



Technical Description

Joinery

Skill 25



WorldSkills International, by a resolution of the Competitions Committee and in accordance with the Constitution, the Standing Orders, and the Competition Rules, has adopted the following minimum requirements for this skill for the WorldSkills Competition.

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1 Introduction

1.1 Name and description of the skill competition

1.1.1 The name of the skill competition is

Joinery

1.1.2 Description of the associated work role(s) or occupation(s)

A bench joiner, or joiner, generally works on commercial and residential projects. There is a direct relationship between the nature and quality of the product required and the payment made by the customer. Therefore, the joiner has a continuing responsibility to work professionally in order to meet the requirements of the customer and thus maintain and grow the business. Joinery is associated with carpentry plus other parts of the construction industry and with the many products that support it, normally for commercial purposes.

The joiner is usually based in a workshop because the formation of various joints requires specialist machinery but sometimes undertakes installations in the homes of customers and on building sites. They produce and interpret drawings, set out and measure, cut, form joints, assemble, install, and finish to a high standard. The joiner usually produces items such as interior and exterior doors, windows and stairs. They also construct and install components that are seen on the inside and outside of residential or commercial buildings.

Work organization, self-management, communication, and interpersonal skills are integral parts of this occupation's skill set, together with problem solving, innovation and creativity. The ability to work precisely and accurately are fundamental attributes of an outstanding practitioner. Whether the joiner is working alone or in a team, they take on a high level of personal responsibility and autonomy. Safety awareness is a vital attribute. Every step in the process matters; mistakes may be largely irreversible and could carry a very high cost. A joiner must demonstrate exceptional planning skills, along with stamina and the concentration to focus on detail in order to achieve an excellent finish. They must use standard business equipment and software and have the technological skills to use digital instruments such as GPS location devices, laser levels, electronic distance measurement devices and digital callipers. They may also use specialist construction CAD software and project management (BIM) software.

The qualities of an outstanding joiner may be demonstrated wherever wood is used for installations, fixtures and fittings and there is an accessible supply of timber, wood, and wood products. Therefore, with the international mobility of people, the joiner faces rapidly expanding opportunities and challenges. For the talented joiner there are many commercial and international opportunities; however, these carry with them the need to understand and work with diverse cultures and trends. The diversity of skills associated with joinery is therefore likely to expand.

1.1.3 Number of Competitors per team

Joinery is a single Competitor skill competition.

1.1.4 Age limit of Competitors

The Competitors must not be older than 22 years in the year of the Competition.

1.2 The relevance and significance of this document

This document contains information about the standards required to compete in this skill competition, and the assessment principles, methods, and procedures that govern the competition.

Every Expert and Competitor must know and understand this Technical Description.

In the event of any conflict within the different languages of the Technical Descriptions, the English version takes precedence.

1.3 Associated documents

Since this Technical Description contains only skill-specific information it must be used in association with the following:

- WSI – Code of Ethics and Conduct
- WSI – Competition Rules
- WSI – WorldSkills Occupational Standards framework
- WSI – WorldSkills Assessment Strategy
- WSI online resources as indicated in this document
- WorldSkills Health, Safety, and Environment Policy and Regulations
- WorldSkills Standards and Assessment Guide (skill-specific)

2 The WorldSkills Occupational Standards (WSOS)

2.1 General notes on the WSOS

The WSOS specifies the knowledge, understanding, skills, and capabilities that underpin international best practice in technical and vocational performance. These are both specific to an occupational role and also transversal. Together they should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, to the extent that it can. The Standard is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards. This is often referred to as the “weighting”. The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

Through the Test Project, the Marking Scheme will assess only those skills and capabilities that are set out in the WorldSkills Occupational Standards. They will reflect the Standards as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme will follow the allocation of marks within the Standards to the extent practically possible. A variation of up to five percent is allowed, if this does not distort the weightings assigned by the Standards.

2.2 WorldSkills Occupational Standards

Section		Relative importance (%)
1	Work organization and management	5
	The individual needs to know and understand: <ul style="list-style-type: none"> • How a safe, well-organized workspace supports precision, focus, and quality • How unsafe practices damage materials, tools, or finished products • The expectations for high-end workmanship, including fine finishes, clean joints, and attention to detail • The effect of dust, clutter, and poor tool storage on safety and finish quality • How to organize tools, materials, and work areas for efficiency and safety 	

Section	Relative importance (%)
	<ul style="list-style-type: none"> • That sharp, clean, and well-maintained tools produce accurate and safer results • How to protect materials during movement, assembly, and finishing • How poor time management leads to rushed and unsafe work • How to structure work efficiently to maintain both safety and quality • The importance of clear communication to avoid mistakes and hazards • The link between mutual respect, professionalism, and quality • The link between self-management, a sense of responsibility, safety, and quality • That a high-end result reflects care, pride, and attention at every stage.
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Keep tools, cables, and materials organized to reduce hazards and enable clean, accurate work • Clean work surfaces regularly to avoid contamination by finishes or adhesives • Operate all hand and power tools following safety protocols and high precision • Perform regular maintenance checks and sharpening to ensure quality output • Use appropriate pads, blankets, or edge protectors to avoid damage to surfaces • Lift, move, and clamp materials properly to prevent chips, dents, or misalignment • Follow job specifications exactly, checking measurements, squareness, and alignment throughout • Avoid shortcuts that compromise either safety or final finish • Spot potential defects or risks before they affect quality • Proactive correct problems without delaying the project or lowering standards • Stick to agreed methods, sequences, and standards to ensure professional outcomes • Double-check assemblies, joints, and finishes before final approval • Be punctual, dependable, and cooperative throughout each project • Show pride in producing work that reflects premium craftsmanship.
2	Communication and interpersonal skills
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The roles, responsibilities and requirements of associated trades and professions • Methods of communicating with other trades and professions

Section		Relative importance (%)
	<ul style="list-style-type: none"> • The standard terminology for the construction and business environment • Principles and techniques for building and maintaining productive relationships with others • The digital environment for general and specific business communications • The importance of establishing and maintaining confidence and trust with the employer, suppliers, and associated trade professionals • The importance of swiftly resolving misunderstandings and conflicting demands • Reporting principles and methods. 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Visualize and translate customers' wishes, giving advice and making recommendations/providing options which meet/improve the design requirements • Discuss tasks, responsibilities, and safety measures clearly with team members • Ask for clarification or assistance when needed to maintain both safety and finish quality • Positively support and lead decision-making where appropriate • Liaise with suppliers to negotiate prices and place orders • Produce cost and time estimates • Introduce related trades and professions to support customers' requirements • Recognize, respect, and adapt to the changing needs of associated professions and trades • Communicate clearly with others generally and where drawings, variations to documents, and work restrictions are required • Follow instructions, meet deadlines and report on progress in the appropriate format • Interact with the relevant parties in construction projects • Use standard digital communication tools and methods as required in the work environment • Use additional digital communications where these aid efficiency and effectiveness • Maintain meaningful reports and records for oneself and others. 	
3	Interpretation of drawings and instructions	10
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • Standard drawing symbols, abbreviations, and terminology used in construction/joinery drawings • Line types (e.g. hidden lines, centre lines, dimension lines) • different drawing scales and how to interpret measurements accurately • How to recognise and interpret tolerances and allowances specified in the drawings 	

Section	Relative importance (%)
<ul style="list-style-type: none"> • First-angle and third-angle projection systems • How to visualise 2D views (plan, elevation, section) as a 3D object • How to interpret written instructions and notes accompanying drawings (e.g. material types, finishes, fasteners) • Timber types, grades, and their appropriate uses • Various construction methods shown in drawings (e.g. mortise and tenon, dovetail joints, dowelling) • Methods of assembly, fixing, and installation specified in plans • Safety notes and symbols included in technical drawings • Relevant building codes, standards, and compliance requirements that may be referenced • How to interpret site plans or room layouts in context with the joinery work • Location-specific details such as levels, clearances, or environmental exposure. 	
<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Extract all necessary information (dimensions, materials, techniques) from 2D or 3D technical drawings • Complete 1:1 drawing for referencing if required in high detail joint construction • Cross-reference multiple sheets or views to build a full understanding of each job • Mark out, cut, and assemble components to the exact specifications shown in the drawing • Ensure all work matches design intent, including joints, finishes, and fitting • Ask questions or seek clarification from designers, supervisors, or clients if drawings are unclear or inconsistent • Provide feedback on potential issues or improvements during interpretation • Select appropriate tools or machinery based on the material and design detail • Set up and operate tools according to dimensions and angles specified • Sequence tasks logically based on drawings and instructions • Allocate materials and resources efficiently to meet drawing requirements • Check completed work against the drawing and instructions for accuracy and completeness • Adjust or correct any discrepancies • Work independently with minimal supervision using the drawing as the primary guide • Collaborate effectively with team members to interpret and apply complex drawing sets. 	

Section		Relative importance (%)
4	Selection of timber and material	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The difference between hardwoods and softwoods, including common species (e.g. oak, pine, beech, ash) • Grain structure, colour, and workability of different timbers • Environmental standards, regulations, and requirements • How to recognise sustainable and certified timber sources (e.g. FSC-certified) • The use of engineered timber as an alternative to natural timber • Moisture content and how it affects expansion, shrinkage, and stability • The strength, durability, and wear resistance of different timbers • What natural defects (e.g. knots, shakes, splits) look like, and how they impact usability • Which materials are appropriate for specific environments (e.g. interior vs exterior use) • Which timbers are suitable for structural instead of decorative applications • How to identify appropriate finishes or treatments needed for longevity and appearance • The characteristics of MDF, plywood, chipboard, OSB, etc. • The advantages and limitations of each type of board • Appropriate uses for manufactured boards (e.g. cabinet carcasses, panelling) • Which adhesives and fasteners work best with specific timbers and boards • How material selection can affect bonding or fixing methods • Toxicity, VOCs (Volatile Organic Compounds), and other safety considerations with treated or manufactured materials • How to handle and store different timber types safely and correctly • The financial impact of selecting different timbers or materials. • Local availability and lead times. 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Choose timber or materials based on client requirements, environmental conditions, and functional needs • Source and select engineered timber as an alternative to natural timber • Use glue laminated timber across board width or length in place of raw timber • Use mixed product material in place of raw timber and wood-based product (veneered) sheet materials • Match material selection with intended finish (e.g. paint, varnish, natural oil) • Visually and physically assess timber species and quality • Identify potential defects or weaknesses in boards and select the best pieces 	

Section		Relative importance (%)
	<ul style="list-style-type: none"> • Read and apply material specifications from drawings or job sheets • Produce detailed rod boards as appropriate to meets the specification • Produce detailed cutting lists to meet the specification • Choose timber grade and type as each project requires • Check moisture content using a moisture meter • Cut and condition materials appropriately before use • Use tools and machinery suited to the material type (e.g. harder blades for dense hardwoods) • Apply correct machining techniques depending on grain direction, density, or resin content • Stack and store materials to prevent warping or damage • Maintain appropriate conditions for material longevity (e.g. dry, well-ventilated storage) • Prepare surfaces based on the type of timber selected • Apply stains, sealants, or preservatives in line with the material's properties and end use. 	
5	Detailed joint construction	20
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The names, functions, and characteristics of common joints (e.g. mortise and tenon, dovetail, lap joints, mitres) • The purpose of mechanical instead of non-mechanical joints (e.g. glue-only joints instead of screws and dowels) • Where and why specific joints are used based on strength, appearance, and function • Which joints are appropriate for structural applications rather than decorative or temporary joints • How wood movement affects joint performance (e.g. expansion and shrinkage) • How to ensure tight-fitting, square, and aligned joints • How to reinforce joints for strength and durability (e.g. biscuits, dowels, splines) • How different types of timber or boards affect the performance of joints • Which adhesives and fixings suit each joint and material type • Which hand tools and machines are used for cutting, forming, and assembling joints • The safe operation and maintenance of joinery tools (e.g. chisels, routers, tenoners) • Acceptable tolerances and quality standards in professional joinery • How to inspect joints for fit, finish, and strength • How to visualise joint details from 2D and 3D technical drawings • Joint placement and orientation within overall assembly. 	

Section	Relative importance (%)
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Choose appropriate joints based on load-bearing needs, design, and material type • Balance aesthetics and functionality when selecting joint styles • Mark materials accurately using gauges, squares, and rules • Use templates or jigs for consistent and repeatable joint layouts • Use hand tools and/or machines to cut joints to tight tolerances • Produce clean, square, and even cuts for strong, neat assembly • Fit joints together accurately, using adhesives or fixings as needed • Clamp and allow for curing/drying times where adhesives are used • Test assembled joints for square, flush fit, and overall integrity • Sand, trim, or adjust joints to meet finished tolerances and appearance • Identify common issues like gaps, misalignment, or weak bonds • Make corrective actions without compromising final quality • Keep tools in optimal condition for accurate joint work (e.g. sharp chisels, tuned planes) • Care for tools as part of producing consistent high-quality joints.
6	High work quality
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • That accurate measurements and cuts are essential for functionality, appearance, and structural integrity • How small errors can affect the overall quality and fit of joinery components • How to use measuring tools (e.g. steel rule, tape measure, callipers) with precision • How to transfer and mark measurements accurately using marking gauges, squares, and templates • The required tolerances for different types of joints and assemblies • How to apply allowances for expansion, contraction, and fitting (e.g. scribing to walls) • Surface preparation techniques including planing, sanding, and edge treatment • The requirements for high-quality finishes: smoothness, cleanliness, and readiness for coating or fitting • Industry standards for quality in joinery, including fit, alignment, finish, and durability • Client/company expectations and specifications for premium workmanship • How to inspect work at various stages (before assembly, post-assembly, pre-installation) • How to identify and prevent common quality issues (e.g. tear-out, misalignment, glue stains)
	20

Section	Relative importance (%)
<ul style="list-style-type: none"> • The importance of correctly set and maintained machinery for consistent accuracy • How tool sharpness and calibration affect work quality. 	
<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Take precise measurements and transfer them accurately • Use layout tools to achieve consistent and repeatable results • Make clean, accurate cuts using appropriate tools and machines • Minimize waste and errors by working to exact dimensions • Fit joints and components tightly, squarely, and flush • Achieve symmetry, alignment, and balance in all joinery assemblies • Prepare surfaces thoroughly for finishing without scratches, dents, or glue marks • Apply coatings or treatments evenly • Identify flaws or defects early and correct them before final assembly • Ensure all completed work meets the required visual and functional standards • Maintain consistency of quality and precision when producing multiple components • Ensure uniformity in matching parts • Take pride in producing quality work that meets or exceeds expectations • Be proactive in checking and improving own work before sign-off or handover. 	
7	Use of tools and machinery
<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The range of hand tools (e.g. chisels, planes, saws) and power tools (e.g. routers, drills, jigsaws) used in joinery • The proper uses of workshop machinery (e.g. table saws, bandsaws, thicknessers, joiners, spindle moulders and mortise machines) • What each tool or machine is used for and how it contributes to specific tasks • Limitations and best-use practices for each tool or machine • Correct safety protocols for each tool and machine • How to use personal protective equipment (PPE) relevant to tool/ machine use • How to set up, adjust, and calibrate equipment for accurate results • How to read and set angles, fence positions, and cutting depths • How to clean, store, and maintain tools and machinery for long-term performance • The importance of keeping blades, cutters, and bits sharp and in good condition 	10

Section		Relative importance (%)
	<ul style="list-style-type: none"> • Signs of tool or machine faults (e.g. burning wood, vibration, misalignment) • The basic steps to troubleshoot or escalate maintenance issues • Which tools and machines are best suited to different materials (hardwoods, softwoods, manufactured boards) • Workshop signage, emergency stop systems, and risk assessments. 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Choose appropriate equipment based on material, joint type, and precision required • Operate hand tools and machines with control, accuracy, and confidence • Apply safe working methods and maintain awareness of hazards • Prepare tools and machines to required settings (e.g. blade height, fence position) • Carry out trial cuts and checks before final operation • Produce clean cuts, smooth finishes, and consistent dimensions using the correct equipment • Avoid tool marks, burning, or chipping by using equipment properly • Regularly sharpen and hone hand tools for optimal performance • Clean and lubricate machinery as part of routine maintenance • Check equipment for damage or wear before use • Report faults or unsafe equipment to supervisors or maintenance teams • Learn and apply new equipment or tool technologies as introduced in the workshop • Stay current with best practices in tool use and machine operations • Plan tool use to minimise time wasted on adjustments or changeovers • Keep tools clean, sorted, and accessible during all phases of each job. 	
8	Assembly and installation	15
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • The importance of pre-checking components before assembly (e.g. size, squareness, surface quality) • The correct sequence of assembly for different types of joinery products. • Dry-fitting techniques to test joints and alignments • The use of mechanical fixings (e.g. screws, nails, dowels) and non-mechanical fixings (e.g. adhesives, biscuits) • The correct application and curing times for adhesives used in assembly. • How to handle finished components to avoid damage 	

Section		Relative importance (%)
	<ul style="list-style-type: none"> • Appropriate storage methods to keep parts safe and clean before installation • Common hardware (e.g. hinges, handles, brackets) and their installation requirements • How to achieve tight but functional fits between components, especially doors, drawers, and panels • The impact of environment (e.g. humidity, temperature) on fit and alignment • How to assess site conditions (e.g. wall types, levels, access constraints) • What tools, materials, and fixings are needed for specific installation environments • Health and safety responsibilities during installation (e.g. manual handling, working at height) • Building regulations or codes that may apply to installed joinery (e.g. fire ratings, accessibility). 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Check and verify that all components are dimensionally correct and ready for fitting • Remove sharp edges, label parts if necessary, and lay out components logically • Use clamps, jigs, and guides to assemble components squarely and securely • Apply adhesives and fixings, allowing sufficient curing time where needed • Fit hinges, locks, handles, catches, and other hardware with precision and alignment • Use templates or jigs for consistent spacing and location of fittings • Mask or cover finished parts during handling or transport to avoid damage • Handle components with care during movement and installation • Test assembled units for squareness, flush surfaces, smooth operation (e.g. opening and closing doors or drawers) • Make adjustments for alignment, clearances, and secure fixing • Pack and label components for transport, ensuring all items required are included • Keep the assembly and installation area tidy to avoid damage or confusion • Dispose of waste materials and off-cuts appropriately • Respond to unforeseen issues on-site and adapt plans where necessary. 	
9	Surface preparation and finishing	10
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> • That sanding is essential for preparing timber and board surfaces for finishing 	

Section		Relative importance (%)
	<ul style="list-style-type: none"> • How proper sanding improves finish adhesion, smoothness, and overall appearance • The different types of sandpaper (e.g. aluminium oxide, silicon carbide) and their uses • The appropriate grits for each stage of sanding (e.g. coarse for shaping, fine for finishing) • The differences between sandpaper, sanding pads, and sanding sponges • How to sequence sanding (e.g. 80 → 100 → 120 → 150 → 180 → 240) for optimal results • That skipping grits can leave visible scratches or uneven finishes • Use hand sanding (e.g. detailed or curved areas) instead of machine sanding (e.g. flat panels) • Types of machines: orbital sander, belt sander, detail sander, etc. • The importance of sanding with the grain to avoid scratches and swirl marks • How to spot surface flaws before and after sanding (e.g. glue marks, dents, uneven grain) • How sanding reveals or hides surface defects • How dust affects finish adhesion and quality • The importance of cleaning surfaces after sanding using vacuums, brushes, or tack cloths • How different woods react to sanding (e.g. softwoods may gouge easily, hardwoods may burn if over-sanded) • How sanding affects veneered surfaces or edges: the risk of sanding through • The risks of dust inhalation and the need for dust extraction systems and PPE • Safe handling of sanding machines and materials. 	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Choose appropriate grit and sandpaper type based on the job and material • Replace worn abrasives to maintain sanding efficiency and quality • Sand all surfaces evenly without over-sanding or leaving low spots • Maintain consistent pressure and movement during sanding • Operate sanding machines safely and efficiently • Switch between hand and machine sanding as needed for the shape and detail of the workpiece • Begin with the correct starting grit and move through progressively finer grits • Avoid skipping grits that could leave scratch patterns visible in the final finish • Sand always in the direction of the wood grain for a smooth, professional result • Correct any cross-grain marks before applying finishes • Remove all dust and debris after sanding using vacuuming, brushing, and tack cloths 	

Section		Relative importance (%)
	<ul style="list-style-type: none"> • Ensure surfaces are smooth, clean, and ready for finish application (e.g. varnish, stain, paint) • Check for imperfections after each sanding stage and correct them before proceeding • Perform final tactile and visual inspections before applying the finish • Wear dust masks, eye protection, and hearing protection when using power sanders • Ensure dust extraction systems are used and maintained correctly. 	
	Total	100

3 The Assessment Strategy and Specification

3.1 General guidance

Assessment is governed by the WorldSkills Assessment Strategy. The Strategy establishes the principles and techniques to which WorldSkills assessment and marking must conform.

Expert assessment practice lies at the heart of the WorldSkills Competition. For this reason, it is the subject of continuing professional development and scrutiny. The growth of expertise in assessment will inform the future use and direction of the main assessment instruments used by the WorldSkills Competition: the Marking Scheme, Test Project, and Competition Information System (CIS).

Assessment at the WorldSkills Competition falls into two broad types: Measurement and Judgement. For both types of assessment, the use of explicit benchmarks against which to assess each Aspect is essential to guarantee quality.

The Marking Scheme must follow the weightings within the Standards. The Test Project is the assessment vehicle for the skill competition, and therefore also follows the Standards. The CIS enables the timely and accurate recording of marks; its capacity for scrutiny, support, and feedback is continuously expanding.

The Marking Scheme, in outline, will lead the process of Test Project design. After this, the Marking Scheme and Test Project will be designed, developed, and verified through an iterative process, to ensure that both together optimize their relationship with the Standards and the Assessment Strategy. They will be agreed by the Experts and submitted to WSI for approval together, to demonstrate their quality and conformity with the Standards.

Prior to submission for approval to WSI, the Marking Scheme and Test Project will liaise with the WSI Skill Advisors for quality assurance and to benefit from the capabilities of the CIS.

4 Assessment Design and Practice

4.1 General guidance

This section describes the role and place of the Marking Scheme, how the Experts will assess Competitors' work as demonstrated through the Test Project, and the procedures and requirements for marking.

The Marking Scheme is the pivotal instrument of the WorldSkills Competition, in that it ties assessment to the standard that represents each skill competition, which itself represents a global occupation. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards.

By reflecting the weightings in the Standards, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill competition and its assessment needs, it may initially be appropriate to develop the Marking Scheme in more detail as a guide for Test Project design. Alternatively, initial Test Project design can be based on the outline Marking Scheme. From this point onwards the Marking Scheme and Test Project should be developed together.

Section 2.1 above indicates the extent to which the Marking Scheme and Test Project may diverge from the weightings given in the Standards, if there is no practicable alternative.

For integrity and fairness, the Marking Scheme and Test Project are increasingly designed and developed by one or more Independent Test Project Designer(s) with relevant expertise. In these instances, the Marking Scheme and Test Project are unseen by Experts until immediately before the start of the skill competition, or competition module. Where the detailed and final Marking Scheme and Test Project are designed by Experts, they must be approved by the whole Expert group prior to submission for independent validation and quality assurance. Please see the Competition Rules for further details.

Experts and Independent Test Project Designers are required to submit their Marking Schemes and Test Projects for review, verification, and validation well in advance of completion. They are also expected to work with their Skill Advisor, reviewers, and verifiers, throughout the design and development process, for quality assurance and in order to take full advantage of the CIS's features.

In all cases a draft Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition. Skill Advisors actively facilitate this process.

4.2 Assessment Criteria

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived before, or in conjunction with, the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards; in others they may be different. There will normally be between five and nine Assessment Criteria. Whether or not the headings match, the Marking Scheme as a whole must reflect the weightings in the Standards.

Assessment Criteria are created by the person or people developing the Marking Scheme, who are free to define the Criteria that they consider most suited to the assessment and marking of the Test Project. Each Assessment Criterion is defined by a letter (A-I). **The Assessment Criteria, the allocation of marks, and the assessment methods, should not be set out within this Technical Description. This is because the Criteria, allocation of marks, and assessment**

methods all depend on the nature of the Marking Scheme and Test Project, which is decided after this Technical Description is published.

The Mark Summary Form generated by the CIS will comprise a list of the Assessment Criteria and Sub Criteria.

The marks allocated to each Criterion will be calculated by the CIS. These will be the cumulative sum of marks given to each Aspect within that Assessment Criterion.

4.3 Sub Criteria

Each Assessment Criterion is divided into one or more Sub Criteria. Each Sub Criterion becomes the heading for a WorldSkills marking form. Each marking form (Sub Criterion) contains Aspects to be assessed and marked by Measurement or Judgement, or both Measurement and Judgement.

Each marking form (Sub Criterion) specifies both the day on which it will be marked, and the identity of the marking team.

4.4 Aspects

Each Aspect defines, in detail, a single item to be assessed and marked, together with the marks, and detailed descriptors or instructions as a guide to marking. Each Aspect is assessed either by Measurement or by Judgement.

The marking form lists, in detail, every Aspect to be marked together with the mark allocated to it. The sum of the marks allocated to each Aspect must fall within the range of marks specified for that section of the Standards. This will be displayed in the Mark Allocation Table of the CIS, in the following format, when the Marking Scheme is reviewed from C-8 weeks. (Section 4.1 refers.)

	CRITERIA								TOTAL MARKS PER SECTION	WSSS MARKS PER SECTION	VARIANCE	
	A	B	C	D	E	F	G	H				
STANDARDS SPECIFICATION SECTION	1	5.00								5.00	5.00	0.00
	2		2.00					7.50		9.50	10.00	0.50
	3								11.00	11.00	10.00	1.00
	4			5.00						5.00	5.00	0.00
	5				10.00	10.00	10.00			30.00	30.00	0.00
	6		8.00	5.00				2.50	9.00	24.50	25.00	0.50
	7			10.00				5.00		15.00	15.00	0.00
TOTAL MARKS	5.00	10.00	20.00	10.00	10.00	10.00	15.00	20.00	100.00	100.00	2.00	

4.5 Assessment and marking

There is to be one marking team for each Sub Criterion, whether it is assessed and marked by Judgement, Measurement, or both. The same marking team must assess and mark all Competitors. Where this is impracticable (for example where an action must be done by every Competitor simultaneously, and must be observed doing so), a second tier of assessment and marking will be put in place, with the approval of the Competitions Committee Management Team. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (Section 4.6 refers.)

4.6 Assessment and marking using Judgement

Judgement uses a scale of 0-3. To apply the scale with rigour and consistency, Judgement must be conducted using:

- benchmarks (criteria) for detailed guidance for each Aspect (in words, images, artefacts, or separate guidance notes). This is documented in the Standards and Assessment Guide.
- the 0-3 scale to indicate:
 - 0: performance below industry standard
 - 1: performance meets industry standard
 - 2: performance meets and, in specific respects, exceeds industry standard
 - 3: performance wholly exceeds industry standard and is judged as excellent

Three Experts will judge each Aspect, normally simultaneously, and record their scores. A fourth Expert coordinates and supervises the scoring, and checks their validity. They also act as a judge when required to prevent compatriot marking.

4.7 Assessment and marking using Measurement

Normally three Experts will be used to assess each Aspect, with a fourth Expert supervising. In some circumstances the team may organize itself as two pairs, for dual marking. Unless otherwise stated, only the maximum mark or zero will be awarded. Where they are used, the benchmarks for awarding partial marks will be clearly defined within the Aspect. To avoid errors in calculation or transmission, the CIS provides a large number of automated calculation options, the use of which is mandated.

4.8 The use of Measurement and Judgement

Decisions regarding the choice of criteria and assessment methods will be made during the design of the competition through the Marking Scheme and Test Project.

4.9 Skill assessment strategy and procedures

WorldSkills is committed to continuous improvement including reviewing past limitations and building on good practice. The following skill assessment strategy and procedures for this skill competition take this into account and explain how the marking process will be managed.

Assessment and marking will cover the following sections:

- [Module A - Drawing/setting out](#)
- [Module B - Interior joints](#)
- [Module C - Exterior joints: Measurement Marking](#)
- [Module D - Finish and appearance](#)
- [Module E - Conformity](#)
- [Module F - Measurement](#)
- [Module G - Material](#)

The Experts that attend the Competition are divided into marking groups to assess each section of the marking criteria. When dividing the Experts, consideration is given to the composition of the module development groups;

- The Chief Expert will train Experts on each area of the Marking Scheme so they know what to look for when assessing the Competitors' work;
- The Chief Expert will discuss how each section of the marking criteria is assessed prior to adjudication to ensure conformity and consistency;
- All Experts must meet one of the following criteria:
 - A practicing wood trade worker;
 - A practicing wood trade educator;
 - Hold a wood trade qualification.

All Experts will complete a practical assessment at C-3 within the competition workshop; this will ensure industry standard can be maintained prior to and during assessment being conducted.

The Chief Expert will confirm what form the assessment will have on C-3.

5 The Test Project

5.1 General notes

Sections 3 and 4 govern the development of the Test Project. These notes are supplementary.

Whether it is a single entity, or a series of stand-alone or connected modules, the Test Project will enable the assessment of the applied knowledge, skills, and behaviours set out in each section of the WSOS.

The purpose of the Test Project is to provide full, balanced, and authentic opportunities for assessment and marking across the Standards, in conjunction with the Marking Scheme. The relationship between the Test Project, Marking Scheme, and Standards will be a key indicator of quality, as will be its relationship with actual work performance.

The Test Project will not cover areas outside the Standards or affect the balance of marks within the Standards other than in the circumstances indicated by Section 2. This Technical Description will note any issues that affect the Test Project's capacity to support the full range of assessment relative to the Standards. Section 2.1 refers.

The Test Project will enable knowledge and understanding to be assessed solely through their applications within practical work. The Test Project will not assess knowledge of WorldSkills rules and regulations.

Most Test Projects and Marking Schemes are now designed and developed independently of the Experts. They are designed and developed either by the Skill Competition Manager, or an Independent Test Project Designer, normally from C-12 months. They are subject to independent review, verification, and validation. (Section 4.1 refers.)

The information provided below will be subject to what is known at the time of completing this Technical Description, and the requirement for confidentiality.

Please refer to the current version of the Competition Rules for further details.

5.2 Format/structure of the Test Project

The Test Project is a series of three (3) standalone modules.

All section sizes of timber need to be produced from standard sawn sections of timber. For example, 250 mm x 40 mm rough size is 240 mm x 32 mm maximum dressed and laminated if necessary.

5.3 Test Project design requirements

Test Projects should reflect the purposes, structures, processes, and outcomes of the occupational role they are based on. They should aim to be a small-scale version of that role. Before focusing on practicalities, SMTs should show how the Test Project design will provide full, balanced, and authentic opportunities for assessment and marking across the Standards, as set out in Section 5.1.

The Test Project consists of one 22 hour project divided into three (3) modules with the design from any eligible Expert to include:

- 2D – Must have frame with panels;
- 3D – Must be able stand upright under its own weight;

- Installation - Must have an installation component (can have more than one).

Included in the 22 hours, is drawing set-out that will take approximately 1.0 - 1.5 hours to complete, but can be more depending on Test Project complexity. It is important to remember that when designing the Test Project, the Competitor will have approximately 19-20 hours minimum to build the project after the drawing set-out is complete.

The Test Project design must comply with work typical of a joiner stated in section 1.1.2, section 2.1 and section 2.2. Also in the design, the Independent Test Project Designer (ITPD) should consider the project for use after the competition, if possible.

The Test Project is to have a maximum size of 0.3 m³. Max. weight of the Test Project is 25 kg.

In general, the modules must require the Competitor to display a range of hand and machine skills. Each module must be designed to enable the least competent Competitors to achieve some good results, whilst also allowing the most skilled Competitors to demonstrate their ability without achieving 100%.

All Test Projects proposals must be in two languages, one in the language of the Independent Test Project Designer (ITPD) country/region and the other in English. For English-speaking Members, the other language must be German or French.

There must be at least a minimum of four different types of joints used in each module. For example, open mortise and tenon, wedged mortise and tenon, double mortise and tenon, dovetail, etc.

Dowels and biscuits may be used for no more than 10% of the joints in the module.

Suggested Design Guideline - one joint = about one hour work. A minimum of 14 joints to a maximum of 18 detailed joints are to be used in the module design.

Each module is limited to three profile shapes. These profiles include chamfers (45 degrees only), rebates, and grooves. For clarification, each module is limited to no more than three shapes in total. For example, if a module has two chamfers it may only have one other profile – a groove or a rebate. Rebate and groove tooling that would have been used on the selected project has to be the same on the minimum 30% change project for tooling at the competition and Competitor router bits. Only two joints can have a maximum of three components to make up the joint. All hardware required in the Test Project design is to be detailed in the submission to the Skill Competition Manager.

All joints to be formed using any or all of the following: by hand, portable router, mitre saw, mortice machine, band saw. (Please note that tenoners have been removed from the Infrastructure List.)

Project proposals must be submitted using the approved WorldSkills drawing template in a computer assisted drawing format to ISO-standards. First/third angle projection is used detailing plan, end, and elevation views, with section details for clarity. To assist complex joint details, exploded details will also be provided.

The working drawings are produced using Autodesk – AutoCAD software only; no other drawing media can be used, for example Inventor (original design will not be created in Inventor or similar and converted to AutoCAD).

All Test Project proposals submitted by the ITPD have to include the following details and must be accompanied by:

1. Working drawings to scale full size (1:1);
2. Section details;
3. Exploded details of complex joints;
4. Elevation showing joints for marking;
5. Elevations showing measurements for marking;

6. Materials list for the Workshop Manager to prepare the materials;
7. Elevations showing project materials;
8. Provide a photograph to show that the project has been made.

5.4 Test Project coordination and development

The Test Project MUST be submitted using the templates provided by WorldSkills International (www.worldskills.org/expertcentre). Use the Word template for text documents and DWG template for drawings.

5.4.1 Test Project coordination (preparation for Competition)

Coordination of the Test Project/modules will be undertaken by the Skill Competition Manager.

5.4.2 Who develops the Test Project/modules

The Final Test Project/modules are developed by an Independent Test Project Designer (ITPD) in collaboration with the Skill Competition Manager using the 100% externally designed Test Project.

5.4.3 When is the Test Project developed

The Test Project/modules are developed according to the following timeline:

Time	Activity
Fifteen (15) months prior to the Competition	<ul style="list-style-type: none"> • The ITPD is identified and a Confidentiality Agreement between WSI and the ITPD is organized.
Nine (9) to One (1) month prior to the Competition	<ul style="list-style-type: none"> • All Experts can then develop and post Test Project training on the Discussion Forum. • SCM to contact all Experts via email to ensure they are using the Discussion Forum.
Seven (7) – Two (2) months prior to the Competition	<ul style="list-style-type: none"> • Independent Test Project Designer and Skill Competition Manager will design Test Project incorporating aspects from the WSOS and TD. • Skill Competition Manager will give tips and tricks on the Discussion Forum on the TP
Three (3) months prior to the Competition	<ul style="list-style-type: none"> • The Skill Competition Manager releases competition cutting list to the WM to prepare material for the competition. • The Skill Competition Manager releases competition cutting list on the WorldSkills Discussion Forum for all Experts this will be at the same time the cutting list is released to the WSM to prepare the materials for the Competition.
Not later than two (2) months prior to the Competition	<ul style="list-style-type: none"> • The Test Project documents are sent to the WorldSkills International Skills Competitions Administration Manager.
At the Competition on C-2	<ul style="list-style-type: none"> • The final Test Project is presented to the Experts and Competitors without any technical information. No questions are allowed to be asked at this time. • After Competitors have left the workshop Experts are advised of the technical details.

Time	Activity
	<ul style="list-style-type: none"> • The Test Project is accepted in its entirety. • Drawings will not be modified at the competition, but Experts can ensure that details are precise and complete.
At the Competition on C1	<ul style="list-style-type: none"> • Competitors receive the printed drawings and review them for one hour prior to Compatriot Communication: <ul style="list-style-type: none"> ◦ A2 printed drawing; ◦ A3 Primary/Secondary measurements; ◦ A3 Joint details 1:1 or 1:2; ◦ A3 List of materials; ◦ A3 Marking of joints; ◦ A3 3D exploded view of TP.

5.5 Test Project initial review and verification

The purpose of a Test Project is to create a challenge for Competitors which authentically represents working life for an outstanding practitioner in an identified occupation. By doing this, the Test Project will apply the Marking Scheme and fully represent the WSOS. In this way it is unique in its context, purpose, activities, and expectations.

To support Test Project design and development, a rigorous quality assurance and design process is in place (Competition Rules sections 10.6-10.7 refer.) Once approved by WorldSkills, the Independent Test Project Designer (ITPD) is expected to identify one or more independent expert(s), and trusted individuals initially to review the Independent Test Project Designer's ideas and plans, and subsequently to verify the Test Project, prior to validation.

A Skill Advisor will ensure and coordinate this arrangement, to guarantee the timeliness and thoroughness of both initial review, and verification, based on the risk analysis that underpins Section 10.7 of the Competition Rules.

5.6 Test Project validation

The Skill Competition Manager coordinates the validation of the Test Project/modules and will ensure that it can be completed within the material, equipment, knowledge, and time constraints of Competitors.

5.7 Test Project circulation

The Test Project/modules are not circulated prior to the Competition. The Test Project/modules are presented to Experts and Competitors on C-2 without technical or detailed information on the Test Project/modules.

Competitors receive the printed drawings with technical information on C1.

5.8 Test Project change

Due to the Test Project being developed by an Independent Test Project Designer (ITPD), there is no change required to be made to the Test Project/modules at the Competition. Exceptions are amendments to technical errors in the Test Project documents and according to infrastructure limitations.

5.9 Material or manufacturer specifications

Specific material and/or manufacturer specifications required to allow the Competitor to complete the Test Project will be supplied by the Competition Organizer and are available from www.worldskills.org/infrastructure located in the Expert Centre. However, note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

Materials used for the project modules may be hardwood, manufactured panel products, or combinations of these. Dressed material is to be supplied 0.5 mm oversize, moisture content should be between 10% and 13%, with the species acceptable to receive a glue joint that will not fail, wide material to be laminated to prevent cupping, and considered of high quality by the Workshop Manager. In all cases, the Workshop Manager is responsible for the preparation, quality, and suitability of material. Special consideration should be given to materials which exhibit a high degree of “green, enviro-friendly, and eco-consciousness”. Material data specifications are added to the Infrastructure List once the items are released.

All material is to be machined up by Workshop Manager, Workshop Managers Assistant, and/or Experts at the Competition.

The Workshop Manager will have at their disposal a professional/competent machinist to monitor the shapers during the Competition. This is at a preferred coverage rate of one professional to two shapers and a maximum of one professional to three shapers. A student or apprentice is not suitable for this role.

All shapers will have manual hold down devices that apply pressure in two directions, down to the bed of the machine and horizontal to the shaper fence.

To reduce the cost of tooling, shaper heads (cutters) are limited to the following profiles:

A – Chamfers at 45 degrees

B – Rebates

C – Grooves

A master rule is used to check all Competitors measuring devices against. If the Competitor’s rule does not match, measurements are made with the Competitor’s measuring device during measurement evaluation on the Competitor’s Test Project.

6 Skill management and communication

6.1 Discussion Forum

Prior to the Competition, all discussion, communication, collaboration, and decision making regarding the skill competition must take place on the WorldSkills skill-specific Discussion Forum. (<http://forums.worldskills.org>). Skill related decisions and communication are only valid if they take place on the WorldSkills Discussion Forum. The Chief Expert (or an Expert Lead appointed by the Skill Management Team) will be the moderator for this Discussion Forum. Refer to the Competition Rules for the timeline of communication and competition development requirements.

6.2 Competitor information

All information for registered Competitors is available from the Competitor Centre (www.worldskills.org/competitorcentre).

This information includes:

- Competition Rules
- Technical Descriptions
- Mark Summary Form (where applicable)
- Test Projects (where applicable)
- Infrastructure List
- WorldSkills Health, Safety, and Environment Policy and Regulations
- Other Competition-related information

6.3 Test Projects and Marking Schemes

Circulated Test Projects will be available from www.worldskills.org/testprojects and the Competitor Centre (www.worldskills.org/competitorcentre).

6.4 Day-to-day management

The day-to-day management of the skill competition during the Competition is defined in the Skill Management Plan that is created by the Skill Management Team. The Skill Management Team comprises the Skill Competition Manager, Chief Expert, and the Expert Leads. The Skill Management Plan is progressively developed in the six (6) months prior to the Competition and finalized at the Competition. The Skill Management Plan can be viewed in the Expert Centre (www.worldskills.org/expertcentre).

6.5 General best practice procedures

General best practice procedures clearly delineate the difference between what is a best practice procedure and skill-specific rules (section 9). General best practice procedures are those where Experts and Competitors CANNOT be held accountable as a breach to the Competition Rules or skill-specific rules which would have a penalty applied as part of the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System. In some cases, general best practice procedures for Competitors may be reflected in the Marking Scheme.

7 Skill-specific safety requirements

7.1 Personal Protective Equipment

Refer to WorldSkills Safety Policy and Regulations for Host country or region regulations.

Task	Safety glasses with both protective sides	Dust mask	Safety shoes with protective cap	Sturdy shoes with closed toe and no heel	Tight fitting work clothes (long trousers)	Hearing protection
General PPE for safe areas				√		
Machine sanding	√	Optional	√		√	√
Hand sanding	√	Optional	√		√	
Use of fixed machines	√	Optional	√		√	√
Use of portable machines	√	Optional	√		√	√

8 Materials and equipment

8.1 Infrastructure List

The Infrastructure List details all equipment, materials, and facilities provided by the Competition Organizer.

The Infrastructure List is available at www.worldskills.org/infrastructure.

The Infrastructure List specifies the items and quantities requested by the Skill Management Team for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Note that in some cases details of specific materials and/or manufacturer specifications may remain secret and will not be released prior to the Competition. These items may include those for fault finding modules or modules not circulated.

At each Competition, the Skill Management Team must review and update the Infrastructure List in preparation for the next Competition. The Skill Competition Manager must advise the Director of Skills Competitions of any increases in space and/or equipment.

At each Competition, the Technical Observer must audit the Infrastructure List that was used at that Competition for the upcoming WorldSkills Competition.

The Infrastructure List does not include items that Competitors and/or Experts are required to bring and items that Competitors are not allowed to bring – they are specified below.

8.2 Competitors toolbox

Competitors may bring one toolbox with the total external volume not exceeding 1.50 m³.

(Volume = Length x Height x Width, or $V = L \times H \times W$)

Volume measurement does not include a packing crate, other protective packing material, palette for transportation, wheels, etc.

The maximum open height of the toolbox MUST not exceed 1.5 m. No other object in the Competitor's area is to exceed 1.5 m in height: however, the following note must be observed, to ensure Competitors are conforming to Test Project manufacture.







Where the Competitor workspace is 5.0 m x 3.0 m, the following rule applies:




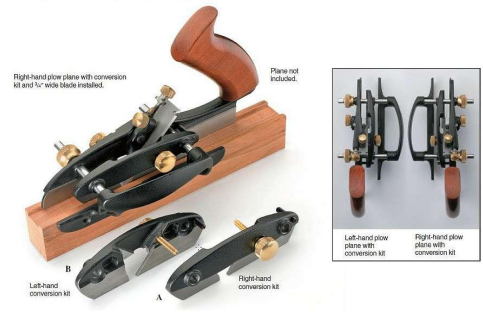

- The working side that is 5.0 m, the maximum permitted height of any object is not allowed to be greater than 1.5 m.
- The working side that is 3.0 m, the maximum permitted height of any object is not allowed to be greater than 1.0 m.

8.3 Materials, equipment, and tools supplied by Competitors

The following items are allowed to be carried in the toolbox:

The list is a suggestion only and is not limited; unless otherwise stated. However, only two bench-mounted static power tools are allowed.

Description	Photo
<p>Electric powered routers, which may be bench mounted, with the necessary safety guards; and if mounted in a router table, have no fixtures to assist the manufacture of tenons or sliding accessories. The motor must be able to be detached and MUST have the the same collet and nut size as a hand held Router.</p>	
<p>The only stationary machines allowed in a Competitor's area are a bench mounted router and a drop saw on a stand (mitre saw). All other power tools must be hand-held</p>	
<p>Hand-held routers x 2</p>	
<p>Set of drawing instruments</p>	
<p>Awls</p>	
<p>Planes</p>	
<p>Chisels</p>	

Description	Photo
	
Shaping tools	
Rebate plane	
Plough plane	
Gauges	
Squares	

Description	Photo
	
<p>Mallet</p>	
<p>Drill and bits</p>	

Description	Photo
Hammer	
Screwdrivers	
Hand tool sharpening equipment	
Trammel points	
Portable vice	
<p>Clamps x 6 of any size</p> <p>Experts will vote on the WorldSkills Discussion Forum for the type of Clamp supplied at Competition for the IL</p>	

Description	Photo
No premade jigs or holding devices for power tools to form joint to be used in the Competition	

- Abrasive paper with a maximum grit of P180; with no specific profiles for sanding; paper must be new and unused, if in doubt it is removed;
- At the competition the Skill Management Team may make other materials available to all Competitors if they are deemed necessary and/or suitable for the making of jigs and fixtures to safely hold small or complicated parts for machining;
- Clamps can be over 1500 but not the clamp stand;
- Competitors can bring any material they want like MDF, ply, and solid timber sheet material 1.5 m², timber species must be different to the Test Projects material, 0.05 m².
- Supplied bench light, ducting pipe and frame, and small flagpole can go over the 1500 mm height;
- No extra lights on Competitors site, Host Country to supply roof light and one bench light per Competitor if required;
- If water, oil, wax etc. is used on a joint, the marking for a perfect joint is 0%;
- No excessive dust from any power tool (mitre saw, router, sander, etc.) may enter the area of another Competitor or the general shop space;
- Upon arrival and unpacking of toolboxes, Competitors will show all tools and demonstrate all jigs and templates to the tool inspection team for validation prior to the commencement of the Competition.

Furthermore, Competitors are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

8.4 Materials, equipment, and tools supplied by Experts

Experts are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.

Experts are responsible that Interpreters bring their own PPE.

8.5 Materials and equipment prohibited in the skill area

Competitors and Experts are prohibited to bring any materials or equipment not listed in section 8.3 and section 8.4.

During the Competition, Competitors are prohibited from using mobile phones, cameras, personal music devices, google glasses, smart watches, radios, and any other devices deemed by the Chief Expert to be a distraction.

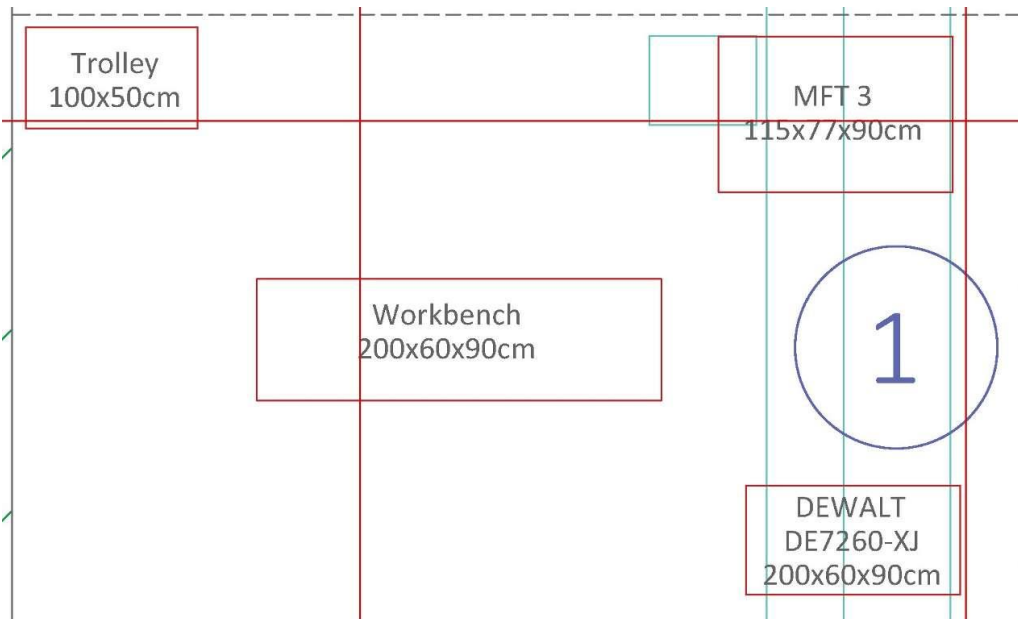
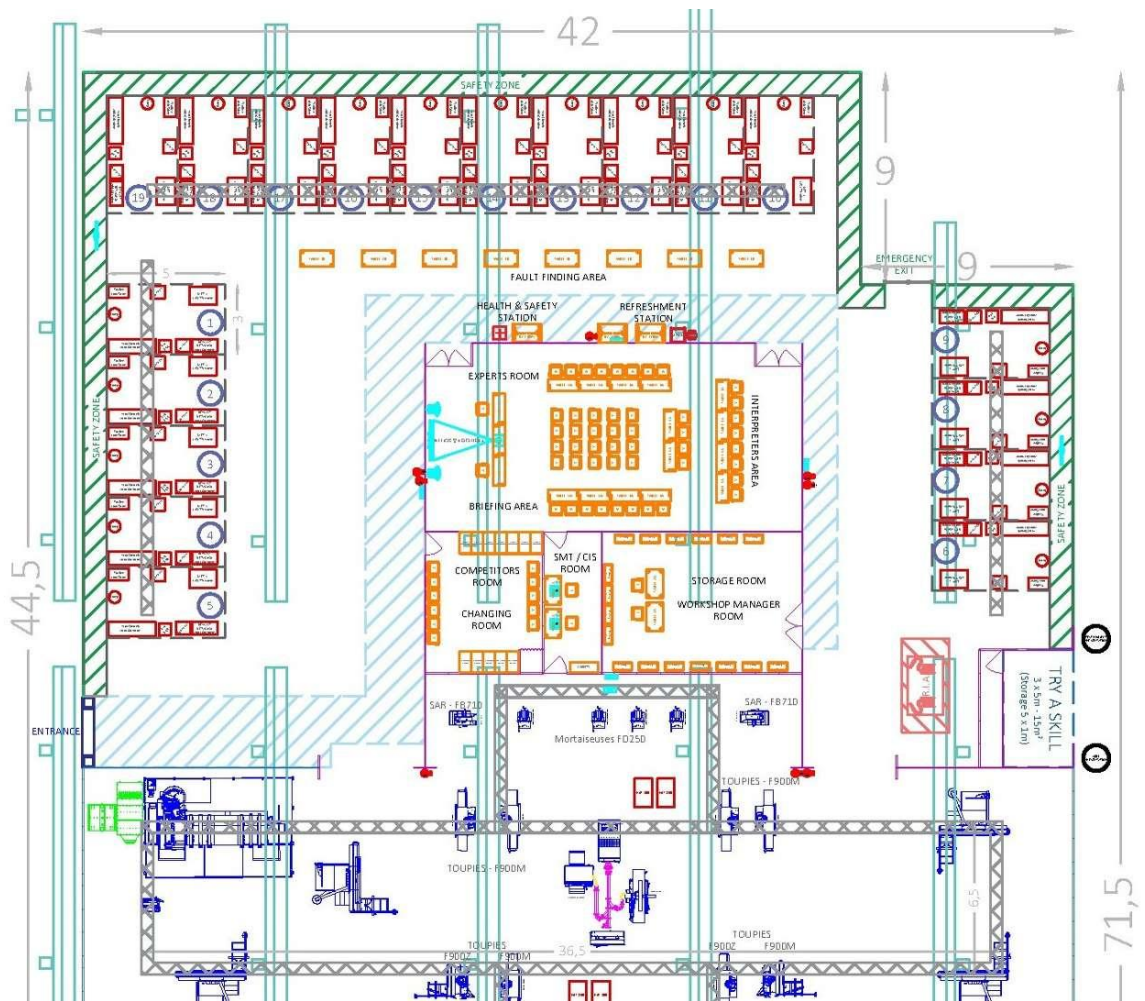
Competitors are not permitted prefixed or assembled jigs, fixtures, or templates.

No premade jigs or holding devices to form joints to be used in the competition in any form. All devices must be from a manufacturer's standard catalogue, not made to order specific to the Test Project; if in doubt, any device questioned during toolbox checks is removed after a vote.

8.6 Proposed workshop and workstation layouts

Workshop layouts from previous competitions are available at www.worldskills.org/sitelayout.

Example workshop layout



9 Skill-specific rules

9.1 General notes

Skill-specific rules cannot contradict or take priority over the Competition Rules. They do provide specific details and clarity in areas that may vary from skill competition to skill competition. This includes but is not limited to personal IT equipment, data storage devices, Internet access, procedures and workflow, and documentation management and distribution. Breaches of these rules will be solved according to the Issue and Dispute Resolution procedure including the Code of Ethics and Conduct Penalty System.

9.2 Skill-specific rules

Topic/task	Skill-specific rule
Use of technology – USB, memory sticks	<ul style="list-style-type: none"> • Competitors, Experts, and Interpreters are not allowed to bring memory sticks into the workshop. If these are brought in they must be locked in the locker and only removed at the end of C4 to upload all the competition drawings. • Chief Expert is allowed to bring a memory stick from C-4 until C-1 for the Mandatory Assessment Training only. • The Skill Competition Manager is exempt from this rule.
Use of technology – personal laptops, tablets, and mobile phones	<ul style="list-style-type: none"> • Competitors are not allowed to bring personal laptops, tablets or mobile phones into the workshop. If these are brought in they must be locked in the locker and only removed at lunch time and at the end of each day. • Chief Expert, Experts, and Interpreters are allowed to use personal laptops or tablets in the Expert room only. When not in use the personal laptop and/or tablet must remain locked in the personal locker until the conclusion of the competition on C4. • Skill Competition Manager, Chief Expert, Experts, and Interpreters are allowed to bring a mobile phone into the workshop (see note for photo taking devices).
Use of technology – personal photo and video taking devices	<ul style="list-style-type: none"> • Skill Competition Manager, Chief Expert, Experts, and Interpreters are allowed to use personal photo and video taking devices in the workshop during the competition days only (C1 to C4), typically with mobile phones. • Competitors are allowed to use personal photo and video taking devices in the workshop at the conclusion of the competition on C4 only.

Topic/task	Skill-specific rule
Templates, aids, etc.	<ul style="list-style-type: none"> • Competitors are not permitted to bring prefixed or ensemble jigs, fixtures, or templates. • A manufactured jig must be available from a standard manufacturer's catalogue. Any other aid or device can be used if it is designed to improve safety; any other device can be used as long as it does not have pre-defined measurements or markings. All compliance is addressed during toolbox checks.
Drawings, recording information	<ul style="list-style-type: none"> • Chief Expert, Competitors, Experts, and Interpreters are not permitted to take the Test Project drawings out of the workshop. Photographs of Test Project drawings are strictly NOT permitted, by anyone one, or any delegate. This rule is valid from C-4 until the end of competition on C4. • The Skill Competition Manager is exempt from this rule.

10 Expert knowledge and experience

10.1 Requirements

Experts appointed for this skill competition must have the following knowledge and experience for the appropriate occupation or work role as documented in **section 1.1.2**.

Category	Requirements
Educational and technical foundation	<ul style="list-style-type: none"> • Formal trade qualification (Diploma, NVQ/SVQ Level 3+, City & Guilds, TAFE Cert III/IV, or equivalent) OR mastery via Recognition of Prior Learning (RPL). • In-depth timber knowledge: species, grain behaviour, moisture tolerances, defects, treatments. • Advanced geometry and technical drawing interpretation (including 3D CAD). • Understanding of all joinery standards.
Industry experience	<ul style="list-style-type: none"> • Post-qualification practical experience. • Proven track record in high-spec joinery manufacturing, installation, and restoration. • Multi-sector expertise: heritage, bespoke, and architectural joinery. • Understanding of multi-material integration (timber, glass, metal, composites). • Experience with international compliance frameworks (sustainability, and environmental).
Technical mastery (understanding)	<ul style="list-style-type: none"> • Complex joints: mortise and tenon variations, dovetails, scarf, finger joints, sliding dovetails, mitred frames, hybrid joints. • High-precision hand tool craftsmanship (mm tolerances). • Operation of CNC routers, spindle moulders, wide-belt sanders, mortisers, routers and other tools and equipment. • Advanced surface preparation and finishing to high standards. • Problem-solving for defects, climate, and design adaptation.
Assessment criteria (On Discussion Forum and at the Competition)	<ul style="list-style-type: none"> • Practical test with complex multi-joint assembly (hand + machine methods). • Technical knowledge on materials, joints, and compliance. • On-site observation in a live workshop environment.
Professional attributes	<ul style="list-style-type: none"> • Global adaptability to regional codes and environments. • Quality control and high level precision workmanship. • Effective communication in a team environment

11 Visitor and media engagement

11.1 Engagement methods

Following is a list of possible ways to maximize visitor and media engagement:

- Try-a-Skill – an area where spectators and media try joinery related skills;
- Demonstration of a CNC router;
- Display screens – a screen that shows visuals of joinery projects, communicates career opportunity, and Competitor profiles;
- Test Project descriptions – a posting of the Test Project drawing that is in public view; display of completed modules – module one may be displayed at the completion of the assessment.

12 Sustainability

12.1 Sustainable practices

This skill competition will focus on the sustainable practices below:

- Recycling bins are provided for paper, cans, and bottles;
- Use of recycled paper for printing of Competition documents;
- Wood used in the Competition projects is harvested from sustainable sources;
- Use of laminated material (where possible) for components;
- Utilize recycled stock (where possible)

13 References for industry consultation

13.1 General notes

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (<http://www.ilo.org/public/english/bureau/stat/isco/isco08/>)
- ESCO: (<https://ec.europa.eu/esco/portal/home>)
- O*NET OnLine (www.onetonline.org/)

13.2 References

This WSOS (Section 2) appears to relate most closely to Construction Carpenters:
<https://www.onetonline.org/link/summary/47-2031.01>

and, at a higher level of generality, Carpenters and Joiners:
<http://data.europa.eu/esco/isco/C7115>

Adjacent occupations can also be explored through these links.

ILO 7115

Unfortunately, no feedback was received from business and industry for WorldSkills Shanghai 2026.

14 Appendix

14.1 Appendix information

Not applicable.