

Worldskills competition
April 2008

WorldSkills Jamaica 2008

Industrial Maintenance – Electrical Installation Test Project



Competition Project in accordance with
NVQJ TEVT Requirements
(Commercial Wiring)

WorldSkills Jamaica Competition April 24 to 25, 2008

General Instructions

1. Each competitor will be required to carry out the test project as specified and will be available on the website three months before the competition.
www.worldskillsjamaica.org
2. Each competitor will be required to carry out the test project as specified on the schedule to be handed out two days before the competition.
3. The time will be specified according to the test project.
4. 20% change will be made to the test project on the day of the competition where a new test project will be issued to the competitor.
5. All materials, ingredients, large equipment and specialized hand tools will be provided.
- 6. Please note that all competitors should provide their own small tools and utensils.**
7. Competitors are expected to identify all equipment/ materials/ingredients needed and submit list to the competitions committee no later than March 7, 2008.
8. Debriefings will also be conducted for all competitors on April 22, 2008.
9. All competitors will get an opportunity to arrange work areas the day before the competition. Where applicable competitors for the second day will arrange their work areas on the evening of day one. Competitors who fall in the second shift will get an opportunity to do their preparation at offsite locations (to be decided) where necessary.
- 10. Competitors and coaches are expected to find their way to the competition village on April 22, 2008 and to depart back home on April 26, 2008**

- 11. Transportation will be provided at designated times for all competitors and coaches to and from the competition venue.**
- 12. All coaches will play the role of experts (judges) for the competition**
- 13. Accommodation and meals will be provided for all competitors**
- 14. Accommodation will be provided for coaches only.**
- 15. All other persons that support the competitors will need to make their own accommodation arrangements.**
- 16. Lunch and light refreshment only will be provided for coaches, (experts), workshop supervisors, national trade managers and volunteers.**

17. All competitors should be present for the opening ceremony along with their coaches.
18. Rehearsal for the opening ceremony will be held on the evening of April 22, 2008 in the Indoor Sports Centre.
19. Competitors are not allowed out of the competition village unless permission is granted by the dorm master.
20. All competitors are required to register at the competition village to qualify for entry into the competition.
21. Special permission must be granted if competitors need to reside off campus.

Lighting and Power Circuit

MODULE DESCRIPTION AND SUGGESTED WORKING TIME

This module is limited to a domestic or commercial type installation; consist of lighting circuits, power outlet circuits and fixed appliances circuits. The installation of consumer units and protective equipment is also included. It will take the designed format stated below by each candidate:

- Fluorescent lighting controlled by a double Pole Mem Switch, powered by a 220V supply
- The Incandescent lamp is controlled by a Photo Electric Cell & a Single Pole Switch and powered by 110V supply
- One 110V Sockets Outlet
- One 220V Socket Outlet

Competitor must be able to demonstrate a range of skills in the installation of electrical fixtures and wiring systems. There will be a minimum of two (2) different wiring systems for this module.

The following systems will be used in this project are

- PVC
- Multi-core cable

DURATION

The duration for this project is maximum four (4) hours.

PLANS AND PREPARE FOR INSTALLATION WORK

Preparation and planning requirements are identified from electrical diagram and wiring specification

Electrical material and apparatus are identified for job specification

Use the appropriate tools for the tasks as outlined

Appropriate personal protective gear is selected and correctly fitted.

INSTALL ELECTRICAL COMPONENTS AND APPARATUS

All electrical apparatus are installed in accordance with layout diagram

The competitor is to carry out installation in accordance to their home country's regulations.

All cables are installed in accordance to layout and schematic diagrams.

PROCEDURE

Measure and mark out the position of fixtures

Secure fixtures and install conduit to work-board

Run and terminate cable for lighting and power circuit

Perform Continuity Test

Perform Verification of polarity Test

Perform Insulation Test

Material Listing

Below are an estimated material quantities and accessories required for the success of the project per candidate.

Item #	Quantity	Description	Specification
1	1	12 Way Distribution Panel	100 Amps/220V/3Φ
2	1	Meter Socket	100 Amps/220V/3Φ
3	1	Pot Head	¾ - 1 inch
4	1	Mem Box with Single grid and cover	2*2
5	1	Junction Box with cover	4*4
6	2	Handy Box with ivory single switch cover	2*4
7	1	Octagonal Box	
8	1	2Ft Double Fluorescent Lamp	220V/20W/50Hz
9	1	Photo Electric Cell complete with base	110V/220V, 50Hz
10	2 Length	Conduit PVC	¾ inch (20mm)
11	20	Conduit PVC Ends	¾ inch (20mm)
12	1 Length	PVC Conduit	1 inch (25mm)
13	6	PVC Conduit Ends	1 inch (25mm)
14	2	2 way switch	
15	1	Double pole single throw Mem switch	20 amps
16	1	Double pole circuit breaker	40 Amp Main
17	1	Single pole circuit breaker	15 Amps
18	2	Double pole circuit breaker	15 Amps
19	2	Double pole circuit breaker	20 Amp
20	1	Single pole circuit breaker	20 Amp
21	1	Broad Base Receptacle	
22	1	Incandescent lamp	110V
23	1	Duplex socket outlet (surface mount)	110V
24	1	English socket outlet with pilot switch	220V
25	6	1" pipe straps	
26	14	¾" pipe straps	
27	2	2' fluorescent lamp	220v/20W/50Hz
28	1	4' x 4' work board	¾" Industrial ply
29	8	4' x work board	¾" Industrial ply
30	50	1" wall screws	
31	6	1 ½" dry wall screw	
32	1	3" circular wood block	
33	1	5" circular wood block	
34	1	Rectangular wood block	

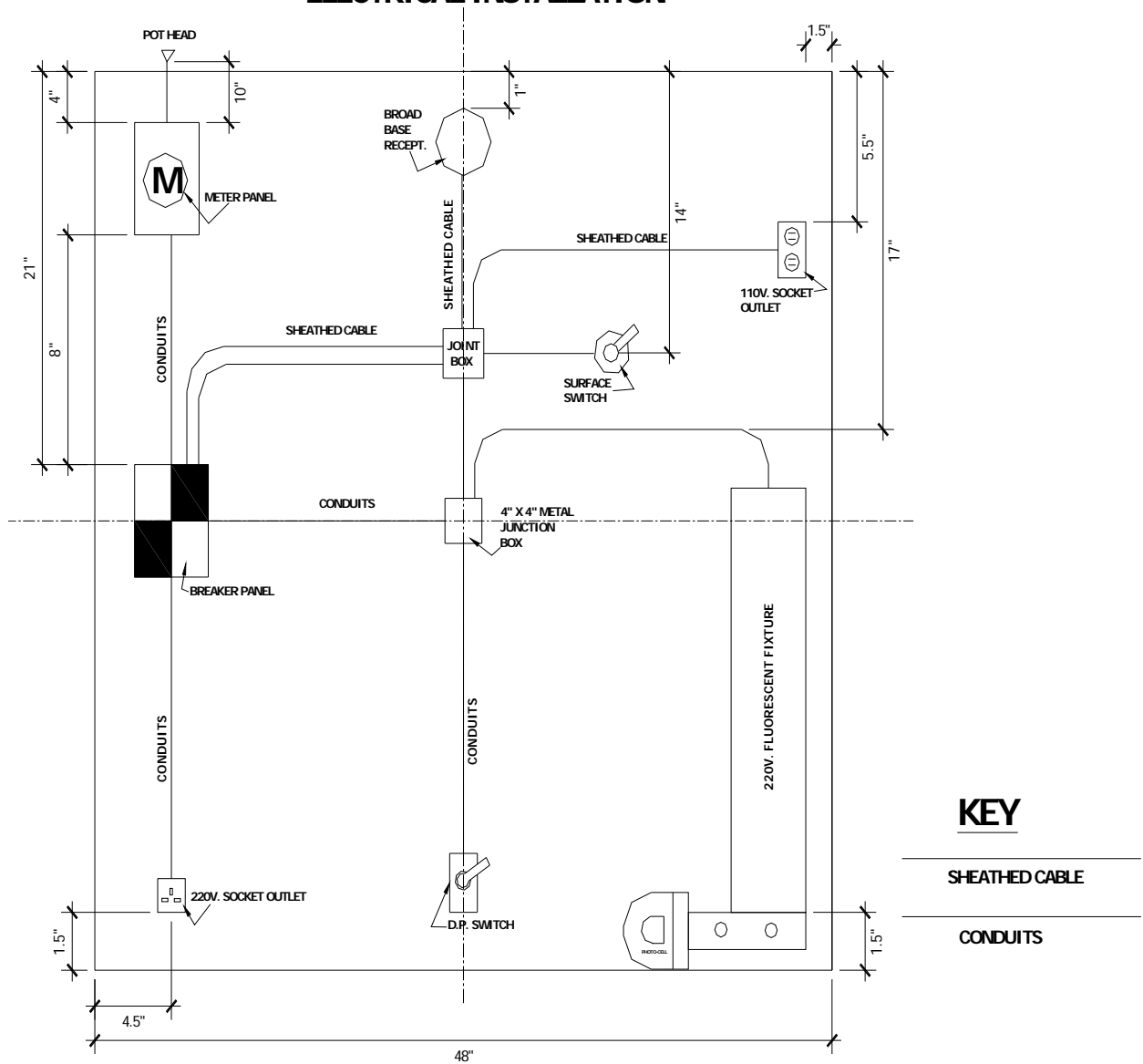
Additional Materials

2.5 mm² (Red) single core cable
2.5 mm² (Yellow) single core cable
2.5 mm² (Black) single core
6 mm² (Black) single core
6 mm² (Red) single core cable
6 mm² (Yellow) single core cable
Drywall Screws
Connector Bars 20Amps
Saddle straps 1 inch (25 mm)
Saddle strap ¾ inch (20 mm)
3" Nail

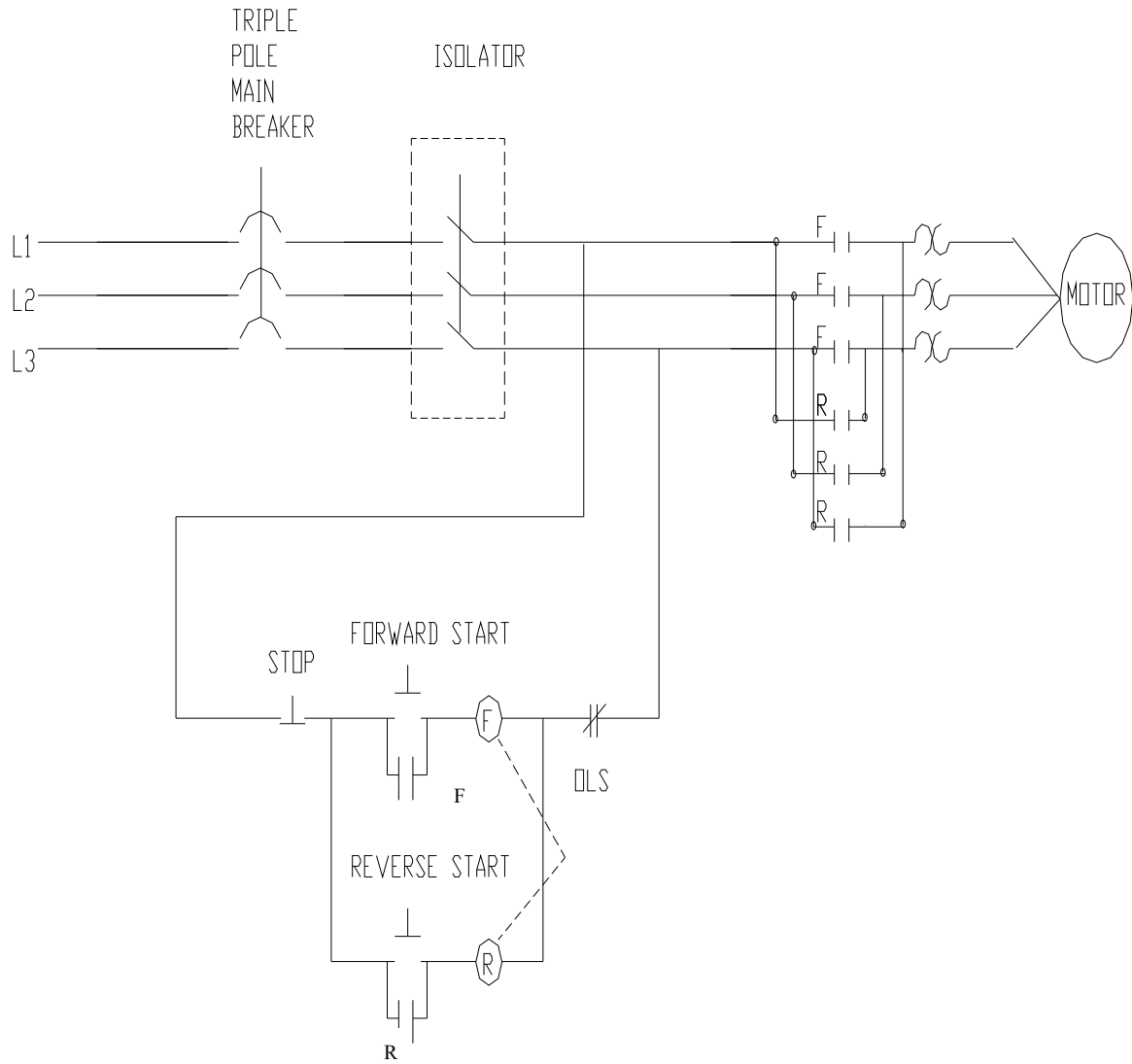
Tools and Instruments required

Pliers
Screw driver (Flathead and Phillips)
Junction drive
Spring bender 1 inch (25 mm)
Spring bender ¾ inch (20mm)
Junior saw
Tape measure
Level
Wire stripper/Utility Knife
Multimeter
Megger Meter
Claw
Hammer
Hole Saw

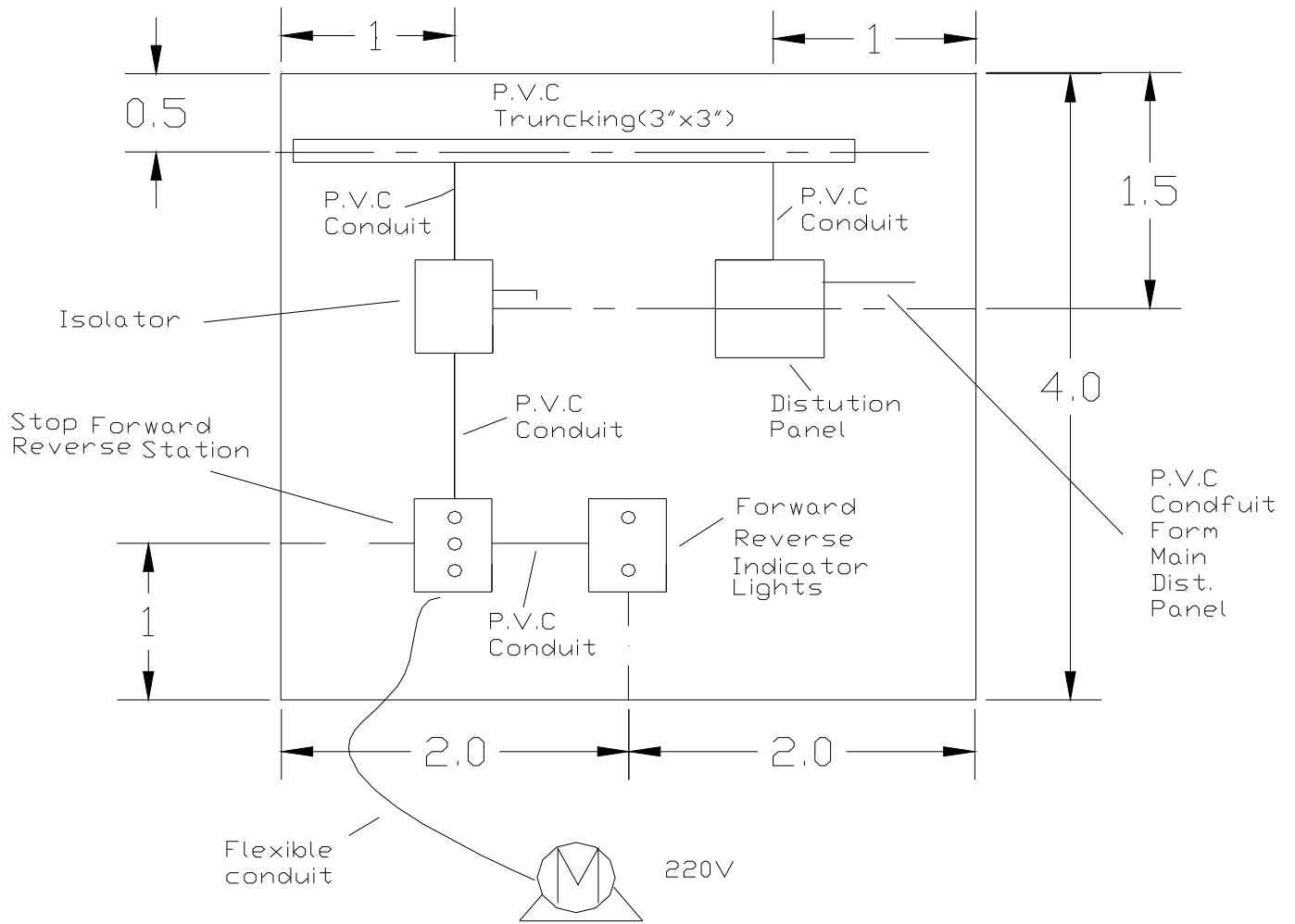
WORLD SKILLS ELIMINATION PROJECT ELECTRICAL INSTALLATION



All dimensions are in inches



FORWARD / REVERSE CONTROL CIRCUIT



**OBJECTIVE MARKING
 FORM 5**

WorldSKILLS JAMAICA 2008

Skill Area: Commerical Wiring/Electrical Installation

Competitor # _____ Competitor Name _____

Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
	MODULE A				
	POWER AND LIGHTING CIRCUIT				
1	<p><u>1. PLANS AND PREPARE FOR INSTALLATION WORK:</u></p> <p>1.1 Preparation and planning requirements are identified from electrical diagram and wiring specifications.</p> <p>1.2 Electrical materials and apparatus are selected for job specifications</p> <p>1.3 Use the appropriate tools for the tasks out lined.</p> <p>1.4 Appropriate personal protective gear is selected and correctly fitted.</p>	20			
2	<p><u>2. INSTALL ELECTRICAL COMPONENTS AND APPARATUS:</u></p> <p>2.1 All electrical apparatus are installed in accordance with layout diagram.</p> <p>2.2 Conduits are installed in accordance with requirements</p> <p>2.3 Conduits are terminated and connected in accordance with requirements.</p> <p>2.4 Final inspections are undertaken to ensure the installed conduits conforms to requirements.</p>	20			

Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
3	<p><u>3. CONNECT ELECTRICAL CONDUCTORS AND CABLES:</u></p> <p>Cables and conductors are prepared using appropriate tools and techniques</p> <p>3.1 All cables are installed in accordance to layout and schematic diagrams.</p> <p>3.2 All cables, wires, conductors and connections etc. are marked/tagged and labeled to specification</p> <p>3.3 Terminations are made to components using standard procedures.</p>	20			
4	<p><u>4. USE ELECTRICAL DEVICES:</u></p> <p>4.1 Use correct measuring instrument to check single-phase power supply.</p> <p>4.2 Check schematic diagram for correct polarity connections.</p> <p>4.3 Check light, power and earthing circuit for continuity.</p> <p>4.4 Conduct an insulation test on the circuit</p> <p>4.5 Switch on power supply and recheck voltages.</p>	20			
5	<p><u>5. FUNCTION OF POWER AND SCHEMATIC CIRCUITS:</u></p> <p>5.1 Power circuit function according to job specification.</p> <p>5.2 Lighting circuits function according to job specification.</p>	20			

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Criterion #	Aspect of Criterion Description	Mark allotted for objective marking	Total Mark received for objective Marking	Total Mark received for Subjective Marking	Overall Mark Awarded
6	<p><u>6. USE ELECTRICAL DEVICES:</u></p> <p>6.1 Use correct measuring instrument to check 3-phase supply.</p> <p>6.2 Check schematic diagram for correct connections.</p> <p>6.3 Connect 3-phase power to L1, L2, and L3.</p> <p>6.3 Connect 3-phase motor to appropriate terminals T1, T2, T3.</p> <p>6.4 Check motor voltage specification before applying power.</p> <p>6.5 Switch on power supply and recheck voltages.</p>	20			
7	<p><u>7. FUNCTION OF POWER AND SCHEMATIC CIRCUITS:</u></p> <p>7.1 Power circuit function according to job specification.</p> <p>7.2 Control circuit function according job specification.</p>	20			

Total Mark awarded: _____ Type of Medal _____

Signatures

Judge 1

Judge 2

Judge 3

Judge 4

Chief Judge
<i>Date</i>

CIS scoring

All competitors will be scored using the Computer Information System (CIS) – (400 to 600 possible points)

500 – Medallion of excellence

Top three scores will receive gold, then silver, then bronze

Skill Area: Commercial Wiring/Electrical Installation

Competitor # _____ **Competitor Name** _____

Criterion #	Aspect of Criterion - Description	Judge score (Out of 10)					Mark Awarded
		1	2	3	4	5	
1	Preparation						
2	Selection of Tools						
3	Use of Tools						
4	Job Knowledge						
5	Material Usage						
6	House Keeping						
7	Safety						
8	Presentation						
9	Creativity						
10	Originality						

Formula for Subjective Marking total score:

Exclude the highest and the lowest score and find the average of the remaining three.

Total Mark awarded _____

Signatures

Judge 1

Judge 2

Judge 3

Judge 4

Chief Judge
<i>Date</i>

Score for subjective marking should be entered on form 5 for total score.