

CONSTRUCTION AND BUILDING TECHNOLOGY

# Wall and Floor Tiling



## Technical Description

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.

The Technical Description consists of the following:

<b>1 Introduction .....</b>	<b>2</b>
<b>2 The WorldSkills Occupational Standards (WSOS).....</b>	<b>4</b>
<b>3 The Assessment Strategy and Specification.....</b>	<b>10</b>
<b>4 The Marking Scheme .....</b>	<b>11</b>
<b>5 The Test Project.....</b>	<b>15</b>
<b>6 Skill management and communication .....</b>	<b>18</b>
<b>7 Skill-specific safety requirements.....</b>	<b>20</b>
<b>8 Materials and equipment.....</b>	<b>21</b>
<b>9 Skill-specific rules.....</b>	<b>25</b>
<b>10 Visitor and media engagement .....</b>	<b>26</b>
<b>11 Sustainability .....</b>	<b>27</b>
<b>12 References for industry consultation.....</b>	<b>28</b>

Effective 22.09.2020



Stefan Praschl  
Board member – Competitions



Michael Fung  
Board member – Competitions

---

© WorldSkills International (WSI) reserves all rights in documents developed for or on behalf of WSI, including translation and electronic distribution. This material may be reproduced for non-commercial vocational and educational purposes provided that the WorldSkills logo and copyright notice are left in place.

# 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 – 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.

## 2 The WorldSkills Occupational Standards (WSOS)

### 2.1 General notes on the WSOS

The WSOS 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/WSOS](http://www.worldskills.org/WSOS)).

The skill competition is intended to reflect international best practice as described by the WSOS, and to the extent that it is able to. 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 that are set out in the Standards Specification. 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, provided that this does not distort the weightings assigned by the Standards.

## 2.2 WorldSkills Occupational Standards

Section	Relative importance (%)
<b>1 Work organization and management</b>	<b>5</b>

The individual needs to know and understand:

- Health, hygiene, and safety legislation, obligations, regulations, and documentation
- The principles of working safely with electricity
- Accident/first-aid/fire/emergency procedures and reporting
- The situations when personal protective equipment must be used
- The purposes, uses, care, maintenance, and storage of all hand and powered tools and equipment together with their safety implications
- The purposes, uses, care, and storage of materials
- Sustainability measures applying to the use of 'green' materials and recycling
- The ways in which working practices can minimize wastage and help to manage costs
- The principles of time management, workflow, and measurement
- The significance of planning, accuracy, checking, and attention to detail in all working practices
- The importance of integrity and trustworthiness
- The value of managing own continuing professional development

The individual shall be able to:

- Follow health, hygiene and safety standards, rules, and regulations
- Identify and use the appropriate personal protective equipment including safety footwear, ear, and eye protection
- Select, use, clean, maintain, and store all hand and powered tools and equipment safely
- Select, use, and store all materials safely
- Plan the work area to maximize efficiency and maintain the discipline of regular tidying
- Consistently measure accurately
- Work efficiently under pressure and check progress/outcomes regularly to meet deadlines
- Establish and consistently maintain high quality standards and working processes

Section	Relative importance (%)
<b>2 Communication and interpersonal skills</b>	<b>5</b>

The individual needs to know and understand:

- The significance of establishing and maintaining customer confidence
- The roles and requirements of related trades
- The value of building and maintaining trust and productive working relationships
- The importance of swiftly resolving misunderstandings and conflicting demands

The individual shall be able to:

- Visualize and translate customer wishes making recommendations which meet/improve their design and budgetary requirements where qualified to do so
- Provide specialist technical advice and guidance on heritage where qualified to do so project
- Present portfolio of previous work to demonstrate range and quality of experience and expertise
- Produce a cost and time estimate for customers
- Introduce related trades to support customer requirements
- Understand the needs/demands of other trades and work around/with them
- Work effectively in a team to facilitate efficiency/productivity/quality and cost control

<b>3 Problem solving, innovation, and creativity</b>	<b>5</b>
--	----------

The individual needs to know and understand:

- The common types of problem which can occur within the work process
- Diagnostic approaches to problem solving
- Trends and developments in the industry including new products/interior designs, materials, and equipment

The individual shall be able to:

- Check work regularly, particularly for accuracy/standard, to minimize problems at a later stage
- Recognize and understand problems swiftly and follow a self-managed process for resolving
- Challenge incorrect information to prevent problems
- Develop creative solutions to challenges when working on restoration projects
- Recognize opportunities to contribute ideas to improve the product and overall level of customer satisfaction
- Keep up to date with changes in the industry
- Demonstrate a willingness to try new methods and embrace change

Section	Relative importance (%)
<b>4 Produce and interpret drawings</b>	<b>5</b>

The individual needs to know and understand:

- The essential information required for floor plans in construction drawings including sections, datum levels, wall constructions, material codes, depth dimensions, heights, schedules, and specification
- Interpretation and execution of drawings to ISO-A or ISO-E standards
- The importance of checking for missing information or errors, anticipating problems and resolving in advance of the 'setting out' process
- The role and use of geometry
- Mathematical processes and problem solving
- The range of costs to be included in estimates

The individual shall be able to:

- Accurately interpret and produce building information
- Produce basic outline drawings (hand and CAD) including elevations, plans, and sections to full size
- Produce accurate complex drawings on wood to make figure on the wall/floor
- Identify drawing errors or items that require clarification
- Determine and check quantities of materials required
- Calculate a cost and price for the work

<b>5 Setting out and measurement</b>	<b>5</b>
--------------------------------------	----------

The individual needs to know and understand:

- Methods of setting out horizontal, vertical, raking, and curved surfaces forming plain areas, patterns, and motifs

The individual shall be able to:

- Check measurements of the wall/floor conform to the drawing specifications
- Produce setting out for templates



Section	Relative importance (%)
<b>6 Preparations</b>	<b>15</b>

The individual needs to know and understand:

- Properties of materials
- How to locate information on falls and positions of outlets, materials, and tiled features from drawings and schedules
- Procedures for measuring, marking, and setting out for channels, outlets, and gullies
- The function of materials: wastewater fittings, channels, outlets, gullies, fixings, and fittings
- Types of sands used for internal/external rendering; the effects of selecting incorrect types; site tests used on sands
- Types of one-coat renders and reasons for using water proofers and plasticizers
- Types of trims and beads including expansion strips, external angle, and stop beads
- Characteristics of components including binder, aggregate, plasticers, and water proofers

The individual shall be able to:

- Remove old tiles, grout, cement, or adhesive
- Fill all holes/cracks and clean surfaces
- 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
- Prepare materials to specification requirements including sand and cement mixes, beads and trims
- Gauge and mix renders: sand and cement mixes in the correct proportions
- Apply render to internal and external backgrounds to provide the specified finish, to include three-coat work and key for tiling

<b>7 Fix</b>	<b>40</b>
--------------	-----------

The individual needs to know and understand:

- The range of fixing methods
- The materials to be used to protect existing finished surfaces

Section	Relative importance (%)
<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 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 Alternative methods for effecting remedies and repairs</li> </ul>	
<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. 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, in order 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 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 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 people 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 Rules for further details.

Experts and Independent Assessors 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)
- 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

WorldSkills is committed to continuous improvement. This particularly applies to assessment. The SMT is expected to learn from past and alternative practice and build on the validity and quality of assessment and marking.

Measurement (tolerance):

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

Assessment and marking are an intense process that depends upon skilful leadership, management, and scrutiny.

The Experts who attend the Competition are 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 is 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 3dimensional 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 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 Developer, 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 single Test Project assessed in stages

### 5.3 Test Project design requirements

The Test Project will include all the difficulties of straight, circular, and diagonal cutting. It must integrate masonry work, such as straight or circular steps, three-dimensional work, and different styles of outside corners (jolly, tile-trim, glazed edges).

The maximum tile area of the Test Project, including the three-dimensional object, must be less than 7.0 m<sup>2</sup> and the floor area must be less than 3.5 m<sup>2</sup>.

Each Competitor will have a stable mounting wall made of brick/concrete of approximately 1600 mm x 1600 mm x 2000 mm. 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 2 mm). All Competitors are allowed the chance to fix their walls during Familiarization Day on 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 by an Independent Test Project Designer in collaboration with the Skill Competition Manager.

### 5.4.2 When is the Test Project developed

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

Time	Activity
Four (4) months prior to the Competition	The Test Project/modules are independently developed and sent to WorldSkills International Skills Competitions Administration Manager.
At the Competition on C-3	The Test Project/modules are presented to all Experts.

## 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 is expected to identify one or more independent, expert, and trusted individuals initially to review the 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 and will ensure that the Test Project/modules can be completed within the material, equipment, knowledge, and time constraints of Competitors.

## 5.7 Test Project selection

The Test Project/modules are selected by the Independent Test Project Designer in collaboration with the Skill Competition Manager.

## 5.8 Test Project circulation

If applicable, the Test Project is circulated via the website as follows:

The Test Project/modules are not circulated prior to the Competition. The Test Project/modules are presented to Experts and Competitors on C-3.

## 5.9 Test Project coordination (preparation for Competition)

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

## 5.10 Test Project change

There is no 30% 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 to infrastructure limitations.

## 5.11 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. 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 such items may include those for fault finding modules or modules not circulated.

## 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
- 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](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)).

## 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.

Topic/task	Best practice procedure
Assessment	<ul style="list-style-type: none"> <li>Before an Expert is permitted to assess they must pass a practical assessment which will be marked by the Experts responsible for assessment.</li> <li>During assessment Experts must remain impartial. Professional, and do nothing to influence other Experts.</li> </ul>
Equipment failure	<ul style="list-style-type: none"> <li>Competitors must report any defect in machines or need for maintenance to the duty Expert.</li> </ul>
Connection to power supply	<ul style="list-style-type: none"> <li>Equipment can only be connected to the main power supply with the permission of and under supervision of the duty Expert.</li> </ul>
Leaving the workshop	<ul style="list-style-type: none"> <li>Competitors, Experts, and Interpreters must inform the duty Expert before leaving the workshop for any reason.</li> </ul>
Material	<ul style="list-style-type: none"> <li>Competitors will be given 10% of extra tiles.</li> <li>Competitors may request additional tiles from the duty Expert. However, marks will be deducted for each additional material.</li> </ul>
Progressive completion of Test Project modules	<ul style="list-style-type: none"> <li>Steps/Blockwork to be constructed on day one</li> <li>At the end of day C1 the Competitor must finish module (A) including grouting and cleaning and timetable.</li> <li>At the end of day C2 the Competitor must finish module (B) including grouting, and cleaning.</li> <li>At the end of day C3 the Competitor must finish module (C) including grouting, and cleaning.</li> <li>At the end of day C4 the Competitor must finish module (D) including grouting, and cleaning.</li> <li>Competitors are allowed to start the next module of work as soon as the current module has been finished.</li> </ul>

## 7 Skill-specific safety requirements

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

Task	Sturdy shoes with closed toe and heel	Safety glasses with side protection	Dust mask	Rubber gloves	Safety shoes with protective cap	Tight fitting work clothes (long trousers)	Hearing protection
General PPE for safe areas	✓						
Using wet saw		✓	✓	✓	✓	✓	✓
Nipping tiles		✓		✓	✓	✓	
Working in Competitor workstation		✓			✓	✓	
Mixing Adhesive/Grout		✓	✓	✓	✓	✓	
Grouting		✓	✓	✓	✓	✓	

## 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 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 such 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.

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 up to two (2) toolboxes with the total external volume not exceeding 2.5 m<sup>3</sup>.

(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.

### 8.3 Materials, equipment, and tools supplied by Competitors

Description	Quantity	Photo
Gauging trowels		
Steel trowels		
Spirit levels		
Calculator		
Ruler		

Description	Quantity	Photo
Cutters		
Scribers		
Pinchers		
Pencil		
Sandpaper		
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		

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

In addition, 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.

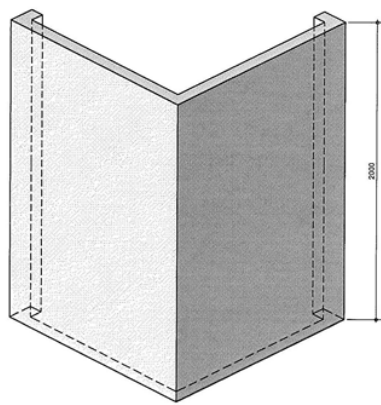
## 8.4 Materials, equipment, and tools supplied by Experts

Experts are not required to bring materials, equipment, or tools. All is supplied by the Competition Organizer.

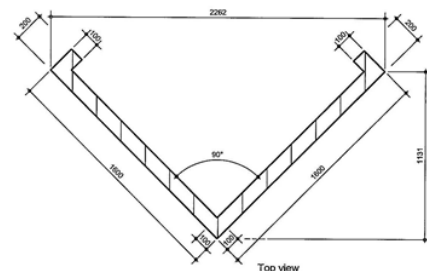
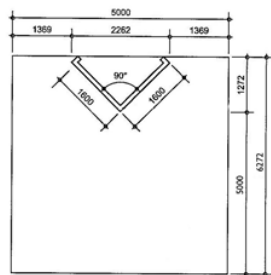
Experts are required to supply their own Personal Protective Equipment as specified in section 7 skill-specific safety requirements.



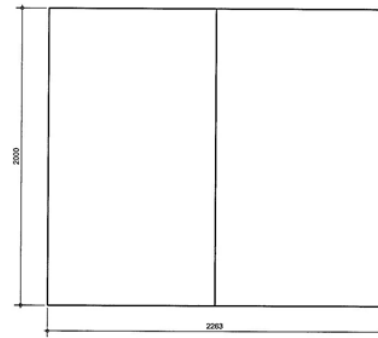




Oblique projection  
Schäve projectie



Top view  
Vooraanzicht



Front view  
Vooraanzicht

Internationale Bouwkampioenschappen Tegelzetten 2009

© 2009 FUNDECION kerntechniek en tegelzettingen bouw & infra



A	Schaal	1:20	Get.	G.S.
B	Formaat	A3	Get.	

## 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 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.

Topic/task	Skill-specific rules
Use of technology – USB, memory sticks	<ul style="list-style-type: none"> <li>Competitors, Experts, and Interpreters are not allowed to bring memory sticks into the workshop. If these items are brought into the workshop they must be locked in the personal locker and can only be taken out at lunch time and at the end of the day.</li> <li>The Skill Competition Manager, Chief Expert, and Deputy Chief Expert are exempt from this rule.</li> </ul>
Use of technology – personal laptops, tablets, and mobile phones	<ul style="list-style-type: none"> <li>Competitors, Experts, and Interpreters are not allowed to bring or use personal laptops, tablets, or mobile phones into the workshop.</li> <li>Skill Competition Manager, Chief Expert, Deputy Chief Expert, Interpreters, and Experts are allowed to bring laptops, tablets, and mobile phones into the workshop however they are only allowed to be used in the Expert room. When not in use they must be locked in the personal locker and can only be taken out at lunch time and at the end of the day.</li> <li>Skill Competition Manager, Chief Expert, Deputy Chief Expert, and Workshop Manager are only permitted to use the official WorldSkills mobile phone in the workshop area.</li> </ul>
Use of technology – personal photo and video taking devices	<ul style="list-style-type: none"> <li>Skill Competition Manager, Chief Expert, Deputy Chief Expert, Workshop Manager, Competitors, Experts, and Interpreters are allowed to use personal photo and video taking devices in the workshop at the conclusion of the competition on C4 only. An Expert is appointed by the Chief Expert to take photos of Competitors and their work throughout the competition.</li> </ul>
Tools/infrastructure	<ul style="list-style-type: none"> <li>Competitors are not permitted to use a grinder and a water jet cutter.</li> </ul>
Templates, aids, etc.	<ul style="list-style-type: none"> <li>Competitors are not permitted to bring templates however they are permitted to build a template after the Test Project briefing and are allowed to use what they have made.</li> </ul>

## 10 Visitor and media engagement

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

- Display screens showing the progress of Competitors work;
- Each Competitor designs and completes one wall with specifications made by Experts prior to 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 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/>) ILO 7122
- ESCO: (<https://ec.europa.eu/esco/portal/home>)
- O\*NET OnLine ([www.onetonline.org/](http://www.onetonline.org/))

Your WSOS (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.

The following table indicates which organizations were approached and provided valuable feedback for the Description of the Associated Role and WorldSkills Occupational Standards in place for WorldSkills Shanghai 2021.

Organization	Contact name
Liebenauer Gerhard e.U. Hafnermeister – Fliesenlegermeister (Austria)	Liebenauer Thomas, Master of wall and floor tiling
Schlüter-Systems (France)	Laurent Gazagnes, General Director