

Technical Description

# Wall and Floor Tiling

Construction and Building Technology



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

Wall and Floor Tiling

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

A tiler 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 tiler has a continuing responsibility to work professionally in order to meet the requirements of the customer and thus maintain and grow the business. Tiling is closely associated with other parts of the construction industry, and with the many products that support it, normally for commercial purposes.

The tiler works internally and externally, including in the homes of customers and on building sites, in all weather conditions, and on small and major projects. The work includes the laying of tiles of ceramics, mosaic, and natural stone on walls, floors, and staircases in houses, commercial, industrial, and public buildings, churches, swimming pools, outside installations and façades to provide protective, and decorative finishes. It also includes the construction of small walls and steps from bricks or blocks.

The tiler will interpret drawings, set out and measure, remove any existing covering, prepare surfaces, lay the tiles in the desired pattern, grout, and finish to a high standard. Work organization and self-management, communication and interpersonal skills, problem solving, innovation and creativity, and working accurately are the universal attributes of the outstanding tiler. Whether the tiler is working alone (many are self-employed or sub-contractors) or in a team on large projects, the individual takes on a high level of personal responsibility and autonomy. Experienced tilers may also specialize in one area of work such as mosaics and they can work for specialist tiling firms specializing for example in artistic work or competition swimming pools.

From working safely and tidily through to exceptional planning and scheduling, concentration, precision, accuracy, and attention to detail to achieve an excellent finish, every step in the process matters. Mistakes are largely irreversible and can be very costly

With the international mobility of people, the tiler faces rapidly expanding opportunities and challenges. For the talented tiler 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 tilers is therefore likely to expand.

### 1.1.3 Number of Competitors per team

Wall and Floor Tiling 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 – Competition Rules
- WSI – WorldSkills Standards Specification framework
- WSI – WorldSkills Assessment Strategy
- WSI Online resources as indicated in this document
- WorldSkills Health, Safety, and Environment Policy and Regulations

## 2 THE WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

### 2.1 GENERAL NOTES ON THE WSSS

The WSSS specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business ([www.worldskills.org/WSSS](http://www.worldskills.org/WSSS)).

The skill competition is intended to reflect international best practice as described by the WSSS, and to the extent that it is able to. The Standards Specification 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 Standards Specification 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 Specification. This is often referred to as the “weighting”. The sum of all the percentage marks is 100.

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

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

## 2.2 WORLDSKILLS STANDARDS SPECIFICATION

SECTION		RELATIVE IMPORTANCE (%)
1	<b>Work organization and management</b>	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• Health, hygiene, and safety legislation, obligations, regulations, and documentation</li> <li>• The principles of working safely with electricity</li> <li>• Accident/first-aid/fire/emergency procedures and reporting</li> <li>• The situations when personal protective equipment must be used</li> <li>• The purposes, uses, care, maintenance, and storage of all hand and powered tools and equipment together with their safety implications</li> <li>• The purposes, uses, care, and storage of materials</li> <li>• Sustainability measures applying to the use of 'green' materials and recycling</li> <li>• The ways in which working practices can minimize wastage and help to manage costs</li> <li>• The principles of time management, work flow and measurement</li> <li>• The significance of planning, accuracy, checking, and attention to detail in all working practices</li> <li>• The importance of integrity and trustworthiness</li> <li>• The value of managing own continuing professional development</li> </ul>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Follow health, hygiene and safety standards, rules and regulations</li> <li>• Identify and use the appropriate personal protective equipment including safety footwear, ear and eye protection</li> <li>• Select, use, clean, maintain, and store all hand and powered tools and equipment safely</li> <li>• Select, use, and store all materials safely</li> <li>• Plan the work area to maximize efficiency and maintain the discipline of regular tidying</li> <li>• Consistently measure accurately</li> <li>• Work efficiently under pressure and check progress/outcomes regularly to meet deadlines</li> <li>• Establish and consistently maintain high quality standards and working processes</li> </ul>	
2	<b>Communication and interpersonal skills</b>	5
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• The significance of establishing and maintaining customer confidence</li> <li>• The roles and requirements of related trades</li> <li>• The value of building and maintaining trust and productive working relationships</li> <li>• The importance of swiftly resolving misunderstandings and conflicting demands</li> </ul>	

	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Visualize and translate customer wishes making recommendations which meet/improve their design and budgetary requirements where qualified to do so</li> <li>• Provide specialist technical advice and guidance on heritage where qualified to do so project</li> <li>• Present portfolio of previous work to demonstrate range and quality of experience and expertise</li> <li>• Produce a cost and time estimate for customers</li> <li>• Introduce related trades to support customer requirements</li> <li>• Understand the needs/demands of other trades and work around/with them</li> <li>• Work effectively in a team to facilitate efficiency/productivity/quality and cost control</li> </ul>	
<b>3</b>	<b>Problem solving, innovation, and creativity</b>	<b>5</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• The common types of problem which can occur within the work process</li> <li>• Diagnostic approaches to problem solving</li> <li>• Trends and developments in the industry including new products/interior designs, materials, and equipment</li> </ul>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Check work regularly, particularly for accuracy/standard, to minimize problems at a later stage</li> <li>• Recognize and understand problems swiftly and follow a self-managed process for resolving</li> <li>• Challenge incorrect information to prevent problems</li> <li>• Develop creative solutions to challenges when working on restoration projects</li> <li>• Recognize opportunities to contribute ideas to improve the product and overall level of customer satisfaction</li> <li>• Keep up to date with changes in the industry</li> <li>• Demonstrate a willingness to try new methods and embrace change</li> </ul>	
<b>4</b>	<b>Produce and interpret drawings</b>	<b>5</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• The essential information required for floor plans in construction drawings including: sections, datum levels, wall constructions, material codes, depth dimensions, heights, schedules, and specification</li> <li>• Interpretation and execution of drawings to ISO-A or ISO-E standards</li> <li>• The importance of checking for missing information or errors, anticipating problems and resolving in advance of the 'setting out' process</li> <li>• The role and use of geometry</li> <li>• Mathematical processes and problem solving</li> <li>• The range of costs to be included in estimates</li> </ul>	

	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Accurately interpret and produce building information</li> <li>• Produce basic outline drawings (hand and CAD) including elevations, plans, and sections to full size</li> <li>• Produce accurate complex drawings on wood to make figure on the wall/floor</li> <li>• Identify drawing errors or items that require clarification</li> <li>• Determine and check quantities of materials required</li> <li>• Calculate a cost and price for the work</li> </ul>	
<b>5</b>	<b>Setting out and measurement</b>	<b>5</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• Methods of setting out horizontal, vertical, raking, and curved surfaces forming plain areas, patterns, and motifs</li> </ul>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Check measurements of the wall/floor conform to the drawing specifications</li> <li>• Produce setting out for templates</li> </ul>	
<b>6</b>	<b>Preparations</b>	<b>15</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• Properties of materials</li> <li>• How to locate information on falls and positions of outlets, materials, and tiled features from drawings and schedules</li> <li>• Procedures for measuring, marking, and setting out for channels, outlets, and gullies</li> <li>• The function of materials: waste water fittings, channels, outlets, gullies, fixings, and fittings</li> <li>• Types of sands used for internal/external rendering; the effects of selecting incorrect types; site tests used on sands</li> <li>• Types of one-coat renders and reasons for using water proofers and plasticizers</li> <li>• Types of trims and beads including expansion strips, external angle, and stop beads</li> <li>• Characteristics of components including binder, aggregate, plasticers, and water proofers</li> </ul>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Remove old tiles, grout, cement, or adhesive</li> <li>• Fill all holes/cracks and clean surfaces</li> <li>• Provide drainage: interpret information with reference to falls and position of outlets from location, assembly, and component drawings; install channels, outlets, and gullies and finish surface and joints</li> <li>• Prepare materials to specification requirements including: sand and cement mixes, beads and trims</li> <li>• Gauge and mix renders: sand and cement mixes in the correct proportions</li> <li>• Apply render to internal and external backgrounds to provide the specified finish, to include three-coat work and key for tiling</li> </ul>	



<b>7</b>	<b>Fix</b>	<b>40</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• The range of fixing methods</li> <li>• The materials to be used to protect existing finished surfaces</li> </ul>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Minimize damage to surrounding surfaces by applying protective material and using barriers</li> <li>• Install tiles to flat, inclined and curved surfaces</li> <li>• Cut and shape tiles needed for edges, corners, and to fit around fittings and pipes ensuring no chipping/sanding</li> <li>• Apply correct adhesive evenly to tiles, avoiding excess</li> <li>• Attach tiles to surfaces and floors to form patterns and motifs, ensuring no lipping</li> <li>• Accurately space tiles, checking level, plumb and square to ensure aligned and levelled</li> <li>• Prepare and apply seal and grout to joints ensuring symmetrical and equal</li> <li>• Remove excess seal and grout, clean and polish to provide a good finish which meets the specification/customer requirements</li> <li>• Finish edge and corners with appropriate finishing methods and strips</li> </ul>	
<b>8</b>	<b>Quality</b>	<b>20</b>
	<p>The individual needs to know and understand:</p> <ul style="list-style-type: none"> <li>• The required quality standards for the task in hand</li> <li>• The nature and causes of substandard work and defects</li> <li>• The available range of quality checks and methods</li> </ul> <p>Alternative methods for effecting remedies and repairs</p>	
	<p>The individual shall be able to:</p> <ul style="list-style-type: none"> <li>• Inspect equipment, structures, and/or material to identify the nature and causes of errors, defects or problems</li> <li>• Think critically by using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.</li> <li>• Identify actual and potential problems.</li> <li>• Analyse information and evaluate options to choose and use the best solution</li> <li>• Make and follow through decisions</li> <li>• Evaluate solutions and optimize results</li> </ul>	
	<b>Total</b>	<b>100</b>

## 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 Specification. The Test Project is the assessment vehicle for the skill competition, and also follows the Standards Specification. The CIS enables the timely and accurate recording of marks, and has expanding supportive capacity.

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

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

## 4 THE MARKING SCHEME

### 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 standards that represent the skill. It is designed to allocate marks for each assessed aspect of performance in accordance with the weightings in the Standards Specification.

By reflecting the weightings in the Standards Specification, the Marking Scheme establishes the parameters for the design of the Test Project. Depending on the nature of the skill 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 Specification, if there is no practicable alternative.

The Marking Scheme and Test Project may be developed by one person, or several, or by all Experts. The detailed and final Marking Scheme and Test Project must be approved by the whole Expert Jury prior to submission for independent quality assurance. The exception to this process is for those skill competitions which use an independent designer for the development of the Marking Scheme and Test Project. Please see the Rules for further details.

Experts and independent designers are required to submit their Marking Schemes and Test Projects for comment and provisional approval well in advance of completion, in order to avoid disappointment or setbacks at a late stage. They are also advised to work with the CIS Team at this intermediate stage, in order to take full advantage of the possibilities of the CIS.

In all cases a draft Marking Scheme must be entered into the CIS at least eight weeks prior to the Competition using the CIS standard spreadsheet or other agreed methods.

### 4.2 ASSESSMENT CRITERIA

The main headings of the Marking Scheme are the Assessment Criteria. These headings are derived in conjunction with the Test Project. In some skill competitions the Assessment Criteria may be similar to the section headings in the Standards Specification; in others they may be totally 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 Specification.

Assessment Criteria are created by the person(s) developing the Marking Scheme, who are free to define 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). It is advisable not to specify either the Assessment Criteria, or the allocation of marks, or the assessment methods, within this Technical Description.

The Mark Summary Form generated by the CIS will comprise a list of the Assessment 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) specified 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, or instructions for how the marks are to be awarded. Aspects are assessed either by measurement or 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 skill in the Standards Specification. 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)

	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	10.00	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, in all circumstances. The marking teams must be organized to ensure that there is no compatriot marking in any circumstances. (See 4.6.)

## 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)
- 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, with a fourth to coordinate the marking and acting as a judge to prevent compatriot marking.

## 4.7 ASSESSMENT AND MARKING USING MEASUREMENT

Three Experts will be used to assess each aspect. 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.

## 4.8 THE USE OF MEASUREMENT AND JUDGEMENT

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

## 4.9 COMPLETION OF SKILL ASSESSMENT SPECIFICATION

Measurement (tolerance):

- 0mm = 10 points;
- 1mm = 9 points;
- 2mm = 8 points;
- 3mm = 7 points;
- 4mm = 6 points;
- 5mm = 5 points;
- More than 5mm = 1 point.

A - Overall appearance

- Cleaning of tiles and tile edges;
- Regular joints for width and surface;
- Cleaning the area around the project.

B - Cutting

- No chipping on tile edges;
- Regular size joints;
- Sanded edges of tiles.

C - Level

- Put the level on the tiles and adjust until it is level. Place the marking wedge at one end of the straight edge until it reads level. (Note this is not to be done in the middle.)

D - Plumb

- Put the level on the tiles and adjust until it is plumb. Place the marking wedge at one end of the straight edge until it reads plumb. (Note this is not to be done in the middle.)

E - Square

- The square must be used in conjunction with 2 screeds/aluminium straight edges. Place the marking wedge in the area deemed to be out of square.

F - Surface alignment

- Using an aluminium straight edge or level over a given area check alignment using the gauge over the length of the service.

G – Measurements

H - Fully completed to drawing

- Missing tiles;
- Wrong tiles;
- Project not completed to drawing;
- Tile bedding not finished to edge of tiles.

## 4.10 SKILL ASSESSMENT PROCEDURES

The Experts who attend the Competition will be divided into marking groups according to their WorldSkills experience, language, and culture to deal with each section of the marking criteria.

- Groups of Experts assess the same aspects for all Competitors;
- Experts use specific points. Experts use drawings for the right position of the specific points. They use measurement tools like a level, screed/aluminium straight edge, a square, and length measurement tool;
- Three groups of Experts decide on the assessment criteria and indicate the specific points on the drawing of the Test Project;
- The three Expert groups are as follows: 1 = floor, 2 = wall A, 3 = wall B;
- Where possible Experts assess the same percentage of the Test Project;
- Progressive marking will be used for each module. To enable Experts to assess progressively Competitors are required to complete the following tasks at the documented times;
- At the end of the second day the Competitor must finish the main wall (A) including the 3-dimensional object, grouting and cleaning;
- At the end of the third day the Competitor must finish wall B including grouting and cleaning;
- Floor tile bedding can only be laid on day one and day four of the Competition;
- Floor tiles can only be laid on day four of the Competition.

## 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 skills in each section of the WSSS.

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

The Test Project will not cover areas outside the Standards Specification, or affect the balance of marks within the Standards Specification other than in the circumstances indicated by Section 2.

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.

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 Specification. Section 2.1 refers.

### 5.2 FORMAT/STRUCTURE OF THE TEST PROJECT

The format of the Test Project is a single Test Project assessed in stages.

Specific requirements include:

- At the end of the day two the Competitor must finish the main wall (A) including the 3-dimensional object, grouting and cleaning;
- At the end of day three the Competitor must finish the secondary wall (B) including grouting and leaning;
- The screed for the floor can only be laid on day one or day four and if the Competitor works on the floor on day two or day three he/she will not be assessed for the floor (C)
- Floor tiles can only be laid on day four of the Competition.
- If a Competitor does not follow the Health, Safety, and Environment regulation (for example) using an electrical tool which creates excessive dust they will be penalized with maximum one mark of the total.

## 5.3 TEST PROJECT DESIGN REQUIREMENTS

The Test Project has to be presented in colour and in digital format (AutoCAD). It must include detailed drawings of cutting and fitting. The Test Project must include all the difficulties of straight, circular and diagonal cutting. It must integrate masonry work, such as straight or circular steps, and three-dimensional work.

The maximum tile area of the Test Project, including the three-dimensional object, must be less than 7m<sup>2</sup> and the floor area must be less than 3.5m<sup>2</sup>.

Each Competitor will have a stable mounting wall made of brick/concrete of approximately 1600mm x 1600mm x 2000mm. Walls are to be at an angle of 90 degrees.

Walls must be constructed of light weight concrete blocks with a tolerance of  $\pm 2$  mm (plus or minus 2mm). All Competitors are allowed the chance to fix their walls during Familiarization Day C-2.

## 5.4 TEST PROJECT DEVELOPMENT

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

### 5.4.1 Who develops the Test Project or modules

The Test Project modules are developed independently and must be validated by all Experts.

### 5.4.2 How and where is the Test Project or modules developed

The Test Project modules are developed independently.

### 5.4.3 When is the Test Project developed

The Test Project modules are developed before the previous Competition.

The Test Project is developed according to the following timeline:

TIME	ACTIVITY
Two (2) months before CPW	All Experts who have a proposal for the Test Project should upload it on the discussion forum in the correct format (.dwg/CAD readable). In the same instant all Experts are given the possibility to download the drawings of the two previous Test Projects (e.g. Leipzig, London).
Between the 8th – 5th week before CPW	All Experts are given 3 (three) weeks of discussion about the given proposals on the specified forum
Between the 5th-3rd week before CPW	Using the poll function on the discussion forum the Experts must give their anonymous vote for one proposal.
One (1) week before CPW	The chosen Test Project will be announced to all (incl. CE, DCE) on the discussion forum and circulated on the website. Each Expert has the chance to work on his suggestion on the 30% changing. The Test Project incl. changing suggestions need to be in the correct format (.dwg/CAD readable) as well as the detailed drawings. The suggestions need to be brought to the current Competition.
C-4	All Experts vote on the suggestions brought forward and therefore define the final project.



## 5.5 TEST PROJECT VALIDATION

It must be demonstrated that the Test Project can be completed within the material/equipment, knowledge and time constraints. This will be demonstrated by a photograph of the completed Test Project and a technical drawing provided by the designing Expert.

## 5.6 TEST PROJECT SELECTION

The Test Project is selected by vote on the forum four weeks before the Competition Preparation Week.

## 5.7 TEST PROJECT CIRCULATION

The Test Project is circulated via the website as follows:

[View point 5.4.3.](#)

## 5.8 TEST PROJECT COORDINATION (PREPARATION FOR COMPETITION)

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

## 5.9 TEST PROJECT CHANGE AT THE COMPETITION

Under the supervision of the Skill Management Team, the group of Experts make a 30% change to the Test Project. The changed Test Project will be circulated to Competitors during the briefing session on day one of the Competition.

Experts can present their ideas or drawings developed prior to the Competition and brought with them. All Experts discuss these suggestions and the Chief Expert conducts a vote to approve the accepted 30% change. Change may be made to any 30% of the following:

- Measurement of radials or other details;
- Construction changes;
- Number of tiles;
- Design modification.

## 5.10 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](http://www.worldskills.org/infrastructure) located in the Expert Centre.

The Competition Organizer will provide the list of manufacturer specifications to the equipment and materials as listed on the Infrastructure List with respect to the particularities of the Host Country.

## 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 skill specific Discussion Forum (<http://forums.worldskills.org>). Skill related decisions and communication are only valid if they take place on the forum. The Chief Expert (or an Expert nominated by the Chief Expert) will be the moderator for this Forum. Refer to 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](http://www.worldskills.org/competitorcentre)).

This information includes:

- Competition Rules
- Technical Descriptions
- Marking Schemes
- Test Projects
- 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](http://www.worldskills.org/testprojects) and the Competitor Centre ([www.worldskills.org/competitorcentre](http://www.worldskills.org/competitorcentre)).

### 6.4 DAY-TO-DAY MANAGEMENT

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

## 7 SKILL-SPECIFIC SAFETY REQUIREMENTS

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

- All Competitors must use safety glasses when using any hand, power, or machine tools or equipment likely to cause or create chips or fragments that may injure the eyes;
- Experts will use the appropriate personal safety equipment when inspecting, checking, or working with a Competitor's project.

## 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](http://www.worldskills.org/infrastructure).

The Infrastructure List specifies the items and quantities requested by the Experts for the next Competition. The Competition Organizer will progressively update the Infrastructure List specifying the actual quantity, type, brand, and model of the items. Items supplied by the Competition Organizer are shown in a separate column.

At each Competition, the Experts must review and update the Infrastructure List in preparation for the next Competition. Experts 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.

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 COMPETITOR'S TOOLBOX

A maximum of three toolboxes are allowed. The total external size of 4m<sup>3</sup> must not be exceeded.

All toolboxes must be placed in the Competitor's work area or behind the Test Project.

### 8.3 MATERIALS, EQUIPMENT, AND TOOLS SUPPLIED BY COMPETITORS IN THEIR TOOLBOX

The Competitor must bring the following tools in a toolbox:

DESCRIPTION	QUANTITY	PHOTO
Gauging trowels		
Steel trowels		
Spirit levels		
Calculator		
Cutters		
Scribers		
Pinchers		
Ruler		

DESCRIPTION	QUANTITY	PHOTO
Cutters		
Scribers		
Pinchers		
Ruler		
Pencil		
Sand paper		
Wooden float		
Hammer		
Builder's square (600 mm approx.)		
Try square		
Bevel		
Compass (with radius extension)		
Safety equipment (protective clothing and safety boots)		
Notched trowels to suit Test Project		

The Competitors may bring other tools that they use in the tiling industry for the execution of the Test Project. Exceptions are listed in section 8.5.

## 8.4 MATERIALS, EQUIPMENT, AND TOOLS SUPPLIED BY EXPERTS

Not applicable.

## 8.5 MATERIALS AND EQUIPMENT PROHIBITED IN THE SKILL AREA

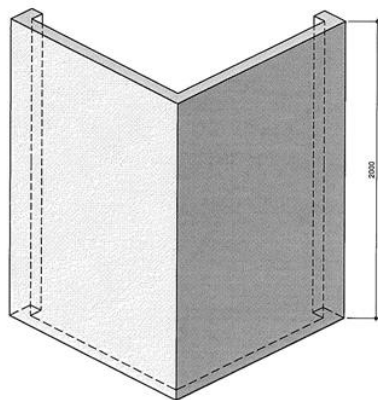
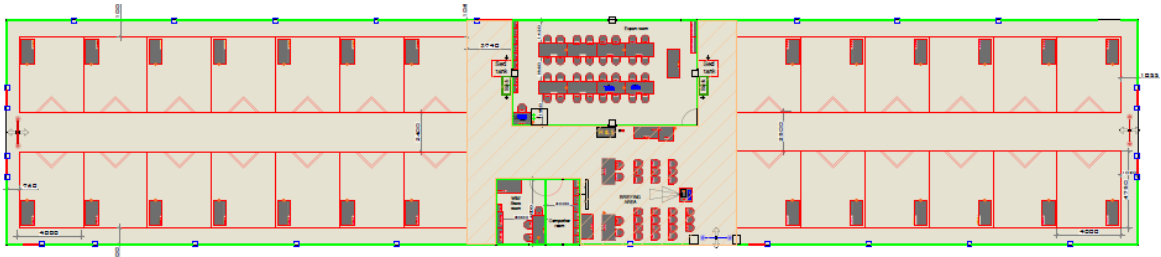
The following equipment is prohibited for use by Competitors.

- Templates brought to the Competition (Templates made after the Test Project briefing are allowed);
- Laser cutting machines;
- Automatic CNC cutting machines;
- Water jet machines;
- Dry cutting machines (with the exception of machines which meet the WorldSkills Health, Safety, and Environment policy and guidelines regulations) and have a dust suction component.

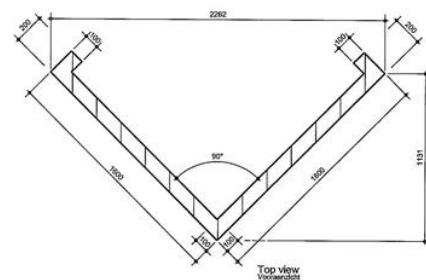
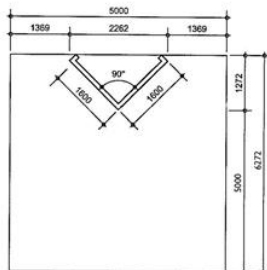
## 8.6 PROPOSED WORKSHOP AND WORKSTATION LAYOUTS

Workshop layouts from previous competitions are available at [www.worldskills.org/sitelayout](http://www.worldskills.org/sitelayout).

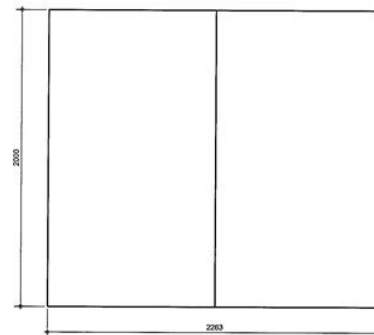
Example workshop layout:



Oblique projection  
Schiefe Projektion



Top view  
Vorderansicht



Front view  
Vorderansicht

Internationale Bouwkampioenschappen Tegelsetten 2009

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A. Schaal: 1:20 Gef.: G.S.  
B. Formaat: A3 Ges.:

## 9 SKILL-SPECIFIC RULES

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 work flow, and documentation management and distribution.

TOPIC/TASK	SKILL-SPECIFIC RULE
Use of technology – USB, memory sticks	Competitors, Experts, and Interpreters are not allowed to bring memory sticks into the workshop.
Use of technology – personal laptops, tablets and mobile phones	Competitors, Experts, and Interpreters are not allowed to bring personal laptops, tablets or mobile phones into the workshop.
Use of technology – personal photo and video taking devices	Competitors, Experts, and Interpreters are allowed to use personal photo and video taking devices in the workshop at the conclusion of the competition only. An Expert will be appointed by the Chief Expert to take photos of Competitors and their work throughout the competition.
Tools/infrastructure	Competitors are not permitted to use a grinder and a water jet cutter.
Templates, aids, etc.	Competitors are not permitted to bring templates however they are permitted to build a template after the Test Project briefing and will be allowed to use what they have made.
Health, Safety, and Environment	Refer to the WorldSkills Health, Safety, and Environment policy and guidelines document.
Equipment failure	Competitors must report any defect in machines or need for maintenance to the duty Expert.
Connection to power supply	Equipment can only be connected to the main power supply with the permission of and under supervision of the duty Expert.
Leaving the workshop	Competitors, Experts, and Interpreters must inform the duty Expert before leaving the workshop for any reason.
Material	Competitors may request additional tiles from the duty Expert.

## 10 VISITOR AND MEDIA ENGAGEMENT

The following ideas may be considered to maximize the engagement of visitors and media.

- Display screens showing the progress of Competitors work;
- Each Competitor designs and completes one wall with specifications made by Experts before the Competition. This could be used for a public award for the Competitor;
- Marketing of the Test Project by a regional vocational education school with logos of the local sponsors and specification of the assessment and good wall and floor tiling;
- Features of displays and support for students of the Test Project in 3D animation and print;
- Interviews of the Experts and Competitors.



# 11 SUSTAINABILITY

This skill competition will focus on the sustainable practices below:

- Recycling;
- Use of 'green' materials;
- Use of completed Test Projects after Competition

## 12 REFERENCES FOR INDUSTRY CONSULTATION

WorldSkills is committed to ensuring that the WorldSkills Standards Specifications 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 Standards Specification 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/](http://www.onetonline.org/))

Your WSSS (Section 2) appears most closely to relate to Tile and Marble Setters:

<https://www.onetonline.org/link/summary/47-2044.00>

or Tile Fitter: <http://data.europa.eu/esco/occupation/02447817-ea01-4d8b-b09c-8bc128e447e6>

These links can also be used to explore adjacent occupations.