

Skills map

Skills needs identification for restoration of traditional architecture in Europe

Intellectual Output 2



Co-funded by the
Erasmus+ Programme
of the European Union

CONSTRUCTION
INHERITANCE 



ERASMUS+ Programme
Key Action 2 | Call 2015
Strategic Partnership for VET (KA202)

Project Code:
2015-1-ES01-KA202-016031

Partnership:

- Fundación Laboral de la Construcción (Spain),
- Comité de Concertation et de Coordination de l'Apprentissage du Bâtiment et des Travaux Publics (France),
- Bildungszentren des Baugewerbes e.V. (Germany),
- Ente Nazionale per la Formazione e L'Addestramento Professionale Nell'Edilizia di Puglia (Italy),
- Centre IFAPME Liège-Huy-Waremme (Belgium),
- Centro de Formação Profissional da Indústria da Construção Civil e Obras Públicas do Sul (Portugal).

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Index

INTEGRATED CONSERVATION	1
SKILLS MAP METHODOLOGY	2
SCOPE DEFINITION	2
DESCRIPTORS OF KNOWLEDGE, SKILLS AND COMPETENCES	5
KSC FINAL PERIMETER	7
SKILLS FOR TRADITIONAL ARCHITECTURE IN EUROPE	12
STONE CUTTING / CUTTING OF CUSTOMIZED PIECES	12
CONSTRUCTION OF THE ROWS (COURSES) OF BRICK WALLING / RIGGING AND CONSTRUCTION TO REQUIRED SPECIFICATIONS	14
CONSTRUCTION OF FALSE WORK/SHORING SCAFFOLDS	16
CARVING AND CONFIGURATION OF STRUCTURAL LINTELS	18
SETTING OF THE ARCH OR VAULT ELEMENTS, ANCHORS AND ENCOUNTERS TO OTHER CONSTRUCTION ELEMENTS	20
RECONSTRUCTION OF STAIRCASES AND OTHER SPECIAL ELEMENTS: CONFIGURATION OF ITS STRUCTURAL ELEMENTS	22
PLACEMENT OF STRAPS AND COMPONENTS OF THE GABLE STRUCTURE	24
PLACEMENT OF TILES AND PLATE COVERING	26
EXECUTION OF FINISHES AND ROOF APRONS / FINISHING EXECUTIONS AND PARAPET WALLS	28
RESOLUTION OF ROOF ENCOUNTERS	30
INSTALLATION AND REPAIRS OF GUTTERING, DOWNPIPES AND SYSTEM COMPONENTS	32
EXECUTION OF JOINTS, ENCOUNTERS AND ANCHORS TO OTHER CONSTRUCTION ELEMENTS IN SANITATION INSTALLATIONS	34
FINISHING OF ENCOUNTERS OF ROOF PLUMBING WITH OTHER BUILDING ELEMENTS	36
TREATMENT OF THE SEAMS AND JOINTS IN FACADES AND INTERIOR ARCHITECTURE	38
CONFIGURATION OF FINISHES AND DECORATIVE ELEMENTS OF MASONRY ELEMENTS (STONE, BRICK)	40
RESTORATION AND PLACEMENT OF OTHER FINISHES OF DECORATIVE ELEMENTS	42
DECORATIVE PAINTING: SELECTION OF PIGMENTS AND APPLICATION OF COLOUR, LACQUERS AND VARNISHES	44
ELABORATION AND APPLICATION OF TEMPLATES AND MOULDS FOR DECORATIVE FITTINGS	46
ANNEX 1- KSC MAPS IN PARTNER'S MOTHER TONGUES	48
SCHNEIDEN VON GESTEIN / SCHNEIDEN PASSENDER STÜCKE	49
KONSTRUKTION VON REIHEN ON MAUEREN / MONTAGE UND BAU IM RAHMEN BESTIMMTER BESONDERHEITEN	51
COSTRUZIONE DI PONTEGGI/IMPALCATURE DI SOSTEGNO	53
SCULPTURE ET CONFIGURATION DES LINTEAUX STRUCTURELS	55
EINBAU/VERARBEITUNG VON BÖGEN UND GEWÖLBELEMENTEN, MAUERANKERN UND VERBINDUNGEN GEMÄß PLAN	57
RICOSTRUZIONE DI SCALE E DI ALTRI ELEMENTI SPECIALI: CONFIGURAZIONE DEI LORO ELEMENTI STRUTTURALI	59
POSE DES COMPOSANTS DE LA STRUCTURE D'UN PIGNON DE TOIT	62
COLOCACIÓN DE TEJAS Y OTROS MATERIALES DE COBERTURA	64
EJECUCIÓN DE REMATES Y PETOS	66
RESOLUCIÓN DE ENCUENTROS DE CUBIERTAS	68
INSTALAÇÃO E REPARAÇÃO DE CALEIRAS, TUBOS DE QUEDA E OUTROS COMPONENTES DAS REDES	71
EXECUÇÃO DE JUNTAS, LIGAÇÕES DE TUBAGENS E FIXAÇÃO COM OUTROS ELEMENTOS DE CONSTRUÇÃO	73

ENCAMINHAMENTO DE ÁGUAS PLUVIAIS – ACABAMENTOS / COMPATIBILIZAÇÃO ENTRE ELEMENTOS DE CONSTRUÇÃO	75
TRAITEMENT DES JOINTS DE FAÇADES ET D’ARCHITECTURE INTERIEURE	78
DISPOSIZIONE DELLE FINITURE E DEGLI ELEMENTI DECORATIVI IN MURATURA	80
RESTORATION AND PLACEMENT OF OTHER FINISHES OF DECORATIVE ELEMENTS.....	82
DECORATIVE PAINTING: SELECTION OF PIGMENTS AND APPLICATION OF COLOUR, LACQUERS AND VARNISHES.....	84
ELABORATION AND APPLICATION OF TEMPLATES AND MOULDS FOR DECORATIVE FITTINGS.....	86
ANNEX 2 – KSC MATRIX.....	88
ANNEX 3 – EUROPEAN SKILLS, COMPETENCES, QUALIFICATIONS AND OCCUPATION (ESCO) TAXONOMY	96

Skills needed for Restoration

Transfer of know-how from senior construction workers to young ones

Integrated conservation

This project adopts and proclaims the principles of the **European Charter of the Architectural Heritage**, drawn up by the Council of Europe Committee on Monuments and Sites, which considers that *“the European architectural heritage consists not only of our most important monuments: it also includes the groups of lesser buildings in our old towns and characteristic villages in their natural or manmade settings”*.

For many years, only major monuments were protected and restored. Today it is recognized that entire groups of buildings, even if they do not include any example of outstanding merit, may have an atmosphere that gives them the quality of works of art, welding different periods and styles into a harmonious whole. In so called “integrated conservation” such buildings should also be preserved.

Integrated conservation is achieved by **the application of sensitive restoration techniques** and the correct choice of appropriate functions. In the course of history, the hearts of towns and sometimes villages have been left to deteriorate and have turned into areas of substandard housing. Because of this, conservation must be one of the first considerations in all urban and regional planning.

Integrated conservation depends on legal, administrative, financial and technical support. From a technical perspective, **our heritage is threatened by obsolescence or disappearance of key trades**. There are today too few technicians of all kinds and skilled craftsmen to respond to all the needs of restoration of old buildings in Europe. It is necessary to develop training facilities and increase prospects of employment for the relevant technical and manual skills. Traditional crafts should be fostered rather than allowed to die out.

Therefore, restoration presents an urgent challenge to companies, workers, leaders and institutions working in the field of Vocational Education and Training, to contribute to the constant search for solutions, competitive advantages and sustainability, which should be dealt with in a coordinated manner, not only among different actors but also to the whole Europe, as conservation problems are not peculiar to any one country.



Skills map methodology

Scope definition

For the characterisation of the main knowledge, skills and competences needed in the building conservation sector, thirty **key informants (construction managers, professors, senior workers...)** have input a **matrix**¹ –*previously outlined by FLC-*, covering the different construction systems, structural elements and the operational activities.

By gathering experts' background information on the **areas where activities are particularly essential**, ordered in scale by importance (from 5 “very important” to 1 “not important at all”), it is expected to define the necessary skills to accomplish restoration works professionally.

Thus, with the joint compilation and analysis of all matrixes, activities scoring between 4 and 5, have defined the scope of this project.

	5	Work site activity very important for an adequate restoration of antique buildings
	4	Work site activity important for an adequate restoration of antique buildings
	3	Work site activity slightly important for an adequate restoration of antique buildings
	2	Work activity not important for an adequate restoration of antique buildings
	1	Work site activity not important at all for an adequate restoration of antique buildings

Experts have pointed out that for any valuation and ranking of the critical activities in building restoration, **four principles of the building** must be taken into account:



¹ See Annex 2 “KSC matrix”.

As a result, a **first set of 38 activities to be considered** for further dimension, to provide a coherent training resource for real critical needs:

Construction system / work stage	Trades	Structural element	Work Site Activities	Scoring
Foundations	Masonry	Walls, arches, [...]	Setting-out on site	4,4
			Rigging and construction to required specifications	3,9
	Stonework	Walls, vaults, standalone foundations, [...]	Setting-out on site	4,4
			Stone cutting / Cutting of customized pieces	4,0
			Configuration of the arch elements according to layout	3,8
Sanitation and Plumbing installations	Masonry	Walls, vaults, ducts, [...]	Construction of the rows of brick walling	3,8
			Setting-out on site	4,4
			Rigging and construction to required specifications	3,8
	Roof plumbing	Manholes, gutters, [...]	Configuration of the arch elements according to layout	3,6
			Installation of system components	4,3
Main Structure	Masonry	Walls, arches, vaults, abutting building elements, [...]	Joints, encounters and anchors to other construction elements	3,6
			Setting-out on site	4,6
			Finishing of encounters with other building elements	4,3
			Configuration of finishes and decorative elements	4,1
			Cutting of customized pieces	4,1
			Configuration of the staircase structural elements	4,0
			Construction of falsework/shoring scaffolds	4,0
Configuration of lintels	4,0			
Facades	Masonry	Walls, arches, cornices, pillars, [...]	Coating compatibility check	5,0
			Setting-out on site	4,6
			Finishing of encounters with other building elements	4,2
			Stone cutting	4,0
	Steelwork	Balconies, [...]	Materials analysis (performance and compatibility)	5,0
	Wrought iron	Carpentry, [...]	Materials analysis (performance and compatibility)	4,8
Renders	Gloss finishes, decorative fittings, [...]	Setting-out on site of the facade	4,6	
Interior architecture - Interior design	Masonry	Partition walls, balustrades, [...]	Setting-out on site	4,3
			Placement of other finishes and decorative elements	3,6
	Ceramic glaze	Tiling, [...]	Application of colour, lacquers and/or varnishes	4,0
			Setting-out on site of the facade	3,8
	Painting	Fresco painting, tempera painting, lime wash painting, [...]	Setting-out on site of the design on the walls	4,3
Application of templates and elaboration of the decorative fittings			4,0	
Plasterers	Plasters, [...]	Selection of pigments/colours	3,9	
Roof	Woodwork	Slab, gable structure (straps), encounters, [...]	Treatment of the seams and joints	4,2
			Compatibility of finishes and waterproofing	4,8
			Execution of finishes and roof aprons	3,7
			Resolution of encounters	3,6
	Slate shingle	Tile installation on pitched gable	Placement of straps and components of the gable structure	3,6
Setting-out on site			4,1	

Results show there are some **activities that have emerged as transversal** (see table), as they appear essential for several different construction systems:



- Setting-out on site.
- Analysis of materials for their compatibility and durability.

And one more transversal activity to consider, which emerged as very important in the previous phase of interviews and case studies, is the deconstruction, this is, the selective dismantlement of building components, specifically for re-use, repair, refurbish, replacement and/or recycling:

- Deconstruction of the building components.

Once transversal activities have been extracted of table, next step has been classifying those which refer to same category of skill-sets, resulting therefore in a total of **18 specific activities to be described**, which are:

- Stone cutting / cutting of customized pieces.
- Construction of the rows (courses) of brick walling/ Rigging and construction to required specifications.
- Construction of false work/shoring scaffolds.
- Carving and configuration of structural lintels.
- Setting of the arch/vault elements and anchors or encounters to other construction elements according to their required layout.
- Reconstruction of staircases and other special elements: configuration of its structural elements.
- Placement of straps and components of the gable structure.
- Placement of tiles and plate covering.
- Execution of finishes and roof aprons.
- Resolution of roof encounters.
- Installation and repairs of guttering, downpipes and system components.
- Execution of joints, encounters and anchors to other construction elements in sanitation installations.
- Finishing of encounters of roof plumbing with other building elements.
- Treatment of the seams and joints in facades and interior architecture.
- Configuration of finishes and decorative elements of masonry elements (stone, brick).
- Restoration and placement of other finishes of decorative elements.
- Decorative painting: selection of pigments and application of colour, lacquers and varnishes.
- Elaboration and application of templates and moulds for decorative fittings.

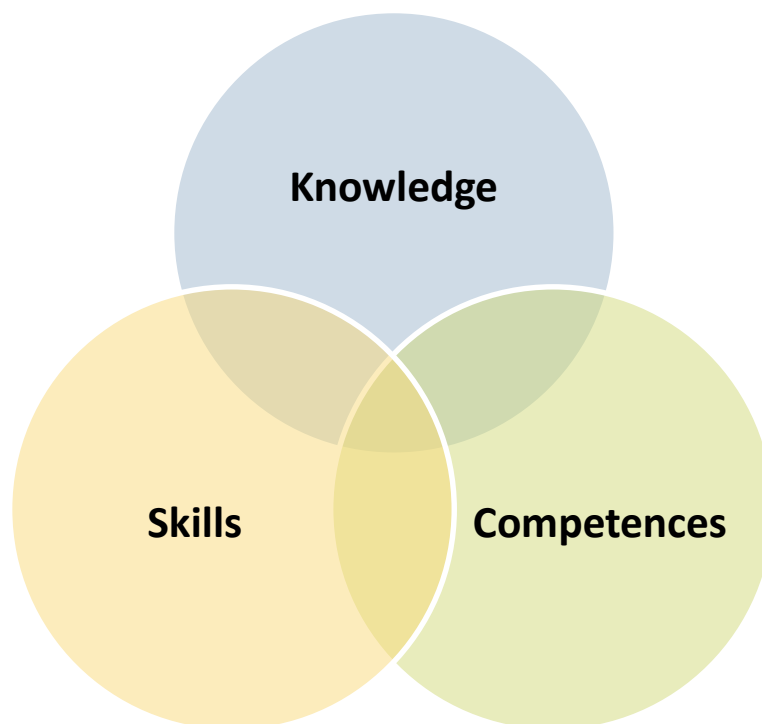


Finally, experts have also identified other essential aspects for workers in the building conservation sector, to consider in the training resource to be developed:

- ✓ The importance of knowing the specific tools and/or machinery.
- ✓ The importance of knowing the lexicon in the topic.
- ✓ The importance of the materials' performance and its recovery.
- ✓ The importance of promoting the use of traditional techniques when they contribute to value.
- ✓ The importance of combining new techniques and/or technologies without losing the value of traditional ones.
- ✓ The key importance of guaranteeing the durability of the building/element.

Descriptors of knowledge, skills and competences

Once core activities are designated, for the definition and development of knowledge, skills and competencies, it is necessary to agree on the key attributes for a professional ("Know", "know-how" and "behave") for a specific activity.



To do so, the map will follow the methodology and descriptors set up by the [European Qualification Framework](#) (EQF) -level 4-, in order to be able to produce learning outcomes later on, which will be common for all countries.

- **Factual knowledge definition:**

To define factual or **theoretical knowledge** associated with the traditional processes detected in the previous phase, bearing in mind that *knowledge* means “the outcome of the assimilation of information through learning, namely facts, principles, theories and practices that are related to this field of work”.

Level 4: factual and theoretical knowledge in broad contexts within a field of work or study.

- **Related skills association:**

Defining those **skills related** with the factual knowledge identified just before. In this case *skills* mean “the ability to apply knowledge and use know-how to complete tasks and solve problems”. Thus, the skills may be cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments).

Level 4: a range of cognitive and practical skills required to generate solutions.

- **Concerned competences definition:**

To identify the **related competencies** associated with knowledge and skills. In this case, *competence* means “the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development”. In this context, competencies are described in terms of responsibility and autonomy.

Level 4: a) Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; b) Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.

KSC final perimeter

- **Site Stage I: Wall, structure and foundations**

Skill / site activity	Work scope	Main elements	Trades involved
Stone cutting / cutting of customized pieces 	Foundations Facades Main Structure	Stand-alone foundations Walls Arches Vaults Abutting building elements Pillars Cornices Balconies	Stonemasons, stonecutters, splitters and carvers
Construction of the rows (courses) of brick walling Rigging and construction to required specifications 	Foundations Facades	Stand-alone foundations Walls	Stoneworkers Bricklayers/masons
Construction of false work/shoring scaffolds 	Main Structure	Walls Arches Vaults	Carpenters
Carving and configuration of structural lintels 	Main Structure	Walls Arches Vaults	Masons

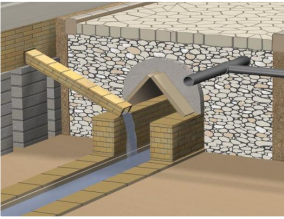
Skill / site activity	Work scope	Main elements	Trades involved
Setting of the arch/vault elements and anchors or encounters to other construction elements according to their required layout 	Foundations Facades Sanitation installations	Stand-alone foundations Walls Arches Vaults Ducts Manholes Gutters	Stoneworkers Masons
Reconstruction of staircases and other special elements: configuration of its structural elements 	Main Structure	Walls Vaults Staircase structures	Masons Steelworkers Carpenters

○ Site Stage II: Roofs

Skill / site activity	Work scope	Main elements	Trades involved
Placement of straps and components of the gable structure 	Roof	Slabs Straps (gable structure) Encounters	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)
Placement of tiles and plate covering 	Roof	Encounters Tile installation on pitched gable Steel plate covering	Slate workers Ceramists/potters (ceramic roof tiles) Metalworkers (steel, lead, copper and zinc metal sheeting)

Skill / site activity	Work scope	Main elements	Trades involved
Execution of finishes and roof aprons 	Roof	Slab Gable structure (straps) Roof encounters Pitched gable Tile installation on pitched gable	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)
Resolution of roof encounters 	Roof	Slab Gable structure (straps) Encounters Tile installation on pitched gable	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)

○ **Site Stage III: Plumbing**

Skill / site activity	Work scope	Main elements	Trades involved
Installation and repairs of guttering, downpipes and system components 	Sanitation and plumbing installations	Ducts Manholes Gutters	Roof plumbers Masons
Execution of joints, encounters and anchors to other construction elements in sanitation installations 	Sanitation and Plumbing installations	Ducts Manholes Gutters	Masons Roof plumbers

Skill / site activity	Work scope	Main elements	Trades involved
Finishing of encounters of roof plumbing with other building elements 	Roofs	Ducts Gutters	Roof plumbers

○ **Site Stage IV: Finishing**

Skill / site activity	Work scope	Main elements	Trades involved
Treatment of the seams and joints in facades and interior architecture 	Facades and Interior architecture/design	Partition walls Balustrades Tiling Plasters Renders Painting	Masons Tillers Plasterers Painters
Configuration of finishes and decorative elements of masonry elements (stone, brick) 	Facades	Walls Arches Vaults Latticework Cornices Balconies Balustrades	Masons
Restoration and placement of other finishes of decorative elements 	Facades and/or Interior architecture/design	Cornices Balconies Balustrades Tiles Skylights	Carpenters Tillers Plasterers Glass workers Metal workers Ceramists/potters

Skill / site activity	Work scope	Main elements	Trades involved
Decorative painting: selection of pigments and application of colour, lacquers and varnishes 	Interior architecture/design	Fresco painting Tempera painting Lime wash painting	Painting Ceramists/potters
Elaboration and application of templates and moulds for decorative fittings 	Interior architecture/design	Plasters Stuccos Gypsum	Plasterers

Skills for traditional architecture in Europe

Stone cutting / cutting of customized pieces



GENERAL DESCRIPTION

Stone cutting: shaping rough pieces of rock into accurate geometrical shapes, and arranging the resulting stones, often together with mortar, to form structures.

SCOPE / WORK STAGES

Facades
 Walls
 Arches
 Vaults
 Stand-alone foundations

TRADES INVOLVED (ESCO)

Masonry - 7113
 Stonework - 7113

KSC DESCRIPTION

Knowledge	K1. Knows and explains the basics of EQF Levels 1 - 3 (bricklayer, stonemason).
	K2. Knows the different types of natural stone, their characteristics and their application; knows the different mortars for processing with natural stones.
	K3. Knows the techniques for the extraction, transport, handling and processing of natural and artificial stones (with hand tools and machines).
	K4. Knows the techniques for the foundation, anchoring and dowelling of natural and artificial stones.
Skills	S1. Is able to recognize and evaluate natural and artificial stones before processing (e.g. layering).

	S2. Is able to manufacture, profile and install part stones according to the customer's requirements (with hand tools and machines).
	S3. Is able to make reliefs, sculptures, deepened and sublime ornaments and writings.
	S4. Is able to manufacture and install wall cladding and flooring.
Competences	C1. Communicates his knowledge and skills to his employees, lead them to independent work and supervise the execution.
	C2. Is able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Is able to advise customers expertly and recommend further work.

Construction of the rows (courses) of brick walling / Rigging and construction to required specifications



GENERAL DESCRIPTION

Bricklayers and stone workers construct masonry out of natural and artificial stones, install and assemble finished parts. They also perform concrete and reinforced concrete works according to plans, for example in foundations or ceilings. They also perform plaster and tile works as well as drywall works.

SCOPE / WORK STAGES

Foundations

Facades

Stand-alone foundations

Walls

TRADES INVOLVED (ESCO)

Bricklayers/masons – 7112 / 7113

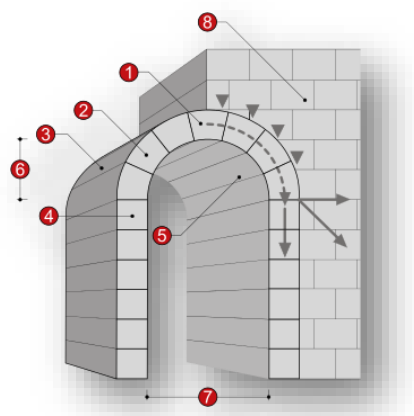
Stoneworkers - 7113

KSC DESCRIPTION

Knowledge	K1. Knows and explains the basics of EQF Levels 1 - 3 (bricklayers, concrete workers, plasterers).
	K2. Knows and explains the relevant regulations of the technical building regulations (Euro codes) and the information sheets of the WTA (Scientific-technical work group for building conservation and preservation of monuments). http://wta-international.org/?L=2
	K3. Knows the functions, constructive principles and differences of foundations and the different walls in the structure.
	K4. Know and explain the various requirements of existing structures, foundations, walls and components made of masonry and the special characteristics of concrete, masonry and mortar.

Skills	S1. Is able to distinguish and characterize different masonry and foundation works.
	S2. Is able to plan, execute, control and evaluate brickwork according to the specifications of existing buildings.
	S3. Is able to explain the functions, characteristics, scopes of application and limits of foundations and walls made of masonry to customers and employees.
Competences	C1. Communicates his knowledge and skills to his employees, lead them to independent work and supervise the execution.
	C2. Is able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Is able to advise customers expertly and recommend further work.

Construction of false work/shoring scaffolds



GENERAL DESCRIPTION

Construction of scaffolding/shoring: Position of temporary works for the creation of suitable working areas and service passages, which make accessible any surface, even at high altitude, to be treated. Among the temporary structures there are also scaffolding and ribs, often made of wood, through which create adequate support during installation of arches or times or sustain horizontal architectural elements (beams and slabs).

SCOPE / WORK STAGE

Walls
Arches
Vaults

TRADES INVOLVED (ESCO)

Carpentry works - 7115

KSC DESCRIPTION

Knowledge	K1. Knows descriptive geometry for the design of the tracks generators for the creation of the rib of vaults and arches.
	K2. Knows the theory on the structures, to identify the correct position of any supports or the structural functioning of the architectural element that includes support with the scaffolding.
	K3. Knows the wood cutting theory and the mounting and joints of flexible strips and panels for the construction of curved ribs, also through the study of treatises of stereotomy of the wood.
	K4. Knows editing systems scaffolding prefabricated frame to be realized for the renovation of vertical surfaces.
	K5. Knowledge of methods and theories for the de-Arching of masonry, with particular attention to the works mounted dry.

Skills	S1. Cutting wood workshop and assembly of ribs.
	S2. Design of appropriate ribs for the support of existing arcs and vaults.
	S3. Playing ribs and scaffolding described in the manuals.
	S4. Tests de-arching of works mounted dry.
Competences	C1. Creating ribs and temporary works of adequate support for every need.
	C2. Identification of the structural scheme of the architectural elements turned to be mounted on the ribs.
	C3. Identification of the structural scheme of the architectural elements to be mounted on the curved ribs.
	C4. Correct assembly of scaffolding for machining vertical surfaces in safety altitude.

Carving and configuration of structural lintels



GENERAL DESCRIPTION

Architectural element used to support the materials of the wall above a bay, a door or a window. The lintel can serve as a base for a tympanum and a discharge arc. At the beginning, made of stone and wood, raw materials found on the early sites of construction, gradually more worked, lintels have gone from the rectilinear form to curved shapes allowing greater spans and less binding loads for the materials. The lintels (mainly above doors) can be decorated elements that show a certain notoriety of the owner.

SCOPE / WORK STAGE

Main Structure

Walls

Arches

Vaults

TRADES INVOLVED (ESCO)

Masons - 7113

KSC DESCRIPTION

Knowledge	K1. Identify different types of frequently used lintel in its region and their construction method.
	K2. Identify conditions that ensure the work stability (shapes, weight, disorders, flaws...).
	K3. Identify problems linked to the stapling.
Skills	S1. Work preparation: - Make technical drawings (blueprint + drawing). - Search for source and type of materials. - Note the shapes, dimensions and features of the work (type of cut).

	S2. Plan time and number of workers needed, order materials, communicate the safety and handling needs to the architect or the safety coordinator. S3. Work making: - Create and set up a template (intern formwork). - Check the stones joining on the floor. - Place elements with compassing and correct alignment. - Make a graft. - Make a stone stapling.
Competences	C1. Combine the technical knowledge linked to the heritage in order to make or repair a lintel that will meet the customer's expectations and the requirements of the global project.

Setting of the arch or vault elements, anchors and encounters to other construction elements



GENERAL DESCRIPTION

Arches or vaults are formed by the joining together of individual stones which are strengthened with their lateral surfaces mutually and in their entire scope against other, fixed components (abutments). In this way, openings and rooms are covered free-floating. Before the development of reinforced concrete, vaults were the only (incombustible) components with which rooms could be massively covered.

SCOPE / WORK STAGES

Foundations
Facades
Sanitation installations
Stand-alone foundations
Walls
Arches
Vaults
Ducts
Manholes
Gutters

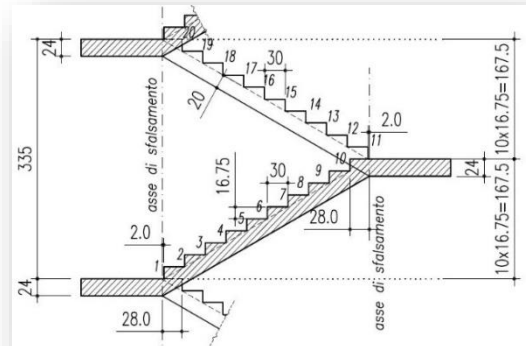
TRADES INVOLVED (ESCO)

Masons – 7112 / 7113
Stoneworkers - 7113

KSC DESCRIPTION

Knowledge	K1. Knows and explains the basics of EQF Levels 1 - 3 (bricklayers, concrete workers, stoneworkers).
	K2. Knows the functions, constructive principles and differences of arch/vault elements.
	K3. Knows the static rules and principles for the construction of arches, vaults and abutments.
Skills	S1. Is able to draw the different arches in the various designs on a scale of 1: 1 (e.g. segmental arch, basket arch, gothic arch).
	S2. Is able to manufacture the scaffold and formwork and arrange the brickwork.
	S3. Is able to manufacture arches and vaults of masonry in visual quality (notice: the under view of the arch or vault is not visible during masonry work).
Competences	C1. Communicates his knowledge and skills to his employees, lead them to independent work and supervise the execution.
	C2. Is able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Is able to advise customers expertly and recommend further work.

Reconstruction of staircases and other special elements: configuration of its structural elements



GENERAL DESCRIPTION

Reconstruction of stairs and other special elements: reconstruction of structural elements damaged through the use of identical materials to the original (or similar and compatible) aimed at ensuring the structural integrity of the article and its usability.

SCOPE / WORK STAGE

Walls
Vaults
Staircase structures

TRADES INVOLVED (ESCO)

Carpenters - 7115
Masons – 7112 / 7113
Steelworkers (Locksmiths) – 7214 / 7222

KSC DESCRIPTION

Knowledge	K1. Knowledge of the basic principles on the static and dynamic behaviour of the structures, to identify and classify the elements to replace and reproduce.
	K2. Knows the dimensional standards for the construction of staircases suitable for the correct use.
	K3. Knowledge of the theory on the intrinsic and extrinsic characteristics and quality of the material to be used (stone, brick, concrete, wood...) for the formation of structural elements.
	K4. Classification and definitions of case studies emblematic of wider application.
	K5. Knowledge of descriptive geometry of two-dimensional and three-dimensional structural element design.

	K6. Knowledge of the stone stereotomy for the construction of complex stone stairs.
	K7. Knowledge of the production modules of the stone structural elements through the manufacturing procedure Cad - Cam, with the use of numerical control machines.
Skills	S1. Creation of models that reproduce theoretical applications.
	S2. Discussion on possible alternative modes of execution of case studies.
	S3. Classification of reconstruction interventions, identifying the major issues in relation to the materials used, identifying the best solutions and the best performing material for each type of intervention.
	S4. Work on the definition of the structural elements in stone through the practice of the techniques of the stonemasons.
	S5. Creation of structural elements through the production Cad-Cam, with the use of numerical control machine.
Competences	C1. Engaging in identification of structural members deteriorated to replace.
	C2. Produce structural elements in stone through the use of the stonemasons' techniques.
	C3. Produce structural elements in stone through the use of CAD - CAM techniques.
	C4. Deal with the assembly of the structural elements (steps of a ladder, lintel replacement, etc.) by managing the static behaviour of the same and the surrounding structures.

Placement of straps and components of the gable structure



GENERAL DESCRIPTION

The **gable** is the exterior wall with a triangular end, which are supporting, in traditional frame (wall to wall), the horizontal beams (purlin). The gable is perpendicular to the lateral wall which is receiving the water ledges.

The gable can:

- Be higher than the roof in a straight-lined way or "sawtooth".
- Be covered by the roof.

SCOPE / WORK STAGE

Roof

Slabs

Straps (gable structure)

Encounters

TRADES INVOLVED (ESCO)

Metalworkers (steel, lead, copper and zinc metal sheeting) - 7213

Woodworkers - 7115

Slate workers - 7113

KSC DESCRIPTION

Knowledge	K1. Take into account the stability to resist the lateral forces due to winds and the load of the roof
	K2. Regulation about common walls
	K3. Functions and flaws in insulation.
	K4. Basic materials resistance.
	K5. Regulation for works-at-height (work on a scaffold...)

Skills	S1. Work preparation: - Make the exact blueprint of masonry - Cut the bricks at a regular angle.
	S2. Placement of the insulation.
	S3. Make decorative masonry.
	S4. Put stable and precise slope markers.
Competences	C1. Combine the technical knowledge linked to the heritage in order to make a gable structure that will meet the customer's expectations and the requirements of the global project.

Placement of tiles and plate covering



GENERAL DESCRIPTION

Placement of tiles and other covering materials: by placing the tiles or covering pieces, as a general rule, in horizontal strings on the support, perpendicular to the ridge, following the line of maximum slope and bottom up, ensuring the correct overlap of the Pieces and fixing them, if necessary and according to the type of covering material, by paste or mortar or by nails or hooks on screens.

SCOPE / WORK STAGE

Roof

Encounters

Tile installation on pitched gable

Steel plate covering

TRADES INVOLVED (ESCO)

Ceramists/potters (ceramic roof tiles) - 7314

Metalworkers (steel, lead, copper and zinc metal sheeting) - 7213

Slate workers - 7113

KSC DESCRIPTION

Knowledge	K1. Interpret the planes and to know the content of the documentation of the construction projects, particularly, in the relative thing to technical definition, graphic representation and requirements of water tightness, insulation and covering resistance.
	K2. Understand the functions of the coverings and its performance in the presence of water, wind and passage of heat: flow of water/water flow laws/rights, surface-tension, overflow, absorption and capillarity; the wind action and the suction power of the wind; insulating materials and thermal bridges.
	K3. Identify the different materials composing traditional coverings: inclination walls formation, boards and covering material.

	K4. Distinguish the different types of traditional coverings: mounting systems, special pieces, properties, performance and incompatibilities.
	K5. Identify the damages which affect the coverings and to define the repairs needed according to each damage.
	K6. Know the execution procedures of the traditional coverings: materials and construction methods of skirts, boards and its components.
	K7. Identify the traditional solutions of coverings, inclined coverings by tiles (ceramic tiles and slates tiles) and by metal plates (zinc, copper...)
	K8. Identify the tools used in the placement of coverage materials for inclined coverings: types, function, management and safety requirements.
	K9. Define the acceptance or rejection conditions of covering materials which are dismantled for its exploitation on restoration of the covering.
	K10. Distinguish the types of construction and demolition wastes that can be generated on restoration works of the traditional coverings and its correspondent treatment.
	K11. Identify the labour risks associated to the restoration Works of inclined coverings, and to know the preventive and protection measures needed for its control.
Skills	S1. Describe the development of execution Works of traditional coverings; specifying the different functions of layers and elements, material used, construction methods of the skirts and the boards and the placement sequence of coverage material...); explaining the realization of singular elements and its importance; by linking the causes of the dysfunctions detected in the covering and the needed reparations and identifying the measurements that need to be respected.
	S2. Accomplish the dismantling of the covering materials, preventing from any damage to the removed materials and other constructive elements that must be kept, watching the manipulation conditions and supply of different materials, applying the acceptance criteria of the original elements dismantled for its reutilization, and verifying the state and resistance of the plank, the support structure and the rest of the elements of the covering.
	S3. Determine setting outs and to apply traditional techniques of coverage in inclined coverings, according to each original material of coverage; ceramic or slates tiles, copper strips, zinc...; identifying the configuration to be executed (distribution and overlapped pieces...); interpreting the relevant technique documentation; using the suitable materials; applying the solution and adopted execution sequence; respecting the original fixation system (Spiking, on batten support frames, glues for plasterboards, dry conditions...); solving convergences and special elements of the covering; analysing the conditions required on water tightness, insulation and the covering ventilation; and selecting and using the proper way the work equipment for the mechanization and placement of the covering pieces.
Competences	C1. Apply traditional techniques of placing materials of coverings in restoration works; identifying the execution sequence and the original configuration of the covering which is going to be interceded; interpreting the technique documentation needed and accomplishing the requirement of projects of original coverage; selecting and applying the profited material and work equipment; applying the safety and preventive measures against the identified risks; and minimizing the impact on the environment.

Execution of finishes and roof aprons / Finishing executions and parapet walls**DESCRIPTION**

Execution of finishes and roof aprons: rebuilding of eaves, ridges, limates, overhangs and other damaged elements on the covers, through the application of traditional techniques and the use of identical, similar or compatible materials to the originals.

SCOPE / WORK STAGE

Roof
Slab
Gable structure (straps))
Roof encounters
Pitched gable
Tile installation on pitched gable

TRADES INVOLVED (ESCO)

Woodworkers - 7115
Slate workers – 7214 / 7222
Metalworkers (steel, lead, copper and zinc metal sheeting) - 7213

KSC DESCRIPTION

Knowledge	K1. Know how to interpret the plans and to know the documentation content of work projects, particularly, to the thing related to technical definition, graphical representation and water tightness requirements, insulation and resistance of coverings and its final elements.
	K2. Identify the finish elements of the traditional coverings or roofs: eaves, ridge tiles, hip rafters, parapet walls, edge tiles...
	K3. Identify the damages affecting the finish elements of the traditional inclined coverings and to define the reparation needed according to each damage.

	K4. Know the execution procedures of the traditional coverings: materials, construction methods of the skirts and boards and its components.
	K5. Identify the execution solutions of the finishing of the traditional inclined coverings: eaves, ridge tiles, hip rafters, parapet walls, edge tiles...
	K6. Identify tools: types, function, use and security requirements.
	K7. Define the acceptance or rejection conditions of the dismantled materials for its exploitation in the finish restoration of the covering.
	K8. Distinguish the different types of construction wastes and demolition that can be generated in the restoration works of traditional coverings and its correspondent treatment.
	K9. Identify the labour risks associated to restoration Works of covering finishing and to know the preventive and protection measures needed for its control.
Skills	S1. Describe the development of finishing executions and parapet walls of the traditional coverings; specifying the different elements functions (eaves, ridge tiles, hip rafters, parapet walls, edge tiles...), the material used and the sequence of realization; linking the causes of the detected dysfunctions in those finish elements and the reparation needed.
	S2. Accomplish the dismantling of the finish elements of coverings that must be repaired or substituted, preventing from any damage to the removed materials and other covering elements that must be kept, analysing the manipulation conditions and supply of different materials, applying the acceptance criteria of the original elements dismantled for its reutilization, and verifying the state and resistance of the support structure and the rest of the elements of the covering.
	S3. Determine setting outs and to apply traditional techniques of execution of finish inclined coverings, ...); interpreting the relevant technique documentation; using the suitable materials; respecting the original configuration of the finish element that needs to be restored (eave, ridge tiles, hip rafters, parapet wall, edge tile...) analysing the conditions required when assembling with the rest of the elements of the covering and the building facing, and selecting and using properly the needed work equipment.
Competences	C1. Apply traditional techniques of finish execution and parapet walls of coverings in restoration works; identifying the original solution and interpreting the technique documentation required and accomplishing the requirement of projects; if it is needed making a selecting dismantle in order to use the original elements selecting and applying the profited material and work equipment; applying the safety and preventive measures against the identified risks; and minimizing the impact on the environment.

Resolution of roof encounters**DESCRIPTION**

Resolution of roof encounters: repair of limehobia and damaged encounters on gable roofs, overhangs, fireplaces, dormer rooms and skylights, among other salient elements, through the application of traditional techniques and the use of identical, similar or compatible materials to the originals.

SCOPE / WORK STAGE

Roof

Slab

Gable structure (straps)

Encounters

Tile installation on pitched gable

TRADES INVOLVED (ESCO)

Metalworkers (steel, lead, copper and zinc metal sheeting) - 7213

Woodworkers - 7115

Slate workers - 7113

KSC DESCRIPTION

Knowledge	K1. Knows how to interpret the plans and to know the documentation content of restoration projects, particularly, to the thing related to technical definition and solvency of encounter of coverings and the requirements of water tightness, insulation and resistance.
	K2. Identify encounter of traditional coverings or roofs with other constructive elements.
	K3. Identify the damages affecting the encounter of inclined traditional coverings with other constructive elements and define the needed restoration according to each damage.
	K4. Know the execution procedures of the traditional coverings: materials, construction methods of the skirts and boards and its components.

	K5. Identify the execution solutions of valley rafters of inclined traditional coverings and the encounter with gable ends, parapet walls, chimneys, mansards, skylights...
	K6. Identify used tools, types, and function, use and security requirements.
	K7. Define the acceptance or rejection conditions of the dismantled materials for its exploitation in the restoration of encounters of coverings with other constructive elements.
	K8. Distinguish the different types of construction wastes and demolition that can be generated in the restoration works of traditional coverings and its correspondent treatment.
	K9. Identify the labour risks associated to restoration Works of inclined covering and to know the preventive and protection measures needed for its control.
Skills	S1. Describe the development of works for roof encounters of traditional buildings with other constructive elements: gable ends, parapet walls, chimneys, mansards, skylights...: specifying the adopted solutions, the material used and the realization sequence; linking the causes of the detected malfunctions in this encounters and the reparations needed.
	S2. Accomplish the dismantling of the used materials in covering valley rafters and the encounter with other constructive elements that need to be repaired or substituted, preventing from damaging removed materials and the remaining covering elements, by analysing the manipulation conditions and supply of the different materials, applying the acceptance criteria of original dismantled elements for its reutilization and verifying the state and resistance of the support structure and the rest of covering elements.
	S3. Accomplish the dismantling of the used materials in covering valley rafters and the encounter with other constructive elements that need to be repaired or substituted, preventing from damaging removed materials and the remaining covering elements, by analysing the manipulation conditions and supply of the different materials, applying the acceptance criteria of original dismantled elements for its reutilization and verifying the state and resistance of the support structure and the rest of the covering elements.
Competences	C1. Apply the traditional execution techniques of the covering valley rafters and its encounter with other elements, identifying the original solution and interpreting the required technique document and accomplishing the restoration project requirements; making a selective dismantle if it is needed for the exploitation of original materials; selecting and applying the proper material and work equipment; applying the prevention and protection measures against other identified risks and minimizing the impact on the environment.

Installation and repairs of guttering, downpipes and system components



DESCRIPTION

Diagnose, plan, implement and monitoring rehabilitation / reconstruction work of guttering, downpipes and system components, according the original construction and respecting current construction standards (technical standards / safety, health and environment).

SCOPE / WORK STAGE

Sanitation and plumbing installations

Ducts

Manholes

Gutters

TRADES INVOLVED (ESCO)

Masons – 7113

Plumbers - 7126

Roof plumbers - 7213

KSC DESCRIPTION

Knowledge	K1. Interpret the constitution of a process, distinguishing its different parts in particular with respect to special technical parts within the scope of sanitation and plumbing installations.
	K2. Understand the functions of the different piping systems and their constituents, namely pipes and fittings, auxiliary seals and their reaction to water, moisture, vibration, infiltration.
	K3. Distinguishes the different types of sanitation and plumbing facilities used in rehabilitation, their performance and incompatibilities.
	K4. Identify the different types of materials used in traditional plumbing systems, their characteristics and applicability.

	K5. Identify the pathologies that affect the sanitation and plumbing installations and define a reparation plan considering the materials and processes used.
	K6. Identify the tools and the equipment used in sanitation and plumbing installations, their functions and precautions in their handling and safety requirements.
	K7. Distinguish the different types of traditional building waste that are generated and the corresponding treatment (lead, copper).
	K8. Identify the risks associated to the tasks performed in the sanitation and plumbing installations as well as the respective safety measures for their elimination or reduction. Identify individual safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.
	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the constructive processes to be adopted in view of the operationally of the construction and the anomalies and their repair needs.
	S2. Accomplish the clearing works of deteriorated materials, its packaging for further treatment, according to its hazards.
	S3. Determine setting outs and to apply traditional techniques of execution of sanitation and plumbing installations using appropriate materials and equipment taking into account their characteristics and resistance, respecting the original design of the buildings, accomplishing the development of the execution in order to guarantee the quality of the work in accordance with technical specifications.
Competences	C1. Manage and supervise the rehabilitation works of guttering, downpipes and system components, respecting the processes and techniques appropriate to each stage of the process, selecting materials, tools and equipment's to use. Be responsible for the monitoring and management of waste streams, minimize the environmental impact of the work carried out and taking prevention and safety measures.

Execution of joints, encounters and anchors to other construction elements in sanitation installations



DESCRIPTION

Diagnose, plan, implement and monitor rehabilitation / reconstruction work in the execution of joints, encounters and anchors to other construction elements in sanitation installations, considering the original construction and respecting the current norms of construction (technical standards / safety, health and environment) and taking into account the functionality of buildings.

SCOPE / WORK STAGE

Sanitation and Plumbing installations

Ducts

Manholes

Gutters

TRADES INVOLVED (ESCO)

Masons - 7113

Plumbers - 7126

Roof plumbers - 7213

KSC DESCRIPTION

Knowledge	K1. Interpret the constitution of a project, distinguishing its different parts in particular with respect to special technical parts within the scope of sanitation and plumbing installations.
	K2. Understand the functions of the different sanitation installations, their constituents, and their compatibility with other construction elements.
	K3. Distinguishes the different sanitation installations used in rehabilitation, their performance and incompatibilities.

	K4. Identify the different types of materials used in traditional sanitation installations, their characteristics and applicability.
	K5. Identify the pathologies that affect the sanitation installations and define a repair plan considering the materials and processes used.
	K6. Identify the tools and the equipment used in sanitation installations, their functions and precautions in their handling and safety requirements.
	K7. Distinguish the different types of traditional building waste that are generated and the corresponding treatment.
	K8. Identify the risks associated to the tasks performed in the sanitation installations as well as the respective safety measures for their elimination or reduction. Identify individual safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.
	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the constructive processes to be adopted in view of the operationally of the construction and the anomalies and their repair needs.
	S2. Accomplish the works of removal of deteriorated materials, its packaging for further treatment.
	S3. Determine setting outs and to apply traditional techniques of execution of sanitation installations using appropriate materials and equipment taking into account their characteristics and resistance, accomplishing the development of the execution in order to guarantee the quality of the work in accordance with technical specifications.
Competences	C1. Manage and supervise the rehabilitation works of sanitation installations, respecting the processes and techniques appropriate to each stage of the process, selecting materials, tools and equipment's to use. Be responsible for the monitoring and management of waste streams, minimize the environmental impact of the work carried out and taking prevention and safety measures.

Finishing of encounters of roof plumbing with other building elements



DESCRIPTION

Manage and supervise the rehabilitation works that make possible the transport of pluvial water coming from the roof of the building to the exterior through gutters or other elements that need to be framed with other constructive elements.

SCOPE / WORK STAGE

Roofs
Ducts
Gutters

TRADES INVOLVED (ESCO)

Plumbers - 7126
Roof plumbers - 7213

KSC DESCRIPTION

Knowledge	K1. Identify the constitution of a process, distinguishing its different parts in particular with regard to special technical parts in the scope of pluvial water outflow.
	K2. Understand the functions of the different pluvial water drainage systems and their constituents, namely gutters, downpipes, drop tubes and other elements as well as their reaction to the surrounding environment.
	K3. Distinguish the different types of pluvial water drainage systems used in rehabilitation, their performance and incompatibilities.
	K4. Identify the different types of materials used in traditional pluvial water drainage systems, their characteristics and applicability.
	K5. Identify the pathologies that affect the various elements used in the drainage of pluvial water (clogging of gutters, degradation of welds and materials) and define a reparation plan considering the materials and processes used.

	K6. Identify the tools and equipment used in pluvial water drainage works, their functions and precautions in their handling and safety requirements, in particular those relating to work at heights.
	K7. Distinguish the different types of traditional building waste that are generated in this process and the corresponding treatment (lead, copper, concrete, zinc).
	K8. Identify the risks associated with the tasks it carries out in the context of pluvial water drainage (in particular those related to working at heights and welding) as well as the respective safety measures for its elimination or reduction. Identify individual and collective safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.
	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the constructive processes to be adopted in view of the operation of the work, the anomalies diagnosed and the respective repairs needs.
	S2. Accomplish the work of removing the deteriorated materials, its packaging for later treatment / reuse, according to its danger.
	S3. Determine setting outs and to apply traditional techniques of execution of pluvial water drainage, the use of appropriate materials and equipment taking into account their characteristics and strength, respecting the original design of the buildings and the compatibility between elements, accomplishing the execution of the project in ensure the quality of the work in accordance with the technical specifications.
Competences	C1. Manage and supervise the rehabilitation works that make possible the transport of pluvial water coming from the roof of the building to the exterior through gutters or other elements that need to be framed with other constructive elements, respecting the processes and techniques appropriate to each phase of the process, selecting materials, tools and equipment to use. Be responsible for monitoring and managing waste streams, minimizing the environmental impact of the work carried out and taking appropriate prevention and safety measures.

Treatment of the seams and joints in facades and interior architecture



DESCRIPTION

Surface treatment of the spaces between the masonry elements which guarantees watertightness and avoids the proliferation of undesirable mosses and vegetation that can degrade the masonry. The joint produces aesthetic appearance. These joints can be treated in various ways by applying different mortars.

SCOPE / WORK STAGE

Facades
 Interior architecture/ design
 Partition walls
 Balustrades
 Tiling
 Renders
 Plasters
 Painting

TRADES INVOLVED (ESCO)

Masons - 7113
 Plasterers - 7123
 Painters – 7131 / 7132
 Tillers - 7115

KSC DESCRIPTION

Knowledge	K1. Identify different types of grouts according to different eras and areas.
	K2. Identify different diseases: gutted grouts, parasites, salts, lichen, vegetation, grout chalking, cracking, fouling...
	K3. List the grouts composition: sands from different sources, air lime, cement, and colouring.

Skills	S1. Work preparation: - Detect diseases and defects of the mortar. - Decided which technique to execute. - Identify the mortar composition with the help of qualified persons. - Copy the composition the most precisely possible. - Clean the wall (empty the grouts, remove and treat the vegetation).
	S2. Work achievement: - Treat the grouts (waterproof, cleaning, reinforcement...). - Prepare a homogenous and lasting pointing mortar with the right consistency. - Compact the mortar in the empty grouts.
	S3. Putting the finishing touches: - Put the right finishing touches. - Protect the places that do not have to be treated or the attendant materials (floors, frames...). - Protect the wall from bad weather.
Competences	C1. Combine the technical knowledge linked to the heritage in order to renovate grouts that will meet the customer's expectations and the requirements of the global project.

Configuration of finishes and decorative elements of masonry elements (stone, brick)



DESCRIPTION

Available finishes and masonry decorations: renovating or restoring the superficial layer, not structural, protection and decoration of vertical surfaces, exterior and interior of the buildings, as well as the reconstruction of the original form of decorative masonry.

SCOPE / WORK STAGE

Walls
Arches
Vaults
Trellises
Frames
Balconies
Balustrades

TRADES INVOLVED (ESCO)

Masons – 7113

KSC DESCRIPTION

Knowledge	K1 Knowledge of the finishing products to determine their compatibility with the support and of the chemical composition of the same.
	K2. Knowledge of the application technique (thickness) of the products finishes in order to respond to the protection needs of the masonry.
	K3. Knowledge of stucco decoration techniques (modine types and use).
	K4. Knowledge of relevant technical and descriptive geometry for the redesign of the decorative items to complete.

	K5. Knowledge of the production modules of the stone decorative elements through the manufacturing procedure Cad - Cam, with the use of numerical control machines.
	K6. Knowledge of the techniques of the stonemasons for the integration of sculptural and decorative elements in stone.
Skills	S1. Realisation of plaster casts of the decorative elements to the end of the shapes and volumes understanding.
	S2. Execution work through batter board decorations and plaster profiles or stucco applications.
	S4. Work on the definition of the structural elements in stone through the practice of the techniques of the stonemasons.
	S5. Creation of structural elements through the production Cad-Cam, with the use of numerical control machine.
Competences	C1. Take care of the identification of the decorative elements needing repair to replace.
	C2. Producing decorative elements in stone through the use of the stonemasons' techniques.
	C3. Producing decorative elements in stone through the use of CAD - CAM techniques.
	C4. Deal with the assembly of the decorative elements (sculptures, cornices, balustrades and frames ...) managing the static behaviour of the same and neighbouring structures, through the use of rods made of carbon fiber and epoxy resins, adhesives, or through the formation of special segments to anchor with mortar.

Restoration and placement of other finishes of decorative elements



DESCRIPTION

Cut and ornamentation, as part of new or renovation works, exterior building elements (window sills, paving stones, stairs, ...), interior (fireplaces, ...) or decoration (cornices, balconies, balustrades) in natural minerals (sandstone, granite, limestone, slate ...) according to safety rules. Can sculpt and engrave, lay the moulded elements on the sites and carry out works of protection or restoration of the stone.

SCOPE / WORK STAGES

Facades
 Cornices
 Balconies
 Balustrades
 Interior architecture.

TRADES INVOLVED (ESCO)

Stone carver - 7113

KSC DESCRIPTION

Knowledge	K1. Know different types of stones (limestone, granite, sandstone, resin) and materials annex (marble powder, polymers, impregnation products, etc.) and their properties.
	K2. Identify different styles and times characterizing the elements which compose of ornamentation.
	K3. Know different techniques of cutting and sculpting manually and mechanically.
	K4. Identify the tools (rock saw, chisel, mallet, bush hammer) and their functions.
	K5. Know the different techniques of sealing and fixing (dowelling traditional technic, chemical dowelling technique).

	K6. Know different additives agents (plasticizing agent, waterproofing agent, and fungicide), consolidating agents (hardening resin) and re-mineralizing agents (surfacing product) currently employed.
Skills	S1. Read, comprehend and translate plans and sketch notebooks
	S2. Carry out the survey of elements of simple structures or of sites to be replaced or fitted out.
	S3. Cut up, carve, sculpt, assembly, polish.
	S4. Carry out disassembly or removal work.
	S5. To Carry out repairs using appropriate techniques (restoration).
Competences	C1. Being able of replacing and / or restoring old decorative or ornamental elements respecting the architectural style and the historical features of the building. This taking into account the environmental constraints and knowing at the same time how to put the intervention in the global execution of the restoration process.
	C2. Deal with the analysis of the different structural components and implementing the proper restoration techniques for civil engineering structures.

Decorative painting: selection of pigments and application of colour, lacquers and varnishes



DESCRIPTION

To carry out decorations and finishes adapted to the requirements of the site (style, period, materials) and the client (demand, requirement, feasibility).

SCOPE / WORK STAGES

Interior architecture/ design

TRADES INVOLVED (ESCO)

Painters – 7131 / 7132

KSC DESCRIPTION

Knowledge	K1. Know different techniques of realization of ancient patina (lead, with washes, wax coating etc.).
	K2. Identify different styles and an artistic periods together with all the elements which characterize it.
	K3. Identify different materials resources (lime, stones powder, oils, casein).
	K4. Identify different surfaces, such as white washes, coating, wood, stones.
	K5. Identify different materials and tooling (brushes and paint brushes, spatulas, smooth tool).
	K6. Know the different components: pigments, solvents, binders and dryers.
Skills	S1. Choose the execution processes et different protocols of implementation (glazing, whitewashing, crystallizing, coating, lacquering...).
	S2. Verify the nature and state of the supports.
	S3. Prepare the tools and the materials to realize a decoration.
	S4. Realize the basis/support respecting the preparatory works chronological order.

Competences	S5. Prepare the products respecting dosages and instructions especially in regard with safety regulations.
	S6. Apply the products with adequate tools and respecting the timing and the condition to apply and let dry in the proper manner. Respect the timing of recovery - polymerization and drying time.
	S7. Realize aging patinas and decoration (wax coating, whitewashes, simulation of materials – ex marbles etc.)
	S8. To realise fitting of restoration on the worksite.
	C1. Putting in place a deep analyses of the substrates, assessing their states of the art. Determining which the areas of intervention and/or restoration are. Elaborate an intervention protocol taking into account the environmental issues and the worksite conditions. Being able to repair substrates and basis supports.
	C2. Be responsible for applying the products respecting the state of the art and all the H&S issues, taking into account at the same time the worksites conditions and the unexpected situations.
	C3. Comply in realizing decorations respecting the state of the art and understanding the global harmony of the worksite.
	C4. Decoding, analysing and understanding the specifications taking into account the exigencies or the not reversibility of some techniques.

Elaboration and application of templates and moulds for decorative fittings



DESCRIPTION

Cornices, mouldings of style, capitals, columns or rosettes: the moulding and ornamental plasterer realizes elements of decoration in staff (fibrous plaster) or in stucco to dress up an interior or restore an old building. Coloured plasters and sophisticated finishes allow it to create interiors of character. Realization of elements of decoration in staff (fibrous plasterer) or in stucco.

SCOPE / WORK STAGES

Interior architecture/ design

Stucco

Gypsum

TRADES INVOLVED (ESCO)

Plasterers (master staff and stucco /fibrous plasterer) - 7123

KSC DESCRIPTION

Knowledge

K1. Identify and know different styles and components of artistic periods.

K2. Identify different precast elements (gypsum plaster, mouldings, and ornaments).

K3. Know different types of plaster (coarse plaster, coating plaster, reduced plaster for coating, model gypsum, MOLDA plaster).

K4. Know the different techniques and types of moulding (fibre drawing plaster or not).

K5. Know the different types of sealing (for the very thick high dosed plaster or for the plaster where sand is added).

K6. Know different techniques of assembling and collage (straight laying, oblique laying, bonded laying).

	K7. Know different techniques of raising the dimensions of the support (visual with sketches, taking impression, pictures).
	K8. Identify the manufacturing equipment (zinc template, silicone mould, trowel, brushes, sponges, spatulas) and installation materials (nails, laser, spirit level, CORDEX).
Skills	S1. To perform dragging with zinc patterns. https://www.youtube.com/watch?v=uQHllqakJ-o
	S2. To perform prototypes, models and moulding. https://www.youtube.com/watch?v=K5o3CrjDnrc
	S3. To realize objects built with fibrous plaster or tissues, or vegetal or mineral.
	S4. To utilise laying techniques by sealing or gluing.
Competences	C1. Comply with lying manufactured or precast elements following the specific and given characteristics. Replacing or restoring ancient decorative elements taking into account the global style in order to respect the global project of restoration.
	C2. Carrying out and realizing models and / or moulds and / or tests of different complexity. To create or recreate missing or non-existent old decor items. Determining and realizing appropriate mixture respecting the use of the products. Choosing the right technic and putting it in place properly.

Annex 1- KSC Maps in partner's mother tongues**Site Stage 1: Wall, structure and foundations**

Schneiden von Gestein / Schneiden passender Stücke



ALLGEMEINE BESCHREIBUNG

Schneiden von Gestein: Zuschneiden grober Steine zu passenden geometrischen Formen, und Anordnen der angefertigten Steine, oft zusammen mit Mörtel, um Bauteile zu erstellen.

UMFANG / ARBEITSSTUFEN

Fassaden
Wände
Bögen
Gewölbe
Allein-/freistehende Fundamente

RELEVANTE GEWERKE

Maurer
Mauerwerksbau

KSC BESCHREIBUNG

Kenntnisse	K1. Kennt und erläutert die Grundlagen der EQF-Stufen 1-3 (Maurer, Mauerwerksbau).
	K2. Kennt verschiedene Arten von Natursteinen, ihre Eigenschaften und ihre Verarbeitung; kennt verschiedene Mörtelarten im Zusammenhang mit der Verarbeitung von Natursteinen.
	K3. Kennt Techniken zur Gewinnung, zum Transport, zum Umgang und Weiterverarbeitung natürlicher und künstlicher Steine (mit Handwerkzeugen und Maschinen).
	K4. Kennt Techniken in Bezug auf Fundamente, Befestigung und Verdübelung von natürlichen und künstlichen Steinen.
Fertigkeiten	S1. Kann natürliche und künstliche Steine vor der Verarbeitung erkennen/unterscheiden und bewerten (z.B. Schichtung)
	S2. Kann Vorgaben des Kunden Teile von Steinen zu verarbeiten, anzupassen und installieren (mit Handwerkzeugen und Maschinen) umsetzen.

Kompetenzen	S3. Kann Reliefs, Skulpturen sowie ausgehöhlte und sublime Ornamente und Schriftzüge produzieren.
	S4. Kann Wandverkleidungen und Bodenbeläge verarbeiten.
	C1. Gibt sein Wissen an Mitarbeiter weiter, leitet sie zu selbständigem Arbeiten an und überwacht die Ausführung.
	C2. Ist in der Lage, Zeit- und Materialplanung durchzuführen und dies dem Baustellenmanagement zu berichten als Basis für die spätere Abrechnung.
	C3. Ist in der Lage, Kunden fachgerecht zu beraten und weitere Arbeiten zu skizzieren.

Konstruktion von Reihen on Maueren / Montage und Bau im Rahmen bestimmter Besonderheiten



ALLGEMEINE BESCHREIBUNG

Maurer und Mauerwerksbauer errichten Mauerwerk aus Natur- und gefertigten Steinen und montieren auch Fertigteile. Sie führen ebenfalls Arbeiten im Beton- und Stahlbetonbereich durch z.B. bei Gründungen oder Decken. Darüber hinaus führen sie auch Fliesen- und Trockenbauarbeiten aus.

UMFANG / ARBEITSSTUFEN

Fundamente
Fassaden
Allein-/freistehende Fundamente
Wände

RELEVANTE GEWERKE

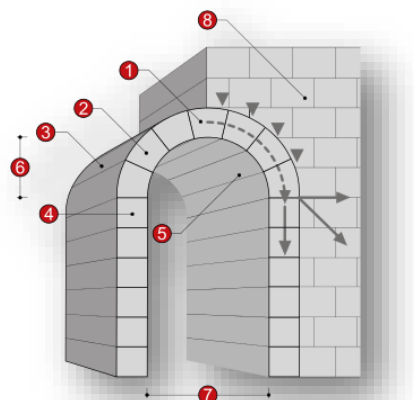
Mauerwerksbauer
Maurer

KSC BESCHREIBUNG

Kenntnisse	K1. Kennt und erläutert die Grundlagen der EQF-Stufen 1-3 (Maurer, Betonbauer, Stuckateure).
	K2. Kennt und erläutert relevante Bestimmungen der Technischen Bauordnung (Eurocodes) sowie die Informationsblätter der WTA (wissenschaftlich-technische Arbeitsgruppe zur Bauwerkserhaltung und Erhaltung von Monumenten). http://wta-international.org/?L=2
	K3. Kennt die Funktionen, Bauprinzipien und Unterschiede von Fundamenten und der verschiedenen Wandarten in der Baukonstruktion.
	K4. Kennt und erläutert die verschiedenen Zusammenhänge bestehender Baukonstruktionen, Fundamente, Wände und Einzelteile in Bezug auf Mauerwerk sowie Besonderheiten von Beton, Mauern und Mörtel.
Fertigkeiten	S1. Kann verschiedenen Mauerwerks- und Fundamentarbeiten unterscheiden und charakterisieren.

Kompetenzen	S2. Kann Mauerwerksarbeiten gemäß der Besonderheiten bestehender Gebäude planen, ausführen, kontrollieren und einstufen.
	S3. Kann Kunden und Mitarbeitern Funktionen, Eigenschaften, Anwendungsumfang und Grenzen von Fundamenten und Wänden aus Mauerwerk erklären.
	C1. Gibt sein Wissen an Mitarbeiter weiter, leitet sie zu selbständigem Arbeiten an und überwacht die Ausführung.
	C2. Ist in der Lage, Zeit- und Materialplanung durchzuführen und dies dem Baustellenmanagement zu berichten als Basis für die spätere Abrechnung.
	C3. Ist in der Lage, Kunden fachgerecht zu beraten und weitere Arbeiten zu skizzieren.

Costruzione di ponteggi/impalcature di sostegno



DESCRIZIONE

Costruzione di ponteggi e impalcature: montaggio di opere provvisorie per la creazione di idonee aree di lavoro e passaggi di servizio, che rendano accessibile ogni superficie, anche in quota, da trattarsi. Tra le opere provvisorie ci sono anche impalcature e centine, spesso realizzate in legno, attraverso le quali creare adeguati sostegni durante il montaggio di archi o volte o sostenere elementi architettonici orizzontali (travi e solai).

AMBITO DI APPLICAZIONE/ FASI DI LAVORO

Muri
Archi
Volte

SETTORI COINVOLTI

Opere di carpenteria

KSC DESCRIZIONE

Conoscenze	K1. Conoscenza della geometria descrittiva per il disegno dei tracciati generatori per la creazione della centina di volte e archi.
	K2. Conoscenza della teoria sulle strutture, per identificare la corretta posizione di eventuali sostegni o comunque il funzionamento strutturale dell'elemento architettonico che si intende sorreggere con le impalcature.
	K3. Conoscenza della teoria del taglio del legno e del montaggio ed incastri di listelli e pannelli flessibili per la realizzazione di centine curve, anche attraverso lo studio dei trattati di stereotomia del legno.
	K4. Conoscenza dei sistemi di montaggio di ponteggi a telai prefabbricati da realizzarsi per la ristrutturazione di superfici verticali.
	K5. Conoscenze dei metodi e teorie per il decentinamento di opere in muratura, con particolare attenzione alle opere montate a secco.
Abilità	S1. Laboratorio di taglio del legno e montaggio di centine.
	S2. Progettazione di centine adeguate per il sostegno di volte e archi esistenti.

Competenze	S3. Riproduzione di centine e ponteggi illustrati nei manuali.
	S4. Prove di de-centinamento di opere montate a secco.
	C1. Creazione di centine e opere provvisionali di sostegno adeguate a ogni necessità.
	C2. Montaggio adeguato di ponteggi per la lavorazione di superfici verticali in quota in sicurezza.
	C3. Individuazione dello schema strutturale degli elementi architettonici voltati da montarsi sulle centine.
	C4. Individuazione dello schema strutturale degli elementi architettonici arcuati da montarsi sulle centine.

Sculpture et configuration des linteaux structurels



DESCRIPTION GÉNÉRALE

Élément architectural utilisé pour supporter les matériaux du mur au-dessus d'une baie, d'une porte ou d'une fenêtre. Le linteau peut servir de base pour un tympan et un arc de décharge. Au début, en pierre et en bois, (les matières premières trouvées sur les premiers sites de construction) progressivement plus travaillées, les linteaux sont passés de la forme rectiligne à des formes courbes permettant des portées plus importantes et des charges moins contraignantes pour les matériaux. Les linteaux (principalement au-dessus des portes) peuvent être décorés d'éléments qui montrent une certaine notoriété du propriétaire.

ÉTENDUE / ÉTAPE DE TRAVAIL

Structure principale

Murs

Arches

Voutes

MÉTIERIS IMPLIQUÉS (ESCO)

Maçonnerie

KSC MAP

Connaissances	K1. Identifier les différents types de linteaux fréquemment utilisés dans la région et leur méthode de construction. (...) Connaissance de la théorie des caractéristiques intrinsèques et extrinsèques et de la qualité du matériau à utiliser (pierre, brique, béton, bois ...) et leur application.
	K2. Connaître les techniques d'extraction, de transport, de manutention et de transformation du linteau de pierre et en métal (avec ou sans aide mécanique)
	K3. Identifier les conditions garantissant la stabilité du travail (formes, poids, défauts ...). Le linteau doit prendre appui sur deux supports latéraux stables et supporter une charge répartie uniformément sur ces deux supports.
	K4. Identifier les dommages qui affectent les linteaux et définir les réparations nécessaires en fonction de chaque dommage.
	K5. Identifier les outils utilisés pour le placement du linteau: types, fonctions, gestion et exigences de sécurité.

	K6. Identifier les problèmes liés à l'agrafage : dans certains cas de restaurations, les linteaux sont en « croisé de fenêtre ». Pour assurer leur stabilité, il est nécessaire de réaliser la technique de l'agrafage.
	K7. Distinguer les différents déchets de construction et de démolition qui peuvent être générés sur les travaux de restauration de la sculpture traditionnelle de linteaux structuraux et son traitement correspondant.
	K8. Identifier les risques de travail associés aux travaux de restauration des linteaux et connaître les mesures préventives et de protection nécessaires à son contrôle.
Attitudes	S1. Réaliser la préparation du travail : - Réaliser des dessins techniques du travail à réaliser (plan + dessin). - Recherche des matériaux nécessaires (étançons, burin, fers à joints ...) - Définir les méthodes de construction - Noter les formes, dimensions et caractéristiques de l'ouvrage (type de coupe). - Expliquer la réalisation des éléments singuliers et son importance, en liant les causes des dysfonctionnements détectés et les réparations nécessaires tout en identifiant les mesures à respecter.
	S2. Planifier le temps et le nombre de travailleurs nécessaires, commander des matériaux, communiquer les besoins en matière de sécurité et de manipulation à l'architecte ou au coordonnateur de la sécurité.
	S3. Réaliser le démantèlement du linteau, éviter tout endommagement du matériel enlevé qui doit être conservé, appliquer les critères d'acceptation des éléments d'origine démantelés pour leur réutilisation et vérifier l'état et la résistance de la structure de support et du reste des éléments.
	S4. Appliquer les techniques traditionnelles selon chaque matériau d'origine (bois, pierre ...) : - Appliquer des réparations ou changer le linteau en fonction des dysfonctionnements précédemment détectés (Différents problèmes sont fréquents : décomposition du bois, affaissement, présence d'insectes, porosité, salissures, érosion, présence de rouille ...) - Placer les éléments avec un alignement correct et à niveau. - En utilisant la manière appropriée l'équipement de travail pour la mécanisation et le placement du linteau - Utilisation d'une technique de greffage pour les linteaux en bois ou en appliquant un agrafrage de pierre - Vérifier la stabilité de la structure
Compétences	C1. Combiner les connaissances techniques liées du patrimoine afin de réaliser ou de réparer un linteau tout répondant aux attentes du client et aux exigences du projet global. Identifier la séquence d'exécution et la configuration initiale de la sculpture du linteau en sélectionnant et appliquant le matériel adéquat et l'équipement de travail, tout en respectant les mesures de sécurité et de prévention des risques identifiés.

Einbau/Verarbeitung von Bögen und Gewölbeelementen, Mauerankern und Verbindungen gemäß Plan



ALLGEMEINE BESCHREIBUNG

Bögen und Gewölbe sind durch die Verbindung verschiedener Steinarten charakterisiert, die sich mit ihren seitlichen Oberflächen gegenseitig wie auch mit ihrem gesamten Ausmaß gegenüber anderen fest installierten Bauteilen stützen. Auf diese Art sind Öffnungen und Räume freischwebend. Vor der Entwicklung von Stahlbeton waren Gewölbe die einzigen (unbrennbaren) Bestandteile, mit denen Räume in massiver Weise verbaut werden konnten.

UMFANG / ARBEITSSTUFEN

Fundamente
Fassaden
Sanitärinstallationen
freistehende Fundamente
Wände
Bögen
Gewölbe
Leitungen
Schächte
Abflüsse

RELEVANTE GEWERKE

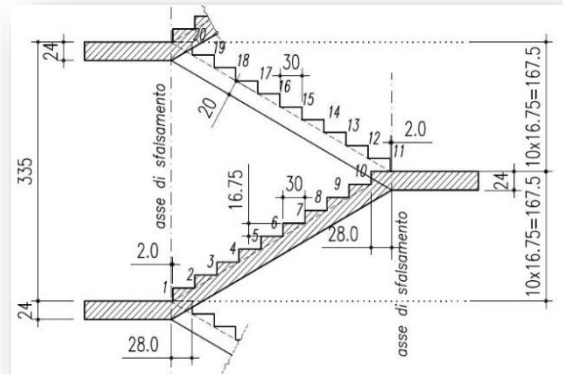
Mauerwerksbauer
Maurer

KSC BESCHREIBUNG

Kenntnisse	K1. Kennt und erläutert die Grundlagen der EQF-Stufen 1-3 (Maurer, Betonbauer, Steinverarbeiter).
	K2. Kennt die Funktionen, Konstruktionsprinzipien und Unterschiede von Bogen- und Gewölbeelementen.
	K3. Kennt Statikregeln und Prinzipien für die Konstruktion von Bögen, Gewölben und Widerlager.

Fertigkeiten	S1. Kann verschiedene Bögen im Format 1:1 skizzieren (z.B. Flachbogen, Korbogen, gotischer Bogen).
	S2. Kann Gerüste und Schalungen sowie die Steinarbeiten umsetzen.
	S3. Kann Bögen und Gewölbe aus Steinen in guter sichtbarer Qualität herstellen (Anmerkung: der Untergrund von Bögen und Gewölben ist während der Arbeiten nicht sichtbar)
Kompetenzen	C1. Gibt sein Wissen an Mitarbeiter weiter, leitet sie zu selbständigem Arbeiten an und überwacht die Ausführung.
	C2. Ist in der Lage, Zeit- und Materialplanung durchzuführen und dies dem Baustellenmanagement zu berichten als Basis für die spätere Abrechnung.
	C3. Ist in der Lage, Kunden fachgerecht zu beraten und weitere Arbeiten zu skizzieren.

Ricostruzione di scale e di altri elementi speciali: configurazione dei loro elementi strutturali



DESCRIZIONE

Ricostruzione di scale e di altri elementi speciali: ricostruzione di elementi strutturali ammalorati o danneggiati attraverso l'uso di materiali identici all'originale (o simili e compatibili) volti ad assicurare l'integrità strutturale del manufatto e la sua fruibilità.

AMBITO DI APPLICAZIONE/ FASI DI LAVORO

Muri
Volte
Strutture delle scale

SETTORI COINVOLTI

Muratori
Fabbri
Carpentieri

KSC DESCRIZIONE

Conoscenze	K1. Conoscenza dei principi fondamentali sul funzionamento statico e dinamico delle strutture, per identificare e classificare gli elementi da sostituirsi e da riprodurre.
	K2. Conoscenza degli standard dimensionali per la costruzione di scale idonee alla corretta fruizione.
	K3. Conoscenza della teoria sulle caratteristiche e qualità intrinseche ed estrinseche del materiale da utilizzare (pietra, mattoni, cls, legno, ..) per la formazione degli elementi strutturali.
	K4. Classificazione e definizioni di casi studio emblematici di più diffusa applicazione.
	K5. Conoscenza della geometria descrittiva per il disegno bidimensionale e tridimensionale dell'elemento strutturale.
	K6. Conoscenza della stereotomia della pietra per la costruzione di scale complesse lapidee.
	K7. Conoscenza dei moduli di produzione degli elementi strutturali lapidei attraverso il procedimento di produzione Cad- Cam, con l'uso di macchine a controllo numerico.

Abilità	S1. Creazione di modelli che riproducano applicazioni teoriche.
	S2. Discussione sulle eventuali modalità di esecuzioni alternative su casi studio.
	S3. Classificazione degli interventi di ricostruzione, identificando le principali problematiche in riferimento ai materiali utilizzati, individuando le soluzioni migliori ed il materiale più performante per ogni tipologia di intervento.
	S4. Operare sulla definizione degli elementi strutturali in pietra attraverso la pratica delle tecniche degli scalpellini.
	S5. Creazione di elementi strutturali attraverso la produzione Cad-cam, con l'uso di macchina a controllo numerico.
Competenze	C1. Occuparsi dell'individuazione degli elementi strutturali ammalorati da sostituirsi.
	C2. Produrre elementi strutturali in pietra attraverso l'uso delle tecniche degli scalpellini.
	C3. Produrre elementi strutturali in pietra attraverso l'uso delle tecniche CAD – CAM.
	C4. Occuparsi del montaggio degli elementi strutturali (gradini di una scala, sostituzione architrave, ecc..) gestendo il comportamento statico degli stessi e delle strutture limitrofe.

Site Stage II : Roofs



Pose des composants de la structure d'un pignon de toit



DESCRIPTION GENERALE

La structure du toit est l'épine dorsale du toit. Traditionnellement en bois, il peut également être en béton ou en métal, ces deux matériaux étant de plus en plus utilisés.

La structure est soumise à plusieurs forces : force de traction, force de flexion et force de compression. Il est nécessaire de trouver la forme la plus appropriée pour résister à ces forces.

Le cadre se compose d'une ou plusieurs fermes. La ferme en bois est une structure triangulaire, perpendiculaire aux parois de support. Si le toit est composé de plusieurs armatures, les fermes sont interconnectées par des pièces appelées chevrons.

Les différentes parties d'un ancien cadre sont interconnectées par des chevilles en bois. Le cadre traditionnel est le cadre le plus utilisé. Il est en bois.

Dans la conception du toit en pente, le terme « pignon » désigne la partie supérieure de la paroi qui monte au toit d'une immeuble trois ou quatre façade. De forme triangulaire, cette partie supporte les pentes d'un toit avec deux pentes. À l'origine, le pignon est en brique, tout comme le mur dont il fait partie. Cependant, il peut être nécessaire d'appliquer un revêtement pour le protéger.

En effet, si le pignon en question appartient à une façade face aux vents dominants, il subit fortement les assauts des pluies. De là peuvent venir les risques d'infiltration, et donc l'humidité qui vont bientôt se propager à l'intérieur de la maison. Il est alors nécessaire d'apposer une couverture qui servira de carapace.

ÉTENDUE / ÉTAPE DE TRAVAIL

Toit
Dalles
Courroies (structure de pignon)

MÉTIERs IMPLIQUÉS (ESCO)

Travailleurs du bois
Travailleurs de l'ardoise
Métallurgistes (acier, plomb, cuivre et zinc)

KSC MAP

Connaissances	K1. Identifier différents types de pignons fréquemment utilisés dans sa région et leur méthode de construction. (Le plus souvent en bois)
	K2. Connaissance des aspects théoriques et pratiques de la mise en application. Comprendre les fonctions du pignon et de la charpente en général pour supporter le toit face aux intempéries (neige, pluie ...)
	K3. Connaissance de la méthodologie pour contrôler l'état de la structure existante
	K4. Identifier les dommages qui affectent la structure du pignon et définir les besoins en réparations pour chaque type de dommage.
	K5. Connaître les procédures d'exécution d'une structure traditionnelle : matériel, outillage et méthodes de construction
	K6. Identifier les outils à utiliser dans le placement d'une structure de pignon : types, fonctions, management et les exigences au niveau de la sécurité
	K7. Distinguer les divers types de déchets de la démolition et de la construction qui pourraient être générés et les méthodes pour les traiter.
	K8. Identifier les travaux risqués associés au travail de la restauration d'un pignon et connaître les mesures de prévention et de protection nécessaires pour leur contrôle. Vérifier la conformité de la structure.
Attitudes	S1. Fabrication Le traçage : faire des croquis et des lectures pour la fabrication, Tracer les morceaux de bois selon un modèle, repérer et marquer les morceaux de bois. La découpe : sciage de bois, coupe à travers les joints, façonnage des morceaux de bois, maintien des couteaux Assemblage : Installer une structure assemblée, installez le matériel, montez les éléments préfabriqués aux modèles, vérifiez la conformité et la précision de l'assemblage avec l'esquisse Expliquer la réalisation des éléments singuliers et son importance, en reliant les causes des dysfonctionnements détectés dans la structure du pignon et les réparations nécessaires et en identifiant les mesures qui doivent être respectées. S2. Réaliser le démantèlement de la structure du pignon, éviter tout dommage aux matériaux enlevés et autres éléments constructifs qui doivent être conservés, en observant les conditions de manipulation et la fourniture de différents matériaux, en appliquant les critères d'acceptation des éléments d'origine démantelés pour leur réutilisation et en vérifiant L'état et la résistance de la structure. Dans la majorité des cas de restauration, un démantèlement mondial est nécessaire.
	S3. Mise en œuvre sur chantier Vérifier l'outillage, les matériaux et les moyens de protection personnelle et collective Vérifier les dimensions, les carrés, les niveaux Montage, levage et installation Assembler les éléments structurels sur le sol, augmenter, régler les structures de support, installer les pièces (pannes, chevrons) Remplacement ou restauration d'éléments défectueux Installation et fixation des connexions et ancrages Distribution et fixation des revêtements, etc.
Compétences	C1. Combiner les connaissances techniques liées au patrimoine afin de créer ou de réparer la structure des gables qui répondent aux attentes du client et aux exigences du projet global. Identifier la séquence d'exécution et la configuration originale du pignon qui intercéder, en sélectionnant et en appliquant le matériel et l'équipement de travail, en appliquant les mesures de sécurité et de prévention contre les risques identifiés.

Colocación de tejas y otros materiales de cobertura



DESCRIPCIÓN GENERAL

Colocación de tejas y otros materiales de cubrición: colocación de las tejas o piezas de cubrición, como norma general, en hiladas horizontales sobre el soporte, perpendicularmente a la cumbrera, siguiendo la línea de máxima pendiente y de abajo arriba, garantizando el correcto solape de las piezas y fijándolas, en caso necesario y según el tipo de material de cubrición, mediante pasta o mortero o mediante clavos o ganchos sobre rastreles.

ALCANCE / ETAPA DE TRABAJO

Techo

Encuentros

Instalación de azulejos en el frontón inclinado

Revestimientos de chapa de acero

OFICIOS INVOLUCRADOS (ESCO)

Trabajadores de la pizarra

Ceramistas / alfareros (tejas cerámicas)

Metalúrgicos (acero, plomo, cobre y zinc)

KSC DESCRIPCIÓN

Conocimientos

K1. Saber interpretar los planos y conocer el contenido de la documentación de los proyectos de obra, en particular, en lo relativo a la definición técnica, representación gráfica y requisitos de estanqueidad, aislamiento y resistencia de las cubiertas.

K2. Comprender la función de las cubiertas y su comportamiento frente al agua, el viento y el paso del calor: las leyes del recorrido del agua, tensión superficial, escorrentía, absorción y capilaridad; la acción y fuerza de succión del viento; los materiales aislantes y puentes térmicos.

K3. Identificar los elementos que componen las cubiertas tradicionales: formación de pendientes, tablero y material de cobertura.

K4. Distinguir los distintos tipos de coberturas de las cubiertas tradicionales: sistemas de fijación, piezas especiales, propiedades, comportamiento e incompatibilidades.

	K5. Identificar las lesiones que afectan a las cubiertas y definir la reparación necesaria según el tipo de lesión.
	K6. Conocer los procesos de ejecución de las cubiertas tradicionales: materiales y métodos de construcción de los faldones y tableros y sus componentes.
	K7. Identificar las soluciones tradicionales de coberturas de cubiertas inclinadas mediante tejas (cerámicas y de pizarra) y mediante láminas metálicas (zinc, cobre...).
	K8. Identificar las herramientas empleadas en la colocación del material de cobertura de las cubiertas inclinadas: tipos, función, manejo y requisitos de seguridad.
	K9. Definir las condiciones de aceptación o rechazo de los materiales de cobertura desmantelados para su aprovechamiento en la restauración de la cubierta.
	K10. Distinguir las distintas clases de residuos de construcción y demolición que se pueden generar en los trabajos de restauración de las cubiertas tradicionales y su tratamiento correspondiente.
	K11. Identificar los riesgos laborales asociados a los trabajos de restauración de las cubiertas inclinadas y conocer las medidas de prevención y protección que se han de adoptar para su control.
Habilidades capacidades	S1. Describir el desarrollo de los trabajos de ejecución de las cubiertas tradicionales; precisando las funciones de los distintos elementos y capas, los materiales utilizados, los métodos de construcción de los faldones y tableros y la secuencia de colocación del material de cobertura. ...); explicando la realización de los elementos singulares y su importancia; relacionando las causas de las disfunciones detectadas en la cubierta y las reparaciones necesarias; e identificando las dimensiones características a respetar.
	S2. Realizar el desmontaje de los materiales de cobertura, evitando daños a los materiales retirados y a otros elementos de la construcción que se han de mantener, observando las condiciones de manipulación y acopio de los distintos materiales, aplicando los criterios de aceptación de los elementos originales desmantelados para su reutilización, y comprobando el estado y resistencia del tablero, estructura soporte y demás elementos de la cubierta.
	S3. Determinar replanteos y aplicar las técnicas tradicionales de cubrición en cubiertas inclinadas, en función del material de cobertura original: tejas cerámicas o de pizarra, láminas de cobre, zinc...; identificando la configuración a ejecutar (distribución y solapes de piezas...); interpretando la documentación técnica necesaria; empleando los materiales adecuados; aplicando la solución y secuencia de ejecución adoptadas; respetando el sistema original de fijación (claveteado, sobre rastreles, pasta de agarre, en seco...); resolviendo los encuentros y elementos singulares de la cubierta; observando las condiciones exigidas de estanqueidad, aislamiento y ventilación de la cubierta; y seleccionando y utilizando de manera adecuada los equipos de trabajo para el mecanizado y la colocación de las piezas de cobertura.
Competencias	C1. Aplicar técnicas tradicionales de colocación de materiales de cobertura en obras de restauración; identificando la secuencia de ejecución y la configuración originales de la cubierta en la que se va a intervenir; interpretando la documentación técnica necesaria y cumpliendo los requisitos del proyecto; realizando un desmantelamiento selectivo para el aprovechamiento de los elementos de cubrición originales; seleccionando y empleando los materiales y equipos de trabajo adecuados; aplicando las medidas de prevención y protección frente a los riesgos identificados; y minimizando el impacto sobre el medioambiente.

Ejecución de remates y petos



DESCRIPCIÓN

Ejecución de remates y petos: reconstrucción de aleros, cumbreras, limatesas, petos y otros elementos dañados en las cubiertas, mediante la aplicación de técnicas tradicionales y el uso de materiales idénticos, similares o compatibles a los originales.

ALCANCE / ETAPA DE TRABAJO

Techo

Estructura de los frontales (correas)

Encuentros en el techo

Frontón inclinado

Instalación de azulejos en el frontón inclinado

OFICIOS INVOLUCRADOS (ESCO)

Carpinteros

Trabajadores de la pizarra

Metalúrgicos (acero, plomo, cobre y zinc)

KSC DESCRIPCIÓN

Conocimientos

K1. Saber interpretar los planos y conocer el contenido de la documentación de los proyectos de obra, en particular, en lo relativo a la definición técnica, representación gráfica y requisitos de estanqueidad, aislamiento y resistencia de las cubiertas y sus elementos de remate.

K2. Identificar los elementos de remates de las cubiertas tradicionales: aleros, cumbreras, limatesas, petos, acroteras...

K3. Identificar las lesiones que afectan a los elementos de remates de las cubiertas inclinadas tradicionales y definir la reparación necesaria según el tipo de lesión.

K4. Conocer los procesos de ejecución de las cubiertas tradicionales: materiales y métodos de construcción de los faldones y tableros y sus componentes.

	K5. Identificar las soluciones de ejecución de los remates de las cubiertas inclinadas tradicionales: aleros, cumbreras, limatesas, petos, acroteras...
	K6. Identificar las herramientas empleadas: tipos, función, manejo y requisitos de seguridad.
	K7. Definir las condiciones de aceptación o rechazo de los materiales desmantelados para su aprovechamiento en la restauración de los remates de la cubierta.
	K8. Distinguir las distintas clases de residuos de construcción y demolición que se pueden generar en los trabajos de restauración de las cubiertas tradicionales y su tratamiento correspondiente.
	K9. Identificar los riesgos laborales asociados a los trabajos de restauración de los remates de las cubiertas inclinadas y conocer las medidas de prevención y protección que se han de adoptar para su control.
Habilidades capacidades	S1. Describir el desarrollo de los trabajos de ejecución de los remates de las cubiertas tradicionales; precisando las funciones de los distintos elementos (aleros, cumbreras, limatesas, petos, acroteras...), los materiales utilizados y la secuencia de realización; relacionando las causas de las disfunciones detectadas en estos elementos de remate y las reparaciones necesarias.
	S2. Realizar el desmontaje de los elementos de remates de cubiertas que se tienen que reparar o sustituir, evitando daños a los materiales retirados y a otros elementos de la cubierta que se han de mantener, observando las condiciones de manipulación y acopio de los distintos materiales, aplicando los criterios de aceptación de los elementos originales desmantelados para su reutilización, y comprobando el estado y resistencia de la estructura soporte y demás elementos de la cubierta.
	S3. Determinar replanteos y aplicar las técnicas tradicionales de ejecución de los remates de las cubiertas inclinadas; interpretando la documentación técnica necesaria; empleando los materiales adecuados; respetando la configuración original del elemento de remate a restaurar (alero, cumbrera, limatesa, peto, acrotera...); observando las condiciones exigidas en el encuentro con el resto de elementos de la cubierta y paramentos del edificio; y seleccionando y utilizando de manera adecuada los equipos de trabajo necesarios.
Competencias	C1. Aplicar técnicas tradicionales de ejecución de remates y petos de cubiertas en obras de restauración; identificando la solución original; interpretando la documentación técnica necesaria y cumpliendo los requisitos del proyecto; realizando en caso necesario un desmantelamiento selectivo para el aprovechamiento de los elementos originales; seleccionando y empleando los materiales y equipos de trabajo adecuados; aplicando las medidas de prevención y protección frente a los riesgos identificados; y minimizando el impacto sobre el medioambiente.

Resolución de encuentros de cubiertas



DESCRIPCIÓN

Resolución de encuentros de cubiertas: reparación de limahoyas y encuentros dañados en las cubiertas con hastiales, petos, chimeneas, buhardillas y lucernarios, entre otros elementos salientes, mediante la aplicación de técnicas tradicionales y el uso de materiales idénticos, similares o compatibles a los originales.

ALCANCE / ETAPA DE TRABAJO

Techo

Estructura de los frontales (correas)

Encuentros

Instalación de azulejos en el frontón inclinado

OFICIOS INVOLUCRADOS (ESCO)

Carpinteros

Trabajadores de la pizarra

Metalúrgicos (acero, plomo, cobre y zinc)

KSC DESCRIPCIÓN

Conocimientos

K1. Saber interpretar los planos y conocer el contenido de la documentación de los proyectos de restauración, en particular, en lo relativo a la definición técnica y resolución de los encuentros de las cubiertas y los requisitos de estanqueidad, aislamiento y resistencia.

K2. Identificar los encuentros de las cubiertas tradicionales con otros elementos constructivos: hastiales, petos, chimeneas, buhardillas, lucernarios.

K3. Identificar las lesiones que afectan a los encuentros de las cubiertas inclinadas tradicionales con otros elementos constructivos y definir la reparación necesaria según el tipo de lesión.

K4. Conocer los procesos de ejecución de las cubiertas tradicionales: materiales y métodos de construcción de los faldones y tableros y sus componentes.

K5. Identificar las soluciones de ejecución de las limahoyas de las cubiertas inclinadas tradicionales y los encuentros con hastiales, petos, chimeneas, buhardillas, lucernarios...

	K6. Identificar herramientas empleadas: tipos, función, manejo y requisitos de seguridad.
	K7. Definir las condiciones de aceptación o rechazo de los materiales desmantelados para su aprovechamiento en la restauración de los encuentros de la cubierta con otros elementos constructivos.
	K8. Distinguir las distintas clases de residuos de construcción y demolición que se pueden generar en los trabajos de restauración de las cubiertas tradicionales y su tratamiento correspondiente.
	K9. Identificar los riesgos laborales asociados a los trabajos de restauración de las cubiertas inclinadas y conocer las medidas de prevención y protección que se han de adoptar para su control.
Habilidades capacidades	S1. Describir el desarrollo de los trabajos de ejecución de los encuentros de las cubiertas tradicionales con otros elementos constructivos: hastiales, petos, chimeneas, buhardillas, lucernarios...; precisando las soluciones adoptadas, los materiales utilizados y la secuencia de realización; relacionando las causas de las disfunciones detectadas en estos encuentros y las reparaciones necesarias. S2. Realizar el desmontaje de los materiales utilizados en las limahoyas de las cubiertas y los encuentros con otros elementos constructivos, y que se han de reparar o sustituir, evitando daños a los materiales retirados y al restos de elementos de la cubierta, observando las condiciones de manipulación y acopio de los distintos materiales, aplicando los criterios de aceptación de los elementos originales desmantelados para su reutilización, y comprobando el estado y resistencia de la estructura soporte y demás elementos de la cubierta. S3. Determinar replanteos y aplicar las técnicas tradicionales de ejecución de las limahoyas y los encuentros de las cubiertas inclinadas con otros elementos constructivos: hastiales, petos, chimeneas, buhardillas, lucernarios...; interpretando la documentación técnica necesaria; empleando los materiales adecuados; respetando la configuración y solución originales; observando las condiciones exigidas de resistencia, estanqueidad y aislamiento en el encuentro; y seleccionando y utilizando de manera adecuada los equipos de trabajo necesarios.
Competencias	C1. Aplicar técnicas tradicionales de ejecución de las limahoyas de las cubiertas tradicionales y sus encuentros con otros elementos; identificando la solución original; interpretando la documentación técnica necesaria y cumpliendo los requisitos del proyecto de restauración; realizando en caso necesario un desmantelamiento selectivo para el aprovechamiento de los materiales originales; seleccionando y empleando los materiales y equipos de trabajo adecuados; aplicando las medidas de prevención y protección frente a los riesgos identificados; y minimizando el impacto sobre el medioambiente.

Site Stage III: Plumbing

Instalação e reparação de caleiras, tubos de queda e outros componentes das redes



DESCRIÇÃO GERAL

Diagnosticar, planejar, implementar e monitorizar trabalhos de reabilitação / reconstrução de caleiras, tubos de queda e outros componentes do sistema, considerando a construção original e respeitando as normas atuais de construção (normas técnicas / segurança, saúde e ambiente).

ÂMBITO DE APLICAÇÃO / FASES DE TRABALHO

Canalizações
Conduatas
Caixas de visita
Caleiras

OFÍCIOS / PROFISSÕES / ÁREAS IMPLICADAS (ESCO)

Canalizadores,
Funileiros / Latoeiros
Pedreiros

KSC Mapa

Conhecimentos	K1. Interpreta a constituição de um processo, distinguindo as suas diferentes peças particularmente no que respeita às peças técnicas especiais no âmbito da reabilitação / reconstrução de caleiras, tubos de queda e outros componentes destes sistemas.
	K2. Compreende as funções dos diferentes sistemas de tubagens e dos seus constituintes designadamente tubos e acessórios, meios auxiliares de estanquidade e a sua reação às águas, humidades, vibrações, infiltrações,
	K3. Distingue os diferentes tipos de instalações e os seus componentes, o seu desempenho e incompatibilidades.
	K4. Identifica os diferentes tipos de materiais utilizados em sistemas tradicionais, as suas características e aplicabilidade.

	K5. Identifica as patologias que afetam estas instalações e define um plano de reparação considerando os materiais e os processos utilizados.
	K6. Identifica as ferramentas e equipamentos utilizados nestas instalações, as suas funções e precauções no seu manuseamento e requisitos de segurança.
	K7. Distingue os diferentes tipos de resíduos de construção tradicional que são gerados e o correspondente tratamento (chumbo, cobre).
	K8. Identifica os riscos associados às tarefas que executa assim como as respetivas medidas de segurança para a sua eliminação ou redução. Identifica medidas e equipamentos individuais de segurança.
	K9. Distinguir diferentes tipos de custos, designadamente custos de mão de obra e de materiais.
	K10. Identificar as questões relativas à implementação de estaleiro (Dimensões, condições, localização e relacionamento com autoridades locais).
Habilidades Capacidades	S1. Planeia a sequência dos trabalhos a desenvolver, estabelecendo as precedências entre as atividades. Determina os materiais a utilizar, determina os processos construtivos a adotar face à operacionalidade da obra e às anomalias e às respetivas necessidades de reparações efetuadas.
	S2. Acompanha os trabalhos de remoção dos materiais deteriorados, o seu acondicionamento para posterior tratamento, de acordo com a sua perigosidade.
	S3. Determina os outputs utilizando os materiais e equipamentos adequados tendo em conta as suas características e resistência, respeitando a traça original dos edifícios, acompanha desenvolvimento da execução de forma a garantir a qualidade dos trabalhos de acordo com as especificações técnicas.
Competências	C1. Gerir e supervisionar os trabalhos de reabilitação deste tipo de instalações, respeitando os processos e técnicas adequados a cada fase do processo, selecionando materiais, ferramentas e equipamentos a utilizar. Ser responsável pela monitorização e gestão de fluxos de resíduos, minimizar o impacto ambiental dos trabalhos realizados e tomando medidas de prevenção e segurança.

Execução de juntas, ligações de tubagens e fixação com outros elementos de construção



DESCRIÇÃO GERAL

Diagnosticar, planear, implementar e monitorizar trabalhos de reabilitação / reconstrução de juntas, ligações de tubagens e fixações com outros elementos de construção considerando a construção original, respeitando as normas atuais de construção (normas técnicas / segurança, saúde e ambiente) e tendo em conta a funcionalidade dos edifícios.

ÂMBITO DE APLICAÇÃO / FASES DE TRABALHO

Canalizações / Saneamento

Condutas

Caixas de visita

Caleiras

OFÍCIOS / PROFISSÕES / ÁREAS IMPLICADAS (ESCO)

Canalizadores,

Pedreiros

KSC Mapa

Conhecimentos	K1. Interpreta a constituição de um projeto, distinguindo as suas diferentes peças particularmente no que respeita às peças técnicas especiais. Compreende a integração do projeto a executar na rede de saneamento local.
	K2. Compreende as funções dos diferentes sistemas e dos seus constituintes, designadamente tubos de descarga e outros elementos da rede, e a sua compatibilidade com outros elementos construtivos.
	K3. Distingue os diferentes sistemas utilizados, vantagens e incompatibilidades.
	K4. Identifica os diferentes tipos de materiais utilizados, as suas características e aplicabilidade.
	K5. Identifica as patologias que afetam os diferentes componentes destes sistemas e define um plano de reparação considerando os materiais e os processos utilizados.

	K6. Identifica as ferramentas e equipamentos utilizados na execução dos trabalhos, as suas funções e precauções no seu manuseamento e requisitos de segurança.
	K7. Distingue os diferentes tipos de resíduos de construção que são gerados e o correspondente tratamento.
	K8. Identifica os riscos associados às tarefas que executa assim como as respetivas medidas de segurança para a sua eliminação ou redução. Identifica medidas e equipamentos individuais e coletivos de segurança.
	K9. Distinguir diferentes tipos de custos, designadamente custos de mão de obra e de materiais.
	K10. Identificar as questões relativas à implementação de estaleiro (Dimensões, condições, localização e relacionamento com autoridades locais).
Habilidades Capacidades	S1. Planeia a sequência dos trabalhos a desenvolver, estabelecendo as precedências entre as atividades. Determina os materiais a utilizar, determina os processos construtivos a adotar face à operacionalidade da obra e às anomalias e às respetivas necessidades de reparações efetuadas.
	S2. Acompanha os trabalhos de remoção dos materiais deteriorados, o seu acondicionamento para posterior tratamento.
	S3. Determina os materiais e equipamentos adequados tendo em conta as suas características e resistência, acompanha o desenvolvimento da execução de forma a garantir a realização dos trabalhos de acordo com as especificações técnicas.
Competências	C1. Gerir e supervisionar os trabalhos a realizar, respeitando os processos e técnicas adequados a cada fase do processo, selecionando materiais, ferramentas e equipamentos a utilizar. Ser responsável pela monitorização e gestão de fluxos de resíduos, minimizar o impacto ambiental dos trabalhos realizados e tomando medidas de prevenção e segurança.

Encaminhamento de águas pluviais - acabamentos / compatibilização entre elementos de construção



DESCRIÇÃO GERAL

Gerir e supervisionar os trabalhos de reabilitação que viabilizam o encaminhamento de águas pluviais provenientes da cobertura do edifício para o exterior através de caleiras ou outros elementos que necessitam de ser enquadrados com outros elementos construtivos.

ÂMBITO DE APLICAÇÃO / FASES DE TRABALHO

Coberturas
Conduatas
Caleiras
Tubos de Queda

OFÍCIOS / PROFISSÕES / ÁREAS IMPLICADAS (ESCO)

Canalizadores
Latoeiros / Funileiros

KSC Mapa

Conhecimentos	K1. Interpreta a constituição de um processo, distinguindo as suas diferentes peças particularmente no que respeita às peças técnicas especiais no âmbito do encaminhamento das águas pluviais.
	K2. Compreende as funções dos diferentes sistemas de encaminhamento de águas pluviais e dos seus constituintes, designadamente caleiras, algerozes, tubos de queda e outros elementos bem como a sua reação ao meio envolvente.
	K3. Distingue os diferentes tipos de sistemas de encaminhamento de águas pluviais utilizados na reabilitação, o seu desempenho e incompatibilidades.
	K4. Identifica os diferentes tipos de materiais utilizados em sistemas tradicionais de encaminhamento de águas pluviais, as suas características e aplicabilidade.
	K5. Identifica as patologias que afetam os diversos elementos utilizados no encaminhamento de águas pluviais (entupimentos de caleiras e algerozes, degradação das soldaduras e dos materiais) e define um plano de reparação considerando os materiais e os processos utilizados.

	K6. Identifica as ferramentas e equipamentos utilizados nos trabalhos de encaminhamento de águas pluviais, as suas funções e precauções no seu manuseamento e requisitos de segurança, designadamente as relativas aos trabalhos em altura.
	K7. Distingue os diferentes tipos de resíduos de construção tradicional que são gerados neste processo e o correspondente tratamento (chumbo, cobre, betões, zinco).
	K8. Identifica os riscos associados às tarefas que executa no âmbito dos trabalhos de encaminhamento de águas pluviais (em particular as relacionadas com trabalhos em altura e soldaduras) assim como as respetivas medidas de segurança para a sua eliminação ou redução. Identifica medidas e equipamentos individuais e coletivos de segurança.
	K9. Distinguir diferentes tipos de custos, designadamente custos de mão de obra e de materiais.
	K10. Identificar as questões relativas à implementação de estaleiro (Dimensões, condições, localização e relacionamento com autoridades locais).
Habilidades Capacidades	S1. Planeia a sequência dos trabalhos a desenvolver, estabelecendo as precedências entre as atividades. Determina os materiais a utilizar, determina os processos construtivos a adotar face à operacionalidade da obra, às anomalias diagnosticadas e às respetivas necessidades de reparações efetuadas.
	S2. Acompanha os trabalhos de remoção dos materiais deteriorados, o seu acondicionamento para posterior tratamento/ reutilização, de acordo com a sua perigosidade.
	S3. Determine os materiais e equipamentos adequados tendo em conta as suas características e resistência, respeitando a traça original dos edifícios e a compatibilidade entre elementos, acompanhar a execução de forma a garantir a qualidade dos trabalhos de acordo com as especificações técnicas.
Competências	C1. Gerir e supervisionar os trabalhos de reabilitação que viabilizam o encaminhamento de águas pluviais provenientes da cobertura do edifício para o exterior através de caleiras ou outros elementos que necessitam de ser enquadrados com outros elementos construtivos, respeitando os processos e técnicas adequadas a cada fase do processo, selecionando materiais, ferramentas e equipamentos a utilizar. Ser responsável pela monitorização e gestão de fluxos de resíduos, minimizar o impacto ambiental dos trabalhos realizados e tomando medidas de prevenção e segurança adequadas.

Site Stage IV : Finishing



Traitement des joints de façades et d'architecture intérieure



DESCRIPTION GENERALE

Traitement de surface des espaces entre les éléments de maçonnerie qui garantit l'étanchéité à l'eau et évite la prolifération de mousses et de végétaux indésirables pouvant dégrader la maçonnerie. L'articulation produit une apparence esthétique. Ces joints peuvent être traités de différentes manières en appliquant des mortiers différents.

ÉTENDUE / ÉTAPE DE TRAVAIL

Façades
Architecte d'intérieur / designer
Balustrades
Carreleur
Plafonneur
Peintre

MÉTIERS IMPLIQUÉS (ESCO)

Maçons
Plafonneur
Peintre

KSC MAP

Connaissances

K1. Identifier les différents types de mortiers selon les époques et les zones géographiques. Connaissance de la théorie sur les caractéristiques intrinsèques et extrinsèques et la qualité du matériau à utiliser (chaux, ciment ...) et leur application. Établir une liste de la composition des mortiers: sables de différentes sources, chaux, ciment et colorants.

K2. Identifier les outils utilisés pour le traitement des joints: les types, les fonctions, la gestion et les exigences de sécurité.

K3. Identifier les différentes maladies: mortier éviscérés, parasites, sels, lichen, végétation, fissuration, encrassement ...

	K4. Identifier les dommages qui affectent les joints et définir les réparations nécessaires en fonction de chaque dommage. K5. Distinguer les types de déchets de construction et de démolition qui peuvent être générés sur les travaux de restauration du traitement traditionnel des joints et les traitements correspondants. K6. Identifier les risques professionnels associés aux travaux de restauration du traitement des joints et connaître les mesures préventives et de protection nécessaires à leur contrôle.
Attitudes	S1. Préparation du travail : - Détecter les maladies et défauts du mortier. - Décider quelle technique exécuter : gommage, gommage à l'eau, extraction de pièces non adjacentes - Expliquer la réalisation des éléments singuliers et son importance, en liant les causes des dysfonctionnements détectés et les réparations nécessaires et en identifiant les mesures à respecter. Copier la composition le plus précisément possible. - Nettoyer le mur (vider les joints, enlever et traiter la végétation). S2. Planifier le temps et le nombre de travailleurs nécessaires, commander des matériaux, communiquer les besoins en matière de sécurité et de manutention à l'architecte ou au coordonnateur de la sécurité. S3. Appliquer les techniques traditionnelles : - Traiter les joints - Réaliser le démantèlement, en évitant d'endommager les matériaux enlevés qui doivent être conservés, en appliquant les critères d'acceptation des éléments originaux démantelés pour sa réutilisation et en vérifiant l'état et la résistance de la structure de support et du reste des éléments - Préparer un mortier homogène et durable avec la bonne consistance. - Compacter le mortier dans les joints vides S4. Réaliser les finitions - Protéger les endroits qui ne doivent pas être traités (planchers, chassis...). - Protéger le mur des intempéries.
Compétences	C1. Combiner les connaissances techniques liées du patrimoine afin de réaliser ou de réparer des joints de façade répondant aux attentes du client et aux exigences du projet global. Identifier la séquence d'exécution et la configuration initiale en sélectionnant et en utilisant le matériel adéquat et l'équipement de travail, tout en respectant les mesures de sécurité et de prévention des risques identifiés.

Disposizione delle finiture e degli elementi decorativi in muratura



DESCRIZIONE

Disposizione delle finiture e decorazioni in muratura: restauro o ripristino degli starti superficiali, non strutturali, di protezione e decorazione delle superfici verticali, esterne ed interne degli edifici, nonché la ricomposizione delle forme originarie di elementi decorativi in muratura

AMBITO DI APPLICAZIONE/ FASI DI LAVORO

Muri
Archi
Volte
Graticci
Cornici
Balconi
Balaústre

SETTORI COINVOLTI

Muratori

KSC DESCRIZIONE

Conoscenze	K1. Conoscenza dei prodotti di finitura per definirne la eventuale compatibilità con il supporto e della composizione chimica degli stessi.
	K2. Conoscenza della tecnica di applicazione (spessori) dei prodotti di finiture al fine di rispondere ad esigenze di protezione della muratura.
	K3. Conoscenza delle tecniche di decorazione a stucco (uso di modine e tipologie).
	K4. Conoscenza delle tecniche di rilievo e della geometria descrittiva per il ridisegno degli elementi decorativi da completare.
	K5. Conoscenza dei moduli di produzione degli elementi decorativi lapidei attraverso il procedimento di produzione Cad- Cam, con l'uso di macchine a controllo numerico.

	K6. Conoscenza delle tecniche degli scalpellini per l'integrazione di elementi scultorei e decorativi in pietra.
Abilità	S1. Realizzazione di calchi in gesso degli elementi decorativi al fine della comprensione di forme e volumi.
	S2. Esecuzione di decorazioni in opera attraverso modine e applicazioni di profili in gesso o stucco.
	S3. Operare sulla definizione degli elementi strutturali in pietra attraverso la pratica delle tecniche degli scalpellini.
	S4. Creazione di elementi strutturali attraverso la produzione Cad-cam, con l'uso di macchina a controllo numerico.
Competences	C1. Occuparsi dell'individuazione degli elementi decorativi ammalorati da sostituirsi.
	C2. Produrre elementi decorativi in pietra attraverso l'uso delle tecniche degli scalpellini
	C3. Produrre elementi decorativi in pietra attraverso l'uso delle tecniche CAD – CAM
	C4. Occuparsi del montaggio degli elementi decorativi (sculture, cornicioni, balaustre e cornici...) gestendo il comportamento statico degli stessi e delle strutture limitrofe, attraverso l'uso di barre in fibra di carbonio e resine epossidica, collanti, o attraverso la formazione di conci speciali da ancorarsi con malta.

Restoration and placement of other finishes of decorative elements**DESCRIPTION GENERAL**

Taille et ornemente, dans le cadre de travaux neufs ou de rénovation, des éléments de construction extérieure (parements de fenêtres, pavés, escaliers, ...), intérieure (cheminées, ...) ou de décoration (corniches, fontaines, bancs, ...) en minéraux naturels (grès, granit, calcaire, ardoise ...) selon les règles de sécurité. Peut sculpter et graver, poser les éléments façonnés sur les chantiers et effectuer des travaux de protection ou restauration de la pierre

ÉTENDUE / ÉTAPE DE TRAVAIL

Façades,
Cornices,
Balconies,
Balustrades,
Interior architecture.

MÉTIERS IMPLIQUÉS (ESCO)

Tailleur de pierre (stone carver)
Maçon

KSC MAP

Connaissances	K1. Différencier les différents types de pierre (calcaires, granit, grés) et matériaux annexes (résines, polymères, produits d'imprégnation) et leurs propriétés.
	K2. Identifier les différents styles et époques et caractériser les éléments qui les composent ainsi que les registres d'ornementation.
	K3. Connaître les différentes techniques de taille et de sculpture, manuelles et/mécaniques.
	K4. Identifier les différents outils (scie, ciseaux, massette, boucharde ...) et leur fonction.
	K5. Différencier les techniques de fixation (chevillage traditionnel, chevillage chimique) et de scellement (chimique ou traditionnel).
	K6. Connaître les adjuvants (plastifiant, imperméabilisant, fongicide ...), consolidant (résine durcisseurs), et reminéralisant (produit de surfacage) actuellement employés.
Attitudes	S1. Lire, comprendre et traduire les plans ou calepins d'appareillages.
	S2. Effectuer le relevé d'éléments d'ouvrages simples ou d'emplacements devant être remplacés ou aménagés.
	S3. Débiter, tailler, sculpter, assembler, polir.
	S.4 Réaliser des travaux de démontage ou de dépose d'ouvrages.
	S4. Réaliser des réparations en utilisant les techniques appropriées (restauration).
Compétences	C1. Remplacer et ou restaurer des éléments anciens décoratifs ou d'ornementation dans le respect du style architectural et historique du bâtiment. Prendre en compte les contraintes et l'environnement du chantier et situer l'intervention dans le déroulement des opérations de restauration.
	C3. Analyser les différentes composantes structurelles et déterminer l'état d'altération des éléments. Déterminer et choisir la ou les techniques de restauration à mettre en œuvre.

Decorative painting: selection of pigments and application of colour, lacquers and varnishes



DESCRIPTION GENERAL

Réaliser des décorations et des finitions adaptées aux exigences du chantier (style, époque, matériaux) et du client (demande, exigence, faisabilité)

ÉTENDUE / ÉTAPE DE TRAVAIL

Interior architecture/ design

MÉTIER S IMPLIQUÉS (ESCO)

Painters

KSC MAP

Connaissances	K1. Connaître les différentes Techniques de patine ancienne (céruse, cire ...).
	K2. Identifier les styles et époques ainsi que les éléments qui les caractérisent.
	K3. Caractériser identifier les différents matériaux (chaux, poudre de pierres, huiles, caséine) et leurs propriétés.
	K4. Identifier les surfaces de référence et supports (badigeon, enduit, bois, pierre...).
	K5. Identifier le matériel et outillage (différentes brosses et pinceaux, couteaux, outils de lissage ou de serrage ...) et leur fonction.
	K6. Connaître les différents composants (pigments, solvants, liants et siccatifs) ainsi que leurs propriétés spécifiques.
Attitudes	S1. Choisir des procédés d'exécution et des protocoles de mise en œuvre (glacis, badigeon, oxydation, vernissage, cristallisation ...).
	S2. Vérifier la nature et l'état des supports.

	S3. Préparer les outillages, les matériels, les matériaux pour réaliser un décor.
	S4. Réaliser les fonds (préparation du support en respectant l'ordre des travaux préparatoires et d'apprêt).
	S5. Préparer les produits en respectant les dosages et instruction notamment de sécurité.
	S6. Appliquer les produits avec les outils et les techniques adéquats et en respectant les temps et conditions d'application et de séchage. Respecter les délais de recouvrement.
	S7. Réaliser des patines de vieillissement et décoratives (enduit ciré, badigeon, effets de matière etc. ...).
	S8. Réaliser des raccords de restauration sur site.
Compétences	C1. Analyser les matériaux de support et apprécier leur état. Déterminer les zones d'intervention ou de préservation. Élaborer un protocole d'intervention adapté en tenant compte de l'environnement et des contraintes du site. Préparer les supports et les subjectiles.
	C2. Appliquer les produits dans le respect des règles de l'art et de sécurité tout en prenant la distance nécessaire en fonction du contexte et des aléas du chantier.
	C3. Réaliser des finitions décoratives dans le respect des règles de l'art et en harmonie avec l'environnement global du chantier de restauration.
	C4. Décoder, analyser et comprendre un cahier des charges. Tenir compte de l'exigence ou non de la réversibilité des techniques.

Elaboration and application of templates and moulds for decorative fittings



DESCRIPTION GENERALE

Corniches, moulures de style, chapiteaux, colonnes ou rosaces : le staffeur-ornemaniste réalise des éléments de décoration en staff ou en stuc pour habiller un intérieur ou restaurer une construction ancienne. Plâtres colorés et finitions sophistiquées lui permettent de créer des intérieurs de caractère.

ÉTENDUE / ÉTAPE DE TRAVAIL

Interior architecture/ design

Stucco

Gypsum

MÉTIER S IMPLIQUÉS (ESCO)

Plasterers (master staff and stucco /fibrous plasterer)

KSC MAP

Connaissances	K1. Identifier les Différents styles et époques et caractériser les éléments qui les composent.
	K2. Identifier Les différents éléments préfabriqués (Staff, moulures, ornementation).
	K3. Différencier les types de plâtres (plâtre grossier de construction, plâtre d'enduisage, plâtre allégé pour enduisage, plâtre à modeler, plâtre MOLDA).
	K4. Connaître les différentes techniques de moulage (avec fibre, sans fibre).
	K5. Différencier les types de scellement (plâtre fortement dosé, plâtre avec charge).
	K6. Connaître les différentes techniques d'assemblage et de collage (pose droite, pose en oblique, pose en quinconce).

	K7. Connaitre Les techniques de relevé (visuelle avec croquis, prise d'empreinte, photographie ...).
	K8. Identifier l'outillage de fabrication (gabarit zinc, bol à gâcher, moule silicone truelle, brosses, éponges, couteaux) et le matériel de pose (pointes, cordex, laser, niveau).
Attitudes	S1. Réaliser des trainages avec gabarit zinc https://www.youtube.com/watch?v=uQHllqakJ-o
	S2. Réaliser des prototypes, des modèles et des moules https://www.youtube.com/watch?v=K5o3CrjDnrc
	S3. Réaliser des fabrications staffées avec fibres ou toiles, végétales ou minérales.
	S4. Utiliser des techniques de pose par scellement ou collage.
Compétences	C1. Réaliser la pose d'éléments fabriqués ou préfabriqués en fonction de spécifications données tout en respectant les structures afin de <i>Remplacer et/ou de restaurer des éléments anciens de décoration</i> . Prendre en compte le style existant ou recréer un style en fonction du projet global de restauration.
	C2. Réaliser des modèles et/ou moules et/ou épreuves de différentes complexités pour <i>Créer ou recréer des éléments de décoration anciens manquants ou inexistants</i> . Déterminer et réaliser les mélanges appropriés dans le respect de consigne des produits. Choisir la technique la mieux appropriée et la mettre en œuvre.

Annex 2 – KSC Matrix

KSC Matrix

Construction system	Trades	Structural element	Work Site Activities
Foundations	Masonry	Walls Arches Vaults Standalone foundations [...]	Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework / shoring scaffolds
			Configuration of the arch elements according to layout
			Configuration of the vault elements
			Construction of brick wall caissons
			Preparation of mortar and grout
			[...]
	Stonework	Walls Arches Vaults Standalone foundations [...]	Stone cutting
			Cutting of custom pieces
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework/shoring scaffolds
			Configuration of the arch elements according to layout
			Configuration of the vault elements
			Construction of brick wall caissons
			Preparation of mortar and grout
			[...]
	Others (describe)	Others (describe)	Others (describe)
Sanitation and Plumbing installations	Masonry	Walls Vaults Ducts Manholes [...]	On-site layout sketch of the design
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework/shoring scaffolds
			Configuration of the arch elements according to layout
			Configuration of the vault elements
			Construction of brick wall caissons
			Preparation of mortar and grout

Construction system	Trades	Structural element	Work Site Activities
			[...]
	Stonework	Walls Vaults Ducts Rainwater spouts [...]	Stone cutting
			Cutting of custom pieces
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework/shoring scaffolds
			Configuration of the arch elements according to layout
			Configuration of the vault elements
			Construction of brick wall caissons
			Preparation of mortar and grout
			[...]
	Roof plumbing	Manholes Gutters Roof drains Rainwater spouts Drain pipes [...]	Cutting of lead piping
			Installation of system components
			Joining and welding of the components
			Joints, encounters and anchors to other construction elements
			[...]
	<i>Others (describe)</i>	<i>Others (describe)</i>	<i>Others (describe)</i>
Main Structure	Masonry	Walls Arches Vaults Domes Staircase structures Abutting elements [...]	On-site layout sketch of the design
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework/shoring scaffolds
			Configuration of the arch elements according to layout
			Configuration of the staircase structural elements
			Preparation of mortar and grout
			Configuration of finishes and decorative elements
			Finishing of encounters with other building elements
			[...]
	Stonework	Walls Arches Vaults Domes/Vaults Pillars Lintels Buttresses Staircase structures [...]	On-site layout sketch of the design
			Stone cutting
			Cutting of custom pieces
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of falsework/shoring scaffolds
			Configuration of the arch elements according to layout

Construction system	Trades	Structural element	Work Site Activities
			Configuration of lintels
			Configuration of the vault elements
			Configuration of the dome elements
			Rigging of the buttresses
			Configuration of the staircase structural elements
			Preparation of mortar and grout
			[...]
	Woodwork	Wooden trusses Studs Sleepers Girders Joists Trusses [...]	On-site layout sketch of the design
			Setting-out on site
			Cutting and fabrication of elements
			Installation of system components
			Joints
			Wood preservation treatments
			[...]
	Adobe	Walls [...]	Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Configuration of finishes and decorative elements
			Finishing of encounters with other building elements
			[...]
	Tapial/Rammed earth	Walls [...]	Setting-out on site
			Preparation of the mortar
			Formwork
			Uncasing of formwork
			Execution of finishes and decorative elements
			Finishing of encounters with other building elements
			[...]
	Steelwork	Pillars Trusses Spatial structures [...]	On-site layout sketch of the design
			Setting-out on site
			Cutting and fabrication of elements
			Installation of system components
			Joints
			Metal preservation treatments
			[...]
	Others (describe)	Others (describe)	Others (describe)
Facades	Masonry	Walls Arches Cornices Roof aprons	On-site layout sketch of the design
			Setting-out on site
			Construction of the rows of brick walling

Construction system	Trades	Structural element	Work Site Activities
		Finishes and decorative elements [...]	Rigging and construction to required specifications
			Rigging with metal braces or other means
			Configuration of cornice and roof apron elements
			Placement of other finishes and decorative elements
			Finishing of encounters with other building elements
			Preparation of mortar and grout
			[...]
	Stonework	Walls Arches Pillars Friezes/Wainscots Balustrades Cornices Roof aprons Sculptures and decorative elements [...]	On-site layout sketch of the design
			Stone cutting
			Carving of lintels, decorative elements and sculptures
			Cutting of custom pieces
			Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Construction of formwork
			Configuration of the arch elements according to their required layout
			Configuration of lintels
			Preparation of mortar and grout
			[...]
	Woodwork	Exterior woodwork Cornices Finishes and decorative elements [...]	On-site layout sketch of the design
			Cutting and fabrication of elements
			Setting-out on site
			Installation of system components
			Joints
			Wood preservation treatments
			Carving of custom pieces and decorative elements
			Installation of fittings
			[...]
	Steelwork	Balconies [...]	On-site layout sketch of the design
			Mould fabrication
			Parts fabrication
			Setting-out on site
			Installation of system components
			Joints
			Preservation treatments
			[...]
	Wrought iron	Carpentry Metal fittings Awnings	On-site layout sketch of the design
			Parts fabrication
			Setting-out on site, anchoring and placement

Construction system	Trades	Structural element	Work Site Activities
		Finishes and decorative elements [...]	Preservation treatments
			[...]
	Adobe	Walls Roof aprons Finishes and decorative elements Others (describe) [...]	Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Rigging with metal braces or other means
			Configuration of finishes and decorative elements
			Finishing of encounters with other building elements
			[...]
	Tapial/Rammed earth	Walls Roof aprons Finishes and decorative elements [...]	Setting-out on site
			Preparation of the mortar
			Formwork
			Uncasing of formwork
			Execution of finishes and decorative elements
			Finishing of encounters with other building elements
			[...]
	Renders	Gloss finishes Decorative fittings Finishes Abutting building elements [...]	Sketch layout and template design
			Preparation of the base surface
			Preparation of the mortar
			Checking and colour proofing
			Setting-out on site of the facade
			Fabrication of traditional cement downright/beads
			Application of the different layers
			Application of templates, removal of material, cutting and preparation of decorative fittings
			[...]
	Ceramic glaze	Gloss finishes Decorative fittings Mosaics Finishes Abutting building elements [...]	Preparation of the base surface
			Preparation of tile mortars
			Sketch layouts
			Setting-out on site of the facade
			Cutting of custom pieces
			Installation of pieces
			Grouting
			[...]
	Lead, copper and zinc metal sheeting	Bib Flashings Finishes and encounters accessories [...]	Preparation of the base surface
			Sketch layout
			Cutting and folding of sheets
			Cutting of custom pieces
			Positioning and fixing of elements
			Finishing of joints, overlaps and encounters
			[...]

Construction system	Trades	Structural element	Work Site Activities
	Glasswork	Window casings Balconies [...]	Sketch layout
			Glass cutting
			Colour application
			Setting-out on site and placement of the pieces
			Joints and lead strips
			Placement and attachment to the façade
			[...]
	Others (describe)	Others (describe)	Others (describe)
Interior architecture - design	Masonry	Partition walls [...]	Setting-out on site
			Construction of the rows of brick walling
			Rigging and construction to required specifications
			Placement of other finishes and decorative elements
			[...]
	Stonework	Balustrades Railings Finishing of gaps (doors) and ventilation [...]	On-site layout sketch of the design
			Stone cutting
			Carving of lintels, decorative elements and sculptures
			Cutting of custom pieces
			Setting-out on site
			Anchoring of parts
			Preparation of mortar and grout
			[...]
	Woodwork	Coffered ceilings Balustrades Railings Interior carpentry Flooring [...]	On-site layout sketch of the design
			Preparation of the base surface
			Cutting and fabrication of elements
			Setting-out on site
			Installation of system components
			Joining and assembly of the elements
			Fixing to the support structure
			Preservation treatments
			Carving of custom pieces and decorative elements
			Application of colour, lacquers and varnishes
			Other surface treatments: polishing
			[...]
	Stuccos	Gloss finishes Decorative fittings Finishes Abutting building elements [...]	Sketch layout and template design
			Preparation of the base surface
			Preparation of the mortar
			Checking and colour proofing
			Setting-out on site on the façade
			Fabrication of traditional cement downright/beads
			Application of different layers

Construction system	Trades	Structural element	Work Site Activities
			Application of templates, removal of material, cutting and preparation of decorative fittings
			[...]
	Ceramic glaze	Tiling Flooring Mosaics [...]	Preparation of the base surface
			Preparation of tile mortars
			Sketch layout
			Setting-out on site of the facade
			Cutting of custom pieces
			installation of the tiles
			Grouting
			[...]
	Painting	Fresco painting Tempera painting Lime wash painting Silica painting Lacquering [...]	Preparation of the base surface
			On-site layout sketch of the design
			Selection of pigments/colours
			Paint preparation
			Setting-out on site of the design on the walls
			Application of templates and elaboration of the decorative fittings
			Paint application
			[...]
	Gypsum and plaster	Mouldings Plasters Decorative elements Garnished and coated Flat ceilings [...]	On-site layout sketch of the design
			Mould fabrication
			Elaboration of mouldings, plaster and decorative elements
			Setting-out on site of the design
			Attachment of mouldings, plaster and decorative elements
			Treatment of the seams and joints
			[...]
	Wrought iron	Carpentry Metal fittings Awnings Finishes and decorative elements [...]	On-site layout sketch of the design
			Preparation of the elements
			Setting-out on site, anchoring and installation
			Preservation treatments
			[...]
	Others (describe)	Others (describe)	Others (describe)
Roof	Masonry	Pitched gable Slab Finishes and roof aprons Encounters of gables with other building elements [...]	On-site layout sketch of the design
			Setting-out on site
			Preparation of mortars
			Creation of pitches
			Installation of the slab or structure for the roof covering material
			Execution of finishes and roof aprons
			Cutting of custom pieces
			Support to other trades

Construction system	Trades	Structural element	Work Site Activities
			[...]
	Stonework	Pitched gable Finishes and roof aprons Encounters of gables with other building elements [...]	On-site layout sketch of the design
			Setting-out on site
			Preparation of mortars
			Creation of pitches
			Execution of finishes and roof aprons
			Cutting of custom pieces
			[...]
	Woodwork	Gable structure (straps) Roof slabs Encounters [...]	Setting-out on site of the gable structure
			Placement of straps and components of the gable structure
			Installation of the slab or support structure for the roof
			Resolution of encounters
			[...]
	Lead, copper and zinc metal sheeting	Bib Flashings Finishes and joints accessories Steel plate covering [...]	[...]
	Ceramic roof tiles	Tile installation on pitched gable Tile installation on finishes and roof aprons Tile installation on the encounters of gable and other building elements [...]	On-site layout sketch of the design
			Setting-out on site
			Preparation of mortars
			Creation of pitches
			Execution of finishes and roof aprons
			Cutting of custom pieces
			[...]
	Slate shingle	Tile installation on pitched gable Tile installation on finishes and roof aprons Tile installation on the encounters of gable and other building elements [...]	On-site layout sketch of the design
			Setting-out on site
			Installation of the tiles
			Creation of pitches
			Execution of finishes and roof aprons
			Cutting of custom pieces
			[...]
	<i>Others (describe)</i>	<i>Others (describe)</i>	<i>Others (describe)</i>

Annex 3 – European Skills, Competences, Qualifications and Occupation (ESCO) Taxonomy

Some information about ESCO Taxonomy ¹

ESCO is the multilingual classification of European Skills, Competences, Qualifications and Occupations.

ESCO is an important deliverable to support the Europe 2020 strategy and the New Skills Agenda for Europe.

The Commission services launched the project in 2010 with an open stakeholder consultation. DG Employment, Social Affairs and Inclusion manages the development and continuous updating of the ESCO classification. In this work, it is supported by stakeholders and by the European Centre for the Development of Vocational Training CEDEFOP.

The ESCO classification identifies and categorises skills, competences, qualifications and occupations relevant for the EU labour market and education and training.

It systematically shows the relationships between the different concepts.

A demo version of ESCO (ESCO v0) was published on 23 October 2013. This release marks the beginning of the pilot and testing phase. The first full version of ESCO (ESCO v1) is expected to be released mid-2017.

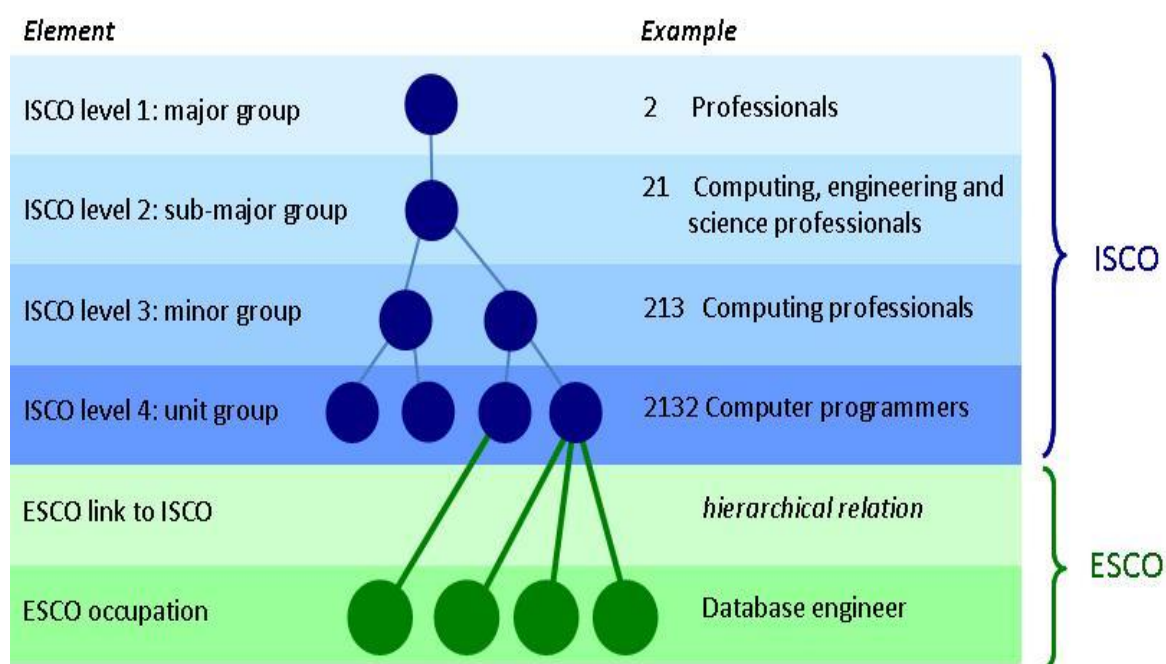
In ESCO, each occupation is mapped to exactly one ISCO-08 code (International Standard Classification of Occupations). ISCO-08 can therefore be used as a hierarchical structure for the occupations pillar. ISCO-08 provides the top four levels for the occupations pillar. ESCO occupations are located at level 5 and lower.

The International Standard Classification of Occupations (ISCO) is a four level classification of occupation groups managed by the International Labour Organisation (ILO). Its structure follows a grouping by education level. The two latest versions of ISCO are ISCO-88 (dating from 1988) and ISCO-08 (dating from 2008).

The drawing below illustrates the role of ISCO 08 in the hierarchical structure of the ESCO occupations pillar:

See: <https://ec.europa.eu/esco/portal>





Since ISCO is a statistical classification, its occupation groups do not overlap.

Each ESCO occupation is therefore mapped to only one ISCO unit group. It follows from this structure, that ESCO occupation concepts can be equal to or narrower than ISCO unit groups, but not broader.

The result is a strictly mono-hierarchical structure where each element at level 2 or lower has exactly one parent.

Include below two tables regarding the use of ESCO taxonomy in this project.

The first one presents the information about the different trades and indicates, in addition to the codes, the links where the information can be consulted. The second one presents a synthesis of the codes referenced in the 18 activities surveyed in the project.

ConceptURI	Concept Type	ConceptPT (@REF_LN)	ISCO code	Parent Concept URI	Parent ISCO code
http://data.europa.eu/esco/occupation/89	OG	Bricklayers and related workers [@en]	7112	http://data.europa.eu/esco/occupation/451	711
http://data.europa.eu/esco/occupation/18983	OC	Bricklayer [en]		http://data.europa.eu/esco/occupation/89	7112
http://data.europa.eu/esco/occupation/23149	OC	Granite mason [en]		http://data.europa.eu/esco/occupation/89	7112
http://data.europa.eu/esco/occupation/108	OG	Stonemasons, stone cutters, splitters and carvers [en]	7113	http://data.europa.eu/esco/occupation/451	711
http://data.europa.eu/esco/occupation/18678	OC	Stone sculptor [en]		http://data.europa.eu/esco/occupation/108	7113
http://data.europa.eu/esco/occupation/18645	OC	Mason (monuments) [en]		http://data.europa.eu/esco/occupation/108	7113
http://data.europa.eu/esco/occupation/18943	OC	Stonemason [en]		http://data.europa.eu/esco/occupation/108	7113
http://data.europa.eu/esco/occupation/18946	OC	Stone worker [en]		http://data.europa.eu/esco/occupation/108	7113
http://data.europa.eu/esco/occupation/81	OG	Carpenters and joiners [en]	7115	http://data.europa.eu/esco/occupation/451	711
http://data.europa.eu/esco/occupation/18348	OC	Stone setter [en]		http://data.europa.eu/esco/occupation/81	7115
http://data.europa.eu/esco/occupation/18987	OC	Construction wood worker [en]		http://data.europa.eu/esco/occupation/81	7115
http://data.europa.eu/esco/occupation/513	OG	Floor layers and tile setters [en]	7122	http://data.europa.eu/esco/occupation/462	712
http://data.europa.eu/esco/occupation/72	OG	Plasterers [en]	7123	http://data.europa.eu/esco/occupation/462	712
http://data.europa.eu/esco/occupation/19961	OC	Stucco worker [en]		http://data.europa.eu/esco/occupation/72	7123
http://data.europa.eu/esco/occupation/505	OG	Plumbers and pipe fitters [en]	7126	http://data.europa.eu/esco/occupation/462	712
http://data.europa.eu/esco/occupation/16723	OC	Plumber [en]		http://data.europa.eu/esco/occupation/505	7126
http://data.europa.eu/esco/occupation/477	OG	Painters and related workers [en]	7131	http://data.europa.eu/esco/occupation/408	713
http://data.europa.eu/esco/occupation/475	OG	Spray painters and varnishers [en]	7132	http://data.europa.eu/esco/occupation/408	713
http://data.europa.eu/esco/occupation/449	OG	Sheet-metal workers [en]	7213	http://data.europa.eu/esco/occupation/487	721

ConceptURI	Concept Type	ConceptPT (@REF_LN)	ISCO code	Parent Concept URI	Parent ISCO code
http://data.europa.eu/esco/occupation/441	OG	Structural-metal preparers and erectors [en]	7214	http://data.europa.eu/esco/occupation/487	721
http://data.europa.eu/esco/occupation/491	OG	Toolmakers and related workers [en]	7222	http://data.europa.eu/esco/occupation/458	722
http://data.europa.eu/esco/occupation/19940	OC	Steel engraver (glass, ceramics and related decorative painters) [en]		http://data.europa.eu/esco/occupation/255	7316
http://data.europa.eu/esco/occupation/19708	OC	Ceramist [en]	7314	http://data.europa.eu/esco/occupation/189	7314
http://data.europa.eu/esco/occupation/449	OG	Sheet-metal workers [en]	7213	http://data.europa.eu/esco/occupation/487	721
http://data.europa.eu/esco/occupation/441	OG	Structural-metal preparers and erectors [en]	7214	http://data.europa.eu/esco/occupation/487	721
http://data.europa.eu/esco/occupation/491	OG	Toolmakers and related workers [en]	7222	http://data.europa.eu/esco/occupation/458	72
http://data.europa.eu/esco/occupation/72	OG	Plasterers [en]	7123	http://data.europa.eu/esco/occupation/462	712
http://data.europa.eu/esco/occupation/19961	OC	Stucco worker [en]		http://data.europa.eu/esco/occupation/72	7123
http://data.europa.eu/esco/occupation/505	OG	Plumbers and pipe fitters [en]	7126	http://data.europa.eu/esco/occupation/462	712
http://data.europa.eu/esco/occupation/16723	OC	Plumber [en]		http://data.europa.eu/esco/occupation/505	7126
http://data.europa.eu/esco/occupation/477	OG	Painters and related workers [en]	7131	http://data.europa.eu/esco/occupation/408	713
http://data.europa.eu/esco/occupation/475	OG	Spray painters and varnishers [en]	7132	http://data.europa.eu/esco/occupation/408	713
http://data.europa.eu/esco/occupation/19708	OC	Ceramist [en]	7314	http://data.europa.eu/esco/occupation/312	7314
http://data.europa.eu/esco/occupation/449	OG	Sheet-metal workers [en]	7213	http://data.europa.eu/esco/occupation/487	721
http://data.europa.eu/esco/occupation/441	OG	Structural-metal preparers and erectors [en]	7214	http://data.europa.eu/esco/occupation/487	721
http://data.europa.eu/esco/occupation/491	OG	Toolmakers and related workers [en]	7222	http://data.europa.eu/esco/occupation/458	722
http://data.europa.eu/esco/occupation/20857	OC	Stone sawyer [en]		http://data.europa.eu/esco/occupation/189	8114

Work Site Activities	TRADES INVOLVED	ISCO Code
Stone cutting / cutting of customized pieces	Masons	7113
	Stonework	7113
Construction of the rows (courses) of brick walling / Rigging and construction to required specifications	Stoneworkers Bricklayers/masons	7113 7112/7113
Construction of false work/shoring scaffolds	Carpentry works	7115
Carving and configuration of structural lintels	Masons	7113
Setting of the arch or vault elements, anchors and encounters to other construction elements	Stoneworkers Masons	7113 7112/7113
Reconstruction of staircases and other special elements: configuration of its structural elements	Masons Steelworkers (Locksmiths) Carpenters	7112 / 7113 7214/7222 7115
Placement of straps and components of the gable structure	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)	7115 7113 7213
Placement of tiles and plate covering	Slate workers Ceramists/potters (ceramic roof tiles) Metalworkers (steel, lead, copper and zinc metal sheeting)	7113 7314 7213
Execution of finishes and roof aprons / Finishing executions and parapet walls	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)	7115 7214/7222 7213
Resolution of roof encounters	Woodworkers Slate workers Metalworkers (steel, lead, copper and zinc metal sheeting)	7115 7113 7213

Work Site Activities	TRADES INVOLVED	ISCO Code
Installation and repairs of guttering, downpipes and system components	Plumbers Roof plumbers Masons	7126 7213 7113
Execution of joints, encounters and anchors to other construction elements in sanitation installations	Plumbers Roof plumbers Masons	7126 7213 7113
Finishing of encounters of roof plumbing with other building elements	Plumbers Roof plumbers	7126 7213
Treatment of the seams and joints in facades and interior architecture	Masons Tillers Plasterers Painters	7113 7115 7123 7131/7132
Configuration of finishes and decorative elements of masonry elements (stone, brick)	Masons	7113
Restoration and placement of other finishes of decorative elements	Stone carver	7113
Decorative painting: selection of pigments and application of colour, lacquers and varnishes	Painters	7131/7132
Elaboration and application of templates and moulds for decorative fittings	Plasterers (master staff and stucco /fibrous plasterer)	7123

Project leader:



FUNDACIÓN
LABORAL
DE LA CONSTRUCCIÓN

Fundación Laboral de la Construcción
SPAIN

Partners:



Comité de Concertation et de Coordination de
l'Apprentissage du Bâtiment et des Travaux
Publics
FRANCE



Ente Nazionale per la Formazione e
L'Addestramento Professionale Nell'Edilizia
di Puglia
ITALY



Centro de Formação Profissional da Indústria
da Construção Civil e Obras Públicas do Sul
PORTUGAL



Bildungszentren des Baugewerbes e.V.
GERMANY



Centre IFAPME Liège-Huy-Waremme
BELGIUM

CONSTRUCTION
INHERITANCE

