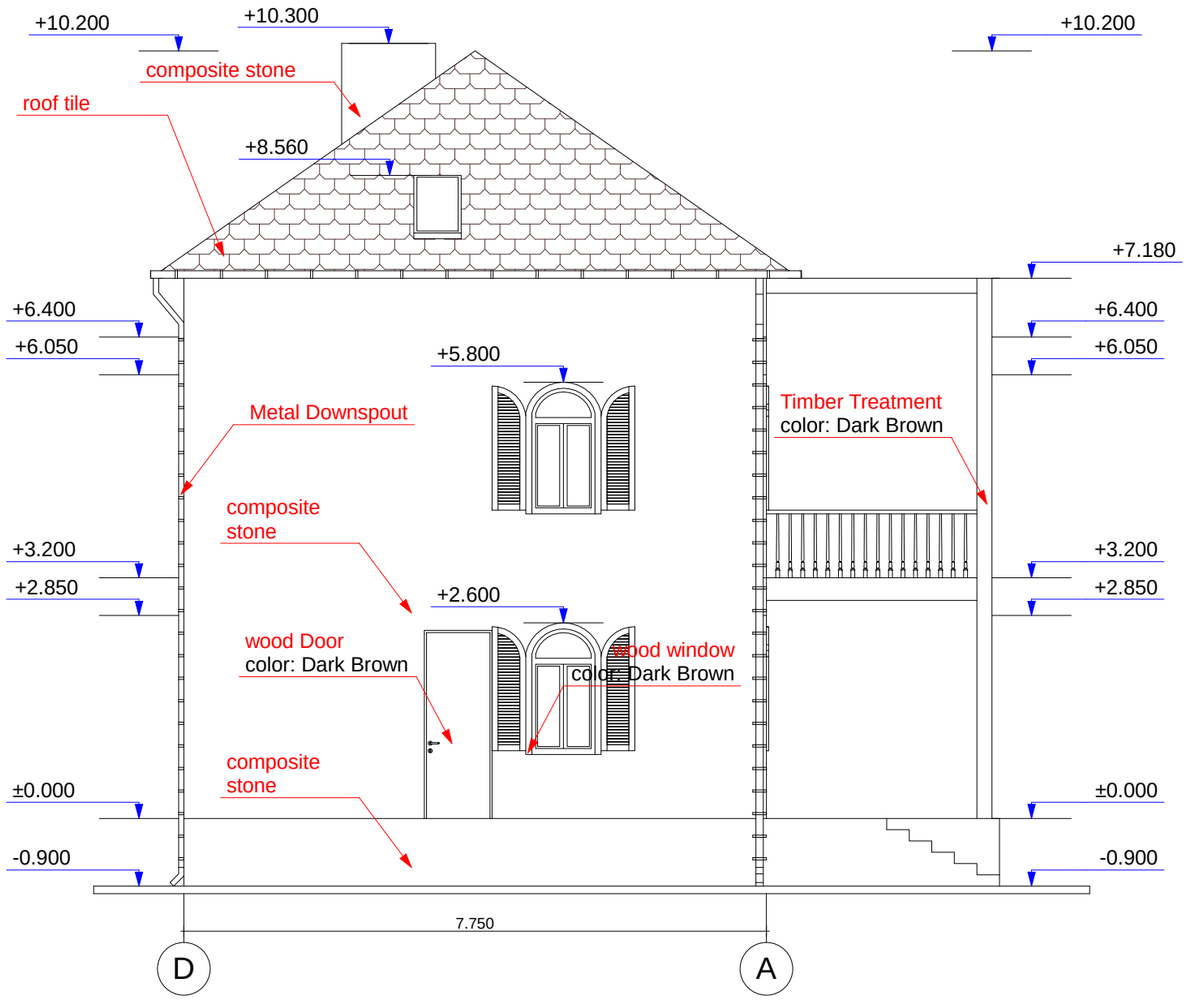
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	facade D-A

PROJECT №:		A-13
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	



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GEORGIA 0131 TBILISI
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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

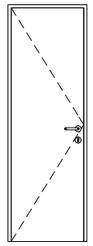
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

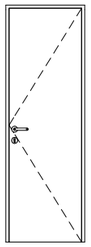
ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: facade D-A

PROJECT №:		A-13 Alternative
FORMAT :	A3	
SCALE :	1:75	
DATE :	20.12.2013	

	**Width:** 0.70 m **Height:** 2.10 m	**6 piece(s)**
User ID	DOO - 002	
Opening orientation	L	
Material	Wd-Pine Vertical	

	**Width:** 0.70 m **Height:** 2.10 m	**6 piece(s)**
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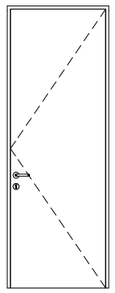
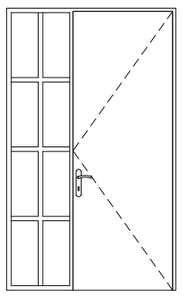
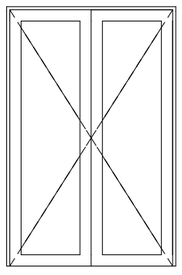
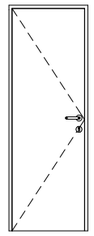
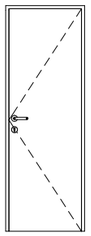
Material	Wd-Pine Vertical	

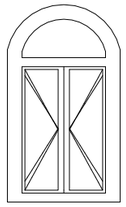
	**Width:** 0.90 m **Height:** 2.50 m	**1 piece(s)**
User ID	DOO - 003	
Opening orientation	R	
Material	Wd-Pine Vertical	

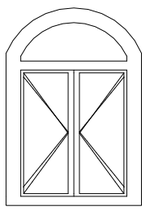
	**Width:** 1.50 m **Height:** 2.50 m	**1 piece(s)**
User ID	DOO - 001	
Opening orientation	R	
Material	wood Long-term preservation and surface finishing of timber	

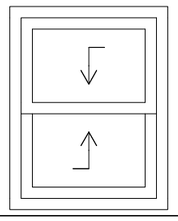
	**Width:** 1.50 m **Height:** 2.30 m	**1 piece(s)**
User ID	DOO - 004	
Opening orientation	L	
Material	wood Long-term preservation and surface finishing of timber	

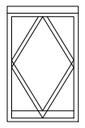
	**Width:** 0.70 m **Height:** 2.00 m	**2 piece(s)**
User ID	DOO - 006	
Opening orientation	L	
Material	Wd-Pine Vertical	

	**Width:** 0.70 m **Height:** 2.00 m	**1 piece(s)**
User ID	DOO - 007	
Opening orientation	R	
Material	Wd-Pine Vertical	

	**Width:** 1.00 m **Height:** 1.75 m	**6 piece(s)**
User ID	WD - 002	
Opening orientation	0	
Material	wood Long-term preservation and surface finishing of timber	

	**Width:** 1.20 m **Height:** 1.75 m	**4 piece(s)**
User ID	WD - 001	
Opening orientation	0	
Material	wood Long-term preservation and surface finishing of timber	

	**Width:** 0.70 m **Height:** 0.90 m	**7 piece(s)**
User ID	WD - 003	
Opening orientation	0	
Material	wood Long-term preservation and surface finishing of timber	

	**Width:** 0.60 m **Height:** 1.20 m	**3 piece(s)**
User ID	WD - 004	
Opening orientation	0	
Material	wood Long-term preservation and surface finishing of timber	

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

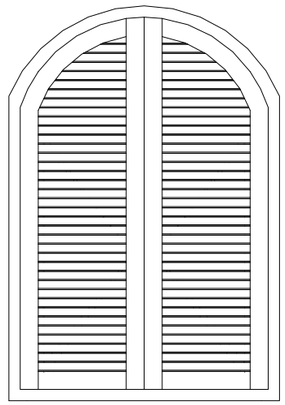
Green social housing programme in lebanon

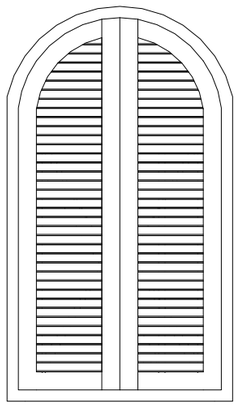
ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: specification of doors and windows

PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

A-14

	**Width:**	**1.20 m**	**4 piece(s)**
	Height:	**1.75 m**	
	User ID		sunshade - 001
	Opening orientation		0
	Material		wood Long-term preservation and surface finishing of timber

	**Width:**	**1.00 m**	**6 piece(s)**
	Height:	**1.75 m**	
	User ID		sunshade - 002
	Opening orientation		0
	Material		wood Long-term preservation and surface finishing of timber

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: specification of sunshade

PROJECT №:		A-15
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

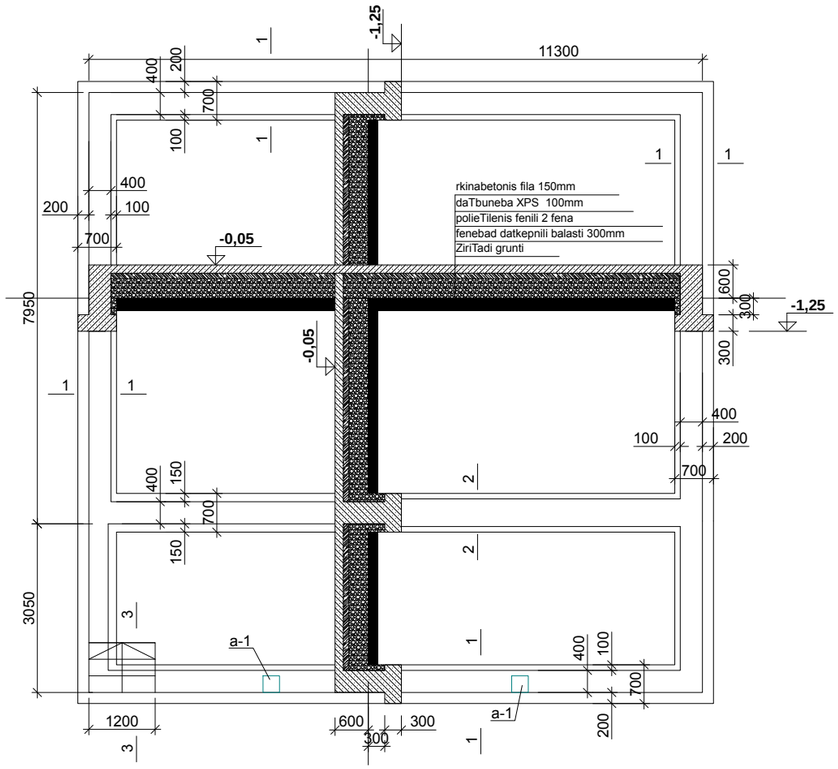
Green social housing programme in Lebanon

NEW TECHNOLOGY CENTER

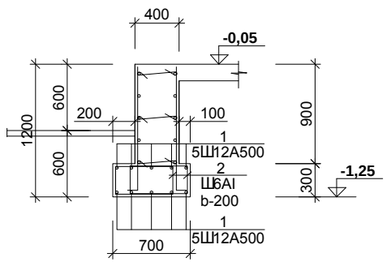
Constructive part

K-1 Fundament arrangement scheme
K-2 Floor tiler reinforcement and anchorage disposition layouts
K-3 layouts of disposition of separate armature fittings on the floor tile floor truss/wall connection
K-4 DETAIL №1 Balcony
K-5 DETAIL №2
K-6 DETAIL №3
K-7 DETAIL №4
K-8 DETAIL №5
K-9 DETAIL №6
K-10 DETAIL №7
K-11 DETAIL №8
K-12 Wall section
K-13 **Typical window installation**
K-14 Posy floor plan(GF)
K-15 Posy floor plan
K-16 Stairs
K-17 chimney height the ridge
K-18 frame

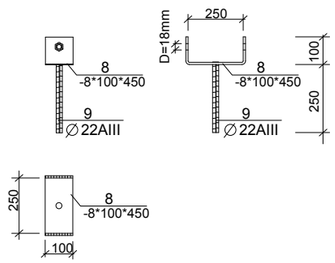
Fundament arrangement scheme



1 - 1



Anchorage-1



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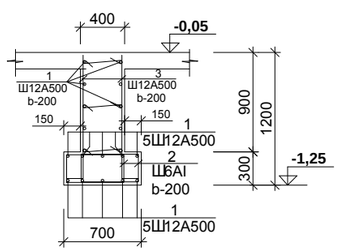
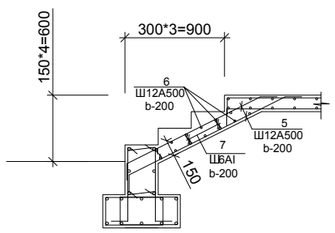


3 - 3



Register of armature fittings

el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Strip foundation	1	Cut on place	12AIII	460 000	—	409,0
	2	250 / 550	6AI	1750	460	179,0
	3	150 / 1150	12AIII	1350	460	552,0
	4	280	6AI	450	225	23,0
monolithic stairs	5	150 / 1050 / 150	12AIII	**1350**	**16**	**20,0**
	6	**1150**	12AIII	**1150**	**16**	**17,0**
	7	130	6AI	300	10	1,0

Metal Expenditure list - per stamp

stamp	pos. N	Profile	length mm.	quant. pcs.	Weight kg. 1 pcs.	Overall	Stamp
Metal anchorage (2pcs)	8	-8*100	450	1	3.00	3.00	3.90*2= =7,80
	9	Armature ∅22AIII	270	1	0.90	0.90	

Unit specification on mounting scheme

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
	Strip foundation				
		concrete B-25	13.10 m		
	Monolithic walls				
		concrete B-15	12.20 mi		
	Monolithic steps				
		concrete B-25	0,50 mi		

1.Please consider the given paper in combination with remaining foundation documents
2.pouring concrete into "In situ wall" requires usage of manual vibrator
3.wall connection to the axis please refer to architectural drawings.
4.Foundation cavity is indicated conditionally on drawings, as the comprehensive geological analyses
of building site has not been conducted yet
5. After digging out working trench, adjustment of foundation drawings to real life scenario is possible.
5. After digging out working trench, adjustment of foundation drawings to real life scenario is possible.

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

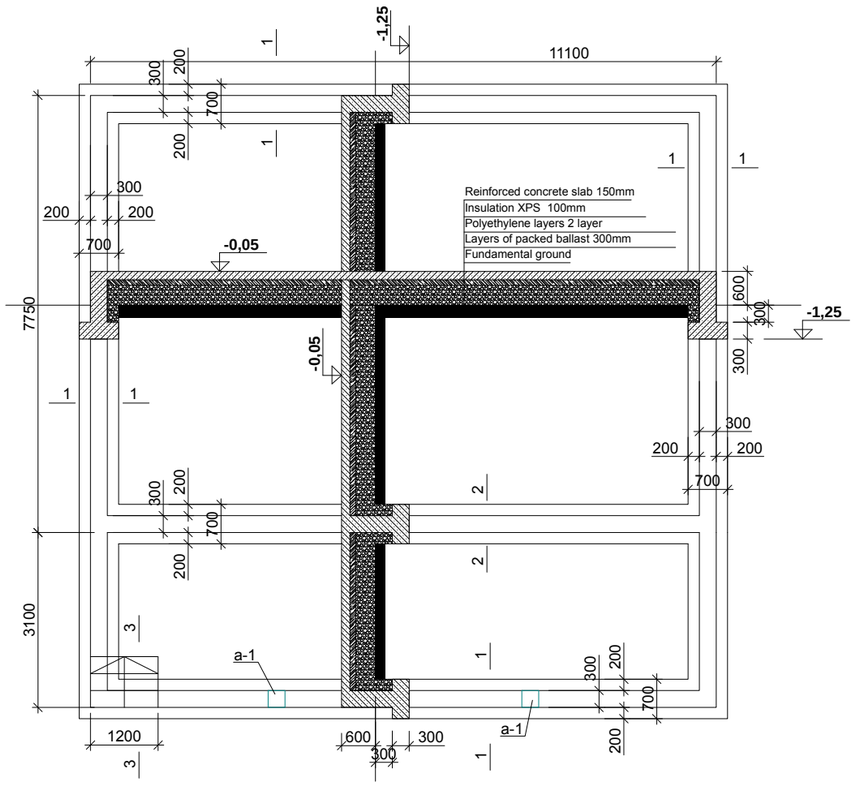
ENGINEERING: I.kevlishvili

STATUS : Project

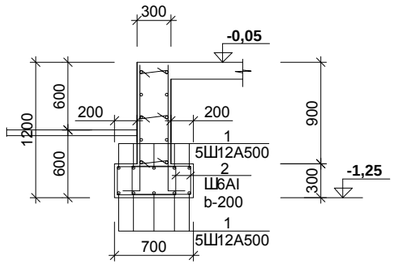
DRAWING: Fundament arrangement scheme

PROJECT №:		K-1
FORMAT :	A3	
SCALE :	1:100	
DATE :	20.12.2013	

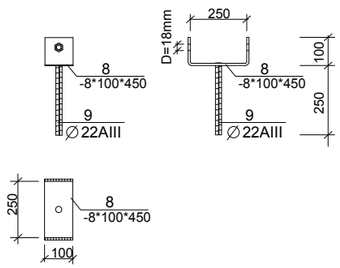
Fundament arrangement scheme



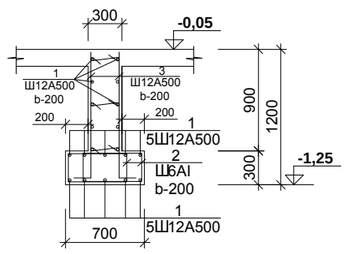
1 - 1



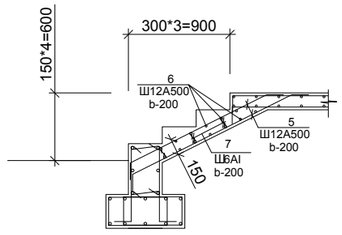
Anchorage -1



2 - 2



3 - 3



Register of armature fittings

el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Strip foundation	1	Cut on place	12AIII	460 000	—	409,0
	2	250, 550	6AI	1750	460	179,0
	3	150, 1150	12AIII	1350	460	552,0
	4	280	6AI	450	225	23,0
monolithic stairs	5	150, 1050, 150	12AIII	**1350**	**16**	**20,0**
	6	**1150**	12AIII	**1150**	**16**	**17,0**
	7	130	6AI	300	10	1,0

Metal Expenditure list - per stamp

stamp	pos. N	Profile	length mm.	quant. pcs.	Weight kg. 1 pcs.	Weight kg. Overall	Weight kg. Stamp
Metal anchorage (2pcs)	8	-8*100	450	1	3.00	3.00	3,90*2= =7,80
	9	Armature ∅22AIII	270	1	0.90	0.90	

Unit specification on mounting scheme

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
	Strip foundation				
		concrete B-25	9.50 mi		
	Monolithic walls				
		concrete B-15	12.20 mi		
	Monolithic steps				
		concrete B-25	0,50 mi		

1.Please consider the given paper in combination with remaining foundation documents
2.pouring concrete into "In situ wall" requires usage of manual vibrator
3.wall connection to the axis please refer to architectural drawings.
4.Foundation cavity is indicated conditionally on drawings, as the comprehensive geological analyses
of building site has not been conducted yet
5. After digging out working trench, adjustment of foundation drawings to real life scenario is possible.
5. After digging out working trench, adjustment of foundation drawings to real life scenario is possible.

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

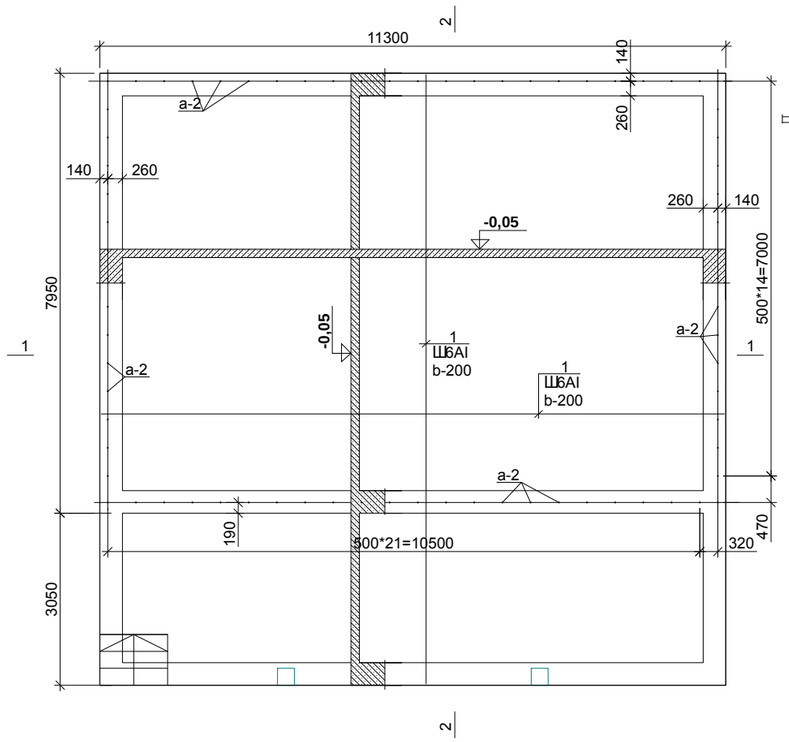
STATUS : Project

DRAWING: Fundament arrangement scheme

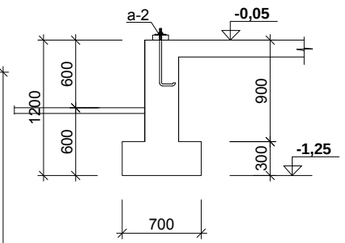
PROJECT №:	
FORMAT :	A3
SCALE :	1:100
DATE :	20.12.2013

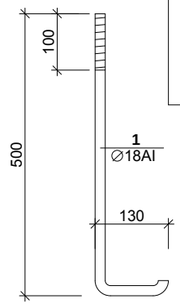
K-1 Alternative

Floor tiler reinforcement and anchorage disposition layouts



det. #1

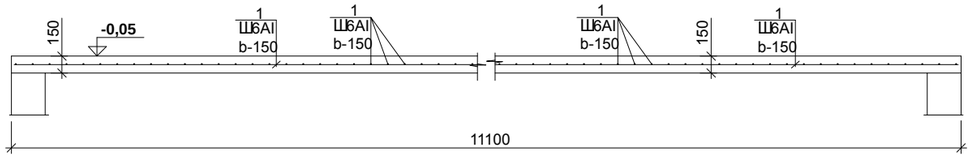




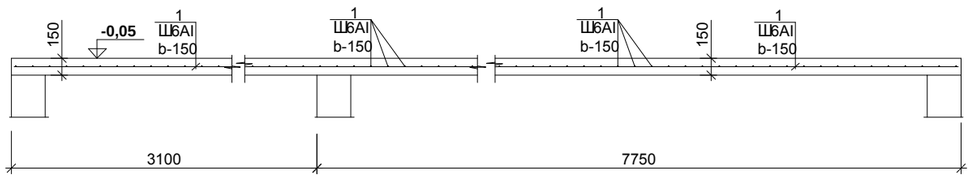
Register of armature fittings

el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Flooring slab	1	Cut on place	6AI	1650 000	—	367,0

1 - 1



2 - 2



Battery specifications for installation layouts

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
	Floor slab				
		Concrete B-25	18,00mi		
		Anchorage A-2			
a - 2	Page k-	Anchorage A-2	74		

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

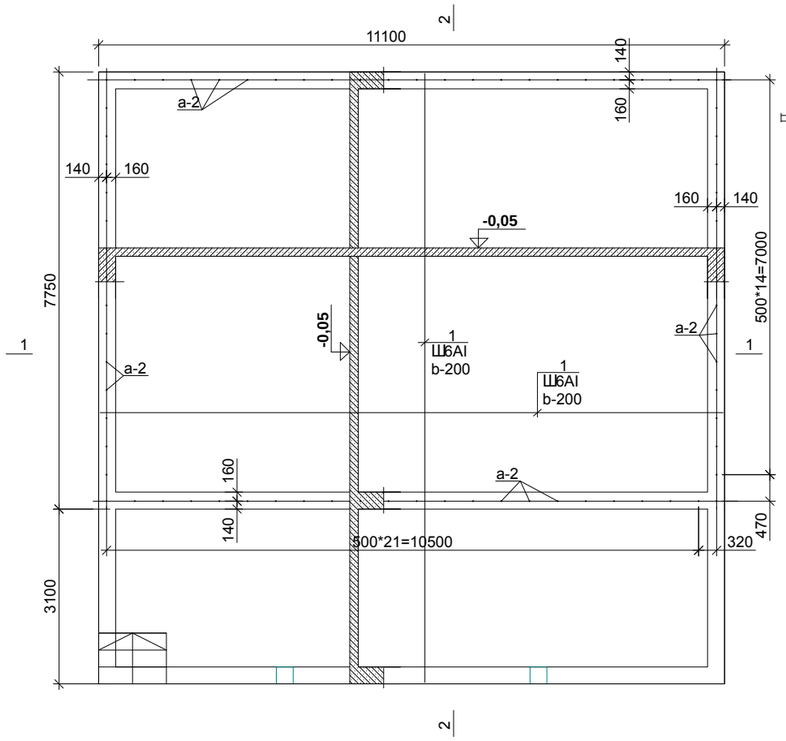
STATUS : Project

DRAWING: Floor tiler reinforcement and anchorage disposition layouts

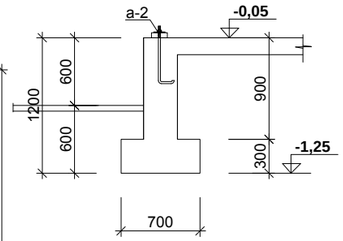
PROJECT №:	
FORMAT :	A3
SCALE :	1:100
DATE :	20.12.2013

K-2

Floor tiler reinforcement and anchorage disposition layouts

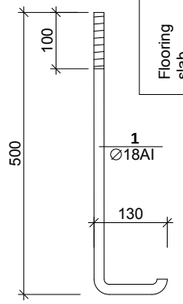


detail #1

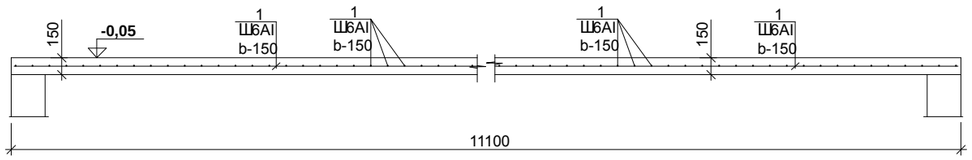


Register of armature fittings

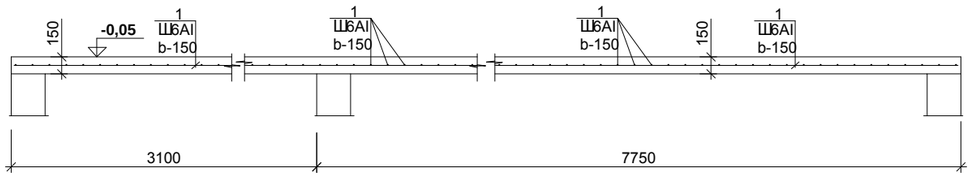
el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Flooring slab	1	Cut on place	6AI	1650 000	—	367,0



1 - 1



2 - 2



Battery specifications for installation layouts

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
	Floor slab				
		Concrete B-25	18,00mi		
		Anchorage A-2			
a - 2	Page k-	Anchorage A-2	74		

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

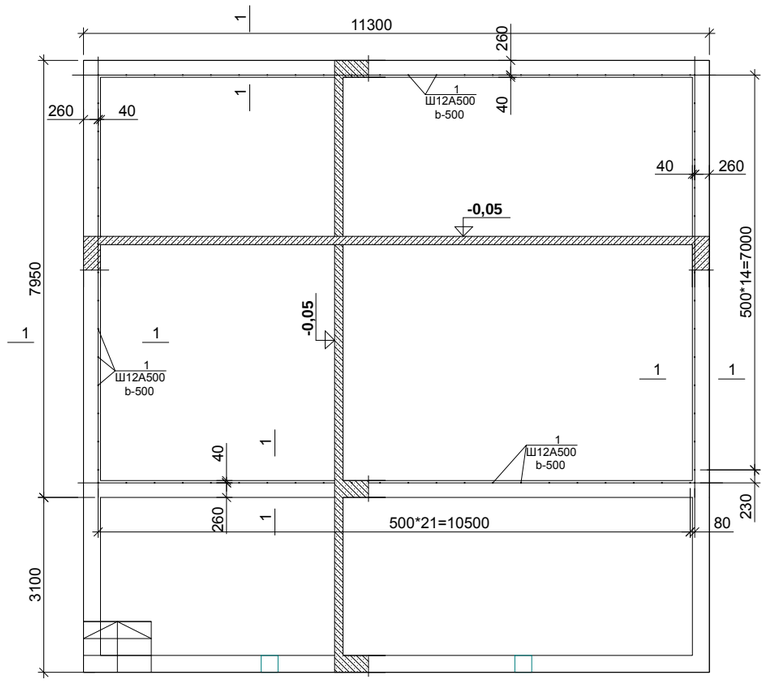
STATUS : Project

DRAWING: Floor tiler reinforcement and anchorage disposition layouts

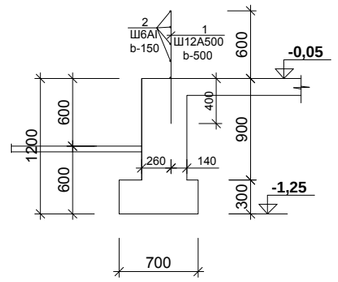
PROJECT №:	
FORMAT :	A3
SCALE :	1:100
DATE :	20.12.2013

K-2 Alternative

layouts of disposition of separate armature fittings on the floor tile



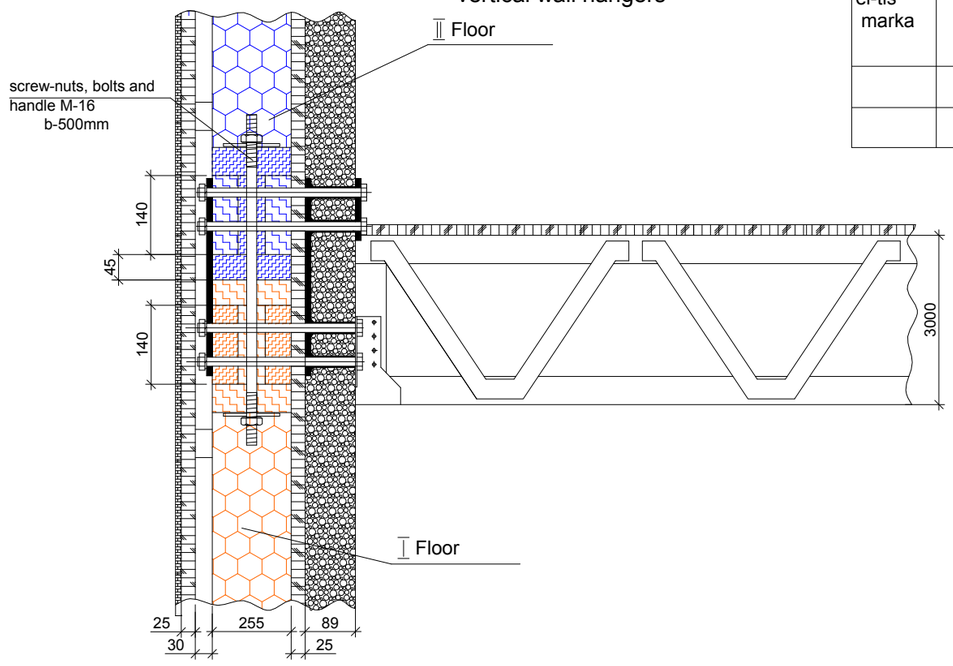
1 - 1



armaturis Reroebis uwyisi

el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Flooring slab	1	**1000**	12AIII	**1000**	**90**	**80,0**
	2	Cut on place	6AI	280 000	—	63,0

floor truss/wall connection and vertical wall hangers



Battery specifications for installation layouts

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
		Basement wall			
		Concrete	2,70mi		

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

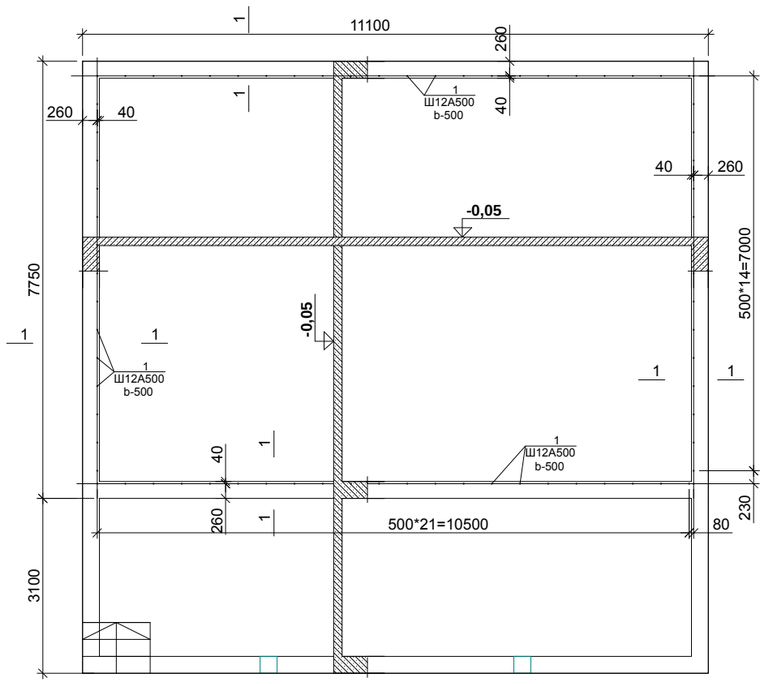
DRAWING: layouts of disposition of separate armature fittings on the floor tile

floor truss/wall connection

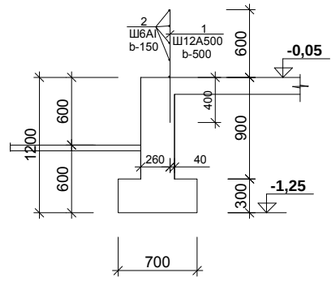
PROJECT №:	
FORMAT :	A3
SCALE :	1:100
DATE :	20.12.2013

K-3

layouts of disposition of separate armature fittings on the floor tile



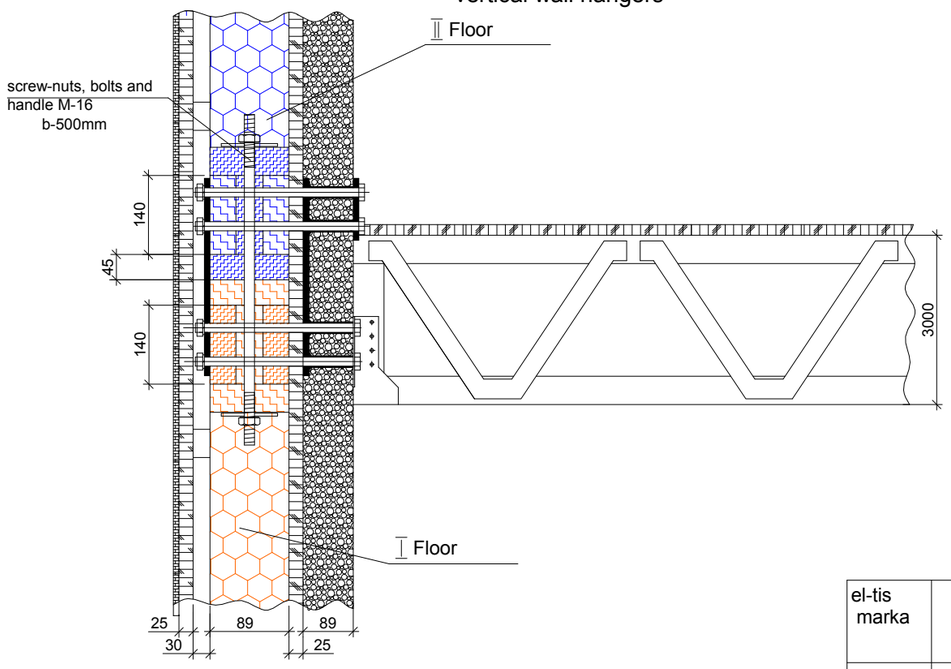
1 - 1



armaturis Reroebis uwyisi

el-tis marka	pos. N	sketch or cut	∅ mm	Length mm	quant. pcs.	weight kg
Flooring slab	1	**1000**	12AIII	**1000**	**90**	**80,0**
	2	Cut on place	6AI	280 000	—	63,0

floor truss/wall connection and vertical wall hangers



Battery specifications for installation layouts

el-tis marka	Serial Number	Name	quant. pcs.	weight kg.	Note
		Basement wall			
		Concrete	2,70mi		

EN1992-1 Eurocode 2: Design of concrete structures Part 1-1 - General rules and rules for buildings Part 1-2 - General rules - Structural file design

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

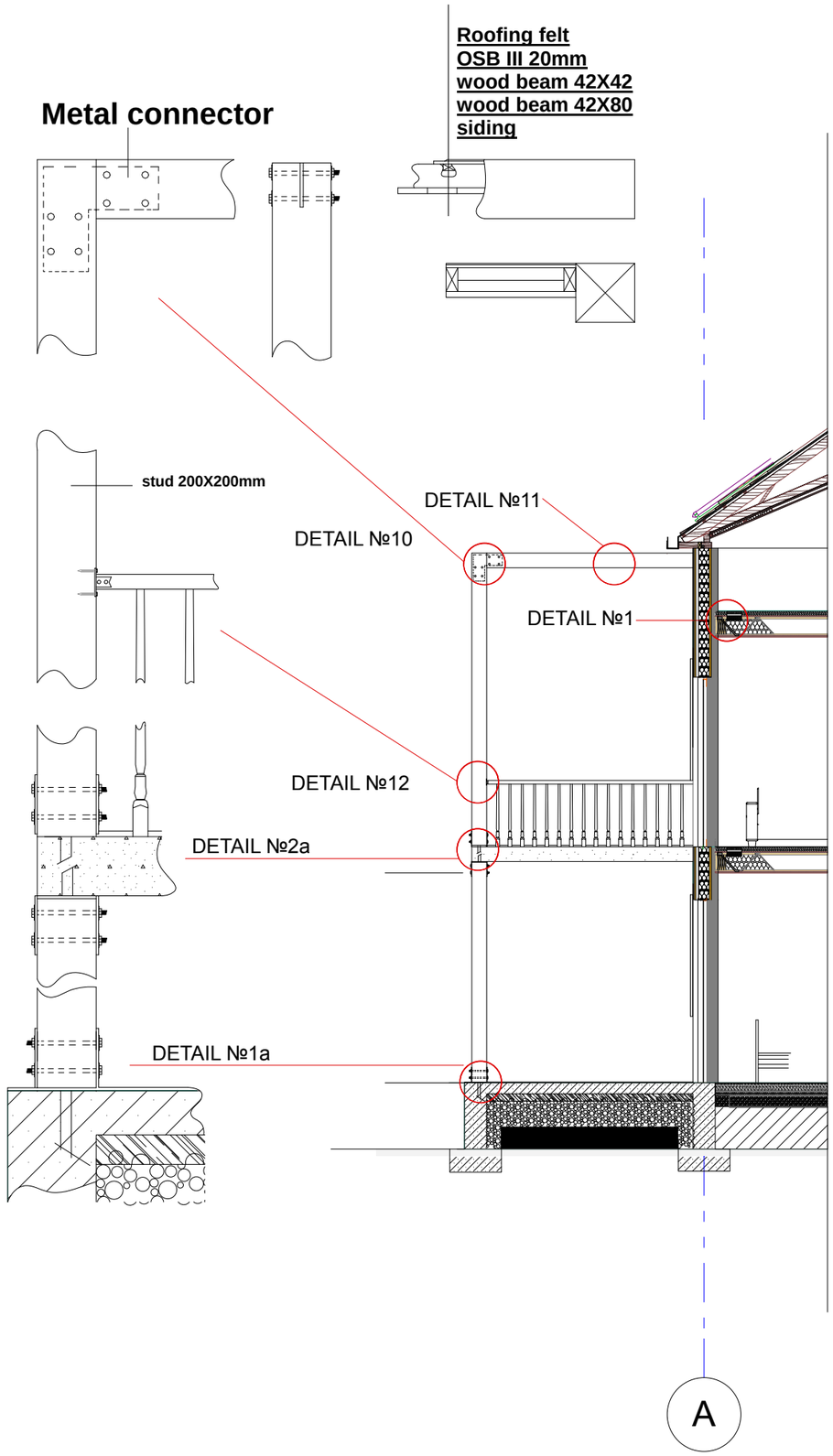
STATUS : Project

DRAWING: layouts of disposition of separate armature fittings on the floor tile

floor truss/wall connection

PROJECT №:	
FORMAT :	A3
SCALE :	1:100
DATE :	20.12.2013

K-3 Alternative



Timber Treatment

Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack.

Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

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CLIENT: GREEN FUTURE LEBANON

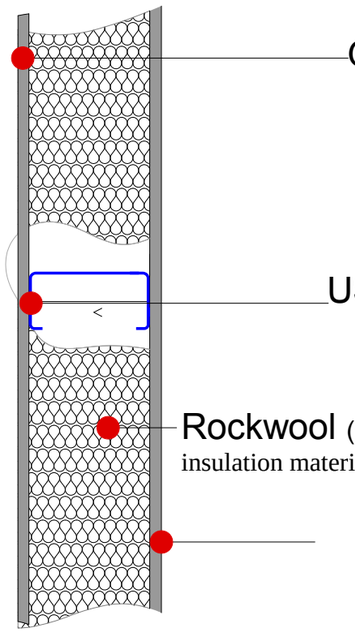
PROJECT:

Green social housing programme in lebanon

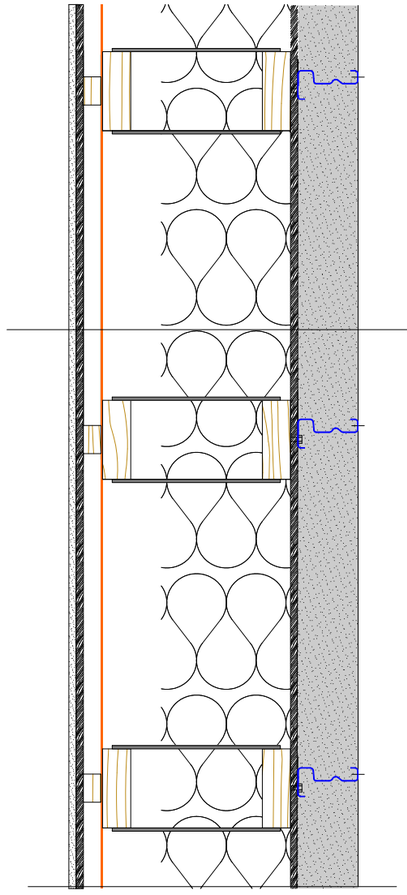
ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	Balcony

PROJECT №:		K-4
FORMAT :	A3	
SCALE :	1:70	
DATE :	20.12.2013	

Inside wall



Outside wall



1. Stone cladding
2. OSB IV 25mm
3. Treated wood planks 30mm
4. Wind barrier
5. Posy beam
6. Rockwool 150mm(can be substituted with other insulation material with adequate technical properties)
7. OSB III 15 mm
8. USC 89X1.0
9. Fill with fluid beton B 22,5

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PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

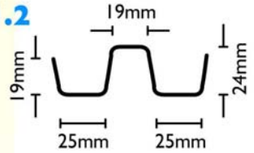
DRAWING: DETAIL №2

PROJECT №:	8.1.9	K-5
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	

USW76x1.0 or 1.2

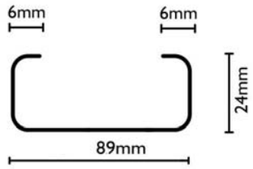
76mm web, available in 1.0mm and 1.2mm coated steel. Fits elegantly onto chords.

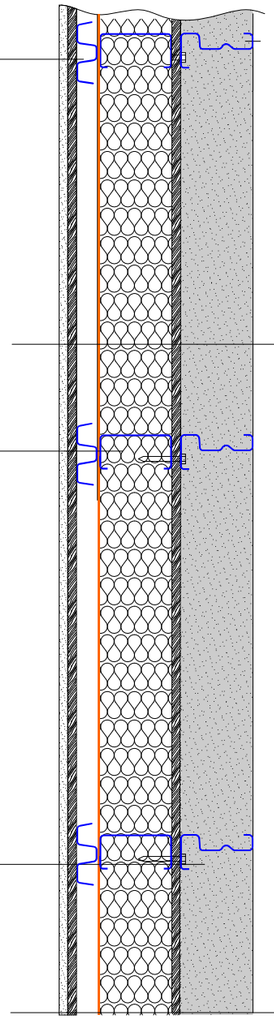
Weight:
1.26kg/m and 1.51kg/m respectively.



USC89x1.0

89mm web in 1.0mm steel.



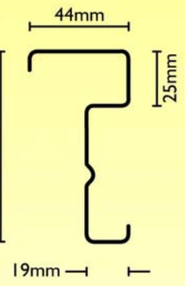


1. Stone cladding
2. OSB IV 25mm
3. USW 76X1.0
4. Wind barrier
5. USC 89X1.0
6. Rockwool 100mm(can be substituted with other insulation material with adequate technical properties)
7. OSB III 15 mm
8. USC 89X1.0
9. Fill with fluid beton B 22,5

USC89x1.0 or 1.2

89mm deep chord, available in 1.0mm or 1.2mm coated steel.

Weight:
1.44kg/m and 1.73kg/m respectively.



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CLIENT: GREEN FUTURE LEBANON

PROJECT:

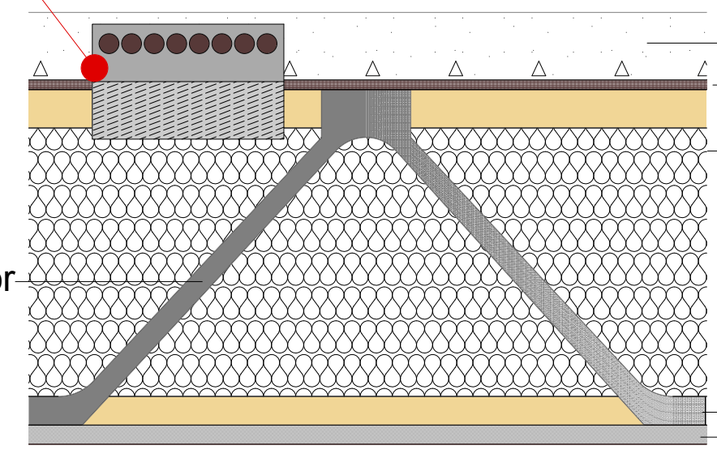
Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №2

PROJECT №:		K-5 Alternative
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

Timber to concrete special galvanized connector



Concrete slab B22,5
wich fluide beton

OSB 20mm

Rocckwool (can be substituted with other insulation material with adequate technical properties)

Posy Conector

Posijoist beams

Gypsum board

British Standard BS 6399: Loading of Buildings:
-Part 1: Code of Practice for Dead and Imposed loads 1996
-Part 2: Code of Practice for Wind Loads 1997
-Part 3: Code of Practice for Imposwd Roof loads1988

Description of OSB according to EN 300
Rockwool insulation R=1,25Q.M/KVT .H=50MM 2lier

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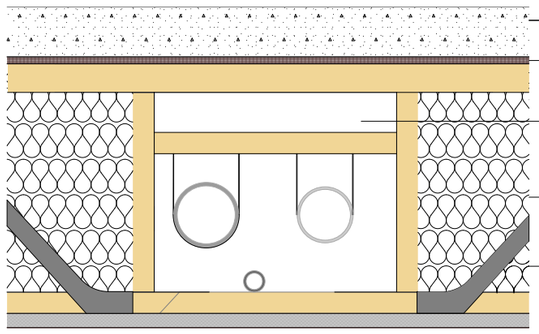
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №3

PROJECT №:		K-6
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Concrete slab mk. B22,5 wich fluide beton
OSB 20mm
Comunication
Rocckwool (can be substituted with other insulation material with adequate technical properties)
Posijoist beams

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PROJECT:

Green social housing programme in lebanon

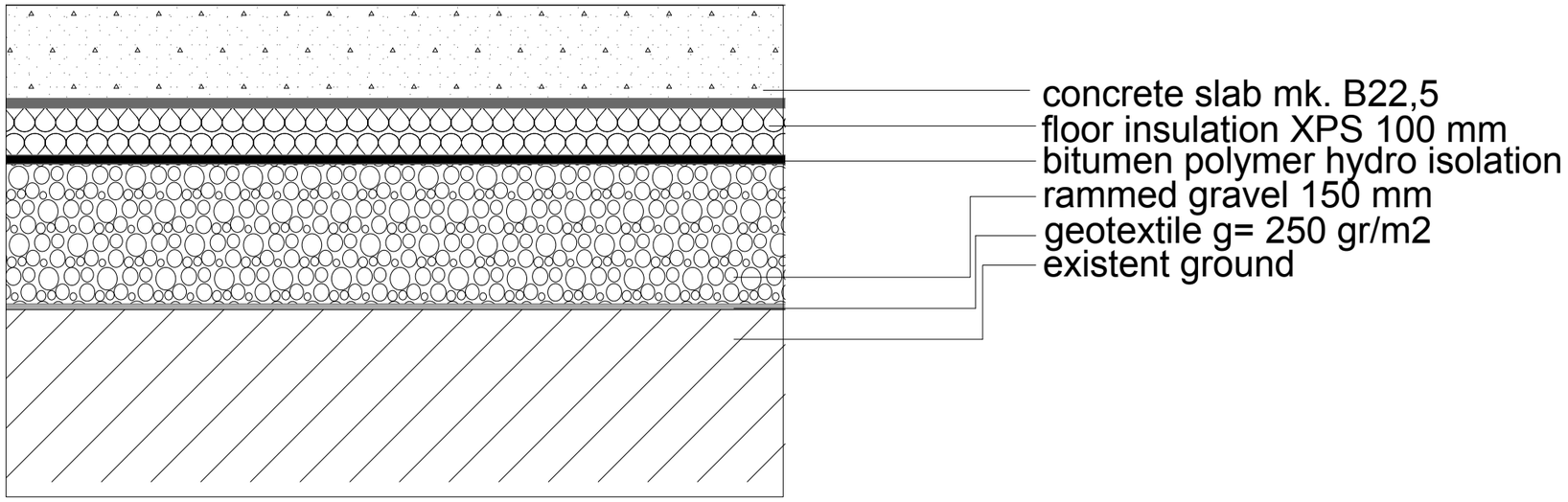
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: DETAIL №4

PROJECT №:		K-7
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



PE L ayer witch 10 cm XPS extended polystyrene, with closed struqrure of air bubbles. Maqx factor of thermal isulation 0.05 kw/sq.m density of at least 200kg/kub.m

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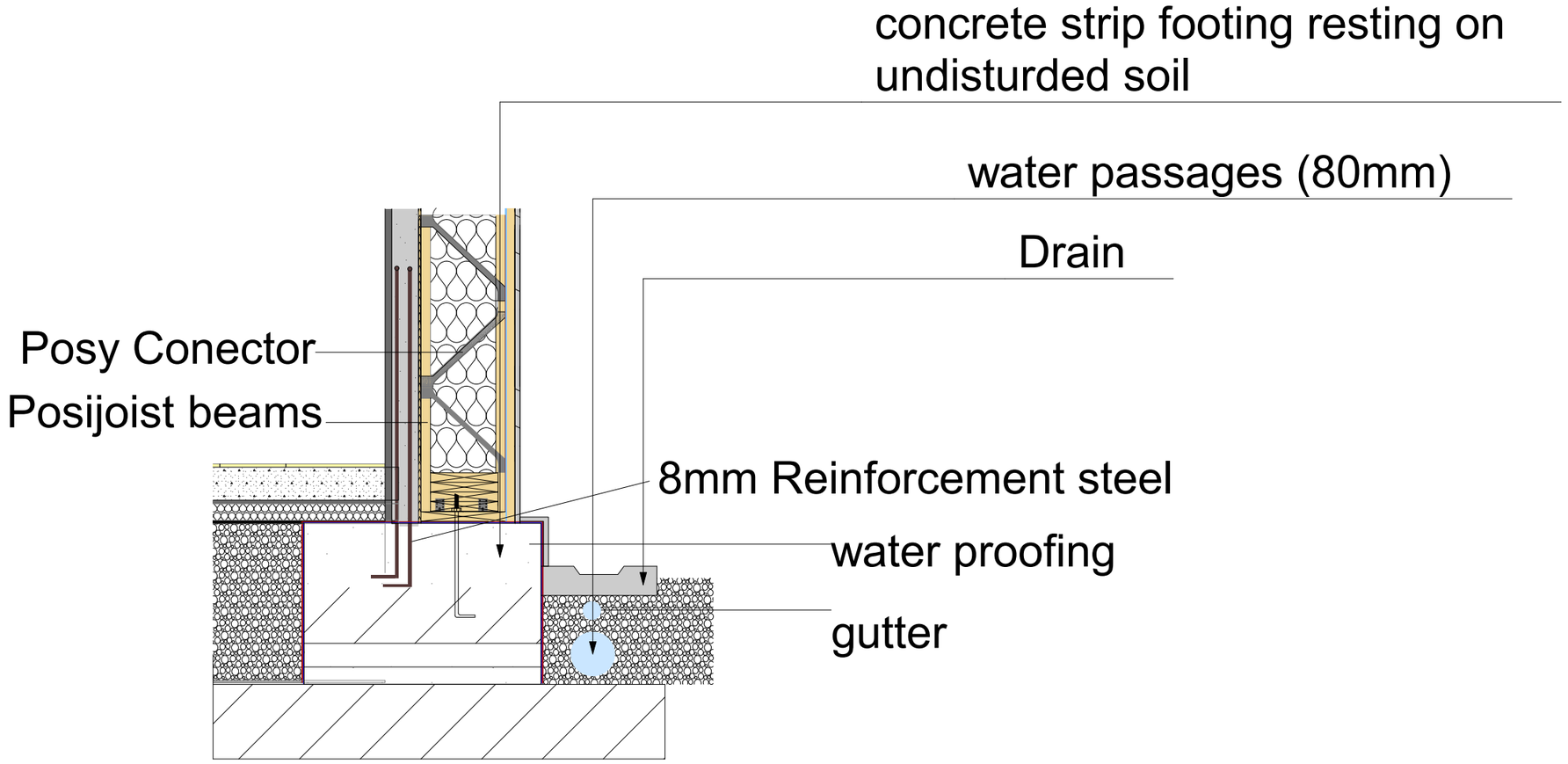
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №5

PROJECT №:		K-8
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



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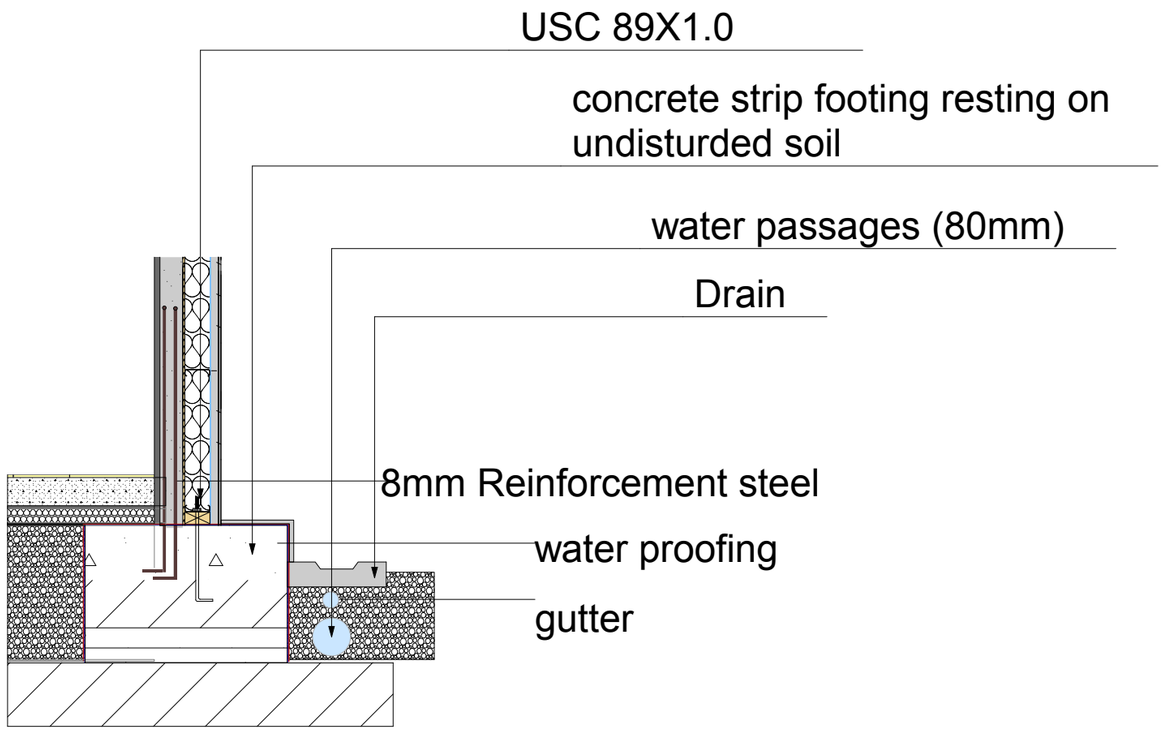
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №6

PROJECT №:		K-9
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

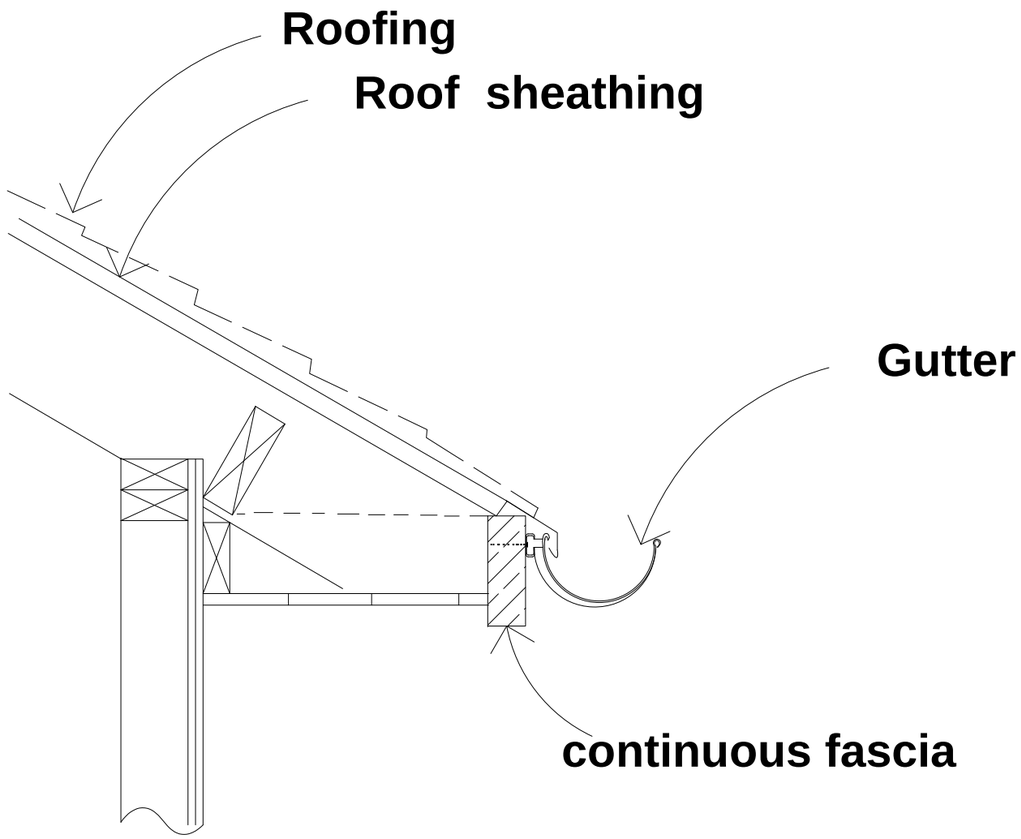
ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: DETAIL №6

PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

K-9 Alternative



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CLIENT: GREEN FUTURE LEBANON

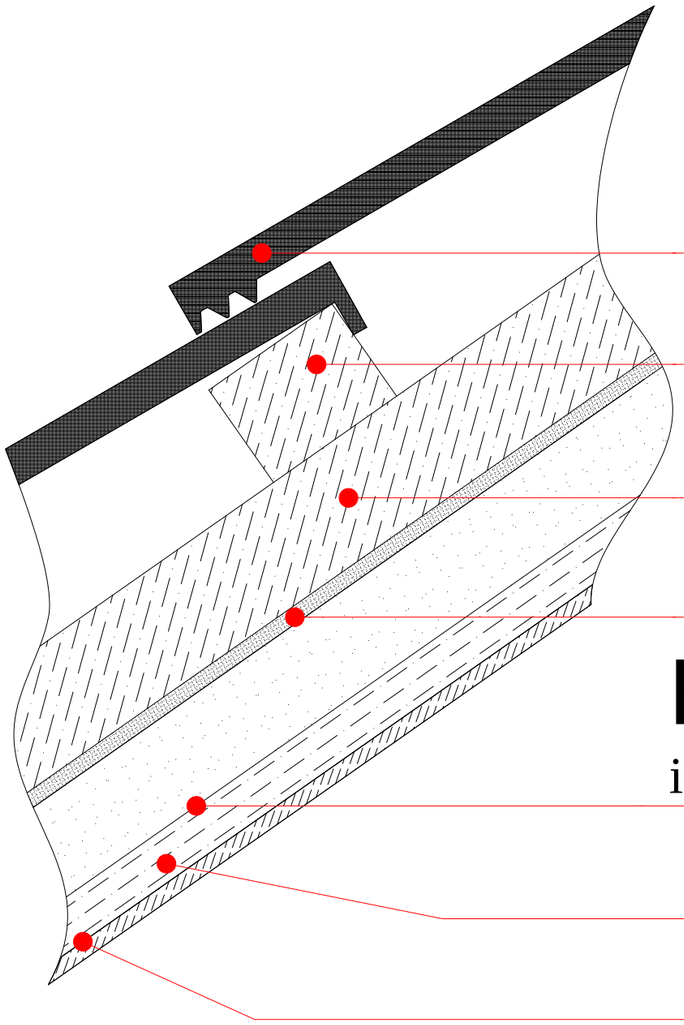
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №7

PROJECT №:	8.1.13	K-10
FORMAT :	A3	
SCALE :	1:50	
DATE :	20.12.2013	



roof tile

batten horizontal

batten vertical

wind barrier

Rockwool (can be substituted with other insulation material with adequate technical properties)

humidity barrier

OSB III

Timber Treatment

Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack.
Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

Description of OSB according to EN 300

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CLIENT: GREEN FUTURE LEBANON

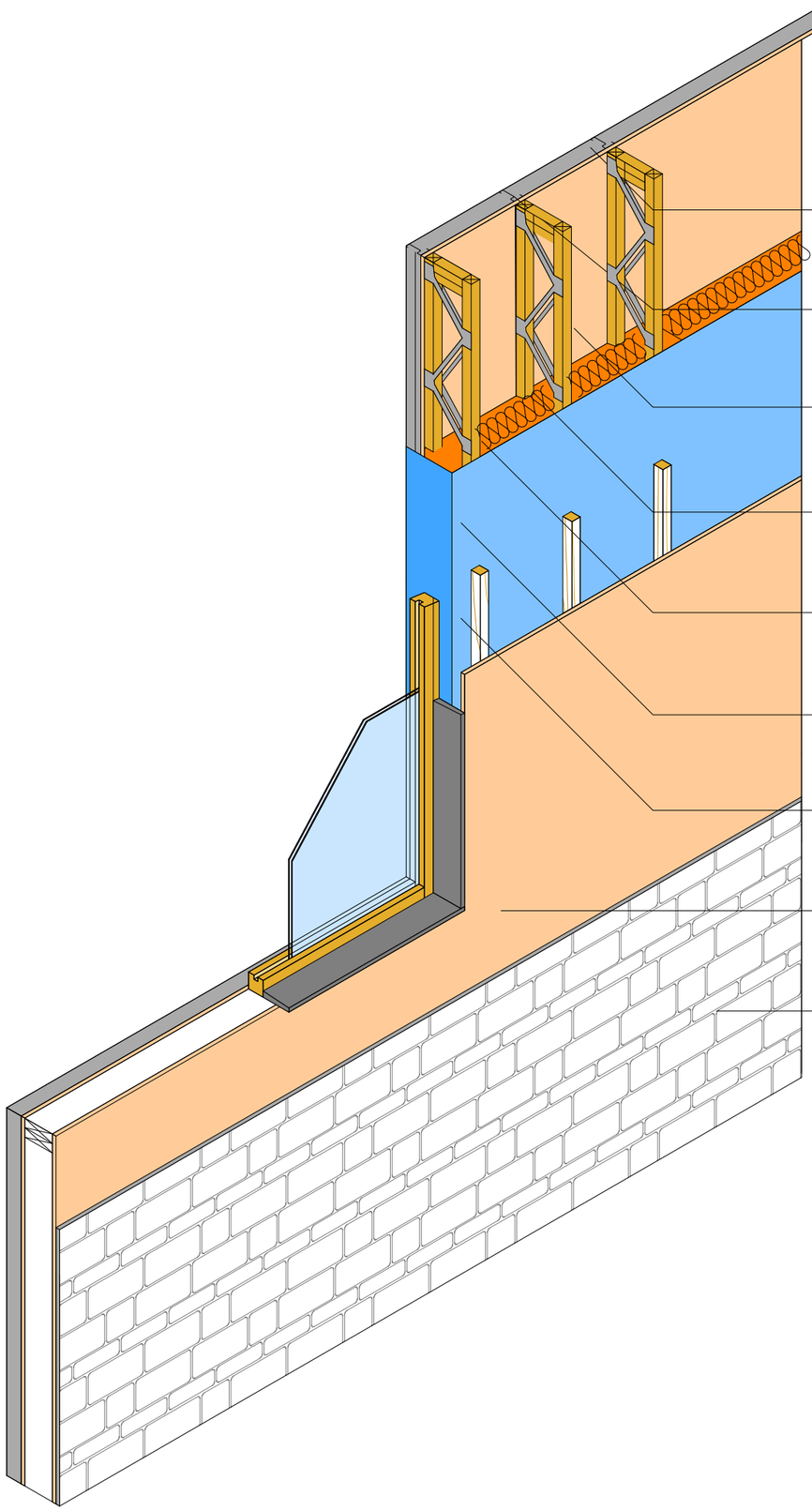
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: DETAIL №8

PROJECT №:		K-11
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Fill with fluid beton B 15, usc 89X1.0

usc 89X1.0

OSB III 15mm

posy beams

Rockwool(can be substituted with other insulation material with adequate technical properties)

Wind barrier

Treatid wood planks

OSB IV 25mm

Stone cladding

Timber Treatment
Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack. Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

Description of OSB according to EN 300

Doors and Windows
Main characteristics of windows produced with German technology (according to PREN 14351-1 WI00033279) are:
- Three layer glued bar
- Modern Fittings system
- Long-term preservation and surface finishing of timber
- Sealing rubber and aluminum gutter
- Pane set 24 (4+16+4) mm

*specifay window instalating layout with manufacturer

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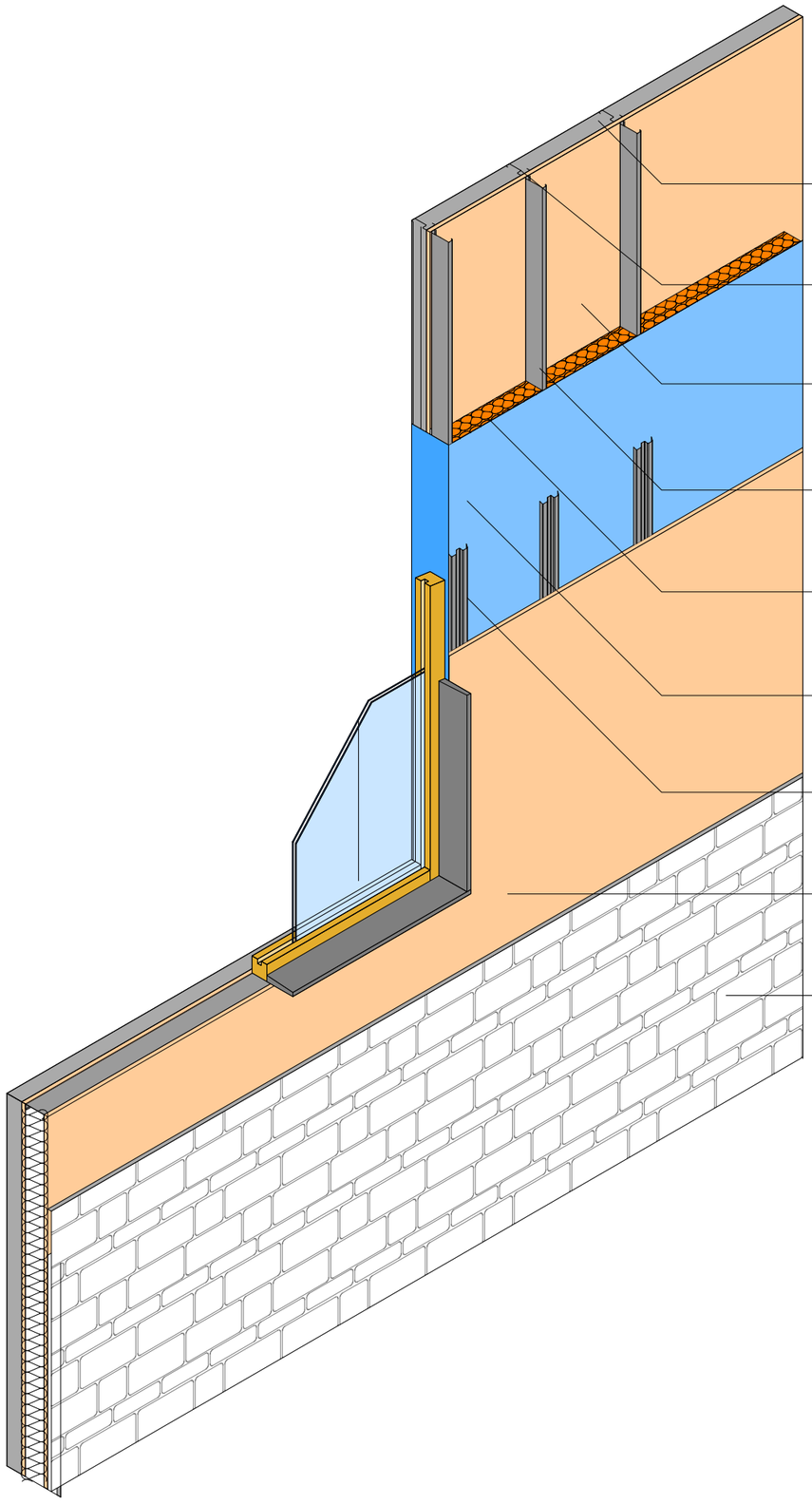
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	Wall section

PROJECT №:		K-12
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Fill with fluid beton B 15, usc 89X1.0

usc 89X1.0

OSB III 15mm

usc 89X1.0

Rockwool(can be substituted with other insulation material with adequate technical properties)

Wind barrier

usc 89X1.0

OSB IV 25mm

Stone cladding

Timber Treatment
Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack. Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

Description of OSB according to EN 300

Doors and Windows
Main characteristics of windows produced with German technology (according to PREN 14351-1 WI00033279) are:
- Three layer glued bar
- Modern Fittings system
- Long-term preservation and surface finishing of timber
- Sealing rubber and aluminum gutter
- Pane set 24 (4+16+4) mm

*specifay window instalating layout with manufacturer

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

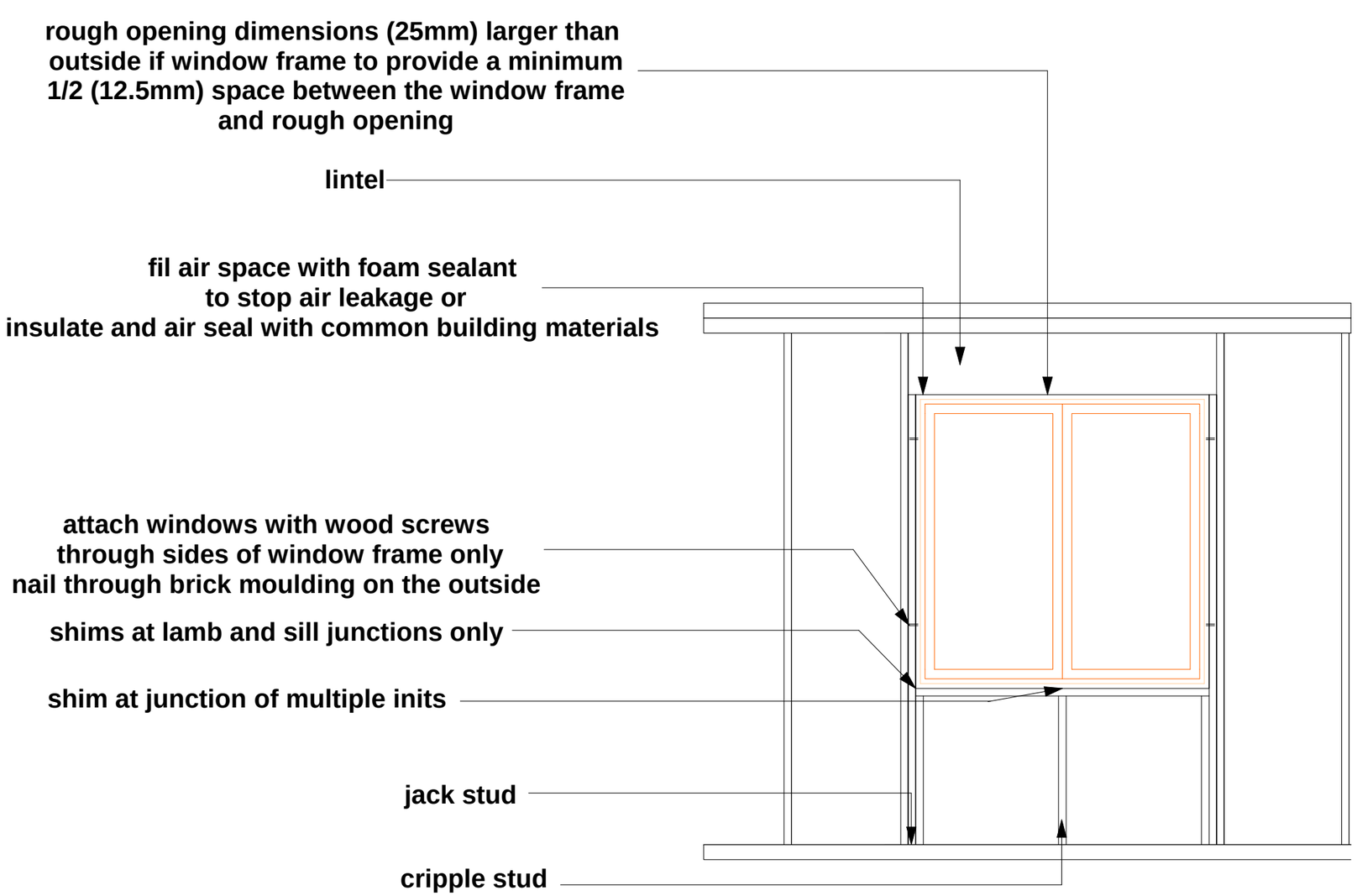
ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: Wall section

PROJECT №:		K-12 Alternative
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

Typical window installation



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Description of OSB according to EN 300

Doors and Windows

Main characteristics of windows produced with German technology (according to PREN 14351-1 WI00033279) are:

- Three layer glued bar
- Modern Fittings system
- Long-term preservation and surface finishing of timber
- Sealing rubber and aluminum gutter
- Pane set 24 (4+16+4) mm

*specifay window instalating layout with manufacturer

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CLIENT: GREEN FUTURE LEBANON

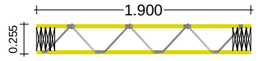
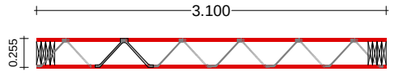
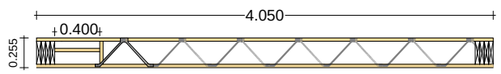
PROJECT:

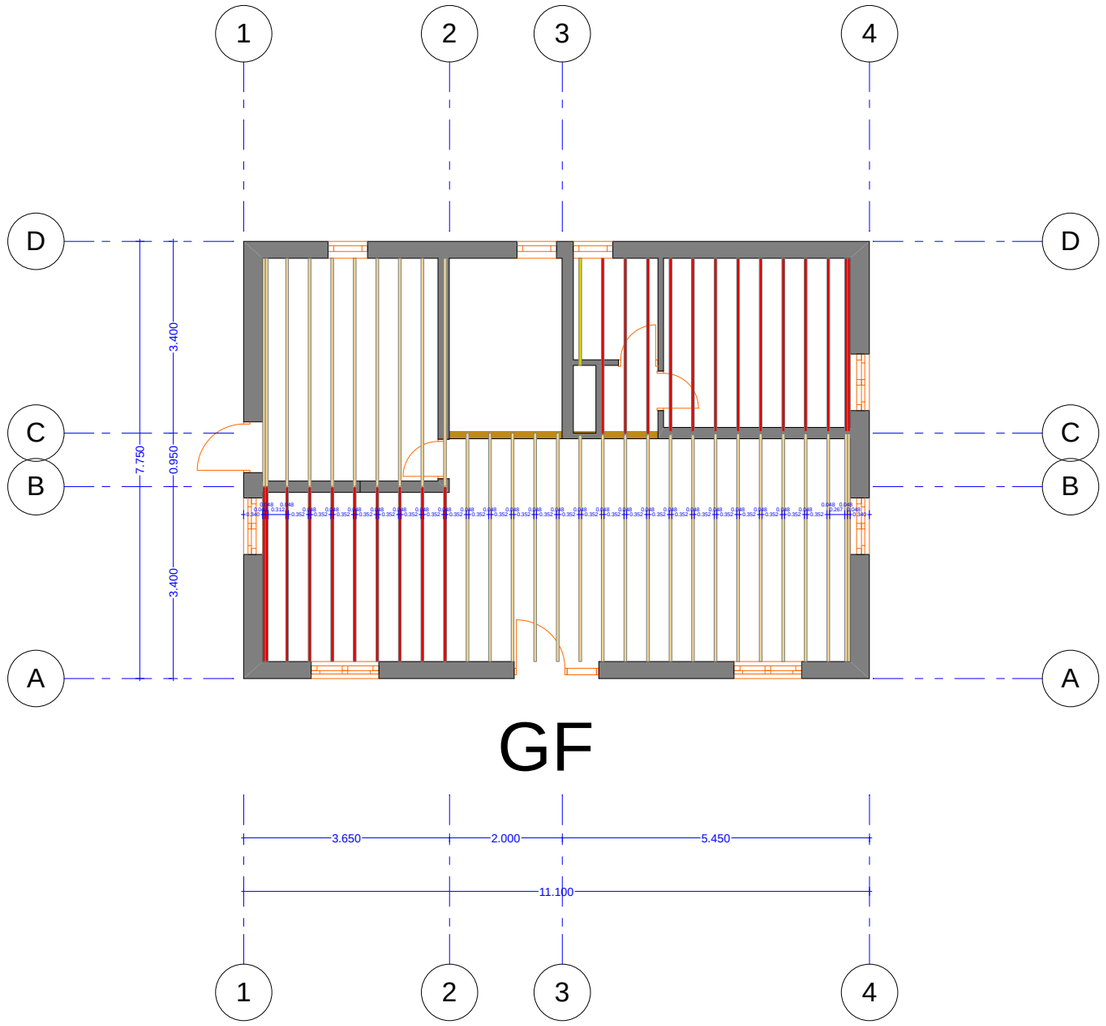
Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: **Typical window installation**

PROJECT №:		K-13
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

P6	
P7	
P8	



GF

General Specification:

Irish Standard EC5:2006
- IS 444: The Use of Structural Timber in Building

British Standard BS 6399: Loading of Buildings:
- Part 1: Code of Practice for Dead and Imposed Loads 1996.
- Part 2: Code of Practice for Wind Loads 1997.
- Part 3: Code of Practice for Imposed Roof Loads 1988.

Materials:

Timber:

Top Chord	140x48 R/W C14
	140x48 R/W C24
Bottom Chord	140x48 R/W C24

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

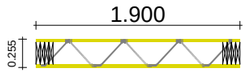
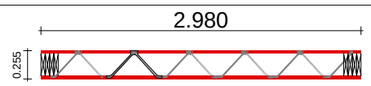
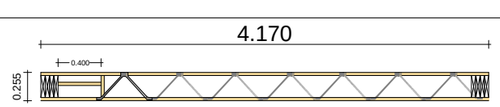
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: Posy floor plan

PROJECT №:		K-14
FORMAT :	A3	
SCALE :	1:100	
DATE :	20.12.2013	

P1	
P2	
P3	
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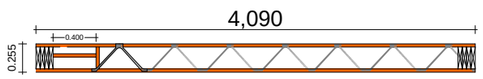
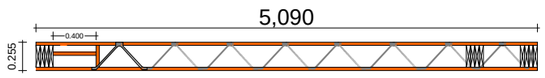
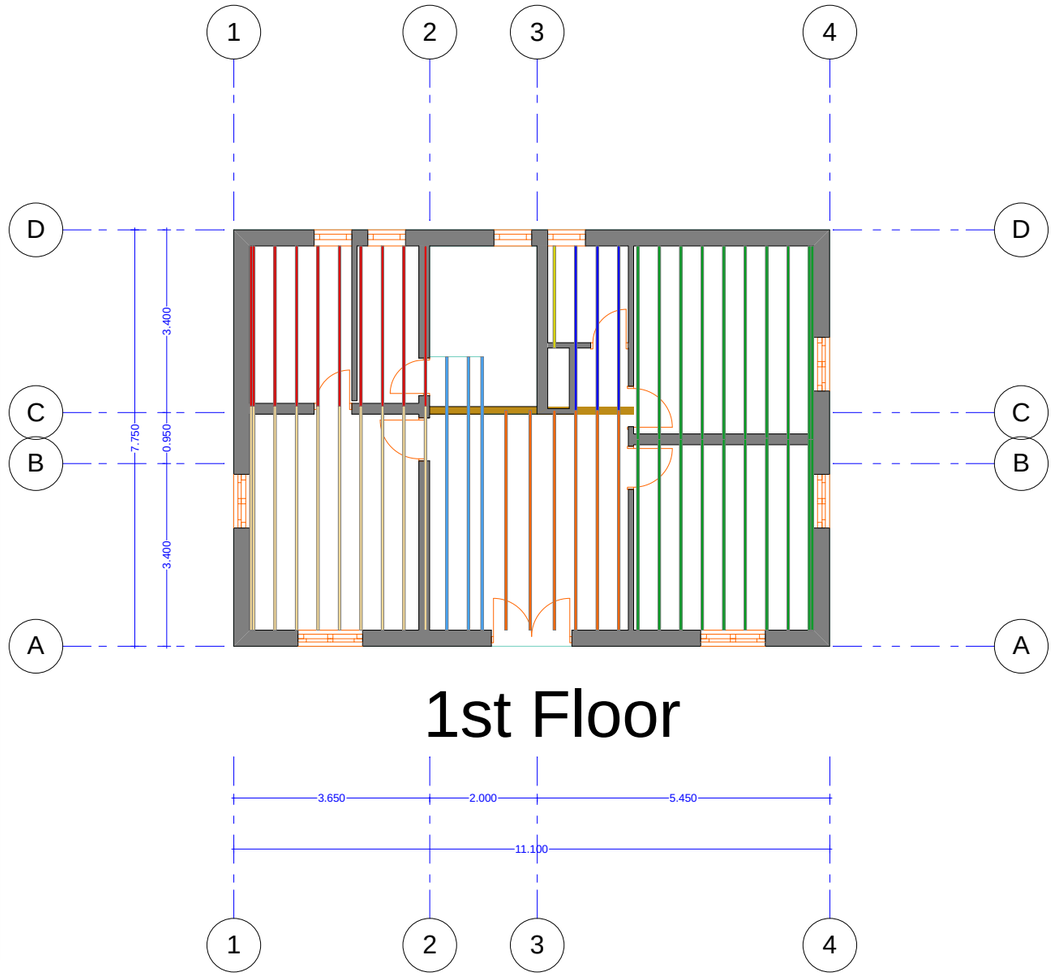
P5	
P6	



1st Floor

General Specification:

Irish Standard EC5:2006
- IS 444: The Use of Structural Timber in Building

British Standard BS 6399: Loading of Buildings:
- Part 1: Code of Practice for Dead and Imposed Loads 1996.
- Part 2: Code of Practice for Wind Loads 1997.
- Part 3: Code of Practice for Imposed Roof Loads 1988.

Materials:

Timber:

Top Chord	140x48 R/W C14
	140x48 R/W C24
Bottom Chord	140x48 R/W C24

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GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

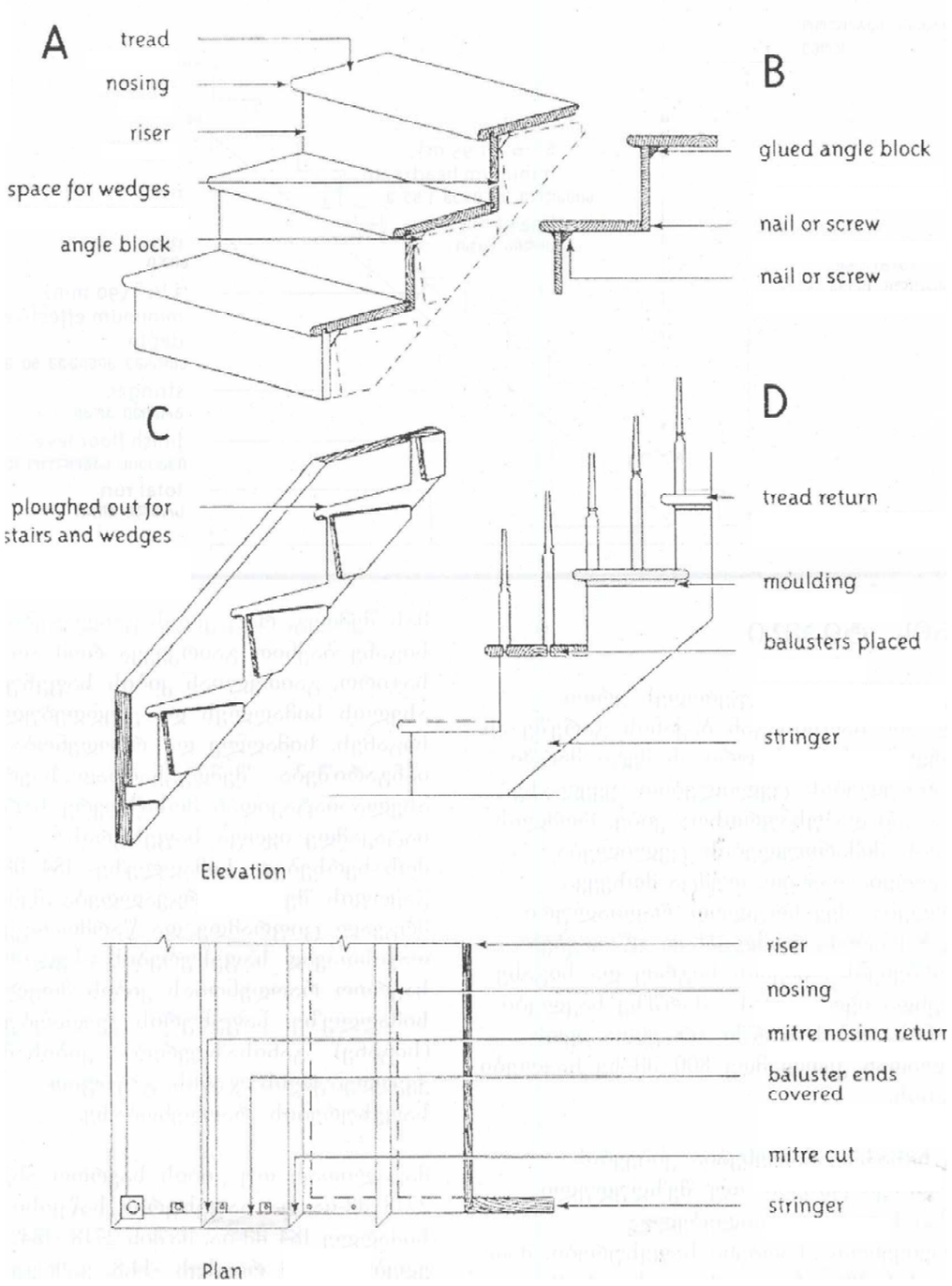
Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	Posy floor plan

PROJECT №:		K-15
FORMAT :	A3	
SCALE :	1:100	
DATE :	20.12.2013	

STAIRS

'arts of stairs: *(A)* risers and treads tongued and grooved together; *(B)* risers and treads onnected with angle blocks; *(C)* housed stringers; *(D)* cut-out stringer (open) showing alusters and mitre-nosing return.



Timber Treatment

Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack.

Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

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CLIENT: GREEN FUTURE LEBANON

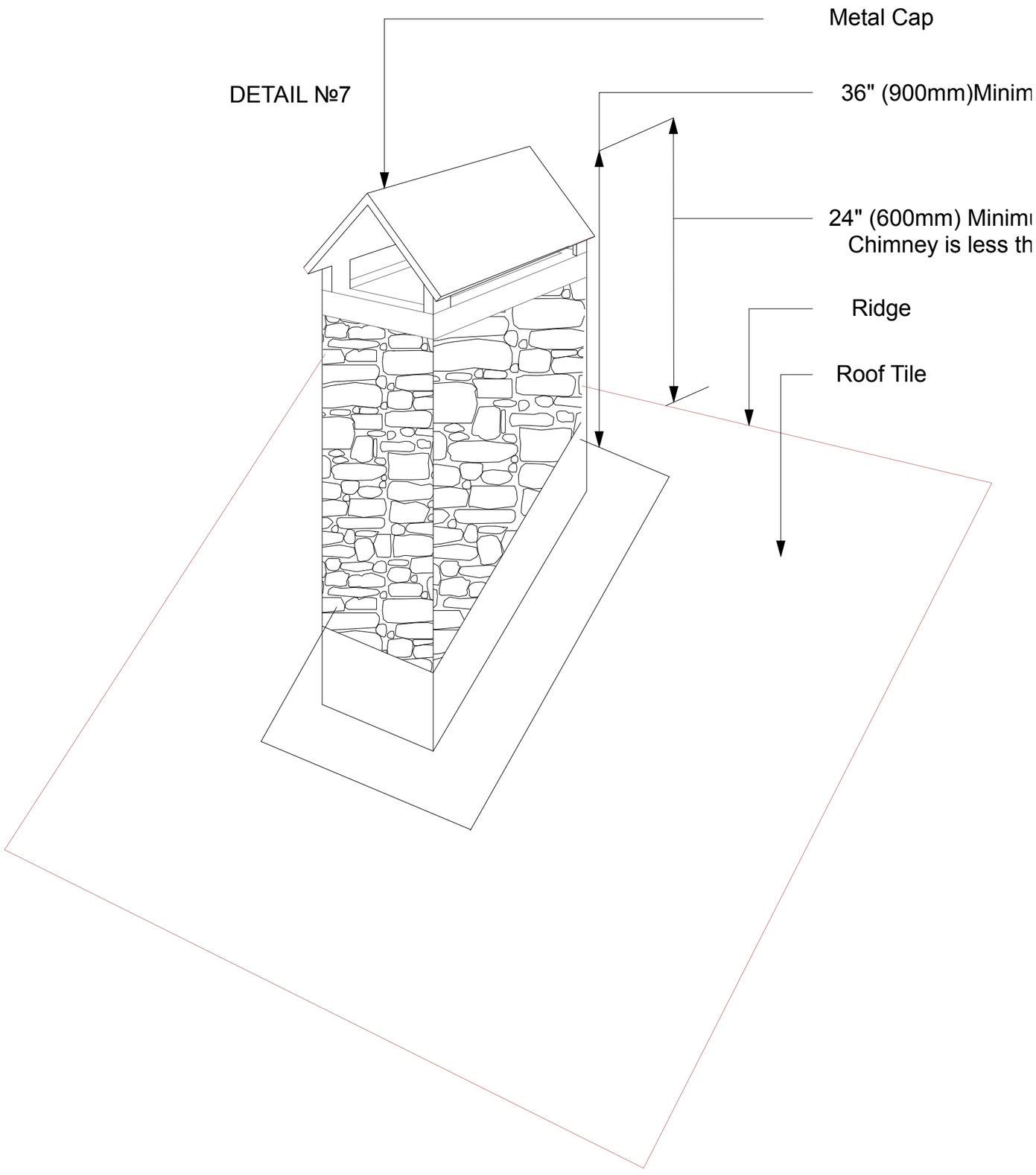
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	Stairs

PROJECT №:		K-16
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

DETAIL №7



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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

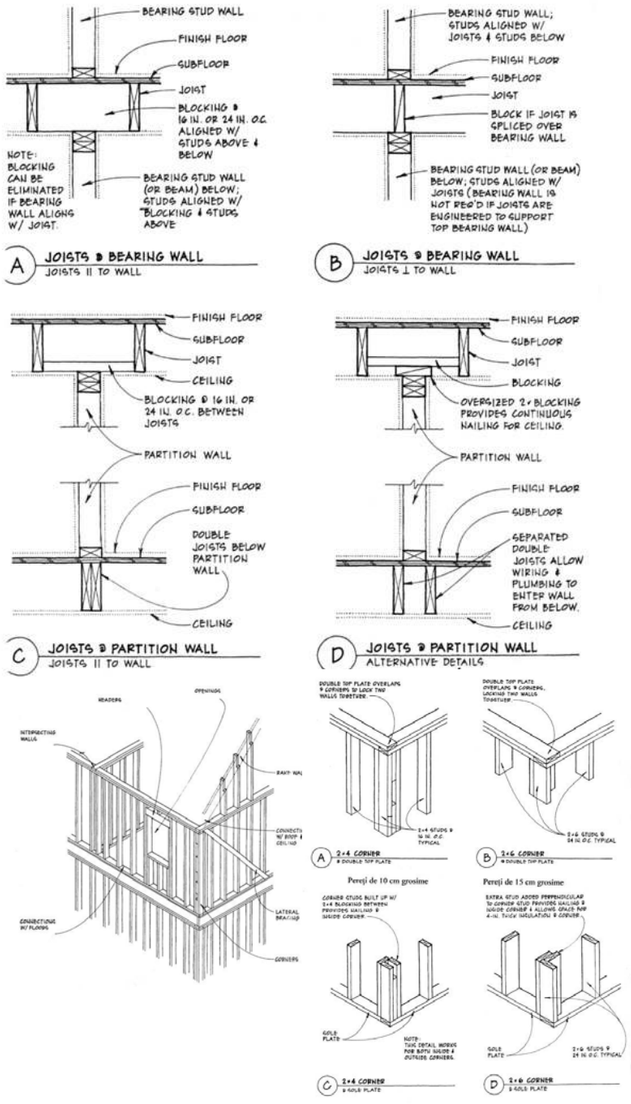
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	chimney height the ridge

PROJECT №:		K-17
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Timber Treatment

Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack. Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

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TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	frame

PROJECT №:		K-18
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

Timber Treatment

Durability of timber is ensured by treatment of wood with bio-preservatives in a high pressure-vacuum treatment plant. Timber treated with preservative solution is specified for both in and out of ground and water contact applications where there is a medium to high risk of decay or insect attack. Timber treatment is conducted according to EN 335-1:1992; EN 335-2:1992; BSEN 351-1:1996; BSEN 351:1996 and EN 599-1.

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	frame

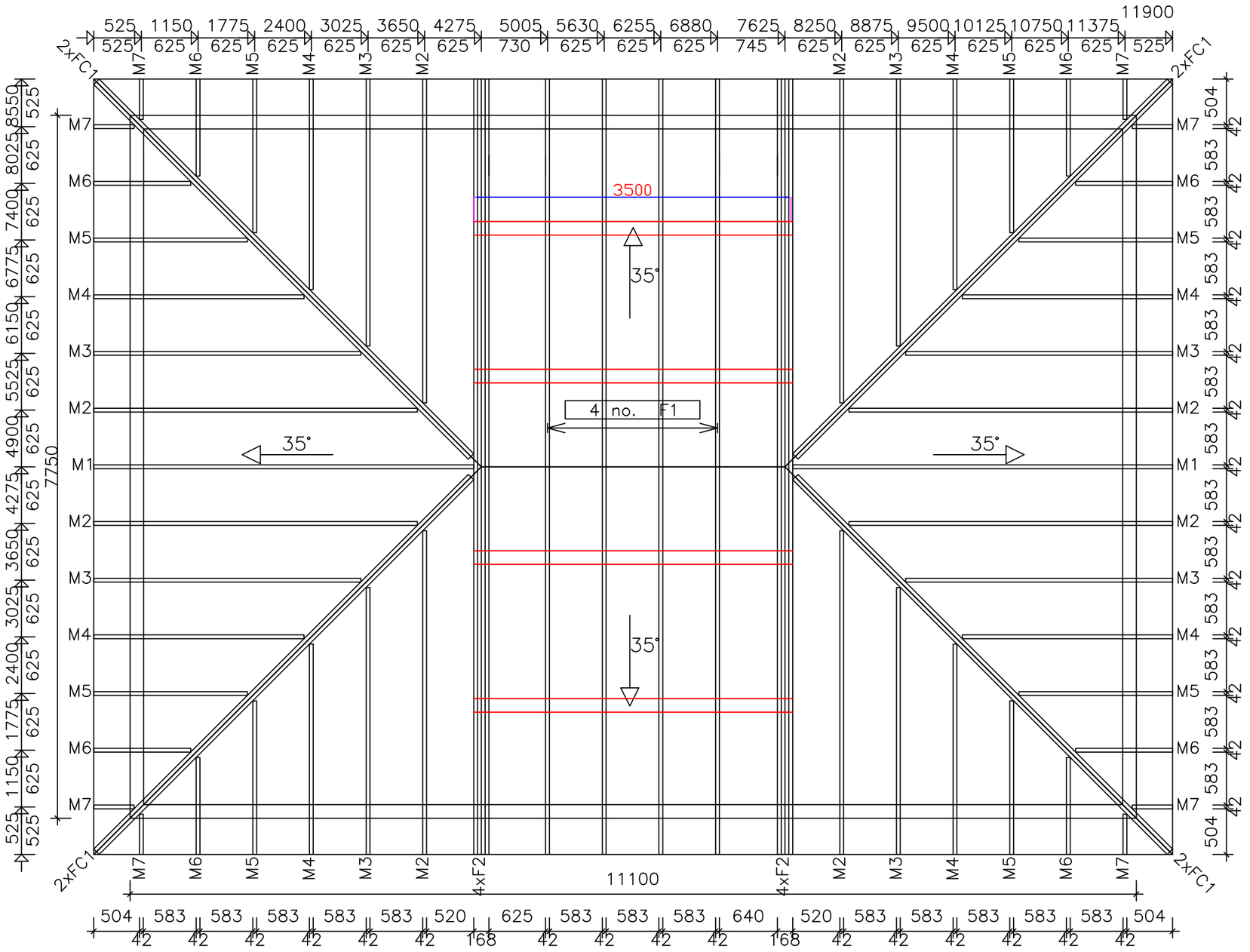
PROJECT №:		K-18 Alternative
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

Green social housing programme in Lebanon

NEW TECHNOLOGY CENTER

Roof construction

R-1 roof plan
R-2 roof F1
R-3 roof F2
R-4 roof FC1
R-5 roof M1
R-6 roof M2 M3
R-7 roof M4 M5
R-8 roof M6 M7
R-9 roof visualization
R-10 roof visualization



Bracings 4 pieces 42x100x3500

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
EN 335_1:1992 21.03.08 #57
EN 335_2:1992 21.03.08 #58
BSEN 351_1:1996 21.03.08 #60
BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

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TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

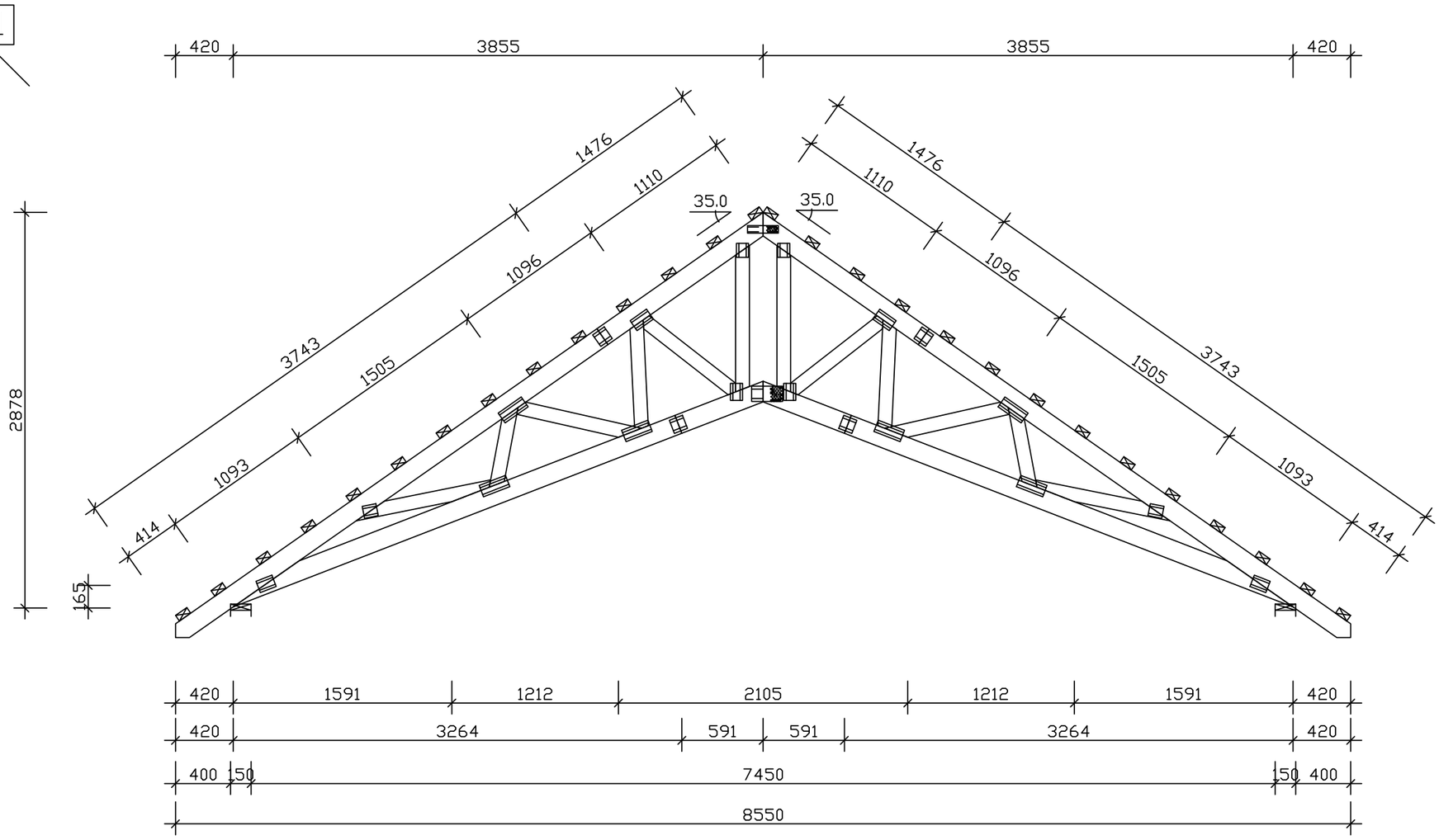
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	Roof plan

PROJECT №:		R-1
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

F1



LEMN: GROSIME 42 mm				
ELEMENT CONSTR.	LATIME mm	CLASA	CTV mm	INCARCARE N/m²
11-14	140	C24	Da	260
1-14	140	C24	Da	260
18-6	140	C24	400	2
6-19	140	C24	400	2
22-24	100	C24	Nu	
20-21	100	C24	Nu	
3-17	100	C24	Nu	
9-12	100	C24	Nu	
3-16	100	C24	Nu	
9-13	100	C24	Nu	
5-16	100	C24	Nu	
7-13	100	C24	Nu	
5-21	100	C24	Nu	
7-24	100	C24	Nu	
2-17	100	C24	Nu	
10-12	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	640
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031
FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.
COD LEMN: SR EN 1995+NA
COD CONECTORI: SR EN 1995+NA;

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
EN 335_1:1992 21.03.08 #57
EN 335_2:1992 21.03.08 #58
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BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

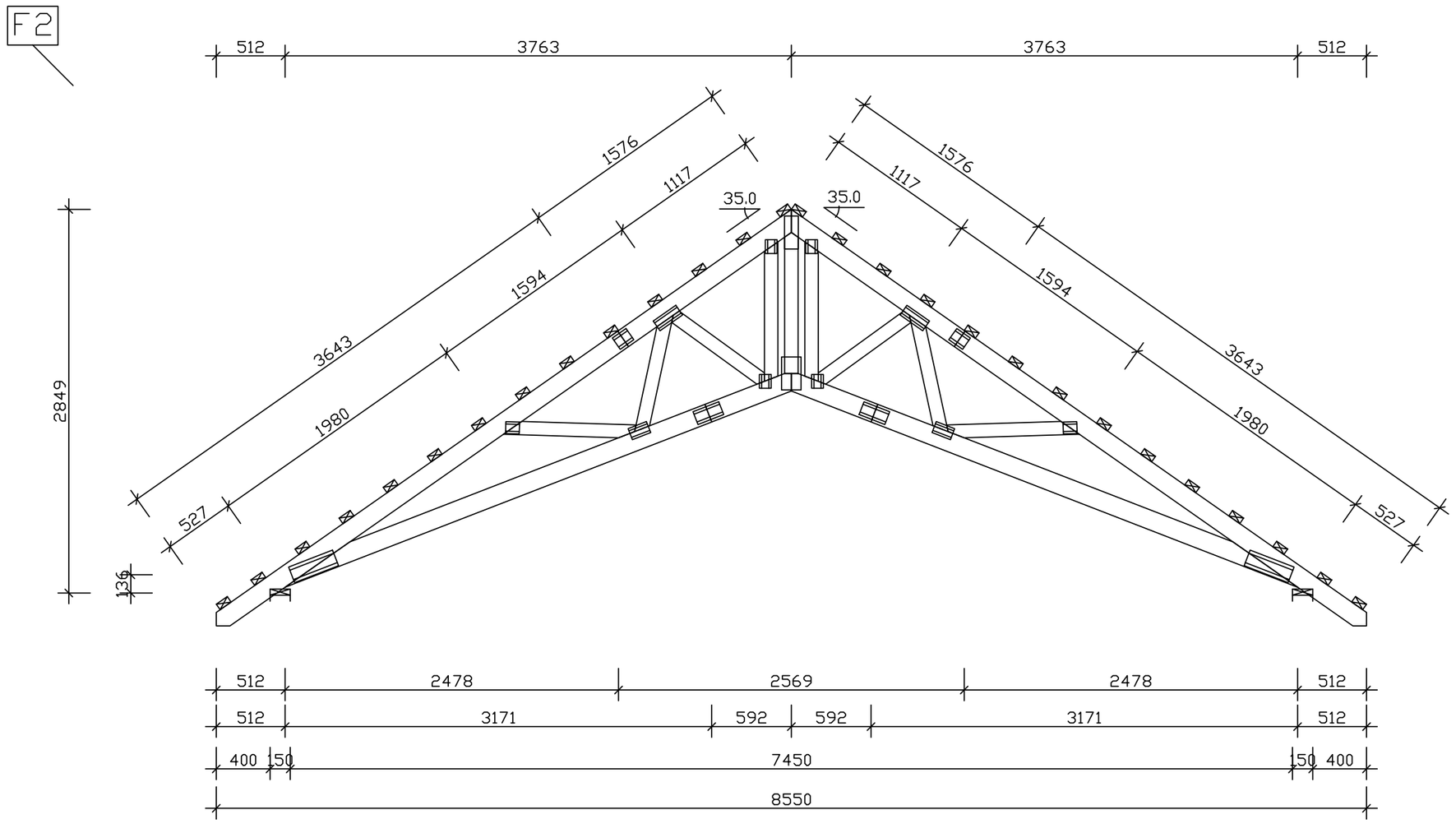
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: roof F1

PROJECT №:		R-2
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



LEMN: GROSIME 42 mm **4 PLIURI**

ELEMENT CONSTR.	LATIME mm	CLASA	CTV mm	INCARCARE N/m²
9-11	140	C24	Da	260
1-11	140	C24	Da	260
14-5	140	C24	400	600
5-15	140	C24	400	600
18-20	100	C24	Nu	
16-17	100	C24	Nu	
4-17	100	C24	Nu	
6-20	100	C24	Nu	
5-11	100	C24	Nu	
4-13	100	C24	Nu	
6-10	100	C24	Nu	
2-13	100	C24	Nu	
8-10	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	4 x 42
INTERAX FERME: (mm)	500
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031
FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.
COD LEMN: SR EN 1995+NA
COD CONECTORI: SR EN 1995+NA;

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
EN 335_1:1992 21.03.08 #57
EN 335_2:1992 21.03.08 #58
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BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

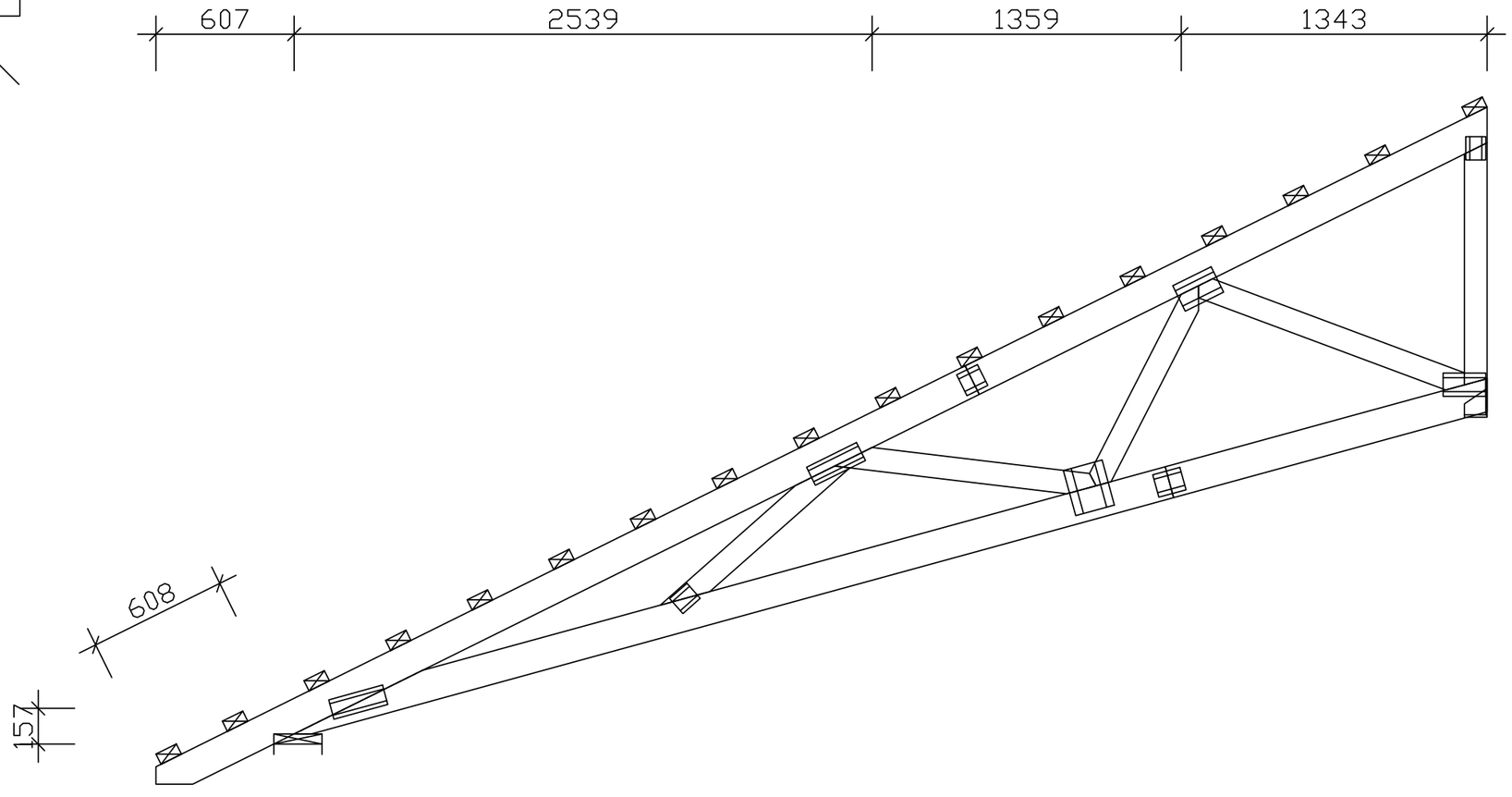
STATUS : Project

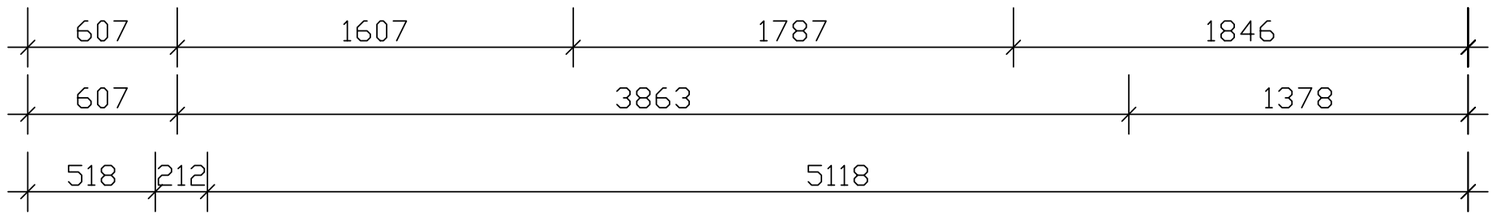
DRAWING: roof F2

PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

R-3

FC1





LEMN: GROSIME 42 mm **2 PLIURI**

ELEMENT CONSTR.	LATIME mm	CLASA	CTI mm	INCARCARE N/m²
5-10	140	C24	400	1600
1-9	140	C24	Da	160
5-9	100	C24	Nu	
2-7	100	C24	Nu	
4-7	100	C24	Nu	
4-9	100	C24	Nu	
2-6	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	2 x 42
INTERAX FERME: (mm)	625
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031
FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.
COD LEMN: SR EN 1995+NA
COD CONECTORI: SR EN 1995+NA;

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
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EN 335_2:1992 21.03.08 #58
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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

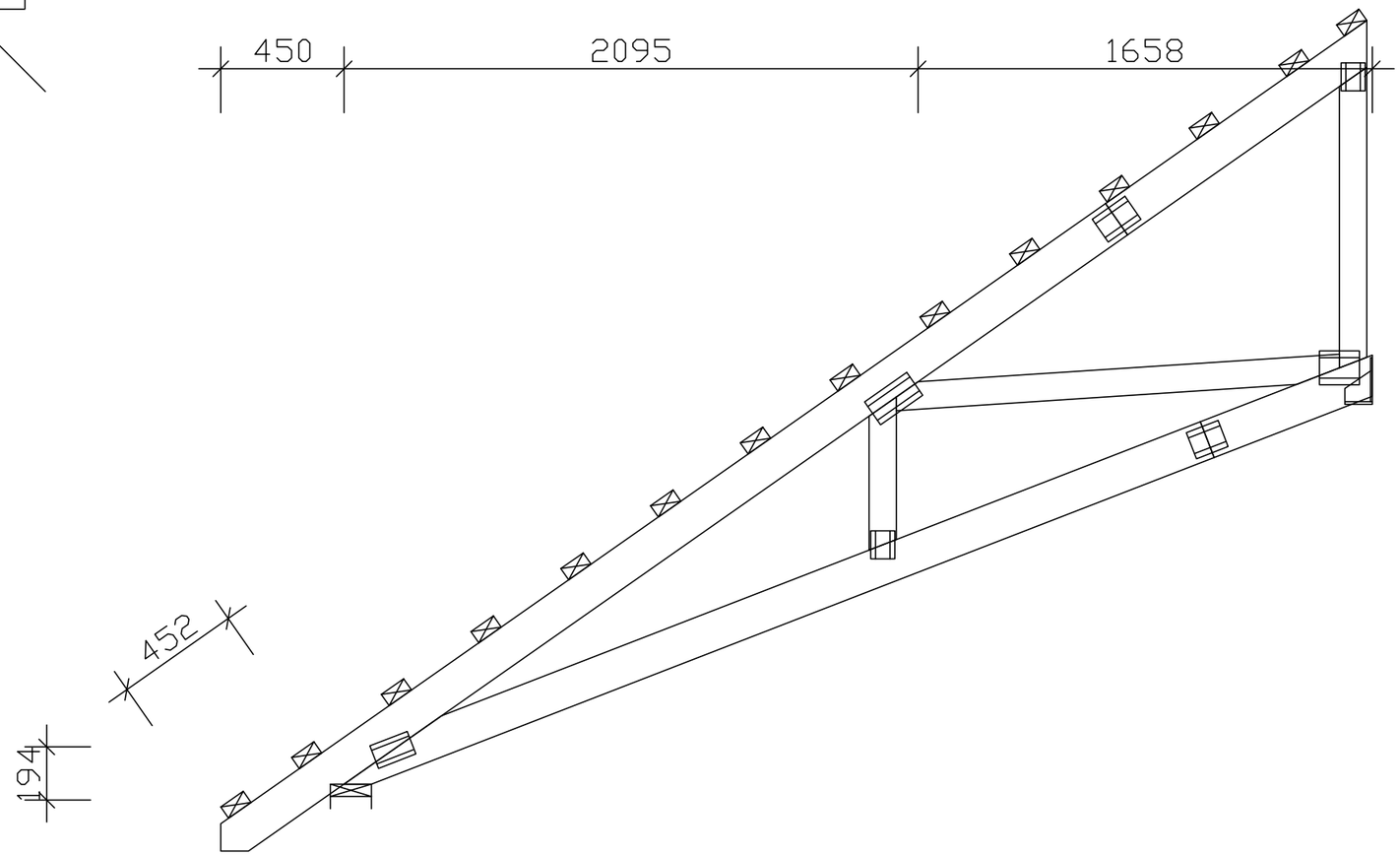
ENGINEERING: I.kevlishvili

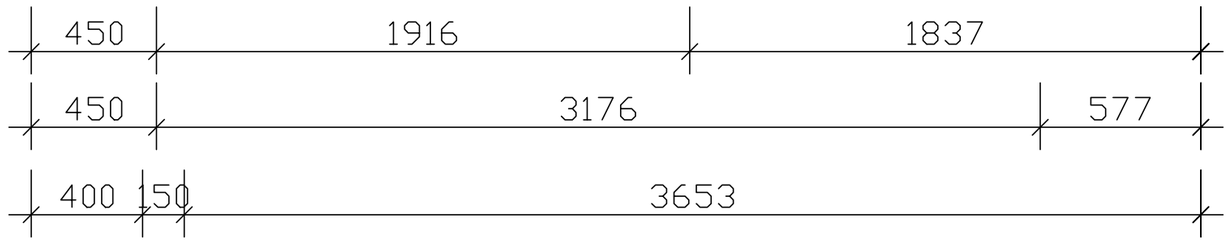
STATUS : Project

DRAWING: roof FC1

PROJECT №:		R-4
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

M1





LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTV mm	INCARCARE N/m²
4-9	140	C24	400	1600
1-8	140	C24	Da	260
4-7	100	C24	Nu	
2-5	100	C24	Nu	
2-7	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	625
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031
FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.
COD LEMN: SR EN 1995+NA
COD CONECTORI: SR EN 1995+NA;

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
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EN 335_2:1992 21.03.08 #58
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BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

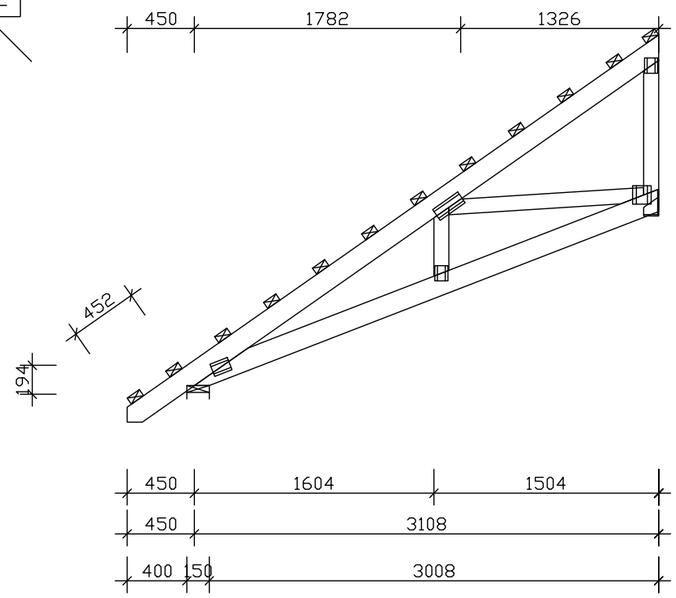
ENGINEERING: I.kevlishvili

STATUS : Project

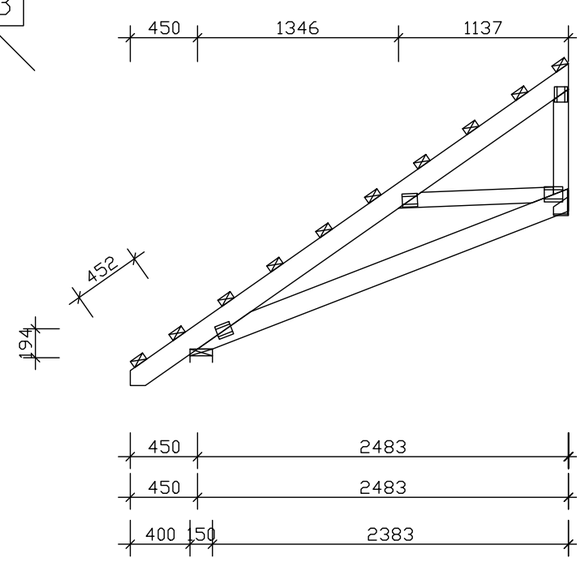
DRAWING: roof M1

PROJECT №:		R-5
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

M2



M3



LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTN mm	INCARCARE N/m²
3-6	140	C24	400	1600
1-5	140	C24	Da	260
3-5	100	C24	Nu	
2-4	100	C24	Nu	
2-5	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031

FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.

COD LEMN: SR EN 1995+NA

COD CONECTORI: SR EN 1995+NA;

LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTN mm	INCARCARE N/m²
3-5	140	C24	400	1600
3-4	100	C24	Nu	
1-4	140	C24	Da	260
2-4	100	C24	Nu	

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
EN 335_1:1992 21.03.08 #57
EN 335_2:1992 21.03.08 #58
BSEN 351_1:1996 21.03.08 #60
BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

NEW TECHNOLOGY CENTER
LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

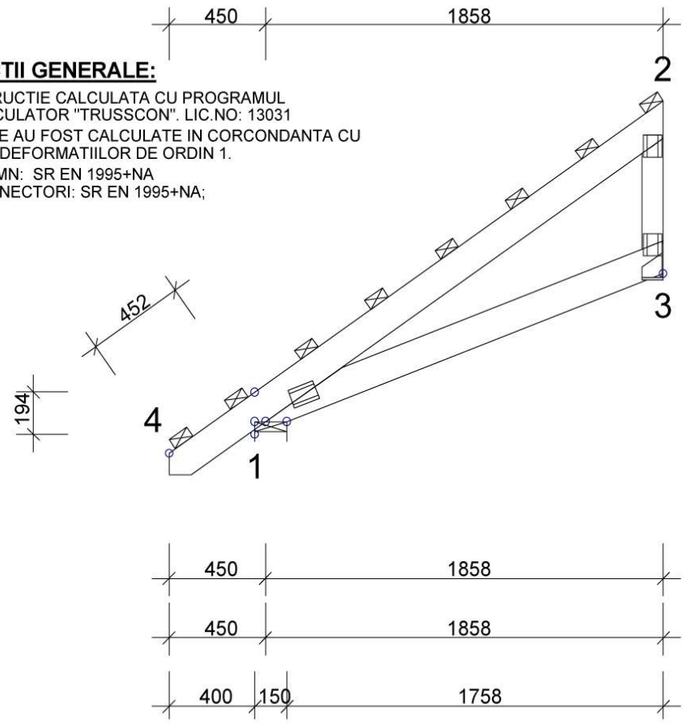
STATUS : Project

DRAWING: roof M2 M3

PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

R-6

M-4



DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL DE CALCULATOR "TRUSSCON". LIC.NO: 13031

FORTELE AU FOST CALCULATE IN CORCONDANTA CU TEORIA DEFORMATIILOR DE ORDIN 1.

COD LEMN: SR EN 1995+NA

COD CONECTORI: SR EN 1995+NA;

LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTINCARCARE mm	N/m²
2-4	140	C24	400	1600
2-3	100	C24	Nu	
1-3	140	C24	Da	260

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

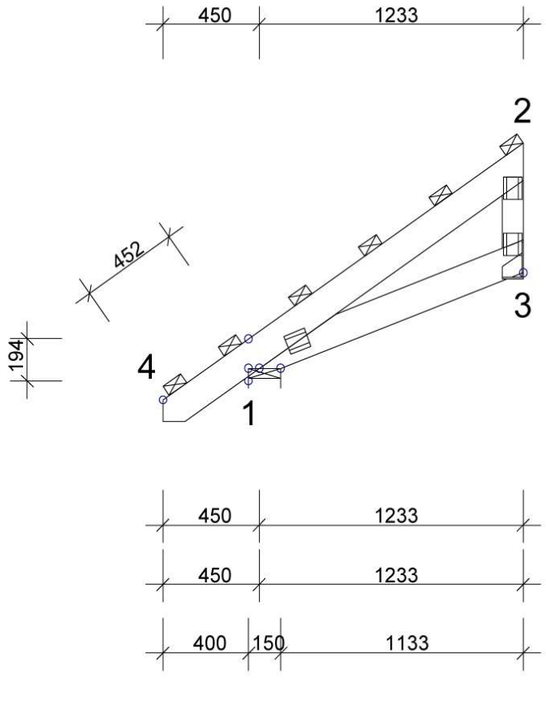
INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN

ALTE INCARCARI: VEZI NOTE DE CALCUL

M-5



LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTINCARCARE mm	N/m²
2-4	140	C24	400	1600
2-3	100	C24	Nu	
1-3	140	C24	Da	260

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN

ALTE INCARCARI: VEZI NOTE DE CALCUL

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
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EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: roof M4 M5

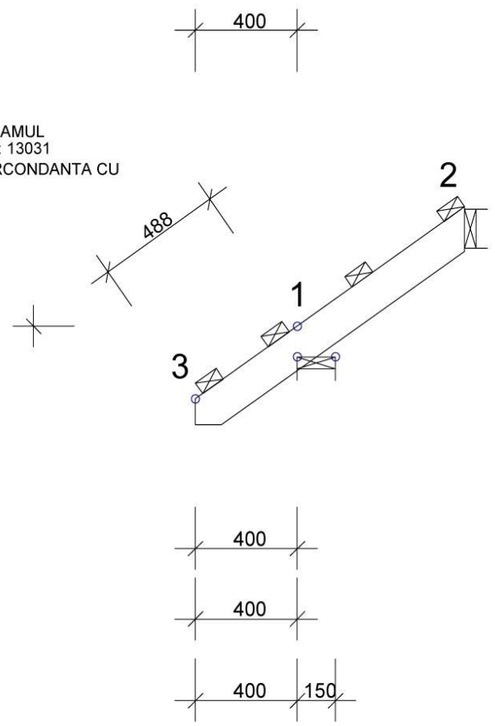
PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

R-7

M-6

DIRECTII GENERALE:

CONSTRUCTIE CALCULATA CU PROGRAMUL
DE CALCULATOR "TRUSSCON". LIC.NO: 13031
FORTELE AU FOST CALCULATE IN CORCONDANTA CU
TEORIA DEFORMATIILOR DE ORDIN 1.
COD LEMN: SR EN 1995+NA
COD CONECTORI: SR EN 1995+NA;



LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTR mm	INCARCARE N/m²
2-3	140	C24	400	1600

SETARI GENERALE:

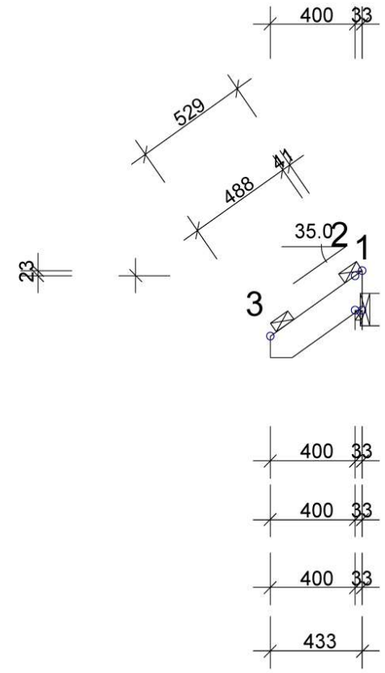
GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

M-7



LEMN: GROSIME 42 mm

ELEMENT CONSTR.	LATIME mm	CLASA	CTR mm	INCARCARE N/m²
2-3	140	C24	400	1600

SETARI GENERALE:

GROSIME LEMN: (mm)	42
INTERAX FERME: (mm)	650
ZONA CLIMATICA:	2
CLASA DE SIGURANTA:	2

INCARCARI (N/m²):

INCARCARE ZAPADA (VALOAREA DE BAZA):	400
INCARCARE VANT (VALOAREA DE BAZA):	1179

INCARCARI PERMANENTE: VEZI TABELUL DE LEMN
ALTE INCARCARI: VEZI NOTE DE CALCUL

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: roof M6 M7

PROJECT №:	
FORMAT :	A3
SCALE :	
DATE :	20.12.2013

R-8

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
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BSEN 338:2003 21.03.08 #59

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GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	roof visualization

PROJECT №:		R-9
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

NOTES: The enclosed elements which fully comply with European and British standards (EC5: Design of Timber Structures; Durability of wood and wood based products) are used as main building components.

PrEN 14.545:20707 (E) 21.03.08 #63
PrEN 1995-1-1:2003(E)21.03.08 #56
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BSEN 351:1996 21.03.08 #61
EN 599-1 21.03.08 #62
BSEN 338:2003 21.03.08 #59

NEW TECHNOLOGY CENTER

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GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	roof visualization

PROJECT №:		R-10
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

Green social housing programme in Lebanon

NEW TECHNOLOGY CENTER

MAP engineering

M-1 HVAK GF
M-2 HVAK I floor
M-3 HVAK II floor
M-4 Lighting plan GF
M-5 Lighting plan I floor
M-6 Lighting plan II floor
M-7 Low current plan GF
M-8 Low current plan I floor
M-9 Low current plan II floor
M-10 Sockets plan GF
M-11 Sockets plan I floor
M-12 Sockets plan II floor

10/500 Section radiator (quantity /Hmm between the axes)

101 Room number

56/70 towel rail (Hsm/Lsm between the axes)

5/500 Radiator dimension

Riser. Ø25

ø25 ø25 Pipelines diameters (Hot and cold.)

20 ø32 ø32 Pipelines diameters of sanitary water (Circulation, cold and hot.)

ø25 Drainage pipe diameter

Supply pipe

Returne pipe

Sanitary hot water pipe (with protective layer)

Cold water pipe

Drainage pipe with inclination

Air conditioning pipe (Cooper pipelines)

Distribution manifold

NEW TECHNOLOGY CENTER

LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

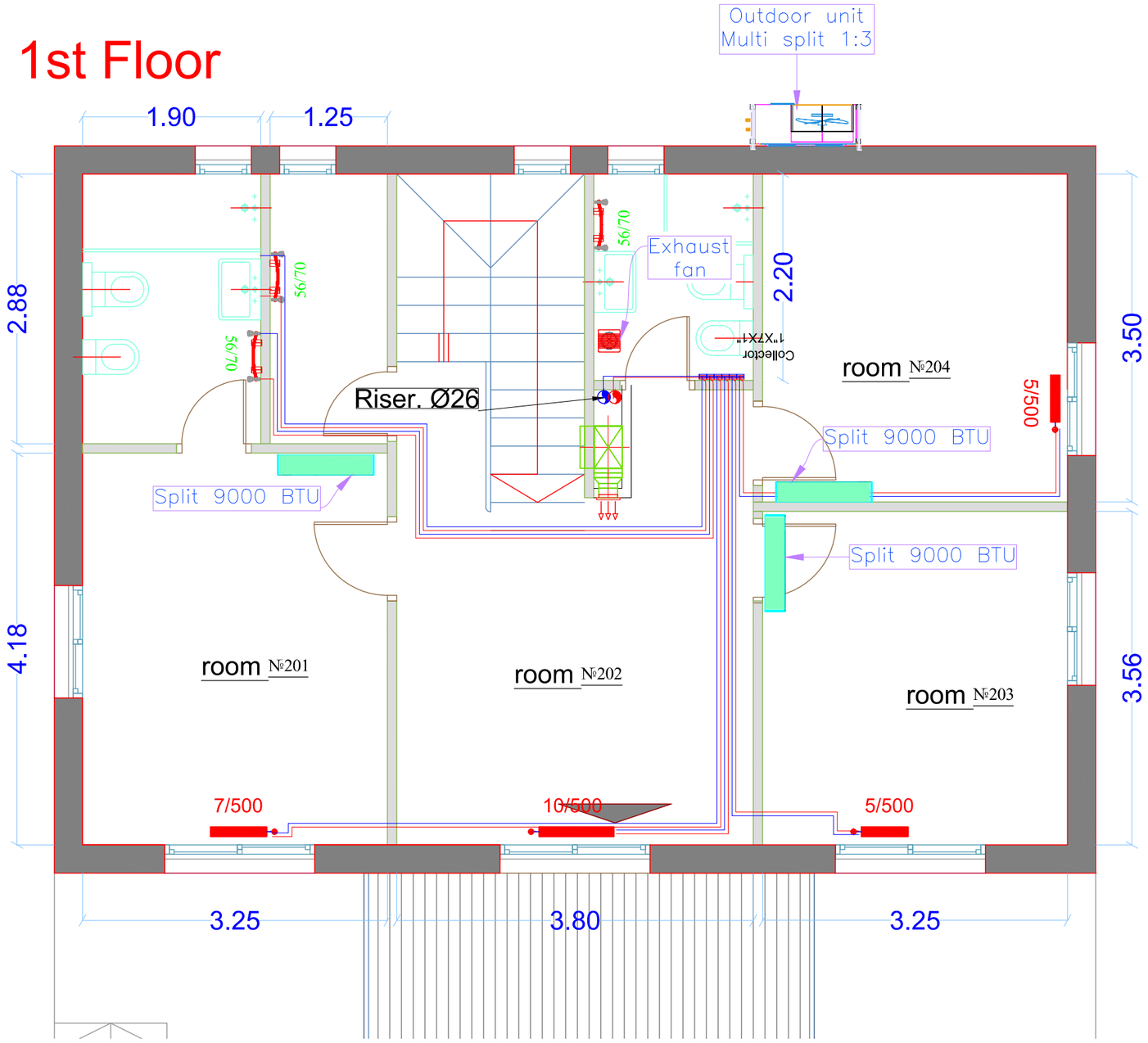
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	HVAK GF

PROJECT №:		M-1
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

1st Floor



10/500 Section radiator (quantity /Hmm between the axes)

101 Room number

56/70 towel rail (Hsm/Lsm between the axes)

5/500 Radiator dimension

Riser. Ø25

ø25 ø25 Pipelines diameters (Hot and cold.)

20 ø32 ø32 Pipelines diameters of sanitary water (Circulation, cold and hot.)

ø25 Drainage pipe diameter

Supply pipe

Returne pipe

Sanitary hot water pipe (with protective layer)

Cold water pipe

Drainage pipe with inclination

Air conditioning pipe (Cooper pipelines)

Distribution manifold

NEW TECHNOLOGY CENTER

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

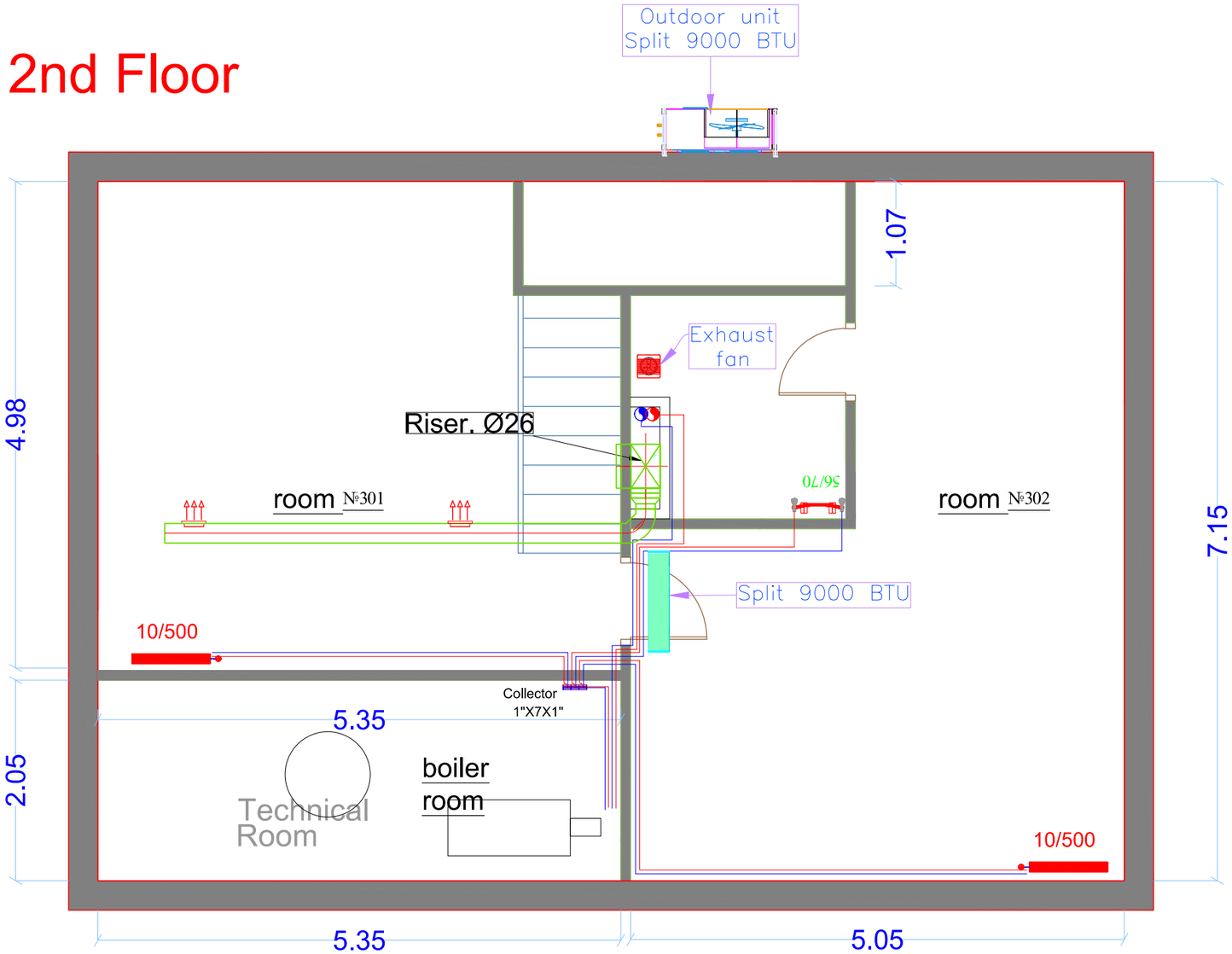
ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: HVAK I Floor

PROJECT №:		M-2
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	

2nd Floor



10/500 Section radiator (quantity /Hmm between the axes)

101 Room number

56/70 towel rail (Hsm/Lsm between the axes)

5/500 Radiator dimension

Riser. Ø25

ø25 ø25 Pipelines diameters (Hot and cold.)

20 ø32 ø32 Pipelines diameters of sanitary water (Circulation, cold and hot.)

ø25 Drainage pipe diameter

Supply pipe

Returne pipe

Sanitary hot water pipe (with protective layer)

Cold water pipe

Drainage pipe with inclination

Air conditioning pipe (Cooper pipelines)

Distribution manifold

NEW TECHNOLOGY CENTER

LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

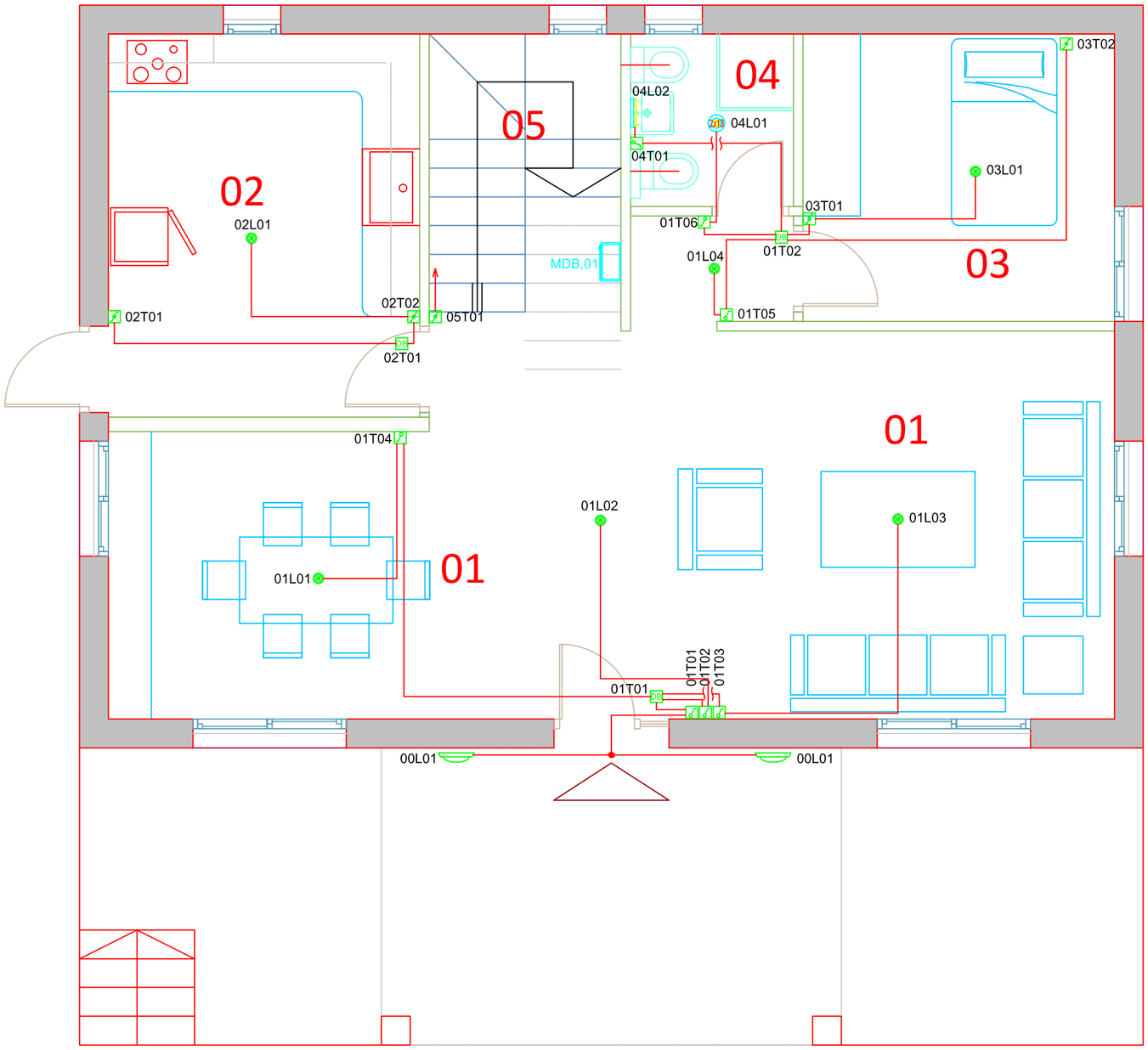
CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project
DRAWING:	HVAK II Floor

PROJECT №:		M-3
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
- Light Type B5
- Light Type A3
- Light Type B3 wall
- Distribution Board

NEW TECHNOLOGY CENTER

LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

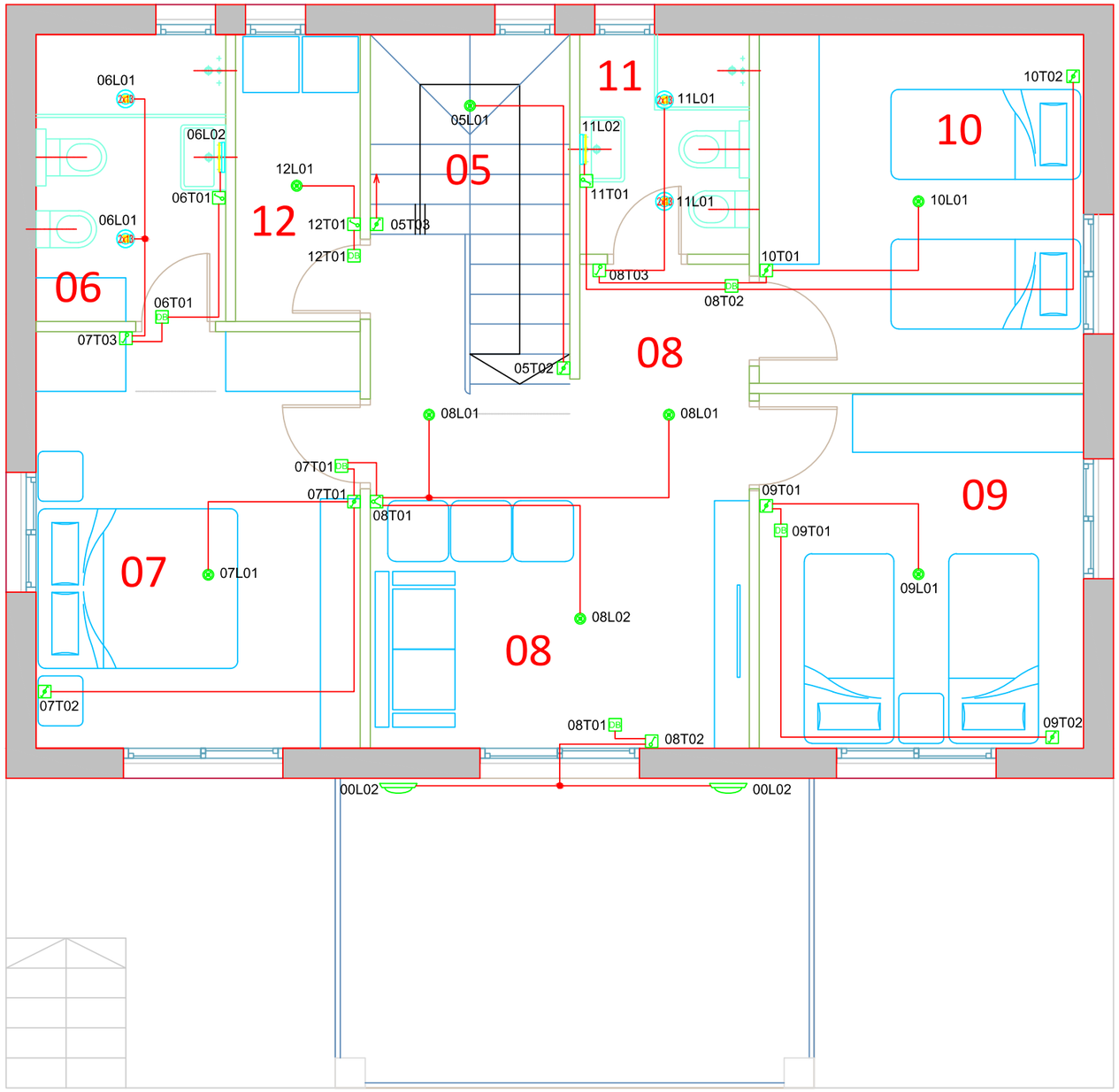
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: Lighting plan

PROJECT №:		M-4
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Socket 230v
Socket RJ 12
Socket RJ 45
WI-FI
Socket TV
Distribution Box
Switch Button 1
Switch Button 2
Switch Button rev. 1
Light Type F1
Light Type B5
Light Type A3
Light Type B3 wall
Distribution Board

NEW TECHNOLOGY CENTER
LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

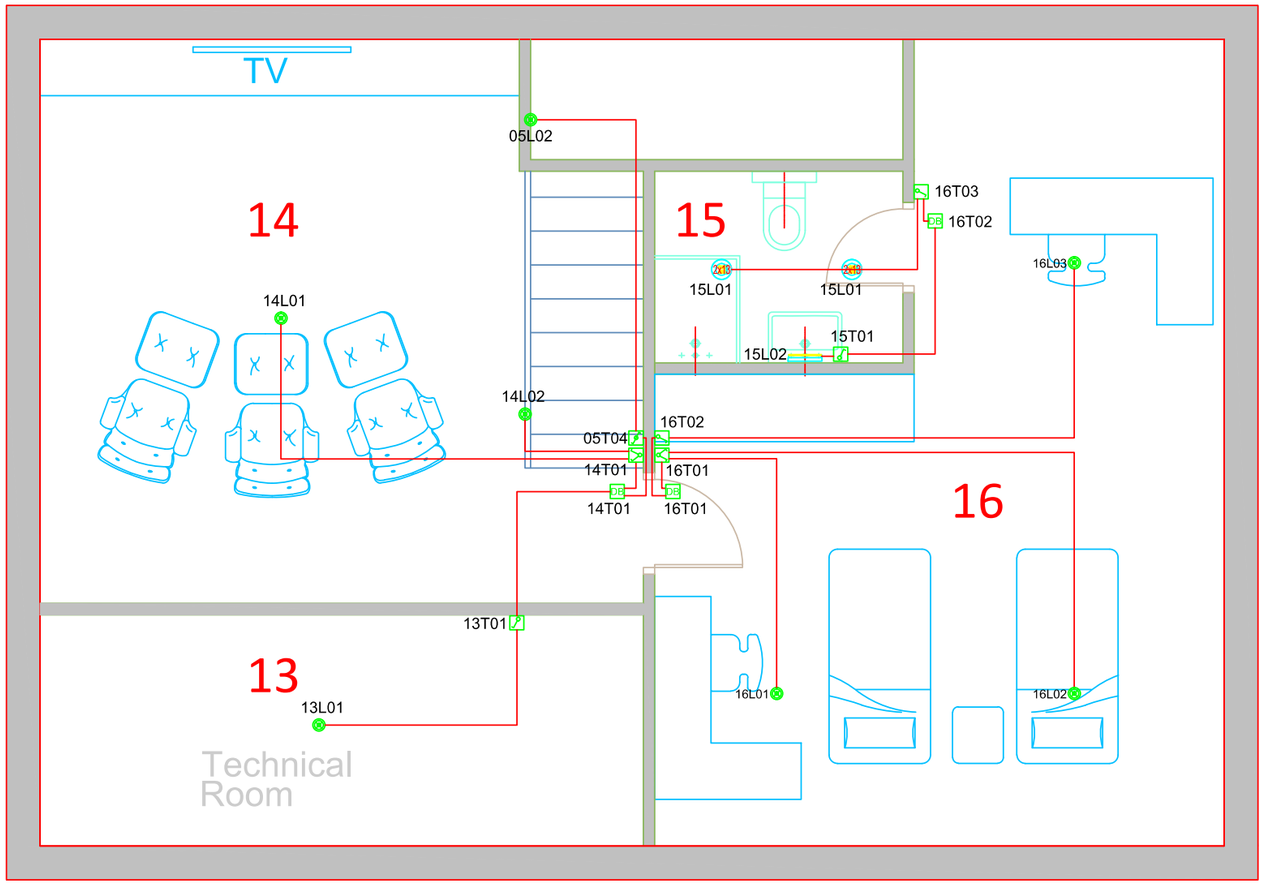
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: Lighting plan I floor

PROJECT №:		M-5
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
- Light Type B5
- Light Type A3
- Light Type B3 wall
- Distribution Board

NEW TECHNOLOGY CENTER

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DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

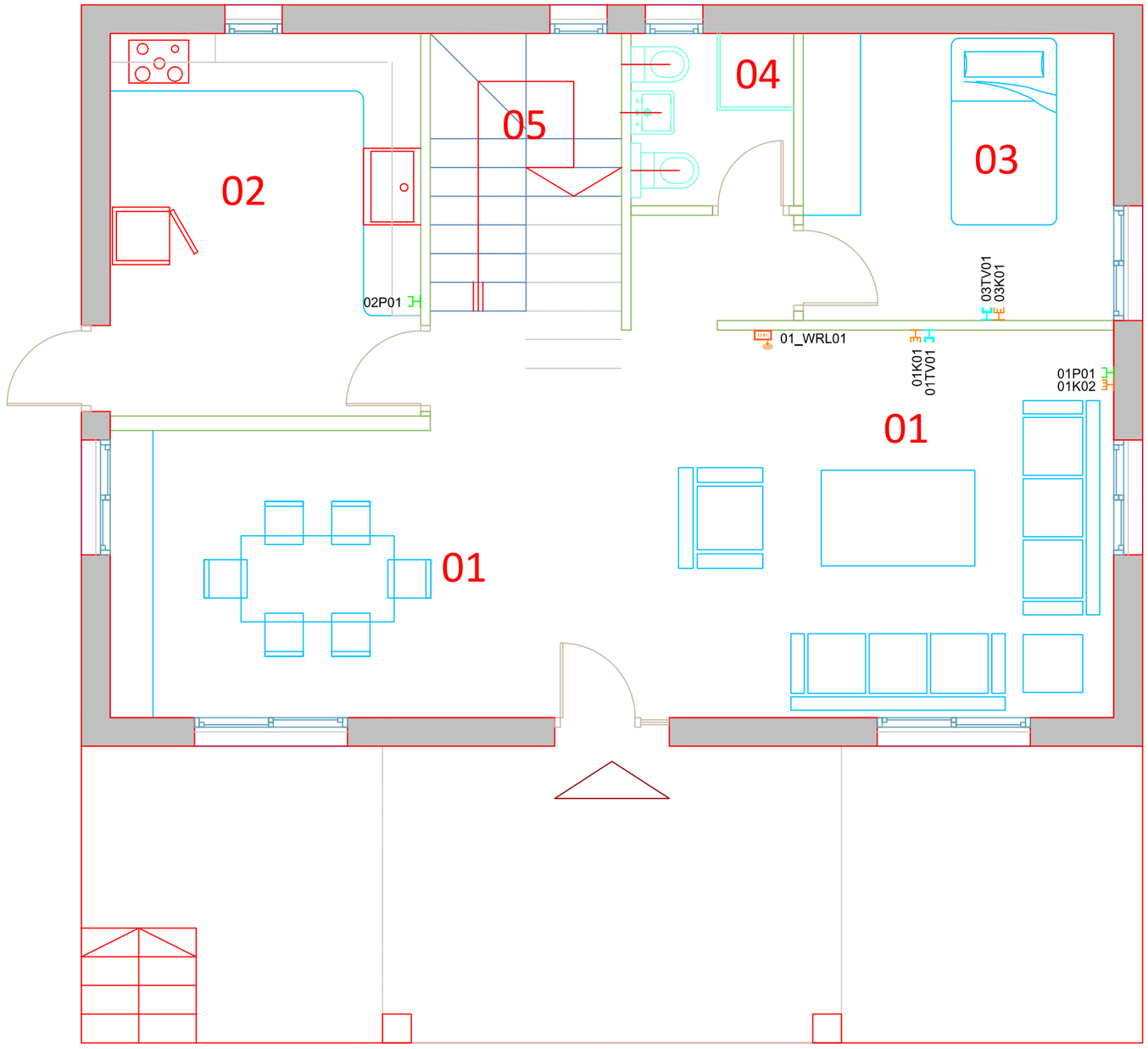
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: Lighting plan II floor

PROJECT №:		M-6
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
- Light Type B5
- Light Type A3
- Light Type B3 wall
- Distribution Board

NEW TECHNOLOGY CENTER

LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

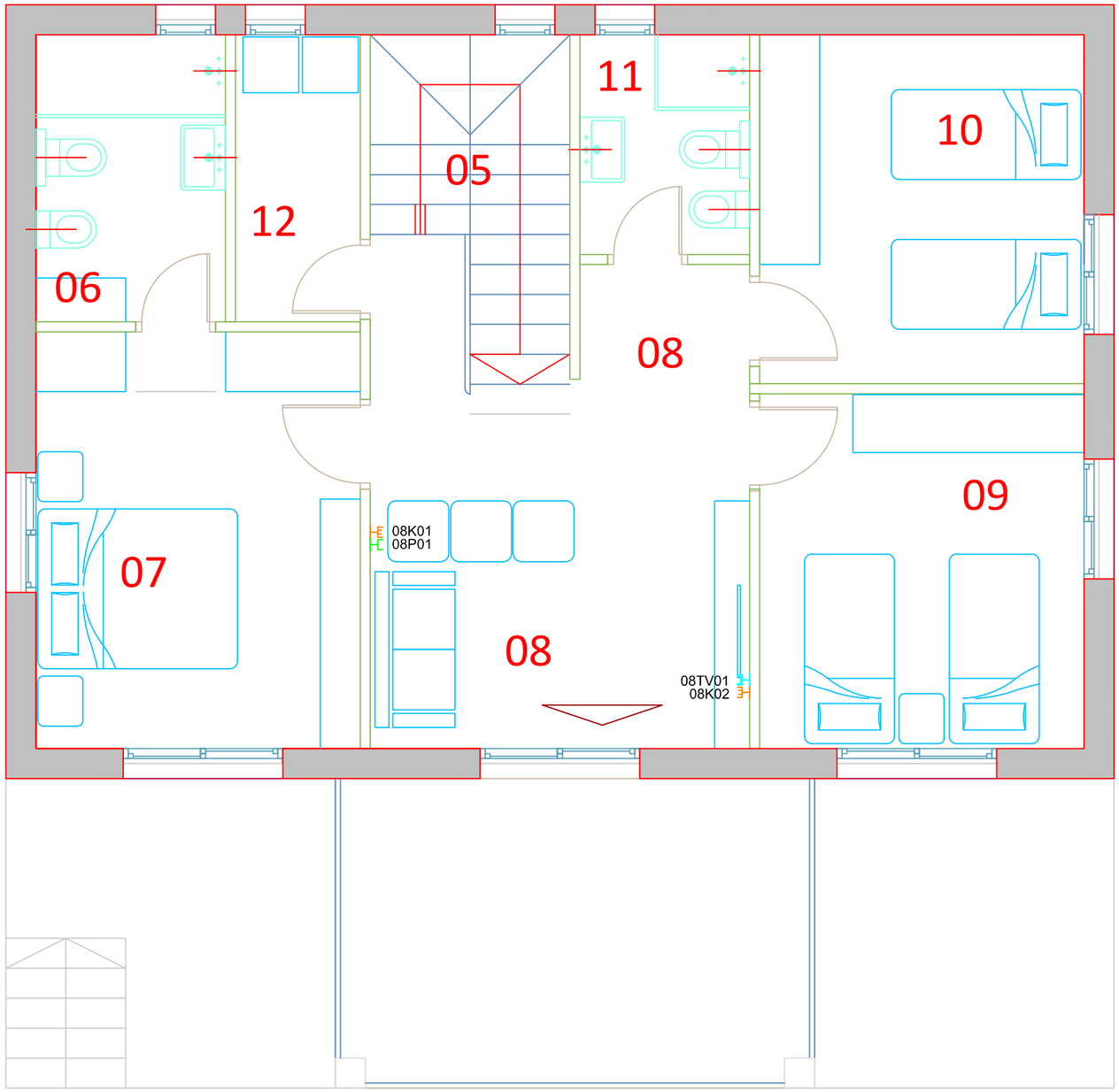
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: low current plan GF

PROJECT №:		M-7
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Socket 230v
Socket RJ 12
Socket RJ 45
WI-FI
Socket TV
Distribution Box
Switch Button 1
Switch Button 2
Switch Button rev. 1
Light Type F1
Light Type B5
Light Type A3
Light Type B3 wall
Distribution Board

NEW TECHNOLOGY CENTER
LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

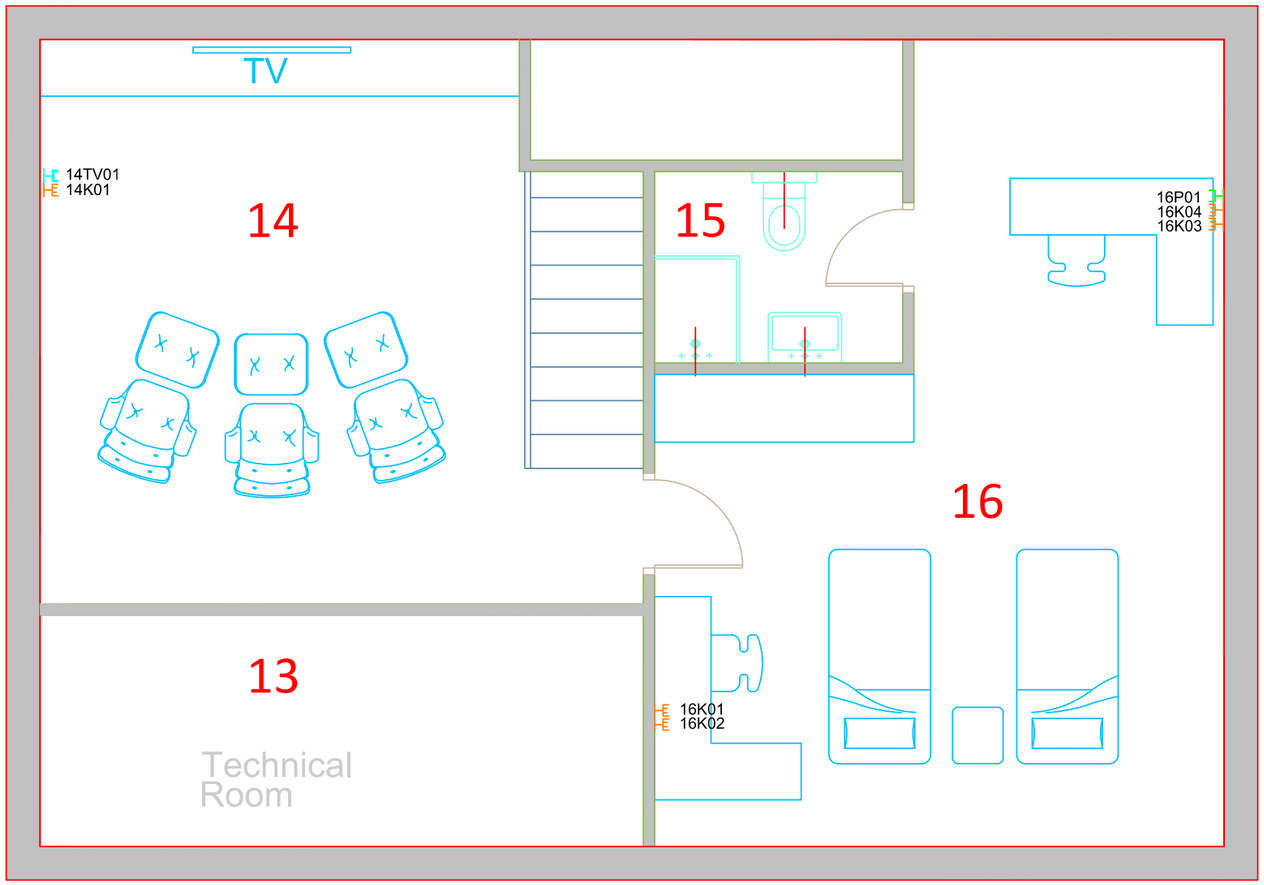
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING:low current plan I floor

PROJECT №:		M-8
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
- Light Type B5
- Light Type A3
- Light Type B3 wall
- Distribution Board

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CLIENT: GREEN FUTURE LEBANON

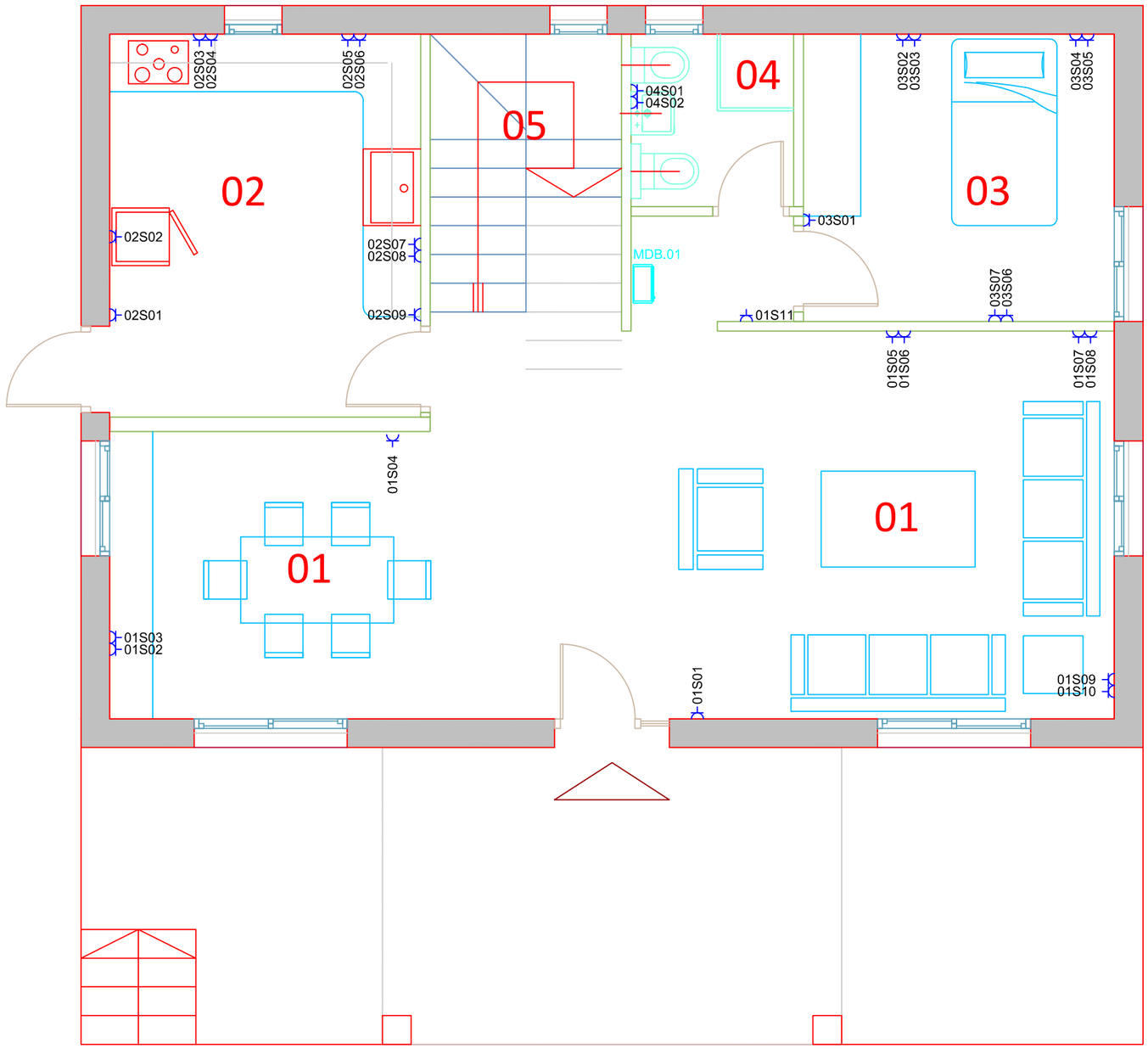
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: low current plan II floor

PROJECT №:		M-9
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
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- Light Type A3
- Light Type B3 wall
- Distribution Board

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

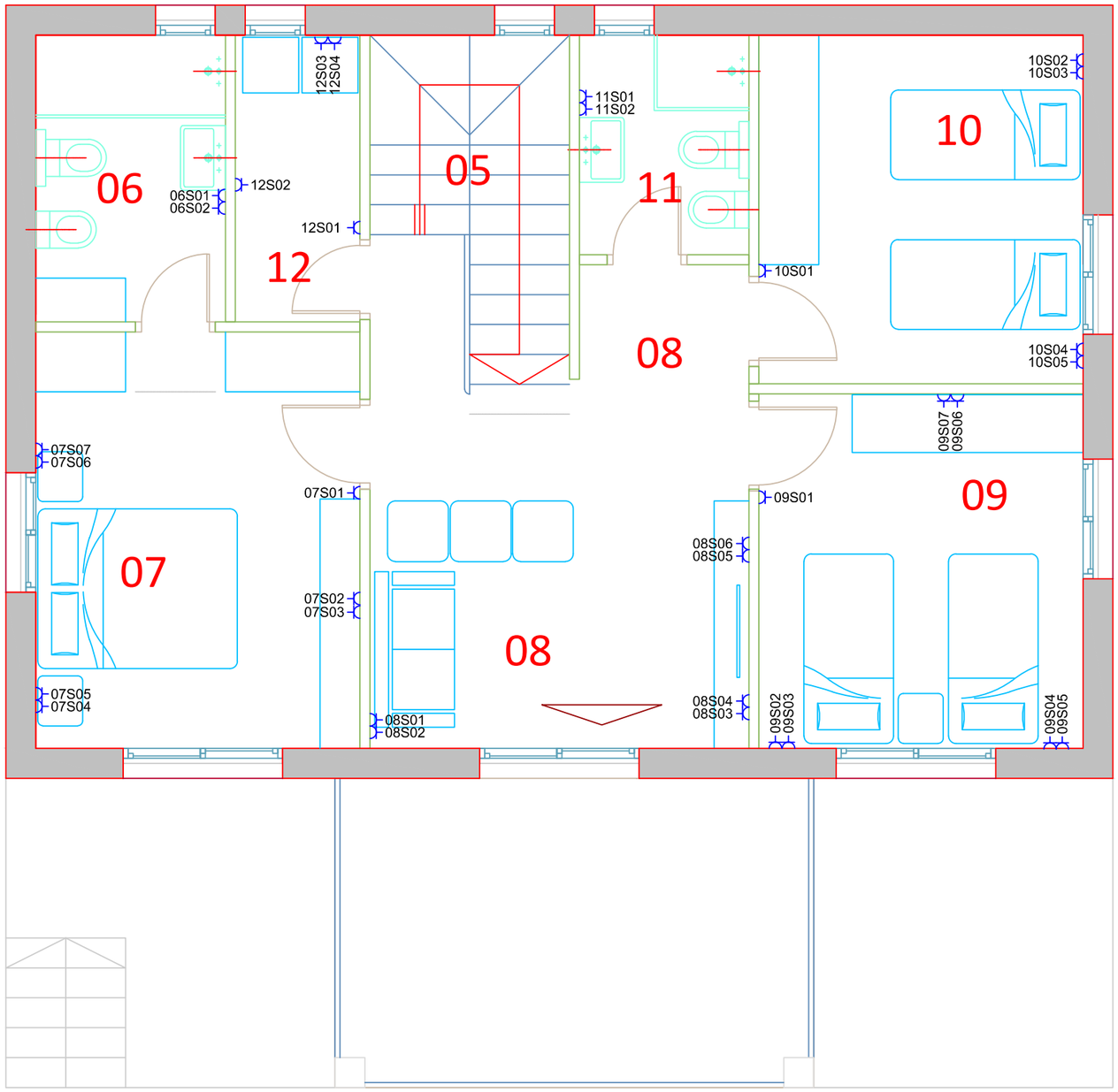
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: Sockets plan GF

PROJECT №:		M-10
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



- Socket 230v
- Socket RJ 12
- Socket RJ 45
- WI-FI
- Socket TV
- Distribution Box
- Switch Button 1
- Switch Button 2
- Switch Button rev. 1
- Light Type F1
- Light Type B5
- Light Type A3
- Light Type B3 wall
- Distribution Board

NEW TECHNOLOGY CENTER

LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

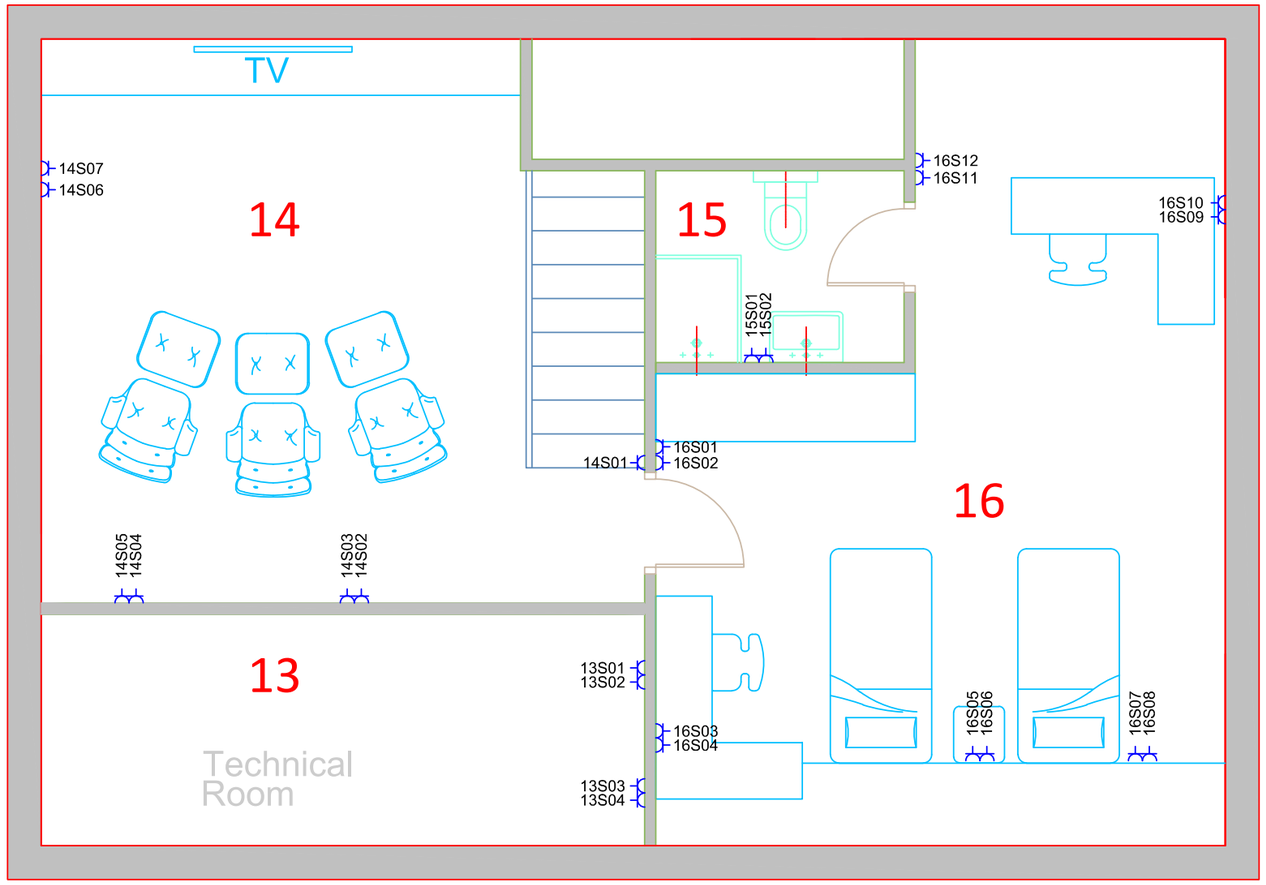
PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: Sockets plan I floor

PROJECT №:		M-11
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	



Socket 230v
Socket RJ 12
Socket RJ 45
WI-FI
Socket TV
Distribution Box
Switch Button 1
Switch Button 2
Switch Button rev. 1
Light Type F1
Light Type B5
Light Type A3
Light Type B3 wall
Distribution Board

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LTD. NEW TECHNOLOGY CENTER
GEORGIA 0131 TBILISI
DAVIT AGHMASHENEBELI LANE 15 km.
TEL: +995 32 333650

CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

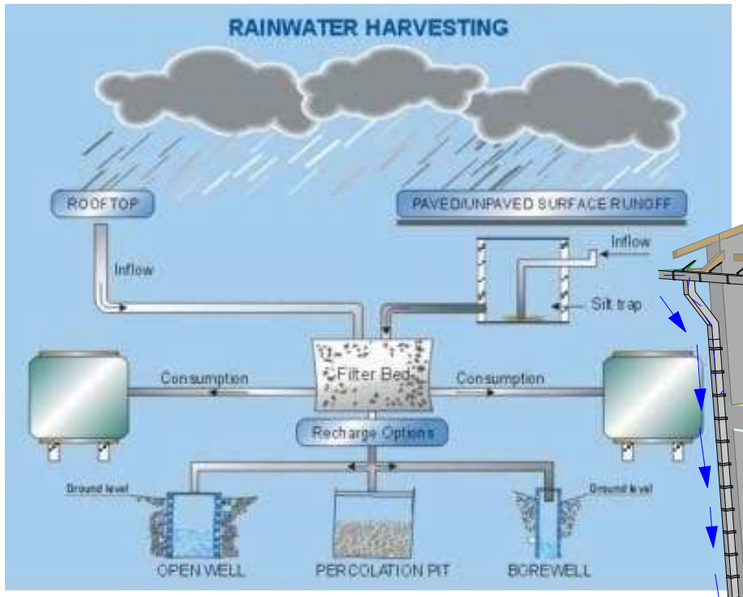
ARCHITECT: G.jamarjashvili S.Tabatadze G.Khosruashvili

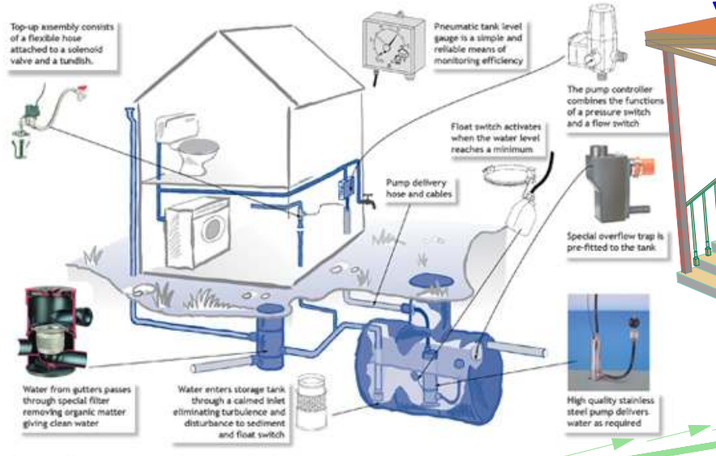
ENGINEERING: I.kevlishvili

STATUS : Project

DRAWING: Sockets plan II floor

PROJECT №:		M-12
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	





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! The circuit further agrees with the manufacturer

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CLIENT: GREEN FUTURE LEBANON

PROJECT:

Green social housing programme in lebanon

ARCHITECT:	G.jamarjashvili S.Tabatadze G.Khosruashvili
ENGINEERING:	I.kevlishvili
STATUS :	Project

DRAWING: water collection system

PROJECT №:		M-13
FORMAT :	A3	
SCALE :		
DATE :	20.12.2013	