

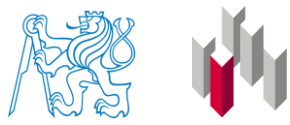
FINAL PROJECT: SINGLE FAMILY HOUSE

GOLMAYO, SORIA (SPAIN)

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INDEX

DESCRIPTIVE MEMORY

1- GENERAL INFORMATION

- 1.1. Project
- 1.2. Situation
- 1.3. Information about the location
- 1.4. Planning regulations
- 1.5. Urban special regulations
- 1.6. Building
- 1.7. Occupation
- 1.8. Sloping roof
- 1.9. Vents or smoke evacuation
- 1.10. Support facilities
- 1.11. Treatment of open spaces
- 1.12. Other considerations

2- URBAN AREAS ELIGIBLE PURPOSES

3- SCHEDULE OF REQUIREMENTS AND DESCRIPTION OF BUILDING

- 3.1. Durability considerations
- 3.2. Formal Aspects
- 3.3. Construction features
 - 3.3.1. *Foundation and structure*
 - 3.2.2. *Facades and partitions*
 - 3.2.3. *Carpentry and locksmithing*
 - 3.2.4. *Sanitation*
 - 3.2.5. *Coatings*
 - 3.2.6. *Requirements for implementation*

4. REGULATIONS FOR THE CREATION OF THE PROJECT

5. BUILDING SERVICES IN CONNECTION WITH THE BASIC REQUIREMENTS CTE

- 5.1. Basic requirements for Fire Safety FS (SI)
- 5.2. Security basic demands of use (SU)
- 5.3. Basic requirements for energy saving (HE)

6. BENEFITS OF BUILDING

- 6.1. Basic requirements concerning the functionality
- 6.2. Basic requirements regarding safety
- 6.3. Basic requirements relating to habitability
- 6.4. Other aspects

CONSTRUCTIVE MEMORY

1- SOIL CHARACTERISTICS

2- FOUNDATION AND STRUCTURE

- 2.1. Method of calculation of the structure
- 2.2. Foundation characteristics
- 2.3. Structure
 - 2.3.1. *Reaction and fire resistance*
 - 2.3.2. *Gravitational actions*
 - 2.3.3. *Wind action*
 - 2.3.4. *Thermal and rheological actions*
 - 2.3.5. *Seismic action*
 - 2.3.6. *Resistant properties of structural materials*



3- SURROUND

3.1. Facades and other vertical elements

3.1.1. Detailed description

3.1.2. Physical behavior

3.2. Covers

3.2.1. Physical behavior

3.3. Sills and floors without ground contact

3.3.1. Description

3.3.2. Physical behavior

3.3. Voids in facade

3.3.1. Physical behavior

3.4. Interior separation

3.4.1. Physical behavior

3.5. Finishes

3.5.2. Interior finishes

4. CONDITIONING AND FACILITIES

4.1. Plumbing memory

4.2. Electricity memory

4.3. Fire protection memory

4.4. Extraction and ventilation memory

4.5. Telecommunication memory

4.6. Lightning rod

5. EQUIPMENT

5.1. Baths

5.2. Kitchen

6. JUSTIFICATION OF COMPLIANCE REGULATIONS

6.1. EHE-08

6.2. Low voltage Electrotechnical regulations (REBT)

6.3. Telecommunications (common infrastructures)

6.4. Municipal ordinances

6.5. General plan

7. BOOK OF SPECIFICATIONS

7.1. General conditions

7.1.1. The contract

7.1.2. Obligatory arbitration

7.1.3. Competent jurisdiction

7.1.4. Responsibility of the contractor

7.1.5. Accidents of work

7.1.6. Damages to third

7.1.7. Payments to arbitrary

7.1.8. Announcements and cartels

7.1.9. Copies of documents

7.2. Conditions of technicians

7.2.1. Agents obligations

POSSIBILITY OF CONSTRUCTION THE HOUSE IN PRAGUE



DESCRIPTIVE MEMORY

1- GENERAL INFORMATION

1.1. Project

The Project is a detached house, with the completely determination of details and material specifications, elements, construction systems and equipment. Its content will be enough to obtain the necessary visa to begin the work

1.2. Situation

Municipal area of Golmayo, province Soria
Urbanization 'Las Camaretas'
Nº 3 and nº4 of plot

1.3. Information about the location

The road into the building is planned from a public thoroughfare and it's going to be totally surfaced.

The potable water comes from the mains municipal supply and it counts with canalization for the connection planned in front of the plot or site.

There is plumbing municipal supply in front of the plot, which is connected to the interior mains of the edification through its own connection.

The electricity supply it's going to be made from the low voltage distribution running on public roads.

The plot is situated in urban ground non-consolidated and its use is residential for detached house. The corresponding plots, number 3 and 4 have square geometry. Its limits are: Front accesses directly with the main road and with north orientation, the rest sides are limited with other constructed plot and the west side with green zone.

The plot has a surface of 1024 m².

The dimensions of the perimeter are:

- The main frontage: 30,09m
- South boundary: 36,04m
- North boundary: 32,5m
- West boundary: 29,88m



1.4. Planning regulations

Shall apply, in terms of Town Planning Regulations, the revised General Plan Golmayo Management, adopted on April 4, 2005 by Carlos de la Casa Martinez, and published in the Official Gazette Castilla y Leon (BOCYL) on June 6, 2005, now in force, and as ordinances and applicable Special feature typical use and location.

It will also be implementing all the provisions of Standards General detailed rules, annexes and explanatory graphics planimetry of Golmayo for the municipality, and in all rules, orders and regulations relating to Forced Compliance new construction buildings and part of the plan "Las Camaretas", where housing is located.

1.5. Urban special regulations

The purpose of this building project must meet the following parameters as the Parcial Plan of "Las Camaretas" and all the specific applicable ordinances:

- Land classification: Unconsolidated urban
- Zonal classification: Urban land
- Plot:
 - Maximum buildable height: 2 floors with h. max 7 meters
 - Minimum area: 500 m²
 - Maximum buildable depth: Not specified
 - Maximum plot: Not applicable

1.6. Building

- Road alignment: Free subject to compliance with other conditions.
- Alignment of curtain wall of plot: Not specified.
- Separation boundaries: At least 4 m.
- The maximum distance between the exterior edge of existing public road and the building housing may not exceed 35 m.
- Height: Two floors with a maximum ridge height of 7 m.
- Flush: You can't alter the original relief of the terrain at distances less than 4m the boundaries with adjacent properties.



1.7. Occupation

- Buildable: 0.4 m²/m², area in detached house.
- Occupation: 0.3 m²/m², area in detached house.
- Cantilever: When designing the new works has glass galleries, they are accounted for 50% of its surface.
- Underground: They aren't counted.
- Basement: Basement floors aren't counted in which the upper bound of the roof slab is at a distance equal to or less than 1.20 m. of the grade of the land.

1.8. Sloping roof

The roof pitches less than 35 °.

1.9. Vents or smoke evacuation

It's possible to put a chimney above the authorized parameters for roofs where justified their design.

1.10. Support facilities

For a building is considered ancillary to the house shall not exceed 50 m² of floor area or be separated from the main building more than 15m. with the exception of the conditions set out in Article 10.7.3 "Auxiliary Building" in the General Plan.

1.11. Treatment of open spaces

The standards adopted for the construction of isolated house.

1.12. Other considerations

The new housing for land classified as urban land for a isolated house, must respect and adapt to the basics, the environment and traditional environment in which they are located.



2- URBAN AREAS ELIGIBLE PURPOSES

The measurement of surfaces constructed and useful to the provisions referred to below are:

- Constructed surface: 312, 12 m²
- Useful surface: 260, 10 m²

Breakdown useful surface

Floor	Room	Useful	Built
Basement Floor	Hall	5,58 m ²	
	Corridor	7,62 m ²	
	Kitchen	28,85 m ²	
	Living room	48,31 m ²	
	Bathroom 1	4,70 m ²	
	Office	11,22 m ²	
	Stair 1	4,11 m ²	
	Garage	46,40 m ²	
Total basement Floor		156, 79m²	188, 15 m²
First Floor	Stair	7,32 m ²	
	Corridor	8,77 m ²	
	Bedroom 1	15,56 m ²	
	Bedroom 2	16,39 m ²	
	Bathroom 2	7,12 m ²	
	Bedroom 3	27,48 m ²	
	Bathroom 3	18,02 m ²	
	Balcony	2,65 m ²	
Total first Floor		103, 31 m²	123, 97 m²
TOTAL		260, 10 m²	
TOTAL BUILT AREA			312, 12 m²



3- SCHEDULE OF REQUIREMENTS AND DESCRIPTION OF BUILDING

11

The building to which this project is intended to use the house unit and all its dependencies allow the accomplishment of the assigned function.

The conditions and requirements that have served as a premise for this project is required by law for the PFC, providing the necessary documentation for actual implementation and fulfilling the statement provided to members of the court assigned.

3.1. Durability considerations

This house is projected to meet the essential requirements of mechanical strength and stability, fire safety, hygiene, health, environment and safety in use. Compliance with these requirements is expected to meet during the life of 50 years, during which the user has to prove the maintenance manual which is part of the book building.

3.2. Formal Aspects

This project develops an isolated house with rectangular forms in its plant. Based on the conditions and requirements listed above, the property has the following formal aspects:

- Choosing the most suitable location for the building.
- Act on the existing environmental conditions surrounding the building.
- Provide the building of appropriate general volumetric characteristics with respect to energy exchanges with the outside.
- Act on the characteristics of the building envelope for optimal performance of interior-exterior energy transfer and to address its permeability.
- Consider the effects that space, and interior finishing elements that indicate the building's energy performance.

3.3. Construction features

3.3.1. Foundation and structure

The structure of the building is going to be resolved with steel concrete and can be decomposed, for purposes of calculation, in: Foundations, supports, floors and unique elements.

The geometric description of the structure which is included in the plans for Execution Project shall be constructed and controlled in accordance with what indicated in the Technical Building (Código Técnico de la Edificación). The interpretation of plans and implementation requirements of the structure are ultimately subject to the directives and orders during the Construction of it imparts the Architect of the work.

12

The frameworks are made with a total depth of 25 + 5 cm., interaxis concrete vault of 72 cm., Steel joists, trusses and complementary distribution, filling of breasts and compression layer of 5 cm. thick, all executed as established under current legislation. The framework will be concrete vault.

Based in the geotechnical study, adopted the following principles of typology and calculation of foundation and construction features of the same: A system using surface footings with walls of 0.85 m supported on them.

Concrete elements will be carried out in situ with steel concrete H-25 N/mm², T.máx. 20 mm. placed on structure formed by walls, pillars, beams bands, wrought beams and slabs, pouring consistency and compacted with vibrating plastic, steel trusses B-500-S.

The sill will be of concrete with a thickness of 17 cm, arranged on natural ballast, it must be clean and free from clay, loam or other foreign materials.

Transverse joints will shrink every 25 m², with distances between them not exceeding 5.00 m. being the depth of not less than 1 / 3 the thickness and width of 3 mm. The sill will include its corresponding mesh and bituminous waterproofing.

3.2.2. Facades and partitions

- Closings

The facades are made of hollow brick with 24x11,5x 9 cm, with extruded polystyrene brick wall up to 24x11, 5x4 cm.

- Covers

To cover adopts the solution of a ceramic tiled pitched roof 25 °, formed by partitions Warren and supported these in a 25 +5 cm forged, extruded polystyrene insulation.



3.2.3. Carpentry and locksmithing

-Exterior Carpentry

As for the external joinery have the front door, windows outdoor and garage access doors, terrace and lounge from the dining room, which will be composed of aluminum on the outside and wood the interior, exterior to avoid wear these.

-Locksmith

The railing of the staircase handrail iron is solid wood, while the external stairs shall be stainless steel.

3.2.4. Sanitation

The sewerage system will collect the studs' wet rooms housing and the rain. These are grouped into different collectors following his path to the connection with the general coffers to the general thrust of release. General collectors and drains toilets, sinks, washing machine are made by PVC pipe of varying diameter and according to the layout and dimensions established at the project. The network will carry a minimum slope of 1.5% and placed properly sized recordable boxes for network maintenance, drains, etc.

3.2.5. Coatings

Coverings and interior finishes covered in this project are defined taking into account the intended uses selected, considering the resistance that must be submitted, easy cleaning, maintenance and the project obtaining.

-Flooring

The pavement will be held inside the house is going to be of terrazzo tile, except kitchen and bathrooms that will be made with ceramic tile. The garage will be made with sill plate.

In the exterior parts of the house, as the entrance terrace with stairs, made with a rustic ceramic floor tiles.

-Coping

The copings are going to be of ceramic and provided with drip edge.

-Outer faces

The materials used in the exterior finish will be of plaster facades shall continuous mortar.



-Interior walls

Plaster-based strong laying and fine finish, prepared to paint, except it will be tiled wet rooms. All vertical tiling is made with tile pieces in bathrooms and smooth ceramic in the kitchen, taken on plaster screed support with tile adhesive, joints between parts and in straight alignment, without breakage, chipping or surface defects.

-Ceiling

Plaster-based strong laying and fine finish, prepared to paint, except it will be tiled wet rooms and in the corridor that is going to be of false ceiling

The false ceiling is continuous with smooth drywall, received with esparto and plaster.

-Paint

The interior walls are made with matte plastic paint color, sanded and preparation based on background and two coats of finish.

Metal struts are painted with paint on base type ferro scraped, cleaned and a coat of electrolytic.

The wood supports are finished with varnish applied to protect and hand sanding.

-Glasses

The type of glass used in the external woodwork consists of two panes of 4mm dehydrated and air gap of 6mm. The glass located on the inside will be low emissivity in order to stop the flow of heat, reflecting inward emissions units of heating equipment, preventing their loss to the outside. This system avoids the phenomenon of "cold wall" getting better use shelf units saving energy.

In all cases, the set is not subject to contractions, expansions or deformation of the support or in contact with other glass, concrete or metal. The glass will be completely watertight.

3.2.6. Requirements for implementation

The accreditation of qualities required of the materials will be checked for reception work. Te requirements for the laying of prefabricated materials shall conform to the BD (basic document) that applies to them and to the manufacturer's instructions. In particular, it will strictly observe the construction and structural joints as well as auction meetings with manufacturing waterproofing materials, fireplaces, furniture and drainage elements contained in this project and the corresponding BD.



4. REGULATIONS FOR THE CREATION OF THE PROJECT

15

Content	Type of regulation
TECHNICAL BUILDING CODE (CTE)	
STRUCTURE	
DB SE-AE STRUCTURAL SAFETY. ACTIONS OF THE BUILDING	RD 314/06
DB SE-A STRUCTURAL SAFETY.STEEL	RD 314/06
FIRE	
DB SI SAFETY IN CASE OF FIRE	RD 314/06
USE	
DB SU SAFETY OF USE	RD 314/06
HEALTHINESS	
DB HS HEALTHINESS	RD 314/06
NOISE	
DB HR NOISE PROTECTION	RD 1371/07
ENERGY	
DB HE ENERGY SAVING	RD 314/06
PROFESSIONAL ACTIVITIES	
FUNCTION	
LAW BUILDING MANAGEMENT	Law 38/99
FORMAN BUILDER. FUNCTIONS	D 16/07/35
FOREMAN BUILDER. FACULTIES AND RESPONSABILITIES	RD 265/71
DUTIES OF CONTRACTORS AND BUILDERS	D 16/07/35
RESPONSIBILITIES OF BUILDERS	Order 22/10/63
PRODUCT LIABILITY	Law 22/94
CONSTRUCTION PROJECT MANAGEMENT	
TECHNICAL BUILDING CODE (CTE)	RD 314/2006
APROVAL OF PROTECTION AGAINST NOISE BD-HR AND MODIFICATION OF RD 314/2006	RD 1371/2007
RULES OF ORDER AND ATTENDANCE BOOK.MODIFICATION	Order 09/06/71
FINAL CERTIFICATE OF LOCATION WORKS	Order 20/01/72



COLLECTION OF AMOUNTS ANTICIPATED IN HOUSING	Law 57/68
SALE AND LEASE HOUSING INFORMATION	RD 515/89

16

STRUCTURE	
NCSE-02. CONSTRUCTION STANDARD EARTHQUAKE-RESISTANT	RD 997/02
CONCRETE STRUCTURAL INSTRUCTION (EHE)	RD 1247/08
PROTECTION	
BASIC PROCESS FOR ENERGY EFFICIENCY CERTIFICATION	RD 47/07
REGULATION OF FACILITIES OF FIRE PROTECTION	RD 1942/93
CLASSIFICATION OF CONSTRUCTION PRODUCTS AND ELEMENTS OF CONSTRUCTION	RD 110/2008
NOISE LAW	Law 37/03
REGULATION WHICH DEVELOPES NOISE LAW	RD 1367/2007
THERMAL SYSTEM	
REGULATION OF THERMAL SYSTEM IN BUILDINGS RITE-2007	RD 1027/07
FUEL	
TECHNICAL REGULATION OF DISTRIBUTION AND USE OF FUEL	RD 919/06
CHANGE OF RULES OF REGULATIONS AND TECHNICAL INSTRUCTION	RD 1523/99
ELECTRICITY	
REGULATION OF LOW ELECTROTECHNICAL CURRENT TECHNIQUES AND ADDITIONAL FACILITIES ITC-BT-01 A 51	RD 842/02
REGULATIONS AND RULES ABOUT ELECTRICAL CONNECTIONS	RD 2949/82
SECURITY REQUIREMENTS IN POWER DEVELOPEMENT	RD 7/88
REGULATIONS FOR HIGH VOLTAGE OVERHEAD LINES	D 3151/68
SPECIFICATIONS	
TECHNICAL ESPECIFICATIONS	Order 04/06/73
INSTRUCTION FOR THE RECEIPT OF CEMENT	RD 1797/03
TECHNICAL SPECIFICATION, WATER PIPES	Order 28/07/74
TECHNICAL SPECIFICATION, DRAINAGE PIPES	Order 15/09/86



HEALTHY CONDITIONS	
HOUSING	
CASTILLA Y LEÓN	
BUILDING DESIGN STANDARDS FOR HOUSING	D 39/98
BOOK OF THE BUILDING IN CASTILLA-LEÓN	D 41/2007
PLANNING	
REGIME OF SOIL AND LAND MANAGEMENT	
LAW OF REGIME AND VALUATION OF SOIL	Law 6/98
PLANNING REGULATION	RD 2159/78
URBAN DISCIPLINE REGULATION	RD 2187/78
EASEMENTS	
EASEMENTS: CIVIL CODE	Law 30/81
DISTANCE BETWEEN TREES AND ADJACENT BUILDINGS	D 2661/67
SERVICE: ELECTRICITY, EXPROPRIATIONS AND WAY EASEMENTS	Law 10/60
REGULATION OF APPLICATION	D 2219/66

17

Basic requirement SI 4: Fire protection facilities

The house has those equipment and facilities required in terms of their use and condition to enable the detection, control and extinguish a fire.

18

Basic requirement SI 5: Fire intervention

The house and its surroundings have the conditions that are required to facilitate the involvement of rescue and firefighting.

Basic requirement SI 6: Fire resistance of the structure

The supporting structure is designed to maintain the required fire resistance for the time necessary for them to carry out the basic requirements above.

5.2. Security basic demands of use (SU)**Basic requirement SU 1: Security against the risk of falls**

The morphology of the building and its parts has been designed to offer the following benefits:

- It limited the risk of falling users.
- The floor favor people not to slipping, tripping or will be difficult mobility.
- It's limited the risk of falling through holes in changes of level, on stairs and ramps.
- Cleaning the exterior glazing can be done safely.

Basic requirement SU 2: Safety against the risk of impact or entrapment

Proper design of fixed and building practices ensures that the risk that users may suffer impact or entrapment with them, should be limited safety.

Basic requirement SU 3: Security against risk of imprisonment

The building has been designed to limit the possibility for users to accidentally get trapped somewhere.

Basic requirement SU 4: Security against the risk caused by inadequate lightning

The lighting proposal ensures that the risk of users suffer damage due to it both in circulation areas in the interior and exterior, is limited, even in an emergency or failure of normal lighting.

Basic requirement SU 5: Security against the risk caused by high occupancy situations.

The use and the ability of the property failure guarantee the impossibility of risk caused by high occupancy situations.

Basic requirement SU 6: Security against the risk of drowning.

There are no items in the home which could cause risk due to drowning.

5. BUILDING SERVICES IN CONNECTION WITH THE BASIC REQUIREMENTS CTE

This project is consistent with the point 2 of the Second Transitional Provision of Royal Decree 314/2006 of 17 March, approving the Technical Building Code.

5.1. Basic requirements for Fire Safety FS (SI)**Basic Requirement SI 1: Internal propagation**

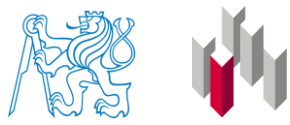
The property subject of this project ensures the limitation of the risk of spread of fire inside.

Basic requirement SI 2: Outdoor propagation

The features and ensure housing situation which limits the risk of spread outside of a fire, in the same house as other buildings.

Basic requirement SI 3: Evacuation of the occupants

The property has adequate means of escape for the occupants to leave the same or reach safety



Basic requirement SU 7: Security against the risk caused by moving vehicles

This project is a detached house, the risk caused by moving vehicles is considered limited.

Basic requirement SU 8: Security against the risk related to the action of lightning

The purpose of this project has been designed so that the risk of electrocution and fire caused by lightning is limited

5.3. Basic requirements for energy saving (HE)

Basic requirement HE1: Limited energy demand

The envelope of the house has all the necessary requirements to guarantee the limitation of energy demand to ensure adequate thermal comfort depending on your local climate and its use. In that way, it has appropriate characteristics of isolation and inertia, air permeability and exposure to solar radiation, preventing the development of humidity and interstitial condensation.

Basic requirement HE2: Performance of thermal system

Thermal systems of the house ensure thermal comfort of its occupants and all requirements set forth in the existing Regulation of Thermal Systems in Buildings (RITE).

Basic requirement HE3: Energy efficiency of lighting system

Lighting systems are designed according to the needs from the proper use of energy efficient housing and through a control system that adjusts the ignition to the actual occupancy of each area.

The house has also a system of regulation of natural light that takes full advantage of it in the required areas.

Basic requirement HE4: Minimum solar contribution to sanitary hot water.

The house has a system for collecting, storing and using solar energy at low temperature, suitable for the global solar radiation of the location and hot water demand of the house itself, ensuring that portion of the total thermal energy needs are covered by this system.

Basic requirement HE5: Contribution minimum photovoltaic power

This project doesn't incorporate feedback system and solar energy conversion by photovoltaic processes.



6. BENEFITS OF BUILDING

6.1. Basic requirements concerning the functionality

- Using

The house has been designed that the arrangement and the dimensions of spaces, and the facilities provision, facilitate the life to the proper and its functions on it.

- Accessibility

The property has all the requirements according to their characteristic in terms of accessibility.

Access to the telecommunication services, audiovisual and information

The house has been designed that meet all the requirements of current legislation, both in the 'Real Decreto Ley1/1998, of 27th of February', a common infrastructure in the buildings for access to the telecommunication services and regulation governing the common infrastructure of telecommunications for access to telecommunication services in indoor and activity installation of telecommunications equipment and systems (Real Decreto 401/2003 of 4th April, and Ley 32/2003, general de telecomunicaciones).

6.2. Basic requirements regarding safety

- Structural safety

The house is designed to have all the necessary requirements to avoid any damage, or the property itself or any of its parts, which have their origin in the foundation, supports, frameworks, floors, walls or load other structural element, or affect them, ensuring the mechanical strength and stability of the house.

6.3. Basic requirements relating to habitability

- Hygiene, health and environmental protection

The property has conditions of safety and proper sealing in your indoor environment, and it doesn't deteriorate the environment in their immediate environment, ensuring a great waste management.

-Protection against noise

The house's characteristics ensure that the health of users of the same isn't in danger because of the perceived noise and can perform so successfully in the same activities.



6.4. Other aspects

21

The property has also requirements of all mandatory standards that apply, according to the relationship expressed in previous sections.



CONSTRUCTIVE MEMORY

22

1- SOIL CHARACTERISTICS

The geotechnical study has been done in accordance with the parameters set out in *Artículo 3 del Documento Básico SE-C del CTE*, and committed for a qualified technician designed by the developer and have the college visa.

All points of recognition, in planimetry and altimetry are reflected in the foundation plane, referred to fixed points clearly recognizable in the environment and enclosed.

Nature of the foundation layer	Sand
Specific weight	1,8 t/m ³
Cohesion	0,0 kN/m ²
Internal friction angle	30°
Considered permissive stress	200 kN/m ²
Water ground level	Below the foundation elevation

Previous to the construction of the foundation it has to be done the tastings prescribed by the architects.

2-FOUNDATION AND STRUCTURE

2.1. Method of calculation of the structure

To calculate the different types of resistive elements it has been in consideration several hypotheses: total vertical load, alternating overload, and vertical load combined with wind. The structure of the floors is done with one-way slab and beams supporting reinforced concrete pillars. In all cases was used one-way reinforced concrete slabs, the height is (25+5) 30 cm.

It has taken for granted that materials have an elastic behavior, and for the design of the different elements has been followed the method of calculation based on the ultimate limit and service states. In the particular case of the concrete, it has been taken as a model of behavior the normatively admitted: parabola-rectangle, rectangle diagram...



The numerical calculation was done by a computer program, based on the matrix formulation of the method of balance. The software used is CYPE 2009 program. The calculation method is adapted to the current legislation. Likewise it has been used tables and/or abacus of specialized publications.

23

The method of calculation used for the design of the concrete footing and its reinforcement is reflected in the EHE-08 regulation. In the slabs and reinforced concrete has been checking out the deformations according to the regulation EHE (*concrete instruction*) too.

2.2. Foundation characteristics

The chosen system is shallow spread footings with low walls for create a suspended floor. The method of calculation used for the design of footings and walls, and their reinforcement is reflected in the regulation EHE-08.

As seen, the value of the allowable stress is prudent, however I will be taken as correct which determines the geotechnical report of the land.

2.3. Structure

2.3.1. Reaction and fire resistance

The materials used of the structure are A1 class in relation to its fire structural elements and they fulfill with the following fire resistance:

Supporting elements without separation function in front fire	R30
Supporting elements with separation function in from fire	R90. EI90

2.3.2. Gravitational actions

GROUND FLOOR	
Slab own weight	3,70 kN/m ²
Partitions overload	1,00 kN/m ²
Own weight flooring	1,00 kN/m ²
Use overload	2,00 kN/m ²
TOTAL	7,70 kN/m²



24

FIRST FLOOR	
Own weight slab	3,70 kN/m ²
Partitions overload	1,00 kN/m ²
Own weight flooring	1,00 kN/m ²
Overload use	2,00 kN/m ²
TOTAL	7,70 kN/m²
GROUND COVER	
Slab own weight	3,70 kN/m ²
Gable tile on planks and brick openwork own weight	3,00 kN/m ²
Wind overload	1,52 kN/m ²
Snow overload	0,60 kN/m ²
TOTAL	8,82 kN/m²
STAIR SLAB	
Slab self weight	3,70 kN/m ²
Step own weight	1,85 kN/m ²
Use overload	2,00 kN/m ²
Own weight flooring	1,00 kN/m ²
TOTAL	8,55 kN/m²
ENCLOSURE AND RAILING	
Façade walls	7,00 kN/m
Handrails on stairs	3,00 kN/m
Ledge	1,00 kN/m

2.3.3. Wind action

Height of the building	< 10m
Building situation	A-according to DB-SE-AE and urban zone
Wind speed	26 m/s
Wind dynamic pressure	0,43 kN/m ²
Wind coefficient (pressure, suction)	0,7 – 0.3



2.3.4. *Thermal and rheological actions*

Not considered because the dimensions of the building are reduced. For this reason, it requires no structural expansion joint

2.3.5. *Seismic action*

Not considered because the location of the building is not very exposed to earthquakes. For this reason, it requires n structural expansion joint.



2.3.6. *Resistant properties of structural materials*

According to EHE-08, it has been taken the following safety coefficients relation to control levels to make:

STRUCTURAL MASS CONCRETE, REINFORCED OR PRESTRESSED ELEMENTS: TABLE OF CORRECT CHARACTERISTICS SUITABLE TO THE INSTRUCTION "EHE-08"						
CONCRETE						
STRUCTURAL ELEMENTS	Concrete type	Level of control	Nominal coating (mm)			Safety factors (γ_c)
			Lateral	Superior	inferior	
Foundation	HA-25/B/20/IIa	STADISTIC	7	50	70	Persistent situation 1,50
Walls	HA-25/B/20/IIa	STADISTIC	3	-	-	
Pillars	HA-25/B/20/IIa	STADISTIC	3	-	-	Accidental situation 1,30
Beam and slabs	HA-25/B/20/IIa	STADISTIC	3	30	30	
STEEL						
STRUCTURAL ELEMENTS	Steel type	All the steel used in the frame it will have a officially recognized distinctive (AENOR).				Safety factors (γ_c)
Foundation	B 500 S					Persistent situation 1,15
Walls	B 500 S					
Pillars	B 500 S					Accidental situation 1,00
Beam and slabs	B 500 S					
EXECUTION						
Execution level control	Safety factors of actions to check.					
	ACTION TYPE	Permanent or temporary situation		Accidental situation		
		Favorable	Unfavorable	Favorable	Unfavorable	
NORMAL	Variable	$\gamma_Q=0,00$	$\Gamma_Q=1,50$	$\gamma_Q=0,00$	$\Gamma_Q=1,00$	
	Permanent	$\Gamma_Q=1,3$		$\Gamma_Q=1,0$		

For all the building work will be used the steel B 500 S.

For all reinforced concrete elements is used HA-257B/20/IIa concrete. The reinforcement coating is 5 cm. for foundation and 3, 5 cm. for the rest of the elements. As a base for the foundation, it's provided cleaning concrete.



3- SURROUND

27

3.1. Facades and other vertical elements

3.1.1. Detailed description

Addition to the description in the point 3.3.2 of the descriptive memory, and provide the following requirements for walls, party walls and partitions in contact with non living spaces.

- Vertical enclosure in contact with the outside:

COMPONENTS	THICKNESS (m)
Mortar	0.02
Double hollow brick	0.115
Parge coat	0.01
Extruded polystyrene	0.06
Simple hollow brick	0,04
Plaster	0,015
Total	0,26

- Vertical enclosure without heating

COMPONENTES	ESPEJOR (m)
Mortar	0.02
Double hollow brick	0.115
Parge coat	0.01
Extruded polystyrene	0.06
Simple hollow brick	0,04
Plaster	0,015
Total	0,26

3.1.2. Physical behavior

Sealing

The sealing of the penetration of water will be subject to the relevant checks to the final receiving of the building. In particular, take note of woodworking supplies due to the factory, and the willingness and sealing of windows.

Soundproofing

- Blind part of the facade: Airborne sound insulation R of 47dbA
- Interior walls in contact with non-residential spaces: Airborne sound insulation R of 47 dbA.

Thermal insulation

The property has the following percentages of voids in facades: < 15% (aprox. 10%). In all these fronts the void ratio is less than 60% of its surface. For these reasons, we applied the simplified option in the DB HE 1 of CTE for the calculation of energy demand. The property is located in a climatic zone C3. All spaces considered low components of internal load, the use to which they will be posted. The thermal envelope of the flowing elements:

- Cover
- Soil contact area uninhabitable
- Facades
- Interior partitions in contact with area uninhabitable

Reaction and fire resistance

The constituent materials of the facades are classified according to their reaction to fire class A1. They also meet the minimum strength EI 120 in accordance with the DB SI 2.

Mechanical resistance

Outside the factory has been designed to withstand the gravitational action, wind and earthquake.

28



3.2. Covers

29

3.2.1. Physical behavior

Sealing

The waterproofing system used comprises a waterproofing asphalt to be applied attached to support the entire surface and reinforce all joints and meetings with vertical and outgoing items. This system will ensure the tightness of the cover at each point.

The sealing of the penetration of water will be subject to the relevant checks to the final receiving of the building. In particular, the perimeter deliveries due to drainage elements, and arrangement of joints.

Soundproofing

The materials used in the sloping roof and the thickness of each of them behaves as sound insulation according to the needs of the building being airborne sound R of 58,8 dbA, meeting the limit values required by current regulations.

Thermal insulation

The thermal transmittance value of $0,32\text{W/m}^2\text{K}$ complies with regulatory constraints. Calculation is provided in support of the absence of surface humidity and interstitial condensation.

Mechanical resistance

The cover is designed to withstand the gravitational action, wind and earthquake.

3.3. Sills and floors without ground contact

3.3.1. Description

Has ground floor slab in the garage area, at elevation $\pm 0,00\text{m}$ with a height of $+0,17\text{m}$. The concrete slab will be HA-25/B/IIa of characteristic strength 20N/mm^2 , 15/20 mm aggregate, soft consistency, made with cement CEM I-42,5R, 20 cm thick, reinforced with corrugated steel B-500 S in the amount on the surface of 7kg/m^2 . Application of layer about 20 cm. of pitching 40/80 mm gravel filter of a bituminous emulsion in the surface of the ground.

In the perimetral meetings has extruded polystyrene insulation with a thickness of 5 cm strip of 1m wide.

The ground without contact with the soil, which belongs to the whole house, is formed by suspended floor, which is supported in a wall of 0,85m in height, leaving a gap between

the ground and the slab of 0,55m. This is formed with a framework 25+5 with extruded polystyrene insulation, and the mortar and the corresponding flooring.

30

3.2.2. Physical behavior

In this case the sill is only found in the garage area, which counts as a habitable zone, so that the calculations of transmittances not appear, while the soil with an air chamber is present in the entire house. Its features are:

Thermal insulation

The thermal transmittance of the slab is $0,48\text{W/m}^2\text{K}$ value complies with regulatory constraints. Sills in contact with the ground are not being studied as possibility of the condensation. The thermal transmittance of the air camera floor is $0,42\text{W/m}^2\text{K}$.

Fire reaction

The material of the sill is class A1 in reaction on fire

Mechanical reaction

The sill and floor with camera has been designed to withstand the gravitational action.

3.3. Voids in facade

3.3.1. Physical behavior

Sealing

To ensure air tightness of the holes is designed woodwork inside and aluminum on the outside, whose components, due to squaring, and sealing elements, classify it as A-3.

The water sealing is made with the placement of the windowsills and after the waterproofing of the parapet and after the placement of the casing. Jambs deliveries will be at least 2 cm lateral to the plane. The slope of the windowsills shall not be less than 10° . The outer edges of the windowsills are separated sufficiently from façade and will have eaves.

The sealing of the penetration of water will be subject to the relevant checks to the end reception of the building.

Soundproofing

The airborne sound insulation carpentry holes are 32dbA, the maximum required to comply with current regulations.

**Thermal insulation**

The thermal transmittance of the window woodwork frames is 2,2 W/m²K. The transmittance of the semitransparent part of the same is 3,00 W/m²K. The resulting transmittance of the hole in the door is 2.83 W/m²K.

These transmittance values are taken into account in the calculation of the average thermal transmittance of each façade, provided with the required limits, which have to apply the corrector factor.

Safety requirements for use

Each of the holes and protections are designed to meet requirements compared to the drop in thrust or impact actions prescribed in the DB SU. Geometric characteristics are material constitution defined in the plans of the project.

Durability against environmental aggression of the components of the building envelope

Keeping all elements of the building envelope must be observed the requirements of maintenance plan that necessarily has to consider the user to comply with the relevant periodic reviews.

3.4. Interior separation*3.4.1. Physical behavior***Soundproofing**

For the materials and the thickness of interior walls is used an acoustic insulation of 36 dbA between areas of equal and different uses, meeting both with the limits prescribed in the regulations.

3.5. Finishes*3.5.1. Exterior finishes***Vertical paraments**

The material used in the exterior will be continuous plaster mortar.

Flooring

The materials used in this project are prescribed to suit the requirements of DB SU.

*3.5.2. Interior finishes***Vertical paraments**

Plaster-based lying strong and fine finished ready to paint, except the wet rooms that are going to be tiled.

All vertical tiling is made in bathrooms and kitchen with ceramic smooth tiles, support received on screed tail plaster cement, with joints between parts and straight alignment, and doesn't presenting broken, chipped or surface defects.

Horizontal paraments

Plaster-based lying strong and fine finished ready to paint, except the wet rooms that are going to be tiled.

False ceiling plate continuous with smooth plaster 120x60 cm, met with esparto pulp and plaster.

Coatings

The interior walls are made with matte plastic paint color, sanded and preparation based on background and with two coats of finished.

Metal struts are painted with paint on base type ferro scraped, cleaned only with one hand. The wooden supports are finished with varnish applied above protection and sanding.

Flooring

The pavement will be finished with terrazzo tile, except kitchen and bathrooms that will be made with ceramic tiles. The garage is made with the sill. In the other parts, as the terrace entrance area with stairs be made with a rustic ceramic floor tiles.

4. CONDITIONING AND FACILITIES4.1. Plumbing memory

The counter is located in the monolith and it will leave the derivation of the house with copper pipes of varying diameter depending on the flow necessary for different sections projected.

The bathroom fittings will be chrome monobloc, setting general stopcocks and appliances and outdoor water taps (if any).



The plumbing fixtures are glazed porcelain, with the bath sheet steel enamel. The facility will be equipped with shut-off valves in general and equipment, flexible hoses and the necessary accessories for proper operation. Pipes designed for the drainage system will be PVC "C" series.

33

4.2. Electricity memory

Check the relevant part of low voltage Electrotechnical Regulations within the justification of compliance with other applicable regulations.

4.3. Fire protection memory

Check the DB for the SI in the justification of compliance with the requirements of the CTE of his report.

4.4. Extraction and ventilation memory

Check the DB for the HS-3: Indoor air quality within the justification of compliance with the requirements of the CTE.

4.5. Telecommunication memory

The installation consists of individual antenna capture equipment with 4 TV and FM sockets, ready to receive all the terrestrial TV channels.

4.6. Lightning rod

According to the supporting installation of lightning protection attached to this report, the building for its formal characteristics, environment and use, doesn't require this facility, having completed the requirements contained in section 8 of the DB SU.



5. EQUIPMENT

34

5.1. Baths

- Bathtub of steel plate enameled of 170 x 70 cm, white with nonskid bottom, model Nueva Europe de Metalibèrica, with mixer faucets outer monocontrol, valve with spillway and connected to the network of water-drainages by means of PVC pipe.

- Acrylic Bathtub to interlock, rectangular, of 185x110 cm., with system of whirlpool incorporated by air and with finished chromed, mixer faucets outer monocontrol, bathe-skillful automatic investor, skillful telephone with adjustable, flexible sprayer of 170 cm. and articulated support chromed, even empties with spillway, of horizontal exit, 40 mm.

- Porcelain Washbasin vitrified in target of 65 x 51 cm placed with pedestal and anchorages to the wall with chromed faucets, positioning of water-drainages by means of valve of brass chromed with cork, chain and siphon of PVC type bottle.

- Washbasin of vitrified porcelain white, 2 sines, 130x50 cm. of total measures, to place on furniture, even this one, faucets monocontrol chromium, even valves of water-drainage of 32 mm, chromed keys of square of 1/2 ", and flexible hoses of 20 cm. and of 1/2 ", installed and working.

- Odorless of porcelain vitrified in target, in low tank, normal series placed by means of tacos and screws to the paved one, sealed with silicone, and even made up of: cup, low tank with cover and mechanisms and seat with cover lacqued, steel hinges, installed, even with key of 1/2 square of " chromed and flexible hoses of 20 cm. and of 1/2 ", working.

5.2. Kitchen

Sink of 2 stainless steel sines, of 120x49cm, to fit in top, faucets monopad model 2V of Rock, empties by means of siphon of bottle in PVC.

6. JUSTIFICATION OF COMPLIANCE REGULATIONS

6.1. EHE-08

Its fulfillment is justified in:

- Descriptive memory
- Constructive memory
- Plans



6.2. Low voltage Electrotechnical regulations (REBT)

Its fulfillment is just in:

- Descriptive memory
- Constructive Memory
- Compliance CTE
- Plans

6.3. Telecommunications (common infrastructures)

Its fulfillment is just in:

- Complementary Project

6.4. Municipal ordinances

In the writing of the present project have considered all effective Municipal ordinances of the City council of Golmayo at the moment for writing up he himself.

6.5. General plan

The fulfillment of the General Plan of Golmayo and the Subsidiary Norms of "Las Camaretas" is just in:

- Descriptive memory

7. BOOK OF SPECIFICATIONS

The purpose of these specifications is to define the criteria for establishing the relationship between agents involved in the works defined in this project and provide a basis for carrying out the contract work between the developer and the contractor.

7.1. General conditions

7.1.1. The contract

Of the diverse types of contract, it is chosen for the contract for units of work, which measures, values, judges and pays the works dividing the total cost in the corresponding units of work.

FORMALIZATION OF THE CONTRACT

The contracts will formalize by means of private document, in general, that will be able to rise up to public writing by request of any of the parts and in agreement with the in force dispositions.

The contractor, before formalizing the writing, will have signed also the foot of the "Schedule of conditions" that will govern the work in the planes, picture of prices and in the general budget.

They will be have account of the successful bidder all the expenses that there causes the extension of the document in which the contract is obtained.

REASONS OF THE RESCISSION OF THE CONTRACT

They will be considered to be sufficient reasons for the rescission of a contract those that later distinguish themselves:

- Death or disability of the contractor.

- Bankruptcy of the contractor. In the previous cases if the inheritors of the contractor or syndics were offering to go to I dig the works, under the same conditions stipulated in the contract, the owner can admit or reject the offer, without in this last case they have those rights to some indemnification.

Also they will be reasons justified for the rescission of the contract:

- The alterations of the same one for the reasons:

a) The modifications of the project in such form that represents fundamental alterations of the same one, in the opinion of the director of work and, in any case, providing that the variation of the budget of execution, as consequence of the mentioned modifications, represents approximately 25 %, as minimum of the amount of that one.

b) The modification of units of work, providing that these represent variations, more or less, of 40 % as minimum of some of the units of the project that have been modified.

- The suspension of the begun work and in any case, providing that for reasons foreign to the contract one does not give beginning to the work awarded in the term of three months and to depart from the adjudication. In such a case the return of the bail will be automatic.

- The suspension of the begun work providing that the term of suspension has exceeded of one year.

- The breach of the conditions of the contract, when it indicates carelessness and bad faith, with prejudice of the interests of the work.

- The completion of the term of the work without well-taken reason.

- The bad faith in the execution of the works.



7.1.2. *Obligatory arbitration*

37

It divides both they promise to submit in his differences to the arbitration of amicable compounders, designated one of them for the owner, different for the contract and an Engineer for the official corresponding college. In addition one of these compounders will be obligatorily the director of work.

7.1.3. *Competent jurisdiction*

In case of not coming to agreement for the previous procedure, both parts remain obliged to submit the discussion of all the questions that could arise as derivatives of his contract to the authorities and ordinary courts, in accordance with the in force legislation, resigning the common right and the jurisdiction of his domicile, being competent the jurisdiction where the work was nailed.

7.1.4. *Responsibility of the contractor*

The contractor is responsible for the execution of the works in the conditions established in the contract and in the documents that compose the present project. The memory will not have the consider ration of project document. Since consequence of it will come forced to the demolition and reconstruction from everything executed evil, without there could use as excuse, which the director of work has examined and recognized the construction during the work, not the fact that the partial liquidations should have been paid.

7.1.5. *Accidents of work*

In case of accidents happened to the workmen with motive and in the exercise of the works for the execution of the work, the contractor will be abided by the ready thing in this regard in the in force legislation, being in any case, only one responsible for his fulfillment and without for no concept the property could remain affected for responsibilities of any type.

The contractor this one bound to adopt the safety measures that the in force dispositions to avoid in possible you injure to the workers or to the pedestrian, not only in the scaffoldings, but in all the places of the work.

Of the accidents and prejudices of any kind that, for not fulfilling the legislated exceeds the matter, they could happen or strike, he will be the contractor the responsible only one, or his representatives in the work, since it thinks that in the contracted prices all the



necessary expenses are included to complement the due above mentioned legal dispositions.

38

7.1.6. *Damages to third*

The contractor will be responsible for all the accidents that for inexperience and / or carelessness were striking so much in the building in which the works are affected as in the contiguous ones. It will be, therefore, of his account the credit of the corresponding indemnifications, when there was place to it, of all the hurts and prejudices that had been caused during the execution of the works. The contractor will fulfill the requirements that prescribe the in force dispositions on the matter, must demand, when it was needed, the voucher of such a fulfillment.

7.1.7. *Payments to arbitrary*

The payment of taxes and arbitraments, police officers or of another species, so much recounted to fences, system of illumination, etc., whose credit will be done during the time of the execution of the work, as those owed to concepts inherent in the works that are realized, they are chargeable to the contract, providing that in the particular conditions of the project the opposite is not stipulated. Nevertheless to the contractor there will be restored the amount of all those concepts that the director of work considers to be just to do it.

7.1.8. *Announcements and cartels*

Without previous authorization of the owner it will be able to put neither in the works, nor in his fences on any more inscriptions or announcements that the suitable ones to the regime of the works and the city police.

There exempts of this measure the cartel optional announcer of the work who will be placed by request of the director of work and will run to account of the contractor.

7.1.9. *Copies of documents*

The contractor has right to extract copies to his coast, of the planes, budgets, schedule of conditions, and also of other documents of the project. The Technical Engineer, if the



contractor requests it, authorizes these copies with his signature, once it has confronted them.

39

7.2. Conditions of technicians

7.2.1. Agents obligations

The responsibilities of the different agents involved in the building are regulated by Law 38/99 Building Management (L.O.E.)

DEVELOPER

a) Decide, drives, software and financed with own resources or outside, the building work for themselves or their subsequent disposal, delivery or transfer to third parties under any title.

b) Takes the lead the entire process of building, developing the management necessary to perform the work originally contemplated, and bear all the cost involved.

BUILDING CONTRACTOR

a) To organize constructed works, writing the plans of work that are needed and projecting or authorizing the provisional facilities and auxiliary means of work.

b) To elaborate, when it is needed, the safety plan and hygiene of the work in application of the corresponding study and to have in any case the execution of the preventive measures, guarding over his fulfillment and over the observance of the in force regulation as for safety and hygiene in the work.

c) To sign with the Engineer, the record of I restate of the work.

d) To show the headquarters of the whole personnel that intervenes in the work and to coordinate the interventions of the subcontractors.

e) The competence assures each and every of the materials and constructive elements that should be in use, verifying the preparations in work and rejecting, on own initiative or for prescription of the Technical Engineer, the supplies or prefabricated that do not possess the guarantees or documents of suitability needed by the procedure of application.

f) To guard the book of orders and follow-up of the work and to give informed to the annotations that are practiced in the same one.

g) To facilitate the precise materials to the Technical Engineer, in advance sufficiently, for the fulfillment of his assignment.

h) To prepare the partial certifications of work and the offer of final liquidation.

i) To sign with the promoter the minutes of provisional and definitive receipt.

j) To coordinate the assurances of accidents of work and damages to third during the work.



THE CONTRACT MANAGER

40

a) To verify the adequacy of the foundation projected to the royal characteristics of the soil.

b) To write the complementary ones or rectified of the project that is needed.

c) To be present at the works, its nature and complexity needs all the times, in order to solve the contingencies that take place and to give the complementary instructions that are precise to obtain the correct solution.

d) To coordinate the intervention in work of other technical personnel who, in his case, meet to the direction with own function in partial aspects of his specialty.

e) To approve the partial certifications of work, the final liquidation and to advise the promoter forthwith of the receipt.

f) To prepare the final documentation of the work and to send and to sign in union of the Technical Engineer, the final certificate of the same one.

BUILDING EXECUTION MANAGER

a) To write the document of studies and analysis of the project.

b) To plan, in view of the architectural project, the contract and the technical regulation of application, the quality control and economically of the works.

c) To write when it is needed, the study of the systems adapted to the risks of the work in the accomplishment of the work and to approve the safety plan and hygiene for the application of the same one.

d) To affect the rest of the work and to prepare the corresponding record, signing it in union of the Engineer and of the Builder.

e) To verify the provisional facilities, auxiliary means and safety systems and hygiene in the work, controlling his correct execution.

f) To order and to direct the execution of the material in accordance with the project, the technical procedure and the procedure of good construction.

g) To realize or to arrange the tests and material testing, facilities and other units of work according to the sampling rates programmed in the plan of control, as well as to affect other checking that turn out to be necessary to assure the constructive quality of agreement with the project and the technical applicable regulation. Of the results the builder will report punctually, him giving, in his case, the opportune orders; of the contingency not be solving he will adopt the measures that correspond realizing to the Engineer.

h) To realize the measurements of work executed and to give conformity, according to the established relations, to the valued certifications and to the liquidation of the work.

i) To sign, in union of the engineer, the final certificate of the work.

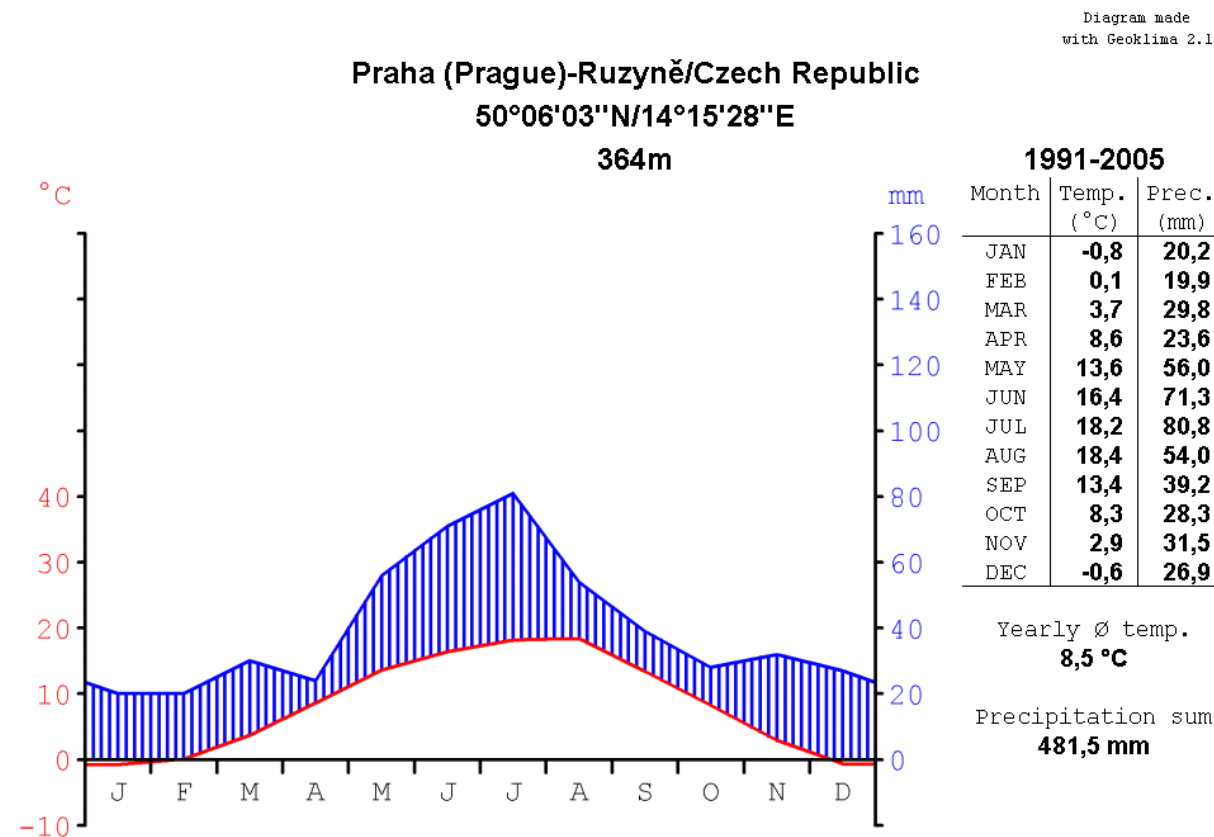


POSSIBILITY OF CONSTRUCTION THE HOUSE IN PRAGUE

We study the possibility of build the house in the municipality of Soria raised in Prague, where the project has been made. This will involve the posing of the pre-construction single family home in Prague, a climatological analysis of the city.

Climatological analysis of the city

Prague is a city in a country with 4 seasons, the Czech Republic, and its climate is continental. This means they can drop to 20 degrees Celsius and snow with exceptionally thick, 30 cm or more that stained the streets and rooftops of the city in white. The average annual temperature is 8-9 °C. Spring is cool at first and becomes warm and humid as summer approaches, reaching 16-17 degrees in June, surpassing the average and 70 mm. precipitation. Summers in Prague are sunny and warm, even reaching 35 °. However it is normal to enjoy a temperature of about. The rainfall reaches its peak in July and begins to decline in August. Prague Autumn is mild and moderately dry, with rainfall similar to those of winter. Winter is harsh but not too severe and relatively dry, with average temperatures in the winter months around 0 degrees.



Construction and Climate - Bioclimatic Architecture

Bioclimatic building to talk about architecture that takes into account the weather and environmental conditions to help achieve the best thermal comfort inside. In theory what you want to achieve with the bioclimatic construction is to avoid the need to purchase or installation of HVAC mechanical systems, but play with the elements of the building to increase energy efficiency and comfort to achieve that naturally. In cold climates, such as the city of Prague, should keep the heat inside. The biggest problems are the high losses by convection, which is why attempts to reduce exchanges between the environment and the building, and this can be achieved through the construction of buildings or homes with not-so uneven and enclosures high thermal inertia. To perform this type of construction should take into account weather data, or external factors that surround the building taking into account solar radiation, temperature, wind humidity and others.

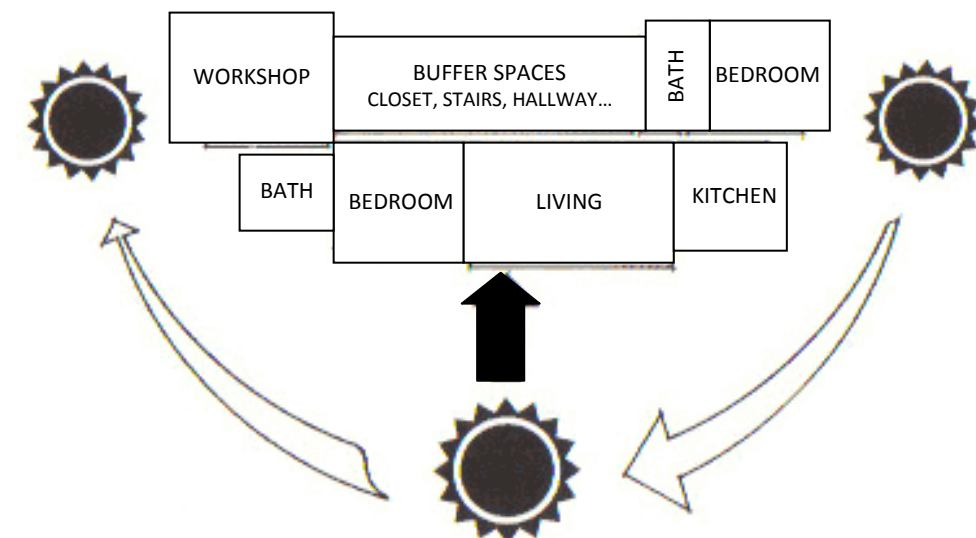
Orientation and shape

In cold climates, such as the Prague, the buildings are desirable to have rectangular shape with longer sides in the sun that gives more savings for energy efficiency. The house properly oriented, with an appropriate and windows in the optimal position can reduce energy bills up to 30% or more. We must take into account the sun's path in the sky: the sun rises in the east and sets in the west, and is more something in the summer and lower in winter.

Orientation

In temperate and cold climates, if you live in the north hemisphere, the longer walls of your home should face south (the north, in southern hemisphere countries). Southern exposure is crucial to get maximum solar benefits (Northern exposure in southern hemisphere countries).

This rule shouldn't be considered too strictly. A variation till 20 or 30 degrees is rather irrelevant, and there are particulars and adaptations that should also be considered.





Building Shape And Axis

Rectangular-compact buildings, with their longer walls facing the winter low sun (to profit from it), are excellent solutions. In this case, the longer axis of the building (its ridge line) is oriented east/west. Such orientation and shape allow maximum winter solar gains and will reduce unwanted summer sun (that will strike the east and the west sides of the house).

Most Frequently Used Rooms Facing The Winter's Low Sun

The most used areas of the house should be located on the winter side of the building (cold and temperate climates), where sunlight can enter through conveniently located windows, high clerestories windows, or skylights. South-exposure should incorporate well sized overhangs and the shadow of trees, to limit sun radiation in the hotter months.

Less Frequently Used Rooms On The East/West Short Side Of The House

Other rooms and divisions (namely garages, storage rooms, laundry rooms...) should be located on the home's east/west and shorter sides, where they can act as an extra thermal buffer. Avoid glass in the east and west sides of the house, since it is a common cause of unwanted energy losses and glare.

Cooling in summer

Homes with low level of insulation, bad landscaping and inadequate shading or ventilation (passive cooling methods) will likely need lots of air conditioning, even cold climates like Prague. In such cases, the only great alternative to summer air conditioning is summer ventilation methods (including fans) and the use of shades and similar devices to minimize heat gains.

New houses and remodeling old ones

If building a new house or making a major remodeling, bet on its cooling design. Proper cooling design for Prague's climate includes:

- High level of insulation for walls and ceilings
- Proper landscaping
- Proper sized window glazing
- Shading devices

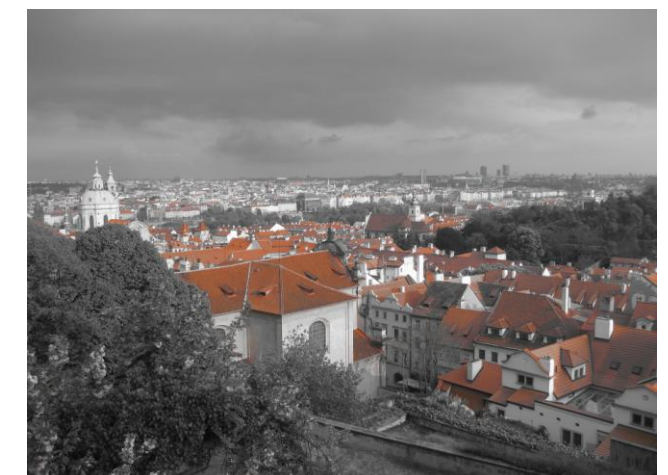


Conclusions:

- Prague is a city with cold climate
- It has to use as much as possible the sun light, for these reason; it has to be orientated the large part of the house avoiding the north.
- The shape of the house has to be rectangular-compact construction
- We must take into account wall insulation, must be thicker than in Spain

Changes in our family house to adapt to Prague's climatology

In first place, the inclination of the roof have to change, because in Spain, it's about 30°, enough for the zone in which is going to be built, but we have to consider the snow in Prague. For these reason we are going to do the roof with an angle of 45° to let the snow slide the surface. Other thing that has to change is the material of the tiles. In Prague is typical to see from any vantage or point above the city the roof of the houses red. We can see it in the bottom picture which is took from the Castle's vantage looking to the center of Prague.

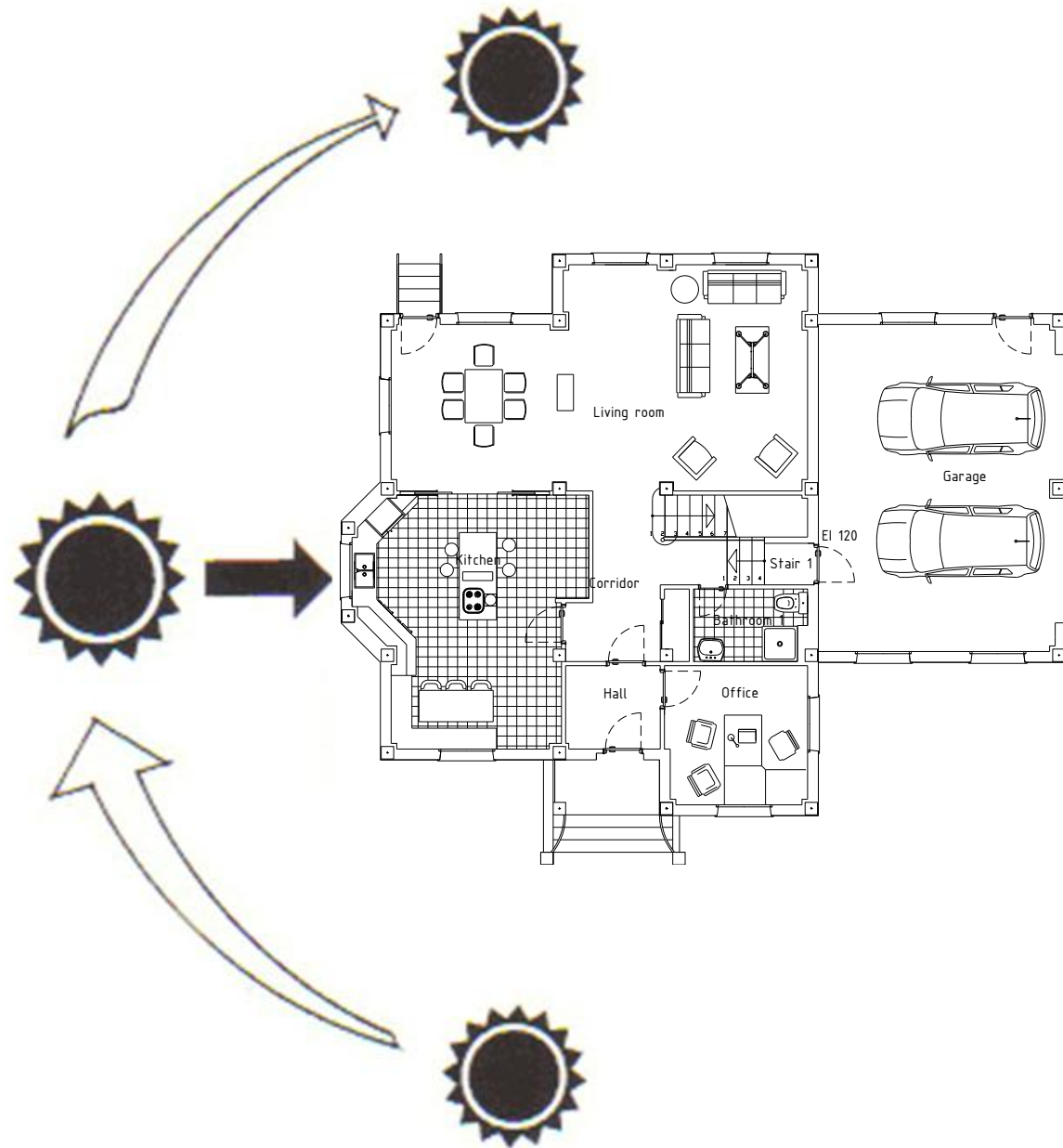




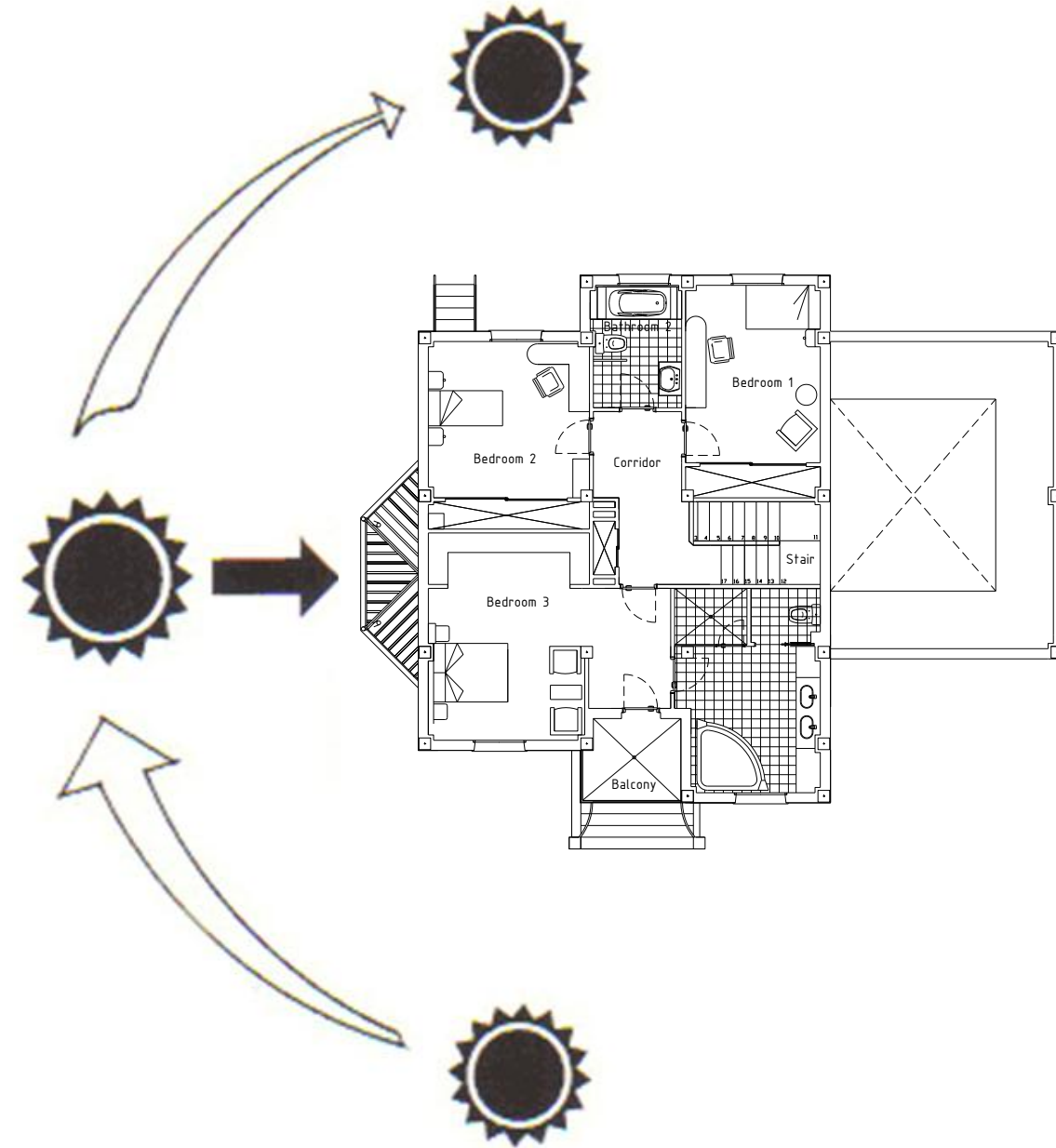
One of the most important things to build a new house is the orientation that is going to be taken:

In this case the main facade is orientated to the east, which is perfect as we said previously, because the most frequently used rooms are exposed all day to the sunlight. This is a point that we haven't to change is we propose this building to the new city

Ground floor



First floor



The last things we have to change in if we want build this family house in Prague is to do the exterior walls thicker. Using thicker bricks for example instead one of 11,5 cm and the interior one of 4 cm, use two of 11,5 and the insulation instead of 5 cm of thickness, use one of 7cm.



INDEX

DISTRIBUTION

1. Distribution plan: Ground floor
2. Distribution plan: First floor
3. Distribution plan: Roof

ELEVATION

4. Elevation: East
5. Elevation: North
6. Elevation: East
7. Elevation: West

SECTIONS

8. Section A-A'
9. Detail 1-2
10. Detail 3
11. Section B-B'
12. Detail 1-2
13. Detail 3-4
14. Detail 5
15. Section C-C'
16. Longitudinal section
17. Transversal section

ANNOTATION

18. Annotation plot
19. Annotation Ground floor
20. Annotation First floor
21. Annotation Roof
22. Annotation East elevation
23. Annotation West elevation
24. Annotation North elevation
25. Annotation South elevation



STRUCTURE

26. Foundation
27. Detail foundation
28. Sanitary slab
29. Ground floor slab
30. First floor slab

CARPENTRY

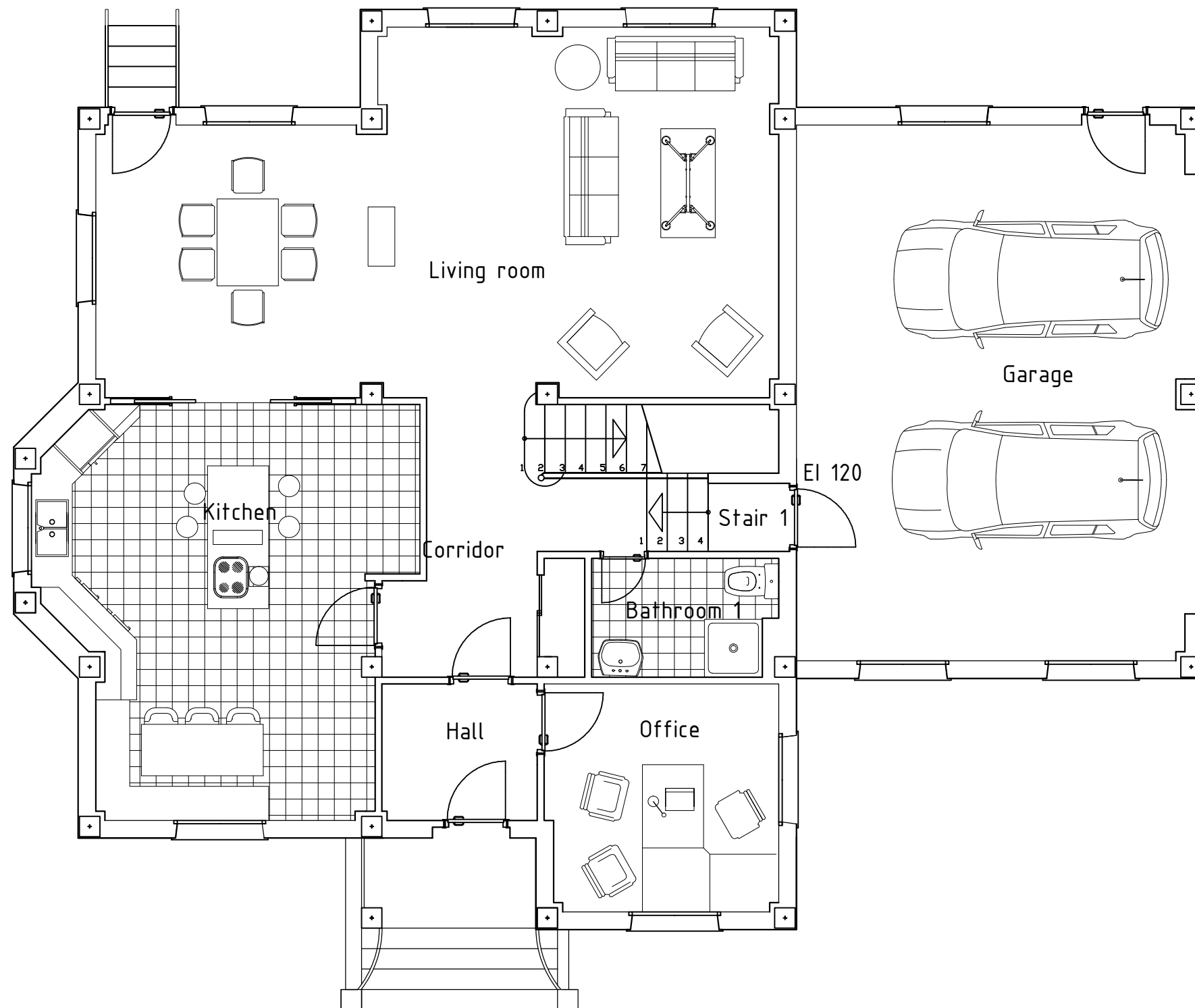
31. Carpentry summary
32. Carpentry details

FACILITIES PLANS

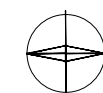
33. Drainage system
34. Drainage foundation
35. Drainage Ground floor
36. Drainage First floor
37. Water supply system
38. Plumbing Ground floor
39. Plumbing first floor
40. Plumbing roof
41. Heating Ground floor
42. Heating First floor
43. Gas system
44. Lightning system
45. Electricity Ground floor
46. Electricity First floor
47. Ventilation Ground floor
48. Ventilation First floor
49. Ceiling Ground floor
50. Ceiling First floor
51. Gardening

SAFETY PLAN & HYGIENE

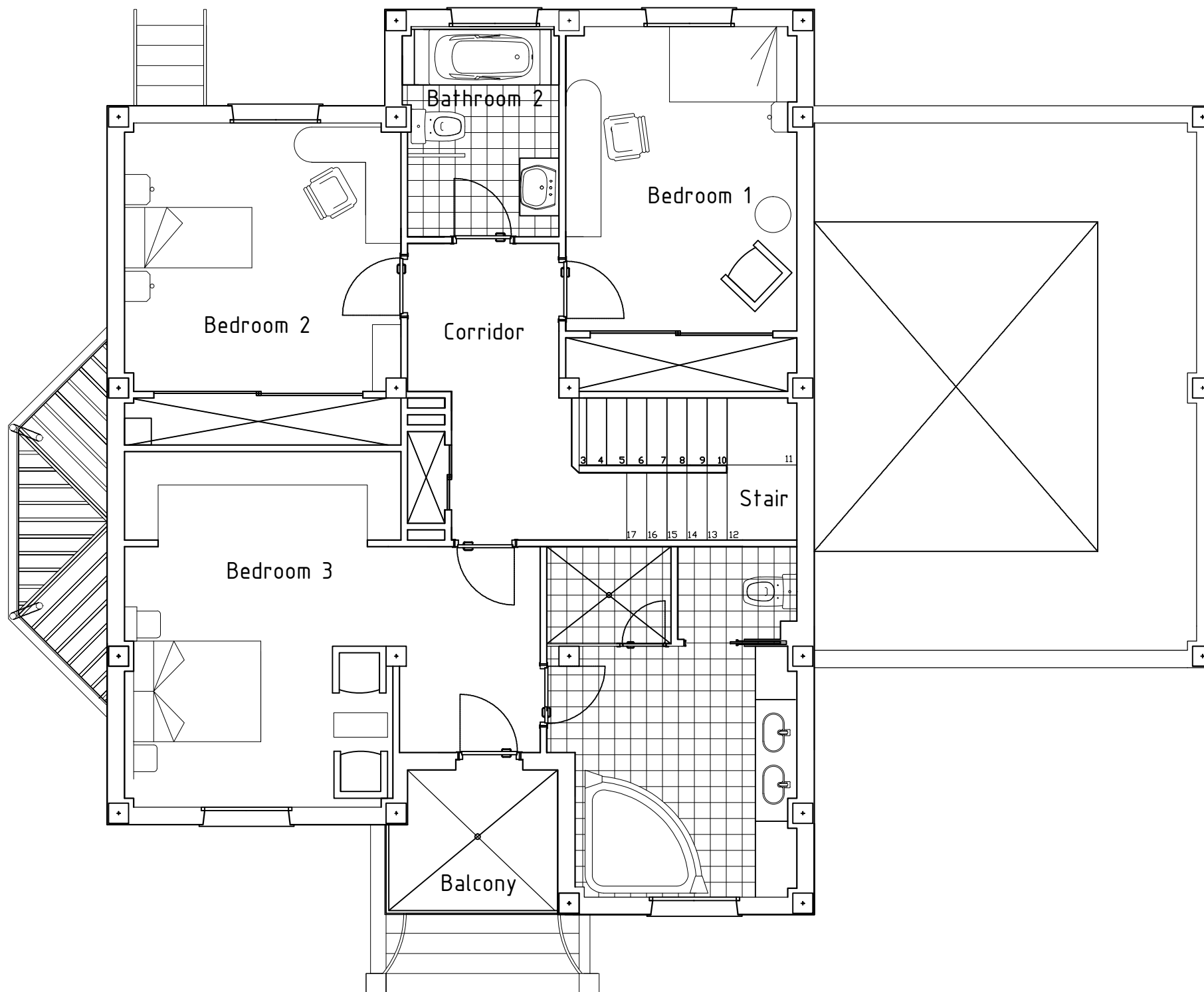
52. Crane site plan
53. Safety



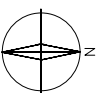
Floor	Room	Useful	Built
Basement floor	Hall	5,58 m ²	
	Corridor	7,62 m ²	
	Kitchen	28,85 m ²	
	Living room	48,31 m ²	
	Bathroom 1	4,70 m ²	
	Office	11,22 m ²	
	Stair 1	4,11 m ²	
Total		156,79 m ²	188,15 m ²



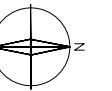
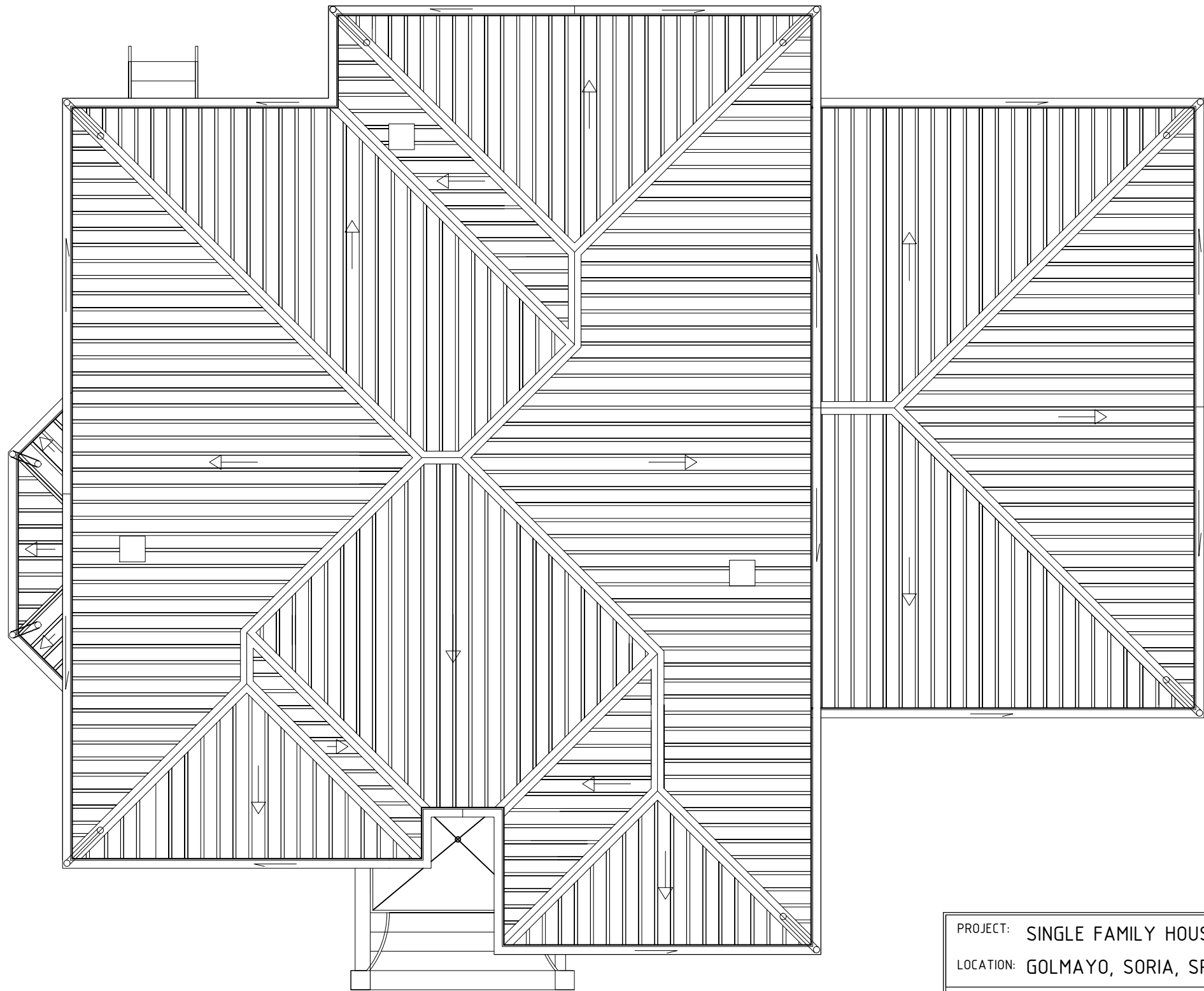
PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: DISTRIBUTION GROUND FLOOR	Nº PLANE: 1	



Floor	Room	Useful	Built
First floor	Stair	7,32 m ²	
	Corridor	8,77 m ²	
	Bedroom 1	15,56 m ²	
	Bedroom 2	16,39 m ²	
	Bathroom 2	7,12 m ²	
	Bedroom 3	27,48 m ²	
	Bathroom 3	18,02 m ²	
	Balcony	2,65 m ²	
Total		103,31 m ²	123,97 m ²





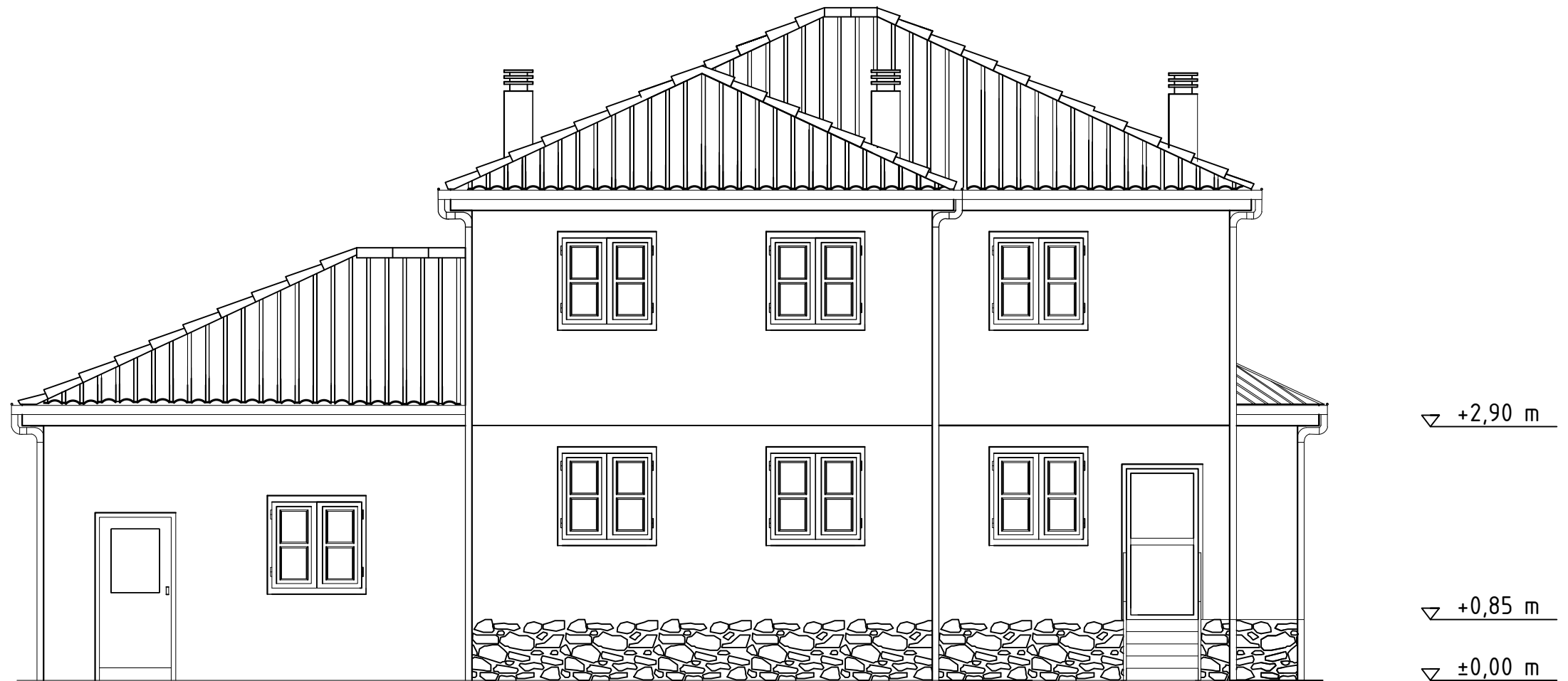
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: DISTRIBUTION FIRST FLOOR	Nº PLANE: 2	DATE: JUNE 2011	



PROJECT: SINGLE FAMILY HOUSE		 ČVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: DISTRIBUTION ROOF	Nº PLANE: 3 DATE: JUNE 2011





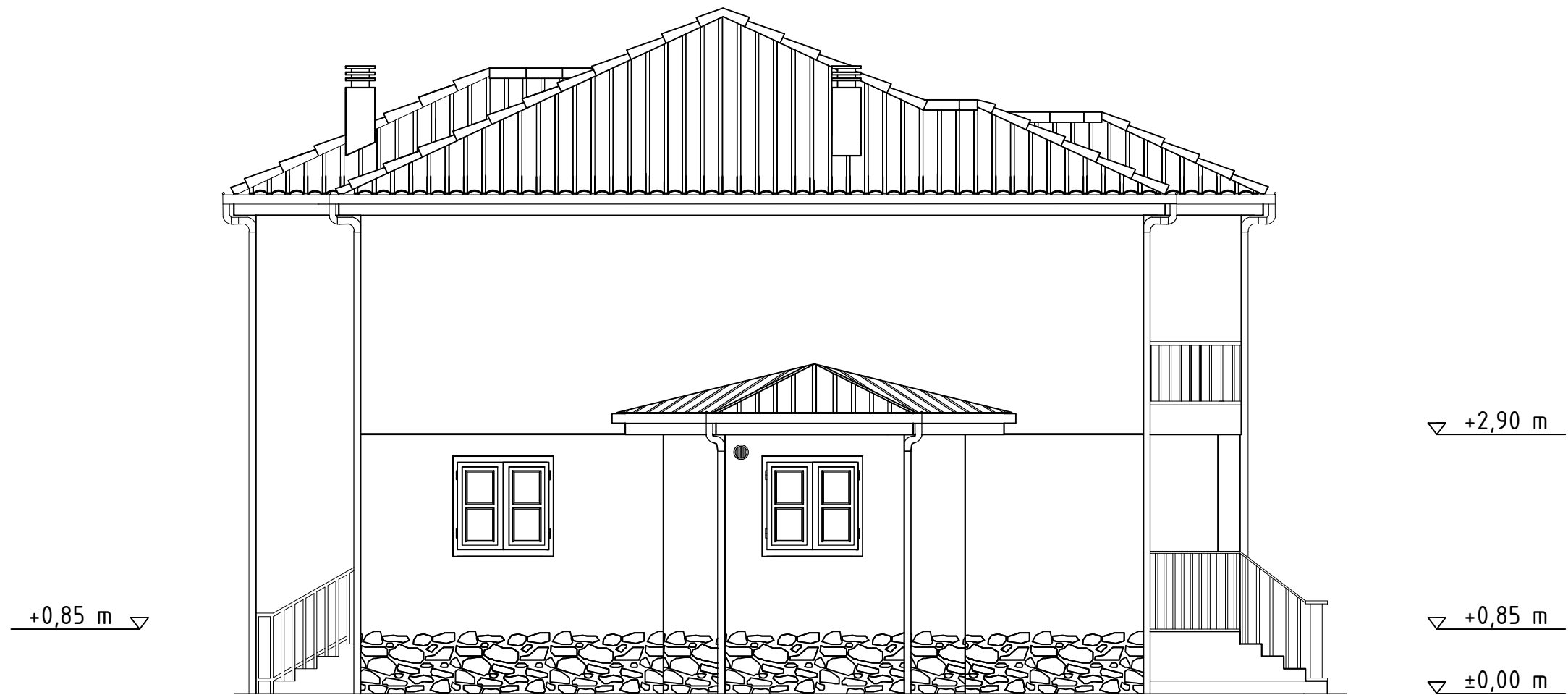
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: ELEVATION PLAN: EAST	Nº PLANE: 4	DATE: JUNE 2011	



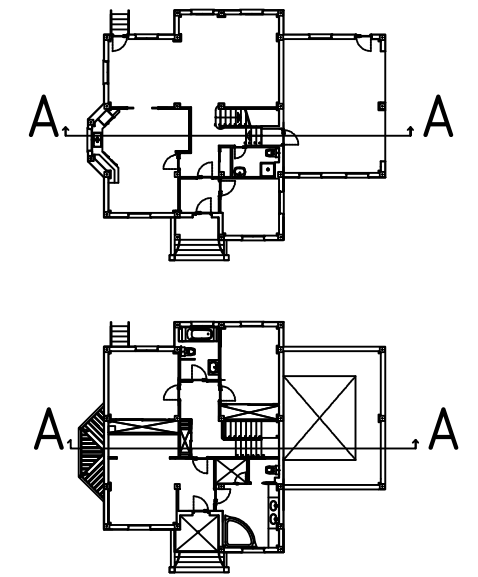
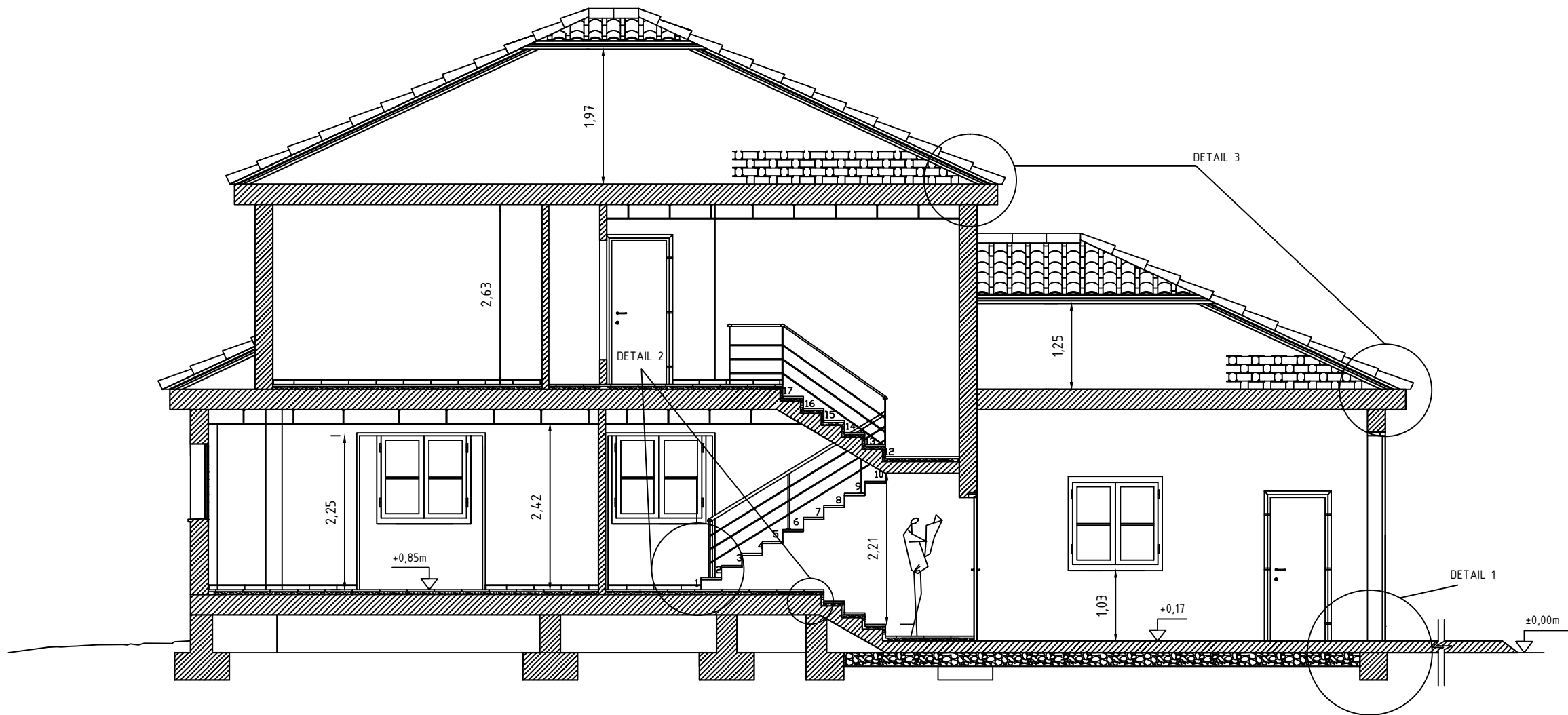
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: ELEVATION PLAN: WEST	Nº PLANE: 5	DATE: JUNE 2011	



PROJECT: SINGLE FAMILY HOUSE		 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: ELEVATION PLAN: NORTH	Nº PLANE: 6 DATE: JUNE 2011



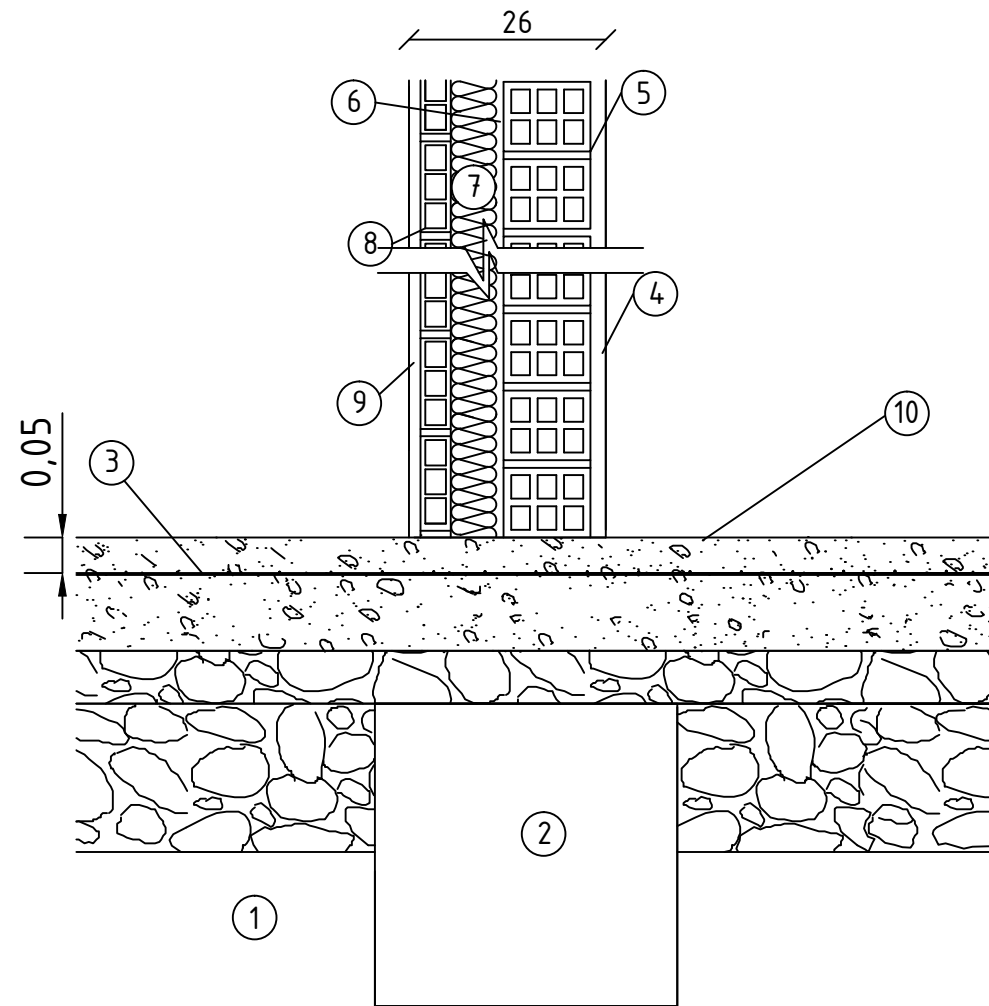
PROJECT: SINGLE FAMILY HOUSE		 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: ELEVATION PLAN: SOUTH	Nº PLANE: 7
		DATE: JUNE 2011



SECTION A-A'

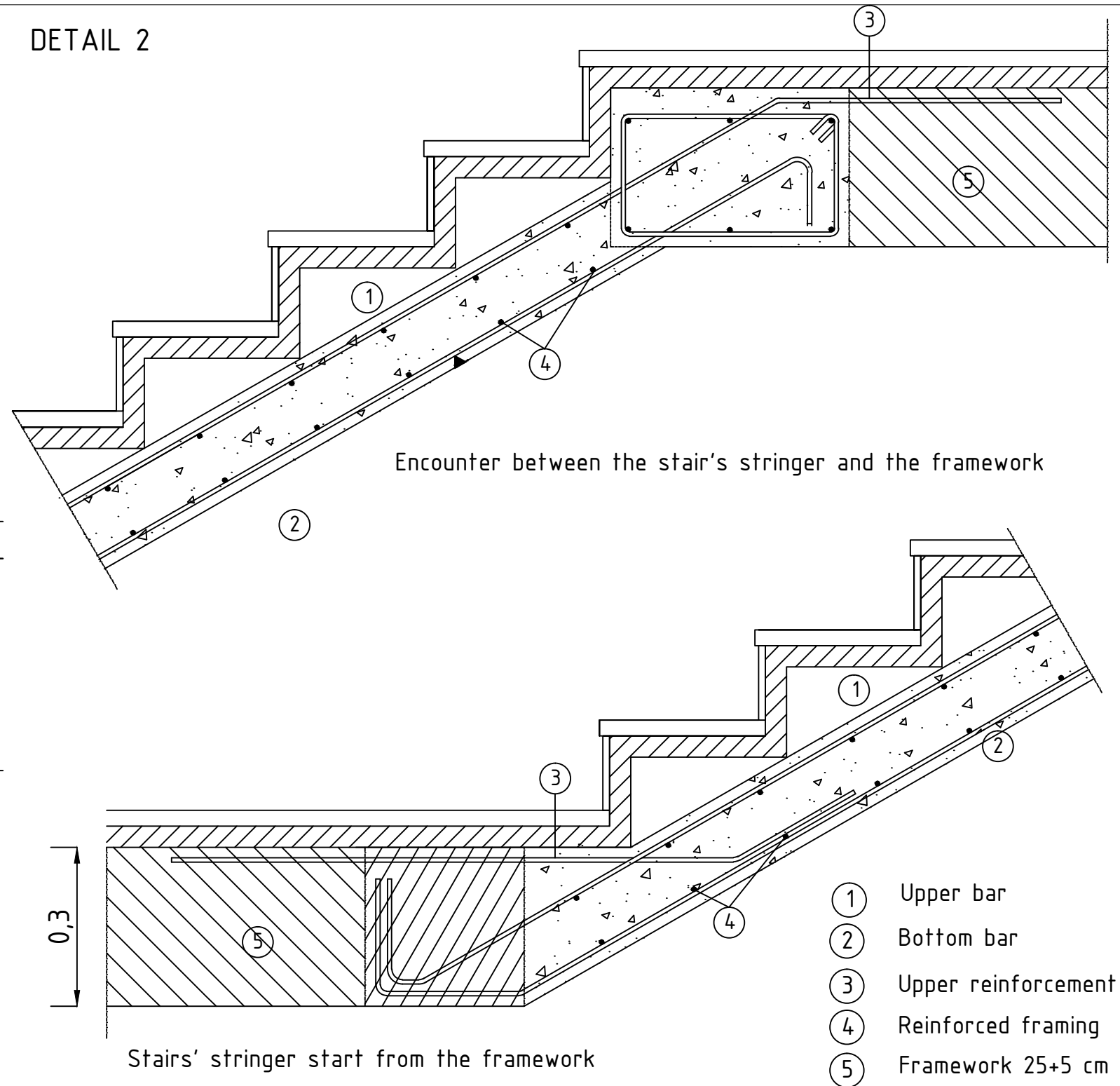
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: SECTION A-A	Nº PLANE: 8	DATE: JUNE 2011	

DETAIL 1



- ① Lot
- ② Viga riostra de cimentación
- ③ Retraction mesh
- ④ Mortar 2cm
- ⑤ Double air brick 1.5x24x9
- ⑥ Interior parge coat 1cm
- ⑦ Thermal insulation (polyestyrene) 6cm
- ⑧ Simple air brick 4cm
- ⑨ Plaster parge coat 1.5cm
- ⑩ Sill plate 15cm
- ⑪ Irregular stones 20cm

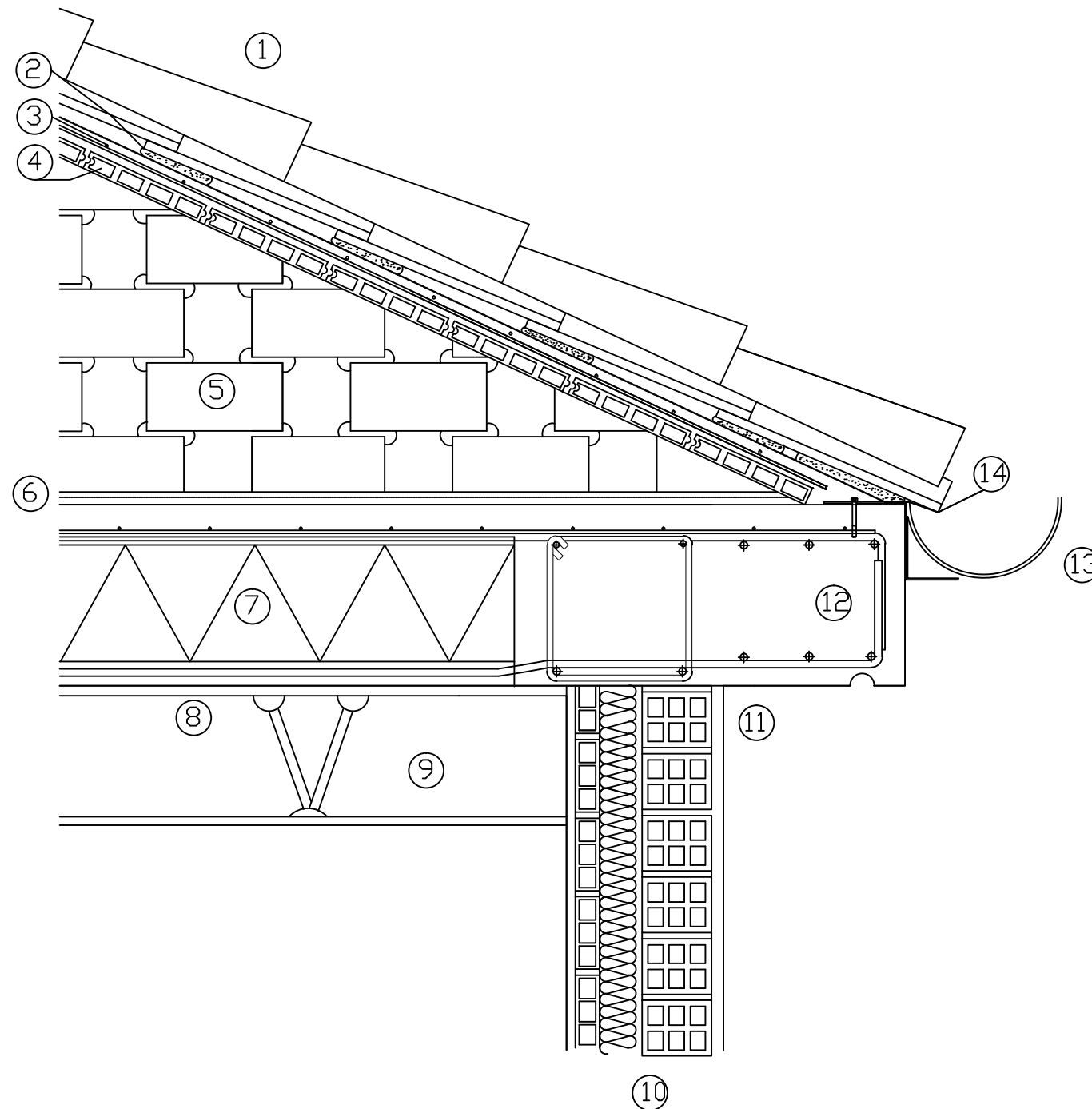
DETAIL 2





- ① Upper bar
- ② Bottom bar
- ③ Upper reinforcement
- ④ Reinforced framing
- ⑤ Framework 25+5 cm

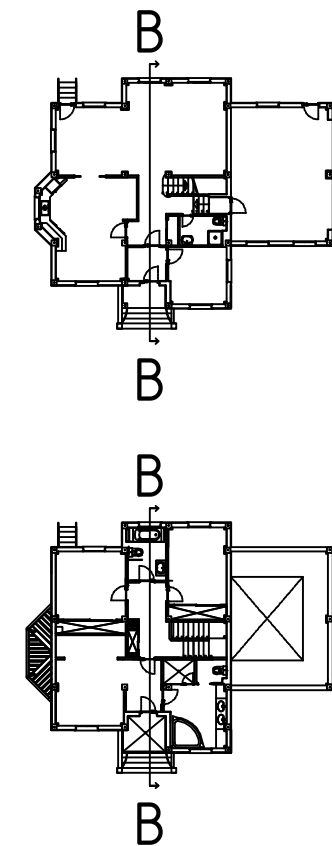
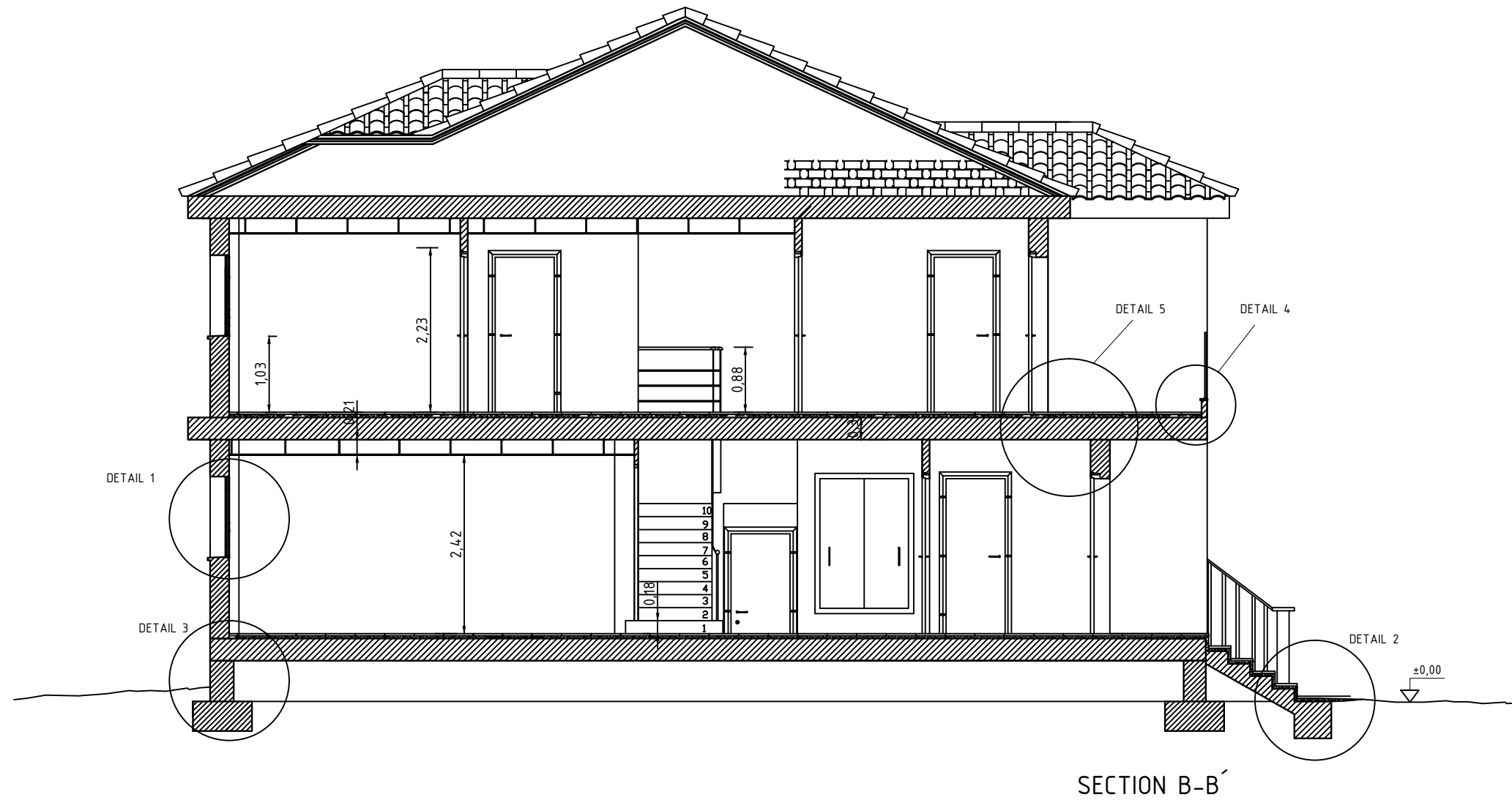
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:10	PLAN NAME: DETAIL 1-2	Nº PLANE: 9	DATE: JUNE 2011	

DETAIL 3





- ① Ceramic tile
- ② Cement temper
- ③ Welded-wire mesh
- ④ Grand
- ⑤ Air brick partition
- ⑥ Polystyrene thermal insulation
- ⑦ Framework 25+5 cm
- ⑧ Plaster parge coat 2cm
- ⑨ Drop ceiling made from plaster sheet 20cm
- ⑩ Enclosure parge coat
- ⑪ Overhang framework 30 cm
- ⑫ Reinforced solid slab :
-Upper o10 c/15
-Bottom o10 c/15
- ⑬ Hanging gutter
- ⑭ Waterproofing

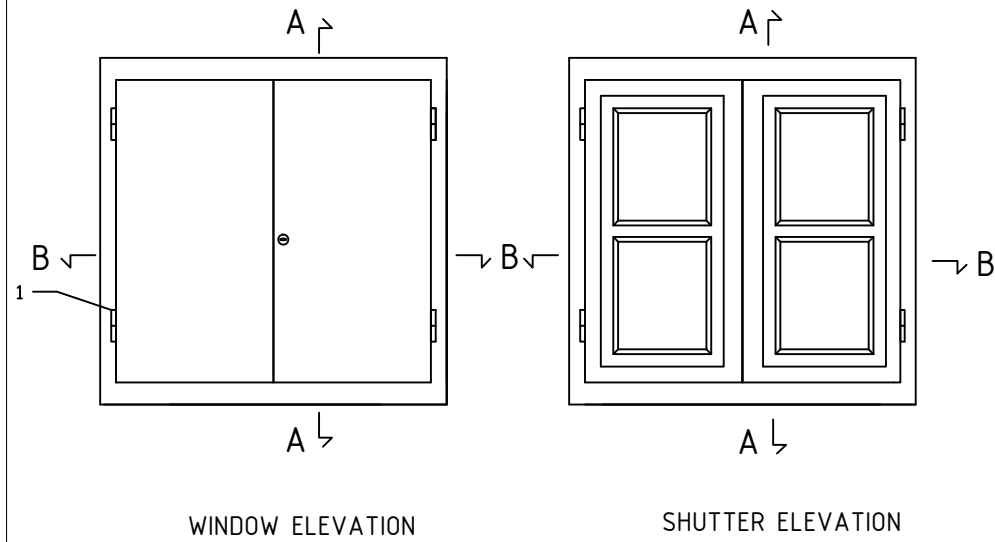
PROJECT: SINGLE FAMILY HOUSE		 ČVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:10	PLAN NAME: DETAIL 3	
		DATE: JUNE 2011



SECTION B-B'

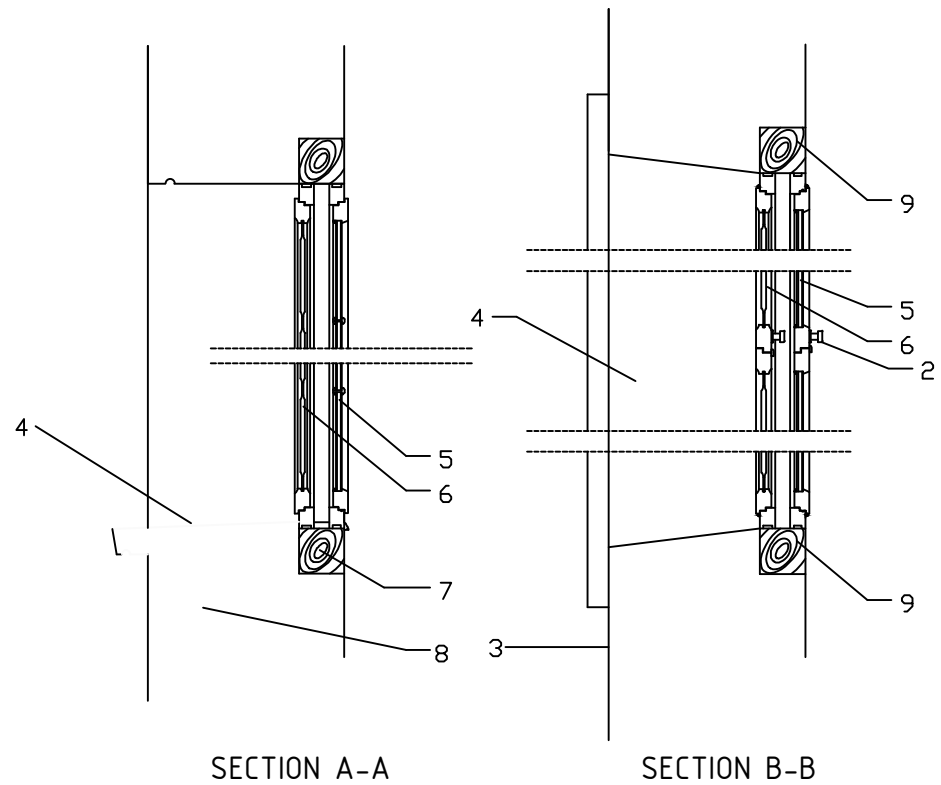
PROJECT: SINGLE FAMILY HOUSE		 	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: SECTION B-B	Nº PLANE: 11	DATE: JUNE 2011

DETAIL 1



WINDOW ELEVATION

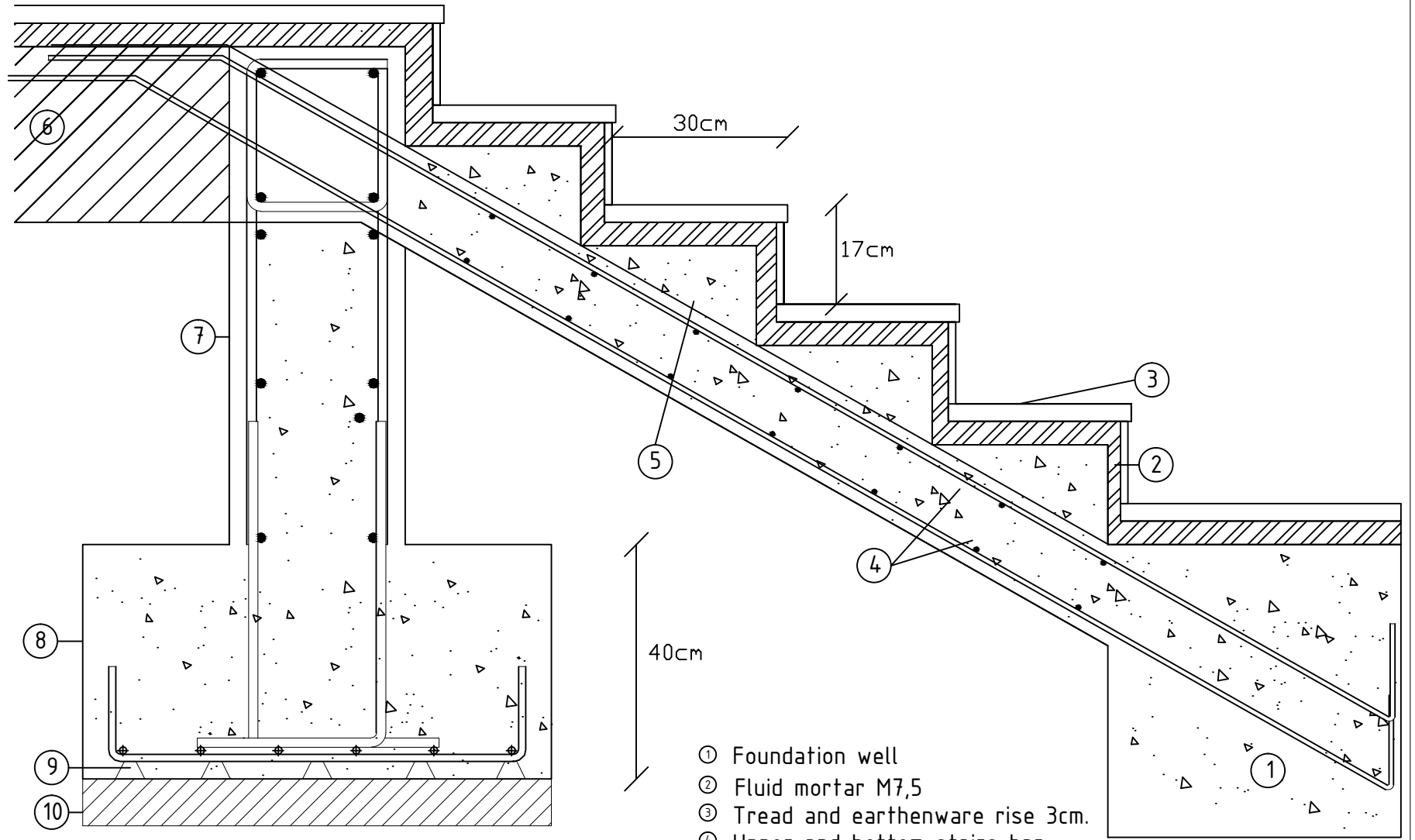
SHUTTER ELEVATION



SECTION A-A

SECTION B-B

DETAIL 2



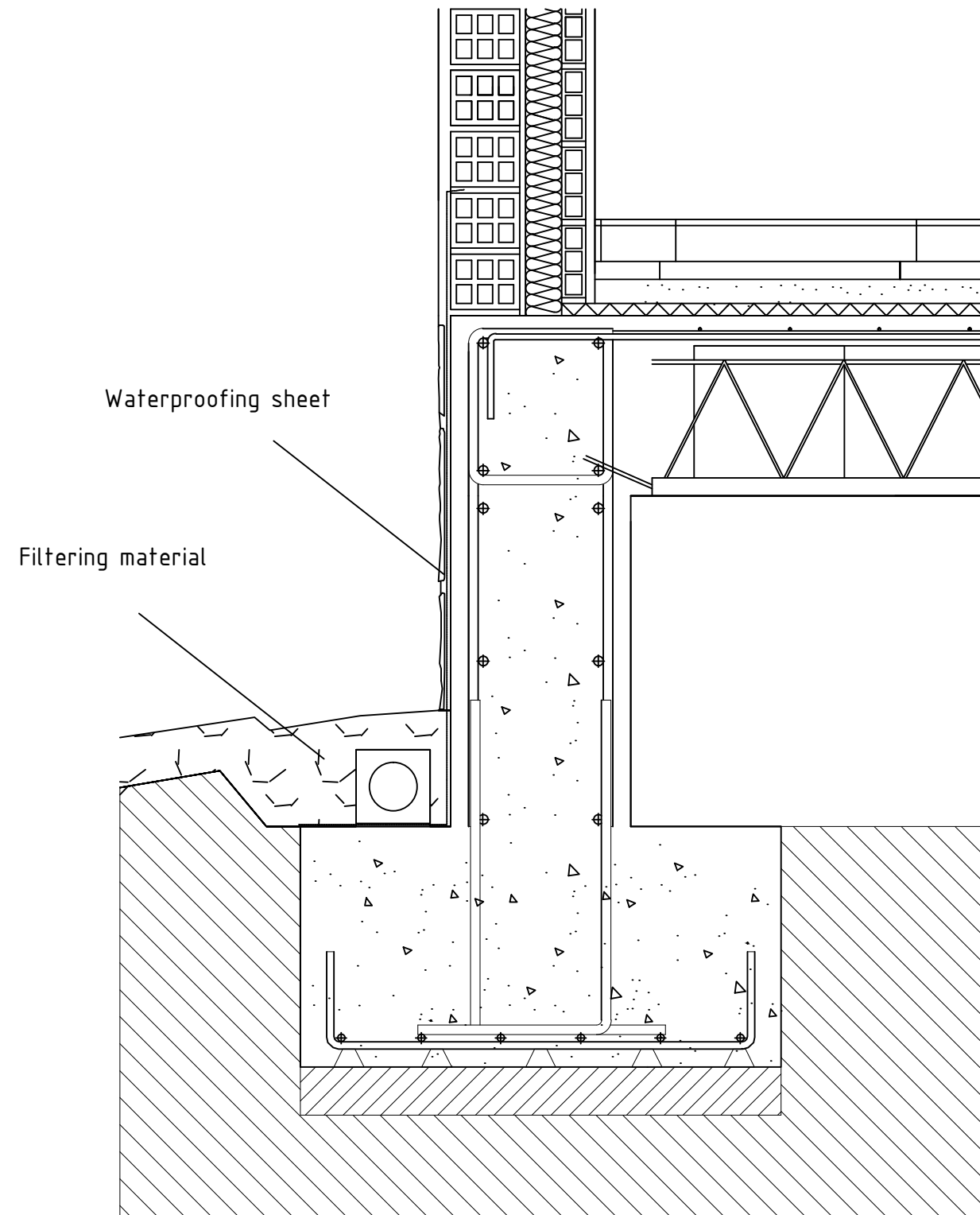
- ① Foundation well
- ② Fluid mortar M7,5
- ③ Tread and earthenware rise 3cm.
- ④ Upper and bottom stairs bar.
- ⑤ Concrete HA-25
- ⑥ Framework 25+5
- ⑦ Foundation wall
- ⑧ Continuous footing
- ⑨ Wedge
- ⑩ Cleaning concrete

- ① Hanging brass hinge 80 cm.
- ② Bolt
- ③ Parge coat T= 2cm
- ④ Cladding chestnut board t= 2.2 cm.
- ⑤ Chestnut woodwork with double glass tipe
- ⑥ Chestnut wood shutter
- ⑦ Chestnut wood sill 15x15 cm.
- ⑧ Parge coat facade
- ⑨ Chestnut wood jamb 10x10 cm.

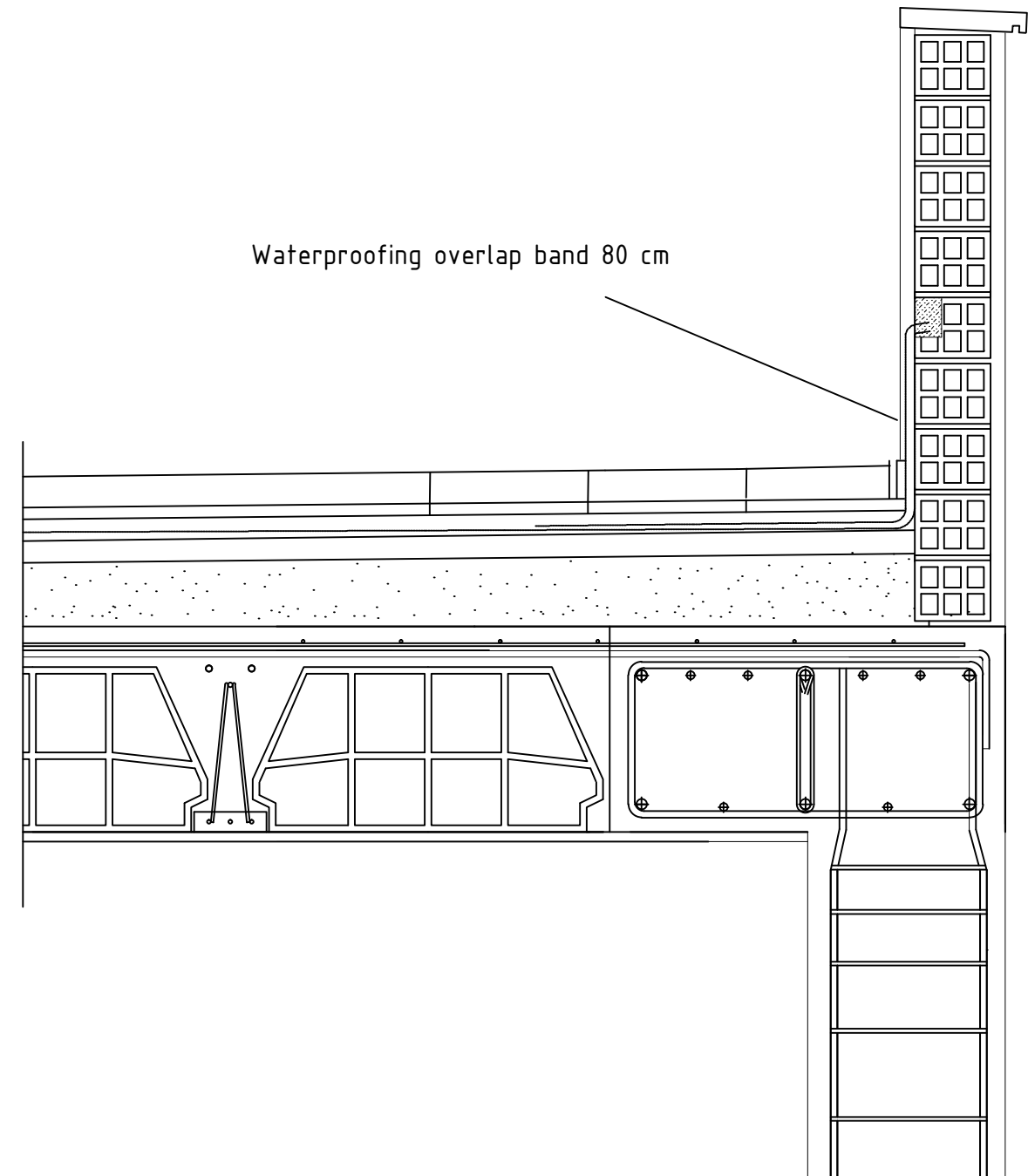
The window is composed of a mixed window, with chestnut wood in the interior leaf and aluminium in the exterior part. The shutter is totally made from chestnut wood.



PROJECT: SINGLE FAMILY HOUSE		
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:10	PLAN NAME: DETAIL 1-2	Nº PLANE: 12 DATE: JUNE 2011

DETAIL 3

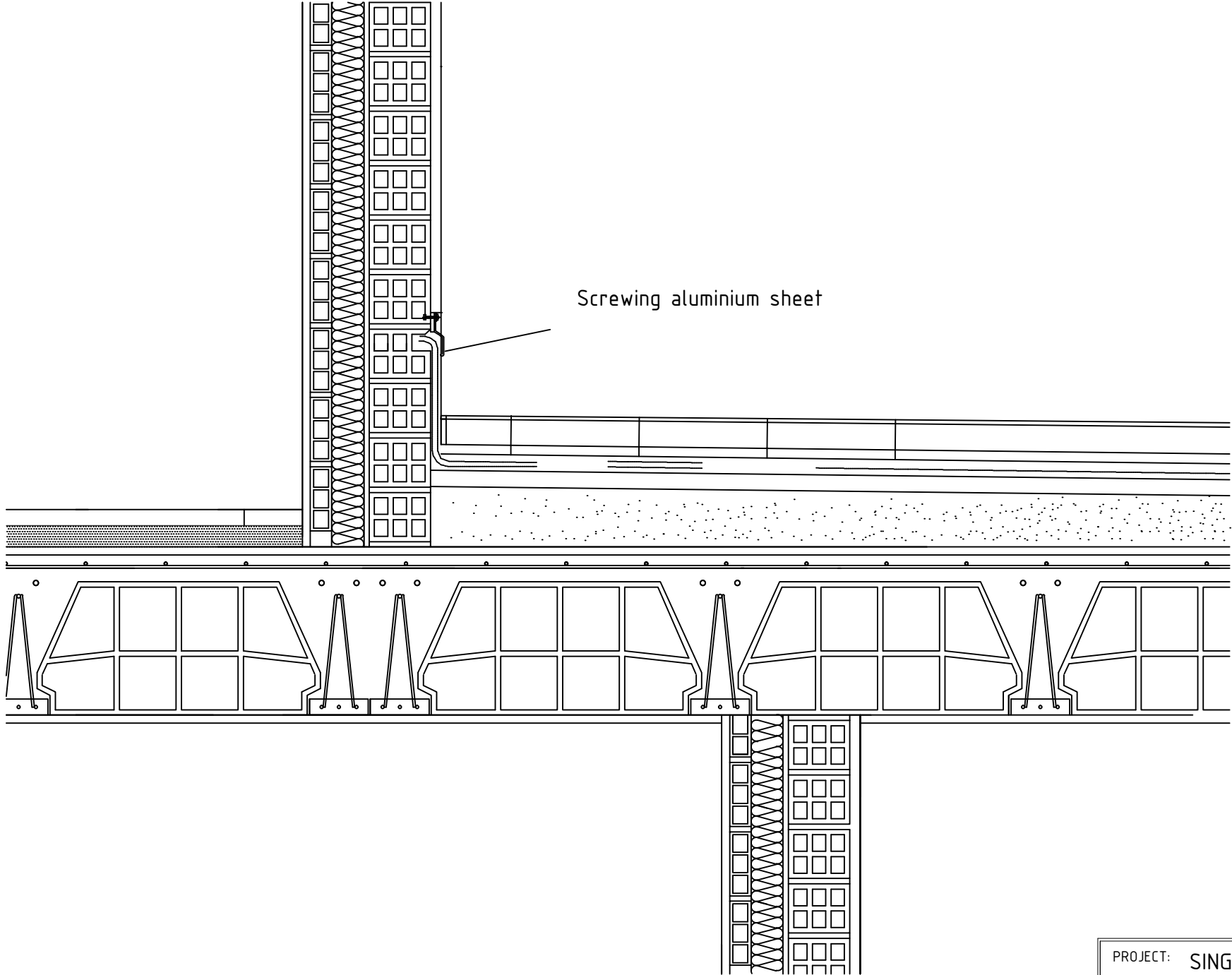


DETAIL 4



PROJECT: SINGLE FAMILY HOUSE				 
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:10	PLAN NAME: DETAIL 3-4	Nº PLANE: 13	DATE: JUNE 2011	

DETAIL 5

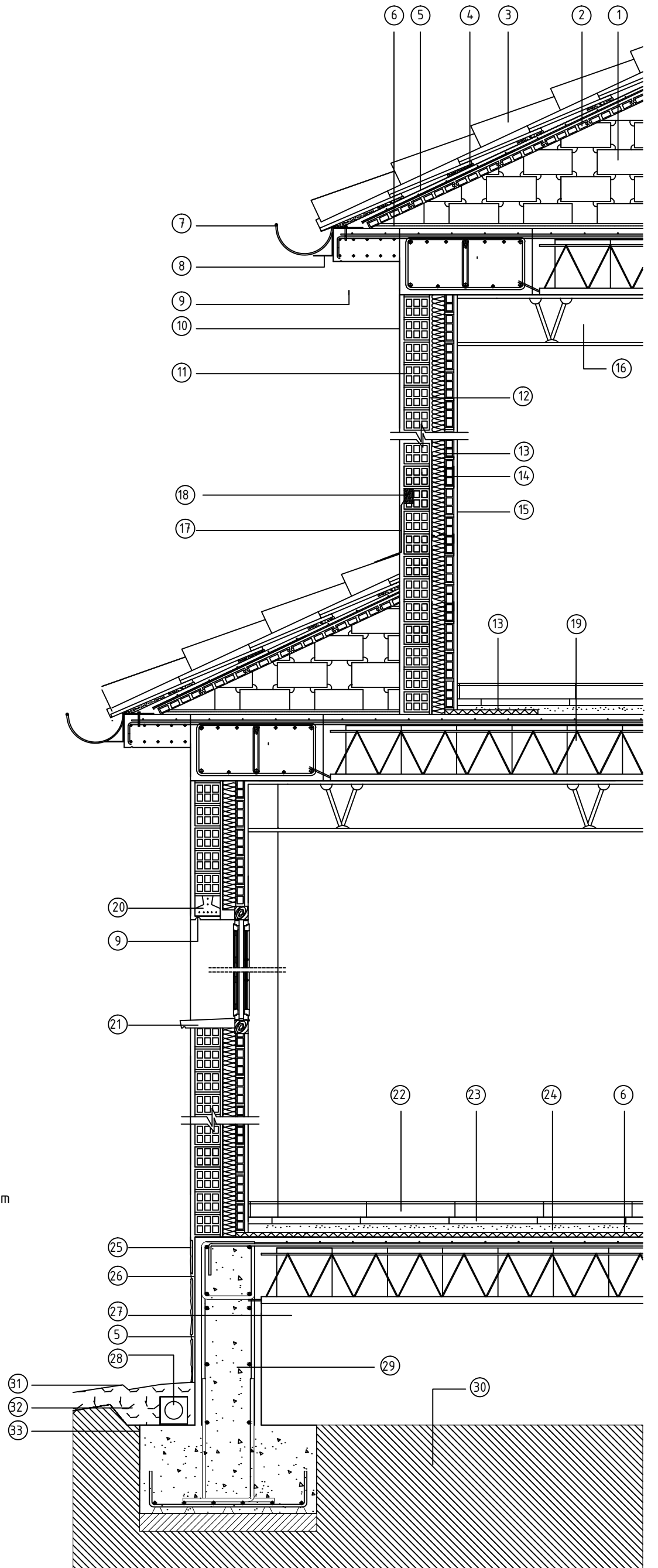


PROJECT: SINGLE FAMILY HOUSE		 CVUT	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:10	PLAN NAME: DETAIL 5	Nº PLANE: 14	DATE: JUNE 2011

LEYENDA

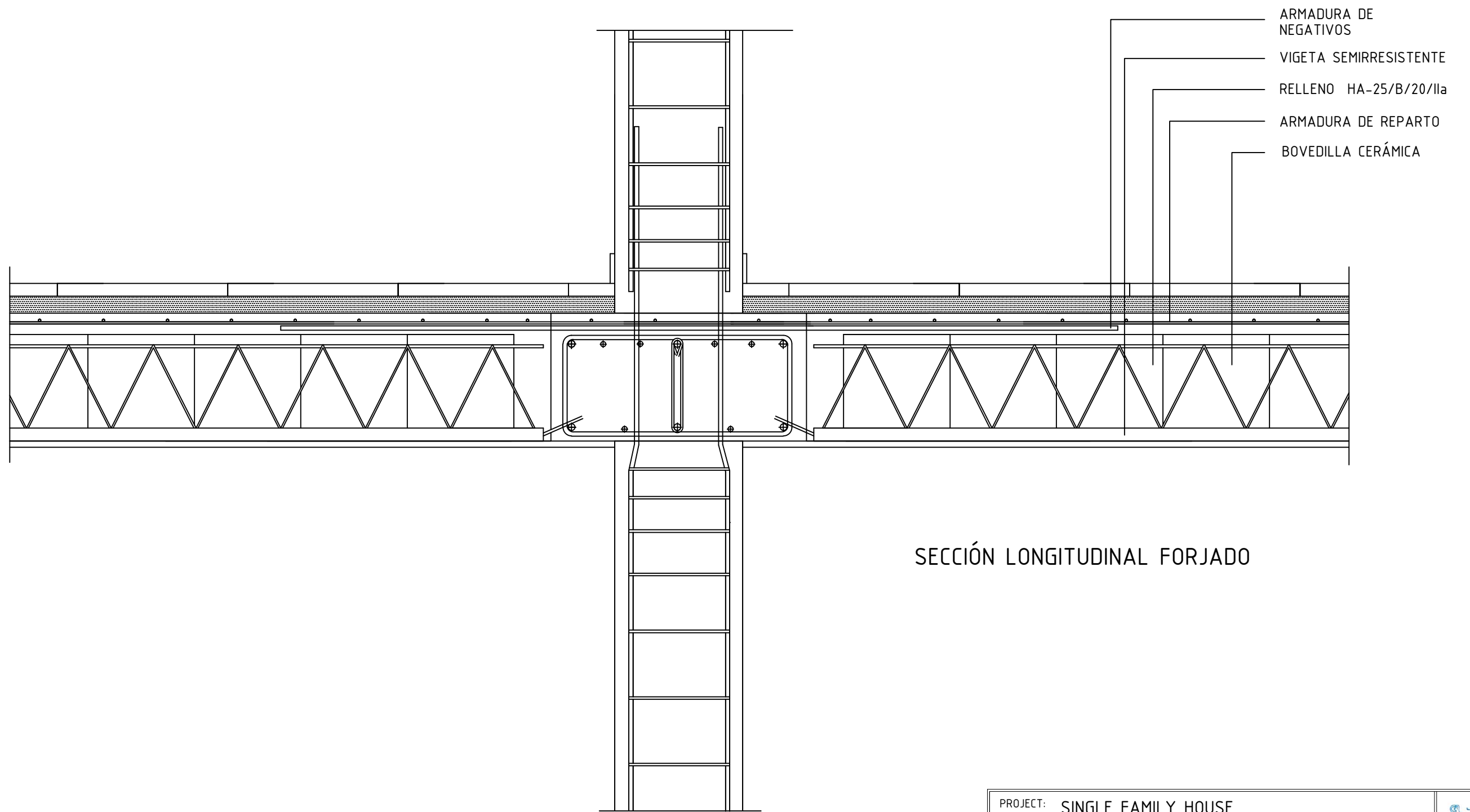
- ① Tabiques palomeros
- ② Tablero rasilla tomado con mortero de cemento
- ③ Teja cerámica
- ④ Mortero bastardo de agarre 1:8
- ⑤ Lámina de impermeabilización asfáltica
- ⑥ Aislamiento térmico, poliestireno extruido
- ⑦ Canalón de PVC
- ⑧ Escuadra del soporte del canalón
- ⑨ Goterón
- ⑩ Enfoscado mortero
- ⑪ Ladrillo hueco doble 11.5x24x9
- ⑫ Enfoscado interior 1cm
- ⑬ Aislamiento térmico poliestireno extruido
- ⑭ Ladrillo hueco simple 4cm
- ⑮ Enlucido de yeso
- ⑯ Falso techo 20cm
- ⑰ Lámina de impermeabilización
- ⑱ Roza recubierta de mortero 1:8
- ⑲ Forjado 25+5 (bovedilla 72cm inter. y viguetas)
- ⑳ Dintel de semivigüeta
- ㉑ Alfeizar
- ㉒ Rodapié de terrazo
- ㉓ Baldosa de terrazo
- ㉔ Cama de arena de 4cm
- ㉕ Revestimiento exterior de planchas de piedra
- ㉖ Mortero relleno
- ㉗ Cámara de aire

- ㉘ Tubo drenaje
- ㉙ Muro de hormigón armado 30cm
- ㉚ Terreno natural
- ㉛ Tierra vegetal
- ㉜ Grava
- ㉝ Lámina de impermeabilización

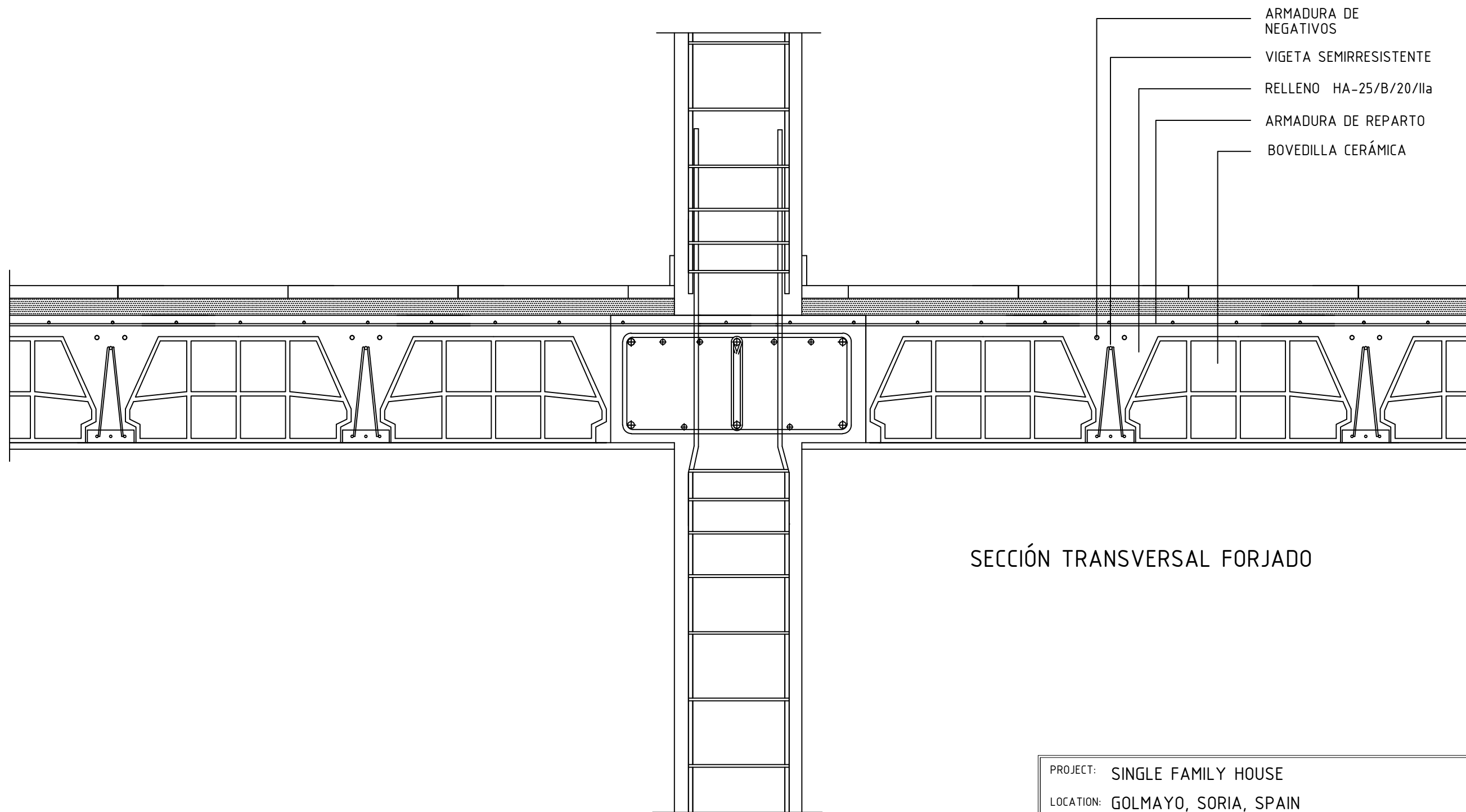


PROJECT:	SINGLE FAMILY HOUSE
LOCATION:	GOLMAYO, SORIA, SPAIN
AUTHOR:	ANDREA PENADÉS ORTOLÁ
TUTOR:	FRANTISEK KULHANEK / MILAGROS IBORRA
SCALE:	1:50
PLAN NAME:	SECTION C-C
Nº PLANE:	15
DATE:	JUNE 2011






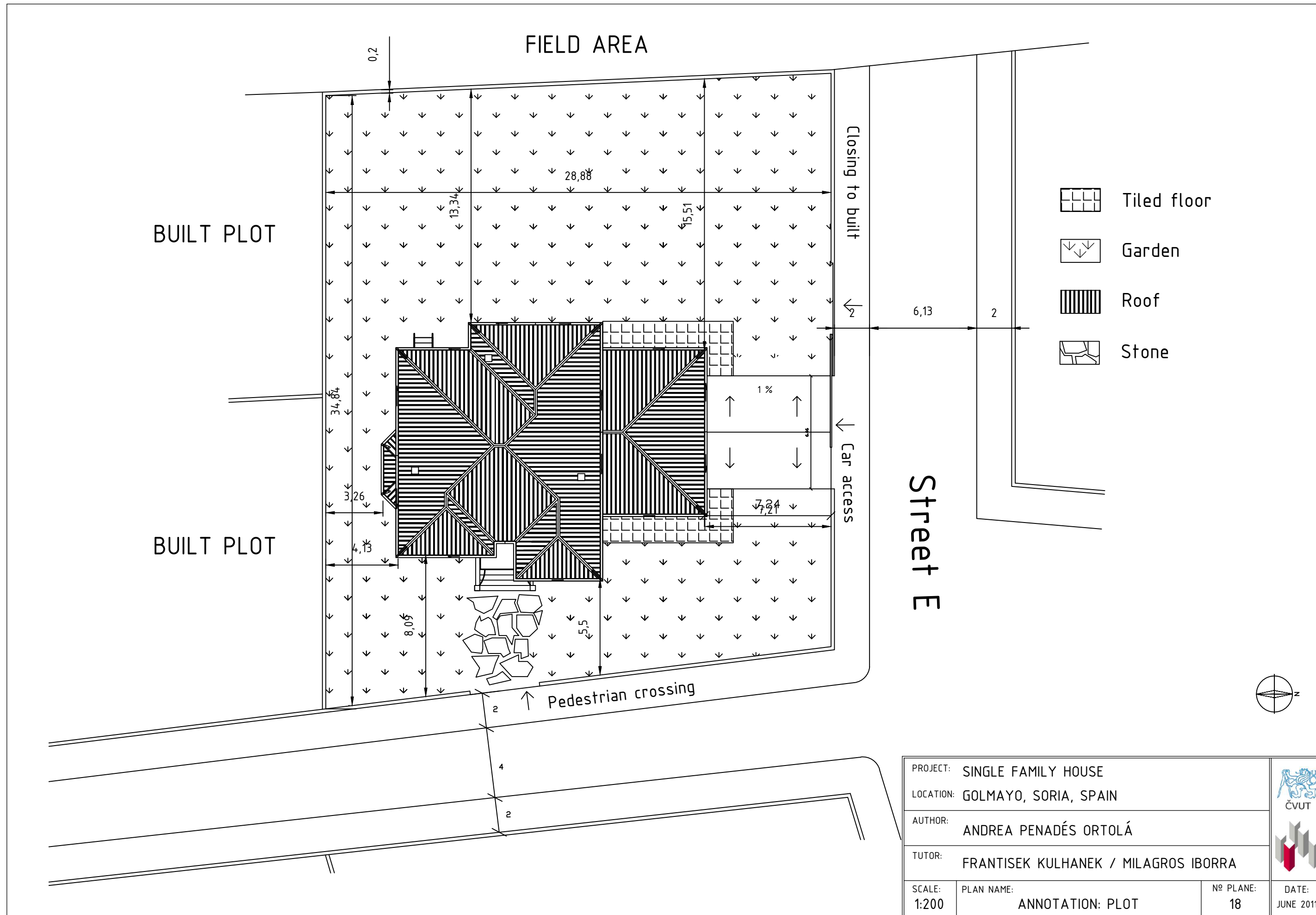
PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:10	PLAN NAME: LONGITUDINAL SECTION	Nº PLANE: 16	DATE: JUNE 2011	





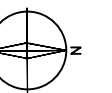
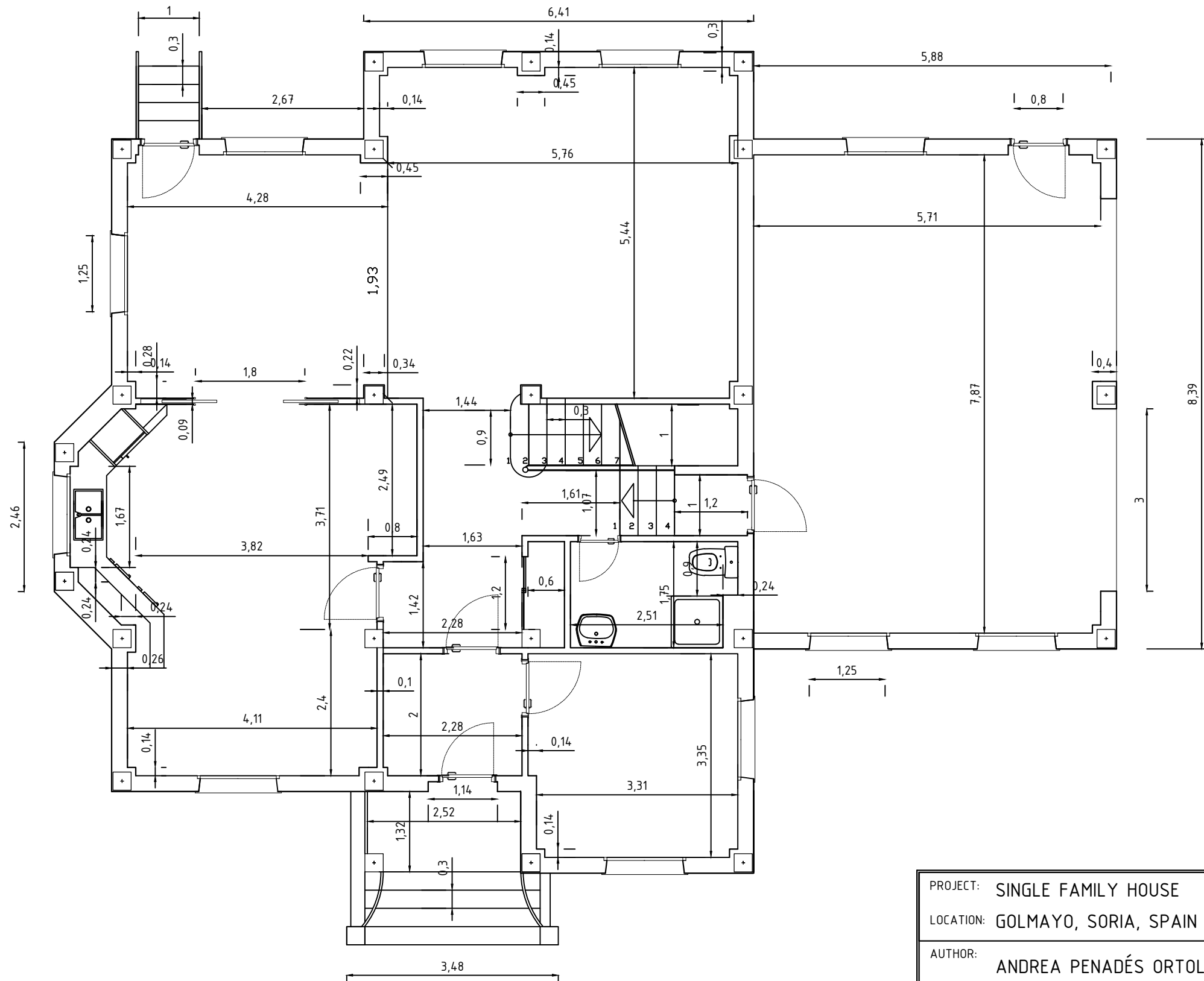
- ARMADURA DE NEGATIVOS
- VIGETA SEMIRRESISTENTE
- RELLENO HA-25/B/20/IIa
- ARMADURA DE REPARTO
- BOVEDILLA CERÁMICA

SECCIÓN TRANSVERSAL FORJADO

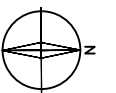
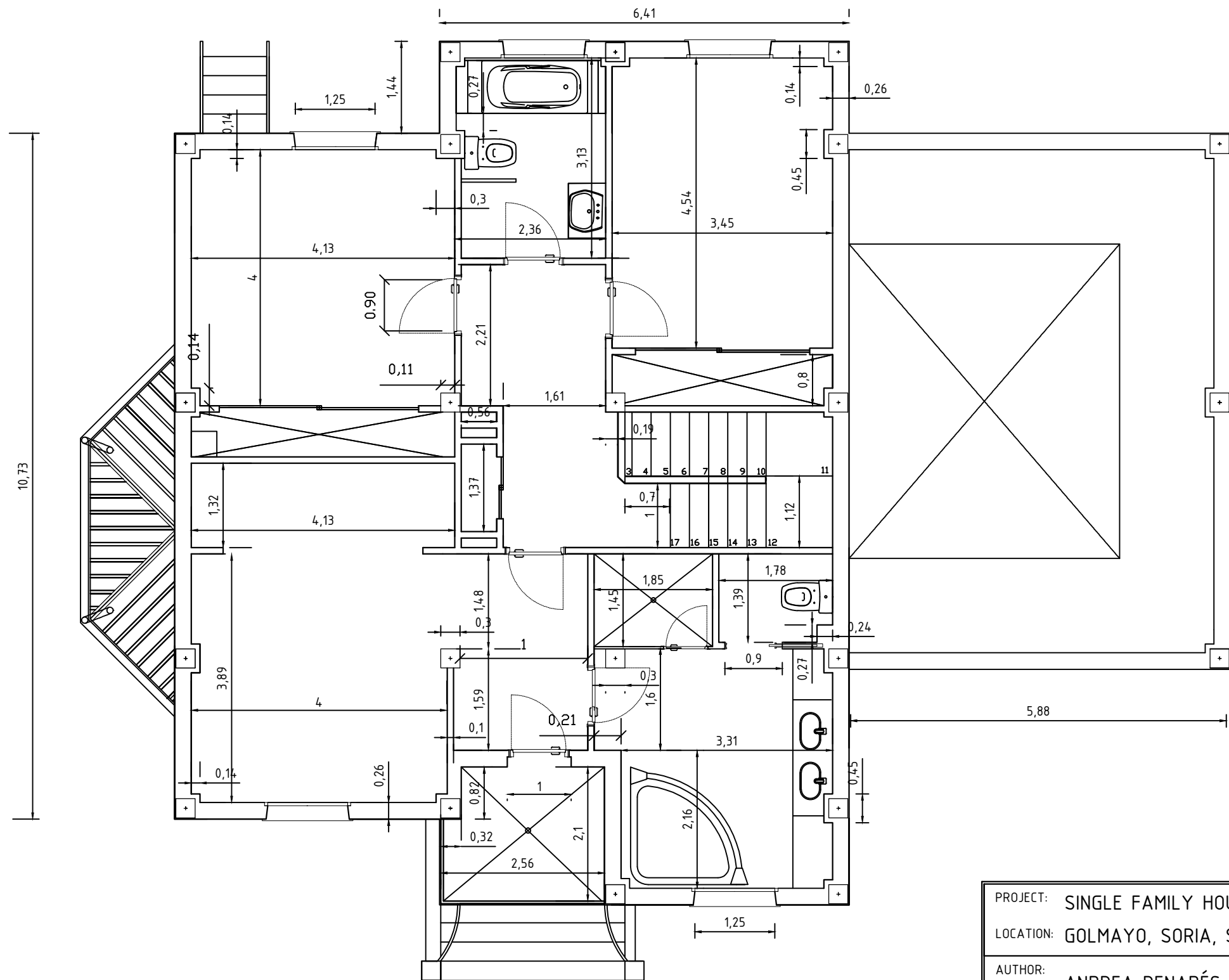
PROJECT: SINGLE FAMILY HOUSE		 CVUT	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:10	PLAN NAME: TRANSVERSAL SECTION	Nº PLANE: 17	DATE: JUNE 2011



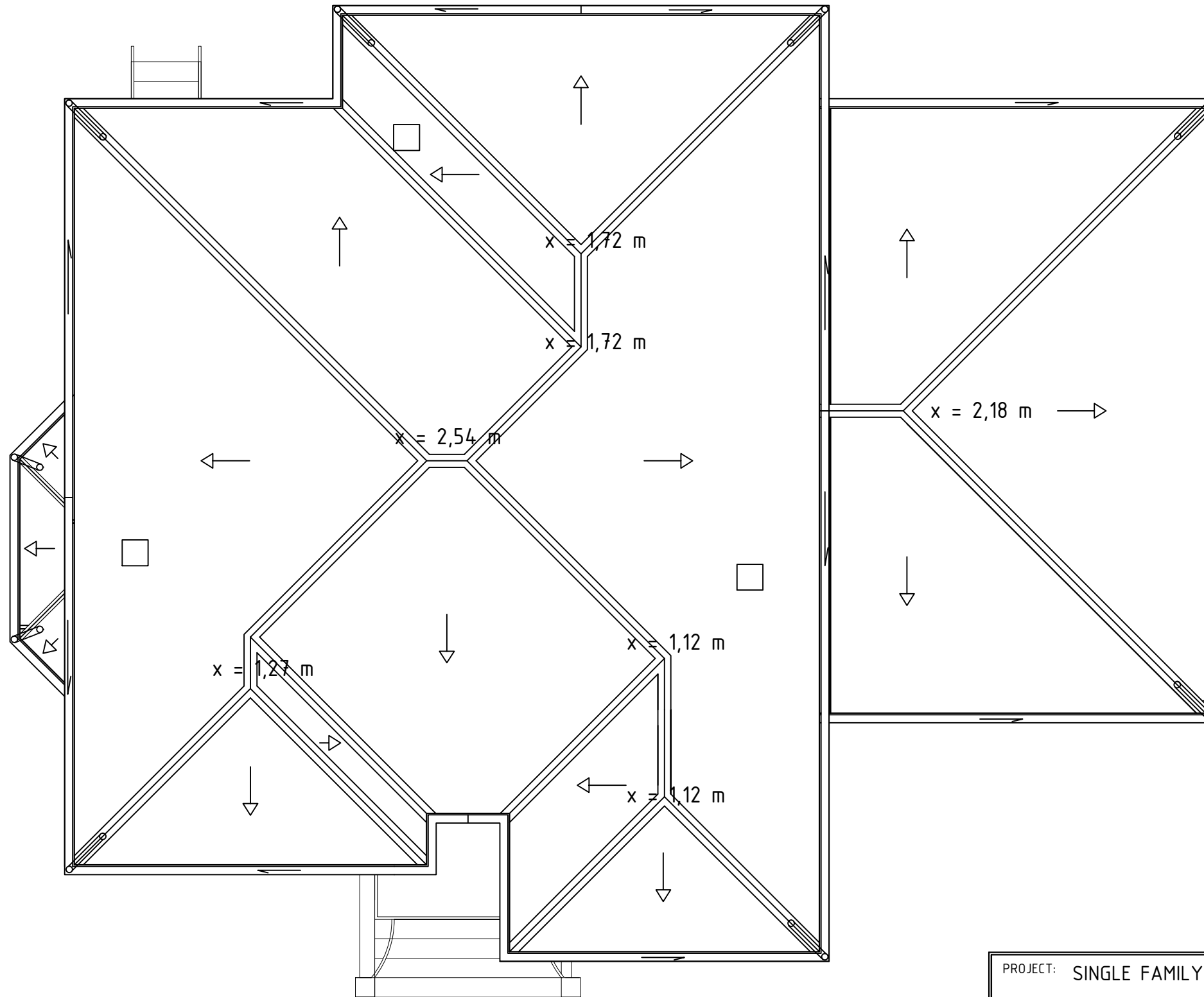
PROJECT: SINGLE FAMILY HOUSE		 CVUT 	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:200	PLAN NAME: ANNOTATION: PLOT	Nº PLANE: 18	DATE: JUNE 2011




PROJECT: SINGLE FAMILY HOUSE		
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: ANNOTATION: GROUND FLOOR	Nº PLANE: 19 DATE: JUNE 2011




PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: ANNOTATION: FIRST FLOOR	Nº PLANE: 20	DATE: JUNE 2011



PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: ANNOTATION: ROOF	Nº PLANE: 21	DATE: JUNE 2011	





PROJECT: SINGLE FAMILY HOUSE			 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: ANNOTATION: EAST ELEVATION	Nº PLANE: 22	DATE: JUNE 2011



PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: ANNOTATION: WEST ELEVATION	Nº PLANE: 23	D JUN



PROJECT: SINGLE FAMILY HOUSE		 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: ANNOTATION: NORTH ELEVATION	Nº PLANE: 24 DATE: JUNE 2011



PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: ANNOTATION: SOUTH ELEVATION	Nº PLANE: 25	DATE: JUNE 2011	

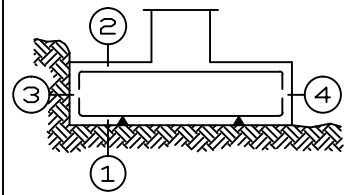
Characteristic chart EHE

Materials	Concrete Characteristics				Steel Characteristics		
	Level control	Weighting coef.	Type	Max. aggregating size	Level control	Weighting coef.	Type
All the work	Normal	$\gamma_c = 1,50$	HA-25	15/20 mm	Normal	$\gamma_s = 1,15$	B 500 S
Foundation	Normal	$\gamma_c = 1,50$	HA-25	15/20 mm	Normal	$\gamma_s = 1,15$	B 500 S
Walls	Normal	$\gamma_c = 1,50$	HA-25	15/20 mm	Normal	$\gamma_s = 1,15$	B 500 S
Pillars	Normal	$\gamma_c = 1,50$	HA-25	15/20 mm	Normal	$\gamma_s = 1,15$	B 500 S
Beams & slabs	Normal	$\gamma_c = 1,50$	HA-25/B/20/IIa				

Notes

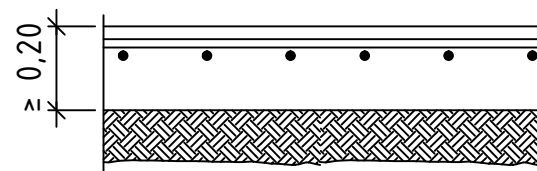
Overlaps as EHE

Coatings



- ① Lower coating in contact with the ground $\geq 8\text{cm}$
- ② Upper free coating 4/5cm.
- ③ Lateral coating in contact with the ground 5cm.
- ④ Lateral free coating 4/5cm.

Sill detail



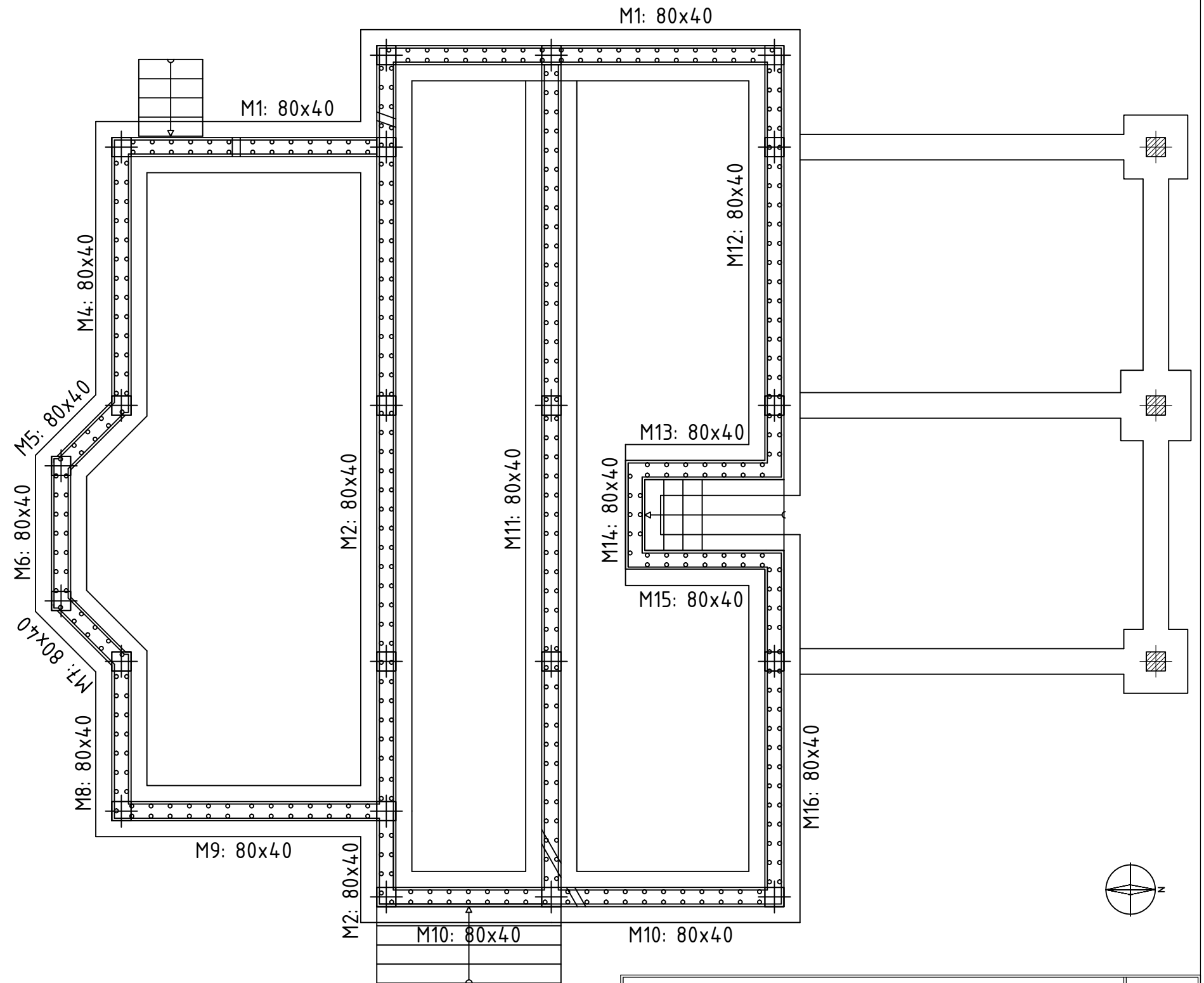
Mesh reinforcement
15x15@6

Geotechnical data

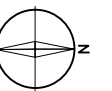
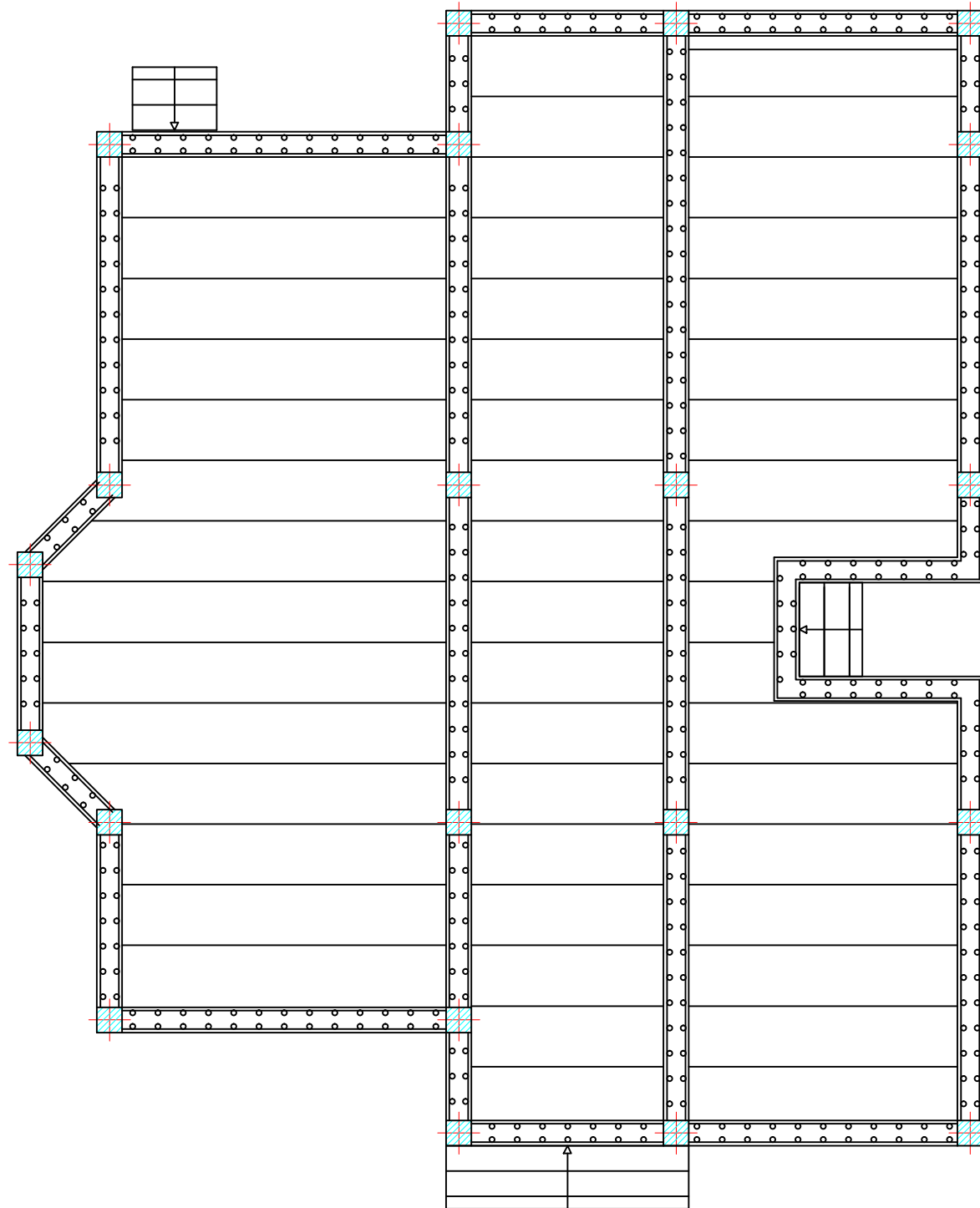
Allowable stresses of the ground $\sigma_{\text{allow}} = 2,0 \text{ Kg/cm}^2$

Divider disposal

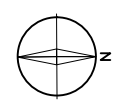
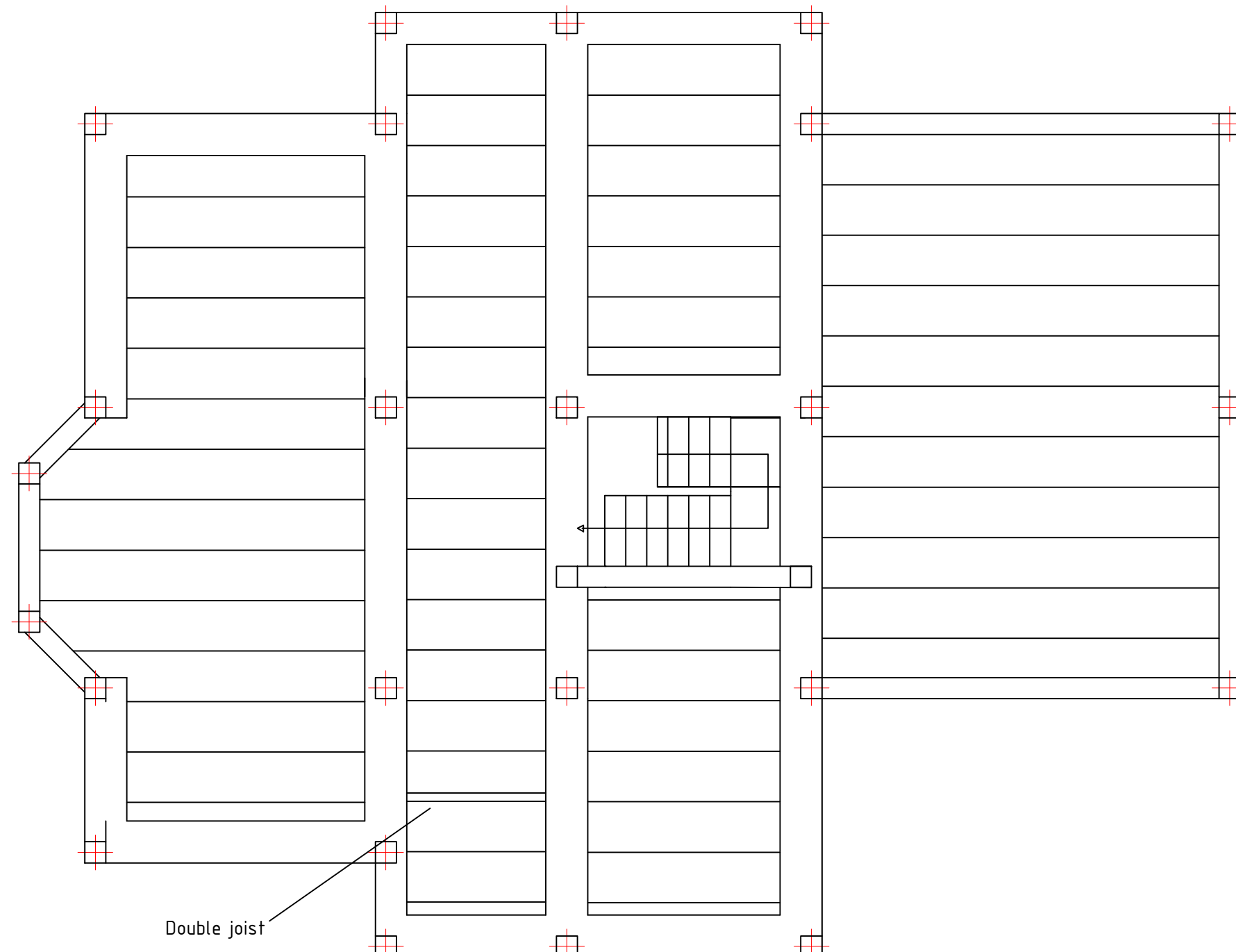
Element		Maximum distance
Bottom horizontal elements (slab, brake shoe...)	Bottom grating	50 ϕ or 100cm
	Upper grating	50 ϕ or 100cm
Walls	Each grating	50 ϕ or 100cm
	Sep. between grating	100cm
Beams		100cm
Support		100 ϕ or 200cm





PROJECT: SINGLE FAMILY HOUSE		
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: FOUNDATION	Nº PLANE: 26
		DATE: JUNE 2011

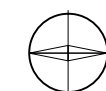
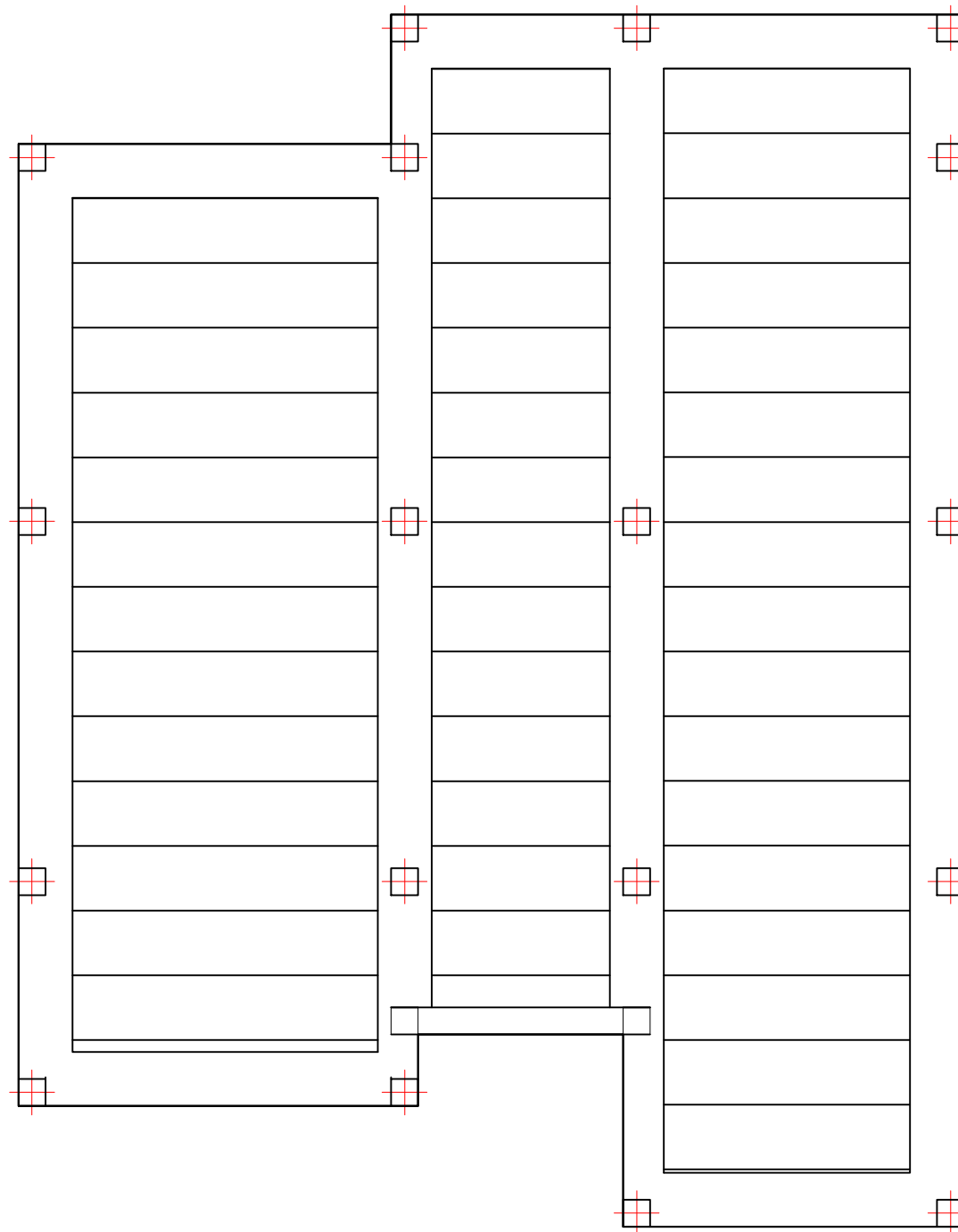


PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: STRUCTURE: SANITARY SLAB	Nº PLANE: 28	DATE: JUNE 2011

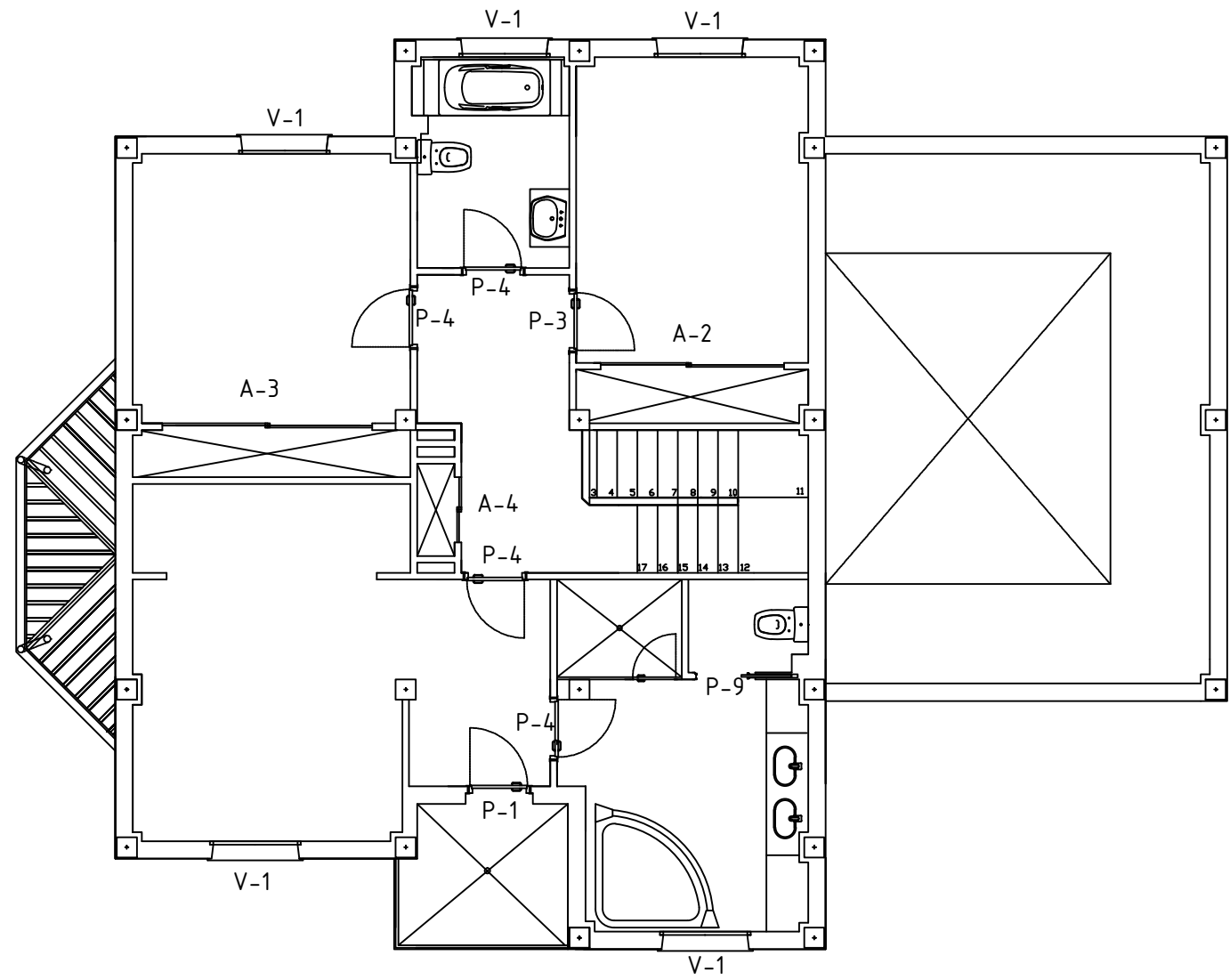
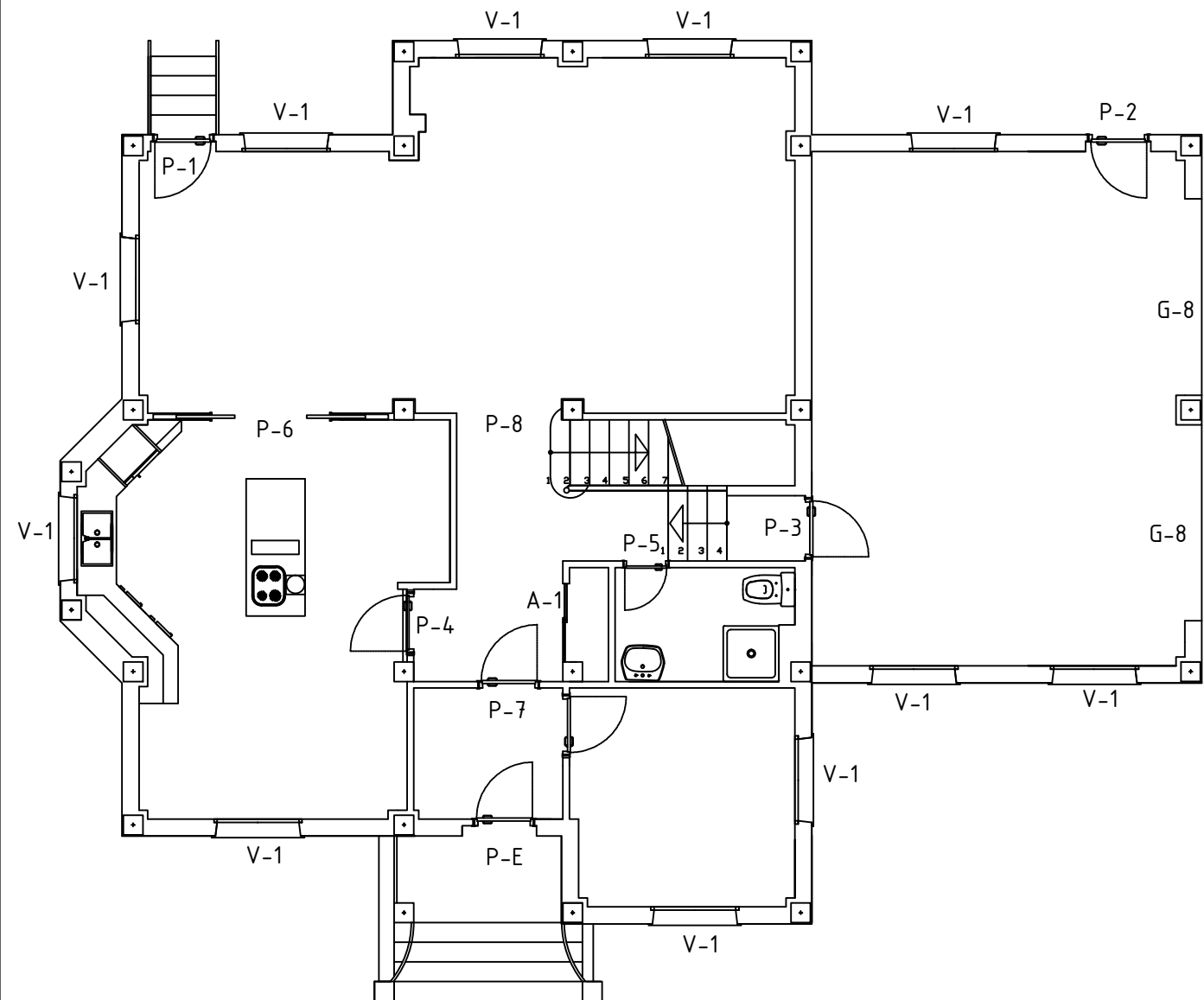


Double joist

PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: STRUCTURE: GROUND FLOOR SLAB	Nº PLANE: 29	DATE: JUNE 2011	

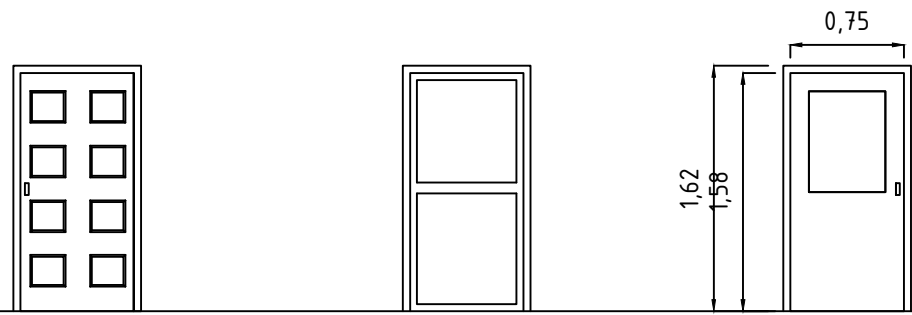


PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: STRUCTURE: FIRST FLOOR SLAB	Nº PLANE: 30	DATE: JUNE 2011	



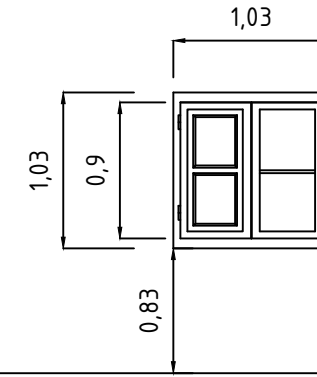
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: CARPENTRY SUMMARY	Nº PLANE: 31	DATE: JUNE 2011	

EXTERIOR CARPENTRY WOOD-ALUMINIUM : DOORS



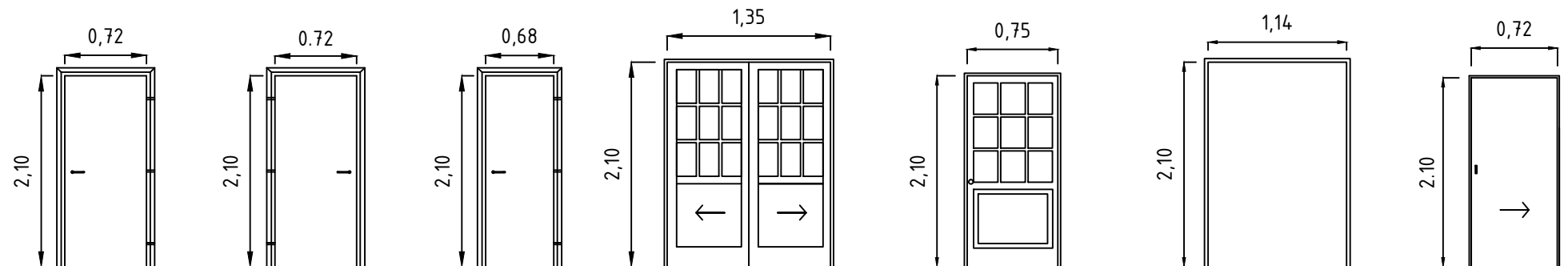
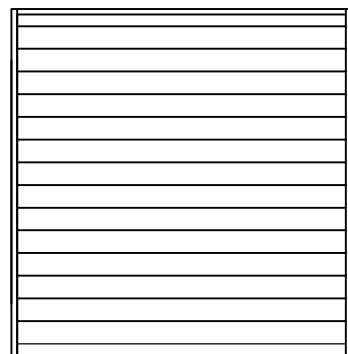
TYPE	P-E (Reinforced)	P-1	P-2
LEAF DIMENSION	210 x 100 x 4,5	210 x 100 x 4,5	210 x 100 x 4,5
NUMBER	1	2	1

EXTERIOR CARPENTRY WOOD-ALUMINIUM: WINDOWWOOD: SHUTTER



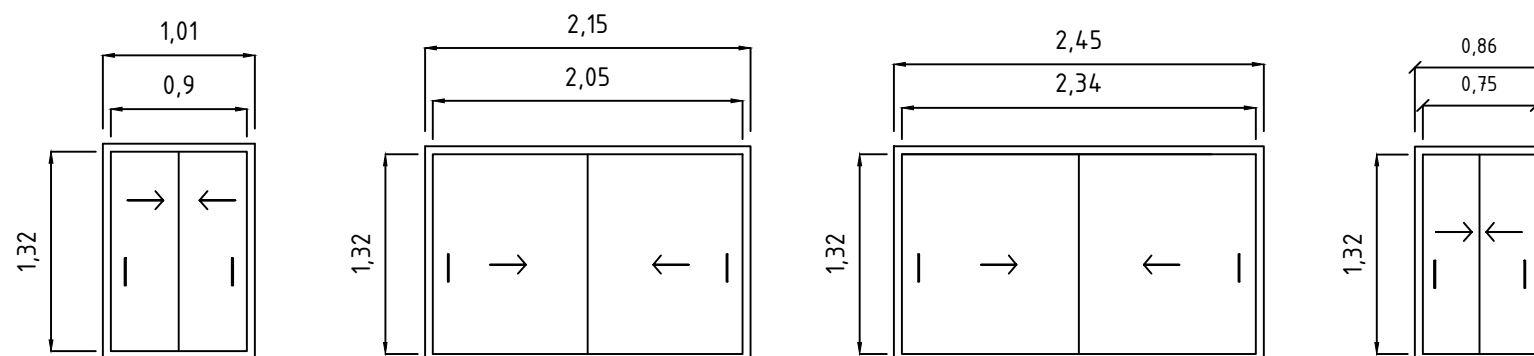
TYPE	V-1
NUMBER	16
GLAZING	DOUBLE GLASS, INTERIOR CHAMBER
SHUTTER	OAK WOOD

EXTERIOR CARPENTRY GARAGE DOOR

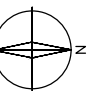


TYPE	G-8	P-3	P-4	P-5	P-6	P-7	P-8	P-9
LEAF DIMENSION	300 x 300	210 x 90 x 3,5	210 x 90 x 3,5	210 x 75 x 3,5	225 x 180	210 x 100	225 x 153	210 x 75
NUMBER	2	2	6	1	1	1	1	1

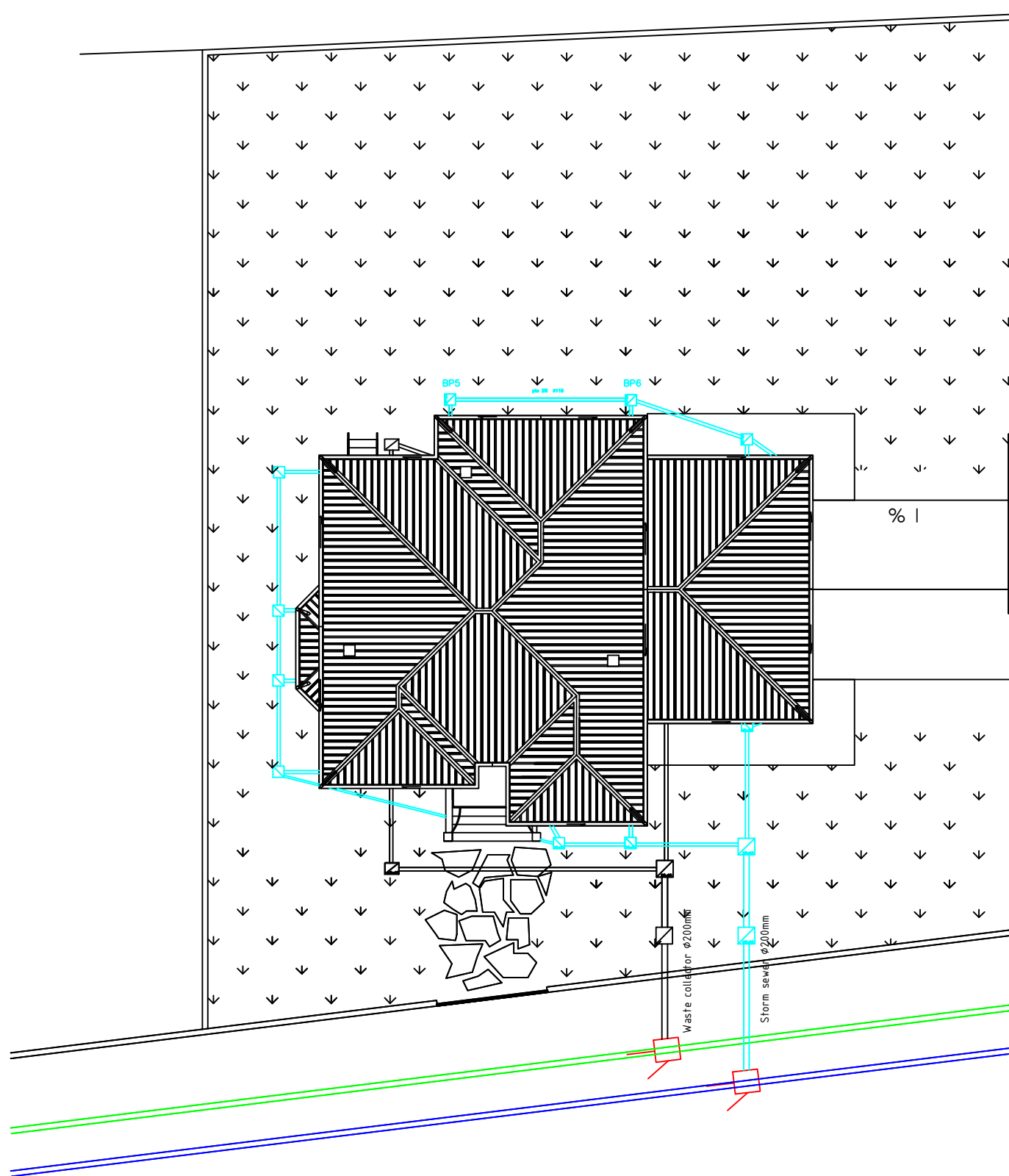
INTERIOR WOOD CARPENTRY - SLIDING WARDROBE DOORS














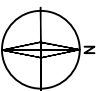
TYPE	A-1	A-2	A-3	A-4
LEAF DIMENSION	176 x 120 x 3,5	176 x 273 x 3,5	176 x 320 x 3,5	176 x 100 x 3,5
NUMBER	1	1	1	1





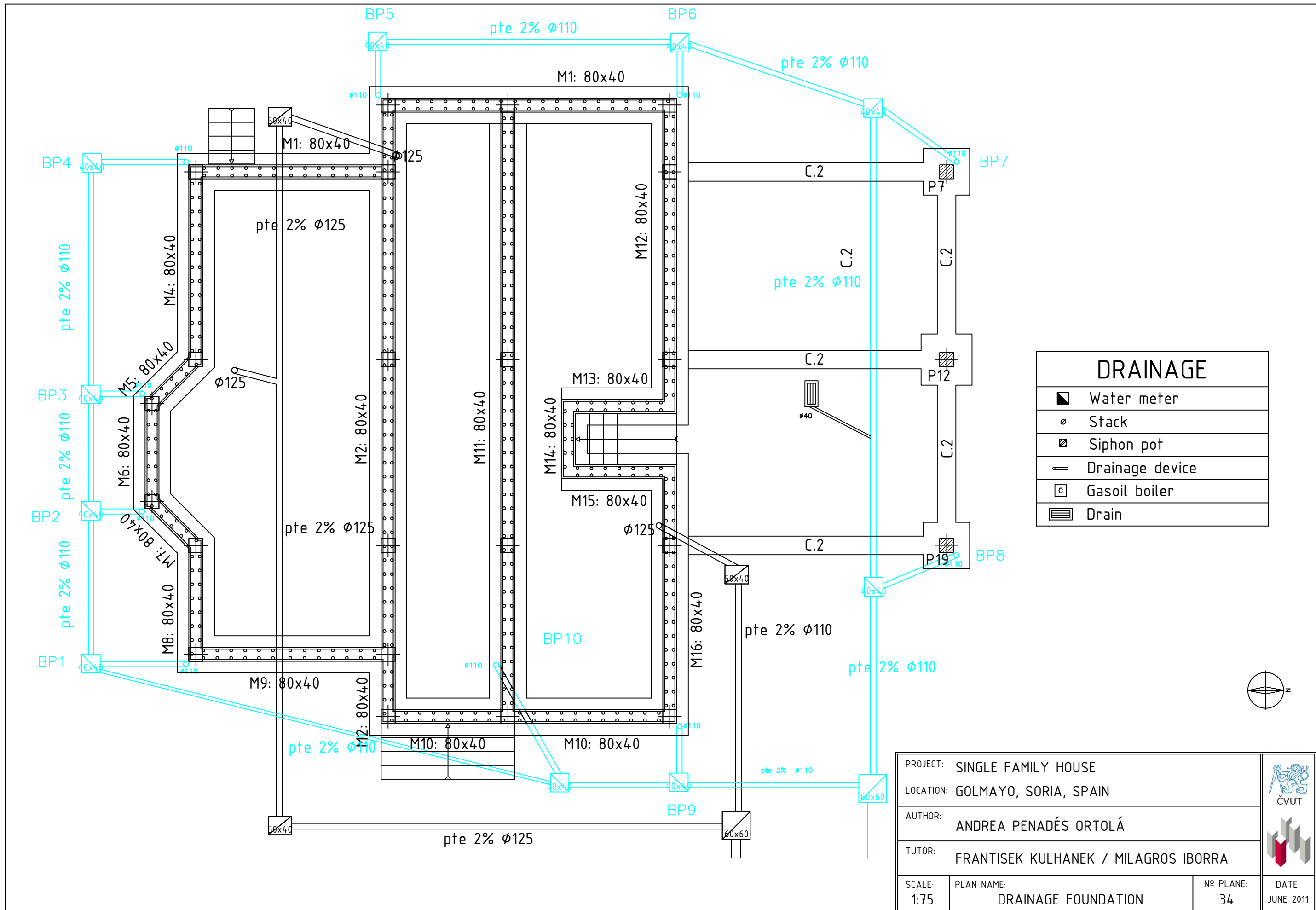
PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:100	PLAN NAME: CARPENTRY DEALS	Nº PLANE: 32	DATE: JUNE 2011



-  Garden
-  Roof
-  Stone
-  Concrete sill plate
-  Residual concrete pipe
-  Storm concrete pipe
-  PVC pipe tube (PN10) ϕ 150mm
-  Small chest 60x60cm
-  Particular connection PVC pipe ϕ 200mm
-  Waste collector
-  Storm sewer

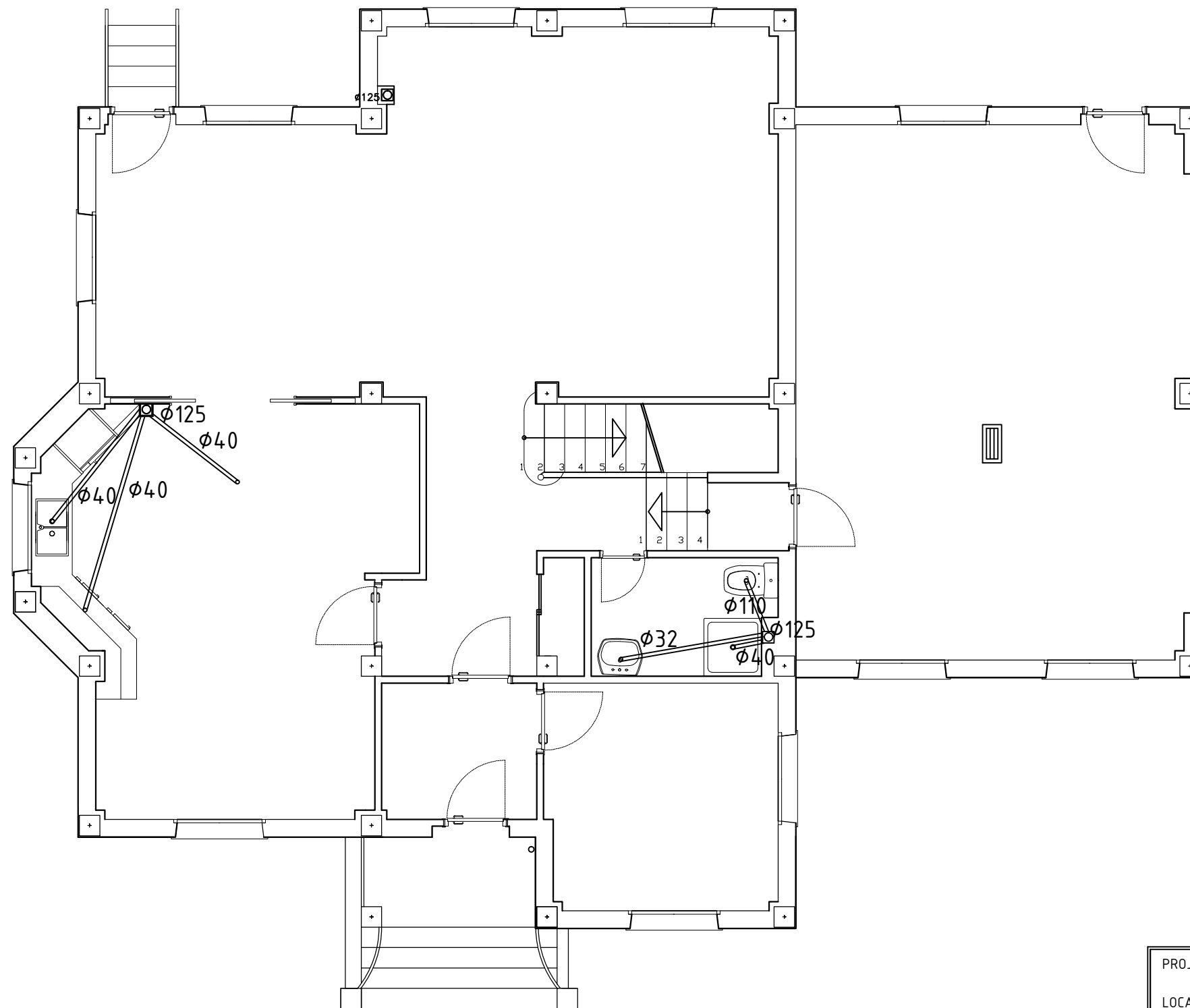


PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:200	PLAN NAME: DRAINAGE SYSTEM	Nº PLANE: 33	DATE: JUNE 2011	

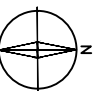


DRAINAGE	
	Water meter
	Stack
	Siphon pot
	Drainage device
	Gasoil boiler
	Drain

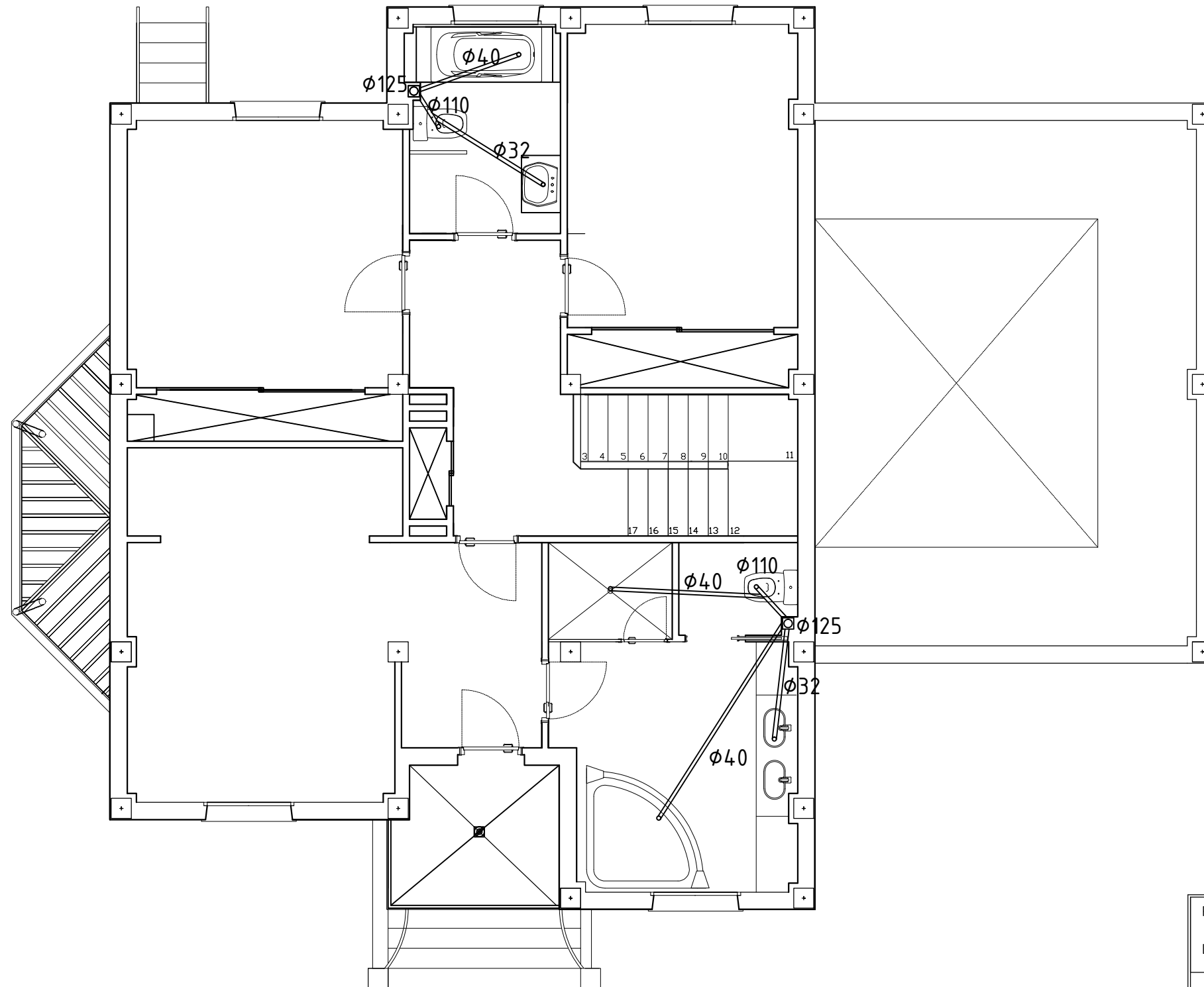
PROJECT: SINGLE FAMILY HOUSE			 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: DRAINAGE FOUNDATION	Nº PLANE: 34	DATE: JUNE 2011



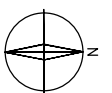
DRAINAGE	
	Water meter
	Stack
	Siphon pot
	Drainage device
	Gasoil boiler
	Drain



PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: DRAINAGE: GROUND FLOOR	Nº PLANE: 35	DATE: JUNE 2011	

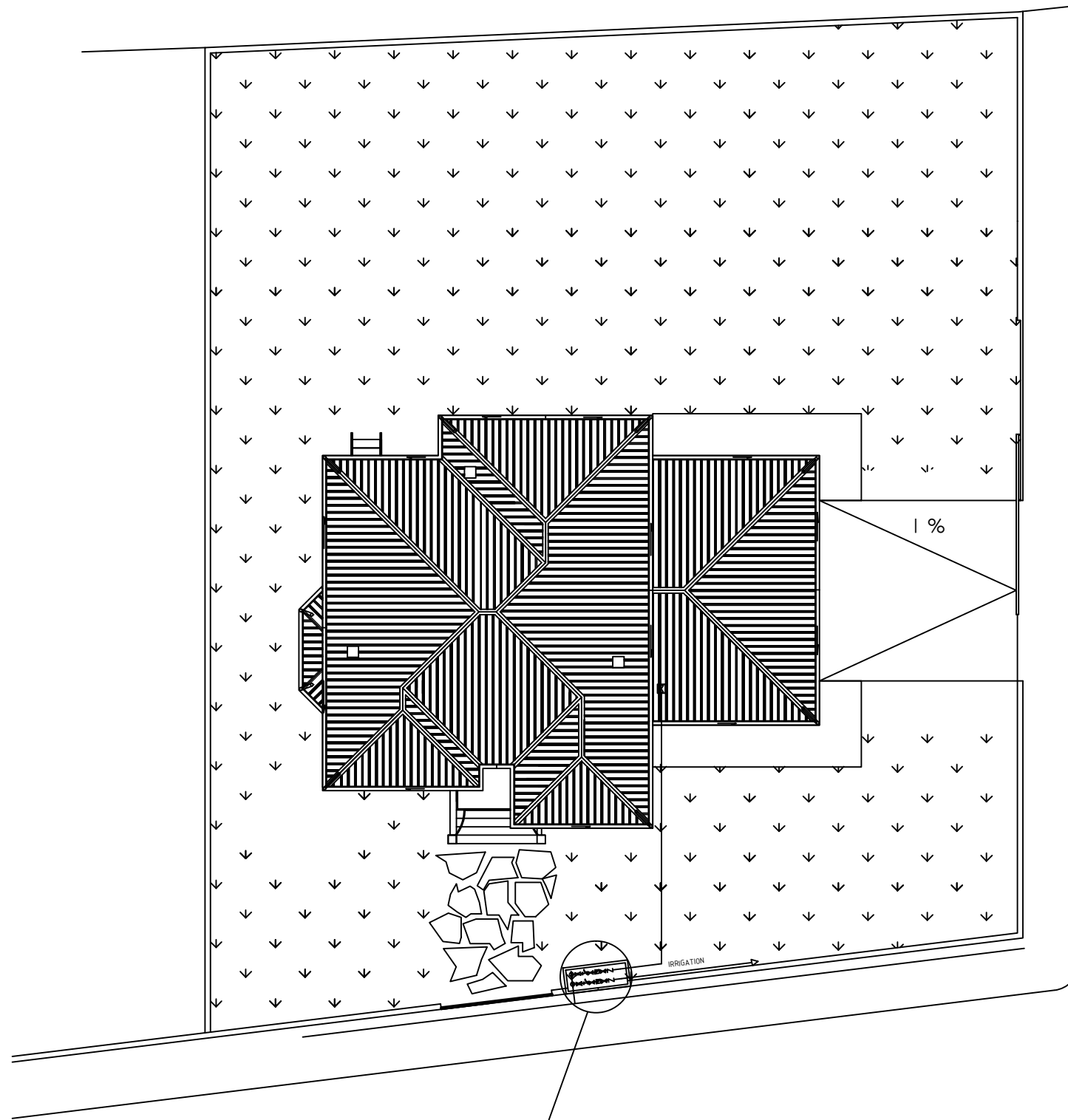


DRAINAGE	
	Water meter
	Stack
	Siphon pot
	Drainage device
	Gasoil boiler
	Drain















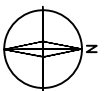
PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: DRAINAGE: FIRST FLOOR	Nº PLANE: 36	DATE: JUNE 2011



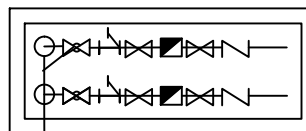




Street

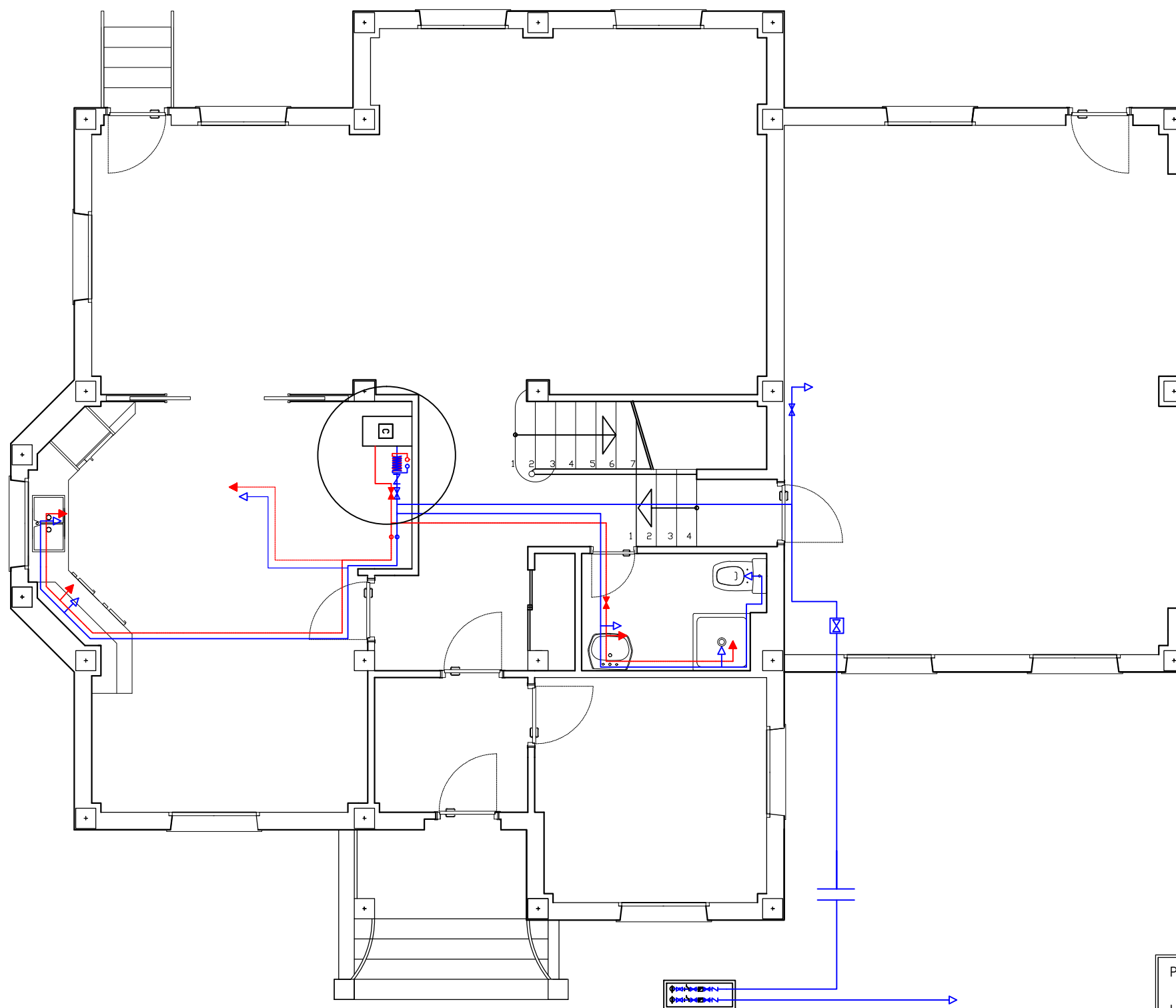
-  Garden
-  Roof
-  Stone
-  Concrete sill plate
-  Municipal connection
-  Socket valve
-  Stopcock
-  General stopcock
-  Filter
-  Check valve
-  Water meter
-  Cold water gate valve
-  Cold water canalization



WATER METER DETAIL

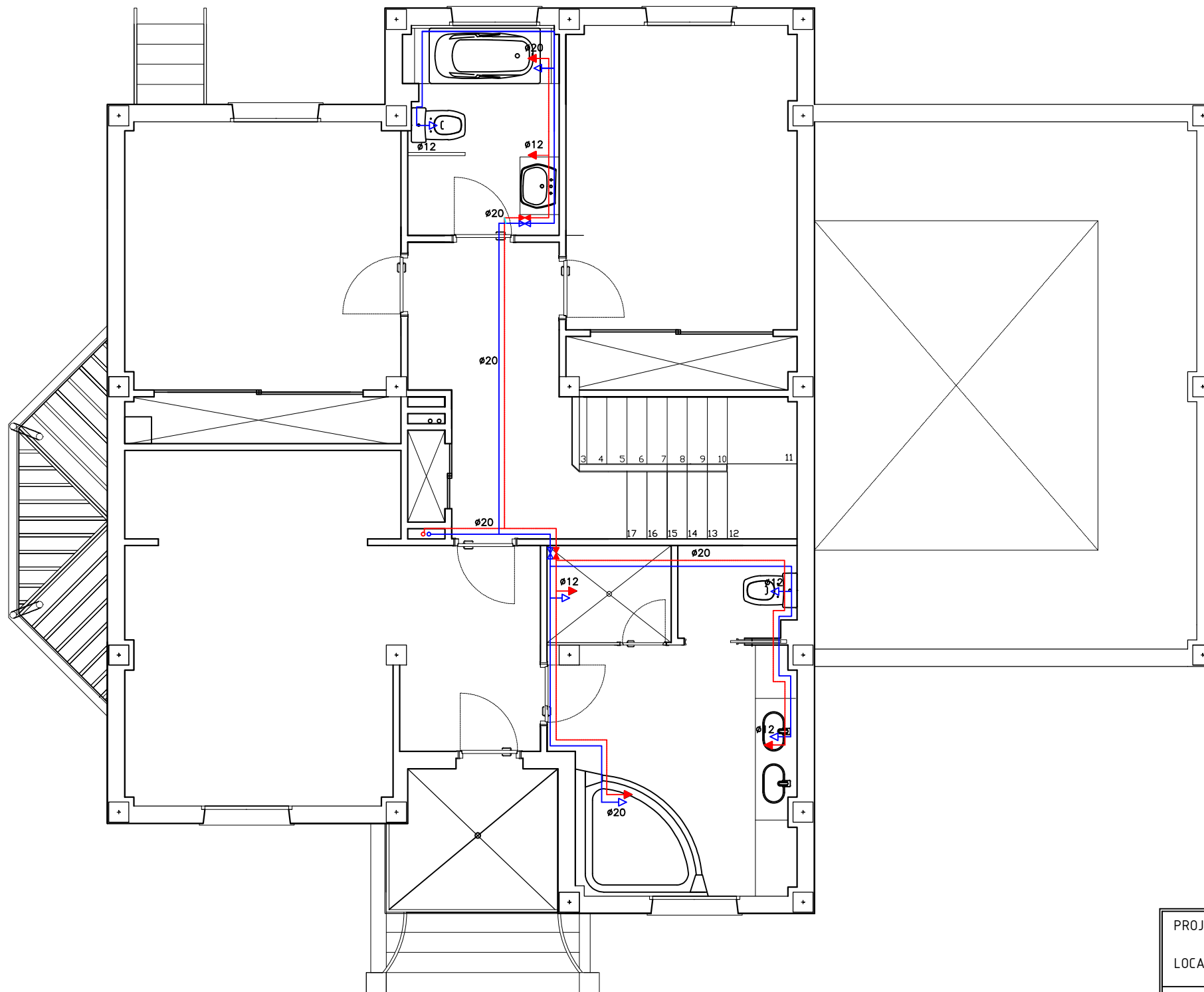


PROJECT: SINGLE FAMILY HOUSE				 ČVUT 
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:200	PLAN NAME: WATER SUPPLY SYSTEM	Nº PLANE: 37	DATE: JUNE 2011	



PLUMBING SYSTEM	
	Municipal connection
	Socket valve
	Stopcock
	General stopcock
	Filter
	Check valve
	Water meter
	Cold water gate valve
	Hot water gate valve
	Cold water canalization
	Hot water canalization
	Cold water tap
	Hot water tap
	Natural gas boiler
	Exanger solar tank

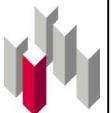
PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: PLUMBING: GROUND FLOOR	Nº PLANE: 38	DATE: JUNE 2011	

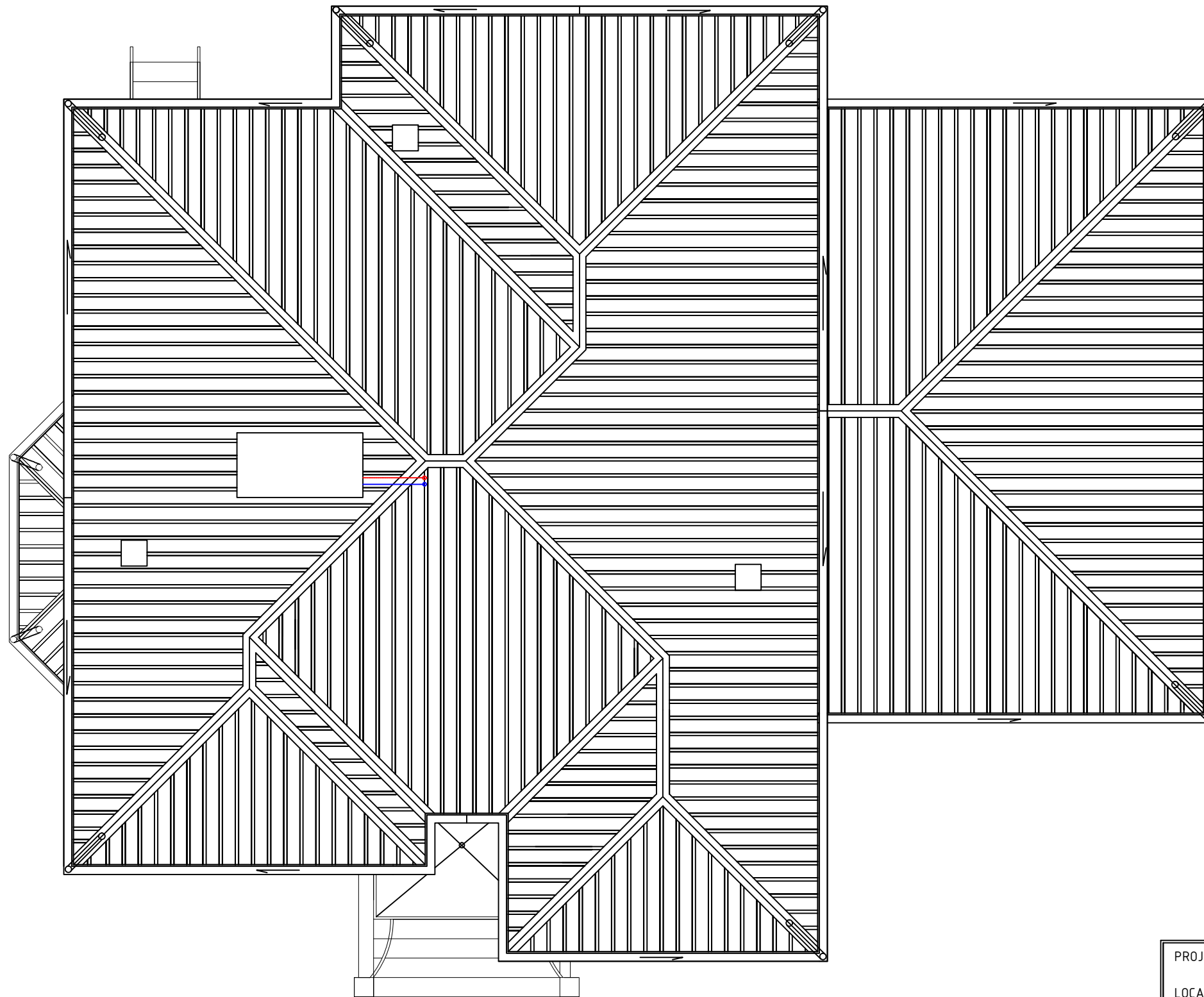


PLUMBING SYSTEM	
	Municipal connection
	Socket valve
	Stopcock
	General stopcock
	Filter
	Check valve
	Water meter
	Cold water gate valve
	Hot water gate valve
	Cold water canalization
	Hot water canalization
	Cold water tap
	Hot water tap
	Natural gas boiler
	Exchanger solar tank



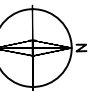
PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: PLUMBING: FIRST FLOOR	Nº PLANE: 39	DATE: JUNE 2011



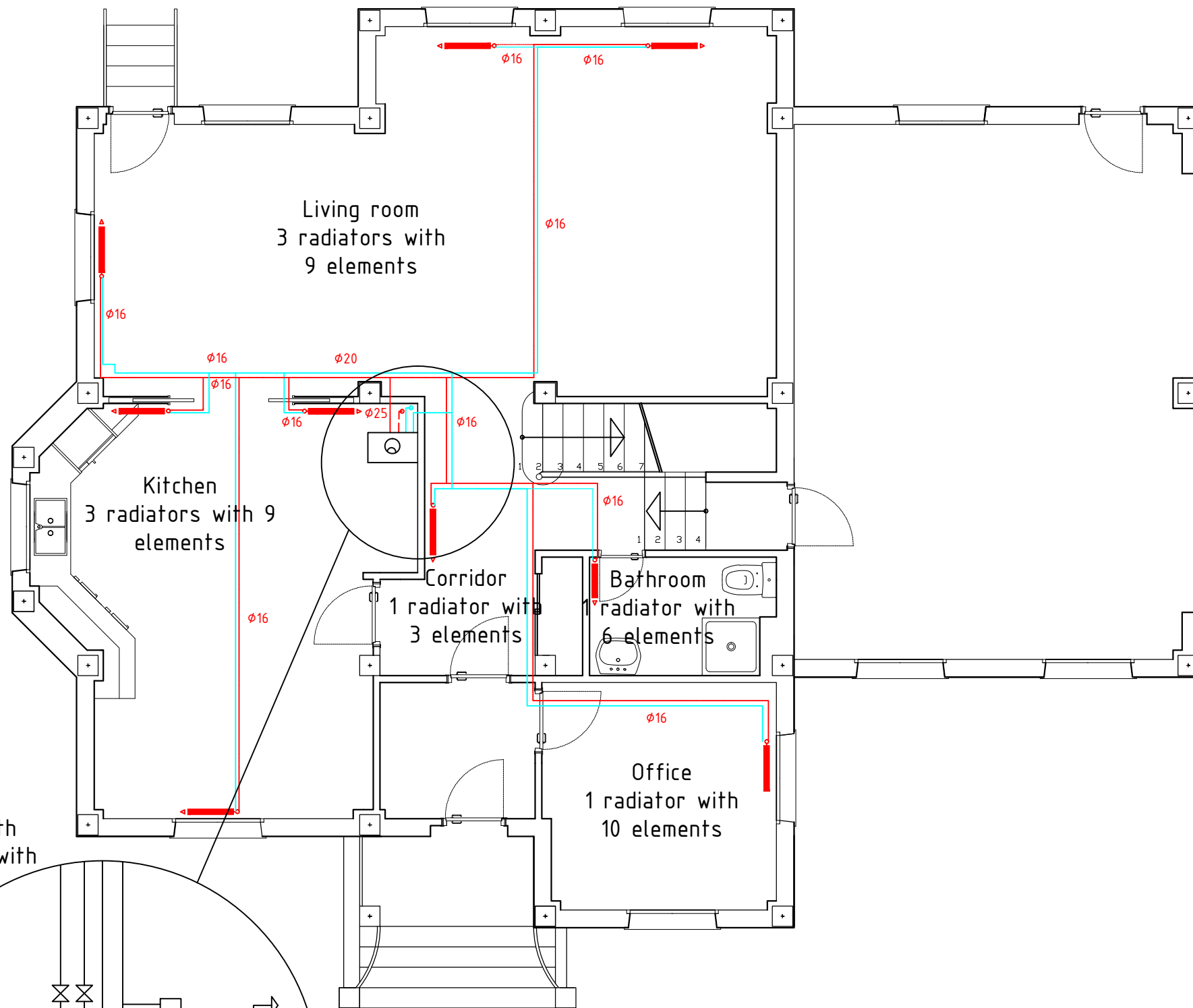


PLUMBING SYSTEM

	Municipal connection
	Socket valve
	Stopcock
	General stopcock
	Filter
	Check valve
	Water meter
	Cold water gate valve
	Hot water gate valve
	Cold water canalization
	Hot water canalization
	Cold water tap
	Hot water tap
	Natural gas boiler
	Exanger solar tank

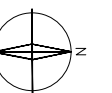
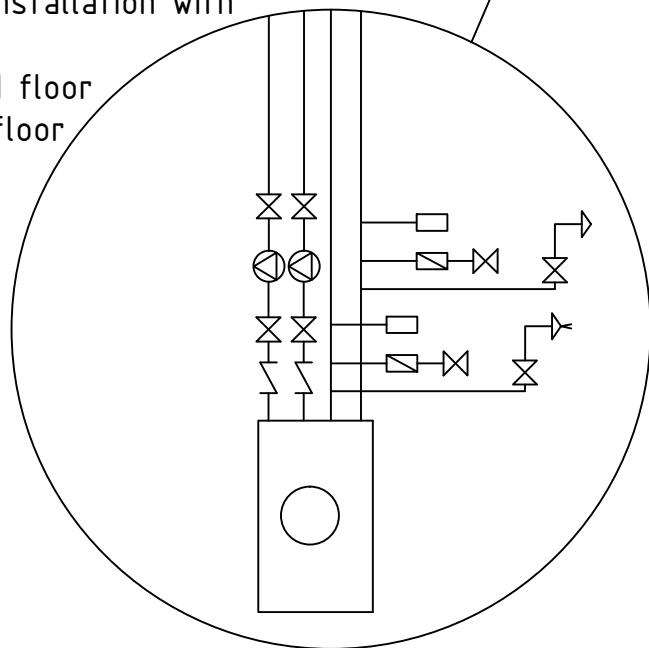


PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: PLUMBING: ROOF	Nº PLANE: 40	DATE: JUNE 2011	

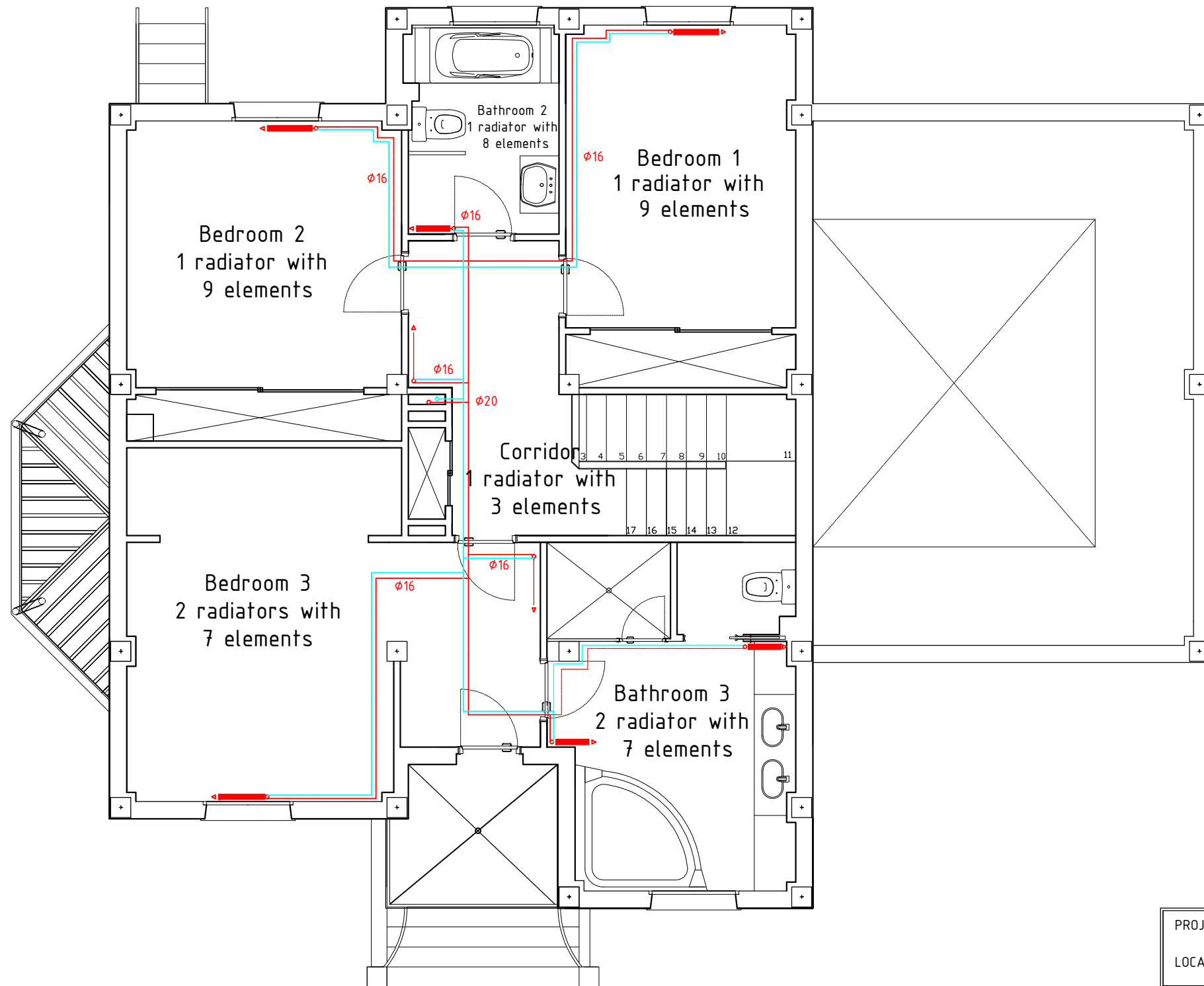


HEATING SYSTEM	
	Gas boiler
	Room thermostat
	Sheet radiator panel
	Check valve
	Safety valve
	Heating circulator
	Stopcock
	Round pipe
	Return pipe
	Expansion tank
	Drain installation
	Vertical girder
	Transmitter

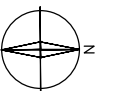
Distribution supply with two-pipe installation with 2 circuits:
 1 - Ground floor
 2 - First floor



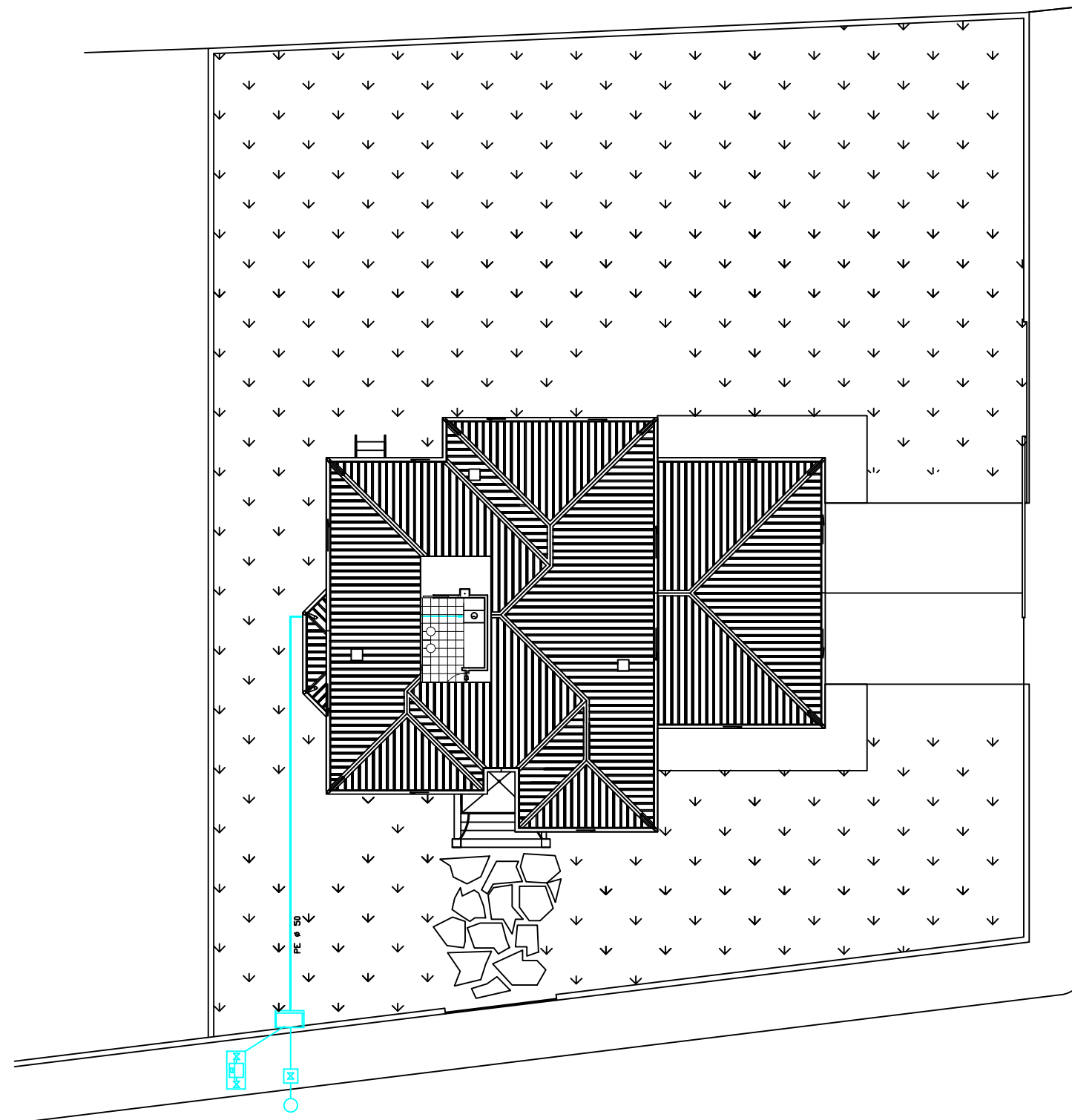
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: HEATING: GROUND FLOOR	Nº PLANE: 41	DATE: JUNE 2011	













HEATING SYSTEM	
	Gas boiler
	Room thermostat
	Sheet radiator panel
	Check valve
	Safety valve
	Heating circulator
	Stopcock
	Round pipe
	Return pipe
	Expansion tank
	Drain installation
	Vertical girder
	Transmitter

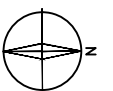




PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: HEATING: FIRST FLOOR	Nº PLANE: 42	DATE: JUNE 2011	

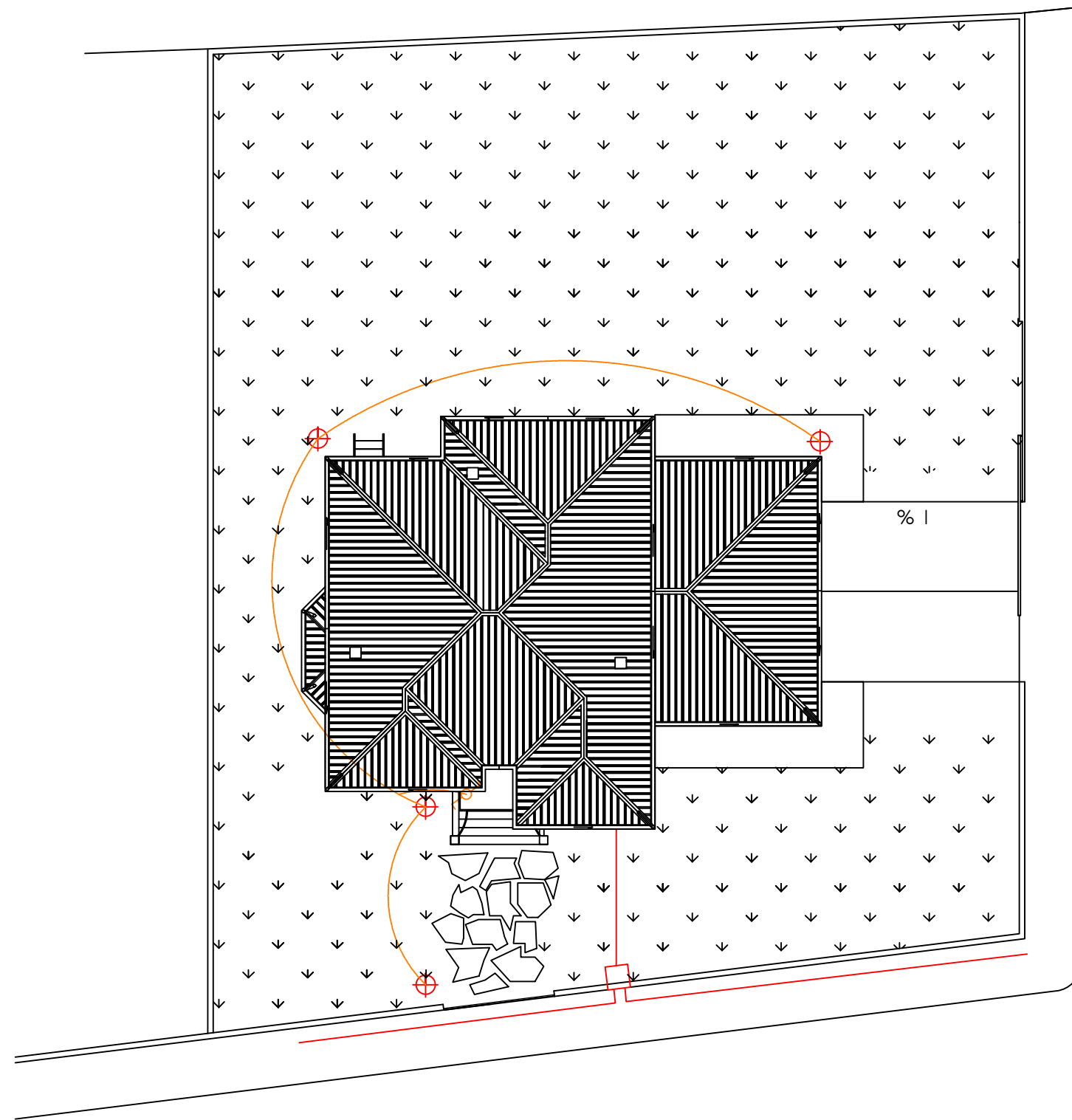











-  Garden
-  Roof
-  Stone

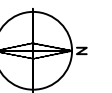
GAS	
 Cold water canalization	 Pressure regulator
 General stopcock	 Gas canalization
 Counter	 Natural gas boiler
 Stopcock	





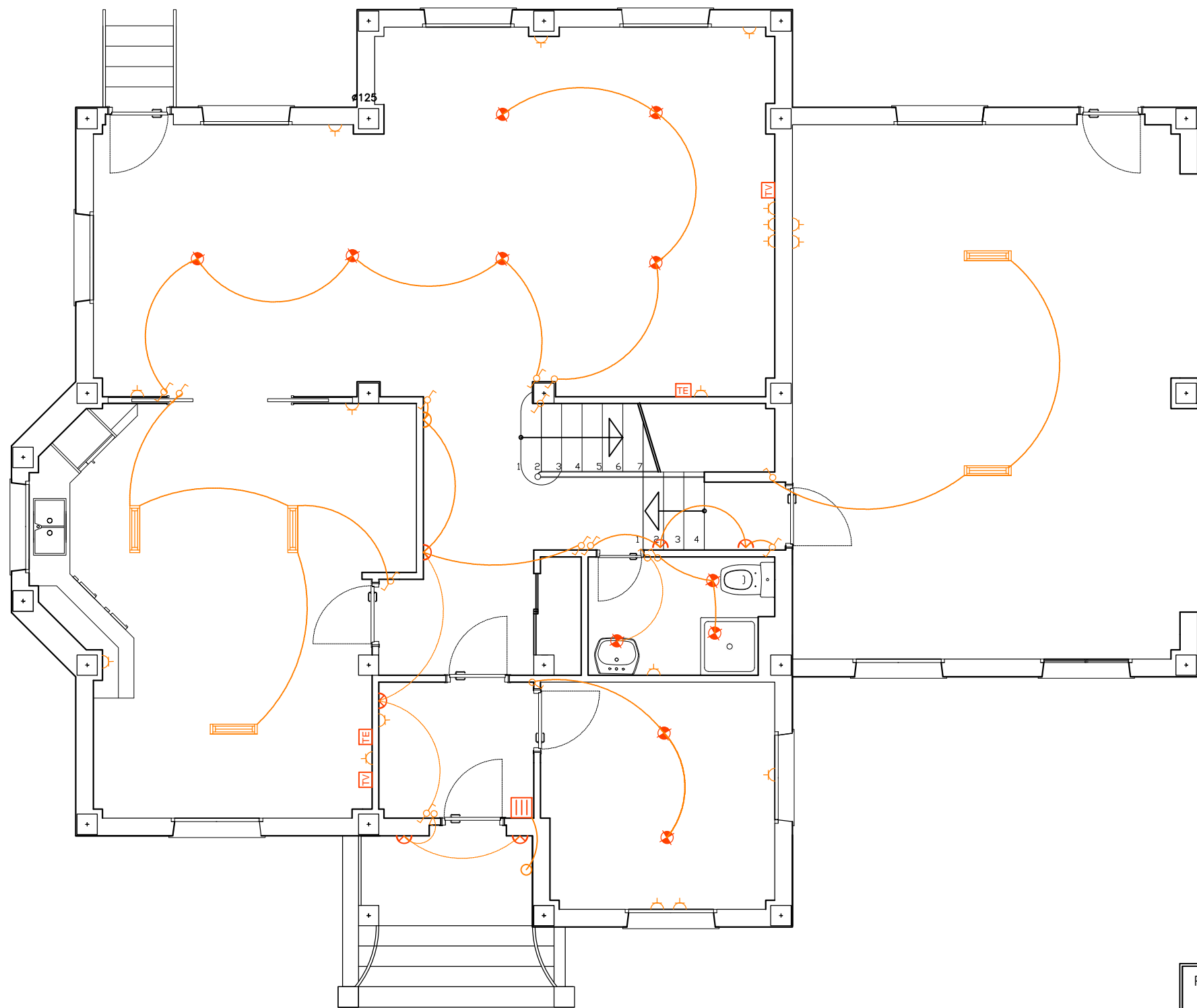
PROJECT: SINGLE FAMILY HOUSE		 CVUT	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:200	PLAN NAME: GAS SYSTEM		Nº PLANE: 43
			DATE: JUNE 2011



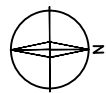
-  Garden
-  Roof
-  Stone
-  Concrete sill plate
-  Switch
-  Circuit
-  Light 100w.
-  Underground low voltage network (Copper conductor RV 0.6/1 KV 2x1x16 mm²)
-  Protective device (E/S 400A)





PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:200	PLAN NAME: LIGHTNING SYSTEM	Nº PLANE: 44	DATE: JUNE 2011	



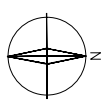
VENTILATION	
	TV socket
	General distribution box
	Stopcock
	Simple switch
	Changed over switch
	Socket
	Ceiling light point
	Fluorescent
	Wall light point
	Button
	Buzzer
	Telephone power point



PROJECT: SINGLE FAMILY HOUSE			 CVUT 
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: ELECTRICITY: GROUND FLOOR	Nº PLANE: 45	DATE: JUNE 2011

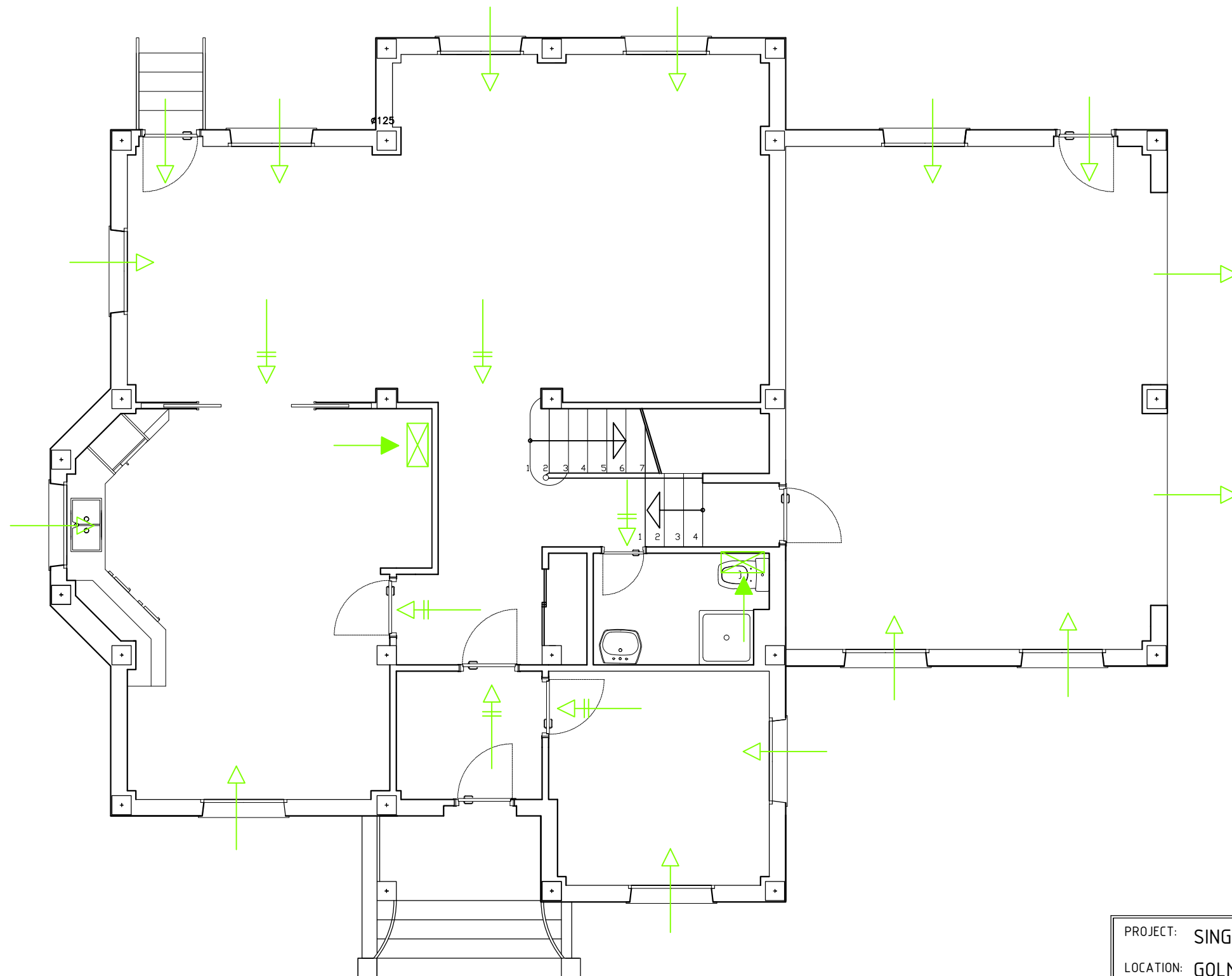


VENTILATION	
	TV socket
	General distribution box
	Stopcock
	Simple switch
	Changed over switch
	Socket
	Ceiling light point
	Fluorescent
	Wall light point
	Button
	Buzzer
	Telephone power point

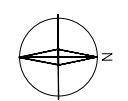


PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: ELECTRICITY: FIRST FLOOR	Nº PLANE: 46	DATE: JUNE 2011

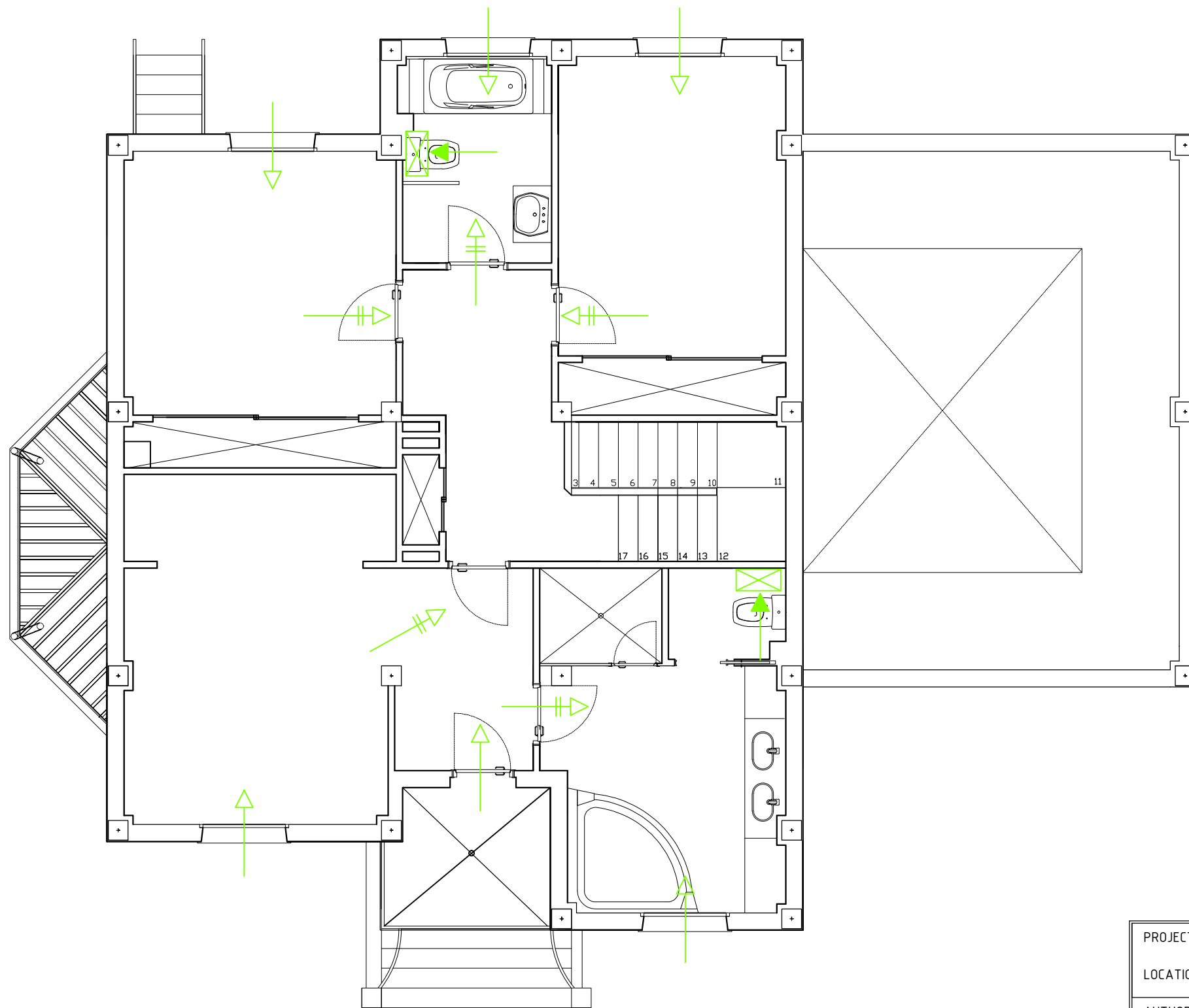




VENTILATION	
	Admission opening
	Cross opening
	Extraction opening
	Extraction pipe



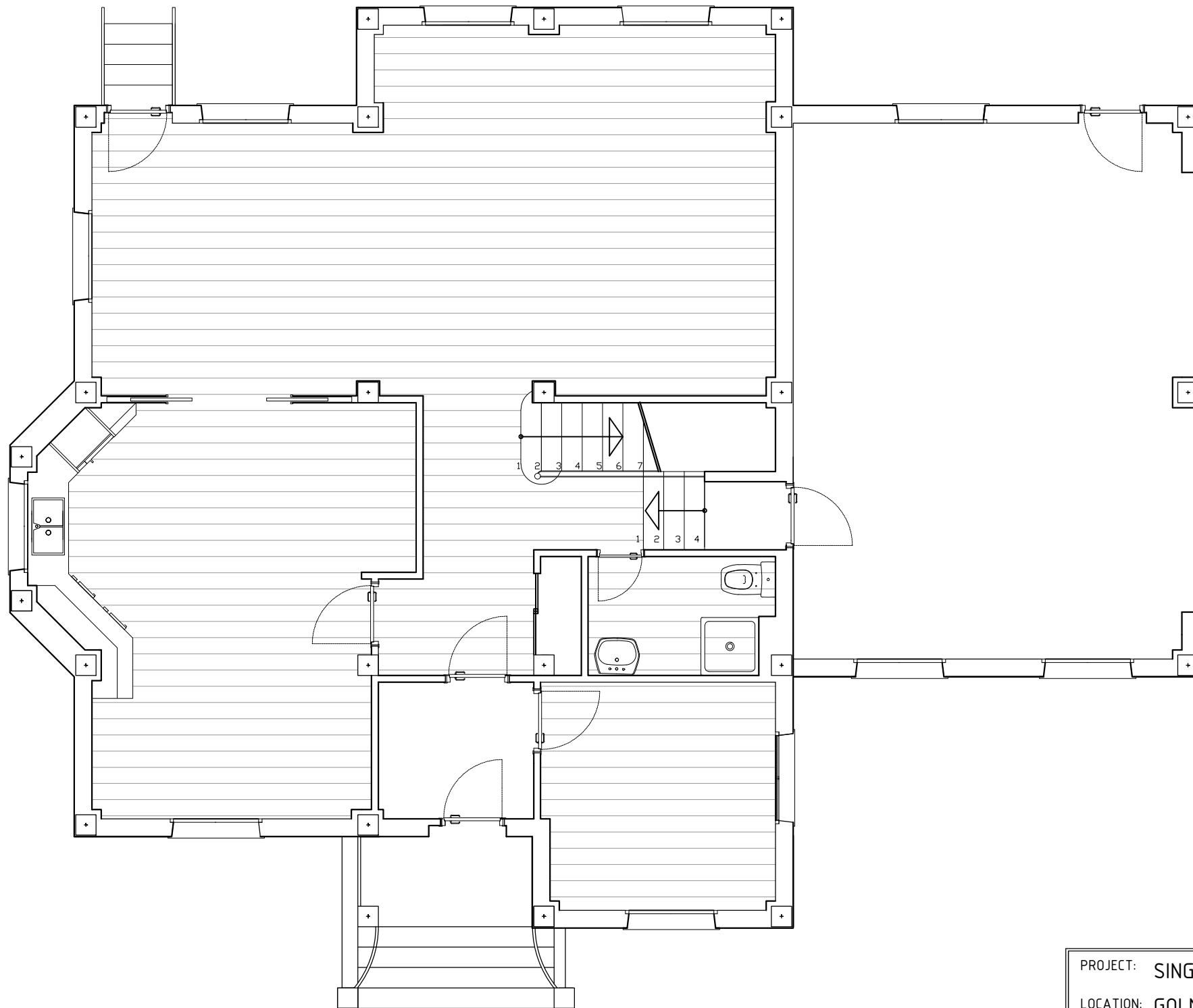
PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: VENTILATION: GROUND FLOOR	Nº PLANE: 47	DATE: JUNE 2011



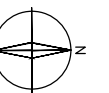
VENTILATION	
	Admission opening
	Cross opening
	Extraction opening
	Extraction pipe



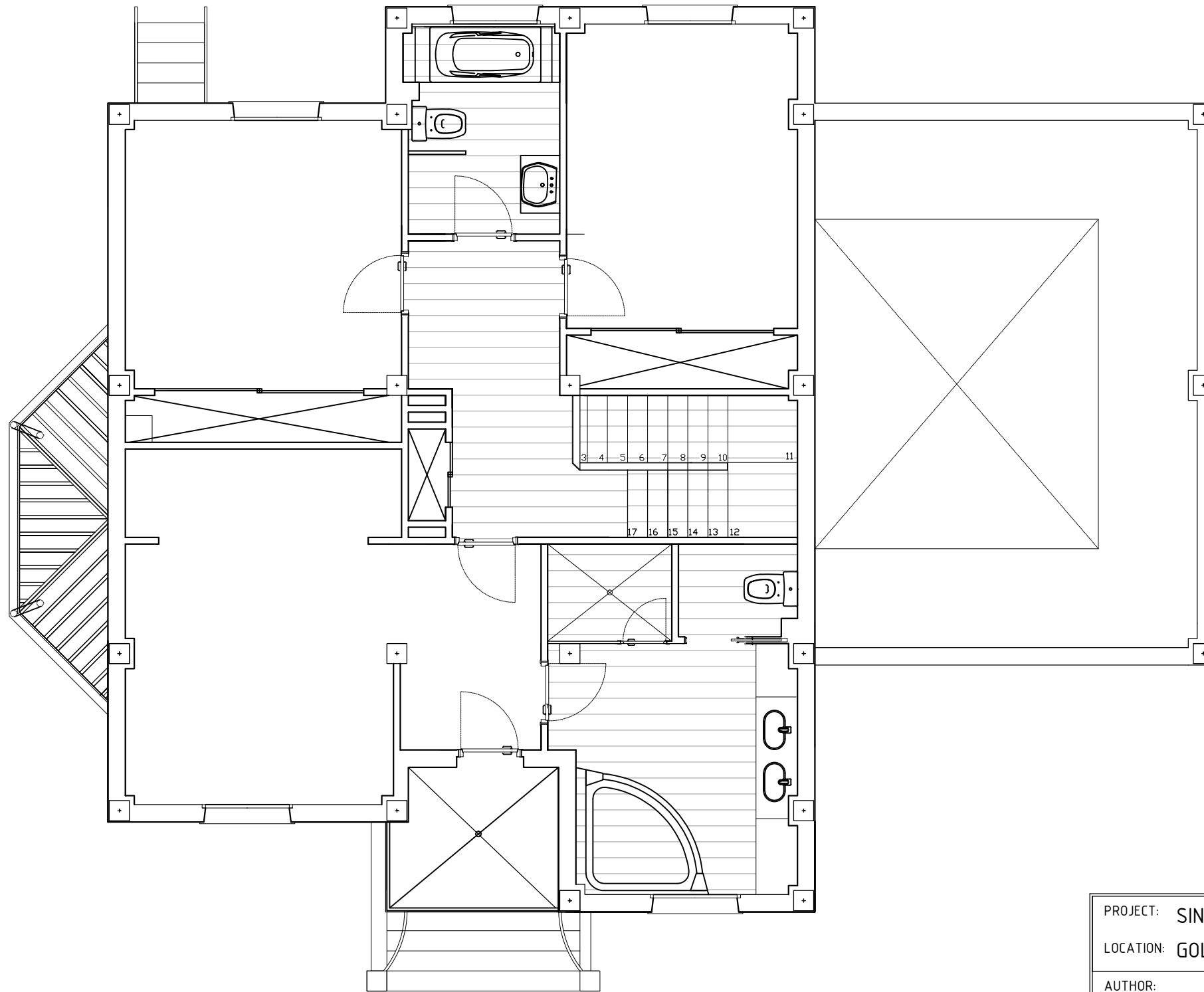
PROJECT: SINGLE FAMILY HOUSE				
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: VENTILATION: FIRST FLOOR	Nº PLANE: 48	DATE: JUNE 2011	



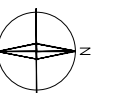

 CONTINUOUS PLASTER
 CEILING





PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				
SCALE: 1:75	PLAN NAME: CEILING: GROUND FLOOR	Nº PLANE: 49	DATE: JUNE 2011	

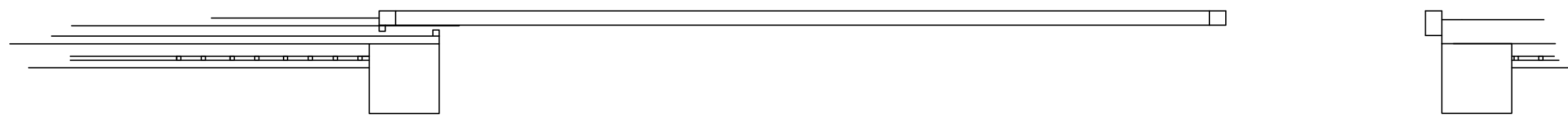
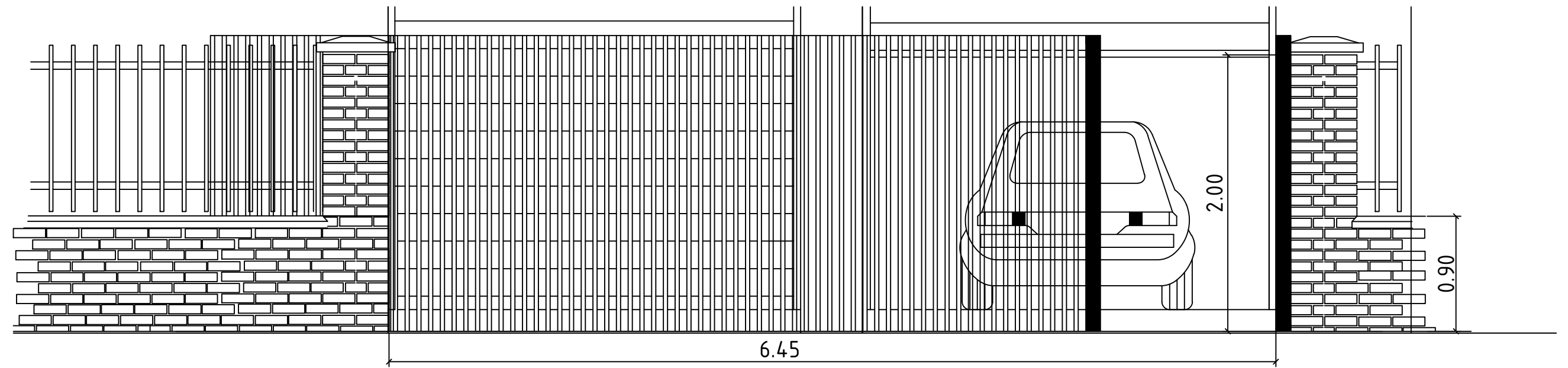



 CONTINUOUS PLASTER
 CEILING

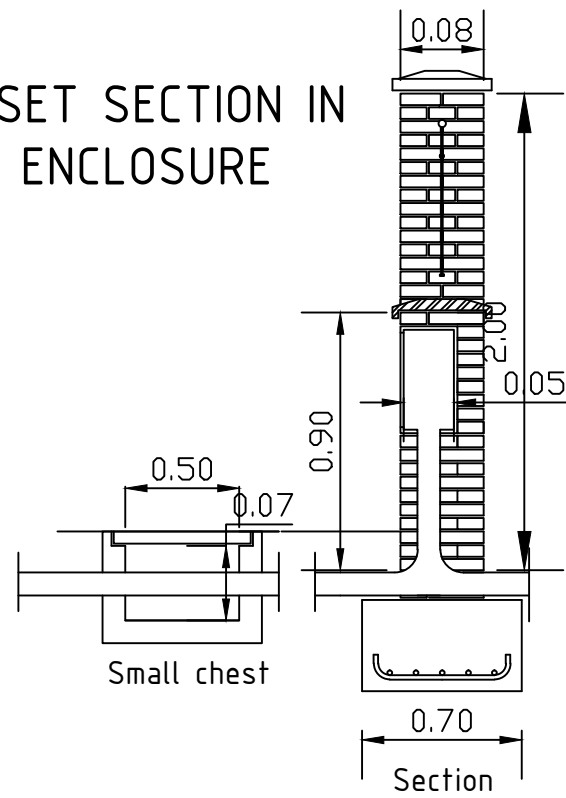


PROJECT: SINGLE FAMILY HOUSE		 ČVUT
LOCATION: GOLMAYO, SORIA, SPAIN		
AUTHOR: ANDREA PENADÉS ORTOLÁ		
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA		
SCALE: 1:75	PLAN NAME: CEILING: FIRST FLOOR	DATE: JUNE 2011
	Nº PLANE: 50	

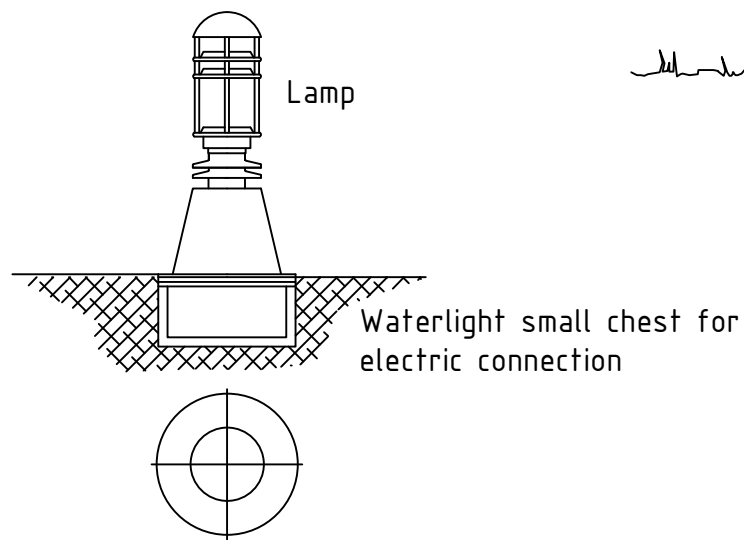
ACCESS DOOR TO THE PLOT



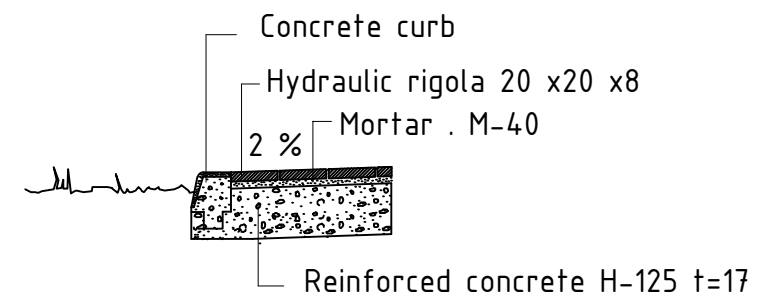
CLOSET SECTION IN THE ENCLOSURE





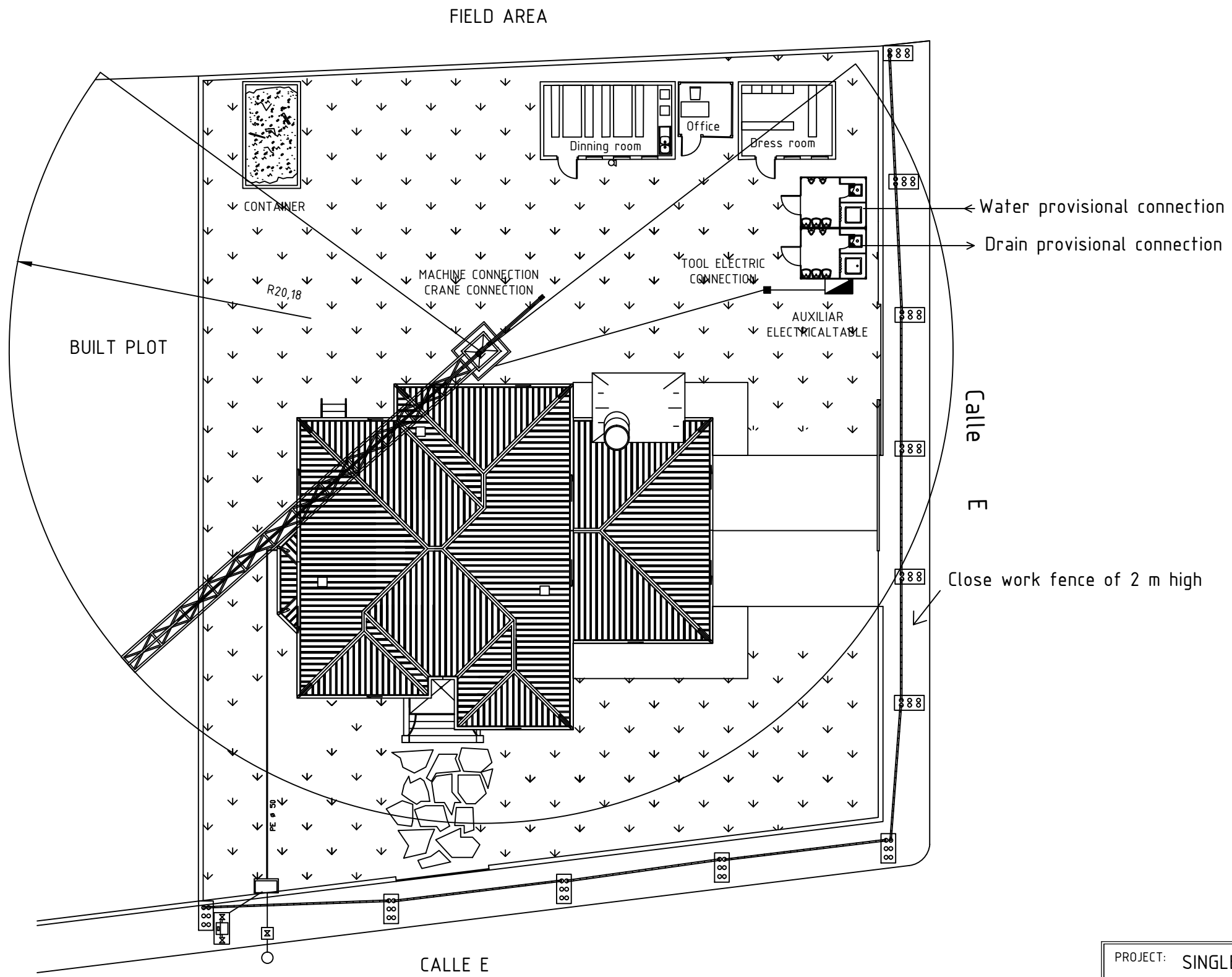
GARDEN ILLUMINATION



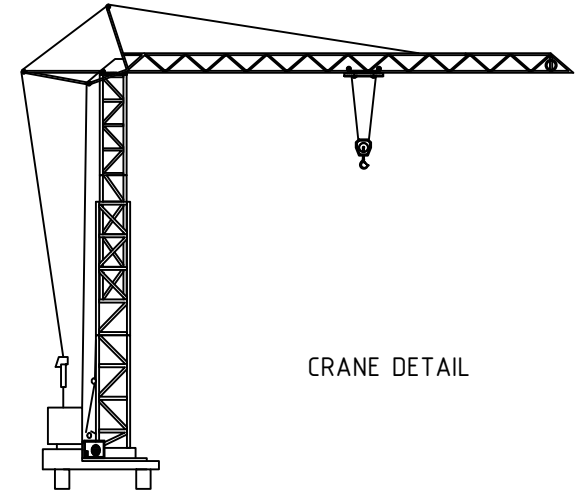
TILING DETAIL



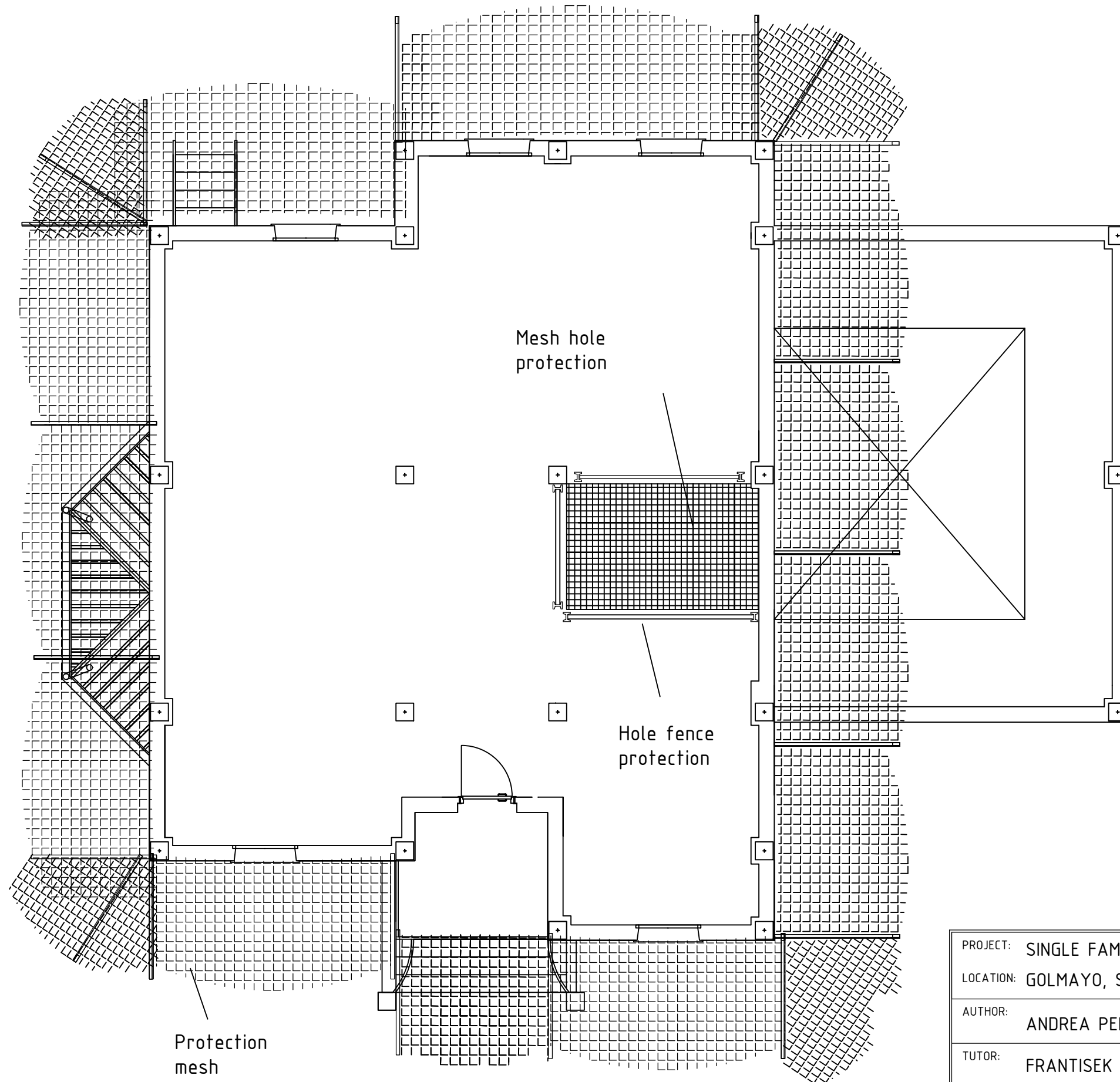
PROJECT: SINGLE FAMILY HOUSE				 CVUT
LOCATION: GOLMAYO, SORIA, SPAIN				
AUTHOR: ANDREA PENADÉS ORTOLÁ				
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA				 DATE: JUNE 2011
SCALE: 1:35	PLAN NAME: GARDENING	Nº PLANE: 51		



SIGNS	
	No entry to anyone outside the work
	No parking
	Obligatory helmet use
	Light buys



PROJECT: SINGLE FAMILY HOUSE		 	
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:200	PLAN NAME: CRANE SITE PLAN	Nº PLANE: 52	DATE: JUNE 2011



PROJECT: SINGLE FAMILY HOUSE			
LOCATION: GOLMAYO, SORIA, SPAIN			
AUTHOR: ANDREA PENADÉS ORTOLÁ			
TUTOR: FRANTISEK KULHANEK / MILAGROS IBORRA			
SCALE: 1:75	PLAN NAME: SAFETY PLAN	Nº PLANE: 53	DATE: JUNE 2011

