



# worldskills New Zealand

**2010 NATIONAL COMPETITION**

# Plumbing

**Pre-Competition Information  
for Competitors**

**Project Designer/s:**

Ritchie Gorrie

**Name and contact details for National Skill Expert**

Ritchie Gorrie\_-C.P.I.T 021 284 6005 / gorrier@cpit.ac.nz

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## INTRODUCTION

Congratulations on qualifying for a WorldSkills New Zealand national competition. The pathway to success includes a careful study of these instructions. **Please read these instructions fully and retain them for the competition days.**

A WorldSkills New Zealand competition will give you a ranking against your peers according to the skills you demonstrate on the day. You are judged according to your ability to achieve set goals and are awarded marks according to how well you achieve those goals. Unlike standard competency assessments if you perform better than the industry standard demands [the minimum mark], then you will be rewarded for that effort.

### Project Description

The competition project consists of:

1. **Plumbing Services Design:**  
Design of Sanitary Drainage, Water and Gas Systems. (ISOMETRIC Drawing)
2. **Trade Skills Test:**  
Small practical projects that test all skill areas described in the skills list.
3. **Design and Fabrication of a simulated basic bathroom and laundry pre-pipe:**  
The project will be made up of Hot, Cold and Rain Water, Gas and Waste  
The following fixtures will be installed and commissioned:
  - ⇒ Hot Water System
  - ⇒ Basin
  - ⇒ Shower
  - ⇒ Laundry Tub
  - ⇒ Bayonet fitting
  - ⇒ Tempering Valve

Competitors complete pipe work layout to predetermined design.  
The project will be carried out in a timber frame “L” shape section.  
Pipe work will be secured to AS/NZS 3500 Standards

Marks will be allocated for:

- ⇒ Plumb and Level
- ⇒ Economy of design
- ⇒ Accuracy
- ⇒ Pressure test
- ⇒ Workmanship

**Cold Water** - Breaching pieces – Copper- Dux Secura Pipe work -

**Hot Water** - Copper – SILVER SOLDER - SILVER BRAZE

**Tempered Water** - Copper - SILVER SOLDER - SILVER BRAZE

**Gas** - Copper / BMS – SILVER SOLDER - SILVER BRAZE

**Rainwater** – Marley.

### Competition Schedule

### Competition Schedule

The maximum working time for this competition is **21 hours**. As a competitor you should keep track of time yourself. The timetable for the day of competition is shown below.

#### Day of Arrival (Wednesday 22 September)

3.00pm – 5.00pm	Arrival, draw for work stations and instructions
5.00pm – 6.00pm	Opening Ceremony

#### Day 1 (Thursday 23 September)

9.00am -	Familiarisation
9:30am	Commence work on competition project
Competitors take breaks at different times.	Morning Break
	Continue work on competition project
Morning and afternoon tea break – 15 mins	Lunch break
	Continue work on competition project
Lunch – ½ hr	Afternoon Break
	Continue work on competition project
5:30pm	Stop work on competition project
5.45pm	Competition Debrief

**Day 2 (Friday 24 September)**

8.00am -	Familiarisation
8:30am	Commence work on competition project
Competitors take breaks at different times.	Morning Break
	Continue work on competition project
Morning and afternoon tea break – 15 mins	Lunch break
	Continue work on competition project
Lunch – ½ hr	Afternoon Break
	Continue work on competition project
4:30pm	Stop work on competition project
4.45pm	Competition Debrief

**Day 3 (Saturday 20 September)**

8.30am -	Familiarisation
8:45am	Commence work on competition project
Competitors take breaks at different times.	Morning Break
	Continue work on competition project
Morning break – 15 mins	Lunch break
	Continue work on competition project
Lunch – ½ hr	
3:00pm	Stop work on competition project
3.15pm	Competition Debrief

**Day 4 (Sunday 21 September)**

	Cleaning up at WelTec if necessary
11am	Awards Ceremony

## Marking Scale Summary

All competitors who compete in this skill category will be judged according to the same criteria. A summary of the different project sections and the number of marks allocated to each section is shown below.

Section	Task	Maximum Possible Marks
1	Isometric design	5
2	Employability skills	5
3	Trade skills test	30
4	Hot & cold water on project frame	30
5	Gas & waste	30
	Total	100

On Day 1 of competition you will receive a blank copy of the marking scheme for your skill category. You will be allowed to retain this during the competition. We recommend that you refer back to this regularly throughout the competition.

### Description of Marking Systems

The following marking systems will be used by the Judges in their assessment of your project.

#### *Objective Marking*

Judges will carry out **objective marking** in areas of the project where tolerances can be applied or where it can clearly be seen that a task has or has not been completed.

#### **The marks to be awarded are scaled as shown:**

- Within 2% of tolerance maximum marks
- Within 2% to 5% of tolerance 50% of marks
- Within 5% to 7% of tolerance 20% marks
- Greater than 7% or not attempted no marks

#### *Subjective Marking*

Judges will carry out **subjective marking** in areas of the project where a visual assessment needs to be made.

Description of Judges marking scale where subjective marking is to be used.

<b>Judges Marking Scale</b>	0-10
Perfect	10
Very Good	9
Good	8
Acceptable	7

Sufficient	6
Medium	5
Weak	4
Poor	3
Bad	2
Very Bad	1
Not acceptable/Not attempted	0

## EQUIPMENT TO BE SUPPLIED BY THE COMPETITOR

Competitors are responsible for their own tools. It should be noted that all power tools and machinery must comply with OSH regulations and have adequate safety guards and be in what is deemed to be safe operating condition. At the discretion of the officials any suspect piece of equipment may be prevented from being used. Competitors should supply the information listed below.

[Please note you will be in a fully equipped plumbing workshop .It is optional to bring your own hand tools].

- Hacksaw and blades – 18-24-32 – junior hacksaw
- Files – half round and round
- Tape measure and rules
- Pencils and felt tip pens
- Highlighters – red, blue, yellow, orange – for isometric design
- Drawing instruments – compass, scale rule, 45 degree – 60/30 set squares and pencils
- Square – carpenter type
- Adjustable bevel
- Centre punch
- Level – 300mm or 600mm
- Tin snips – aviation – left and right hand
- Claw hammer
- Pipe tongs/stilsons
- Multi grips
- Crescent/shifting spanner – 100mm-300mm
- Pliers
- Screwdrivers
- Cordless drill – optional
- Wood chisel
- Relevant industry codes and standards AS/NZ 3500
- Pipe cutters – Secura – 15mm and 20mm
- Anything else you are used to using

## EQUIPMENT AND MATERIALS TO BE SUPPLIED BY THE ORGANISERS

- Tube cutter copper – 10-25 x 8
- Tube cutter P.V.C 40 – 100 x 8
- Dividers x8
- A3 drawing board x 8
- Carpenter square x 8
- Wire brush x 8
- Flint gun x 8
- 15 Tube Benders – 20 Tube Benders x 4
- Flaring Tool 15 – 20 RIGID or similar x 4
- Copper pipe expander 15, 20 x 4
- 22mm or 28mm auger bit – For drilling holes in timber framing x 4
- Oxy-Welding goggles x 8
- Leather gauntlets x 8
- Hand pipe dyes 15mm x 4
- Cutting oil
- Electric drills x 4
- Oxygen – acetylene – gas welding plants x 8
- Gas welding tips – No 8 – x 8
- Water pressure testing equipment
- Screws posi or square drive – 25mm long
- Posi or square drive bits
- Air testing equipment – for gas pipe work
- Brazing flux x 4
- Solvent cement x 250ml x 8
- Primer – for P.V.C pipe 250ml x 8
- Hemp x 4
- Graphite x 4
- P.T.F.E tape white – water x 8
- P.T.F.E yellow – gas x 8