

TECHNICAL DESCRIPTION
Autobody Repair



world **skills**
international

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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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Liam Corcoran
Technical Committee Chair

1. INTRODUCTION

1.1 Name and description of skill

1.1.1 The name of the skill is [Autobody Repair](#).

1.1.2 Description of skill

Thousands of motor vehicles are damaged in traffic accidents every day. Collision repair technicians must safely repair this damage. However, it can be challenging because each damaged vehicle presents a different problem. Collision repair technicians must develop appropriate methods for each job, using their broad knowledge of automotive construction and repair techniques. A professional repairer will be able to use several techniques.

Autobody Repair technicians first diagnose damage often with the aid of computerised equipment. Technicians then must restore damaged vehicles without compromising structural integrity, function, and appearance so they will perform as designed, especially in subsequent collisions. They work with a variety of metals and plastics, as well as glass, electrical, and mechanical parts. Welding skills are an essential part of the repair process.

Autobody Repair technicians use panel repairing equipment, and structural realignment and measuring devices. Specialty hand and power tools are used to remove or repair damaged parts, and properly install new parts. The technician repairs the vehicle to the stage to which it can be painted.

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 - Competition Manual
- 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. [This is demonstrated by completing a collision repair.](#)

2.1 Competency specification

Competitors must acquire the knowledge and understanding of the following competencies. Test project modules may include some or all of the below competencies.

Follow safety procedures during vehicle repair operations

- Become familiar with the host countries Health and Safety Regulations documentation (posted on www.worldskills.org).
- Safe and proper use of power (pneumatic/electric) tools commonly used in the Autobody Repair industry.
- Safe and proper use of all equipment commonly used in the Autobody Repair industry.

Remove, re-install (or replace with new), and align bolted, screwed, riveted, clip or adhesively attached exterior and/or interior panels/parts

- Remove bolted, screwed, riveted, clip or adhesively attached body panels (hood, fenders, doors, etc.), tagging items for reassembly.
- Re-install (or replace with new) bolted, screwed, riveted, clip or adhesively attached body panels.
- Re-align parts within tolerances following manufacturer's specifications. If none are available, the Test Project sample (located at the competition in a stall with competitor and expert access) will be used + or - .5mm tolerance.
- Remove, replace, and adjust exterior/interior trim and/or other parts necessary to complete a collision repair.

Operate and/or manipulate necessary equipment and tools used to perform collision repairs

- Operate hydraulic pulling/pushing equipment (bench, rack, portopower, etc.).
- Manipulate body hammers, dollies, picks, spoons, body files, and other tools used for the straightening process.
- Operate pneumatic tools (ex. air hammer, disc grinder, file board, shears, rivet gun, etc.).
- Operate electric tools (ex. welders, pullers, etc.).

Perform diagnosis and corrections of vehicle damage

- Mount vehicle on anchoring equipment.
- Interpret manufacturer's specifications and perform prescribed procedures from manuals for diagnosis and correction of vehicle structure.
- Determine direction of force or impact.
- Determine extent of direct and/or indirect damage.
- Determine structural damage, using appropriate diagnostic equipment.
- Determine vehicle damage and recommended repair procedure.
- Repair vehicle body misalignment.
- Rough out damaged panels prior to removal for replacement.
- Straighten and repair damaged structural components and return to dimensional squareness.
- Diagnose frame damage (using the following: toe-in gauge, tram gauge, self-centering gauge, manual, etc).
- Repair and align full-frame and suspension damage.

Replace necessary welded-on panels/parts

- Repair/replace structural damage.
- Remove panels/parts and prepare surfaces (with little or no damage) and ensure proper fit-up for panel replacement.
- Replace welded-on panels (rails, quarters, pillars, body panels, etc.).
- Replace major welded-on panels at factory seams.
- Carry out major part replacement using sectioning procedures.
- Determine proper welding procedure to be used for a specific application (be aware of unseen hazards: gas lines, brake lines, etc.).
- Perform all panel fit-up joining options (fillet/lap, butt w/backing, plug, butt without backing, spot).
- Perform welding processes necessary to complete collision repairs (Mig, Tig, Pressure, Mig-Brazing, etc).
- Dress welds with sanding and/or grinding operations.

Repair damaged panels (steel, aluminum, plastic)

- Straighten damaged sheet metal (steel, aluminum) using metal finishing techniques.
- Repair body panels with plastic body filler.
- Repair plastic body panels/components (thermo plastic).

Prepare vehicle for the refinishing operation

- Inspect vehicle for surface defects and damage.
- Operate DA sander and polisher.
- Repair surface defects, featheredge broken surfaces.

Perform collision related repairs such as (but not limited to) electrical diagnosis

- Diagnose and perform necessary repairs (possibly using scan tools).
- Diagnose and perform necessary repairs to an SRS (airbag system).

2.2 Theoretical knowledge

2.2.1 Theoretical knowledge is required but not tested explicitly.
Any demonstration of theoretical knowledge should be related to the skills required of an Autobody Repair technician.

2.2.2 Knowledge of rules and regulations is not examined.

2.3 Practical work

Below are the appropriate technical skills the competitor must use to carry out, unaided, the following tasks:

- Safe and proper use of power (pneumatic/electric) tools commonly used in the autobody repair industry.
- Competent use of autobody measuring equipment to determine the existence, and the accurate correction, of structural misalignment of the unitized body shell.
- Proper set-up and use of welding equipment for the repair or replacement of autobody components
- Mount vehicle on anchoring equipment.
- Use of autobody dimension and specification manuals.
- Removal and replacement of parts such as doors, bonnet (hood), etc. (Assistance can be given by any Expert other than one from the Competitor's country).
- Determine the type and extent of structural misalignment in a damaged unitized body shell using industry recognized auto-body measuring equipment.
- Provide the Experts with a written description of the structural misalignment of the body shell.
- Correct all structural misalignment of the unitized body using hydraulically operated repair equipment to pull/push the body back into proper alignment.
- Verify the accurate realignment of the unitized body, including suspension attachment points, using industry recognized autobody measuring equipment.
- Replace a damaged structural (frame) member using internationally accepted procedures, including those of the manufacturer.
- Repair cosmetic damage to an exterior steel and/or aluminium and /or plastic body panel (fender, door, quarter panel, roof, etc.) by metal finishing (or repair product in the case of a plastic panel).
- Replace cosmetic non-structural exterior steel and/or aluminium body panel (fender, door, quarter panel, roof, etc.) The welded joints are to be ground and dressed ready for a thin application of filler (as determined by the experts at the competition).
- If chosen, an option could be to remove and re-install a collision passenger safety system (example, air bag) or other electrical / electronic components attached to the vehicle body.

3. **THE TEST PROJECT**

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

The format of the Test Project is a series of standalone modules.

3.2 **Test Project design requirements**

In the Competitor's instructions, STOP must be written with a border at each evaluation point/section. The STOP must clearly define what is to be evaluated. All STOPS on the Competitor instructions must be numbered in this manner:

- A1
- A2
- B1
- B2
- C1
- C2
- D1
- D2
- E1
- E2 etc...

The evaluation criteria must also be numbered so that each STOP number matches the STOPS on the Competitor instructions. These STOP numbers must appear in the assessment criteria.

The Competitor must be tasked to demonstrate a range of skills in Autobody Repair. There should be at least five (5) different modules prepared.

- Module A - Diagnosis and Correction
- Module B - Structural Part Replacement
- Module C - Non-Structural Part Replacement
- Module D - Panel Repair
- Module E - Collision related repairs such as/but not limited to electrical diagnoses, plastic repair, and/or glass replacement.

Module A – Diagnosis and Correction

- Safe work practices must always be adhered to and apply to Host Country's regulations.
- Diagnose, repair and realign structural damage on a vehicle mounted on a realignment bench provided by the host country.
- Remove bolt-on parts for access as necessary.
- Ensure that the sill clamps and/or centring jigs are in recommended position and secure (tightened).
- Vehicle must be measured by either a jig system or a universal mechanical measuring system.
- A misalignment report will be compiled as required.
- Realign and repair components that are not being replaced.
- Repair all structural components to manufacturer's contours and shape that are not to be removed and replaced. The repair must be finished to a state that could be chemically treated and primed. The repair must not lose its strength due to over thinning of steel.
- There may be upper engine bay measuring points given to assist you to realign front engine bay to manufacturer's measurements.
- All front end bolt on panels supplied must be refitted to manufacturers' specifications
- After the repairs are completed the engine bay must be realigned to the specification provide by the equipment manufacturer. A printout should be provided for verification if applicable.
- Manufacturer's specifications and tolerances should be respected. If none are available, and using a universal measuring system, + or - 3 mm is the tolerance used for each measuring point (dimension).

Module B – Structural Part(s) Replacement

- Safe work practices must always be adhered to and apply to Host Country's regulations.
- Remove bolt-on parts for access as necessary.
- When the make and model of the vehicle is decided on, (s/b 12 months prior to the Competition), there may be some other small parts required to complete these projects.
- Assessment will be done as the project evolves as determined by the stops in the competitor instructions.

Panel Removal

- Remove parts damaged beyond repair listed in the Competitor's instructions (full or partial) following the vehicle repair manual using manufacturers' specifications. If unavailable, the Experts will supply necessary procedural information.
- Remove corrosion protection materials as necessary in areas where panels or panel flanges will be heated by any welding method.
- Straighten (repair) all deformation and remove spot weld remnants.

Panel Preparation

- Drill or punch holes for plug welds on flanges as necessary.
- Welding primer should be applied to all weld areas, according to the vehicle manufacturer's guidelines.

Install replacement panel/parts (fit-up)

- Produce joint gaps to within manufacturer's tolerances.
- Create alignment of swage lines at replacement part to existing vehicle part locations.
- Produce flush mating flange fit-up.

Replace panel/part(s) by welding

- Replace parts listed in the Competitor's instructions (full or partial) following the vehicle repair manual using manufacturers' specifications. If unavailable, the Experts will supply necessary procedural information.
- All placement and type of welding is to be completed as specified by the vehicle manufacturer. If none are available, the Test Project sample (located at the competition in a stall with competitor and expert access) will be used.
- Welding procedures will be performed as per manufacturers repair manual instructions unless otherwise specified because of lack of manufacturer repair information or the project design.
- All welds must be marked before grinding takes place.
- Welds will be tested for strength (random selection).
- Welded areas must be finished in a state that would enable the areas to be chemically treated and primed.

Dress/Grind/Sand Welds

- After MIG welding (plug or continuous welds) metal joining surfaces, the welds must be ground (as determined by the Experts at the competition) flat and finished.
- Welded areas must be finished in a state that would enable the areas to be chemically treated and primed.
- When you finish grinding/sanding welds, they must be checked before fitting bolt on parts.

Panel gaps

- Reinstall all parts removed for repair operations using manufacturers' specifications and tolerances.

Module C – Non-Structural Part(s) Replacement

- Safe work practices must always be adhered to and apply to Host Country's regulations.
- Remove bolt-on parts for access as necessary.
- Assessment will be done as the project evolves as determined by the stops in the competitor instructions.

Panel Removal

- Remove a panel/part following sectioning guidelines in the Competitor's instructions.
- Remove corrosion protection materials as necessary in areas where panels or panel flanges will be heated by any welding method.
- Straighten (repair) all deformation and remove spot weld remnants.

Panel Preparation

- Drill or punch holes for plug welds on flanges as necessary.
- Welding primer should be applied to all weld areas, according to the vehicle manufacturer's guidelines.

Install replacement panel/parts (fit-up)

- Produce joint gaps to within manufacturer's tolerances.
- Create alignment of swage lines at replacement part to existing vehicle part locations.
- Produce flush mating flange fit-up.

Replace panel/part(s) by welding

- All placement and type of welding is to be completed as specified by the vehicle manufacturer. If none are available, the Test Project sample (located at the competition in a stall with competitor and expert access) will be used.
- Welding procedures will be performed as per manufacturers repair manual instructions unless otherwise specified because of lack of manufacturer repair information or the project design.
- All welded butt joints are to be dressed ready for a thin application of filler.
- All welds must be marked before grinding takes place.
- Welds will be tested for strength (random selection).
- Welded areas must be finished in a state that would enable the areas to be chemically treated and primed.

Dress/Grind/Sand Welds

- After MIG welding (plug or continuous welds) metal joining surfaces, the welds must be ground (as determined by the Experts at the competition) flat and finished.
- Welded areas must be finished in a state that would enable the areas to be chemically treated and primed.
- The panel must be fitted to suit manufacturer's measurements and gaps with adjacent panels.

Module D – Panel Repair

- Safe work practices must always be adhered to and apply to Host Country's regulations.
- Repaired area must have the original contour and shape.
- Repaired area must be file finished.
- Panel shrinking must be done with electrical equipment or cold shrinking as needed.
- Repaired area is to be carried out without filler to a standard ready for chemical treatment and primer.
- Repair surface defects, sand to P80g or finer, feathered edge broken surrounding surfaces to P120g or finer.
- The panel repair area must not be over thinned due to excessive filing or sanding.

Module E – Collision related repairs such as/but not limited to electrical diagnoses, plastic repair, and/or glass replacement

- Safe work practices must always be adhered to and apply to Host Country's regulations.
- Describe the repair procedure selection here.
- The repair procedure selected will consist of a list of operations, with each one being evaluated.

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 an elected Test Project Design Team.

Experts from six countries are selected by vote at the previous Competition to work with the Deputy Chief Expert to develop a project in accordance with the current Technical Description.

3.3.2 How and where is the Test Project / modules developed

The Test Project / modules are developed:

- Jointly on the Discussion Forum by the elected Test Project Design Team.

3.3.3 When is the Test Project developed

The Test Project is developed:

- By 3 months before the current Competition.

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

A team of Experts will design the five modules and the marking scale according to the manufacturer's data on repair methods. These modules will be circulated for training of the Competitors.

3.6 Test Project selection

The Test Project is selected as follows:

- By vote of Experts on the Discussion Forum 3 months prior to the Competition.

Once the Test Project modules have been developed by the Test Project Design Team they will be posted on the Discussion Forum for comment. After that time the comment and discussion will be taken into consideration for the final version of the Test Project modules. These final modules will be posted on the Discussion Forum for voting by the Experts.

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:

- Chief Expert and Deputy Chief Expert

3.9 Test Project change at the Competition

The Test Project is subject to 30% change. The changes will be made during the preparation days prior to the Competition. Typical changes include the change of side of the car a panel or wing may be damaged.

3.10 Material or manufacturer specifications

The Workshop Supervisor will post the car manufacturer's repair instructions and jig manufacturer's datasheet on the Discussion Forum 3 months prior to the Competition.

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 (agreed by Experts and submitted to the Chair/Vice Chair of the Technical Committee). The Chief Expert is to regularly share updates of the Skill Management Plan via the Forum.

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	Diagnosis and Correction		20	20
B	Structural Part Replacement		35	35
C	Non-structural Part Replacement		25	25
D	Panel Repair	7.5	7.5	15
E	Collision related repairs such as but not limited to electrical diagnoses, plastic repairs, and/or glass replacement		5	5
Total =		7.5	92.5	100

5.2 Subjective marking

Scores are awarded on a scale of 1 to 10.

5.3 Skill assessment specification

Experts will prepare the aspects of criterion.

Test Project marking document

- The Test Project marking document (used by the judges at the Competition) must include the assessment criteria and all explanations for point deductions (penalties).
- All judging teams must consult the compatriot Expert of the Competitor being evaluated and explain where point deductions were applied. The jury must identify the errors on aspects of the criterion that were faulty. When possible, digital photographs will be taken to build a file for each Competitor. This will not be used as a method of comparison from one Competitor to another.

Diagnosis

- Set-up
 - Deductions for each anchoring clamp not installed according to equipment makers recommendations.
- Measuring system
 - Deductions for each measuring point not recorded or displayed.
 - Deductions for each jig (if used) with excessive tension on the pin or bolts.

Correction

- If jigs are used each jig must not have excessive tension on jig bolts or pin.
 - Deductions for each jig with excessive tension on the pin or bolts.
- If measuring system is used each measuring point must not exceed manufacturer's tolerances (2mm if not available).
 - Deductions for each measuring point (length, width, height) exceeding manufacturer's tolerances.
 - Deductions for each tear or deforming caused by incorrect pulling or incorrect clamping.
- Jig bolts and sill clamp nut torque must be checked using a torque wrench according to the equipment manufacturer's specifications.
 - Deductions for each bolt or nut without proper torque.
 - Deductions for each bolt missing.

Panel removal (structural and non-structural)

- Deductions for each hole left by drilling or grinding unless they are to be used for a MIG plug weld where recommended by the manufacturer.
- Deductions for every tear in adjacent panels.
- Deductions for each 5 mm of reinforcement cut when cutting off panel.
- Deductions for each 5 mm where original paint not removed where panels or panel flanges will be heated by any welding method. (This will be done before installing parts).

Panel preparation (structural and non-structural)

- Deductions for each 5mm of deformation.
- Deductions for each 5 mm without weld-thru primer applied in weld site.

Install replacement panel/part (fit-up)

- When making butt joint, there should be one metal thickness of gap preferred and the maximum gap should be two metal thicknesses of the panel being welded, no overlap.
 - Deductions for each 5 mm of overlap or gap larger than specified gap.
- Swage lines
 - Deductions for each swage line not aligned correctly where welded. This will be measured using a template that matches the swage line contour to within 2mm.
- Panel flanges
 - Deductions for every area (in between plug welds) where there is a gap greater than 0.5 mm between the two panels.

MIG continuous welds

- Weld quality
 - Deductions for every 5 mm of weld having any of the following defects (holes, skips, voids, porosity, etc.).
 - Deductions for every 5 mm of weld exceeding 2.0 mm high.
 - Deductions for every 5 mm of weld exceeding 10.0 mm in diameter.
 - Deductions for each 5 mm of no penetration.

MIG plug welds

- Weld Quality
 - Deductions for each incorrect placement or number of plug welds.
 - Deductions for each plug weld where the hole hasn't been completely welded.
 - Deductions for each plug weld exceeding 2 mm high.
 - Deductions for plug welds that exceed 1 ½ times the diameter of the hole.
 - Deductions for each faulty weld, tested at random.

Resistance spot welds

- Weld quality
 - Deductions for each incorrect placed or number of spot welds.
 - Deductions for each spot weld which has blown a hole.
 - Deductions for each spot weld where metal is missing.
 - Deductions for each faulty weld, tested at random.

Dressing (Grinding/Sanding) of welds

- Deductions for each 5 mm of continuous weld that has been ground too deep or not ground enough.
- Deductions for each MIG plug weld ground too deep or not enough.
- Deductions for each surrounding area with damage (gouges, holes, weld spatter, etc).

Panel gaps

- If the manufacturer's specifications tolerances are respected, full marks will be awarded.
 - Deductions for each control point out of tolerance.
- Respect the inward and outward alignment tolerance, 0.5 mm.
 - Deductions for each control point out of tolerance.
- Respect the height adjustment for body lines according to the manufacturer's recommendations.
 - Deductions for each control point out of tolerance.

Panel repairs (finishing)

- Subjective marking
 - Repaired panels will be coated to produce a glossy surface and looked at in the light for imperfections: The repaired area will be felt by hand (usually with the aid of a soft glove or cloth). This will be evaluated according to the Subjective Marking Form.
- Templates: 1mm tolerance given
 - Deductions for each 1 mm over tolerance. Any templates must be held at both ends and measure the complete line.
 - Deductions for each checkpoint that exceeds tolerance.
 - The contour of a panel is checked by using a template, in accordance with set tolerances.
 - Where the panel is lower than the template the largest gap is measured.
 - Where the panel is too high/full one end only the template is held against the panel and the gap is measured at the other end.

Collision related repairs (Plastic repair, glass installation, electronic diagnosis and repairs, etc.)

- Plastic repair
 - Deductions for each incorrect procedure.
 - Deductions for incorrect contour and smoothness ready for application of primer. This is subjective marking and will be evaluated according to the Subjective Marking Form.
- Remove and re-install electronic components
 - Example SRS:- Deductions for each incorrect procedure.

5.4 Skill assessment procedures

The following will be used as a guide to for the Experts for marking the Test Projects completed by the Competitors:

- The Experts that attend the Competition will be divided into marking groups with a designated leader.
- Every completed module will be marked on the same day in which it was completed.
- To ensure transparency, each Competitor is provided the same evaluation sheet as used by the Experts.
- Change (make marking document specific to the project vehicle) scoring system (within limits specified in the Technical Description).
- Change Competition sequence or content.
- Agree on a solution for disputes concerning points awarded etc.
- A “request for judging chart” and a little red flag will be installed at each Competitor workstation. This chart will be numbered in the same manner as the Competitor instructions. When the Competitor is ready to be evaluated on STOP A.0.1 (for example) they will write down the time in the appropriate STOP box on the chart and position the red flag in the upright position. After the judges have finished evaluating, they turn the flag to the horizontal position and verbally advise the Competitor that they have completed judging.

6. SKILL-SPECIFIC SAFETY REQUIREMENTS

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

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

7. MATERIALS & EQUIPMENT

7.1 Infrastructure List

The Infrastructure List lists all equipment, materials and facilities provided by the Host Country.

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 Host Country will progressively update the Infrastructure List specifying the actual quantity, type, brand/model of the items. Host Country supplied items 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

The Competitor must supply any tools, special equipment, and individually desired materials not covered in the Infrastructure List. These must be presented to the Experts for inspection before the start of the Competition.

The Competitor's toolbox must be suitably sized to fit within the boundaries of the workstation without encroaching on walkways, neighbouring competitor workstations or cause obstruction to the free and safe movement of the Competitor or Experts within the workstation.

MIG welders and spot welders may be brought to the Competition by the Competitor for their personal use.

7.3 Materials, equipment and tools supplied by Experts

Experts are required to supply their own Personal Protective Equipment as specified in the Host Member Health and Safety document.

7.4 Materials & equipment prohibited in the skill area

The Experts may rule out any items brought to the Competition, which are not considered normal autobody tools and would give any Competitor an unfair advantage. This applies specially to pre-fabricated, pre-formed or pre-drawn templates or repair jigs of any kind. These are not allowed to be brought to the Competition.

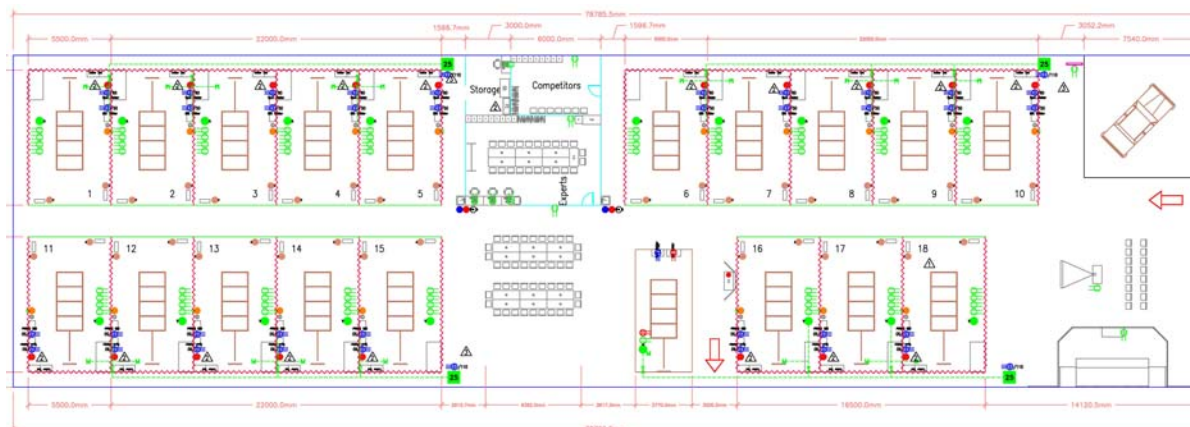
Everything of this nature must be made or fabricated on site if so desired. Profile gauges must not be pre-adjusted before the start of the Competition.

7.5 Sample workshop layouts

Workshop layouts from Calgary are available at:

http://www.worldskills.org/index.php?option=com_halls&Itemid=540

Workshop layout from previous Competition:



8. MARKETING THE SKILL TO VISITORS AND MEDIA

8.1 Maximising visitor and media engagement

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

- Try a trade
- Display screens
- Test Project descriptions
- Enhanced understanding of Competitor activity
- Competitor profiles
- Career opportunities
- Daily reporting of competition status

8.2 Sustainability

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