

BOB JOHNSTON

MINISTRY OF TRANSPORT

MARINE DIVISION

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POWER LIFT RULES

1989

FORWORD

This 1989 edition of the Power Lift Rules consists of:

- Part 1 General Requirements
- Part 2 Electric Lifts : Passenger and Goods
- Part 3 Electrohydraulic Lifts : Passenger and Goods
- Part 4 Tests

Parts 1, 2 and 3 have been published before but in this 1989 edition they have been revised to include all up to date amendments, interpretations, rulings, and to conform with present practice.

Part 4 is new. Its addition now completes the set of Power Lift Rules which is titled "Power Lift Rules 1989".

Grateful acknowledgement is made to all those who assisted in formulating these Rules and in particular to the Standards Association of Australia for permission to quote from their Lift Code AS 1735.

With the publication and availability of this document departmental requirements in respect of all lifts are now explicit and should be of mutual benefit to all those who are involved with this type of equipment.

J. M. Stark
Chief Engineer Surveyor

February 1989

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PART 1

General Requirements

SECTION 1 - SCOPE

- 1.1 Scope** "1.1 Scope
The scope of this document is the design construction, and operation and testing of passenger carrying lifts, including those intended primarily for the carriage of goods. Refer D2/AS2 for provisions applying to domestic and service lifts."
- ~~1.1.1 **Ambit.**
construction, lifts subject to amendments, except given by an Order.~~ ~~operation of 1950 and requirement is obsolete.~~
- 1.1.2 Exemptions.** The Rules do not apply to the following machinery:
- (a) Lifts used solely in connection with the construction, alteration, repair, renewal or demolition of a building.
 - (b) Stacking machines and similar portable devices.
 - (c) Conveyors used for the handling of goods such as swing tray elevators, bucket conveyors, and similar appliances.
 - (d) Skip Hoists.
 - (e) Amusement devices.
 - (f) Lifts or winding apparatus, used for raising or lowering people or material in mines inspected by the Mines Department.
 - (g) Hand Power Lifts.
 - (h) Power driven lifts where the motive power does not exceed 750 Watts (refer to Rule 1.2). These lifts must however comply with the Rules for Power Lifts not exceeding 750 Watts.
 - (i) Scissor lifts where no guide rails are employed.

~~1.2 **Power Driven Lifts Where The Motive Power Does Not Exceed 750 Watts**~~

~~The testing requirements of all power driven lifts where the motive power does not exceed 750 Watts shall comply with Part 4 of these Rules. The standard and quality of all the materials, workmanship and fittings shall be equal to that which would be required by the Chief Engineer Surveyor for lifts built under full supervision. The manufacturer is responsible for ensuring compliance with these requirements.~~

1.3 Application of the Rules

1.3.1 **Effective Date.** These Rules shall become effective on 1 March 1989. All lifts which were contracted for sale before this date may be designed to the Power Lift Rules 1980 providing the designs are submitted for approval and received by this Division on or before 1 April 1989. The Rules must be applied in their entirety together with all additions and amendments to the entire satisfaction of the Inspecting Engineer Surveyor. Should any doubt arise within the application of these rules the Inspecting Engineer Surveyors views shall be sought and his/her ruling shall be final.

1.3.2 **General.** Notwithstanding the contents of any part of these Rules, no lift installation shall be designed, fabricated or installed in any manner which would preclude sound engineering practice.

1.4 Existing Lifts

These Rules shall apply to every existing lift installation ~~and the owner shall be referred to the Inspecting Engineer Surveyor~~ by an Engineer Surveyor to enable him/her to be satisfied that the lift is securely guarded and is in good repair and may be safely used for the purpose for which it is then used or intended to be used. Whenever any existing lift is re-erected or is subject to material alterations, it shall comply fully with these Rules.

NOTE: "Material alteration" means alteration requiring a reconstruction of the major part of a lift such as a conversion from goods to passenger lift, an extension of travel by addition of a new floor or floors, an increase in the carrying load requiring a new hoisting machine and new ropes, a conversion of hydraulic of belt driven lift to electric drive, etc. Where any doubt exists as to the application of these Rules the matter should be referred to ~~the Chief Engineer Surveyor~~.

1.5 Owners Responsibilities

Lift owners are required to be aware of their responsibility as per section 28(3) of the Act which states - "The owner of a lift shall keep the lift and all of its safety devices in good and safe condition during all times when the lift is in use and, if a certificate under section 10 of this Act is issued in respect of the lift, during the currency of the certificate."

Lifts shall be regularly serviced by competent lift engineers at least once every six months and all repairs, adjustments, and lubrication necessary for safe and efficient operation shall be carried out.

2A.

It is recommended that a responsible person is assigned the task of checking an itemised list of all safety operating, indicating, and communicating devices from within the car and landings at regular intervals and ensuring that those items which malfunction are promptly put right. The owner shall keep a suitable logbook pertaining to the lifts listing all maintenance carried out on each lift with full details of any repairs, and the date, person and company involved. Every entry shall be signed legibly by the person concerned.

WHERE LIFTS ARE REQUIRED .

DI.3.4 (c)

SECTION 2 - GENERAL

2.1 Statutory Obligations

2.1.1 Abstracts from the Boilers, Lifts, and Cranes Act, 1950, relating to Lifts.

THE BOILERS, LIFTS, AND CRANES ACT 1950
1950, No. 53

An Act to make provision for the inspection and certification of boilers, lifts, cranes, and certain other machinery, for the safety of persons working with boilers or machinery to which the Act applies, and for the qualification of persons operating any such boilers or machinery.
(23 November 1950.)

1. Short Title and commencement - (1) This Act may be cited as the Boilers, Lifts, and Cranes Act 1950.
(2) This Act shall come into force on the first day of January, 1951.
2. Interpretation - (1) In this Act, unless the context otherwise requires.

"Lift" means an appliance used for raising and lowering persons or goods by means of a car or platform the movement of which in a vertical or approximately vertical direction is maintained by guides; and includes the supports, well, enclosures, car, and the whole of the mechanical and electrical apparatus required in connection with the operation and safety of a lift.

"Machinery" means a lift, crane, winding engine, or steam engine.

"Minister" means the Minister of Transport.

"Owner", in relation to any boiler or machinery to which this Act applies, includes the mortgagee or lessee thereof, and any engineer, overseer, foreman, agent, or person in charge or having or apparently having the control or management of the boiler or machinery.

"Premises" includes any yard, place, house, or building and any farm, paddock, field, road, or place, in which any boiler or machinery is kept, worked, or used, or is in operation.

"Secretary" means the Secretary for Ministry of Transport.

"Surveyor" or "Engineer Surveyor" means an Engineer Surveyor appointed under this Act.

~~6. Powers of Surveyors (1) Every Surveyor may -~~

- (a) Enter any premises at all reasonable hours by day or night if he has reasonable cause to believe that any boiler or machinery to which this Act applies is in use or working or kept therein, and may then and there inspect and examine the boiler or machinery.
- (b) Take with him a constable or any person he may think competent to assist him in the execution of his duty.
- (c) Make such examination and inquiry as he deems necessary in order to ascertain whether the provisions of this Act are complied with.
- (d) Examine with respect to matters under this Act, either alone or in the presence of any other person, as he thinks fit, every person whom he finds in any premises and require any such person to make and sign a statutory declaration as to the matters with respect to which he is so examined.
- (e) Require the owner of any boiler or machinery to which this Act applies to explain the working thereof.

(2) No person shall, on any examination or inquiry by a Surveyor under this section, be required to answer any question tending to incriminate himself.

(3) Except for the purposes of this Act and the exercise of his functions under this Act, a Surveyor shall not disclose to any person any information which in the exercise of those functions he acquires with respect to any boiler or machinery.

7. Owners to allow entry and inspection - The owner and his agents and servants shall at all times furnish the means required by any Surveyor for an entry, inspection, examination, and inquiry or the exercise of any other powers under this Act.

11. Issue of certificates of inspection - (1) Where a Surveyor has inspected any boiler or machinery to which this Act applies and is satisfied.

- (b) In the case of a lift, crane, or winding engine that it is securely guarded and is in good repair and may be safely used for the purpose for which it is then used or intended to be used -

He shall on payment of the prescribed fee, issue to the owner a certificate in such form as the Minister from time to time approves.

(3) Any certificate issued under this section to the owner of a lift or crane may contain such conditions in respect of the number of passengers or the load that may be carried by the lift, or in respect of the load that may be carried by the crane, as the ~~Minister thinks fit.~~

13. ~~Duration of certificate for other machinery - (1) Subject to the provisions of subsection three of this section, the certificate issued to the owner of any machinery to which this Act applies for which a certificate is required shall remain in force for such period as may be stated in the certificate in that behalf.~~
 - (2) Any such period shall not exceed -
 - (a) Twelve months in the case of a lift. (Note: effective from 1 April 1989).
 - (3) The Secretary may, on the report of a Surveyor, cancel or suspend any such certificate if any material alteration is made in or to the machinery, or if the machinery is not at all times kept securely fenced and guarded and in good repair, and fit to be safely used for the purpose for which it is used, or in any other case in which he deems cancellation or suspension of the certificate to be necessary in the interests of safety.
14. Certificate to be exhibited in conspicuous place - (1) The certificate granted to the owner of any boiler or machinery to which this Act applies shall be exhibited in some conspicuous place where it can be readily seen by all persons working at or with the boiler or machinery.
16. Persons having boilers and machinery subject to this Act to notify Surveyor - (1) Every person who becomes the owner of any boiler or machinery to which this Act applies shall within one month thereafter send to the Surveyor for the time being in charge of the district where the same is, or in which it is intended to use, keep, or work the same, a notice stating the name of the owner, the place or town where the boiler or machinery is erected, kept, or intended to be used, and the nature and kind of the boiler or machinery.
 - (2) Every person who sells or absolutely disposes of any such boiler or machinery to any person shall forthwith give notice to the Surveyor stating the name, occupation, and abode of the person to whom the sale or disposition has been made.
17. Chief Surveyor may prescribe standard requirements -
 - (1) The Chief Surveyor may from time to time prescribe standard requirements to be observed in the design and construction of boilers, lifts, and cranes so as to secure the safe working thereof.
18. Drawings of boilers, lifts, and cranes to be submitted to Chief Surveyor - (1) The owner or other person at whose request the first inspection of any boiler, lift, or crane is made shall, not later than the date of making application for that inspection, forward to the Chief Surveyor a drawing of the boiler, lift or crane accompanied by the prescribed fee and containing all such dimensions and other particulars as may be necessary to enable the Chief Surveyor to determine whether or not the Chief Surveyor's requirements have been complied with.

19. ~~When boilers and machinery to be inspected - (2) Lifts shall be inspected at least once in every 12 months. (Note: effective from 1 April 1989).~~
28. Lifts - (1) Except for the purpose of a test required and witnessed by a Surveyor, no person in charge of a lift shall permit to be carried on the lift any number of passengers, or any load, greater than that stated in the certificate given under section eleven of this Act in respect of the lift.

(2) No person shall wilfully damage a lift or remove or interfere with any safeguard, fence, or safety device of a lift.

(3) The owner of a lift shall keep the lift and all of its safety devices in good and safe condition during all times when the lift is in use and, if a certificate under section 10 of this Act is issued in respect of the lift, during the currency of the certificate.

(4) The owner of a lift shall, before making any material alteration or repairs to the lift, give to the Surveyor notice in writing setting forth full particulars of the proposed work.
30. Minimum age for persons in charge of certain items - (2) The owner of any lift, other than an automatically controlled passenger lift that may be brought into operation by the pressure of a button that causes the lift car to start and stop automatically at the landing corresponding to the button pressed, shall not permit that lift to be worked unless it is in the charge of an attendant who has attained the age of 18 years.

(3) For the purposes of subsection (2) of this section the expression "an attendant" shall mean a person who has been specially employed or authorised in that behalf by the owner of the lift or his agent.
34. Surveyors to be notified of accident - (1) Where any person is killed or suffers serious bodily injury by reason of the explosion of a boiler, or as a result of an accident caused by machinery to which this Act applies, the owner of the boiler or machinery shall within twenty-four hours after the explosion or accident send notice thereof to a Surveyor at his office or usual place of residence, and the Surveyor shall forthwith transmit the notice to the Secretary.

(2) As soon as practicable after receiving any such notice or otherwise becoming aware of any such explosion or accident the Surveyor, or some other Surveyor, shall go to the place where the explosion or accident occurred and make such inquiry as he thinks fit as to the cause of the explosion or accident, and for that purpose may examine the owner of the boiler or machinery, and ~~shall report to the Secretary the result of the inquiry.~~

~~(3) It shall not be lawful for any person to do any act likely to prevent the discovery of the cause of the explosion or accident until the Surveyor has visited the scene thereof and completed his inquiry:~~

Provided that nothing in this subsection shall prohibit the owner from doing anything reasonably necessary to prevent further damage or injury to any person or property, or from disconnecting a boiler from others connected with it.

(4) Every person commits an offence against this Act who -

- (a) Fails to give the notice required by subsection one of this section; or
- (b) Except as authorised in the proviso to subsection three of this section, does or causes to be done any act likely to prevent the discovery of the cause of the explosion or accident.

2.1.2 Other Acts of Parliament and Local By-laws. These Rules shall be considered in conjunction with any other Act of Parliament or local by-law issued by any local authority having control over lift installations.

These Rules establish minimum standards for lift installations and shall in no way supersede applicable by-laws, etc., which require more stringent standards.

2.2 Earthquake Loadings

NZS 4203 'Code of practice for General Structural Design and Design Loadings for Buildings' (with all up to date amendments) shall be used for determining loadings due to seismic accelerations on lift machinery, lift guides, lift car and landing doors and stand-by equipment where called for in these Rules. The lift particulars sheets (see Rules 5.2 and 31.3) define the precise seismic coefficient to be used.

2.3 Related Publications *See NZBC D1 Access Routes.*

"2.3 Access for People with Disabilities
Access routes to and within buildings shall comply with NZBC D1 'Access Routes'. In particular access for people with disabilities shall comply with NZBC Performances D1.3.2, D1.3.4 and D2.3.5".

~~Use of Buildings and Facilities by~~
to this standard. In accordance with Act, it is mandatory to provide an public buildings. It shall be either 5.2 or 31.3, which lifts

~~2.3.4 Other standards. Reference to standards and other publications in these Rules is meant to refer to the current edition with all up to date amendments of those documents.~~

2.4 ~~Dispensations from these Rules~~

2.4.1 Granting. The Chief Engineer Surveyor may at his/her discretion give a dispensation from any particular requirement of these Rules for a particular lift, where he/she considers that the circumstances warrant it.

~~2.4.2 Form. Such dispensations will be in writing over the signature of the Chief Engineer Surveyor and will specify in full the extent of dispensation from these Rules. Each dispensation will be granted in respect to a particular lift installation only and is not to be considered as a precedent for any future dispensation from the rules.~~

2.4.3 Revocation. The dispensation may be revoked by the Chief Engineer Surveyor at any time in writing, if it is considered that

- it is being used in such a manner that safety is compromised
- ~~it was obtained under false pretences~~

2.5 Drawings and Particulars of the Lift Installation to be Submitted

2.5.1 Quantity. Two copies of each drawing shall be submitted in all cases, with the provision that one full size copy and one 35 mm microfilmed copy mounted on an aperture card will be considered as two copies, provided that the microfilmed aperture cards are to the Department of Defence American Specification or equal.

2.5.2 Quality. Each drawing shall be of microfilm quality as laid out in "Specification for the Preparation of Drawings by New Zealand Government Offices for 35 mm Microfilming".

2.5.3 Content.

1. All drawings shall be in the English language. Units shall be in metric or in accordance with relevant Section of these Rules and shall be full as to be built working drawings, fully dimensioned in all respects.
2. Weld details shall be shown on each relevant drawing.
3. Each drawing shall bear an individual and unique number. Where, if for any reason an amendment or modification is made, then the new drawing shall:
 - (a) identify each amendment or modification cumulatively; and
 - (b) bear a sequential modification number or letter.

For Example: A drawing to a revision B shall identify all the changes from the initial drawing to revision A and also identify all the changes from revision A to revision B.

~~2.5.4 Presentation. In its continuing efforts to increase efficiency and reduce time taken from receipt of submissions to the issuing, where appropriate, of letters of approval, the Maritime Transport Division strongly recommends that drawings be submitted in individually folded form to approximately A4 size, if possible, and in two separate sets. To assist in this regard the submitted drawings are to be accompanied by a covering letter or transmittal document and it is recommended that the drawing numbers also are listed.~~

Drawings are required to show arrangement and construction of:

- (a) Liftwell enclosure, machine rooms, sheave rooms, etc., and pits, and their relative locations in building structure, location and sizes of accesses and openings, and clearances required on the lift particulars sheet.
- (b) Lift car and components as necessary to cover dimensions and details required on the lift particulars sheet.
- (c) Diagrammatic reeving of ropes for suspended lifts.
- (d) For observation lifts, to clearly show the extent of glazing in car and liftwell, method of fixing and specification of glass. For open type liftwells, details of floor level partitions are to be shown.

NOTES:

1. ~~The supporting calculations required by the rules for ~~with self~~ brackets need not be supplied when ~~with self~~ type approved guide rail brackets are used.~~

~~In this case the bracket type identity together with the date of approval is to be shown.~~

2. Lift contractors should endeavour to ensure that, at an early stage, architects, builders, etc., are aware of the Power Lift Rules 1989 and their requirements on aspects of the lift installation such as ventilation, pit drainage, accesses to machine rooms, lift clearances, etc. Ignorance of the Rule requirements or errors in building construction are not in themselves sufficient grounds for consideration of any dispensation from meeting those requirements and very costly modifications can result.

Ultimately architects, builders etc., are responsible for compliance with the sections of these rules that apply to their sections of work and affect materials in their supply.

2.6 Certificates to be Submitted

The following aspects of the design and/or construction of the lift installation shall be verified as to compliance with these Rules by a certificate from an approved signatory.

~~(a) The electrical installation (Rule 24.26) - A registered engineer or lift company employee, if authorised as stated in this Rule, however compliance with the electrical wiring regulations is to be verified by the local power supply authority.~~

*(b) The hoist ropes (Rule 16.1) - Manufacturer's certificate.

*(c) Oil buffers (Rule 10.5.8) - Telarc approved test laboratory.

~~(d) The analysis of loads for supporting and overhead structures i.e. beams, trimmer beams, floors, foundations, lifting beams etc (Section 6 and Rule 20.12.2) - A registered engineer.~~

(e) Strength of liftwell enclosures (Rule 12.2) - Telarc approved test laboratory or a ~~registered engineer~~, *appropriately qualified & experienced.*

*(f) Strength of car and landing doors (Rule 13.3.1) - Telarc approved test laboratory or a ~~registered engineer~~, *appropriately qualified & experienced.*

(g) Welder qualification certificates - Certificates to be ~~signed by~~ *Inspecting Engineer Surveyor. Available for inspection.*

~~(h) For observation lifts -~~

(i) Manufacturer's certificates for glass.

(ii) Support of and mounting of glass for car and liftwell under normal and emergency operating conditions - A ~~registered engineer~~.

~~(i) Design and Construction of the supports and foundations for the hydraulic cylinder (Rule 31.6) - registered engineer.~~

(j) For caisson used to protect hydraulic cylinder (Rule 34.3.7) - Manufacturer's certificate.

*NOTE: Type tested equipment which has been proven as follows will be accepted if it is accompanied by the required documentation.

(i) In Australia and used under the Lift code SAA 1735 with the "approval" of the respective state inspection authorities, or

(ii) the U.S.A. and used under the ANSI/ASME A17.1 Lift code with the "approval" of the respective state inspection authorities, or

(iii) the United Kingdom and used under the Lift code BS 5655 with the "approval" of the authorised inspection authorities, or

- (iv) in Europe and used under the CEN Lift standard EN81 with the approval of the authorised inspection authorities;

2.7 Certificate of Inspection

This Rule shall be applied to all lifts regardless of the date of original commissioning. A valid and current certificate of inspection shall at all times be displayed in the car of all lifts. The certificate must be placed in a clear vandal proof frame which is securely fixed, by attachments which cannot be tampered with, to a wall of the car in a conspicuous position.

Certificates of Inspection will not be issued unless this requirement is complied with.

2.8 Lift Security Systems

2.8.1 Location. Equipment pertaining to the security systems for lifts may be located in the lift machine room in accordance with section 7.

2.8.2 Securing. The securing of all security equipment shall be in accordance with section 2.2.

2.8.3 Requirements. Lifts fitted with security systems shall comply fully with these rules. Attention is drawn specifically to the requirements for operation of the lifts under normal, emergency, earthquake and fire conditions.

2.8.4 Failure. The failure of any equipment associated with a lift security system shall not affect the reliability or safety of the lift.

2.9 Building Security Systems

Where a building or floor or floors of a building is protected by a security system the owners or occupiers of the building, floor or floors concerned shall, on consultation with the lift contractor, provide a safe and adequate access route to the lift machine room for lift service personnel. It may also be necessary for lift service personnel to gain access to the liftwell from any car landing area.

SECTION 3 - DEFINITIONS

The following terms, where used throughout these Rules, shall have the meanings given to them in this section.

NOTE: A number of terms, which do not appear in the Rules, have been included for the convenience of architects, engineers and manufacturers as a means of promoting standardization of nomenclature in the lift industry.

3.1 Alteration

Any change in the design of or addition to the equipment other than ordinary maintenance, repairs or replacements.

3.2 Annunciator, Car

An electrical device in the car which indicates visually the landings at which a lift landing signal registering device has been actuated.

3.3 Approved

Approved in writing by ~~the Chief Engineer-Surveyor~~ the territorial Authority or building certifier acting within the scope of their approval under the building act.

3.4 Apron

See 3.23 'Car Apron or Landing Apron'.

3.5 Astragal

A moulding applied to the meeting faces of a door panel and/or door jambs.

3.6 Attendant

A person who has been specially employed or authorised in that behalf by the owner of the lift or his/her agent to be in charge of operating the lift. (~~refer clause 30 of the Boilers, Lifts and Cranes Act 1950~~)

3.7 Attendant Controlled Lift

A lift which is directly under the control of an attendant (refer above) and which can be started only by means of a starting switch or button in the car, and cannot be controlled from landing pushes.

3.8 Authorized Person

A person authorized or selected by the owner or person in charge of a building to carry out duties, other than those of lift attendant or lift engineer, in connection with the lift.

3.9 Bow Member

The top horizontal member of the car frame.

3.10 Buffer

A device designed to absorb the impact of a lift car or counterweight.

3.11 Buffer Clearance, Car

The distance between the car buffer striker plate and the striking surface of the fully extended car buffer when the car floor is level with the bottom landing.

3.12 Buffer Clearance, Counterweight

The distance between the counterweight buffer striker plate and the striking surface of the fully extended counterweight buffer when the car floor is level with the top terminal landing.

3.13 Buffer Member

The bottom horizontal member of the car frame.

3.14 Buffer, Oil

A buffer using oil as a medium which absorbs and dissipates the kinetic energy of the descending car or counterweight.

3.15 Buffer, Oil, Stroke

The oil-displacing movement of the buffer, plunger or piston, excluding the travel of the buffer plunger accelerating device.

3.16 Buffer, Spring

A buffer which is capable of absorbing, in a spring, the kinetic energy of the descending car or counterweight.

3.17 Buffer, Spring, Load Rating

The load required to compress the spring an amount equal to its stroke.

3.18 Buffer, Spring, Stroke

The maximum distance the contact end of the spring can move under a compressive load.

3.19 Buffer, Solid

A device, other than an oil or spring buffer, designed to stop a descending car or counterweight by absorbing the impact.

3.20 Cam (Ramp)

A wedge-shaped device fixed in a liftwell or on a car or counterweight and serving to operate control apparatus by means of the movement of the car or counterweight.

3.21 Cam, Retiring

A device incorporating a cam attached to a car and arranged to retract automatically from its operating position.

3.22 Car

The load-carrying unit including its platform, car frame enclosure and car door.

3.23 Car Apron or Landing Apron

A protective screen, attached to the underside of the car platform or lift landing sill to prevent objects being trapped between the car platform and landing threshold.

3.24 Car Door

A single or multipanel door that closes a car entrance.

3.25 Car Enclosure

The enclosing body of the lift car which comprises the sides and roof, and which is built upon the platform.

3.26 Car Entrance

The opening in the car enclosure through which normal access is available between the lift car and landings.

3.27 Car Frame

The supporting frame to which the car platform, upper and lower sets of guide shoes, car safety gear and the hoisting ropes or hoisting-rope sheaves are attached.

3.28 Car Frame, Overslung

A car frame to which the hoisting-rope fastenings or hoisting-rope sheaves are attached to the top horizontal member of the car frame.

3.29 Car Frame, Underslung

A car frame to which the hoisting-rope fastenings or hoisting-rope sheaves are attached to the bottom horizontal member of the car frame.

3.30 Car Platform

The structure which forms the floor of the car and which directly supports the load.

3.31 Clearance, Mechanical, Bottom Car

The clear, vertical distance from the pit floor to any fitting attached to the car when the car rests on its stops or fully compressed buffer.

3.32 Clearance, Man, Bottom Car

The clear vertical distance from the pit floor to the lowest structural or mechanical part, equipment or device installed beneath the car platform, excepting guide shoes, guide rollers, safety jaw assemblies and platform aprons or guards, when the car rests on its stops or fully compressed buffer.

3.33 Clearance, Mechanical, Top Car

The shortest vertical distance between the top of the car crosshead or between the top of the car, or equipment mounted on car roof where no crosshead is provided and the nearest part of the overhead structure, when the car floor is level with the top terminal landing.

3.34 Clearance, Man, Top Car

The shortest vertical distance between the top of the car crosshead or between the top of the car where no crosshead is provided and the nearest part of the overhead structure, when the car floor is level with the top terminal landing.

3.35 Clearance, Top, Counterweight

The shortest vertical distance between any part of the counterweight or component mounted thereon and the nearest part of the overhead structure or any other obstruction when the car floor is level with the bottom terminal landing.

3.36 Compensating Ropes or Chains

Ropes or chains suspended from the car frame and counterweight to balance the weight, or part of the weight, of the hoist ropes throughout the travel of the car.

3.37 Contact, Car Door

A contact operated by the movement of a car door in such a manner that electrical contact is made only when the door is closed.

3.38 Contact, Enclosure Or Landing Door

A contact operated by the enclosure or landing door in such a manner that electrical contact is made only when the door is closed.

3.39 Contactor

An electro-magnetically operated switch for making or breaking a main electrical circuit.

3.40 Control

The system governing the starting, stopping, direction of motion, acceleration, speed and retardation of the lift.

3.41 Control, Rheostatic

A system of control which is accomplished by varying resistance and/or reactance in the armature/rotor and/or field/stator circuit of the driving machine motor.

3.42 Controller

A device or group of devices which directs the operation of the equipment and/or its auxiliaries.

3.43 Counterweight

A moving weight employed to balance the weight of the lift car and part of the rated load.

3.44 Counterweight, Flying

A counterweight attached directly to the lift car by suspension ropes which are not driven by the driving machine. Where two or more counterweights are employed, one of which is driven by the machine and the other is attached to the car, the former is termed 'the counterweight' and the latter 'the flying counterweight'

3.45 Crosshead, Beam, or Top Member

As for Bow Member; the top horizontal member of the car frame.

3.46 Door, Biparting

A vertically or horizontally sliding door, consisting of two or more sections so arranged that the sections or groups of sections open away from each other and so interconnected that all sections operate simultaneously.

3.47 Door, Landing

A single or multipanel door that opens and closes the landing entrance.

3.48 Door, Locking Device, Landing

A device which secures a landing door in the closed position unless the car is stopped at that landing and the unlocking of which is controlled by the position of the lift car.

3.49 Door Lock, Electro-Mechanical

A combination in one unit of a door contact with a door locking device.

3.50 Door, Manually Operated

A door which is opened and closed solely by hand.

3.51 Door, Power Operated

A door which is opened and/or closed by motive power other than hand power.

3.52 Door, Self-Closing

A door which is opened manually and which closes automatically when released.

3.53 Drum or Sheave Diameter

The 'diameter' of a drum, sheave or pulley, shall mean the centre to centre measurement of the rope wound on it.

3.54 ~~Emergency Stop Button~~ ^{switch} & TOP SWITCH .

A ~~push-button (spring return)~~ ^{switch} designed to open the control circuit and so cause the lift car to stop when the ~~button is pressed~~. ~~The contacts reclose when pressure is released from the button.~~ ^{switch is operated.}

3.55 Fire - Resistance Rating

The measured time in hours or fractions thereof that the material or construction will withstand fire exposure as determined by fire tests conducted in conformity to recognized standards.

3.56 Fire - Resistive Construction

A method of construction which prevents or retards the passage of hot gases or flames as defined by the fire resistance rating.

3.57 Governor, Speed

An automatic device which brings a lift car or counterweight to rest by operating the safety gear in the event of the speed exceeding a predetermined limit.

3.58 Guides

The rails by which the car and counterweight are kept true in their motion.

3.59 Guide Bracket

A member attached to the building or structure and to which the guides are fixed.

3.60 Guide Shoes or Rollers

Attachments to the car frame and counterweight by which they are continuously aligned with the guides.

3.61 Inching Device, Manual

A mechanism which, when controlled by the operator by means of up and down continuous pressure switches, will move the car within the inching zone towards the landing, but not away from it.

3.62 Installation

A complete lift including its liftwell, liftwell enclosure and related construction and all machinery and equipment necessary for its operation.

3.63 Landing

That portion of a floor, balcony or platform used to receive and discharge passengers and/or goods.

3.64 Landing, Bottom

The lowest terminal landing.

3.65 Landing, Button

A switch operated by a push button or other manual device located at a landing for the purpose of calling the lift car to that landing.

3.66 Landing, Top

The highest terminal landing

3.67 Landing Zone

A zone extending above and below a landing by a specified distance.

3.68 Levelling (or Anti-Creep) Device

A mechanism associated with electrohydraulic lifts which will automatically correct a change in the car level caused by leakage in the hydraulic system.

3.69 Levelling Device, Car

Any mechanism which will move the car, at a reduced speed, within the levelling zone towards the landing only, and stop it automatically at the landing.

3.70 Levelling Zone

The limiting distance above or below a landing within which the levelling device may cause movement of the car towards the landing.

3.71 Lift

Means an appliance used for raising and lowering persons or goods by means of a car, the movement of which in a vertical or approximately vertical direction is maintained by guides; and includes the supports, well, enclosures, car, and the whole of the mechanical and electrical apparatus required in connection with the operation and safety of a lift.

3.72 Lift, Electric

A lift the machinery of which is driven by an electric motor.

3.73 Lifts, Goods

A lift designed primarily for the carriage of goods.

3.74 Lift, Hydraulic

A lift in which the motion of the platform or car is obtained from the action of liquid under pressure acting on a piston or ram.

3.75 Lift Hydraulic, Direct Acting

A drive in which the ram or piston is directly attached to the car or platform .

3.76 Lift, Hydraulic, Suspended (Roped)

A drive in which the relative motion of the ram or piston and cylinder is transmitted to the car or platform by a rope or ropes by which the car or platform is suspended.

3.77 Lift, Observation

A passenger lift in which the car and liftwells enclosure when used, have large transparent panels whereby the passengers may have a panoramic outlook.

3.78 Lift, Overslung

Refer car frame, overslung 3.28.

3.79 Lift, Passenger

A lift designed primarily for carrying passengers.

3.80 Lift, Power

A lift in which the motion of the car is obtained through the application of any form of energy other than manual energy and/or gravitational force.

3.81 Lift, Suspended (Roped)

A lift in which motion of the platform or car is obtained from a rope or ropes attached directly or indirectly to the platform or car.

3.82 Lift, Suspended, Drum

A lift in which the suspension rope(s) are fastened to and wind on a drum.

3.83 Lift, Suspended, Traction

A lift in which the motion of the car is obtained through friction between the suspension rope(s) and the sheave.

3.84 Lift, Underslung

Refer car frame, underslung 3.29

3.85 Liftwell (Liftshaft)

A liftwell is an enclosure which provides an accessway for the travel of a lift. or group of lifts .

Where two to four lifts are grouped together, they may be housed in a common enclosure providing it is of uniform cross section and height.

In other cases separate enclosures (liftwells) shall be provided.

3.86 Liftwell, Emergency Access Door

An access door provided in the liftwell enclosure for emergency or maintenance purposes and which is distinct from the normal landing doors.

3.87 Liftwell Enclosure

Any structure which separates the liftwell from its surroundings.

3.88 Liftwell, Multiple

A liftwell for more than one lift.

3.89 Liftwell, Single

A liftwell for a single lift.

3.90 Machine, Driving

The power unit which applies the energy necessary to raise and lower the car.

3.91 Machine Drum

A driving machine in which the hoist ropes are fastened to and wind on a drum.

3.92 Machine, Electric

A driving machine in which the energy is applied by an electric motor. It includes the motor and brake, the driving sheave or drum together with its connecting gearing.

3.93 Machine, Geared

A driving machine in which the energy is applied by an electric motor. It includes the motor and brake, the driving sheave or drum together with its connecting gearing.

3.94 Machine, Gearless

A driving machine in which power is transmitted to the driving sheave from the motor without intermediate reduction gearing.

3.95 Machine, Hydraulic

A driving machine in which the motion of the car is obtained from the action of a liquid under pressure acting on a piston or ram.

3.96 Machine, Traction

A driving machine in which the motion of the car is obtained through friction between the hoist ropes and the sheave.

3.97 Machine Room

The enclosed space used to house the driving machinery and control gear of a lift.

3.98 Operating Device

A car switch, push-button, wheel, lever or other device employed to actuate the control equipment.

3.99 Operation

The method of actuating the control equipment.

3.100 Operation, Car Switch (Attendant Controlled)

A method of operation by which the movement of the lift car is directly under the control of an attendant.

3.101 Operation, Dual (Passenger and Attendant Controlled)

A method of operation which can be switched to provide for either passenger control or attendant control.

3.102 Overhead Structure

All the structural members, platforms, etc., supporting the lift machinery, sheaves and equipment at the top of the liftwell.

3.103 Overtravel (Overrun)

Refer Runby, Top 3.117.

3.104 Passenger

A person other than an attendant who is carried by a passenger lift.

3.105 Passenger Controlled Lift

A lift in which the operation is designed to be under the control of a person other than an attendant.

3.106 Pit

The space in the liftwell below the level of the bottom landing sill.

3.107 Platform

The structure which forms the floor of the car and which directly supports the load.

3.108 Position Indicator

A device situated at the lift landings and/or in the car, which indicates the position of the car in the liftwell

3.109 Rated Load

The load which the lift is designed to carry.

3.110 Rated Speed

The speed at which the equipment is designed to operate.

3.111 Registered Engineer

An engineer who is registered under the Engineers Registration Act, 1924 and holds a current annual practising certificate.

3.112 Relay

An electro-magnetically operated switch for making or breaking a control or auxiliary circuit.

3.113 Re-opening Device

Is a device which when actuated causes power-operated doors to stop closing and fully re-open.

3.114 Retiring Cam

A lock operating cam, usually attached to the car and arranged to retract automatically from its operating position.

3.115 Roping Ratio, Traction Lift

The ratio of the speed of the rope to that of the lift car.

3.116 Roping Ratio, Suspended (Roped) Hydraulic Lift

The ratio of the speed of the ram to that of the lift car.

3.117 Runby (Overtravel), Top

The distance a lift car can travel above its top terminal landing before the ram strikes its mechanical stop.

3.118 Safety Gear

A mechanical device attached to the car frame or to the counterweight, to stop and hold the car or counterweight to the guides, in case of predetermined overspeed or free fall.

3.119 Secondary Floor

That floor immediately below the machine room floor and used to house sheaves and/or auxiliary equipment.

3.120 Shall and Should

The word 'shall' is to be understood as mandatory, and the word 'should' as advisory.

3.121 Sheave

A grooved wheel around which one or more ropes are arranged to pass.

3.122 Sheave, Compensating Rope

The sheave around which the compensating rope(s) pass.

3.123 Sheave, Diverter

A sheave interposed between the overhead sheave and the counterweight to provide lateral separation between the counterweight and car.

3.124 Sheave, Traction or Drive

A powered sheave which, through friction, moves suspension rope(s) to provide motion of the lift car.

3.125 Sling Members, Uprights or Stiles

The vertical members of a car frame connecting the bow and buffer members.

3.126 Switch, Derailment

A device actuated by the derailment of the counterweight at any point in the liftwell to provide information to the control that the counterweight has left its guides.

3.127 Switch, Final Limit

An emergency switch operated by the movement of the car, to stop the lift by causing the power to be removed from the lift motor and brake, in the event of the car travelling a predetermined distance beyond a terminal landing.

3.128 Switch, Slack Rope

A switch or combination of switches arranged to stop the lift if any of the hoist ropes slacken by a predetermined amount.

3.129 Telarc

The Testing Laboratory Registration Council of New Zealand established under the Testing Laboratory Registration Act, 1972

3.130 Telarc, Approved Signatory

An officer approved by the Telarc Council, to sign test documents bearing the Council's endorsement.

3.131 Travel

The vertical distance between the top and bottom landings serviced by the lift.

3.132 Uprights

Refer Sling Members 3.125.

3.133 Working Pressure

The pressure measured at the cylinder of an hydraulic lift when lifting the car and its rated load at rated speed.

SECTION 4 - MATERIALS AND METHODS OF CONSTRUCTION

4.1 ~~General~~ MATERIALS:

4.1.1 ~~Materials Conforming to Approved National Standard Specifications.~~
Where a material is nominated for use in the construction of a lift installation, it shall comply with all the appropriate requirements of one of the standards listed in Rules 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7. (see Rule 2.3.2) ~~or equivalent national standards.~~

4.1.2 Materials Not Conforming to Approved National Standard Specifications. Where consideration is being given to the use, in the construction of a lift installation, of a material for which no standard specification exists, then the material shall be fully tested to show that it fully meets the requirements of one of the standards listed in Rules 4.2, 4.3, 4.4, 4.5, 4.6 and 4.7.

4.2 Steel (Other Than Castings)

4.2.1 Structural Steel Sections and Plates. Steel used in the construction of a lift installation shall comply with one of the following standards:

AS 1163	Welded and Seamless Steel Hollow Sections for General Structural Purposes.
AS 1204	Structural Steels - Ordinary Weldable Grades.
AS 1205	Structural Steels - Weather Resistant Weldable Steels.
BS 4: Part 1	Structural Steel Sections; Hot-Rolled Sections.
BS 4848: Part 2	Hot-Rolled Hollow Sections.
BS 4360	Weldable Structural Steels.

4.2.2 Forgings. Steel forgings shall comply with:

AS 1448	Carbon Steels and Carbon-Manganese Steels - Forgings.
BS 29	Carbon Steel Forgings for Shipbuilding and General Engineering Purposes.

4.2.3 Rivets. Steel rivets shall comply with:

AS B118	Dimensions of Small Rivets for General Purposes.
BS 4620	Rivets for General Engineering Purposes.

4.2.4 Studs, Bolts, Nuts and Washers

4.2.4.1 Materials. Steel for studs, bolts, nuts and washers shall comply with one of the following standards:

AS 1252	General Grade High Strength Bolts with Associated Nuts and Washers for Structural Engineering (I.S.O. Metric Series).
AS 1442	Hot-Rolled Carbon Steels and Carbon Manganese Steels (Bars and Semi-finished Products).
AS 1443	Carbon Steels and Carbon Manganese Steels - Cold - finished bars.

AS 2506 Wrought Alloy Steels of the former BS 970;
En Series Type.

4.2.4.2 Dimensions. The dimensions of studs, bolts, nuts and washers shall conform with the following standards:

AS 1110	ISO Metric Hexagon Precision Bolts and Screws.
AS 1111	ISO Metric Hexagon Commercial Bolts and Screws.
AS 1112	ISO Metric Hexagon Nuts and Castle Nuts.
AS 1237	Flat Metal Washers for General Engineering Purposes (metric series).
AS 1252	General Grade High-Strength Steel Bolts with Associated Nuts and Washers for Structural Engineering (ISO Metric Series).
AS 1427	ISO Metric Machine Screws.

4.2.5 Tubing. Steel tubes shall comply with:

AS 1835	Tubes for Pressure Purposes - Seamless Steel.
AS 1836	Tubes for Pressure Purposes - Welded Steel.

4.3 Castings

4.3.1 Steel Castings. Carbon steel castings shall comply with:

AS 2074	Steel Castings for General Engineering Purposes.
BS 3100	Steel Castings for General Engineering Purposes.

4.3.2 Grey Iron Castings. Grey iron castings shall comply with the following standards:

AS 1830	Iron Castings - Grey Cast Iron.
BS 1452	Grey Iron Castings.
AS 2544	Grey Iron Pressure Pipes and Fittings.

4.3.3 Malleable Castings. Malleable iron castings shall comply with the following standards:

AS 1832	Malleable Cast Iron.
BS 6681	Malleable Cast Iron.

4.3.4 Spheroidal or Nodular Graphite Iron Castings. Iron castings with spheroidal or nodular graphite shall comply with:

AS 1831	Iron Castings-Spheroidal or Nodular Graphite Cast Iron.
BS 2789	Iron Castings with Spheroidal or Nodular Graphite.

In designing components to be made of spheroidal or nodular graphite cast iron and subject to shock stress, account shall be taken of the fact that the nominal impact strength of spheroidal graphite iron is only one-third of that of cast mild steel; in particular the design and machining of components shall be such as will avoid excessive stress concentrations or notch effects in any region.

4.4 Timber

Timber shall not be used for any of the structural parts of the lift car or lift guiding system. Small amounts of timber for fixing, packing, and for architraves are acceptable where permitted by the local building by-laws

Note: Where liftwell enclosures are constructed of timber, connections through which loads are transmitted from the lift machinery, guide rails and other equipment are to be by means of through bolting or equivalent. Nailed or screwed connections are not acceptable.

4.5 Concrete

4.5.1 Structural Concrete. All cement or concrete shall comply with the ~~appropriate requirements of the relevant New Zealand Standard.~~ NZS 3109

4.5.2 Concrete Piping. All cement or concrete piping shall comply with:

AS 1392	Precast Concrete Pressure Pipes.
AS 1711	Asbestos Cement Pressure Pipes.

4.6 Welding

All welding used in the construction of lift installations shall comply with NZS 4701 - Metal Arc Welding of Steel Structures.

All structural welding shall be carried out by welders who have passed the relevant tests specified in NZS 4711 - Qualification Tests for Metal Arc Welders.

4.7 Glass

4.7.1 Glass, Liftwell or Barriers. Glass used for glazed barriers or glazed liftwells to a height of 2.5 metres at levels accessible to people (see Rule 12.6.2(b)) shall comply with one of the following standards:

BS 857	Safety Glass for Land Transport.
BS 5544	Anti-bandit Glazing (Glazing Resistant to Manual Attack).
BS 6206	Impact performance requirements for flat safety glass and safety plastics for use in buildings.
ANSI Z97.1	Glazing material.

~~or an equivalent national glazing standard. Other glass used shall comply with the local building by-laws.~~

4.7.2 Use of Glass in Lift Cars. Glass used for lift cars shall comply with Rule 22.18.

All glass used in lift cars either functional or decorative shall comply with the following requirements.

- (a) Plain glass shall not be used in lift cars except to cover regulatory notices, certificates, etc and annunciators, signalling devices and lamps.
- (b) Plate glass 6 mm and over in thickness may be used in areas not greater than 0.1 m^2 , and wire-reinforced glass or tempered glass may be used in areas not greater than 0.2 m^2 .
- (c) For areas greater than in (b) above the glass concerned shall comply with the relevant parts of Rule 22.18.