



**Routes de France**



# **Presentation of "Road Building Skills" Helsinki 2005**

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# "Road Builders", a trade worth discovering

## I/ Description

Road builders competing in teams comprised of two participants will build a test project that involves a variety of techniques encountered on urban sites, including:

- Reading a layout and diagrams, interpreting specifications
- Laying curbs in a straight line and in a curve.
- Laying paving stones, cobblestones, asphalt concrete and sand as per specified depths.
- Performing joints with cement mortar.
- Building gutters using concrete poured in situ or with prefabricated units, depending on the materials available at the competition.

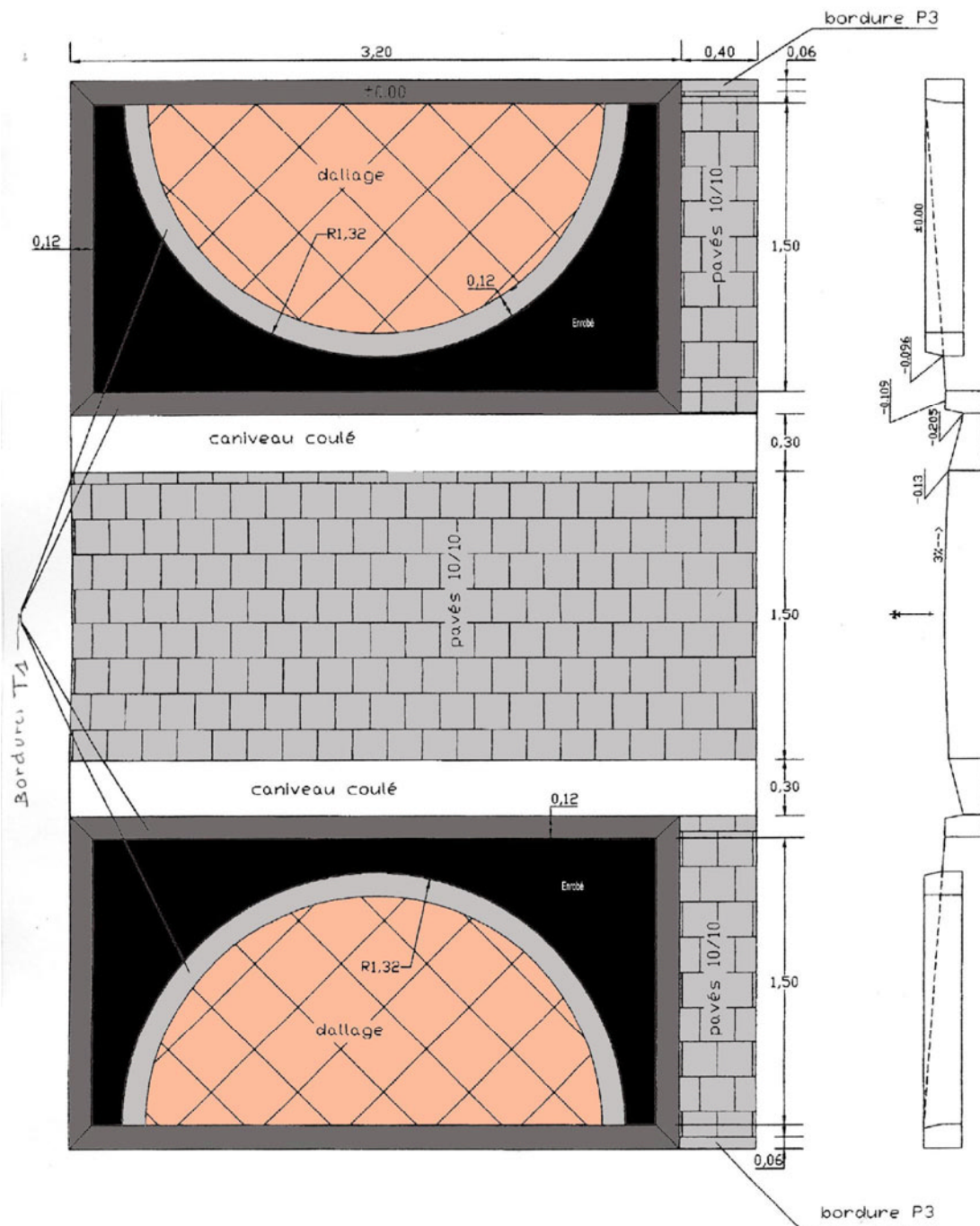
All of the above must be completed within a given amount of time.

# National competition at Nantes, France in January 2005

For the third season in a row, road building skills were part of the Trade Skills competition, backed by professional trade federations and companies.

This year, 30 people from 15 regions working in teams of two participated in the 38<sup>th</sup> French national finals in the city of Nantes.

For the first time ever, the winning team won the right to present road building skills at the World Skills International Finals.



# Photos of competition in Nantes



# Presentation in Helsinki – May 2005

➔ **Work to be performed**

➔ **Layout and diagrams**

➔ **Photos**

## Work to be performed

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The work to be performed involves a small city square (9.60 ml x 4.60ml) comprised of surfacing (cobblestone, paving stone), stabilized soil, colored and black asphalt and urban equipment (street light, bench, cornerstones).

The project involves know-how and skills in techniques used on urban sites, including:

- Reading a layout diagram and understanding specifications
- Laying curbs in a straight line and in a curve.
- Laying paving stones, cobblestones, asphalt concrete and sand as per specified depths.
- Performing joints with cement mortar
- Installation of cornerstones, a bench and streetlight



# Photos



# Building city streets, a profession for success

## I/- What qualities does a road builder need?

Versatility, precision, ingenuity, creativity, practical sense, team spirit

## II/- Techniques and tools

This is an industry that is constantly evolving, one in which new technologies play an important role.

- Computer tools to read layout and diagrams and make adjustments as per in situ constraints (GPS).
- Mechanized tools, miniature equipment: compactors, vibrating hand-held compactors, curb cutters, small handling units, etc.
- Laser leveler for improved precision and efficiency

## III/- What does a road builder do?

Road builders participate in every aspect of road construction projects: signs, signals, set up, operating equipment, laying curbs, paving stone, masonry, application of asphalt concrete, etc.

They help build:

- Urban development sites and recreational facilities (roads, pedestrian streets, bike paths, sidewalks, city squares, playgrounds, athletic fields, etc.)
- Underground networks: sewerage, drainage, public lighting, telecommunication.

## Road builders, contacts with 15 countries

Country	File followed by	Contact made with trade organizations	WorldSkills country interested by road building trade
Germany	JL. MARCHAND [Eurovia]	Road federation	Yes
Belgium	Yvo DERDAELE [Screg Belgium]	MM. DELABRY et DESMEDT [Trade federation]	
Canada	Fernand DOUARIN [USIRF]	Pierre BEAUCHAMP [ACRGTP]	
Denmark	Hans Oluf KROG [Colas Danmark]		Yes
Spain	Javier CAMEO [Panasphalto]	Road federation	Yes in 2007
Finland	Antero BLOMBERG [[Valtatie Oy]	Heikki JAMSA [Finnish asphalt association]	
France	C. LE NOUY [USIRF]	USIRF	Yes
Ireland			Yes
Italy			Yes
Madagascar	Fernand DOUARIN [USIRF]	Jean-Claude BERGER [Syndicat des entrepreneurs du BTP]	
Malaysia			Yes
Netherlands			Yes
Sweden			Yes
Switzerland	Jean BEAUVERD [Colas Suisse SA]	Silvio FERRARI [Technical delegate]	Yes
UK	Peter HINES [Colas Ltd]	QPA Asphalt committee	Yes

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# Road builders are hiring

As demonstrated by the population pyramids in most European countries, many people will be retiring within the next five years. In fact, from 10 to 20% of the workforce will have to be replaced, depending on the country.

Concurrently, with more and more projects being undertaken in urban locations and with business figures on the rise, the need for new employees has soared.

The entire trade has joined forces to train, direct and accompany young students and job seekers.

- **Trade for success**

Choosing road building means giving oneself the possibility to move ahead in one's trade and in one's career, thanks to the numerous possibilities for ongoing training available in companies. It also means attractive wages

# Technical file: references

## 1. SECTION 1 - TECHNICAL DESCRIPTION (TD)

### 1.1 Trade name and description

1.1.1 The job name is Road Builder

1.1.2 Road Builders work on all horizontal equipment of the territory's road sector – motorways – minor pipe work and all municipal road systems.

1.1.3 All experts and job candidates must be familiar with the Technical Description and in particular all municipal road work.

1.1.4 If a dispute arises with regard to the Technical Description, it will be referred to .....

1.1.5 Job-specific terms will be used and must be agreed upon by the experts.

### 1.2 Scope of work for the WorldSkills Competition

1.2.1 The test subjects include practical work consisting of: installation of curbs , paving stones, slabs, sand and asphalt using best practices, and all within a predetermined timeframe.

1.2.2 Basic safety rules will be adhered to under the same conditions as those applied during construction work. They will be strictly graded.

1.2.3 Theoretical knowledge is limited to that required to accomplish practical work. Knowledge of rules, legislation and standards will not be assessed.

### 1.3 Practical work

1.3.1 The test project includes all road system work. Specifically:

- Reading blueprints, including specifications
  - Installing straight or curved curbs
  - Installing paving stones, slabs, coatings and sand including compliance with altitude dimensions
  - Curb joints shall be constructed using cement mortar and concrete gutters which are cast on-site or precast, depending on the materials available at the competition site.
- As in all countries, the techniques and know-how differ but are not incompatible.

1.3.2 The test subject shall be performed in 2-person teams and executed within the competition timeframe.

1.3.3 The competition can be designed by using the following techniques:

- 60% to 70% Curb installation
- 20% to 25% Paving stone installation
- 3% to 5% Slab installation
- 2% to 3% asphalt installation
- 1% to 2% Sand installation

Curb and slab installation must include a 45° straight cut.

1.3.4 The following technical skills are required:

- Read the required work in a project file
- Read a blueprint
- Stake out a construction site
- Install curbs
- Cut curbs
- Install slabs
- Install paving stones
- Create curb joints using mortar
- Create a sand area
- Asphalt area
- Create or install gutters - All work must comply with the grading as specified on the blueprint
- Cleaning

## **1.4 Theoretical knowledge**

1.4.1 Interpreting specifications

1.4.2 Interpreting the scale of the blueprint for installation at a 1:1 scale

1.4.3 Job-specific knowledge and practices

1.4.4 Knowledge of materials

1.4.5 Knowing how to work in a team

1.4.6 The technical evaluation must include the following points:

- Stake out
- Interpreting blueprints
- Dimensions
- Altimetry
- Cutting curbs
- Installing paving stones and slabs
- Installing and finishing asphalt and sand
- Cleaning
- Safety

## **1.5 Materials**

1.5.1 See Section 4.

## **1.6 Workshop facilities**

1.6.1 See Section 4 and Section 5.

## **1.7 Grading the test subject**

1.7.1 All documentation used must be available in electronic form.

1.7.2 A majority of experts (at least 50% + 1) must agree on a grading scale for the Competition.

1.7.3 The choice of appropriate test subject(s) is based on paragraph 1.7.2. The team of experts may modify the proposed test subject.

1.7.4 The experts shall jointly agree on the test project, grading criteria and dimension tolerances to be included on forms 5, 5A and 6, and shall draw up the list of materials.

1.7.5 Points given

- Perfect = 10 points
- Very good = 9 points
- Good = 8 points
- Fairly good = 7 points
- Sufficient = 6 points
- Average = 5 points
- Below average = 4 points
- Insufficient = 3 points
- Very insufficient = 2 points
- Failed = 1 point

1.7.6 Grading

Section/ Maximum of points/100

A/ Stake out/ 15 points

B/ Curb installation [dimensions, grading, cut, joints]/ 20 points

C/ Paving stone installation [creation, grading, dimensions]/ 20 points

D/ Asphalt installation [implementation, compaction, appearance]/ 15 points

E/ Safety [wearing a helmet and glasses when cutting curbs, wearing noise-reduction headphones gloves, safety footwear, harness, safe use of cutting saw]/ 20 points

F/ General appearance [finish, cleaning]/ 10 points

1.7.7 The system will convert from a scale of 0 to 100 to a scale of 400 to 600.

## **2. SECTION 2 – CRITERIA FOR DESIGNING THE TEST SUBJECT (PD)**

2.1.1 As a general rule, the test subject must:

- Be modular
- Comply with the current Technical Description
- Comply with WorldSkills grading requirements and standards
- Be accompanied by a grading scale that will be finalised for the Competition in accordance with sub-section 1.7.
- Be accompanied by proof of correct working order/construction/completion within the required timeframe, etc. (in accordance with job requirements). For example, a photo of a project completed in accordance with the test subject data, using the provided materials and equipment, according to the required skills and within the required timeframe.

## **2.2 Requirements with regard to design**

2.2.1 The test subject covers construction of an entire assembly including: Stake out, curb installation, paving stone installation, coating and sand installation in compliance with altitude measurements and dimensions.

2.2.2 The competition can be designed by using the following techniques:

- 60% to 70% Curb installation
- 20% to 25% Paving stone installation
- 3% to 5% Slab installation
- 2% to 3% Asphalt installation
- 1% to 2% Sand installation

Curb and slab installation must include a 45° straight cut.

## **2.3 Project development and implementation procedure**

2.3.1 The Experts, Technical Representatives, Presidents of the Jury, Workshop Foremen and all other persons who are associated or invited shall use the WorldSkills discussion forum to communicate, cooperate and coordinate development of the test subject, as well as the entire job for the WorldSkills Competition. The Internet address of the forum for this job is: [http://www.worldskills.org/members/forums/forum\\_20/index.php](http://www.worldskills.org/members/forums/forum_20/index.php). The Head Expert (or an expert chosen by the Head Expert) shall act as the leader of this forum.

2.3.2 To be confirmed

## **3. SECTION 3 – JOB MANAGEMENT PROCEDURES (SM)**

### **3.1 Required documents**

3.1.1 The Head Expert will be provided with an updated copy of all documents associated with the job for the Competition.

3.1.2 The required documents include:

- Technical Description– job 20 Masonry
- WorldSkills Competition Rules
- Health and safety documents
- All QAMS documents
- All other documents which are referred to within the documents listed above.

3.1.3 The Head Expert shall be provided with a copy of all documents written in his or her maternal language, and a second complete set of documents shall be prepared in the language identified as the Competition language

3.1.4 The Head Expert must have in-depth knowledge of the requirements and procedures specified in the documentation.

3.1.5 The President of the Jury must have in-depth knowledge and understanding of the requirements and procedures specified in the documentation.

## **3.2 Responsibilities before the Competition**

3.2.1 Within the time interval between two WorldSkills Competitions, the elected Head Expert is responsible for compliance with the requirements described in Section 2 – Criteria for designing the test subject.

## **3.3 Job management procedures for Head Experts before and during the Competition**

3.3.1 The procedures specified below must be adhered to.

3.3.2 When he or she arrives for the first time at the Competition site, the Head Expert must:

- Welcome the experts and ensure that the presentations are made.
- Inform them of their obligations and responsibilities with regard to Competition Rules and Internal Rules.
- Ensure that the test subject is agreed to by all experts and that a copy of the said subject is signed by all experts.

3.3.3 Next, the Head Expert will divide the experts into teams for the following activities:

- Verify that the equipment available on-site is adequate and sufficient
- Re-verify that the quantities of equipment specified on the infrastructure list are adequate
- Develop the program according to which the candidates will perform the various modules
- Develop the schedule of activities
- Install the equipment
- Confirm that the furnishings and layout, work areas and equipment comply with the requirements for workshop furnishings and layout
- Confirm that all machines and equipment are in perfect working order
- Confirm that all work stations/machines/equipment comply with the blueprint and are correctly numbered
- Confirm that the lighting is sufficient
- Confirm that the candidates have enough space to work efficiently
- Confirm that there is sufficient space between the barriers and the candidates to prevent interference and, if the barriers are too close, draw up a schedule allowing the experts to monitor the zone during the Competition
- If necessary, draw up a schedule for the activities to be completed during the Competition – for example, monitoring during lunch breaks, preventing access to unauthorised persons, etc.

3.3.4 The Head Expert shall divide the experts into teams for grading and determine a schedule of grading in accordance with the requirements of sub-section 1.7.

3.3.5 Suggestions and comments for revising and improving the Technical Descriptions should be sent to the Deputy Head Expert in writing. The Deputy Head Expert shall compile all information into a single printed document that is ready to be debated by all of the experts. Before leaving the Competition site, the Head Expert, his Deputy and the President of the Jury shall organise discussion and revision of the Technical Description (also see paragraph 3.3.12).

3.3.6 Whenever a unanimous decision cannot be reached within a reasonable timeframe, the Head Expert will put the problem to a vote. A majority will be 50% of experts plus one. The decision cannot be appealed. If an expert is absent when voting takes place, he or she has the right to be informed of the decision, but the issue shall not be re-discussed nor the vote repeated. There is a single exception to this majority rule: approval of changes to the Technical Description. In this case, a majority of 80% is required.

3.3.7 If additional time is required to allow the Competition to run after 10 PM, the issue must be discussed with the President of the Jury. All alternatives must be studied before planning or approving additional time for the Competition.

3.3.8 Before the end of the Competition, the President of the Jury shall organise selection of the Head Expert and his or her Deputy for the following WorldSkills Competition.

3.3.9 Experts are eligible for the position of Head Expert if:

- They speak English, French or German
- They have participated in a WorldSkills Competition on at least two previous occasions (if less than 4 experts have already participated in a prior WorldSkills Competition, this rule shall be flexibly interpreted at the discretion of the President of the Jury)
- They have demonstrated a high level of experience in their profession
- They have demonstrated leadership qualities
- They have the skills needed to use a computer and the Internet – mainly to lead the discussion forum for their profession.

3.3.10 Selection will be made by secret vote and organised as follows:

- Every expert that is present will draw up the list of his three chosen experts, in order of preference
- The President of the Jury will give a score of three (3) points to every expert who is voted to the first position, two (2) points to those who are voted to the second position and one (1) point to those who are voted to the third position
- The President of the Jury will then total the points and announce the three experts who received the three highest scores
- The expert who received the highest score shall be named Head Expert for the following WorldSkills Competition
- If the first expert chosen for the role of Head Expert cannot participate in the Competition, the second ranking shall be named Head Expert
- If the two leading experts chosen cannot participate in the Competition, the third ranking shall be named Head Expert
- If none of the experts can participate, the President of the Jury shall name or lead the nomination of another Head Expert
- The names of the chosen experts shall be listed in the provided documentation, which will be signed by the President of the Jury and given to the WorldSkills Secretary.

3.3.11 Any change in the Competition design, as well as all suggestions for designing the next Competition and any new tasks must be written up and signed by 80% of the experts and subjected to sub-section 2.3.

3.3.12 The main role of the Deputy Head Expert is to ensure that the Technical Description is updated to reflect technological progress in the profession and include any improvements needed to prepare and manage the Competition. The Deputy Head Expert shall ensure that any changes to the Technical Description are included, that the experts sign the said description and that it is given to the WorldSkills Secretary in both paper and electronic formats.

3.3.13 The Deputy Head Expert shall also help distribute and collect QAMS audit questionnaires and provide help to the Head Expert as needed.

### **3.4 Competition Procedures**

3.4.1 The test subject shall be completed during the four days of the Competition (the subject in question shall be organised into tasks, sections or modules).

3.4.2 Each module/task/section shall be completed on the scheduled day so that gradual grading may take place. The progression of results will be available and communicated every day via a PowerPoint or similar presentation.

3.4.3 Before the start of the Competition, every candidate will receive a detailed schedule listing the time planned to complete the subject tasks or modules.

3.4.4 The candidates will have a maximum of X hours (to be confirmed) to familiarise themselves with the materials, equipment and procedures. When the procedures are particularly difficult, an expert will be available to demonstrate and the candidates will be able to practice.

3.4.5 The candidates shall receive all Competition documents including grading criteria X hours (to be confirmed) before the start of the Competition so that they may study the requirements.

3.4.6 All test subjects, with the exception of a modified module, will be given to candidates to become familiar with it on the first day of the Competition. Next, the candidates will complete each module one after the other starting with module 1, followed by module 2, etc.

3.4.7 At no time during the Competition may an expert from the candidate's originating country hold discussions with his candidate without the presence of another expert or without permission from the Head Expert.

3.4.8 Experts and candidates who do not comply with the Technical Description and Competition Rules may be temporarily or permanently excluded from the Competition.

3.4.9 The entire test subject shall be sent to the experts three months prior to the Competition so that they may study them. The modified module (30%) must be designed in accordance with standards and selected for the Competition. The country that has designed the test subject shall not present the alternative module.

### **3.5 Safety requirements during the Competition**

3.5.1 The policies and procedures specified in the documentation below shall be followed and complied with at all times:

- Health and safety policy – general requirements
- Health and safety policy – job-specific rules
- Safety training procedure
- Safety training organisational diagram
- Health and safety requirements of the host country
- Procedure for requesting medical assistance
- Accident report form

3.5.2 After undergoing training and a briefing, the Head Expert will provide the experts, candidates and personnel he manages with the required information and training to ensure that the Competition takes place in safe conditions, in accordance with the requirements of the documents specified in paragraph 3.5.1 above, and will take account of all specific requirements identified in sub-section 3.6 below.

3.5.3 The Head Expert will ensure that all experts, candidates and personnel he manages fill out and sign the receipt acknowledgement for the training form (see Appendices) at the end of the training session.

3.5.4 The Head Expert will countersign these forms and store them in a safe place until the end of the Competition; said documents will then be given to the Competition Quality Auditor.

3.5.5 The Head Expert will also see to it that the experts ensure that their colleagues, the candidates and all other persons comply with safety rules on the job site and the entire Competition site.

3.5.6 The Head Expert will receive the nominations for and choose the Safety Manager, who will perform the tasks specified in the Safety Check List (see Appendices).

3.5.7 Work clothing must comply with current rules. If the host country has specific rules in this matter which must be complied with during the Competition, these rules must be sent to candidates at least six (6) months in advance.

3.5.8 Machines and/or equipment must comply with the safety rules of the host country.

3.5.9 Candidates must maintain their work space free of all obstacles, with the ground clean and free of any materials, equipment or any other object that could cause someone to trip, slide or fall.

3.5.10 If a candidate does not comply with safety rules or requirements, he may lose points under the safety category. If a candidate continues to behave in a reckless manner, he may be temporarily or permanently excluded from the Competition.

### **3.6 Job-specific safety requirements**

3.6.1 All candidates must wear a helmet, safety footwear, noise-reduction helmet and protective glasses when they use cutting saws or any equipment that may generate projectiles.

3.6.2 A first-aid kit will be available on the job site throughout the duration of the Competition.

3.6.3 The experts will use all appropriate safety equipment during inspection, verification or manipulation of a candidate's test subject.

### **3.7 Requirements with regard to the grading procedure**

3.7.1 The experts who participate in the Competition will be divided into grading groups to evaluate each section of the grading criteria.

3.7.2 Grading of the modules shall start when all candidates have completed their module.

3.7.3 Each completed module/task/section will be graded on the day it was completed.

3.7.4 To ensure transparency, the candidate shall receive the same evaluation sheet as that used by the experts.

3.7.5 The experts agree that a majority vote will be required when:

- The scoring system is modified (within the limits specified by the Technical Description)
- The series or content of the Competition is modified
- This involves agreeing to a solution that allows resolution of a dispute regarding points attributed, etc.

### **3.8 Equity, fairness and transparency**

3.8.1 Candidates who participate in the WorldSkills Competition have the right to expect fair and honest treatment during the Competition with regard to the following items:

- Clear and unambiguous instructions
- Grading schedule that does not benefit another candidate
- Equipment and materials required and specified in the job documentation and required for correct completion of the Competition
- Any help needed from judges and officials so that the candidates may complete the test subject. (The help deemed necessary will be the same for all candidates; it will be given to all and at the same time).
- No unfair interference from officials or spectators which may prevent candidates from completing their test subject.

3.8.2 Every candidate has the right to expect and demand that none of his opponents receive unfair help or intervention that may provide him with an unfair advantage.

3.8.3 All officials and judges present at the Competition site must ensure that paragraphs 3.8.1 and 3.8.2 above are understood and complied with.

3.8.4 The Head Expert and his Deputy are responsible for ensuring that all candidates, interpreters, officials and judges respect and promote the integrity of the Competition and ensure that all necessary measures are taken to ensure that:

- The translations and interpretations for a given candidate do not unfairly benefit said candidate
- Any outside influence does not unfairly enhance or reduce the ability of candidates to give the best of themselves.

3.8.5 A briefing will be sent to all experts and candidates regarding the integrity rules required during the Competition.

3.8.6 In addition, the Head Expert must identify all factors which may be present on the Competition site and cause infringement of paragraphs 3.8.1 and 3.8.2 above, and include them on a verification list which will be used for future reference.

3.8.7 If a candidate, judge, official, observer or colleague of the candidate attempts to provide or receive any help whatsoever which would create an unfair advantage, the Head Expert must immediately refer the matter to the President of the Jury.

3.8.8 The Head Expert shall receive nominations and name the Ethical Director whose task will be to ensure that the requirements of this section are met.

3.8.9 All experts and candidates shall be notified of the fact that no information may enter or leave the Competition site without the express permission of the Head Expert, given after he has been informed in detail regarding the matter.

3.8.10 Security checks will be performed every day on experts and candidates (by the experts and candidates) when they enter or leave the Competition site.

### **3.9 Information policy**

3.9.1 To be confirmed

## **4. SECTION 4 – WORKSHOP FURNISHINGS AND LAYOUT (WS)**

### **4.1 Equipment**

4.1.1 The candidate will bring the following tools in his toolbox:

#### **Group tools**

• wide adhesive tape	1 roll per team
• Measuring tape	1 per team
• Steel pegs	20 per team
• curb lift	1 per team
• Chain saw to cut curbs	1 both team
• shovel	1 per competitor
• mattock	1 per competitor
• wheelbarrow	1 per team
• pestle	1 per team
• Cord (30 ml)	1 per team
• measuring tape (2 ml)	1 per team
• rake	1 per team
• mixing tub	1 per team
• computer or tablet	1 both team
• Paving stone breaker	1 per team
• Vibrating plate	1 both team
• Hand-held paving rammer	1 per team
• Laser levelling instrument	1

#### **Tools for each candidate**

- 1 measuring tape
- 1 pencil
- 1 builder's level
- 1 hammer/ mallet
- 1 round trowel
- 1 broom
- 1 sponge

**Safety for each candidate**

- 1 hardhat
- 1 pair of safety glasses
- 1 pair of gloves
- 1 pair of safety shoes
- 1 set of noise-reducing headphones or earplugs
- 1 dust mask

**Group safety**

- 1 first-aid kit

**Equipment quantities per team [for example]**

- 35 ml curbs T1
- 5.00 ml curbs P3
- 10.00 m<sup>2</sup> granite paving stones 10/10
- 2 m<sup>3</sup> sand for installation (paving stones)
- 0.500 m<sup>3</sup> asphalt 4/6
- 0.100 m<sup>3</sup> sand for sandy area
- 8 m<sup>3</sup> raw granulate 0/315
- 6 bags of cement - Mortar for curb joints and gutter construction.

**4.2 Workshop facilities**

4.2.1 Each team will have a work space of at least 6.0 x 6.0 m.

4.2.2 The general layout of the workshop will resemble the diagram above with enough space for the candidate stall and work station as defined in Section 4.2.10.

Note: This is an example of the layout and not the definitive project. However, the minimum surface area requirements must be met.

4.2.3 There will be a 2.0 m space between the barrier separating the candidates from the public and the work space.

4.2.4 The materials will be supplied and mixed by experienced operators.

4.2.5 Water supply, power supply, a changing room, and a case for the materials and equipment.

4.2.6 The expert meeting room shall have an area of 30m<sup>2</sup> and shall be soundproofed and air-conditioned.

4.2.7 Each team will have a work space of at least 6.0 x 6.0 m. The ground surface shall be flat, horizontal and will have appropriate loading capacity (natural grade).

4.2.8 There will be sufficient space for delivery and storage of materials outside (at least 100 m<sup>2</sup>). Candidate toolboxes will be stored in the changing rooms (tools must remain at the Competition site throughout the entire duration of the test).

4.2.9 The following machines and equipment shall be provided to candidates:

- round and rectangular mortar troughs
- wheelbarrow
- water bucket
- shovel
- broom
- 3.5 m slide rules
- curb cutting machines [electrical or thermal – dimension of disc: 30 mm minimum]
- One locker per team and per expert, tables and chairs
- An A1 table for designing the details with a parallel displacement square or T-square

### **4.3 Layout model**

Layout for the 37th WorldSkills Competition in St. Gall, Switzerland in 2003.