AGREED

Tripartite Co-operation Sub-Council of Vocational Education and Employment at the meeting of 14 August 2019, Minutes No. 5.

ARCHITECTURAL TECHNOLOGIST PROFESSIONAL STANDARD

1. Title of profession, level of qualification						
Architectural Fourth (4th) level of professional qualification (4th LPQ)						
Technologist	(corresponds to the Latvian Qualifications Framework level fifth (5th)					
(5th LQR))						
	2. Professional qualification requirements					
Professional specializatio	ns:					
None.						
Related occupations, leve None.	el of qualification:					
	mmary of basic tasks and duties of professional activity					
performs various tasks in a production and incorporat element connections. Deve	t , working as part of a team under the supervision of a certified architect, all phases of the design process. Understands the technological processes for the ion of materials and building elements and carries out the graphic design of eloping the precise technology for the incorporation of materials and elements, ons for buildings and structures.					
Duties and tasks of an arch	itectural technologist:					
 To prepare initial davideo recordings, sur To carry out a docum To participate in the To perform photogra To carry out field sur To digitise the result To create a 3D surface 	eparation of the pre-project phase: ata (land boundary plan, topography, technical inventory file plans, photo or rvey data, etc.) necessary for the design analysis; nentary study of the building to be converted; visual inspection of the building and site to be converted; aphic and/or video recording of the building and site to be converted; rveys of the construction site; s of the building survey; ce model of the surrounding built environment. lysis of construction materials and technologies:					
 To identify technological options for implementing architectural solutions; To find the most efficient technology to implement the architectural solution To provide building materials and construction products appropriate to the architectural solution adopted and the technology selected; To assess the conformity of architecture, technological solutions, construction materials and constructions and standards. 						
 3.3. Selection, design and To identify the main To develop technical 	visual representation of construction materials and technologies: technical solutions needed; I solutions for the building envelope; cations for building elements (tables for finishes, column fills, architectural					

- To monitor the compatibility of engineering solutions;
- To participate in the design of buildings to be converted;
- To make simulations-calculations using an information model (calculations of sound insulation, heat loss, sound insulation and noise insulation);
- To develop a work organisation project.

3.4. Presentation of project documentation, including using the information model:

- To prepare architectural drawings and specification/volume tables;
- To produce detailed drawings and specifications for the building elements and their connections shown in the architectural section;
- To make changes to the information model and drawings;
- To choose a design (view, page size, type and scale) appropriate to the layout;
- To draw up a construction drawing with graphical markings and dimensions;
- To print and assemble construction design materials at different scales and formats;
- To archive the construction project materials.
- 3.5. Implementing the Fundamental Principles of Professional Conduct:
 - To comply with labour law, occupational health and safety, environmental protection and civil protection requirements;
 - To continue education and development, including research.

	4. The skills and attitudes, PROFESSIONAL knowledge and competences required for the performance of the main tasks and duties of the professional activity							
No.	Tasks	Skills and attitudes	Professional knowledge	Competences (level of qualification	on)			
4.1.	To prepare the initial data required for the design analysis (land boundary plan,	To digitize available baseline data.	At the level of understanding: Regulatory enactments governing	Ability to create an information model of a surveyed construction site at an initial level of detail and to produce drawings.	5. LQR			
	topography, technical inventory file plans, photo or video recordings, survey data,	Graphically represent in 2D diagrams and 3D models the restrictions and protection zones resulting from the regulatory enactments.	construction, spatial planning documents. <u>At the level of use:</u>					
	etc.).	To use historical information models.	Principles of operation of computer and office equipment.					
		To systematize photographic and/or video footage.	Application software (word and image processing, spreadsheets, presentations, databases, web and email browsers, design, project management, graphical editors).					
		To organize the initial data for further work in the project environment (file names, file and folder structure) according to the adopted standard.	Building design designations, cartographic and drawing designations. Methods for capturing, structuring and					
		To present the initial data collection in an easy- to-understand format (presentation, volume, etc.)	storing photographic and survey data. Work with office equipment. Information systems security. Computer security programmes.					
4.2.	To carry out a documentary study of the building to be converted.	Verification of the existence of the heritage value or monument status of the building to be converted.	At the level of understanding: Documentation of the building construction and operation process.	Ability to carry out, under the guidance of an architect, a documentary study of the building to be converted.	5. LQR			
		Under the supervision of an architect, collect and collate technical inventory documents and archive material for the building to be converted.	At the level of use: Legislation and databases in the field of monument protection (including cartographic).					
4.3.	To participate in buildings and sites to be converted	Under the guidance of an architect, visually inspect the building to be converted and the site on site.	At the level of understanding: Legislation on spatial planning	Ability to participate, under the supervision of an architect, in the visual inspection of the building and site to be converted.	5. LQR			

4.4.	Visual inspection To perform photographic and/or video recording of the building and site to be converted.	architectural and layout elements of the building to be converted with the available historical information. To record the features and defects of the physical condition of the architectural and planning elements of the building to be converted. To plan for photographic and/or video recording of the building and site to be converted (weather and lighting conditions on site, angles and accessibility). To choose the necessary technical equipment, note-taking materials and photo-recording method. Knowledgeable use the chosen technical equipment (photo, video camera or other special devices). Independently carry out photographic and/or video recording of the building to be converted and of the site in accordance with the plan drawn up. To take a photo record in such a way that a 3D surface model of the object (buildings, structures, terrain) can be created. To save the results of your photo and/or video capture to your computer.	and protective zones. Documentation of the building construction and operation process. <u>At the level of use:</u> Parts and elements of buildings, their historical evolution. <u>At the level of understanding:</u> Building elements and materials. Building design designations, cartographic and drawing designations. <u>At the level of use:</u> Photo and video recording devices and their use. Working with computers and office equipment Photo and video capture methods. Application software (word processing, graphical editors, spreadsheets, presentations, databases, web and email browsers, image merging software).	Ability to independently carry out photographic and/or video recording of the building and site to be converted in accordance with the plan drawn up and the architect's brief.	4. LQR
4.5.	To carry out field surveys of the construction site.	To measure the main elements of the construction site in accordance with the brief. To measure individual parts of historically valuable substances in the field (eaves, railings, window profiles, etc.) To perform 3D surveying using a simple laser scanner.	At the level of understanding: Building design designations, cartographic and drawing designations. <u>At the level of use:</u> Building elements (including structures and construction products) and materials.	To carefully and independently carry out and accurately document the results of the site measurements in accordance with the plan drawn up and the architect's brief.	4. LQR

		To document measurements in working materials (plans, sections, photographic prints). To distinguish between different types of building structures and construction products and types of materials. To document the condition of the structures and materials on the construction site.	Point cloud aggregation software. Types of measuring instruments and their use. Surveying technology, tools and their use.		
4.6.	To digitize the results of the site survey.	To interpret survey materials (photo and video recordings, sketches). To build a 3D model of the site geometry following the BIM implementation plan.	At the level of use: Working with computers and office equipment Working with 3D graphical editors.	To create an information model of a surveyed building site at an initial level of detail and produce drawings.	5. LQR
		To design drawings that reflect the current condition of the construction site (including from the model).	Publicly accessible cartographic and geospatial databases. To work with 2D and 3D modelling software.		
4.7.	To create a 3D surface model of the surrounding built environment.	Independently determine the level of model detail required for the task.	<u>At the level of understanding:</u> Analysis of the built environment context, assessment of the visual impact of the	To create a 3D surface model of the surrounding built environment in the detail specified in the brief.	5. LQR
		To use original data (topography, survey materials, photo and/or video recordings, etc.) to inform the design.	proposed development, insolation and shading, external noise impact, wind impact analysis.		
		To use and interpret publicly available cartographic databases.	Building elements (including structures and construction products) and materials.		
		To use 3D modelling software to create a 3D surface model of the surrounding area.	<u>At the level of use:</u> Working with computers and office equipment Working with 3D graphical editors. To work with publicly available		
4.8.	To identify technological opportunities for architecture	To analyze the specifics of the task (building function, structural scheme, external and	At the level of perception:	Ability to identify technological options for implementing architectural solutions,	5. LQR

	solutions.	features of internal envelope, infill, external and internal finishes, architectural details, etc.).	Basic principles of architectural design.	by using a variety of information resources	
		To identify the relevant aspects (key technical characteristics, costs, market availability, functionality, etc.) for a specific building component/element. To use a variety of information resources to identify technological opportunities.	<u>At the level of understanding</u> : Effects of physical and chemical processes on buildings. <u>At the level of use:</u> Parts of buildings.		
		To identify and analyse the principle technological options.			
4.9.	To find the most efficient technology to implement the architectural solution.	To assess the interaction of relevant aspects (cost, market availability, functionality, etc.) for a given building component/element.	At the level of perception: Basic principles of architectural design.	Ability to find the most appropriate technology for the task and to justify the choice.	5. LQR
		To choose the most effective technology for a given architectural solution.	At the level of understanding: Effects of physical and chemical processes on buildings.		
		To produce data for the economic evaluation of selected technological options.	Cost of building elements and construction materials.		
			Technologies for the organisation and execution of construction works.		
			<u>At the level of use:</u> Parts of buildings. Calculation of the cost price.		
4.10.	To provide building materials and construction products appropriate to the architectural	To identify the individual components of a technological solution.	At the level of perception: Basic principles of architectural design.	Ability to analyse and assemble building materials and construction products appropriate to the architectural solution	5. LQR
	solution adopted and the technology selected.	To assess the compatibility of the individual components of the technological solution.	At the level of understanding: Effects of physical and chemical processes	adopted and the technology chosen.	
		To analyse building materials and construction products	on buildings.		

		the range available. To prepare an inventory of building materials and construction products used. To provide data for the economic evaluation of selected material mix options.	Cost of building elements and construction materials. Technologies for the organisation and execution of construction works. <u>At the level of use:</u> Parts of buildings. Technical characteristics of construction materials. Calculation of the cost price. Interaction of building materials within a technological solution. Using and creating BIM object libraries.		
4.11.	To assess the conformity of architecture, technological solutions, construction materials and construction products with building regulations and standards.	To identify the list of applicable regulations and standards for the assessment of technological solutions, construction materials and construction products. To assess the compliance of the architectural solution with the regulatory enactments according to the specified criteria. To verify compliance of the chosen technological solution, construction materials and construction products with building codes and standards.	At the level of understanding: Types and hierarchy of legislation, principles of application. <u>At the level of use:</u> Latvian building codes and standards. Construction laws and regulations.	Ability to assess architectural and technological solutions and the conformity of building materials and construction products with building regulations and standards.	5. LQR
4.12.	To identify the main technical solutions required.	Independently determine the scope of work to be carried out, planning time to complete the work. To identify the issues to be addressed in accordance with the terms of reference.	At the level of understanding: Mechanical and physical properties of construction materials. Working with graphical editors.	Ability to identify the main technical solutions required in accordance with the brief, work and schedule.	5. LQR

		To choose the level of detail and the scale of the solution according to the task.	Principles for promoting cooperation.		
			<u>At the level of use:</u>		
			Building codes and standards.		
			Basics of design.		
4.13.		To identify the overall architectural and	At the level of understanding:	Ability to develop appropriate technical	5. LQR
	for the building envelope.	structural design of the building.	Basic principles of architectural design.	solutions for building envelope structures, in accordance with the architectural and	
		To keep track of data and documentation to	Innovative technologies in construction.	structural design of the building.	
		meet the design brief.	Construction technologies.		
		To choose the method and technique of representation and development of technical solutions for building envelopes.	Basic principles of sustainability of buildings and structures.		
		To select materials appropriate to the building	Building elements (including structures and construction products) and materials.		
		elements.	At the level of use:		
		To identify possible innovative solutions.	Sketching techniques, principles of composition.		
		To assess the sustainability of the structure	Mechanical and physical properties of construction materials.		
		and/or building elements.	Specialized computer software		
		To design of the building envelope (floors,	(information model coordination, linking		
		slabs, roof, external and internal wall details, facades).	and cross-checking systems).		
		To design typical details and assemblies (plan assemblies, cut assemblies) of envelope structures.			
4.14.	To develop building element	To select and describe the necessary and key information to be included in the specifications	At the level of use:	Ability to produce accurate and detailed specifications for building components.	5. LQR
		from general material and technical information.	Calculation software.	specifications for building components.	

		Divide the building elements into appropriate groups. To summarize all materials used and required in the specifications of the building elements. To collect indicative material costs. To calculate the volumes of the building elements.	Construction technologies. Planning time and work during construction. Cost of construction materials and works, basic principles of estimating.		
4.15.	To monitor the interoperability of engineering solutions.	To communicate with the design professionals involved in the project. To evaluate and summarise the information received from the design professionals involved in the project. To integrate the solutions of the different parts of the construction project into a single building information model (architectural, structural, site and utility solutions). To identify incompatibilities in the interoperability of engineering solutions. To inform the supervisor of any non- compliance found. To prepare a task to address the non- compliance.	At the level of understanding: Basic principles and requirements for engineering solutions. <u>At the level of use:</u> Specific computer programmes (information model coordination, interlinking and cross-checking systems).	Ability to monitor the compatibility of engineering solutions, identify and resolve discrepancies.	5. LQR
4.16.	To participate in the design of buildings to be converted.	To collect technical information and costs for the restoration or replacement of identified damaged building elements or works. To present options for the reconstruction concept.	<u>At the level of understanding:</u> Basic principles and technological possibilities for preserving cultural heritage. Historical building technologies.	Ability to present reconstruction concept options and participate in their comparison and evaluation.	5. LQR

		To participate in the comparison and evaluation of reconstruction options.	At the level of use: Basic principles of architectural design.		
4.17.	Simulation calculations using an information model (calculations of sound insulation, heat loss, sound insulation and noise insulation).	To explore the use of simulations. To identify the factors that influence the simulation results. To fill the information model with the initial data needed for the simulation.	<u>At the level of understanding:</u> Main types of simulations and calculations (insolation, daylighting, lighting calculation, energy efficiency, noise insulation and acoustics, fire safety, wind). <u>At the level of use:</u>	Ability to create and present simulation- calculations using an information model and calculation methodologies.	5. LQR
			Basics of building climatology. Calculation methodology.		
4.18.	To develop a work organisation project.	To establish a site organisation scheme.	<u>At the level of understanding:</u> Regulatory enactments governing the construction process.	Ability to develop a work organisation project, including a description of the environmental protection measures, according to the specific characteristics of the site.	5. LQR
		To identify the main types of equipment, handling types and options.	At the level of use:		
		To determine the sequence of work to be carried out.	Construction site equipment and technology.		
		To develop a description of environmental protection measures on the construction site.	Environmental requirements in construction. Occupational health and safety		
		Independently develop a civil protection plan for the construction site.	requirements in construction. The legal framework for the civil protection system, organisational structure, capacity building for disaster management, handling of hazardous and explosive substances and security measures.		
			Objects of increased danger.		
			Hazardous substances, their classification and requirements for their storage and transport.		
			Work sequencing.		

4.19.	To prepare architectural drawings and specification/volume tables.	To produce architectural drawings and specification/volume tables. To choose appropriate methods for extracting information from the model. To use drafting standards. To adjust parametric design defaults according to drafting standards and the specifics of the drawings. To create appropriate blanks for various types of drawings and specification tables in parametric design software. To composite drawing sheets. To reprezent on the drawing the necessary set of graphical and descriptive information about	At the level of understanding: Legislation relating to the representation of information on drawings. Parametric model information set. <u>At the level of use:</u> Building design designations, cartographic and drawing designations. Working with parametric design software. Principles of object representation in construction drawings. Information to be shown on construction drawings. Basic principles of composition.	Ability to prepare a set of architectural drawings and tables of specifications/scopes.	5. LQR
4.20.	To produce detailed drawings and specifications for the building elements and their connections shown in the architectural section.	the construction site. Distinguish between different groups of building elements. To identify the list of elements to be specified. To identify the locations of assemblies requiring detail drawings. To develop specifications for architectural solutions, including information from the model. To identify the essential characteristics of construction materials and construction products. To calculate the quantitative properties of the elements,	At the level of understanding: Composition of the building design. Construction technologies. <u>At the level of use:</u> Thermal parameters of building structures. Basic principles and practical applications for estimating the lighting and acoustic properties of building spaces. Parts of buildings, architectural elements. Details and specifications of architectural solutions.	Ability to independently produce detailed drawings and specifications of the building elements and their connections presented in the architectural section.	5. LQR

		including by extracting information from the model. To develop drawings of parts and link them to the information model. To control that the specifications produced are of the required scope and level of detail.	Types of construction materials and their uses.		
4.21.	To make changes to the information model and drawings.	To identify changes made to the information model and drawings. To identify drawing revisions. To design drawing revisions.	<u>At the level of use:</u> Drawing standards. Parametric design software. Drawing design. Work with automated design software.	Ability to work collaboratively with stakeholders.	4. LQR
		To identify and record the solutions and drawings of other sections related to (affected by) the changes.		Ability to independently understand and make changes to construction drawings, to understand the impact of changes on other elements of the structure and to make revisions to drawings.	5. LQR
4.22.	To choose a design (view, page size, type and scale) appropriate to the construction drawing.	To use scales accepted in building design. Graphically represent the gradation of lines to scale. To present the signs in a graphically correct and clear manner and to include all the prescribed information about the construction	At the level of understanding: Standards for the design of building designs. <u>At the level of use:</u> Parametric design software. Basic principles of composition. Graphical designations for the representation of buildings.	Ability to produce independent and visually legible construction drawings at appropriate scales in accordance with drafting standards.	5. LQR
4.23.	To draw up a construction drawing with	project. To keep informed in the design of construction drawings	Basic drawing principles. <u>At the level of understanding:</u>	Ability to comply with drawing standards	5. LQR

	graphical designations and dimensions.	in the standards.		accurately draw construction drawings with markings, labels and dimensions.	
		To display dimensions, elevations and markings on the construction drawing.	At the level of use:		
		To display element markings and references on the drawing.	Attachment elements for parts of buildings.		
		To lay out the elements of the building parts in the construction plan.			
4.24.	To print and assemble construction design materials at different scales and formats.	To prepare materials for paper and digital printing.	<u>At the level of understanding:</u> The process of designing and tuning a	Ability to print and assemble construction project material in paper and digital volumes with care and accuracy.	5. LQR
	at different scales and formats.	To trim the edges of the construction drawing.	construction project.	with care and accuracy.	
		To fold the construction drawings.	At the level of use: Working with computers and office		
		To bind the volume.	equipment (including large-format printing).		
		To create a digital volume of the construction project.	Application software for printing. Construction drawing sheet folding		
		To insert drawings in the Construction	technology. Technology for binding different types of		
		To submit the construction design material for signature.	seed. Construction Information System.		
4.25.	To archive the construction project materials.	To archive the printed materials of the construction project.	At the level of understanding: Assessment of the archival value of	Ability to independently archive construction project material.	4. LQR
		Digitally archive construction project materials.	construction project materials.		
			<u>At the level of use:</u> Working with computers and office		
			equipment (including large-format printing).		
			Archiving techniques for printed and digital material.		
			Application software (word processing, spreadsheets, presentations, databases, web and email		

	browsers, design, project management, graphic editors)		
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5. The skills and attitudes, GENERAL knowledge and competences required for the performance of the main tasks and duties of the professional activity					
No.	Tasks	Skills and attitudes	General knowledge	Competences (level of qualification	on)
5.1.	In line with the communication tasks in Section 4 in the national language and at least two official languages of the European Union.	Communicate with those involved in the work process in the national language and other official languages of the European Union. To express and defend an opinion.	<u>At the level of use</u> : Professional terminology in the national language. Use of two foreign languages.	Ability to find creative solutions, discuss and reason with colleagues, clients and management about practical issues and solutions in the profession.	5. LQR
		Publish presentation materials and speak in different social settings.	Professional terminology in two foreign languages.		
		Reasonably discuss practical issues and solutions with colleagues, clients and management in a multicultural environment	Business writing. The prerequisites, process and methods of effective communication.		
un pro the	In line with the objectives under section 4 on building professional competences in the organisation and management of enterprises.	To plan the organisation and start-up of a business.	At the level of understanding: Strategic management.	Ability to evaluate and improve own and others' performance, and to work in collaboration with others.	5. LQR
		To choose management methods.	Leadership and coordination. Business organisation.		
		To take responsibility for the quantity and quality of your own and your team's work.	The company's accounting and financial reporting system.	Ability to plan and organise work to carry out specific tasks in your profession.	5. LQR
		To evaluate your own work and the work of other performers under your authority.	At the level of use: Time management techniques.	Ability to carry out or supervise work activities that are subject to unpredictable change.	5. LQR
		To delegate tasks to your team.	Work sequencing. Process and management of the work		
		To analyze the basic principles of project design and management.	environment Self-organisation at work.		
		To implement project activities according to professional competence.	Teamwork. Basics of economics.		
			Basics of project design and management.		
			Document production requirements.		

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5.3.	In line with the mathematical and technological thinking tasks in Section 4.	To make connections. To simulate the process of solving the planned task.	At the level of use: Linear algebra, vector algebra and analytical geometry methods for calculations. Mathematical analysis methods. Technical graphics.	Ability to apply mathematical and technological thinking in modelling work situations and planning the execution of a work task.	5. LQR
se in	In line with the objectives in section 4 on the use of information and communication technologies.	Purposefully process information by choosing the most appropriate solution. To check the security configuration and the system devices and/or applications used.	<u>At the level of understanding:</u> Information technology legislation. Principles of operation of computer and office equipment.	Ability to confidently and confidently select and use information and communication technologies to carry out the job.	4. LQR
		To produce documents independently and organise their flow using applications. To find the information you need independently on the internet, on media. Critically assess the reliability of information.	<u>At the level of use:</u> Applications according to the task. Work with office equipment. Information systems security. Computer security programmes.		
5.5.	To comply with labour law, occupational health and safety, environmental protection and civil protection requirements.	To act in accordance with legal requirements. To ensure compliance with labour law, occupational health and safety, environmental protection and civil protection To promote social dialogue at company level.	<u>At the level of understanding:</u> Levels and basic principles of social dialogue. <u>At the level of use:</u> Labour law, occupational health and safety, environmental protection and civil protection	Ability to act as required by law Ability to deal with situations where unpredictable change is possible.	5. LQR 5. LQR
5.6.	To continue education and development, including research.	To deal with non-standard work situations. To plan time for continuing education.	Crisis management. <u>At the level of understanding:</u> Facts, theories and professional practices	Ability to learn further, with an appropriate degree of independence, by developing your competences.	5. LQR

Systematically acquire new knowledge and experience.	Ability to take an analytical approach to professional practice and professional	5. LQR
To keep up to date with developments in architectural theory and practice.	development.	

General information			
Submitter of the occupational standard	Riga Construction College		
	Working group on the occupational standard:		
	 Elīna Rožulapa - expert, Latvian Association of Architects, Head of Certification Centre, architect; 		
	- Uldis Balodis - expert, SIA "Vizuālās modelēšanas studija", architect;		
	- Aleksejs Biņukovs - expert, SIA "MARK arhitekti", architect;		
	- Raimonds Saulītis - expert, SIA "ARHIS ARHITEKTI", architect;		
	 Inese Reitāle - expert, Riga Building College, Head of the Department of Architecture; 		
	 Ieva Gretere - moderator, Latvian Construction Industry Trade Union, Chairperson; 		
	- Anna Bondare - assistant moderator, Free Trade Union Confederation of Latvia, project coordinator.		
Expert Working Group on Occupational Standards	 Normunds Grinbergs - Chairman of the LDDK Construction Industry Expert Council; 		
	 Inese Rostoka - Ministry of Economics, Department of Construction Policy, Senior Expert; 		
	 Igors Suhovilovs - delegated representative of the Professional Education Society/LKA, lecturer, expert at Riga Construction College; 		
	 Sandra Svike - LKA delegated representative Acting Director of Riga Construction College Expert; 		
	 Ieva Gretere - LBNA Chairperson; Vice-Chairperson of the Latvian Construction Industry Expert Council; 		
	- Helga Kaukule - ESF project 8.5.2. "Improving the sectoral qualification system for the development and quality assurance of the vocational education system", Senior Content Expert;		
	 Inese Paudere - Senior Officer, Vocational Education Content Provision Division, National Centre for Education. 		
Occupational Standard NEP Opinion	07.08.2019.		
Harmonisation of occupational standards PINTSA	14.08.2019.		
Previously agreed versions of the occupational standard	-		