

Lighting and Electrical

Relevant Legislation and Documents

ASNZS 3112

ASNZS 3760 testing

ASNZS 3100

ASNZS 3112

ASNZS 3012 2003 electrical installations

ASNZS 3002 2002 shows and carnivals

ASNZS 4249 Safety film, television and video sites

Electrical Engineers Association SMEI Parts 1-3 2004

Electrical regulations 1997

If there is any concern relating to procedure in the mind of the electrical contractor or the production manager, the relevant authority should be contacted for clarification *prior* to work beginning

Guidelines

- 1) Only those persons accredited under relevant legislation shall be engaged to undertake electrical maintenance and or installation.
- 2) All electrical equipment shall be well maintained.
- 3) All portable electrical tools/appliances used in connection with productions and events must be protected by residual current devices (RCDs) or, in the event use of RCDs is incompatible with the use of a particular electrical tool/appliance (for instance, dry ice machines), then protection must be provided by current protection on the distribution board.
- 4) All electrical equipment / devices must be tested for function by a qualified electrician or competent person. Testing requirements must follow those outlined in legislation and NZ standards.
- 5) When there is a possibility of moisture, any joins will be provided with adequate weather protection including RCD protection.
- 6) All leads must be off the ground where possible. In the event it is not possible to keep leads off the ground, a full risk assessment must be undertaken and appropriate controls implemented with consideration being given to the use of covers.
- 7) All electrical equipment/devices must be protected from the weather; or constructed to a suitable IP rating.
- 8) Cables should not be twisted, crushed or kinked.
- 9) All cables should be secured and clearly identified.
- 10) Cable routing should take into account and not create a tripping hazard.

- 11) Before working on any electrical equipment, it must be properly isolated. *(This includes when having to service the lamp after the luminaire is rigged)*. (eg replacing bulb).
- 12) All outlets should be considered live unless proved dead.
- 13) Conducting materials such as earth, concrete, wet/damp timber, flames, all metal objects such as rulers, tapes, rings and belts and yourself shall, where possible, be removed from contact with any electrical work.
- 14) There should be RCD's at mains not at sub mains
- 15) All lights must be safely secured, this includes safety chains.
- 16) All lights and other powered equipment should be properly grounded.
- 17) Deteriorated or poorly maintained lighting equipment fixtures, sockets, fixture wiring, etc., should be replaced.
- 18) All lighting fixtures or stands should be properly supported to prevent tipping.
- 19) All hung fixtures should have a safety chain.
- 20) High voltage gas discharge lamps - such as neon's, HMIs, CSIs and fluorescents - should be properly grounded, inspected for lens cracks that could leak ultraviolet radiation, and otherwise handled with the care given high voltage equipment. Personnel using them should be aware of the ballasts used and ensure all safety devices are working. Keep people away before striking the lamp.
- 21) All personnel should be warned of the dangers of ultraviolet radiation from "arc" type lamps, and care taken to protect against skin and eye damage.
- 22) There should be adequate lighting backstage.
- 23) Lasers must meet requirements (see later chapter) and only those personnel with correct laser-operation permits are allowed to operate lasers.
- 24) Black light output should be low in ultraviolet radiation.
- 25) Appropriate fire extinguishers must be available.
- 26) All switchboards must be of robust weatherproof construction and have a locking device, protective doors that will not damage flexible extension cords, securely fixed to a structure, have an isolating switch, and be locked after work each day/shift.
- 27) Care must be taken when using tap on plugs and adaptors that the circuit is not over loaded
- 28) Clearance should be maintained between lighting equipment and flexible cords to prevent overheating.
- 29) Maximum loads of lighting dimmers shall not be exceeded so as to avoid overloading and a consequent fire hazard.
- 30) Cables shall be protected against contact with sharp edges or heavy loads.
- 31) All portable generators must comply with current NZ standards and be fitted with an earth leakage device.
- 32) Danger tags on portable appliances shall only be removed by authorised personnel
- 33) All electrical personnel should be aware of the load-bearing capacity of cables and boxes and not overload this capacity.
- 34) Cables should not be spliced; they should be connected to approved terminals or connectors.

- 35) Cables should be checked regularly for overheating, loose connections, fraying or other damage.
- 36) Worn and frayed electrical cables should not be used. Keep electric cables away from sharp corners or doors that can pinch and damage them.
- 37) Flexible cords should not be substituted for fixed wiring.
- 38) Set Practical's should be wired internally, and the fixture stem should reach through the back of the scenery where a bushing should be placed on the end of the stem. All fixtures should be securely fastened in place.
- 39) Portable stage switchboards must be supplied by outlets of sufficient voltage and ampere ratings.
- 40) All circuits from a portable switchboard shall be provided with suitable over-current protection.
- 41) Portable switchboards shall be enclosed with substantial construction that is lined with corrosion resistant metal. All switches and circuit breakers should be externally operable and enclosed, and must be test tagged.
- 42) Portable switchboards must have a pilot light that is lit even when the master switch is opened.
- 43) Temporary hook ups to an electrical system must have a Certificate of Compliance issued by the registered electrician that undertook the work.
- 44) Electrical devices used for special effects (e.g., simulating lightning, waterfalls etc.) must be constructed so that sparks and flames do not contact any combustibles.
- 45) All AC circuits must be earthed. The venue may provide a specific technical earth.
- 46) The path to ground from all circuits, enclosures, and equipment shall be permanent.
- 47) All switches shall be clearly marked.
- 48) Powered tools and electrical equipment with exposed metal parts must be grounded.
- 49) Lighting, including Ultra Violet Light (UV light) can create very interesting effects but have the potential to affect the health and safety of those in the workplace. Strobe lighting has been known to induce epileptic seizures. Epileptics who are flicker-sensitive are likely to experience a full seizure if triggered. If this type of lighting is to be used the audience should be warned at the point of ticket sale and also at the entrance to the auditorium.
- 50) Flicker rates of 4 flashes per second or less are recommended and all strobes should be synchronised when more than one is used.
- 51) All exposed metal work must be earthed. (e.g.: rostra, staging, scaffolding, grid, and set elements).
- 52) Safe disposal of discharge and fluorescent lamps: Some of the larger authorities, such as the Auckland region and Hawke's Bay, have a HazMobile service, www.hazmobile.govt.nz, to collect hazardous wastes such as batteries, chemicals and fluorescent lamps. Please check with your local council to find out if they have a hazardous waste collection service and which waste they can accept. To find a contact number for your local council access the following website www.localgovt.co.nz