

# TECHNICAL DESCRIPTION

## ARCHITECTURAL STONEMASONRY



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international

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TD08 v4.1 – WSC2013

WorldSkills International, by a resolution of the Technical 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:

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Effective 11.10.11



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# 1. **INTRODUCTION**

## 1.1 **Name and description of skill**

1.1.1 The name of the skill is

Architectural Stonemasonry

1.1.2 Description of skill

Natural stone is a significant part of our collective, international heritage.

Architectural Stonemasonry covers the cutting to shape of all natural stones (granite, limestone, sandstone and marble) after extraction from quarries with different tools and machines from hand cutting to Computer Numerically Controlled (CNC) machines.

Natural stone is used for building monuments, memorials, commercial and private development, interior designs (floors, work surfaces, bathroom decoration), landscaping, architectural detailing, statuary for both secular and religious. Natural stone is also used for sculpture, ornament, enrichment and letter cutting.

The modern stone industry embraces many facets. Craft areas spanning quarrying to production, from stonecutting to carving, from memorial work to sculpture and conservation to fixing and building. Each facet will require a high degree of skill and underpinning knowledge to be able to execute the work competently.

The more contemporary and modern internal work will be highly mechanised, lending itself to modular formats and standard unit sizes for example the sharp, clean lines associated with interior design. The concept of using stone as a 'raincoat' with the use of thin slabs attached to a building with mechanical fixings as the principle facing.

Contrast the modern with the traditional and we see more evidence of the ancient craft skills being used. Work on the maintenance and repair of a country's architectural heritage will use traditional materials, sometimes an ancient quarry is re-opened to supply the same material for a significant and sensitive programme. The skills are those which have been handed down from Master to Apprentice for more than a millennium. This work will cover anything from the basic places of worship to the massive Gothic cathedrals, from simple but significant buildings to the grand architectural secular commerce and municipal buildings that define a country's heritage.

This Technical Description is based upon the stonemason who is responsible for producing the templets and worked stones with complex architectural detailing, one who is capable of producing incised or raised letters and one who can produce simple carvings in intaglio or in simple bas-relief.

In building modern monuments maintaining our cultural and architectural heritage and developing new contemporary and modern work, stone and marble are highly valued for the creation, restoration, conservation, renovation and maintenance of structures that are locally, regionally, nationally and internationally significant.

To promote participation in WSC from other Asian countries/regions (for example, Japan, China and Taiwan) it is necessary to include other types of stone in the Test Project.

Although granite is the most frequently used stone in Asia, working on granite in a closed site is known to cause health issues. Therefore it is recommended marble to be used in future competitions.

Marble is the second widely used stone in Asia, and the use of limestone is rare. In contrast, limestone is more common in Europe and the accessibility of limestone is much higher than in Asia.

Today & for the future, natural stone has a real place in our “sustainable development”.

## 1.2 Scope of application

1.2.1 Every Expert and Competitor must know this Technical Description.

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

## 1.3 Associated documents

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

- WSI - Competition Rules
- WSI - Online resources as indicated in this document
- Host Country - Health and Safety regulations

## 2. COMPETENCY AND SCOPE OF WORK

The Competition is a demonstration and assessment of the competencies associated with this skill. The Test Project consists of practical work only.

### 2.1 Competency specification

#### **Safe working practices in stonemasonry - common to all stonemasonry operations**

##### Knowledge and understanding of safe working practices

- know the health and safety regulations
- know the accident / first aid / fire/ emergency procedures and reporting
- know about health and hygiene
- know about safe handling of materials and equipment
- know how to work with electricity
- know how to use appropriate personal protective equipment (PPE)

##### The Competitor shall be able to

- apply health and safety regulations
- apply accident / first aid / emergency procedures and reporting
- implement health and hygiene
- safely handle materials and equipment
- work with electricity
  - Maintain hand tools and powered tools in safe condition
  - Select and use Personal Protective Equipment for each process
  - Maintain a safe working environment
- use appropriate personal protective equipment

#### **Information, quantities and communicating - common to all stonemasonry operations**

##### Knowledge and understanding of information, quantities and communication

- Know how to interpret and produce building information
- Interpretation and execution of drawings to ISO-A or ISO-E standards.
- interpret information from specifications
- Measurements in centimetres.

The Competitor shall be able to

- interpret and produce building information
- produce basic outline drawings including elevations, plans and sections to full size
- communicate clearly in the competition workplace where drawings, variations to the documents, and work restrictions have been required

**Produce complex templets**

Knowledge and understanding of

- know how to interpret information for complex templets
- know how to produce complex templets and moulds and apply standard information
  - describe the characteristics of materials used for templets
  - describe tracery features, including: trefoil, quatrefoil, foils, cusps, dead eyes, pierced eyes
  - distinguish between the orders of architecture: Doric, Ionic, Corinthian, Tuscan, Composite
  - describe the members of the entablature: cornice, frieze, architrave
  - describe safe disposal of zinc waste
- know how to set out work full size using standard drawing conventions
  - describe traditional masonry features
  - describe types of developed true shapes, raking sections, stretched mouldings

The Competitor shall be able to

- interpret information to produce complex templets
- produce complex templets
  - select resources, including: sheet zinc and drawing paper,
  - to produce complex templets and moulds, including: tracery, foils, cusps, dead eye, pedestal, cornice, column, coping, plinth, capital springer, keystone or pediment
  - apply information/identification marks to templets and moulds
- produce setting out for templets
  - Use complex geometry to prepare templets in various materials
  - Produce templets from zinc sheet
  - produce accurate complex drawings prior to transferring to templets materials - to within 1mm of specification
  - mouldings - to within 1mm of specification
  - accurately cut templets and reverse templets in zinc or aluminium to within 1mm of specification

**Produce Stonemasonry Components**

Knowledge and understanding of producing stonemasonry components

- know how to apply complex templets to mark out the work
- recognise defects commonly found in natural stones
- know how to produce complex stonemasonry components
  - recognise specialist surface finishes
  - identify current legislation governing vibration and noise at work:
    - provisions to reduce exposure to vibration, and
    - provisions to reduce the exposure to noise

The Competitor shall be able to

- apply complex templets to mark out the work
  - position natural bedding plane in relation to component positions in structures
  - using templets, mark out the whole of the work from the datum surface prior to commencing cutting operations to within 1mm of specification, depending on the selected project
- produce stone project
  - Apply complex geometric shapes to prepared block of stone
  - Prepare stone surfaces straight, square and out of twist
  - Prepare stone surfaces to complex shapes using various technical processes
  - Produce various specified surface finishes to prepared stones
  - work the stones square and to given dimensions within 1mm of specification

- provide a tooled finish to seen faces only
- produce complex worked stone components using hand and power tools to within 1mm of specification including:
  - corners, arrises and internal mitres,
  - measurements and external mitres
  - Profiles, profile surfaces, curved surfaces
  - flat surfaces
- maintain and sharpen hand tools

### **Produce letter cutting and carving**

Knowledge and understanding of letter cutting or carving

- know how to apply lettering or carving to the work
  - describe methods to transfer information onto the stone surface
  - recognise the characteristics of letters
  - select resources to set out lettering and carving

#### The Competitor shall be able to

- apply full size drawing to mark out the work
  - identify the required position of lettering or carved motif on the stone
  - use carbon paper to transfer information to stone surface using full size drawing and details
- cut letters in stone
  - Produce incised letters in various types of stones.
  - cut incised letters to the specification using hand tools only
  - Transfer from drawings and set out lettering in various modern or traditional styles
  - lightly clean carbon ink marks on the surface by removing with water and fine wet/dry paper
- carve given motif on specified surface
- carve motif from given specification onto specified surface using hand or pneumatic tools
  - carving interpretation to competitors own chosen specification
  - carving depth to competitors own chosen depth
  - carving surface finish to competitors own chosen specification
  - lightly clean carbon ink marks on the surface by removing with water and fine wet/dry paper

Subjective marking:

By visual assessment of the quality of workmanship, aesthetic and artistic quality

## **2.2 Theoretical knowledge**

2.2.1 Theoretical knowledge is required but not tested explicitly.

2.2.2 Knowledge of rules and regulations is not examined.

## **2.3 Practical work**

### **Module 1: Templets**

The appropriate technical skills are:

- Transferring the templet details from given drawings and instructions onto sheets of aluminium or zinc and sheet transparent plastic
- Cutting out and forming the templets from the sheets
- Marking the required information on the finished templets
- Using minimum material (zinc, aluminium or plastic) to produce templates
- Safely dispose of waste into a container provided for recycling

A drawing will be provided (not scale 1:1) from which templets should be made.

For a global project a drawing will be provided (scale 1:1) to show only the templates for the project, for example large radius from which templets should be made.

The drawing will show the minimum sizes of the templets. Further measurements are available on the drawing of module 2.

## Module 2: Moulded pieces

The appropriate technical skills are:

- Measuring and setting out directly onto the stone using templates, measuring and marking out equipment
- Working straight and circular mouldings, external mitres/angles, internal mitres/angles, ashlar stops, weatherings/wash, flat surfaces
- The following technical processes can be chosen to obtain the required surface finish
  - Pitching the edges
  - Working the drafts down to the line of reference
  - Roughing down the surface
  - Levelling the surfaces
  - Finishing the surfaces
  - Tooled finish will be given only to those surfaces that are seen when fixed

All the above-mentioned processes can be carried out with hand tools.

Pneumatic hammers must be fitted with the appropriate chisels and operated within current International Legislation.

Rubbing stones are only allowed on arrises.

## Module 3: Letter cutting or ornament

The appropriate technical skills are:

- Transferring the carving and letter cutting detail onto the required surface(s) according to the test project drawings and specification
- Cutting incised or raised letters onto the required surface(s) according to the test project drawings and specification
- Produce the carved ornament in intaglio or simple bas-relief onto the required surface(s) according to the test project drawings and specification

All letter cutting and carving will be carried out using hand tools only, the competitor may interpret the finishing and depth of the carving to their own specification.

The letters may be transferred to the required surface of the stone using carbon paper.

The drawings for letter cutting or carving will be at a scale of 1:1

## 3. **THE TEST PROJECT**

### 3.1 **Format / structure of the Test Project**

Series of standalone modules

### 3.2 **Test Project design requirements**

The Test Project has to be presented in colour, in digital format. It must include detailed drawings of cutting and fitting. The project must include all the difficulties of straight, circular and diagonal cutting. It must integrate masonry work, such as straight or circular and 3 dimensional work. Experts can propose a global test project for assembling all pieces to one or more projects as a column with one or two pieces by same competitor or a fountain, wall or arch. One template or more can be given at a scale of 1:1 for example large radius.

Depending on the type and characteristics of the natural stone, the Test Projects can be planned on the following objects: pedestal, cornice, column, coping, plinth, capital, springer, keystone, tracery or pediment (module 2), carving or lettercutting (module 3).

Note: Sandstone and granite are not allowed because these types of stone contain a high quantity of silica. This would create a health and safety hazard for Competitors, Experts and members of the public.

### Organisation example during the Competition

Day 1	Day 2	Day 3	Day 4
Module 1, 2 and 3	Module 2	Module 2	Module 2
Module 1 Templates	Moulded piece 1 Moulded piece 2	Moulded piece 2 Moulded piece 3	Moulded piece 3 Moulded piece 2
Module 3 Letter cutting and ornament			
Module 2 Moulded piece 1			

### Module identification

Module	Name	Hours
Module 1	Templates	Up to 15% of competition time
Module 2	Moulded pieces	Up to 80% of competition time
Module 3	Letter cutting and carving	Up to 15% of competition time

The Test Project must be in accordance with the Technical Description and include:

- Drawing
- Photograph of completed project
- Stone type: limestone or marble, colour, density, compression strength
- Cutting list
- Quarries or suppliers address

The Test Projects are to be determined by the size of the provided material. Materials that have to be provided:

- The volume of the stone necessary for the Test Project cannot be more than 0.125m<sup>3</sup>.
- The density maximum for stone is 2300 to 2600 kg/m<sup>3</sup>.
- All stones to be supplied +3mm than the finished size to allow for cutting and squaring to the actual dimension given with the project
- The project can be in one or more stones (max 3 stones) with one stone in marble, Module 3 in limestone, the selection of the project to be made on the forum by the Experts

### 3.3 Test Project development

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

3.3.1 Who develops the Test Project / modules  
The Test Project / modules are developed by:

All Experts.

3.3.2 How and where is the Test Project / modules developed

Independently and submitted on the Discussion Forum



- 3.3.3 When is the Test Project developed  
The Test Project is developed according to the following timeline.

Time	Activity
8 months before the Competition	The proposed Test Project modules are developed and uploaded to the forum for consideration by the Experts.  The Test Project is selected by vote of Experts on the forum.
3 months before the Competition	The Selected test Project is circulated.
At the Competition	30% change is made to the Test Project modules.

### 3.4 Test Project marking scheme

Each Test Project must be accompanied by a marking scheme proposal based on the assessment criteria defined in Section 5.

- 3.4.1 The marking scheme proposal is developed by the person(s) developing the Test Project. The detailed and final marking scheme is developed and agreed by all Experts at the Competition.

- 3.4.2 Marking schemes should be entered into the CIS prior to the Competition.

### 3.5 Test Project validation

It must be demonstrated that the Test Project/modules can be completed within the material, equipment, knowledge and time constraints. This will be demonstrated by proof of function, proof of construction and completion in set time as shown in a photograph submitted by the Expert designing the Test Project.

### 3.6 Test Project selection

The Test Project is selected as follows:

The Test Project is selected as follows by Experts on the forum.

By November 2012 the Chief Expert will circulate all Test Projects on the forum and organise an Expert vote to be completed by January 2013. The Chief Expert will confirm with all Experts of the Test Project selected.

### 3.7 Test Project circulation

The Test Project is circulated via WorldSkills International website as follows:

3 months before the current Competition

### 3.8 Test Project coordination (preparation for Competition)

Coordination of the Test Project will be undertaken by:

Coordination of the Test Project will be undertaken by the Expert whose Test Project was selected and the Chief Expert.

The Expert whose Test Project is selected will provide WSI Secretariat and the Chief Expert with all documents, drawings, mark sheets, etc.

In addition the Chief Expert will provide the Workshop Supervisor with details of the stone type and cutting list for module 2.

### 3.9 Test Project change at the Competition

The Test Project will be changed by a minimum of 30% at the first planning meeting attended by all Experts at the competition site and will be subject to the agreement of all Experts. Sizes of each stone for module 2 will not be changed.

### 3.10 Material or manufacturer specifications

A sample piece of stone of approximately 30 x 30 x 10 cm must be available for testing the machines and tools. If two types of stone are used, a sample piece of each type must be provided.

- Module 1: 1 m<sup>2</sup> zinc or aluminium sheet, thickness between 0,2 and 0,4 mm
- Module 2: One, two or three pieces of stone to be cut with a circular diamond saw to a total base volume 0.125 m<sup>3</sup> with one stone in marble
- Module 3: letter cutting or ornament will be worked on moulded pieces in limestone

The Competition Organiser is required to supply a sample of the stones to each registered Member. The size of the sample must be 10 x 10 x 5 cm and must be known together with the contact details of the producer/supplier 6 months before the Competition.

If two types of stone are used, a sample piece of each type must be provided. In addition, a sample 10 x 10 cm zinc or aluminium for the producing of templets must be available.

## 4. **SKILL MANAGEMENT AND COMMUNICATION**

### 4.1 Discussion Forum

Prior to the Competition, all discussion, communication, collaboration and decision making regarding the skill must take place on the skill-specific Discussion Forum (<http://www.worldskills.org/forums>). All 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 moderator for this forum. Refer to Competition Rules for the timeline of communication and competition development requirements.

### 4.2 Competitor information

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

This information includes:

- Competition Rules
- Technical Descriptions
- Test Projects
- Other Competition-related information

### 4.3 Test Projects

Circulated Test Projects will be available from [worldskills.org](http://www.worldskills.org) (<http://www.worldskills.org/testprojects>) and the Competitor Centre (<http://www.worldskills.org/competitorcentre>).

### 4.4 Day-to-day management

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

## 5. ASSESSMENT

This section describes how the Experts will assess the Test Project / modules. It also specifies the assessment specifications and procedures and requirements for marking.

### 5.1 Assessment criteria

This section defines the assessment criteria and the number of marks (subjective and objective) awarded. The total number of marks for all assessment criteria must be 100.

Section	Criterion	Marks		
		Subjective (if applicable)	Objective	Total
A	Templets		18	18
B	General impression	8		8
C	Corners, arrises, internal mitres		18	18
D	Measuremetns & external mitres		18	18
E	Flat surfaces		10	10
F	Profiles, profile surfaces, curved surfaces		20	20
G	Letter cutting and carving	8		8
<b>Total =</b>		<b>16</b>	<b>84</b>	<b>100</b>

### 5.2 Subjective marking

Scores are awarded on a scale of 1 to 10

### 5.3 Skill assessment specification

The skill assessment criteria are clear concise aspect specifications which explain exactly how and why a particular mark is awarded.

#### Objective marking

Degree of tolerance	Points awarded
Within tolerance < 1 mm	10 points*
Within tolerance < 2 mm	5 points
Within tolerance > 2mm	0 points
Out of tolerance	0 points

\* Where 10 points means the full marks for a marking criterion is given, 5 points means the marking criteria is given half marks.

#### Subjective marking

The marking will be subjective on the subsections layout and craftsmanship.

### 5.4 Skill assessment procedures

- The Experts will decide together on the Test Projects, the marking criteria and the dimensional tolerances on Subjective Marking Forms, Objective Marking Forms and Mark Summary Sheets.
- The drawings will indicate the actual positions where the assessment criteria are to be marked.
- The Chief Expert will divide the Experts into groups of 3-4 to mark.
- Every completed module will be marked as soon as possible.
- The pieces of stone are checked by the Experts before the arrival of the Competitors. The Workshop Supervisor places approved stones in the working areas.

- The working areas are divided among the Competitors by lottery. Stones will only be replaced when hidden faults occur during the working process.
- The maximum time of module 1 and 2 will be made public after the Experts have agreed. The finishing time is clearly written on the Competitor instructions of module 1 and 2. When a Competitor finishes a module they may proceed with the next one. When a module is finished early the remaining time can be used for the next module.
- At least two hours are available to set up the working stations, especially to make the air connection. The Workshop Supervisor must be available for support if necessary.
- When the Competition starts the Chief Expert will give the Competitors verbal instructions. If necessary, these will be translated in other languages.
- Prior to module 1 the Competitors will have an hour at their disposal to study the Test Projects.
- It is possible to give 1 or 2 hours extra time on module 3, but only if decided by minimum 80% of the Experts. This has to be announced to the Competitor before the start of the third day of the Competition.

## 6. **SKILL-SPECIFIC SAFETY REQUIREMENTS**

Refer to Host Country Health & Safety documentation for Host Country regulations.

The following skill-specific safety requirements must be met:

### **General**

- All machinery, equipment and safety clothing must comply with the safety rules of the organising country.

### **Dust extraction**

- An adequate system for dust extraction must remove the stone dust produced during the work process. Only when the workshop is outside under a roof, with two sides completely open, with enough natural ventilation is additional dust extraction not necessary.
- Dust extraction must be used in the correct manner at all times.

### **Use of vibrating equipment**

It is acknowledged that by 2010, European Union countries must reduce the use of vibrating equipment under the European Directive of 2002. Presently, there is insufficient data to make an informed, specific decision regarding the reduction until all countries have a strategy in place. The artistic stonemasonry Experts will carry out research and use published data to make any necessary changes for the Leipzig competition. The UK continues to work within their Health and Safety Regulations and provide any new data via the forum.

*“Competitors and experts must familiarise themselves with the Host Country Occupational Health and Safety Regulations prior to the competition, please make sure that all machines and equipment, as well as any personal protective equipment you wish to bring, are safe and in good condition and meet the required ... standards or with national/international standards”* extract from the document, Occupational Health and Safety Regulations (HS21\_40CA\_EN[1]).

The European Physical Agents (Vibration) Directive (2002/44/EC) deals with risks from vibration at work and is one of several Directives dealing with Physical Agents such as Noise and Vibration. This will influence the future use of pneumatic hammers used in artistic stonemasonry operations as all members of the European Union will be required to comply with these regulations. This clearly has an impact on the use of equipment at WSC and the reduction in their use for carving or lettering and the time taken to fix the stones is a move forward. Further improvements can be made by the selection of medium hard limestone such as, Indiana limestone used in Calgary and similar material such as Portland limestone from the UK and French limestones. This will reduce the effort in removal of waste and lessen the trigger time in use. The reductions in trigger time will also show a significant improvement in lowering the stonemasonry compressor running time and stonemasonry carbon footprint.

### **Competitors**

- Competitors must wear safety glasses during all chiselling operations, including sharpening the chisels.
- Competitors must wear gloves at all times
- Competitors must wear appropriate clothing and safety footwear at all times.
- Competitors must wear hearing protection at all times.
- Competitors must wear dust mask protection at all times unless dust extraction is provided.
- Competitors must keep their workspace clear of obstacles and the floor space clean of material and equipment - any items likely to cause the Competitor to trip, slip or fall.
- Competitors must agree to and sign these regulations before starting the Competition.
- Failure by the Competitor to comply with safety directions or instructions will incur loss of marks for safety.

### **Experts**

- A sound insulated room with roof, door and windows (for instance a Porta Cabin) will be made available to the Experts due to the noise
- Every Expert will be provided with a pair of ear defenders.
- Judges will wear the appropriate personal safety equipment when entering the working area when inspecting, checking or otherwise working with a Competitor's project.

### **Spectators**

- When spectators can come closer to the working table than 3 m they must be protected from stone splinters by a fine wire screen or a similar arrangement. It is preferable that measures are taken to assure that neighbouring workshops are not bothered with the noise of the stonemason workshop.

## **7. MATERIALS & EQUIPMENT**

### **7.1 Infrastructure List**

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

The Infrastructure List is online (<http://www.worldskills.org/infrastructure/>).

The Infrastructure List specifies the items & quantities requested by the Experts for the next Competition. The Competition Organiser will progressively update the Infrastructure List specifying the actual quantity, type, brand/model of the items. Items supplied by the Competition Organiser 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 Technical Director 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.

## 7.2 Materials, equipment and tools supplied by Competitors in their toolbox

### Pneumatic tools

- Pneumatic chiselling hammers with hoses and fittings
- Compressed-air reducing valve (regulator)
- Chisels straight and round, boaster, punch, point, claw tools (various sizes)
- Manifold

### Hand tools

- Mallets (various sizes)
- Boasters, drafting chisels straight and round, punch, point, claw tool,
- Dummy/lettering/carving hammer
- Carving chisels (various sizes)
- Lettering chisels (various sizes)
- Hammers, squares, straight edges, depth gauges, combination squares
- Steel rules (various sizes)

### Setting out equipment

- Set squares (various sizes)
- Compass (various sizes)
- Assortment of dividers (various sizes)
- Drawing equipment
- Wire wool/emery paper
- Scissors
- Tin snips
- Scriber
- Flat & round files
- Knife for cutting plastic sheet
- Pencils
- Pens
- Drafting tape

### Supplementary

- Dusting brush
- Timber wedges
- Rubbing stones (only allowed on arises)
- Plastic sheet for supplementary templets (not marked)
- Paper for drawing
- Carbon paper
- Clamps

## 7.3 Materials, equipment and tools supplied by Experts

Measuring equipment for checking tolerances - 1mm and 2mm shims

## 7.4 Materials & equipment prohibited in the skill area

The use of the following machines, fixtures and materials is NOT allowed:

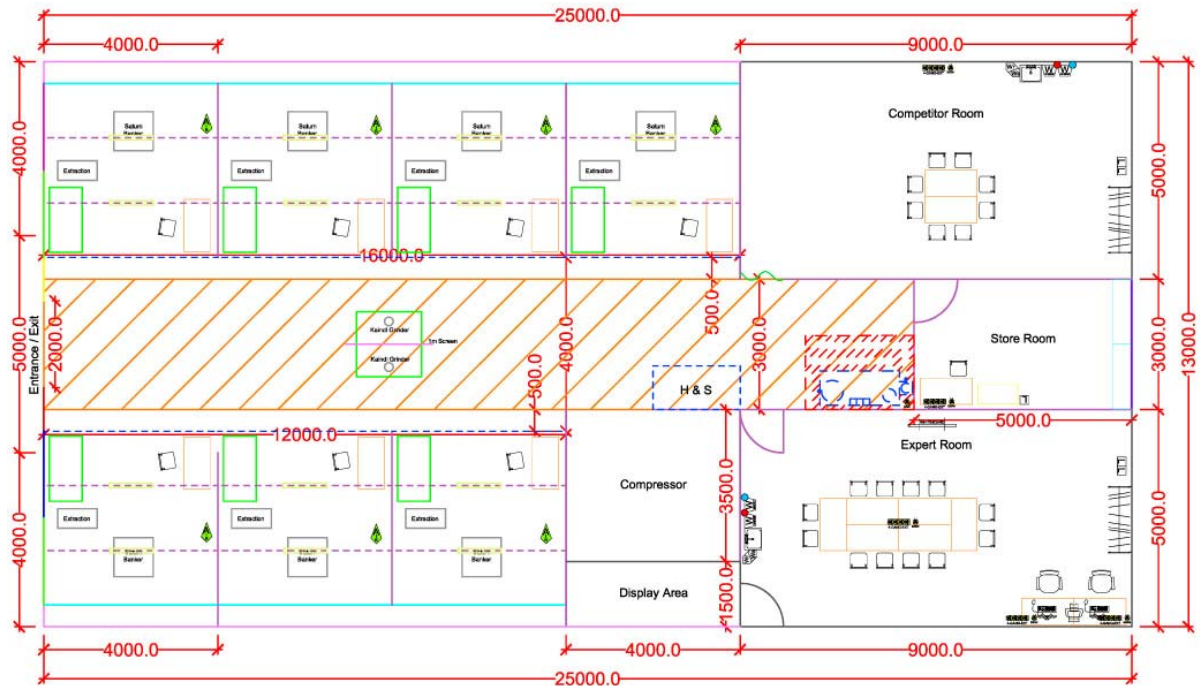
- Grinding and cutting machines
- Handsaws
- Rasps and file

The use of any kind of adhesive for attaching or re-attaching any material is not allowed.

## 7.5 Proposed workshop and workstation layouts

Workshop layouts from London are available at:  
[http://www.worldskills.org/index.php?option=com\\_halls&Itemid=540](http://www.worldskills.org/index.php?option=com_halls&Itemid=540)

Workshop layout:



## 8. MARKETING THE SKILL TO VISITORS AND MEDIA

### 8.1 Maximising visitor and media engagement

- A sample of drawings showing the Test Project will be displayed
  - Standard views of the project
  - Individual components shown in 3D
  - Finished project in 3D
  - Experts to be available to explain the project and processes involved to spectators
- Try a trade
  - Subject to space and material being made available
  - Successful 'try a trade' in Calgary saw many school children and adults having a go at stone carving
  - Involve local stonemasonry schools to help demonstrate and supervise these sessions in future
  - Stone used to be unsaleable offcuts or rough waste blocks at no cost
- Display screens
  - Power Point Presentation showing the work of the stonemason
  - Profile and work of each Competitor
- Test Project descriptions
  - See drawings above

- Enhanced understanding of Competitor activity
- See display screens and PPT Presentation above
  - Competitor profiles
  - Images of Competitor, examples of their work and employer to be supplied by each Expert
  - Career opportunities
  - See PPT Presentation above
- Daily reporting of competition status

## 8.2 Sustainability

### Environmental

#### Material

- Stone selected for the competition should be from a source either within the host country or as close to the host country as possible to reduce excessive transport costs.
- The stone selected must not be at risk and large reserves should be available so there are sufficient stocks available to ensure the local and regional supplies are not endangered
- Completed projects to be offered to Local Authorities for use or placement in areas where they will enhance the environment or offer a focal point to a space.
- Stone selected must not pose any health risks to competitors, experts, support staff and the public.

#### Waste

- Any waste materials from the stone can be reused with careful thought. For example, crushing for aggregate can be passed for use in landscape gardening features or as a base or foundation material.
- To ensure there is minimum waste, project work left after the competition can be offered to host country local authorities, schools etc for placing in gardens, alternatively projects may be auctioned or sold after the competition to WSC members or general public and proceeds given to local charities,. In Calgary, one project was given to the adopted school in 'One school, one country' scheme. Other projects were given to the local construction college where the material was used for further training.