



ELECTRICAL WORKERS REGISTRATION BOARD

PRACTISING LICENCE REFRESHER COURSE PRESCRIPTION

ELECTRICIAN/ELECTRICAL INSPECTOR

Issued by NJJ Sickels
Registrar
26 February 2007

Introduction

The Electrical Workers Registration Board has developed an electrician/electrical inspector practising licence refresher course (the electrician/electrical inspector refresher course) which training providers can use either as their tuition course, or as a guide for alternative tuition courses to satisfy the prerequisite tuition requirements for the issue of Board electrician/electrical inspector practicing licences.

The electrician/electrical inspector tuition course is expected to be completed within three hours and it should be noted that the course does not include basic first aid and cardio-pulmonary resuscitation which is required to be completed as a prerequisite to electrician/electrical inspector practicing licence issue.

The electrician/electrical inspector refresher course does not include references to basic first aid and cardio-pulmonary resuscitation as it is considered that these subjects are more than adequately covered in publications produced by other organisations.

With the exception of the basic first aid and cardio-pulmonary resuscitation aspects, the electrician/electrical inspector refresher course satisfies the electrician/electrical inspector requirements of Schedule 5 to the Electricity Regulations 1997.

General

It is considered that the Board needs to have requirements for the refresher courses that:

- reduce as far as possible the cost of compliance to industry, and
- are readily available to industry; and
- have integrity and be appropriate for the licence categories; and
- are subject to regular audit; and
- provide an assurance to the public that persons who are issued with practising licences on the basis of completing the course are competent to safely carry out prescribed electrical work to a level that satisfies the regulatory requirements.

Training providers must ensure that all amendments to the Electricity Regulations 1997 and the standard specifications that are cited in this document are incorporated into the electrician/electrical inspector refresher course.

Electrician/electrical inspector refresher course content

The electrician/electrical inspector refresher course covers the following subjects:

- testing for safety; and
- the requirements relating to the supervision of trainees both from a supervisor and trainee perspective, and
- earthing requirements; and
- the installation, operation and operational testing of residual current devices; and
- prospective short circuit current levels; and
- hazard identification; and
- testing, certification, and inspection; and
- an appreciation of the types of accidents that have been reported within the previous twelve months; and
- safe working practices; and
- issues highlighted by the Board in ELECTRON newsletter.

Duration of course

As stated in the introduction section the electrician/electrical inspector refresher course is expected to be completed within three hours and this excludes basic first aid and cardio pulmonary resuscitation required by Schedule 5 to the Electricity Regulations 1997.

Course presenters

The Board requires persons wishing to offer electrician/electrical inspector refresher course to be accredited by the Board on an annual basis. This will require potential tuition course presenters to present their credentials for Board accreditation on an annual basis.

The Board would then only publish the names of accredited presenters in its publicity material and on its website.

Auditing of tuition courses and presenters

The Board has an effective auditing programme in place to ensure that the Board's statutory function to ensure competency is satisfied, as well as satisfying the Board's role in ensuring public safety.

Levels of knowledge

Please note that the letters A, B or C alongside subject material represent the level of knowledge the Board expects electrician/electrical inspector refresher course candidates to obtain from the refresher course.

The levels of knowledge are:

- (A) Thorough knowledge
- (B) Good knowledge
- (C) General knowledge

Specific refresher course content

Testing for safety

- (A) All electrician/electrical inspector refresher course candidates are required to have a thorough knowledge of testing as listed in section 6 of AS/NZS 3000 and section 2 of AS/NZS 3760 including:
1. The inspection and tests to be performed to ensure electrical installations are safe are identified and methods of measurement described; and
 2. Where appropriate, the minimum and maximum values applicable to the testing. This includes:
 - Visual inspections/tests; and
 - Continuity of the earthing system; and
 - Insulation resistance; and
 - Polarity; and

- Correct circuit connections; and
- Operation of RCDs; and
- Fault-loop impedance; and
- Frequency of inspection and testing of electrical equipment.

The requirements relating to the supervision of trainees both from a supervisor and trainee perspective

(A) All electrician/electrical inspector refresher course candidates are required to have a thorough knowledge of the requirements of the draft Code of Practice for the supervision of trainee electricians which was issued by the Electrical Workers Licensing Group in May 2006.

Earthing requirements

(A) All electrician/electrical inspector refresher course candidates are required to have a thorough knowledge of the earthing requirements as listed in section 5 of AS/NZS 3000 including:

1. The earthing of electrical installations and fittings for functional and protective earthing purposes; and
2. The role of MEN switchboards within the earthing system including the importance of earthing the neutral in the MEN system; and
3. The earth fault loop in the New Zealand MEN system; and
4. Measuring earth fault currents in installations.

The installation, operation and operational testing of residual current devices

(B) All electrician/electrical inspector refresher course candidates are required to have a good knowledge of:

1. The properties and Classifications of different types of RCDs including RCCB, RCBO, SRCD and PRCD; and
2. Residual current ratings for personal protection and property protection; and
3. Procedures for testing and verifying the operation of new and in service RCDs to achieve the outcomes of applicable regulations and standards.

Prospective short circuit current levels

(A) electrical inspector

(B) electrician

All electrical inspector candidates completing the electrician/electrical inspector refresher course are required to have a thorough knowledge of prospective short circuit current levels while electrician candidates are required to have a good knowledge.

All electrician/electrical inspector refresher course candidates should be aware that there is considerable danger inherent in the wrong selection of equipment or improper installation of equipment due to high prospective short circuit current levels. The high levels of energy dissipated during faults involving high currents can extensively damage plant and can lead to injury for any person working nearby.

Electricians and electrical inspectors should be able to perform calculations to determine fault levels.

Training providers need to be able to provide electrician/electrical inspector refresher course candidates with information on the dangers of prospective short circuit currents.

Hazard identification

(B) All electrician/electrical inspector refresher course candidates are required to have a good working knowledge of the principles of risk management assessment.

The principles of risk assessment comprise of:

- identifying hazards; and
- assessing and prioritising the risks and then
- applying control measures.

How to Identify Hazards in the Workplace

The first step in identifying a hazard is to gather information. Fundamentally the following questions should be asked :

- Does the job look safe?

- What hazards could arise from this job?

After any hazards have been identified a decision must be made on which hazards are significant.

Significant hazards

Significant hazards are those that are the actual or potential cause, or source of:

- serious harm, including death; and
- harm, the severity of which depends on the frequency or extent of exposure; and
- harm not detected until after the exposure.

The purpose of prioritising the hazards is only for the order of addressing them.

All hazards must be considered, irrespective of the level of risk.

The combination of potential injury and level of exposure determines the level of risk.

Applying Control Measures

The application of control measures is the process of considering each hazard in turn and following the "hierarchy of controls" described below:

The steps to follow in the application of control measures are to:

- (a) Eliminate the hazard; and
- (b) Isolate the hazard from the worker - by distance or by time; and
- (c) Minimise the hazard - by use of personal protective equipment and training; and
- (d) Ensure workers are trained:
 - in working in the presence of the hazard
 - by using "standard work procedures "
 - to use personal protective equipment and

- in the correct use and care of personal protective equipment.

The aim of this process is to eliminate or reduce the potential effects of hazards.

Testing, certification and inspection

(A) All electrician/electrical inspector refresher course candidates are required to have a good working knowledge of:

1. The requirements of the Electricity Regulations 1997, AS/NZS 3000, and AS/NZS 3760; and
2. Testing and inspection – General
 - (a) The definition of the terms “testing” and “inspection”; and
 - (b) The types of installation work which can only be inspected by a registered electrical inspector; and
 - (c) The installations that are subject to periodic inspections by a registered electrical inspector; and
- 3 Testing of electrical installations
 - (a) The specific tests that are required by AS/NZS 3000 and state the types of test instruments required to perform those tests; and
 - (b) The methods of carrying out the tests referred to in NZS 3019, stating the minimum and maximum values (where appropriate) that are acceptable; and
 - (c) The requirements of regulation 41 which states the installation work requiring inspection by a registered electrical inspector prior to connection to the power supply; and
 - (d) The tests for installation wiring work as detailed under regulation 41 plus the compliance documentation are required to be completed prior to inspection.
 - (e) Who is responsible for performing the prescribed tests associated with the completion of the compliance documentation involving:
 1. self certification – work which does not require independent inspection

2. work requiring inspection – by a independent registered electrical inspector
3. work that has been done in accordance with the regulations 37, 39 and 40 and understand that a Certificate of Compliance must be:
 - completed within one day of the work being completed or the termination of the contract for the work whichever is sooner [regulation 39(5)]; and
 - one copy of the certificate must be given to the person for whom the work was carried out within 20 working days of the work being completed [regulation 40(2)]; and
 - one copy must be retained for three years or returned to the EWRB [regulation 40 (4) and (5)].

(f) Understand that certifying prescribed electrical work means that the work is electrically safe and has been tested in accordance with the regulatory requirements.

Accidents that have been reported within the previous twelve months

(C) All electrician/electrical inspector refresher course candidates are required to have a general knowledge of the summary of reported electrical accidents produced by the Energy Safety Service.

Safe working practices

General

Many factors can enhance safety in the work place, amongst which sensible, considerate behaviour and good housekeeping rank high.

A knowledge of the right way of carrying out tasks and the use of appropriate protective tools and equipment are also important.

Behaviour

The keypoint of good behaviour is for work to be carried out with due consideration for a person's own safety and the safety of others at all times.

Good behaviour requires that a responsible attitude is taken towards work, and includes

- carrying out instructions properly; and
- asking if in doubt; and
- rectifying or reporting all unsafe conditions; and
- using appropriate tools and equipment correctly; and
- keeping any workplace clean and tidy; and
- not distracting others or indulging in horseplay; and
- wearing or using the protective clothing or equipment provided; and
- not starting machinery unless authorized; and
- obeying all safety rules and signs; and
- using only authorised tools and equipment; and
- not leaving tools on the floor or where they can fall on people below; and
- not wearing loose or torn clothing; and
- taking extra care when members of the public are present (they may not be as aware of hazards or as well protected against them as you are).

Housekeeping

A high standard of housekeeping is essential. Good housekeeping means:

- cleaning up at intervals during the day; and
- no accumulation of waste and rubbish in the workplace; and
- keeping the floor, aisles and passageways clear of obstructions; and
- keeping fire exits and equipment clear of stock; and
- storing tools and equipment in their correct place.

ELECTRON newsletter

(B) All electrician/electrical inspector refresher course candidates are required

to have a good knowledge of the disciplinary cases and other issues highlighted in ELECTRON newsletter.

A handwritten signature in black ink, appearing to read 'N J J Sickels', with a horizontal line underneath.

N J J Sickels
Registrar