

STONEPLACING

**SKILLS and COMPETENCES to perform stonemasonry placing works and
REQUIRED MEANS to achieve the highest level of effectiveness**

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1. OBJECTIVES

Once the seminar is performed and conclusions have been taken, the following step will be to define skills, competences and knowledge required to perform the defined stone placing works and the required means to achieve the highest level of effectiveness: scaffolds, machines, tools, cranes, etc. Once defined, a report will be developed including all the defined skills, competences and knowledge required for placing the stone products in the building site to be used for Stone Placing European Curriculum.

2. SKILLS AND COMPETENCES TO PERFORM STONEMASONRY PLACING WORKS AND REQUIRED MEANS TO ACHIEVE THE HIGHEST LEVEL OF EFFECTIVENESS

Competence Unit 1. Basic risk prevention on the worksite for stone placing

TOTAL 60 h

Theory: 40 h

Training: 20 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF 1: Detecting possibility of risks in the workplace or related to the assigned job, facilities, conditions, etc. and carry out the correct checks with the aim of promoting and controlling the safe progress of the job, in accordance with the site health and safety plan and with the specific regulations for construction sites.

FC1.1. It is necessary for information about work conditions and design of collective protection means the following:

- Identifying person/s in charge, manager/s, supervisors, team leaders, and safety resources for each task or tasks related to among these.
- Seeking out information from these persons in charge and if needed, consulting Plan of Security and Healthy or evaluation of each workplace hazards.

FC1.2. Worksite environment and transit areas are checked visually and / or a confirmation is requested at the beginning and during tasks are carried out according to orders and Plan of Security and Healthy and checking the following:

- Worksite must be clean and free of obstacles (such as stored products, debris or other unrelated to the work done).
- In the case of terrain or neighbouring buildings that are contained, propped up or stabilized.
- Surface, on which task will be carry out, must be stable and resistant.
- Worksite are lit and ventilated adequately.
- Areas for storage of materials must be adequate and secure, and storage is checked if it is in a suitable site due to it cannot exceed load capacity calculation of area where storage is performed and, on the other hand, it cannot interfere with transit of workers and equipment.

FC1.3. Electrical supply facilities are checked visually and / or a confirmation is requested at the beginning and during tasks are carried out according to orders and Plan of Security and Healthy and checking the following:

- RCD functioning correctly.
- The electrical connections are made by regulatory pins.
- The power lines are insulated, in good condition and, as far as possible, are carriers and do not go down, especially in humid areas.

FC1.4. Jobs are suspended under adverse weather conditions, providing the ballast if the products collected or without definitive fixation, mainly those in height.

FC1.5. Is checked in accordance with the instructions, both at the start of work and periodically during the realization of the same, that the signage on the block narrows the areas of potential risk, the time remaining operational and being sufficiently visible, even at night.

FC1.6. Aids installed by foreign companies are checked in accordance with the instructions, visually and if for confirmation, verifying that:

- Correspond in type and location with those under the Health and Safety Plan of the work.
- Feature the maintenance instructions and prescriptive.
- They have in case of inspections and mandatory permits.

FC1.7. Collective means of protection installed by foreign companies are checked in accordance with the instructions, visually and if for confirmation, verifying that:

- They are prepared well in advance of the execution of the work.
- Installation is performed following the instructions of the manufacturer or installer.
- Your items have CE marking.
- Meets the specifications of the Health and Safety Plan of the work.

FC1.8. It is found that the temporary facilities for workers correspond to those provided in the Health and Safety Plan of the work.

FC 1.9. Kind of tool -pulley or sheave- or machine -forklifts and others- for lifting loads and their respective accessories -hooks, ropes, slings, slings and others-, information is requested about confirmation if weights and dimensions of the elements to be lifted is right, and if its entrenched is safe, allowing underlying transactions.

FC1.10. Contingencies that are detected in the block are resolved and if the person responsible for communicating with the speed necessary to enable monitoring and resolution, avoiding the extension of risk.

PF 2: Carry out the basic monitoring and control during the execution of the assigned job(s) with the aim of promoting and controlling the safe progress of the job, in accordance with the site health and safety plan and with the specific regulations for construction sites, checking the correct use of the equipment and the working practices.

FC2.1. Workers directly in charge, it is found that:

- Present a balanced behaviour in accordance with established guidelines, no anomalous behaviour at the time of developing the work.
- They have received specific training and protection, or have a professional qualification tailored to the tasks to be performed.

FC2.2. Occupational hazards associated with activities to develop in pits that are assigned to identify and detect if:

- Consulting those responsible for the work and services to prevent and if necessary the health and safety plan of the work.
- For jobs that do not require safety and health plan, identifying the risks of the pit in which to work, combining the usual risks in this type of work to sites, pit equipment and specific agents.

FC2.3. Situations of increased risk of work interference with other planned activities are detected and collaborating with decision makers and risk prevention services, ensuring protection to third parties within the work itself as party walls or the street.

FC2.4. It is found that the operators and crews directly in charge have been instructed on foot pit on their specific risks and preventive measures to be taken in the same, and if taught clearly and concisely.

FC2.5. Good practices are fostered by checking that operators develop their work:

- Avoiding incorrect postures observed, correcting them and instructing them on the proper posture to prevent injury.
- Avoiding unsafe acts, correcting them otherwise.

FC2.6. Personal protective equipment, it is found that meets the following requirements:

- They are certified.
- Match the Plan specified in the safety and health of the work.
- They are in good condition and within the useful life period, asking if immediate replacement.
- Workers carry them and operate them correctly, instructing them in handling otherwise.

FC2.7. Aids and collective protection, it is found that:

- Respond to the needs of the business, allowing their execution according to the instructions of manufacturer or installer and the safety and health plan of the work.
- Are used, preserved and maintained according to manufacturer's instructions or installer.
- Workers respect the integrity and functionality of them, and seeking permission to proceed with the transformation or removal of any item.
- It is revised after intensive use or solicitation.

FC2.8. Vehicles and machines is found that:

- They correspond to those under the Health and Safety Plan of the work.
- Is used and stored according to manufacturer's instructions.
- They are in good condition according to regulations.
- They are used by authorized and trained operators for this purpose.
- Use only in tasks for which they were designed.
- Machines are properly installed and maintained, keeping guards and protective covers to the operator.
- Vehicles using the road and park in provided spaces for this purpose.

FC2.9. Waste generated in the pit is shown to be dumped or accumulate in the spaces designated for this purpose in accordance with the criteria of safety and environmental protection established.

FC2.10. Contingencies identified in the pit are resolved, and if they communicate as quickly as necessary to enable monitoring and resolution, avoiding the extension of risk.

PF 3: In the case of accidents or injuries, act in a manner to minimise damage and to give first aid to the injured in an efficient, speedy and safe manner, communicating and coordinating with supervisors and the emergency services to control and manage the situation effectively.

FC3.1. Information channels for emergency actions and first aid, are identified in advance, determining the means of contact with those responsible for the work, institutions or health professionals and law enforcement, or any others that might be relevant.

FC3.2. Emergency media-kit, evacuation, fire and others are identified in advance, determining their position and checking that are specified-in number, type and location, and that are in good working order.

FC3.3. Alarm was given in accordance with the provisions, to be satisfied of the emergency or incident, warning people at risk.

FC3.4. Actions of the agent causing the risk in emergencies are limited to their signage as directed set, unless it is considered necessary to intervene to avoid greater evils.

FC3.5. The worker defines the scope of their duties during the emergency or incident, depending on the situation, acting promptly and applying basic measures established, particularly making contact with those responsible for the work, and if necessary with medical officials or civil protection.

FC3.6. Responsible orders are obeyed and executed during the emergency or incident.

FC3.7. Risks arising from the emergency or incident, when failed contact the heads-of the work, medical or civil protection as appropriate, are identified, assessing their severity and establishing both the actions to be developed in the field of its obligations as the priority thereof.

FC3.8. In case of injuries and when they have not been able to receive instructions, identify the damage to them by the type of accident, and proceeds along the following principles:

- Avoiding situations of nervousness or disorder that could aggravate the consequences of the incident.
- Avoiding the displacement of the wounded except as necessary to prevent greater evils.
- Avoiding position changes the wounded.
- Avoiding the removal of the elements embedded in deep wounds.
- Avoiding the separation of skin clothing hurt if severe burn.
- Solving the electrocutions by power disconnection and if injured by separating the insulating useful.

Professional context

Means of production

Media of detection and extinction of fires: Hardware of detection and alarm. Means extinction manuals (Extinguishers, mouths of fire equipped). Media of extinction. Media of evacuation: outputs, doors, signalling, lighting of emergency. Means for action and first aid: Personal protective equipment for emergency situations; closet or kit of first aid portable devices to deliver oxygen, eyewash, showers.

Products and results

Checking the condition of the working environment. Checking the use and maintenance of: Personal and collective protective equipment, auxiliary equipment, site facilities, machinery and plant vehicles. Respond to instructions in the case of accidents or emergencies and first aid. Monitoring and enforcement of the site health and safety plan.

Used or created information

Regulations and documentation of risk prevention. Health and safety regulations in the workplace. Standards and industrial safety regulations in different fields. Reference documents (standards, guides different organisms). Documentation related with the prevention of the company. Documentation related with the hardware and facilities existing in the company. Documentation related with the activities and processes made. Related Documentation with the produce or substances used. Documentation related to notification and log of damage to the health. Plan of security and health in the job. Risk assessments in the workplace. Verbal and written instructions than or responsible. Technical recommendations of manufacturers and machine operating manuals supplied by manufacturers.

IN CROATIAN AND SPANISH CASE: This modulus is main condition to continuing the course.

Competence Unit 2. Preparing cements, mortar, adhesives and concrete

TOTAL 30 h

Theory: 10 h

Training: 20 h

Competence Unit will be level 1 according to European criteria, and level 1 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF1: Operate with the materials and work equipment (machines, tools, supplies and personal protective equipment) necessary to achieve the required performance and quality, observing established safety measures while undertaking day weekend.

FC1.1. Machines, tools, supplies and personal protective equipment are selected are appropriate for the activity to develop.

FC1.2. Safety measures and environmental protection are adopting orders received through verbal and / or written.

FC1.3. Maintenance operations day to correctly apply the various work equipment used.

FC1.4. The waste is dumped or accumulate in the spaces designated for this purpose, and respecting the criteria of safety and environmental protection established.

PF2: Prepare plaster mortar and grout, cement and lime, both manual and mechanical means, to perform masonry and siding, following the composition and dosage set and meet deadlines and volumes required.

FC2.1. Components used are set in terms of types, sizes and shapes of aggregate, binder type and class of additives.

FC2.2. Dosage of components and the volume of water reported are those specified for conditions required consistency and resistance.

FC2.3. Machine mixes projection by dosed based on the nature of it and the environmental conditions.

FC2.4. Specifications regarding mixing, at times adjustability and environmental conditions are respected.

FC2.5. Mixture is prepared, has the proper homogeneity and responds to the quantity demanded.

FC2.6. Mixture is delivered within the specified time range respecting workability period.

PF3: Develop concrete with both manual and mechanical means to execute construction works, following the composition and dosage set and meet deadlines and volumes required.

FC3.1. Components used are set in terms of types, sizes and shapes of aggregate, binder type and class of additives.

FC3.2. Dosage of components and the volume of water reported are those specified for conditions required consistency and resistance.

FC3.3. Specifications regarding mixing, at times adjustability and environmental conditions are respected.

FC3.4. Preparing the mixture has the proper homogeneity and responds to the quantity demanded.

FC3.5. Mixture is delivered within the specified time frame respecting the period of workability.

PF4: Prepare dosage mortars, both manual and mechanical means, to perform masonry and siding, observing the manufacturer's recommendations, indicated quality conditions and standards established safety and environmental protection.

FC4.1. Products used, their quantities and their conservation status are appropriate for the features set, and storage and handling is done in the safety and health conditions indicated or recommended by the manufacturer.

FC4.2. Mortar and grout for machine-dosed projection based on the nature of it and the environmental conditions.

FC4.3. Specifications regarding mixing, wait times before mortar re-kneading, adjustability to time and environmental conditions are respected.

FC4.4. Mixture is prepared and has the response due to the volume homogeneity sued.

FC4.5. Mixture is delivered within the specified time frame respecting the period of workability.

PF5: Prepare adhesives and grouts to perform coating work, using mechanical means, following the dosage and instructions established by the manufacturer and meeting the deadlines and volumes required.

FC5.1. Products used, their quantities and their conservation status are appropriate for the features set, and storage and handling is done in the safety and health conditions indicated or recommended by the manufacturer.

FC5.2. Cementitious adhesives are mixed with the water volume set, subject to the following conditions:

- Water used must be drinking or, alternatively, with no organic matter or other foreign material.
- Dried product was poured on water always.
- Volume of water respects the ratio (liters per bag or kilograms) specified by the manufacturer.
- In case of partial or total replacement of water emulsions, respecting the replacement ratio specified by the manufacturer.
- Compliance to the manufacturer in terms of time to maturity and lifespan.

FC5.3. Adhesives and grouts reaction resins are obtained by mixing the components and using the entire contents of the respective containers.

FC5.4. Adhesives dispersion resins, sold ready for use, are used after a short mechanical stirring before use must be kept intact on the packaging closed at the end of the day to allow its use in downstream applications.

FC5.5. Specifications regarding mixing (useful, speed, stirring time and waiting time before mortar re-kneading) and environmental conditions are respected, obtaining the required consistency and wettability.

FC5.6. Prepared mixture homogeneity due presents with complete absence of lumps and air bubbles in occlusion, responding to the quantity demanded.

FC5.7. Mixture is delivered with due observance of the maturation period in the life of the product, established by the manufacturer depending on the environmental conditions.

Professional context

Means of production

Concrete, mixers and mixers. Pallets, shovels wheelbarrows, drawers, baskets, buckets, hod carriers, kneading-troughs, hod for plaster. Binders: lime, plaster and cement. Gravel. Arena. Water. Additives. Mixtures predosed. Individual protection means.

Products and results

Pasta, mortars, adhesives, materials of grouting and concretes with application: factories, coatings, sealed reinforcement bonding, waterproofing, grouting, filling, levelling, anchoring and / or injections

Used or created information

Working parties, parties of incidents, parts ordering and receiving materials. Technical recommendations of manufacturers. Verbal and written instructions of the team leader. Machine operating manuals supplied by manufacturers.

Competence Unit 3. Selection of stone

TOTAL 30 h

Competence Unit will be level 1 according to European criteria, and level 1 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF 1: Studying about main stone deposit and overview about formation, quarrying and processing natural stone.

FC1.1. Formation, chemical composition and classification.

FC1.2. Physical and chemical terminologies.

FC1.3. Stone formations during geologic history.

FC1.4. Earth's composition. Formation of stone.

FC1.5. Differences between igneous, sedimentary and metamorphic rocks.

PF 2: Studying about possibilities for the use according to the type and characteristic of stone.

FC2.1. Products and their use

FC2.2. Selection of natural stones for their required processing

FC2.3. Structure, colour, textures and drawing

FC2.4. Density and bulk density water absorption under atmospheric pressure and by capillarity, compression strength, bending strength, abrasion resistance, thermal conductivity and dilation

FC2.5. Weathering of stone: Differences between chemical, biological and physical weathering, measures to avoid weathering

PF 3: Technical characteristics of the most important natural stones to use them in the right way

FC3.1. Natural stone characteristics: hardness, resistance to weathering, structure and colour

PF 4: Reasons of building defects and damages on natural stone

FC4.1. Building damages caused by frost, temperature, earthquake, wind, rust, acid corrosion and plant growth.

Competence Unit 4. Placing pavement and stairs

TOTAL 160 h

Theory: 60 h

Training: 100 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF1: Determine the scope and organization of the work to proceed with its implementation on schedule and with the required quality from the interpretation of drawings and other technical documentation, and / or seek information or responsible superior.

FC1.1. Project documents: exploded views and / or assembly and other technical documentation available is sorted and analysed, identifying omissions and errors in the information necessary for the complete definition:

- Characteristics of the pieces to be placed: geometry, volume, weight, appearance.
- Characteristics of the support: materials - brick, concrete or other -, geometry - levelling, surface - flatness and regularity, understructures, installation, stability and condition.
- Singular points, auctions and meetings.

- Anchoring system: characteristics and attachment (for necessity of project).
- Suitable conditions for preparation of the mixture and curing of adhesive.
- Specifications of placing.

FC1.2. Defining a set of place is obtained from the various parts or elements, indicating which are serially and which are unique for a previous overall composition.

FC1.3. Representations and measures or possible mismatched uncertainties that may exist, are identified and communicated to the responsible line manager for clarification and justification.

FC1.4. Parts or areas in appropriate cases, require a detailed interpretation, are studied by means of drawings, proposing solutions to the technician.

FC1.5. Documentation for anchorages and joints, it is checked in relation to information on the geometric position, depth, material and execution order.

FC1.6. Surface finishes and capping operations that require perform "in situ" fully defined, indicating the field of performance, system, intensity and any other parameters necessary for its definitive fulfilment in work.

FC1.7. Organization of material and human resources are determined from the execution orders, trying to optimize the quality and performance in regard to:

- Organization of the work.
- Placement staff.
- Relationship with other trades.
- Medical aids are available: cranes, scaffolding and others.
- Collection, storage and distribution of the pieces to be placed.
- Distribution and sequencing of tasks in time.
- Establishment of control points: checking contents, check the benchmarks, check your work, check adjustment deadline.

PF2: Preparing the equipment and materials necessary work - machines, tools, supplies, personal protective equipment and collective aids, natural stone pieces, to achieve the required performance and quality, observing established safety measures, from the interpretation of graphical information, and written and considering the technical requirements laid.

FC2.1. Machines, tools, supplies, personal protective equipment and collective aids that are selected are appropriate for the activity to develop.

FC2.2. Security measures are taken, according to the plan specified order according to verbal and / or written.

FC2.3. Maintenance operations and day to properly apply the different teams, following instructions and in accordance with specific instructions manuals.

FC2.4. Work spaces are kept clean and free of obstacles, to ensure safety and quality in the work.

FC2.5. Leftover stone, auxiliary materials, pallets and packaging are removed and deposited in areas or containers provided for this purpose.

FC2.6. Amount and characteristics - shape, thickness and finishes, from natural stone elements received at work was found to correspond with the requirements of the technical documentation, verifying, prior to receipt at store or work placement, in perfect and communicating it to the person responsible.

FC2.7. Pieces are identified, both in the work and in the delivery notes, checking compliance with the criteria established production or using summary reports or similar measurements.

FC2.8. Download of the stone elements is done without interrupting other trades, ensuring that the material rests on strong enough areas for the collection.

PF3: Rethinking the necessary references and place the fences to guide the placement of the stone elements, reproducing the geometry defined in the plans, respecting the accepted tolerance.

FC3.1. Staking plan conforms to the geometry and tolerance defined in the project plan or sketch of the work, checking on the clean surface, with a stroke easily identifiable and sufficiently stable.

FC3.2. References and order are placed where they come from, in sufficient number, properly positioned, received, their faces chipping squared and compared to baseline.

FC3.3. Reference view or bars are positioned so that the levels are properly located sills and lintels of the voids, to ensure the proper placement of subsequent courses of stone.

FC3.4. Layout of pavement and stairs need to have the required flatness in the project or the quality plan.

PF4: Set to work natural stone items received to achieve parts with features and finishes required, using manual and mechanical means, respecting the technical specifications and safety standards and environmental protection.

FC4.1. Pre-cuts designed to protect the pieces for transport work are eliminated by mallets and chisels to get completely flat surfaces and edges without chipping.

FC4.2. Pieces are trimmed on site, until the seat flat faces with their cut edges in perfect condition.

FC4.3. Dimensional adjustment problems are solved in the work pre-placement, reviewing or compensating those areas or pieces of stone needed.

FC4.4. Placing operations required in level and corners meetings are held, to achieve consistency with the rest of the work.

FC4.5. Cuts and drills necessary to accommodate the metallic elements - stiffening rods and anchorages, are performed in the stone pieces that need it, so as to allow the accommodation of the metallic elements in a safe and durable, if it is in project.

FC4.6. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF5: Raise stone masonry factories, received dry or with mortar, walls for enclosures or resistant according to the provisions of the project and compliance with quality and safety measures established.

FC5.1. Masonry factories have to be seated on flat and parallel faces.

FC5.2. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

FC5.3. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF9: Topping the work by assistants work together treatments, adjustments and additional work in general, for a complete finish work, ensuring functional and aesthetic requirements.

FC9.1. Grouting products and mastic -pasta - are prepared and applied, as stated in the technical specifications.

FC9.2. Functional and decorative elements, ornaments, or ornaments tether anchorages are placed with enough security and with a shot to the boundary line thereof.

FC9.3. Cleaning required for the delivery of the work under the conditions, are carried out, as indicated.

FC9.4. Finish of the work is checked by visual inspection that matches specified in the project, communicating any relevant responsible anomaly.

FC9.5. Waste generated in the work setting are managed in accordance with procedures established by the company and environmental regulations.

Professional context

Means of production

Elements of drawing. Tools, tools and measuring instruments directly for stakeout. Pallets, levels, plumb bobs, squares and tape measures. Twine and look, trusses courses and material for templates.

Masonry tools: chisels, pointers, axes, pots, maces, hammers various stonework, wedges, crowbars. Spatulas and elements of grouting: pointing trowel, tool for grout, jonquils and gauges calibrated. Formwork and girders. Cutting machines: grinding, cutting wheels, polishing. Cutting tables. Transport media. Aid: scaffolding, pulleys, mounting wedges. Personal protective equipment and collective protective equipment. Gravel, grout, pavements, stairs.

Products and results

Setting out of work. Grouting and completion of the work.

Used or created information

Drawings, sketches, technical requirements, summary reports measurements. Health and Safety Study. Quality of work plan. Technical instructions of the manufacturers of the chemicals. Exploded diagrams Verbal and written instructions of the team leader. Sketch of final state. Working parties, parties of incidents, parts ordering and receiving materials.

Competence Unit 5. Placing masonry, ashlar and blockwork

TOTAL 120 h

Theory: 40 h

Training: 80 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF1: Determine the scope and organization of the work to proceed with its implementation on schedule and with the required quality from the interpretation of drawings and other technical documentation, and / or seek information or responsible superior.

FC1.1. Project documents: exploded views and / or assembly and other technical documentation available is sorted and analysed, identifying omissions and errors in the information necessary for the complete definition:

- Characteristics of the pieces to be placed: geometry, volume, weight, appearance.
- Characteristics of the support: materials - brick, concrete or other -, geometry - leveling, surface - flatness and regularity, stability and condition.
- Singular points, auctions and meetings.
- Anchoring system: characteristics and attachment.
- Suitable conditions for preparation of the mixture and curing of adhesive.
- Specifications of placing.

FC1.2. Defining a set of place is obtained from the various parts or elements, indicating which are serially and which are unique for a previous overall composition.

FC1.3. Representations and measures or possible mismatched uncertainties that may exist, are identified and communicated to the responsible line manager for clarification and justification.

FC1.4. Parts or areas in appropriate cases, require a detailed interpretation, are studied by means of drawings, proposing solutions to the technician.

FC1.5. Documentation for anchorages and joints, it is checked in relation to information on the geometric position, depth, material and execution order.

FC1.6. Surface finishes and capping operations that require perform "in situ" fully defined, indicating the field of performance, system, intensity and any other parameters necessary for its definitive fulfilment in work.

FC1.7. Organization of material and human resources are determined from the execution orders, trying to optimize the quality and performance in regard to:

- Organization of the work.
- Placement staff.
- Relationship with other trades.
- Medical aids are available: cranes, scaffolding and others.
- Collection, storage and distribution of the pieces to be placed.
- Distribution and sequencing of tasks in time.
- Establishment of control points: checking contents, check the benchmarks, check your work, check adjustment deadline.

PF2: Preparing the equipment and materials necessary work - machines, tools, supplies, personal protective equipment and collective aids, natural stone pieces, to achieve the required performance and quality, observing established safety measures, from the interpretation of graphical information, and written and considering the technical requirements laid.

FC2.1. Machines, tools, supplies, personal protective equipment and collective aids that are selected are appropriate for the activity to develop.

FC2.2. Security measures are taken, according to the plan specified order according to verbal and / or written.

FC2.3. Maintenance operations and day to properly apply the different teams, following instructions and in accordance with specific instructions manuals.

FC2.4. Work spaces are kept clean and free of obstacles, to ensure safety and quality in the work.

FC2.5. Leftover stone, auxiliary materials, pallets and packaging are removed and deposited in areas or containers provided for this purpose.

FC2.6. Amount and characteristics - shape, thickness and finishes, from natural stone elements received at work was found to correspond with the requirements of the technical documentation, verifying, prior to receipt at store or work placement, in perfect and communicating it to the person responsible.

FC2.7. Pieces are identified, both in the work and in the delivery notes, checking compliance with the criteria established production or using summary reports or similar measurements.

FC2.8. Download of the stone elements is done without interrupting other trades, ensuring that the material rests on strong enough areas for the collection.

PF3: Rethinking the necessary references and place the fences to guide the placement of the stone elements, reproducing the geometry defined in the plans, respecting the accepted tolerance.

FC3.1. Staking plan conforms to the geometry and tolerance defined in the project plan or sketch of the work, checking on the clean surface, with a stroke easily identifiable and sufficiently stable.

FC3.2. References and order are placed where they come from, in sufficient number, properly positioned, received, their faces chipping squared and compared to baseline.

FC3.3. Reference view or bars are positioned so that the levels are properly located sills and lintels of the voids, to ensure the proper placement of subsequent courses of stone.

FC3.4. Strings are laid between brands of view corresponding to the same row, and have the required flatness in the project or the quality plan.

FC3.5. Auction - moldings, sills, lintels, jambs, and others - whose placement precedes the lifting of the factories are located properly, and are plumb, level and braced.

PF4: Set to work natural stone items received to achieve parts with features and finishes required, using manual and mechanical means, respecting the technical specifications and safety standards and environmental protection.

FC4.1. Pre-cuts designed to protect the blockwork for transport work are eliminated by mallets and chisels to get completely flat surfaces and edges without chipping.

FC4.2. Pieces are trimmed on site, until the seat flat faces with their cut edges in perfect condition.

FC4.3. Dimensional adjustment problems are solved in the work pre-placement, reviewing or compensating those areas or pieces of stone needed.

FC4.4. Tillage operations required in the walls and corners meetings are held, to achieve consistency with the rest of the work.

FC4.5. Right pieces to coat the edges of the slabs are chosen, to achieve an even finish with the rest of the facing.

FC4.6. Cuts and drills necessary to accommodate the metallic elements - stiffening rods and anchorages, are performed in the stone pieces that need it, so as to allow the accommodation of the metallic elements in a safe and durable.

FC4.7. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF5: Raise stone masonry factories, received dry or with mortar, walls for enclosures or resistant according to the provisions of the project and compliance with quality and safety measures established.

FC5.1. Ordinary masonry factories rise so that present the largest masonry regularly in the corners and jambs of the openings being in alignment and plumb, coining and filling the gaps between masonry rubble, with the lock and keys necessary.

FC5.2. Masonry factories concerted and careada occur that presents all the faces of masonry veneer and worked together, being seated on flat and parallel faces.

FC5.3. Rough ashlar factories or irregular masonry spun with rough stones rise of substantially prismatic, and so that no more than three edges coincide in a single vertex and the distance between the vertical joints of two successive rows, lest lower than the specified length.

FC5.4. Duplex factories that meet defined quality control are performed, so that the latch and present necessary keys and finish required on each face.

FC5.5. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF6: Contents placing masonry and blockwork, for the formation of load-bearing structural elements, cladding, and unique items and auction, using dry bonding systems, with anchorages and / or mortar or other adhesives, respecting the technical specifications and safety standards and environmental protection.

FC6.1. Transverse reference necessary to start the wall are placed at set distances, level and plumb, properly, to ensure an adequate basis for the remaining elements.

FC6.2. Stone pieces are placed respecting the criteria of alignment, flatness and levelness.

FC6.3. Pieces are placed with the latch and the rigging set, ensuring stability and aesthetic finish either bone, mortar and / or anchorages.

FC6.4. Window and door openings are joined by right constructive solutions, as well as those made on the other parts of work already built or going to be executed, such as partitions or slabs.

FC6.5 essential unforeseen anchorages practiced manufacturing on site, as a solution to specific problems of placement, using resins and corresponding metal elements.

FC6.6. Provisional elements of lift and support the stone pieces are removed without altering the layout of the built.

FC6.7. Elements drainage and ventilation of the chamber are arranged, if necessary, set in places, to guarantee the absence of humidity in the interior of the building.

FC6.8. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF7: Contents arches, lintels, cornices, columns and other masonry unique shots for voids, cloths and trim of the front defined in the project while ensuring the quality and safety set.

FC7.1. Trusses are made respecting the manner set out in the plan or sketch of work and with sufficient strength to support the weight of the item.

FC7.2. Formwork and construction girders of the arches and adequately support lintels, hollow inside, and the height indicated.

FC7.3. Stone arch segments are properly aligned along the axis of his song with the help of cintrel.

FC7.4. Voussoired lintel having an odd number of pieces of stone, is properly aligned according to the axis of the opening and seals spacing specified.

FC7.5. Imposts, moldings and cornices are made respecting the geometry defined in the plane or the sketch of the work.

FC7.6. Sills, copings and steps are performed brickwork so reproducing the arrangement and inclination of the parts specified in the plan or sketch of the work and present a correct finish sores.

FC7.7. Waste generated in the work setting are managed in accordance with procedures established by the company and current legislation.

PF8: Contents arches, lintels, cornices, columns and other unique auctions in masonry and blockwork for the holes, and trim panels of the facade defined in the project while ensuring the quality and safety set.

FC8.1. Joint drills between pieces of natural stone and the work performed at the points provided by project.

FC8.2. Stiffening metal elements are placed in the holes, applying resins or corresponding threaded elements to ensure the stability of the posterior parts.

FC8.3. Parts are placed in a way that are completely vertical, flat and stable.

FC8.4. Necessary temporary reinforcement are made depending on the parts and the environment in which they are found.

FC8.5. Union joints are finished within the stated tolerances, to avoid discontinuities.

PF9: Topping the work by assistants work together treatments, adjustments and additional work in general, for a complete finish work, ensuring functional and aesthetic requirements.

FC9.1. Grouting products and mastic -pasta - are prepared and applied, as stated in the technical specifications.

FC9.2. Functional and decorative elements, such as vents, or ornaments tether anchorages are placed with enough security and with a shot to the boundary line thereof.

FC9.3. Cleaning required for the delivery of the work under the conditions, are carried out, as indicated.

FC9.4. Finish of the work is checked by visual inspection that matches specified in the project, communicating any relevant responsible anomaly.

FC9.5. Waste generated in the work setting are managed in accordance with procedures established by the company and environmental regulations.

Professional context

Means of production

Elements of drawing. Tools, tools and measuring instruments directly for stakeout. Pallets, levels, plumb bobs, squares and tape measures. Twine and look, trusses courses and material for templates. Masonry tools: chisels, pointers, axes, pots, maces, hammers various stonework, wedges, crowbars. Spatulas and elements of grouting: pointing trowel, tool for grout, jonquils and gauges calibrated.

Formwork and girders. Cutting machines: grinding, cutting wheels, polishing. Cutting tables. Lift and transport media. Aid: scaffolding, pulleys, mounting wedges. Personal protective equipment and collective. Stone wool, gravel, masonry and rough ashlar. Ashlar. Blockwork.

Products and results

Setting out of work. Resistant elements and enclosures of masonry brickwork. Resistant elements and enclosures of masonry brickwork and blockwork. Grouting and completion of the work.

Used or created information

Drawings, sketches, technical requirements, summary reports measurements. Health and Safety Study. Quality of work plan. Technical instructions of the manufacturers of the chemicals. Exploded diagrams (arches, vousoired lintels and panels and finials singular). Verbal and written instructions of the team leader. Sketch of final state. Working parties, parties of incidents, parts ordering and receiving materials.

Competence Unit 6. Placing mortar cladding

TOTAL 120 h

Theory: 40 h

Training: 80 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF 1: Check and conditioning work spaces, materials and equipment required, within their sphere of competence, to achieve the required performance and quality tiling work and plated, complying with health and safety measures in place.

CR 1.1. The machines, tools and supplies available checks that are appropriate to the activities to be undertaken during the execution of tiled and plated, selecting those from the necessary criteria of quality, safety and health, and performance optimization.

CR 1.2. Personal protective equipment for the execution of tiled and clad, are selected according to the indications of higher risk or responsibility and concrete pit, checking that have CE marking, to suit the needs of the business and that is are in good condition and within the period of life, asking if his replacement.

CR 1.3. The health and safety measures for the execution of tiled and clad, are collected and confirmed, requesting instructions-verbal and written-and confirming your understanding if necessary consult the manufacturer's documentation and equipment safety sheets products.

CR 1.4. The aids and collective protection, installed by others, necessary for conducting paint decorative finishes, it checks that are available in the necessary locations to fulfil their role and are operating, detecting defects in installation and maintenance, and avoiding modify without authorization.

CR 1.5. Contingencies identified in the pit are resolved within its purview, and if the upper or communicate responsible as quickly as necessary to enable monitoring and resolution, especially those that compromise the health and safety of himself or others worked, particularly in the case of horizontal or vertical holes without collective protection installed.

CR 1.6. Ladders are used check that the support points are stable, resistant and non-slip, setting the locking mechanisms to avoid opening or moving parts, and avoiding both heavy loads / bulky and difficult tasks that support and decrease the stability of the worker.

CR 1.7. Scaffolds and work towers with reduced height are installed in compliance with established security conditions in width, stability, immobilization of the base, separation wall which work is been working and need for perimeter, meeting in any case regulatory requirements for work equipment for temporary work at height.

CR 1.8. Waste disposal is effected by depositing the waste in containers suitable for each type of waste.

CR 1.9. Maintenance operations to be assigned day that apply to the various work equipment used, following the instructions received and the manufacturer's instructions.

PF 2: Perform preflight support to proceed with the execution of tiled and plated with the required quality checking the status, physical characteristics and geometry of both the support and of the adjacent elements, equipment, and other woodwork.

CR 2.1. The conditions reached in the previous treatments, stability, cleanliness, sanitized, cohesiveness, texture adjustment and media-checks or for confirmation of which are sufficient for the coating run, and in particular the uprights have the mechanical strength sufficient to withstand the weight of natural stone tiles.

CR 2.2. Medium's capacity to withstand the weight of the parts of the coating is checked for confirmation or, especially in the case of veneers, without making excessive deformations.

CR 2.3. Supports protection installations, carpentry or other stand-and environment-cloths, adjacent-elements and equipment, it is found that allows the development of the work without affecting them.

CR 2.4. Absorption capacity / suction holder is evaluated by water jetting, observing the disappearance of the glow time and ending the need to treat wet-support, sealing surface.

CR 2.5. The substrate temperature is proven to be adequate, and the humidity of the positioning surface in the case of thin-layer technique or media hygrometer is checked by ensuring that adhesives can be used.

CR 2.6. Stand Geometric control is performed on all its breadth, considering the following aspects:

- The length and width of the rectangular cloths, detecting different sizes on opposite sides, not mutually parallel edges or possibly diverted from the horizontal or vertical.
- The perpendicularity of intersections among surfaces, detecting when it's necessary to square by screeds.
- The flatness and plumb vertical construction elements, detecting the need to fix by screed according to the bonding materials and techniques applied.

CR 2.7. Geometric control accompanying the support elements is performed considering the following aspects:

- The implementation and location of preinstallations, detecting the absence of pre-execution preinstallations coating or executed off-site or protruding surface.
- The uniformity and width of woodworking supplies and its plumb, level and perpendicular, sensing the need to relocate the supplies.
- The location, level and plumb if fixed equipment and furniture-Especially showers, tubs and tubs or saunas cabins-, sensing the need to reinstall.
- The alignment of the existing structural movement joints.

CR 2.8. Structural movement joints treated by cleaning and filling them across its length and width with the specified compressible materials or placing prefabricated joints that have been specified.

CR 2.9. Movement joints are located perimeter and intermediate, confirming his superior position or responsibility, or detected and installed the screed prior treatments, and if fixing materialize compressible material or backer boards are prefabricated been specified.

2.10 CR. The environmental conditions and the temperature of the support, existing at the time of execution of the coating during drying or later, they are found suitable, especially outdoors.

PF 3: Perform preflight mixtures applied-pastes, mortars, adhesives and grouting-material, parts replaced and the pit conditions to proceed with the execution of tiled and plated with the required quality checking the state and the physical characteristics and geometry tiles and slabs.

CR 3.1. The composition of the mixtures were checked or asked for confirmation that is provided, and where appropriate, consistent and appropriate coatings to execute.

CR 3.2. The dosage of mixtures and in particular the water / binder is checked or asked for confirmation that is appropriate to the type of coating to be executed, the support on which it is applied and environmental conditions of humidity and temperature.

CR 3.3. The mortar and grout, adhesives and grouts prepared, it is found that exhibit the characteristics required fresh, cohesive look, respond to defendant and delivered volume within the specified timeframe without exceeded the maximum time of use or life.

CR 3.4. Correspondence of models defendants served with checks, reading codes on packages forth depending on the quality of the material-series, model, commercial quality, tone, and format appropriate manufacturing-caliber, making sure the stockpiles are correct in number, making every special parts control.

CR 3.5. The quality, integrity and uniformity of the tiles and plates were checked, preparing dry panels with samples from batches collected, controlling:

- Appearance of the pieces-colour tones, textures, and other decorative motifs-detecting inhomogeneities and assessing the need to mix the pieces before placement.
- Directionality of textures and decorations, assessing the need for placement as a certain direction.
- Surface quality regarding marked commercial quality, by detecting that the actual quality of the parts is less than that indicated by its code.
- The dimensional characteristics of the pieces, detecting deviations-Perpendicularity, length, width, straightness and flatness-edge above tolerances, particularly for a certain type of gear, assessing the need for replacement, or in the case of natural stone treatment in workshop.

PF 4: Rethinking the placement of the parts to proceed to its placement, adjusting to the design expectations and conditions of the supports.

CR 4.1. Rethinking fits plans and drawings or as instructed, adjusting the spaces provided and taking into account the areas occupied by equipment or fixed furniture, and other coatings treated by -Paints, laminates and others.

CR 4.2. Stakeout criteria wonder and if necessary establishing, where appropriate seek the approval of the proposals by the client, specifying:

- Address of placement of the pieces, and set direction rectangular pieces of long and short sides.
- Rig placement, considering not only the forms but also the decorative effects of the pieces-stripes, patterns, colours, textures, and other pieces of equal-in design.
- Combination of different-design pieces in chess, spikes or other.
- Treatment of encounters-frames, baseboards, friezes, borders, mouldings, and other treatment, and changes in plane-corners, edges, and others.
- Position of the cuts.

CR 4.3. Stakeout criteria fit as possible to achieve the following purposes:

- Optimization of the material, avoiding having to make cuts of narrow strips, or in the bevel placement of small triangles.

- Performance optimization in the placement, preferably opting to minimize distributions and gear cutting operations.
- Adaptation to the geometry of the support, avoiding gear defects evidencing squareness and plumb alignment thereof or in encounters with the components, equipment and fixed furniture.
- Hiding cuts, trying to locate where they have less visibility or will be covered later, or other kitchen furniture.
- Symmetrical configurations.

CR 4.4. The necessary cuts are determined-in corners, edges of openings, contours of fixed furniture or equipment and for other reasons, seeking:

- Continuity corners decorative effects.
- Avoid narrow strips in standard and special parts.
- The optimization of the material.

CR 4.5. The holes needed are determined, especially considering the position and size of outlets, toilets, pipes and other reasons.

CR 4.6. The position of the holes required on the horizontal edges of the plates of natural stone veneers is determined, considering how to place the hooks on the side edges in encounters with floors and ceilings and the back plate corners.

CR 4.7. The specific marking staking cuts and drills necessary parts to serve as template for the execution thereof.

PF 5: Placing stone on walls, and generally not trafficable construction elements with stone tiles and adhesive material using as cement or cement and lime mixed, to get the project under coatings, meeting quality measures and security established health.

CR 5.1. The tile presenting high water absorption wetted to prevent mortar absorb water.

CR 5.2. The anticipated final level of the facing is respected by adjusting the thickness of mixing and placement available through ruler to serve as references.

CR 5.3. The pieces are placed arranging a mortar bed on the back of the piece with the material after pressing enough that it is completely covered.

CR 5.4. The work is undertaken in a logical order placement unless otherwise specified:

- Before placing the flooring and / or the final level of the same.
- Addressing the contours first unless otherwise indicated, conforming to the lines on the vertical gaps frames, avoiding encircling proceed.
- Advancing in horizontal courses.
- Optimizing performance.

CR 5.5. Previously established Rethinking all respected in their assessments for placement of both parts of the base and special.

CR 5.6. The separation of the joints between pieces provided is respected using prefabricated separators when so required, and if present joints orthogonal parts righteousness, parallelism, levelling and plumbing required.

CR 5.7. Profiles and trims for corners-in case-matching, fixed and plumb while the cloth comes in that corner.

CR 5.8. Structural movement joints, perimeter and if intermediate, sealed properly, ensuring the thickness uniformity and adherence of the sealant to the sides of the pieces.

CR 5.9. Final cloths exhibit the properties of flatness and absence of eyebrows respecting tolerances and ensures the cleaning of the joints between the parts and the surface of the tiles before the hardening of mixtures of grip.

5.10 CR. The health and safety measures for the execution of tiled and clad, are met in accordance with the criteria established for the prevention of occupational hazards and specific instructions for the work that is running.

PF 6: tiling walls and, in general, non-walkable constructive elements, with stones tiles, and thin-layer using adhesives and a half, to obtain the coatings under project, fulfilling the quality measures, and established health and safety.

CR 6.1. The adhesive is placed uniformly on the substrate with the thickness schedule, and avoiding using notched trowels apply spot or gobs.

CR 6.2. The pieces are placed pressing and rubbing until crushing gluing grooves, using the double-spread technique unless otherwise indicated in the following circumstances:

- Large format pieces.
- Demanding-facades, swimming pools, waterproofing, high chemical resistance and others.

CR 6.3. The work is undertaken in a logical order placement unless otherwise specified:

- Before placing the flooring and / or the final level of the same.
- Addressing the contours first unless otherwise indicated, conforming to the lines on the vertical gaps frames, avoiding encircling proceed.
- Advancing in horizontal courses.
- Optimizing performance.

CR 6.4. Previously established Rethinking all respected in their assessments for placement of both parts of the base and special.

CR 6.5. Respect the separation joints between pieces planned, using prefabricated separators when so required, and in particular:

- Orthogonal joints present rectitude parts, parallelism, levelling and plumbing required.

CR 6.6. Profiles and trims for corners-in case-matching, fixed and plumb while the cloth comes in that corner.

CR 6.7. Structural movement joints, perimeter and if intermediate, sealed properly, ensuring the thickness uniformity and adherence of the sealant to the sidewalls.

CR 6.8. Final cloths having the properties of flatness and absence of eyebrows respecting tolerances, ensures the cleaning of the joints between the parts and the surface of the tiles before the hardening of the adhesive.

CR 6.9. The health and safety measures for the execution of tiled and clad, are met in accordance with the criteria established for the prevention of occupational hazards and specific instructions for the work that is running.

PF 7: Making tiled with all types of tile adhesive attached directly or thin-average special coatings on substrates or isolates prefabricated average compressibility interior supports on previously waterproofed waterproofing sheets and liquid-compliance measures quality and established safety and health.

CR 7.1. The applications work on prefabricated supports, insulation or waterproofing treatments using sheets or liquid waterproofing, are undertaken having confirmed the compatibility of the surfaces are tiled bracket adhesive material, assessing the need for treatment adherence placing a first contact layer incorporating fibber mesh.

CR 7.2. Work on applications are undertaken on isolates having confirmed the complete coverage of the support by the insulating material, including elements associated or interposed as pipes or pillars, and proper sealing of joints, resulting in a continuous insulation surface without thermal bridges or acoustic.

CR 7.3. The treatments work on waterproofing applications using sheets or liquid waterproofing-in particular-baths and showers, are undertaken having checked the performance of waterproofing for skilled workers, or undertaking that waterproofing.

CR 7.4. The running sheet waterproofing by using adhesives compatible with both the support material as the sheets, following the instructions of the manufacturer of waterproofing sheets and safety data sheets and adhesives, coating the entire support and seal the joint blade.

CR 7.5. The liquid waterproofing run on substrates without cracks or fissures, using materials compatible with both the substrate and the adhesive tiling, respecting the technical and security of the waterproofing, and coating the entire performance and support with the recommended dilutions.

CR 7.6. Changes flat deliveries preinstalaciones placing bands are treated and elastic sleeves, in the case of liquid waterproofing banding and sleeves is performed after the first layer being covered and protected by the side of the second layer waterproofing.

CR 7.7. The tiling is executed and delivered as normal on the tiles walkable elements, the panels exhibit the properties of final flatness and absence of eyebrows respecting the stated tolerances, and ensures the cleanliness of the joints between parts and the surface of the tiles before curing the adhesive.

CR 7.8. Insulating materials are arranged and fixed to the wall bracket, when necessary and not executed placement specialized operators, similar to that followed in the execution of special floating screeds thereon.

CR 7.9. The health and safety measures for the execution of tiled and clad, are met in accordance with the criteria established for the prevention of occupational hazards and specific instructions for the work that is running.

PF 8: Investing walls and generally constructive elements with non-walkable pieces of natural stone, using traditional plating techniques using mixed-grip holding more anchor-liners for planned, meeting quality measures and health and safety established.

CR 8.1. The anchoring system is specified or selected project:

- Prefabricated stainless steel anchors.
- Non-corrosive wires shaped to form staple.
- Thickness of the plates sufficient to support attachment holes.
- Clamping profiles overhangs edging non-corrosive material.

CR 8.2. Plates presenting high water absorption wetted to prevent mortar absorb water, sprinkle cement (it depends of the case).

CR 8.3. The final level of the facing is provided by adjusting the thickness respects mixture disposed in the substructure of the plates.

CR 8.4. The anchors on rethinking the factory, respecting the previously established stake in all its provisions, and drilled the bracket with the shape and depth to allow the accommodation of the belt anchorages and received mixtures of grip.

CR 8.5. The work is undertaken in a logical order placement.

- Before placing the flooring and / or the final level of the same.
- Setting a first guide batten and supporting the first course on it.
- Advancing horizontal rows supported on the lower course where resistant, ensuring the time required for tightening the clamping or adhesive mixture.

CR 8.6. Forming operations covering parts-cutting, drilling, grooving, chamfering, textured-checked and order for workshop is preferably carried out under controlled conditions, reserving the site work to final adjustment specific details.

CR 8.7. Joints between orthogonal films have been obtained, present righteousness, parallelism, levelling and plumbing required.

CR 8.8. Structural movement joints if any, properly sealed, ensuring uniformity of thickness of the sealant and its adhesion to the sides of the tiles.

CR 8.9. Final checks cloths having the properties of flatness and absence of eyebrows respecting the established tolerances.

CR 8.10. The health and safety measures for the execution of tiled and clad, are met in accordance with the criteria established for the prevention of occupational hazards and specific instructions for the work that is running.

Professional context

Means of production

Measuring tapes, tape measures, plumb bobs, hand levels, water and lasers, rulers / view and view brackets, shims, brackets, wire for tightening and boot dial. Trowels, notched trowels or combs, trowels, flat brush, pointing trowel. Drawers, baskets, buckets, kneading-trough, troughs. Rubber mallets, pliers. Cups. Crosses and wedges for tile separation. Standoffs natural stone. Different types of stone tiles and other materials. Tiles and slabs of natural stone, whether or not agglomerated with resins. Mortars. Cementitious adhesives, dispersed resin and reactive resin. Grouts and borated to plated. Waterproofing liquid preparations are sleeves for plumbing and plane change bands. Fiberglass mesh. Prefabricated movement joints, corners and fixed equipment deliveries. Products for movement joint filler. Putty silicone, polyurethane and polyurethane / tar. Tape. Personal protective equipment, collective protection means, auxiliary, temporary facilities.

Products and results

Tiles placed with cement mortar / lime. Tiles adhesive placed even flashed and natural stone. Tiling on supports prefabricated insulation and waterproofing treatments average compressibility. Clad placed by traditional methods mixed (more anchor adhesion). Media Waterproofing indoors. Compliance measures occupational safety and quality specifications.

Used or created information

Plans and drawings of work related linings. Safety data sheets and product. Working parties, parties of incidents, parts ordering and receiving materials. Manuals and commercial catalogs of materials and products. Operation manuals and maintenance of machines and equipment. Tile Installation Manuals modular rigid. Verbal and written instructions from the team leader or charge higher. Safety and health plan at work. Risk assessments in the workplace. Signaling work.

Competence Unit 7. Assembling ventilated facades

TOTAL 200 h

Theory: 50 h

Training: 150 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF1: Determine the scope of the work to proceed with its implementation on schedule and with the required quality, interpreting blueprints, drawings cutting / modulation and assembly, work plans and other technical documentation generated on site, or seek information superior or responsible, identifying the elements of the façade system ventilated-bracket-anchorage-coating-and specifications laid, and checking the characteristics of the support.

FC1.1. Project documents and / or drawings of plant / modulation and mounting available, are ordered and reviewed, detecting omissions and errors in the information necessary for their work is fully defined, and / or deriving it from the top or responsible:

- Geometry of the facade.

- Singular points, auctions and meetings: start, hollow crown, facilities.
- Coating materials.
- Type and anchorage subsystem elements: point-anchoring systems or non-adjustable point and grid-fixing systems to the structure or the inner enclosure, brackets, vertical elements and horizontal if the substructure, joints / couplings, special parts.
- Registrability or coating.
- Insulation Materials: type, attachment to the support.
- Conditions suitable for the preparation of the mixture and curing of adhesives.
- Specifications of placing substructure and anchorages-point adjustable and non-adjustable, joining pieces, implementing singular elements, insulation placement.

FC1.2. Characteristics and properties of the support are identified based on the drawings and / or specifications and other technical documentation applicable, or possibly doing a spot examination, specifying:

- Support Elements: Forged edges, bearing walls, metal or others.
- Nature of the materials, plants, concrete, metal or other.
- Stability.
- Geometry-forged alignment, levelling, surface evenness and regularity.
- Compatibility anchorage subsystem with the support.

FC1.3. Geometric characteristics of the facade, support, insulation, voids, facilities, anchoring subsystem elements, pieces of siding and decorative motifs are identified from the project drawings, exploded views and assembly and other applicable technical documentation.

FC1.4. Qualities of the anchorage subsystem elements, and parts coating-material aspect and others-are determined from the plans, contract technical requirements of the project and other applicable technical documentation.

FC1.5. Organization of material and human resources are determined from the execution orders, trying to optimize the quality and performance in regard to:

- The organization of work-faces to be coated, order placement and other parts.
- Staff placement.
- Relationship with other trades.
- Aids available: cranes, scaffolding and others.
- The collection, storage and distribution subsystem elements and spare anchorage and insulation coating.
- Distribution and sequencing of tasks in time.
- Establishment of control points: checking contents, check the benchmarks, checking the work performed, check the schedule adjustment.

FC1.6. Yields, terms and interactions with other trades are specified for each unit of work, to inform from person responsible.

PF2: Operate correctly with necessary working equipment-machinery, tools, supplies, personal protective equipment and collective-aids to achieve the required performance and quality, observing established safety measures while undertaking day weekend.

FC2.1. Machines, tools, supplies, personal protective equipment and aids selected are appropriate for the activity to develop.

FC2.2. Security measures are indicated in the manufacturer's documentation for the machines, tools, supplies, personal protective equipment and aids, as well as orders received through verbal and / or written.

FC2.3. Maintenance operations and to use time properly apply different working equipment and machines used.

FC2.4. Evacuation of waste-plastic strips, house waste-is made by depositing the waste in appropriate containers for each type of waste.

PF3: Condition the gashes on ventilated facades assembly to improve performance and prevent risks, points to areas of collection and optimizing routes.

FC3.1. Workspace is shown to be clean and free of obstacles.

FC3.2. Collective protection measures is shown to be arranged with the advance of the execution of work, allow development and meet the specifications of the security plan.

FC3.3. The cuts is shown to be adequately lit and arranged in the vicinity of material storage areas appropriate, safe and easy supply.

FC3.4. Signage on the block is found that narrows the areas of potential risk, the time remaining operational and being sufficiently visible, even at night.

FC3.5. Poor environmental conditions for the implementation of safe-mount exposure to wind, rain, lightning and other-are detected, suggesting stop work in risk areas and alerting the upper or responsible.

FC3.6. Contingencies detected or transmitted on the chopping block are resolved, or communicate to superiors or responsible as quickly as necessary to enable monitoring and resolution, especially jeopardizing the safety of workers, and the stability and safety of the scaffolding or formwork: -ties defective, loose or improperly assembled parts, lack of parts, heavy machinery maneuvers near the scaffold or shoring, jobs near power lines, work at higher levels and others.

PF4: Rethinking references for subsequent positioning subsystem elements anchorage-fasteners, anchorages point and / or substructure of the coating, and the singular elements of the facade, window openings, moldings, sills, eaves and other-, based on previous references set by the competent technician and in line with the graphic documentation and indications of physicians.

FC4.1. The starting point or origin of measures for placing anchorage subsystem identifies the facade to rethink successive elements, from the drawings and / or verbal instructions given in works by technician.

FC4.2. The main lines of reference-level-lead and are positioned with the final depth from the starting point, considering the deviations between the front plane and the plane of the support and the tolerances so that serve to redefine the various elements mounting system.

FC4.3. Construction lines for measuring drag and position of the various subsystem elements of the facade anchorage are positioned perpendicular to the plane defined by facade main lines, performing the necessary physical marks on the support, and compensating for errors resulting from drag measurement.

FC4.4. The parking spot laser markers, and other references to anchorage stake subsystem is positioned and fixed relative to its origin and axes, and are checked periodically, ensuring that no position has been altered to prevent errors drag.

FC4.5. Proper alignment of the location points is checked after setting out, according to the established design, with special attention in the case of subsystems unions anchorage / clip viewed.

FC4.6. Respects Rethinking support structural joints and coating themselves, saying the board or by providing a solution that allows movement.

FC4.7. Complementary elements for the constructive solution of singular points-together, bibs, finials, sockets and others are staked in accordance with the plans, the work done and superior specifications or responsible.

PF5: Fix and install the anchorage sub-substructure and anchorages adjustable and non-adjustable point-to factory support, concrete or the like to proceed with the placement of the pieces of the coating, ensuring stability and strength, respecting previous stakeout and fulfilling the security and quality requirements.

FC5.1. Elements of anchoring subsystem checks that meet the provisions of the project and that any amendment is always approved by the competent technical and system manufacturer.

FC5.2. Adequacy of the support-brick, concrete, metal or other-for the type of anchorage to use subsystem is verified by checking its flatness, resistance and current status.

FC5.3. Fasteners anchorage subsystem support directly receive either the structure or the walls, taking into account avoiding references redesigned and measure the depth directly to the support, following the techniques of system instructions.

FC5.4. Fixing the factory anchorage point anchorages is properly built, meeting the mechanical condition and position, checking explicitly.

FC5.5. Anchorages are checked regularly seen are resting, depending on the design set.

FC5.6. Strength and quality of fixations made to support heavy coatings for ensuring that it is within the minimum / maximum limits required by torque wrenches or the like in the previously defined control points.

FC5.7. Cutting the anchoring elements, the sub-profiles, is performed, when necessary, ensuring maximum utilization of the material.

FC5.8. Installation of the substructure on the brackets already placed, perform, plumbing and levelling the elements according to the nature and order of the system, following the instructions techniques of the system, and in particular respecting the measures to absorb expansion of the grid.

FC5.9. Assembly of the substructure is found to have been carried out correctly and that the knots are resistant prior to placement of the coating.

PF6: Place and secure the insulation panels to complete the thermal resistance of the enclosure, ensuring the absence of thermal bridges and camera functionality and meeting the security and quality requirements.

FC6.1. Insulation panels put these prove the type provided in material, thickness, bonding system at the edges and other specifications.

FC6.2. Stand conditions and environmental conditions, it is checked or asked for confirmation to competent technicians that are appropriate for placement of insulation for moisture, stability and others.

FC6.3. Insulation panels are fixed to the mill stand, concrete or the like, according to design specifications, to ensure stability and minimize the existence of thermal bridges, preventing the deterioration of the panels and filling the perforations undergone.

FC6.4. The panels are placed so that they are linked together, with continuity and without warping, and in the case of dovetail joints or grand, properly attached, and where appropriate, sealed by system.

FC6.5. Insulation boards are protected from moisture before, during and after installation, to prevent spoilage by storing them in appropriate locations before placement and by covering with waterproof materials subsequent to their placement.

FC6.6. Cuts are protected against moisture during the interruptions by covering with impermeable materials.

FC6.7. Waste generated during placement of insulation, are managed in accordance with procedures established by the company and environmental regulations.

PR7: Linking / attaching parts coating to sub-substructure anchorage and anchoring point-adjustable and non-adjustable, to complete the facade, adjusting its position until the intended design in the project and meeting the safety and quality measures established .

FC7.1. Useful section of the air-chamber between the insulation and the extrados of the lining-it is found that is specified by verifying that the projected insulation is cured and is the final level.

FC7.2. Coating parts are visually inspected, ensuring that there are no defects in the material that discourage its use in construction, and that the product range is placed according to the project specifications.

FC7.3. The correspondence of the models served with the defendants is found in products labelled, reading consigned packaging codes depending on the quality of the material-series, model, commercial quality, tone, format and if manufacturing gauge-, verifying that the stockpiles are correct in number, and with extreme control trims.

FC7.4. Coating the pieces is checked containing sufficient holes or slots for positioning directly or indirectly through a coupling piece connecting elements / hook, in accordance with the anchoring system, and gaps that allow movements absorb expansions or without subjecting the parts to any unforeseen effort.

FC7.5. Trim pieces are placed following a sequential order, as the plane of the facade and the anchoring system, left to right or from bottom to top or others buying that flatness defects.

FC7.6. Proportions of components and the setting times for chemical bonding of the anchorages are observed, following the manufacturer's instructions, thus avoiding loading the components until.

FC7.7 Anchorages are resistant. Coating the pieces are placed so that are supported independently of the other supports, each piece no other or others, is supported by and spaced around the perimeter of adjacent components and / or various other structural elements of the anchorage, using if withdrawing prefabricated separators once placed the piece.

FC7.8. Pieces are arranged with the necessary clearances for regarding the own expansion joints / hooks, having plastic caps or fillers into latches needed to prevent ingress of water and to avoid contact between the coating material and the anchorage.

FC7.9. The joints of the pieces of the coating to anchorage subsystem checks that have been carried out correctly and are resistant.

FC7.10. Dimensional deviations of the parts-orthogonality, length, width, flatness and edge state-machined or to invalidate the positioning of the workpiece are detected, evaluating the need for replacement, or in the case of natural or artificial stone treatment in workshop.

PF8: Make singular elements to resolve the discontinuities of the façade -Holes, baseboards, edges and others, ensuring the functionality of the façade Camera-ventilation, absence of thermal bridges, waterproofing, and fulfilling the security and quality requirements.

FC8.1. Singular elements to place in meetings, auctions and / or expect from windows, doors, arches and columns are identified in the plane and checked on site, noting its position on the front and required application, as applicable corner, baseboard, trim , framing, finishing checking-singing prescribed pilaster, miter, straight edge, round, pigeon breast for each.

FC8.2. Various elements are received singular place on serving anchorage subsystem included in project specifications.

FC8.3. Parts are placed so that they are fully stable in the plane-vertical, horizontal, or slant-, as established in the project.

FC8.4. The joints between materials of different physical-mechanical-natural stone, ceramics, metal, glass, wood, plastic and others are resolved by using the solution prescribed in the project, materials, methods and systems, together, discontinuities, fillings, break of bridges.

FC8.5. Elements that ensure tightness against ingress of water, and, if specified to prevent the spread of fire, are identified, checked for installation on site.

FC8.6. Complementary elements for the constructive solution of singular points-together, bibs, finials, sockets and others are placed where appropriate and in accordance with the specifications of the superior responsible.

PF9: Form coating parts-cutting, drilling, grooving, chamfering and others, for integration into the facade, getting the dimensions and finishes required and complying with safety and quality measures established.

FC9.1. Machining that in exceptional cases be required to work, are conducted under the authorization and supervision by the competent technician.

FC9.2. Coating parts are identified form on the plane and in work, checking its quality, consistency, size and texture, to ensure project solution.

FC9.3. Taking action and making templates or models is made contrasting planes and real space work to ensure correctness in the works in terms of measures.

FC9.4. Sites or holes to accommodate the connections / couplings in the coating are determined, taking the dimensions of the anchoring elements such as diameter, length, thickness of an inter alia for incorporation in machining and eventually achieve the correct behaviour between and anchoring the liner part.

FC9.5. Forming operations covering parts-cutting, drilling, grooving, chamfering, textured-are performed using machines and tools tailored to the peculiarities of the material-stone, ceramic, composites, wood derivatives, cement and others, and compliance with established security measures.

FC9.6. Preinstallation elements necessary to apply coating parts are positioned correctly in their flatness,-vertical, horizontal and tilt-, noting the pressure applied mechanically or by the use of chemicals in their quotas.

FC9.7. Waste generated during placement of insulation, are managed in accordance with procedures established by the company and environmental regulations.

PF10: Perform additional work-cleaning, sealants, gaskets and other treatment-for a complete finishing of the work, ensuring functional and aesthetic requirements.

FC10.1. Parts or areas to be treated are identified on the plane and in the work, relating to the various treatments prescribed for each.

FC10.2. Cleaning products are prepared using as contained in the technical requirements and apply at the right intensity or predetermined.

FC10.3. Sealing cords are found to have the necessary throat depth and to ensure functionality and durability.

FC10.4. Application of the products is carried out using established security measures, both individual and collective character.

FC10.5. Functional and decorative elements (such as vents, tether anchorages or ornaments) are positioned and with adequate security and with a shot according to the environment thereof.

FC10.6. Top section of the facade crowning the top and bottom joints checked enabling natural circulation of the air flow inside the camera.

FC10.7. Final check of the work is done in an orderly and systematic, verifying that there are no points or areas without established trim level.

FC10.8. Waste generated during placement of insulation, are managed in accordance with procedures established by the company and environmental regulations.

PF11: Run disassembly and / or reassembly, to carry out necessary repairs or modifications, ensuring the integrity of parts and preventing the collapse of which are damaged, fulfilling the security and quality requirements.

FC11.1. Parts to be replaced previously identified and work plans, as well as the anchoring system with which they have been placed, checking the degree of conservation, possible cracks and flaws that could affect removal.

FC11.2. Possible damage not covered "a priori", reported to relevant responsible for making appropriate decisions.

FC11.3. Parts to be replaced are handled and removed according to their weight, eccentricity, state or fragility, using the means of support, lifting and transportation provided, so as not to affect your state and in any case not to produce new lesions-chipped, mismatches, in the same or adjoining elements.

FC11.4. Parts are stacked safely for both transportation and for storage, and where applicable, are corresponding landfilled.

FC11.5. New parts are placed keeping the flatness and the plumbing necessary, considering the space between joints and their mechanical safety.

FC11.6. Measures necessary for the individual pieces are collected unanticipated, considering all the features required to manufacture anchorage-area, meeting space, and other surface appearance.

Professional context

Means of production

Tools, tools and measuring instruments directly for stakeout. Levels, plumb bobs, squares, tapes, cords and view. Laser Equipment stakeout. Items marked. Tools, Masonry: blades, picks, trowels, flat brush and others. Tools and masonry tools: chisels, pointers, picks, crowbars, pots, hammers, rubber hammers, hammers diverse, wedges, toothed stone chisel, bush-hammer. Forming equipment: grinders, cutting discs, grinding, drilling, grooving. Cordless drills. -Metal, bits. Flat and pipe wrenches. Torque wrenches. Specific elements anchoring subsystem: fasteners, brackets, metal profiles, screws, self drilling screws, anchorages point adjustable or not joins / hooks, plastic caps. Mortars and anchoring adhesives. Sealants seal guns and chemical anchorage. Spatulas, pointing trowel, shims, spacers and shims. Cups. Pieces of natural stone cladding, ceramic, wood derivatives, metal and other materials. Insulation panels. Auction items: corner, grids, bibs and more. Means of support, lifting and transport. Pallet truck manuals. Aids. Temporary facilities. Personal protective equipment and collective.

Products and results

Developments ventilated resetting the facade. Insulation panels placed. Anchorage System-coating placed on site. Items placed shot. Grouting and completion of the work.

Used or created information

Project Technical Documentation: Drawings, specifications, and measurements related parties ventilated facades. Technical Documentation facade system. Book Building. Technical documentation generated during the work: drawings and assembly drawings, exploded views / modulation, prescriptions and other technical documentation, summary reports measurements. Sketch and / or final status report. Health and Safety Plan and Quality Plan work: ventilated facades related parties. Technical Instructions subsystem manufacturer anchorages. Verbal and written instructions for the project management, team leader and foremen. Working parties, parties of incidents, parts ordering and receiving materials.

Competence Unit 8. Placing stone singular elements

TOTAL 120 h

Theory: 40 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF 1: Determine the scope and organization of the work to proceed with its implementation on schedule and with the required quality from the interpretation of drawings and other technical documentation, and / or seek information from the person in charge or supervisor.

FC1.1. Project documents: exploded views and / or assembly and other technical documentation available is sorted and analysed, identifying omissions and errors in the information necessary for the complete definition:

- Characteristics of pieces to be placed: geometry, volume, weight, appearance.
- Characteristics of support: materials (brick, concrete or other), geometry (levelling, surface, flatness and regularity), stability and state of preservation.
- Singular points, finishing and intersections.
- Anchorage system: characteristics and method of attachment.
- Suitable conditions for preparation of mixture and hardening of adhesive.
- Specifications for placing.

FC1.2. Define the set of elements to be placed, it is obtained from various parts or elements, and indicating which one are mass-produced or singular to achieve a previous and overall composition.

FC1.3. Non in agreement representations and measures or lack of definition are identified and communicated to the person in charge for clarification and justification.

FC1.4. Parts or areas, that in appropriate cases require a detailed interpretation, are studied by means of drawings which will propose solutions for technician/s.

FC1.5. Documentation for anchorages and joints, it is checked in relation to information on geometric position, depth, material and execution order.

FC1.6. Surface finishes and capping operations that require perform "in situ" are defined fully, indicating the field of performance, system, intensity and any other parameters necessary for its definitive fulfilment in work.

FC1.7. Organization of material and human resources are determined from the implementation orders, trying to optimize quality and performance in regard to:

- Organization of the work.
- Staff for placement of stone.
- Relationship with other professions.
- Auxiliary equipment used: cranes, scaffolding and others.
- Stockpile, arrangement and storage of the pieces to be placed.
- Distribution and sequencing of tasks over time.
- Establishment of control points: checking products, benchmarks, made work and deadline.

PF 2: Prepare necessary working equipment, machines, tools, equipment, individual and collective protection equipment and auxiliary equipment to achieve required efficiency and quality, and carrying out established standards of safety measures.

FC2.1. Selected machines, tools, equipment, individual protection equipment and auxiliary equipment are appropriated for the activity to do, and to ensure completion of work effectively and safely.

FC2.2. Security measures are indicated in the manufacturer's documentation for machines, tools, equipment, individual protection equipment and auxiliary equipment as well as received through spoken and / or written order given, to ensure the completion of work safely.

FC2.3. Collective protection measures are provided in sufficient time to carrying out work, and comply with specifications of the security plan, to ensure the completion of work safely.

FC2.4. Work places are kept clean and free of obstacles, to ensure the completion of work effectively and safely.

FC2.5. Waste are dumped or accumulated in places or containers for this purpose, in accordance with the criteria of safety and established environmental protection.

PF 3: Make stockpile and move of parts and sets of natural stone, to achieve required performance and quality, carrying out established standards of safety measures.

FC3.1. Load capacity and hoisting of machines used are checked if they are enough resistance to transport work-pieces (entire, parts or assembly).

FC3.2. Slings, clamps and all necessary equipment on anchorages for handling of natural stone pieces are checked if they are enough resistance to transport work-pieces (entire, parts or assembly).

FC3.3. Load capacity calculation of area where storage is performed, it is checked if it can support weight of the pieces to stock-pile.

FC3.4. Stockpile is made respecting original packaging as far as possible, and it must be located as close as possible to area of use and obey occupational risk prevention standards, in order to carry out tasks effectively and safely.

FC3.5. Move work-pieces without original packaging it is done by taking all necessary precautions to ensure stability and immobility of load in means of transport.

FC3.6. In the case of laying pieces without original packaging, protection elements for the pieces are arranged at support points to avoid breaking of edges and corners.

FC3.7. Polished materials without original packaging must be placed among polished faces or serrated faces, so these must never be placed among different kinds of surfaces.

PF 4: Surveying various elements or areas for further placement, based on previous references set by a qualified technician and following project specifications.

FC4.1. Reference lines for deep, level and alignment must fit in the reference origin of construction surveying.

FC4.2. Placement points of different elements are pinpointed and must be check if these points are a problem with the rest of work site.

FC4.3. Verification of reference lines are made to ensure that location is the same, to avoid measurement errors.

FC4.4. Measures are checked when pieces are placed and also before definitive attachment, among all pieces and compared to the reference lines.

FC4.5. Break lines or slope change are surveyed and drawing in the work site –level, plumb line, alignment, location, etc.–.

FC4.6. External references to elements or natural stone compositions are pinpointed properly and are stable to avoid alteration.

FC4.7. When pieces are being placed, location of surveying marks is checking and in agreement with final composition and functionality.

FC4.8. Possible deviations between site work and detailed project are corrected or shared out to be appreciated as little as possible at the time for placing the pieces.

FP 5: Perform cuts at the specified size, machining and shaping, to obtain singular elements that must achieve the necessary requirements for placing on site, and using machines, tools and suitable equipment and, on the other hand following the technical specifications and / or construction surveying and complying with safety standards and standards for environmental protection.

FC5.1. Singular elements to be machined (such as countertops, turning parts, carvings, engravings, mosaics, etc.) and tasks to be identified (such as cuts, drill holes, grooving, milling, polishing,

honing, sanding, texturing, antique, casting), these are established according to the technical specifications and / or construction surveying.

FC5.2. Machines and / or tools to be used (such as cutting machines, cutting wire, hydro-cutting, pantographs, lathes, table shears, laser, sandblasting, bevelling, edge polishing, drill, etc.) are established based on work for cutting or shaping (carving, drilling, sandblasting, engraving, turning, etc.).

FC5.3. Specific tools for machining (such as bits, cutters, discs, wire, shot, hand-tools) are selected according to task to do, are checked status tools periodically and are replaced if necessary.

FC5.4. Certain pieces will be cut at a specified size to fit and to change the direction for solid pieces (such as balustrades, stairs, etc.), and according to specified characteristics in the project (colour, shape, size, texture and materials).

FC5.5. Tasks to be carried out are plotting or survey on the stone, and using natural scales templates in order to fit at work site.

FC5.6. Layouts using templates, laser, measurement and testing tools, are adjust in the implementation planes or sketches, so these draws will be in accordance with reality of work site.

FC5.7. Elements to be installed (such as sinks, toilets, faucets, letters, lighting elements, ornaments, etc.) are checked in accordance with specified adjustment measures.

FC5.8. Arrangement of decorative elements (for instance, curvature, angles, sizes, shapes) is fitted as specified by technical and graphic documentation.

FC5.9. Environmental protection measures are looked after, in particularly on the areas of dust emission and noise production, water discharges and cooling.

FP 6: Placing pieces by means of adherents and / or metal anchorages to achieve the requested global solution, based on the technical information provided or orders of person in charge, and resolving intersections with other construction elements.

FC6.1. Anchorages, adhesives and other materials, which used to make connections between all parts, are specified in the construction's technical documentation.

FC6.2. Placement areas on other stone pieces (for example, drill holes, grooves or slots or similar...) are checked that size and position fit in according to plan and depending on the joint system.

FC6.3. Support is checked that comply with specifications for resistance, flatness and state of preservation, communicating any deficiencies that may exist.

FC6.4. Pieces are covered before placing during the entire construction, because of impacts or adverse weather conditions.

FC6.5. Adherents are prepared and applied in accordance with setting time, as indicated in the manufacturer technical documentation for each product, to ensure correct and safe placement of singular elements of natural stone.

FC6.6. If it is necessary to place anchorages according to technical documentation, so these anchorages will be attached to support and other stone pieces, paying attention to technical instructions of its anchorage system and to guarantee a correct and safe placement of singular elements of natural stone.

FC6.7. Joints for union are cleaned and, where relevant, are concealed by colours and textures similar to stone pieces, and in case it if necessary to waterproof them, it should check continuity of this waterproof coating.

FC6.8. Intersection areas among other materials and/or implement of construction unit will be carried out according to person in charge or technical documentation, and special care should be taken on joint for union and finishing of these intersection areas.

FC6.9. Mechanical stability of elements or groups of elements are checked upon joint tasks are brought to completion.

FP 7: Prepare and implement finishing tasks of singular elements to complete the construction, ensuring functional and aesthetic requirements, according to the instructions and the current rules of occupational safety and environmental protection in force.

FC7.1. Finishing tasks for each singular element (such as adjustment of pieces, calibration, assembly, grouting, sealing works, stained, varnished, polished, texturing tops, cleaning, chemical treatment on surface application for stone products, etc.) are carried out according to technical specifications of project or received instructions.

FC7.2. Materials are used for finishing (for example, silicones, resins, mortars for grout, colouring, glues, decorative items, cleaning products, etc.), as well as application and dosage, are specified in technical specifications to make construction with the required quality.

FC7.3. Security measures implemented in singular elements (for instance, fastening of elements, voids, anti-slip, etc.) are carried out according to construction documents.

FC7.4. Finishing quality is defined by detailed inspection, using quality control tools (such as tracer, glossmeter / lux meter, colorimeter, caliper, gauge, etc.).

FC7.5. Used packaging and other waste products are deposited in appropriate containers to recycle or to transport controlled dumping site or recycled.

FC7.6. Singular elements are delivered without debris or residue from bonding materials, as well as marks or indications for placement, labels, etc.

Professional context

Means of production

Elements for drawing.

Equipment, tools and measuring instruments for surveys: levels, plumb bobs, set-squares, measuring tapes, cords and sights.

Cutting machines, drills, manual lathes, sectioning machines.

Polishing, chamfering, edge polishing, sandblasters, bench grinders.

Tools for stonework and carving (pneumatic and manual).

Cutting plotters, vinyl, abrasive.

Resins, coloring, chemical products.

Tray for immersion of chemical dissolutions.

Lifting, handling and transport equipment.

Suckers, lifting clamps.

Compressors. Vacuum Equipment.

Auxiliary equipment: scaffolding, tackles, assembly wedges.

Temporary facilities. Personal protective equipment and collective.

Products and results

Singular elements (countertops for bathroom, kitchen or furniture, bathroom tops, tables, fireplaces, balusters, solid stone stairs, columns, sculptures, fountains, gargoyles, shields, figures, logos, prints, murals, mosaics, puzzles cutting, street furniture: benches, bollards, planters; funerary art: gravestones, chapels and mausoleums) are placed in worksite with the required finishing level.

Used or created information

Plans, drawings and other technical documentation. Templates. Work instructions oral or written. Technical instruction manuals for equipment and machinery. Product catalogs. Standards of occupational risk prevention. Quality standards of products. Delivery notes. Job order and incident form.

Competence Unit 9. Monitoring and good practice for environmental protection standards

TOTAL 60 h

Theory: 40 h

Training: 20 h

Competence Unit will be level 3 according to European criteria, and level 2 according to curricula from Spain.

Professional fulfilment (PF) and fulfilment criteria (FC)

PF 1: Understand how a sustainable building is orientated and designed.

FC1.1. Given detailed plans and /or model:

- Analyse if a project can be labelled as "environmentally sustainable".
- Propose some improvements to an imperfect or flawed design.

FC1.2. Building materials are identified. Their advantages and drawbacks can be explained to a non-trained professional or client.

FC1.3. Building products are identified. Their advantages and drawbacks can be explained to a non-trained professional or client.

FC1.3. Insulating products are identified. Their advantages and drawbacks can be explained to a non-trained professional or client.

PF 2: Calculate the thermal performance of a small building / house.

FC2.1. The vocabulary and coefficients used in thermal performance calculation are known and used accordingly.

FC2.2. The flaws of an existing building or project are identified, the improvements suggested are relevant.

FC2.3. The diagnosis software is used efficiently, additional improvements are added or removed to attain the desired result.

PF 3: Implement an insulation system on a stone wall.

FC3.1. A relevant system is chosen for the type of support and the nature of the stone available.

FC3.2. The system is placed accordingly to technical documentations or good practices.

FC3.3. Safety gear or collective measures are used accordingly.