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### HEALTH ACT, 1911-1968.

Department of Public Health,  
Perth, 14th September, 1970.

P.H.D. 9/70.

HIS Excellency the Governor in Executive Council, acting pursuant to the provisions of the Health Act, 1911-1968, has been pleased to make the regulations set forth in the schedule hereunder.

W. S. DAVIDSON,  
Commissioner of Public Health.

#### Schedule.

### HEALTH ACT (PUBLIC BUILDING ELECTRICAL) REGULATIONS.

#### PART I.—PRELIMINARY.

1. These regulations may be cited as the Health Act (Public Building Electrical) Regulations.
2. These regulations are divided into Parts as follows:—
  - Part I.—Preliminary, regs. 1-4.
  - Part II.—Public Buildings—General Administrative Requirements, regs. 5-8.
  - Part III.—Public Buildings—General Technical Requirements, regs. 9-33.
  - Part IV.—Public Buildings with Internal Auditoriums, regs. 34-39.
  - Part V.—Stage Lighting and Equipment, regs. 40-46.
  - Part VI.—Drive-in Theatres, regs. 47-54.
  - Part VII.—Circuses, Travelling Shows and Tents, regs. 55-59.
  - Part VIII.—Safety and Emergency Lighting Systems—
    - Division 1—Safety Lighting Systems, regs. 60-65.
    - Division 2—Emergency Lighting Systems, regs. 66-70.
    - Division 3—Additional Rules Applying to both Safety and Emergency Systems, regs. 71-75.

## Part IX.—Essential Electrical Systems.—

Division 1—General Private Hospitals, regs. 76-84.

Division 2—Nursing Homes, regs. 85-88.

Part X.—Schools, Kindergartens, Pre-schools and Infant Welfare Centres, regs. 89-95.

Part XI.—Cinematograph Cabins, regs. 96-99.

Part XII.—Ten Pin Bowling Alleys, regs. 100-102.

Part XIII.—Exit Lights and Signs, regs. 103-107.

Part XIV.—Generating Equipment—Engine and Battery Rooms, regs. 108-114.

Part XV.—Batteries and Chargers for Public Buildings, regs. 115-122.

Part XVI.—Miscellaneous, regs. 123-124.

Appendix A.

Appendix B.

## 3. These regulations shall be read in conjunction with—

- (a) Electricity Act, 1945 and regulations for the time being in force thereunder;
- (b) The Standards Association of Australia Wiring Rules No. CC1, Part 1 of 1969 and all amendments made thereto prior to the coming into operation of these regulations;
- (c) Uniform Building By-laws for the time being in force under Part XV of the Local Government Act, 1960;
- (d) Public Building Regulations for the time being in force under the Health Act, 1911; and
- (e) the regulations for the time being in force under the Inspection of Machinery Act, 1921.

## 4. In these regulations, unless the contrary intention appears—

“approved” means approved by the Commissioner of Public Health in writing;

“auditorium” means that part of the building usually occupied by an audience;

“authorised inspector” means an inspector appointed under the Health Act, 1911 and includes any acting or assistant inspector;

“certificate of approval” means a certificate issued by the Commissioner certifying that an electrical installation in a public building named therein is in accordance with the requirements of these regulations;

“cinematograph or projector” means any apparatus designed for the purpose of projecting onto a screen, still or moving pictures;

“concessional area” means that portion of a drive-in theatre that is set aside for the preparation, sale and service of food stuffs;

“emergency lighting system” means a lighting system obtained from an alternator set for the purpose of supplying lighting and power to less critical essential services in hospitals or lighting and power in other public buildings when the normal power supply is disrupted;

“fire hazard” means a situation conducive to the creation of fire;

“general private hospital” has the same meaning in these regulations as is given to that expression in the Private Hospitals Regulations 1970 in force under the Health Act, 1911.

“maintained lighting” means that portion of the general lighting which is installed for the purpose of assisting movement about the premises;

“panic precautions” means precautions to prevent the sudden alarm in an audience which could result in the panic or stampede of the audience;

“safety lighting system” means a lighting system obtained from a battery charger or battery source, provided to assist the public on entering or leaving a building, and to ensure that an immediate lighting source is available for essential services upon failure of the normal power supply.

## PART II.—PUBLIC BUILDINGS—GENERAL ADMINISTRATIVE REQUIREMENTS.

5. (1) Before carrying out any new electrical installation or modifying or adding to an existing electrical installation in a public building, the owner, occupier or person having charge or control of the public building shall give notice of his intention of having the work carried out to the Commissioner.

(2) Notice to the Commissioner pursuant to subregulation (1) of this regulation shall be accompanied by a plan and specification<sup>1</sup>, in triplicate, prepared by a draftsman and drawn to a scale of one inch to thirty-two feet for site plans and one inch to eight feet for detailed drawings, showing the position and type of all fittings and equipment, including details and layouts of switchboards, circuit grouping in the building and any other information required by the Commissioner.

<sup>1</sup> For guidance in the preparation of plans for buildings with auditoriums refer to typical drawings numbered 1, 2 and 3 in Appendix A to these regulations.

(3) Work shall not be commenced on an electrical installation until the approval of the Commissioner for that installation has been obtained in writing.

(4) Upon completion of any electrical work on a public building, the owner, occupier or person having charge or control of the public building shall apply to the Commissioner for a certificate of approval.

(5) The Commissioner shall issue a certificate of approval when the work on an electrical installation has been completed to his satisfaction.

6. A copy of a drawing showing the layout of the electrical installations and the position of all switchboards shall, when required by the Commissioner, be posted in an approved position in a public building and kept there in good order and condition.

7. Inspections and tests of the electrical installations in any public building may be made by the Commissioner or an authorised inspector from time to time, and the owner, occupier or person having charge or control of that public building shall provide the necessary facilities for making the inspections and tests and for this purpose shall if necessary permit the temporary removal of fittings to facilitate the tests.

8. (1) The Commissioner or a person authorised by him in writing may make such orders as he thinks fit concerning alterations to an electrical installation and specify the time in which the work is to be carried out.

(2) Where the work referred to in subregulation (1) of this regulation is not carried out within the specified time the owner, occupier or the person having charge or control of the public building shall be required to pay any expenses for subsequent inspections of the electrical installation on a cost per hour and mileage basis determined by the Commissioner.

#### PART III.—PUBLIC BUILDINGS—GENERAL TECHNICAL REQUIREMENTS.

9. (1) Every public building shall be equipped with lighting sufficient to illuminate the interior of the building and the exterior exits and passages leading to public thoroughfares.

(2) The artificial lighting of every public building shall be by means of electricity unless otherwise approved by the Commissioner, and shall comply with the S.A.A. lighting code AS—CA/30, 1965.

(3) Every part of public building to which the public is admitted shall be adequately illuminated for the whole of the time the premises are open for or occupied by the public.

10. In every electrical installation in a public building lighting final sub-circuits shall be kept separate and distinct from all power final sub-circuits.

11. In all cases in which it is intended to install temporary lighting in a public building, notice in writing of that intention shall be given to the Commissioner and his approval shall be obtained in writing before installation is commenced.

12. (1) Lights installed to illuminate corridors, passages, stairways and ramps shall be connected where possible to at least two circuits and alternately wired, and shall be located in such a position that lamp replacement or maintenance will not constitute a hazard and may be grouped with lights in adjacent areas, provided a fault in one circuit will not result in a blackout in any one area.

(2) When required by the Commissioner, a safety or emergency lighting system shall be provided in a public building.

13. The front entrance lights in a public building shall be connected to a different circuit from the foyer or front passage lights.

14. Low or extra low voltage lamps may be combined in low or medium voltage (220/250V) fittings, provided that precautions shall be taken to ensure that the different voltage lamps can only be inserted in lampholders supplied at the appropriate voltage.

15. All motor operated ventilating machinery<sup>1</sup> not controlled by a fire detection system, shall be provided with an approved device located in an approved position to enable the supply of current to be cut off in an emergency and the device and motor shall be maintained in good order and condition.

16. Every public building which is mechanically ventilated shall be provided with an approved device placed in an approved position which shows clearly if the machinery is in operation.

17. When the lighting provided for rooms in a public building is likely to produce stroboscopic effects on the rotating parts of machinery therein, steps shall be taken to reduce this phenomenon to limits acceptable by the Commissioner.

<sup>1</sup> For details of requirements for ventilating machinery and air-conditioning equipment refer to regulations 9 and 10 of the Public Building Regulations, made under the Health Act, 1911.

18. Arc lamps or apparatus using arc lamps shall not be installed in any public building without the permission of the Commissioner and when an arc lamp is installed—

- (a) it shall be provided with a switch to isolate the supply of electricity to the arc lamps;
- (b) the conductors within the machine shall be covered with a fire resistant insulating material for a distance of at least 2 ft. from the lamp; and
- (c) it shall be enclosed by a cover substantially constructed of at least 20 gge. metal designed to provide adequate ventilation and prevent sparks or heated carbon particles being emitted therefrom and so arranged that live parts of the lamp cannot come into contact therewith.

19. Electricity within a public building shall be controlled by a switchboard located within the public building.

20. Every switchboard referred to in regulation 19 of these regulations shall be supplied by mains originating at the main switchboard and shall not be controlled at any other or intermediate position.

21. Where a main switchboard supplies a public building and any other portion or portions of an installation, a separate main switch or switches fed from the live side of another main switch or switches shall be provided on the main switchboard for the exclusive control of the electrical installation in the public building and every separate main switch so provided shall be locked or installed behind a locked panel or other locked portion of the switchboard.

22. The key for any lock of a main switch shall—

- (a) be capable of locking the main switch in the "on" position; and
- (b) be mounted in a conspicuous and accessible position near the switch in a glass-fronted case on which there is displayed a notice reading "PUBLIC BUILDING'S MAIN SWITCH KEY, BREAK GLASS TO OBTAIN IN AN EMERGENCY".

23. Where the switch or switches controlling the electrical installation of a public building is or are located in a switch room, the switch room shall be locked and a key for the lock to the switch room shall be retained by the person in charge of the public building.

24. All switchboards and control boards in a public building shall be installed in positions approved by the Commissioner and the Supply Authority<sup>1</sup>, and supplied and fixed in accordance with S.A.A. requirements for public halls and shall—

- (a) be fixed in readily accessible positions;
- (b) not obstruct passageways or exit ways;
- (c) have a "dead front" construction; and
- (d) when they are in a position which is accessible to the public, be fitted with a lock or lockable switches approved by the Commissioner.

25. Switches mounted on a switch or control board shall be grouped together in approved sequence to enable convenient identification and control.

26. Switchboard surrounds and cases may be constructed of well seasoned jarrah, wandoo or other approved hardwood without lining with asbestos, or to any other requirement of the statutory electrical authority.

27. (1) An approved number of spare cartridge/fuse wedges correctly wired with a fuse element to replace in an emergency a blown cartridge/fuse wedge shall be kept in containers/supports and provided at each fuse board in the building.

(2) The temporary bridging of terminals is prohibited.

28. All wiring shall be carried out in such a manner that joints and connectors are reduced to a minimum and in no case shall they be installed in inaccessible positions.

29. (1) Infra red heaters shall not be mounted directly on a ceiling in a public building, without approval from the Commissioner.

(2) Infra red heaters shall not be operated by cord switches.

30. Where an installation is comprised of a main switchboard and one or more distribution boards, then the discrimination of protective apparatus shall provide for the isolation of the faulty circuits only.

31. All water, waste or downpipes within 8 ft. 0 in. of each other and which otherwise could be touched simultaneously shall be bonded.

32. The earth pin or terminal of all power outlets, whether installed in an earthed situation or not, shall be connected to the earthing system of the installation.

33. All accessible underground metallic pipes enclosing electric cables shall be connected at each end to the earthing system of the installation.

<sup>1</sup> An example of an acceptable layout for a typical public hall switchboard is contained in drawing No. 3 in Appendix A to these regulations.

## PART IV.—PUBLIC BUILDINGS WITH INTERNAL AUDITORIUMS.

34. Multiple circuit breakers shall not be used to protect multiphase sub-mains or final sub-circuits.

35. (1) In all public buildings containing an auditorium the electric lighting system shall be arranged in auditorium corridors, exits and other localities adjacent to the auditorium in at least two separate and distinct groups and each group may comprise a number of circuits.

(2) The groups shall be so arranged that approximately half the lights in a division of the auditorium, and if required half of those in corridors, exits or other adjacent circuits, shall be on group A and the remainder on Group B.

(3) When a stage and proscenium is installed, a separate and distinct group known as Group C shall be provided for that portion of the building.

(4) The lights in groups A and B shall be controlled as required in the S.A.A. rules at the main or approved sub-board.

36. (1) As far as is practicable, the lights comprising groups A and B referred to in regulation 35 of these regulations shall be placed alternately, and different group circuits shall not be combined in the same fitting, box, sheath, tube or enclosure as that of another group.

(2) Where more than one phase is available, and groups A and B are single-phase groups, they shall be connected to different phases.

37. Cinematograph or projector circuits shall be installed separately from Groups A, B and C and shall be supplied from independent protection devices.

38. (1) All external lights shall be wired with circuits separate to those provided for the internal lights.

(2) Where a number of lights are necessary, at least two separate circuits shall be installed so that if one circuit fails the illumination from the fittings of the other circuit shall be adequate for the safe entrance and exit from the building by the public.

(3) External lights shall be controlled independently at the main or an approved sub-board, but not the stage or Bio Box sub-board.

(4) When external or security lights are controlled by a time switch, provision shall be made to turn the lights on by a means independent of this switch.

(5) When the installation is supplied from more than one phase the circuits of adjacent external lights shall be connected to different phases.

(6) The circuits referred to in this regulation may be enclosed in one conduit if required.

39. (1) All sanitary conveniences, the approaches thereto, and sex distinguishing signs shall be illuminated<sup>1</sup>.

(2) Where conveniences are external to the main building the circuits for the lighting may be included in one of the external lighting circuits.

(3) The lights referred to in this regulation may be controlled on a switch-board or control board other than the stage or Bio Box sub-board and which is inaccessible to the public.

## PART V.—STAGE LIGHTING AND EQUIPMENT.

40. Stages, platforms and similar positions where the lighting is of necessity subject to frequent changes shall contain sufficient permanently installed circuit and control equipment to minimise the use of temporary wiring and apparatus.

41. (1) Any stage switchboard and control panel shall be located in a position approved by the Commissioner.

(2) All rules relating to stage equipment and wiring shall be in accordance with the appropriate S.A.A. rules.

42. Where, in the opinion of the Commissioner, objects may fall onto the switchboard or operator, a fire resistant protection hood shall be provided, extending the full length of the stage switchboard.

43. (1) When an elevated switchboard is installed a secure platform and means of access to the switchboard shall be provided for the operator.

(2) The platform referred to in subregulation (1) of this regulation shall be installed in an approved position overlooking the stage and be constructed of a fire resisting material with a hardwood or other non-conductive floor and shall be provided with a non-conductive handrail for the safety of the operator.

<sup>1</sup>An example of an acceptable layout for a typical external lighting installation is contained in drawing No. 2 in Appendix A to these regulations.

44. (1) An isolating switch shall be provided with each dimmer installed on stage switch or control boards.

(2) Where the lights are to be controlled by a remote parallel switch, the dimmer isolator shall contain double pole contacts connected with one pole in each side of the dimmer.

(3) All lighting dimmers shall be connected in active conductors.

45. (1) Suspended stage battens shall be securely and rigidly attached to a support at frequent intervals and the support secured with wire ropes in at least three positions on the battens over movable pulleys which will permit lowering from the normal height to within 4 ft. 0 in. of the stage floor for maintenance and servicing.

(2) When used as footlights, these battens shall be more heavily protected with stronger lamp guards than when used as overhead or proscenium battens.

46. Where a winch is required for suspended stage battens it shall be an approved ratchet type, with provision for locking the pawl in position.

#### PART VI.—DRIVE-IN THEATRES.

47. (1) A switchboard shall be installed in the cinematograph cabin of every drive-in theatre and be accessible for use by the operator.

(2) The switchboard referred to in subregulation (1) of this regulation shall control all lighting, projector circuits and electrical apparatus, and motors in the cabin and all general flood-lighting of the auditorium grounds and exit ways.

48. A sub-distribution board located in an approved position not accessible to the public shall be provided in all concessional areas, and shall control all power and lighting for the concessional area including the sanitary conveniences.

49. (1) All readily accessible electrical equipment and lighting in the playground area of a drive-in theatre shall be protected by guards.

(2) The loudspeaker pedestals, lighting and readily accessible electrical equipment in the playground area shall be operated at extra low voltage.

50. The speaker pedestal at each end of each row in a drive-in theatre shall be provided with a guide light.

51. Roadways within a drive-in theatre shall be adequately illuminated by overhead or other approved means of lighting which does not glare into the eyes of drivers of vehicles.

52. General lighting shall be provided for use in a drive-in theatre before and after a show and during interval and appropriately placed to generally illuminate the whole of the auditorium occupied by the public to enable the safe movement around the area during these periods.

53. Entrance and exit driveways in a drive-in theatre shall be continuously illuminated at all times when the premises are open to the public, by means of lights, spaced no more than 40 ft. 0 in. apart.

54. Safety lighting shall be provided in accordance with these regulations to illuminate steps and ramps leading to or from the concessional area and any auditorium building within the theatre.

#### PART VII.—CIRCUSES, TRAVELLING SHOWS AND TENTS.

55. When lighting outlets are installed and located less than 8 ft. above floor or ground level on or in those parts of an amusement park structure, circus, travelling show or tent to which the public are admitted, they shall be energised from an extra low voltage source and protected by a suitable non-flammable guard.

56. All lighting outlets, wiring and equipment within a person's reach on moving parts of a structure to which the public are admitted such as merry-go-rounds and ferris wheels, shall be energised from an extra low voltage source.

57. All cables emanating from an electrical source shall be double insulated and when laid on the ground en route to supply lights in tents, appliances, mobile sub-boards or the like they shall be protected by white painted robust boards, planks or similar covers.

58. Mobile or removable switchboards shall be protected by railing or other means, from access by the public.

59. (1) Where practical, the wiring to the lighting in amusement park structures, circuses, travelling shows and tents shall be connected over at least two circuits and when so required by the Commissioner, such wiring shall be installed.

(2) Where required by the Commissioner, exit lights shall be provided.

## PART VIII.—SAFETY AND EMERGENCY LIGHTING SYSTEMS.

## Division 1.—Safety Lighting Systems.

60. The owner, occupier or person having charge or control of a public building shall, unless exempted by the Commissioner in writing from so doing, provide a safety lighting system which will come into operation automatically upon the failure of the normal supply, and will continuously and effectively illuminate the following portions of a public building for at least one hour—

- (a) the floor, where it is stepped or is at an inclination steeper than in in 12;
- (b) every internal stairway, corridor, or passage being portion of or connected with any exit or escape way from the building;
- (c) battery, main control, plant or projection rooms; and
- (d) aisles between rows of seats.

61. (1) Aisle lights shall be fitted and suitably spaced and hooded to illuminate each aisle and tread of steps therein and the lights shall be on for the whole of the time that the auditorium lights are dimmed or extinguished while the theatre is occupied by the public.

(2) The Commissioner may require the provision of aisle lights in other parts of the theatre if, in his opinion, the illumination of such aisles during public occupation is inadequate.

(3) When, in the opinion of the Commissioner, insufficient illumination exists to permit safe evacuation of the public from an auditorium in a public building, additional safety lighting shall be included as required by the Commissioner.

62. Normal and safety lighting systems shall be so installed that a fault or accident occurring on one system shall not jeopardise the functioning of the other.

63. A pilot light indicator to show that the mains supply is connected to the safety lighting system shall be located in an approved position where it can be under constant observation.

64. Audible signals energised from a battery shall be provided to give warning of the failure of the normal supply to a safety lighting battery charger.

65. The electric supply for a safety lighting battery charger shall be obtained from a sub-main independently controlled at the main or essential services switchboard.

## Division 2.—Emergency Lighting Systems.

66. (1) Automatic switching equipment shall be designed and installed with interlocking provisions which will prevent the interconnection of normal and alternative sources of power.

(2) The equipment referred to in subregulation (1) of this regulation shall be so arranged that the load will be served by the normal power source, except when this source is interrupted for a period in excess of two seconds, then the alternative source prime mover will automatically start and, as the alternator is attaining full voltage, automatically disconnect the normal source of power and connect the essential services.<sup>1 2 3 4</sup>

67. Battery starting systems for internal combustion engines shall be provided with a battery permitting a minimum of 60 seconds continuous cranking time.<sup>5</sup>

68. Audible and visual derangement signal devices, energised from an electric storage battery which complies with Part XVI of these regulations, shall be provided for the following purposes—

- (a) to give warning of excessive over temperature and low lubricating oil pressure; and
- (b) to indicate if the main fuel storage tank contains less than two hours' operating supply,

and the derangement signals shall be located in a position where they shall be readily observed by maintenance or operating personnel at a regular work station.

<sup>1</sup> An example of the general arrangement of equipment and circuits is contained in typical drawing No. 5 in Appendix A to these regulations.

<sup>2</sup> Certain loads involving electric motors may be restored manually or by means of time delay relays in sequence so that their simultaneous starting will not overload the alternator.

<sup>3</sup> When the normal power is restored, the transfer contactor should operate automatically to disconnect the emergency system from the alternative source and connect it to the normal source, and, for this purpose, a time delay feature should be provided to prevent re-cycling or erratic operation of the transfer contactor. In addition, the prime mover should remain running for at least five minutes, to permit the load transfer to take place to the normal supply, during this time.

<sup>4</sup> In the event of intermittent fluctuations of the main supply the phase failure relay shall incorporate a time delay feature to prevent immediate operation.

<sup>5</sup> Starting equipment should be arranged to provide for a starting cycle of short cranking times, set to terminate with enough battery reserve to permit additional cranking if a malfunction occurs which prevents the engine from starting.

69. Generator sets and automatic transfer contactors and batteries serving emergency systems shall be run for at least 30 minutes under load conditions at regular intervals not exceeding two weeks and when severe storm warnings are received.

70. Generator sets shall be fitted with engine hours run meters to facilitate service.<sup>1</sup>

Division 3.—Additional Rules Applying to Both Safety and Emergency Systems.

71. (1) All safety lighting and emergency systems shall be properly maintained and tested at regular intervals not exceeding two weeks.

(2) An adequate record of maintenance and testing shall be kept in a readily accessible position.

72. D.C. and single phase A.C. automatic change-over switches or relays used in safety or emergency lighting circuits shall comply with BSS 764/1954 or other approved standard.

73. Automatic transfer and safety and emergency supply equipment shall be so located that it will be protected against hazards from external or internal conditions such as fire or floods, leaks from plumbing or drainage systems, and situations free from dust, moisture or gases.

74. The safety lighting and emergency systems shall each have adequate capacity and rating for the operation of all lighting and equipment to be served by each system.

75. The electrical characteristics of the alternator and battery sets shall be suitable for the operation of all lighting and equipment they are intended to supply, and transfer switches shall be able to carry full load currents.

PART IX.—ESSENTIAL ELECTRICAL SYSTEMS.

Division 1.—General Private Hospitals.

76. (1) When required by the Commissioner, a general private hospital shall install an emergency system which shall comprise circuits fed from a separate alternator set designed to come into operation automatically and restore power in the event of a failure of the normal supply.

(2) The circuits referred to in subregulation (1) of this regulation shall be run in separate conduits, boxes or ducts from the normal system except at transfer contactor locations and shall energise the appropriate services<sup>2</sup> appertaining to the hospital.

77. When required by the Commissioner general private hospitals shall install safety lighting systems consisting of batteries with associated charging equipment which shall supply current in an emergency for at least three hours to appropriate circuits, which circuits shall be run in separate conduits, boxes or ducts to those provided for the normal system.

78. When normal power is available the following facilities shall be continuously energised from the charger and from the batteries when normal power is interrupted—

- (a) shadowless lamps in operating theatres;
- (b) spot lamps in labour wards;
- (c) spot lamps in treatment rooms;
- (d) sufficient lamps in operating theatres, labour wards and treatment rooms for illumination; and
- (e) in special cases, in other parts of the hospital considered to be of major importance and where a power failure would endanger the safe care of hospitalized patients,

and each shall be supplied from a separate circuit.

79. The essential circuits emanating as final sub-circuits from the emergency portions of sub-boards may be switched at local positions as required but must have each cover plate engraved with the word "EMERGENCY".

80. When a hospital battery charger has a boost facility incorporated, the switching of the load circuits energised therefrom shall be arranged so that the boost charge is disconnected from the load circuit when any load is switched on.

81. When a double filament lamp is employed in operating theatre lamps which are energised from a battery source, the fitting shall be supplied with a relay to visually indicate when one filament has failed.

82. Infra red heaters installed in operating theatres, labour wards, or any locality where anaesthetizing gases of an explosive nature are used or are likely to be used, shall be of the metal sheathed element type and installed at least 7 ft. from the floor.

<sup>1</sup> Operation of internal combustion engines for short periods should be avoided, otherwise condensed vapours formed before the engine becomes properly warmed up may not be dissipated and will form varnish in the cylinders and acid in the oil crank case, both of which are harmful to the engine.

<sup>2</sup> See Appendix B to these regulations for details of recommended services.



83. (1) Where more than two lights exist, the lighting in each ward at a hospital shall be wired on at least two circuits from the normal supply, with approximately half the number of lights on each circuit.

(2) Verandahs and passages shall be wired on at least two circuits with the lights on each circuit placed alternately.

(3) Outside entrance lighting shall not be on the same circuit as the lighting of the front entrance passage or entrance hall.

84. All operating theatres and adjacent areas, where explosive anaesthetic gases are likely to be present, shall comply with A.S.C.Z.9 (1963), except where exempted in whole or in part by the Commissioner.

#### Division 2.—Nursing Homes.

85. Portable electric radiators shall not be used in wards or other rooms occupied by patients in nursing, convalescent or old age homes except under strict supervision to allow heating for patient washing operations and providing they are of a type that cannot create a fire hazard.

86. (1) All electric wall fans in nursing, convalescent or old age homes shall be mounted in permanent positions at least 7 ft. 0 in. from the floor and adequately protected by stiff metal guards.

(2) Ceiling fans shall not be mounted with the blades less than 8 ft. 0 in. from the floor unless adequately protected from interference.

(3) Speed regulators and switches controlling all fans and infra red heaters in nursing, convalescent or old age home shall be either mounted at least 6 ft. 6 in. from the floor or contained in a lock-up box accessible only to authorised persons.

87. All nursing, convalescent or old age homes shall install—

(a) an audio visual call system incorporating a call button adjacent to each bed in the wards and in bathrooms and toilets, and an audible device in or near the nurses' duty station and each call shall be visually registered and retained until cancelled; or

(b) an intercommunication or other call system approved by the Commissioner.

88. (1) Where more than two lights exist, the lighting in each ward of a nursing, convalescent or old age home shall be wired on at least two circuits from the normal supply, with approximately half the number of lights on each circuit.

(2) Verandahs and passages shall be wired on at least two circuits with the lights on each circuit placed alternately.

(3) Outside entrance lighting shall not be on the same circuit as the lighting of the front entrance passage or entrance hall.

#### PART X.—SCHOOLS, KINDERGARTENS, PRE-SCHOOLS AND INFANT WELFARE CENTRES.

89. Standard general purpose outlets in rooms occupied by children in kindergartens, pre-schools and infant welfare centres shall be mounted at least 4 ft. 0 in. above floor level.

90. (1) Classrooms shall be wired on separate circuits from corridors or verandahs.

(2) The lights in corridors and on verandahs, ramps and stairs shall be wired alternately on at least two circuits.

91. Screws which may be removed without the use of a tool shall not be used to secure the cover plates of accessories in kindergartens, pre-schools and infant welfare centres, and the covers of all wall switches which are used on these installations shall be so arranged that removal of the cover cannot be effected by turning the cover.

92. The lights installed in playrooms or gymnasiums forming part of the premises of infant welfare centres or schools shall comply with the requirements of S.A.A. rules for mechanical protection.

93. Every machine in a manual training room which is driven by an electric motor shall be controlled by a switch which requires a key to turn on and is capable of being turned off without the use of the key.

94. Every manual training and pre-vocational room shall contain a system of readily accessible controls, spaced at convenient positions on each wall of the room, and arranged to disconnect all power circuits and readily accessible machinery within the room, at the instant the controls are operated.

95. Bare overhead wiring shall not be permitted in the consumers installation in areas classified under this section.

## PART XI.—CINEMATOGRAF CABINS.

96. Every cinematograph cabin shall contain a switchboard to supply all circuits within the cabin.

97. Electric fans used exclusively for ventilating projector machines in the cinematograph cabin shall be of the totally enclosed type, complying with regulations 36 and 37 of the Public Buildings Regulations with reference to air displacement, and shall be wired in separate circuits which are capable of being isolated near to every doorway giving access to the room.<sup>1</sup>

98. Resistance banks for arc lamps shall be enclosed in non-inflammable material, placed in an approved permanent position outside a cinematograph cabin.

99. Motor generators and rotary converters shall be installed in an approved permanent position outside the cinematograph cabin.

## PART XII.—TEN PIN BOWLING ALLEYS.

100. Lights to provide adequate illumination to enable effective maintenance of the machines without danger to the serviceman in the machine bay at the rear of the alley shall be provided.

101. Each machine must have an isolator, located adjacent to or on the machine, to isolate all incoming supply and control circuit wiring, and a means of isolating the supply to all machinery in the machine bay shall be located near the entrance to the bay.

102. (1) Sanding and finishing operations in which highly flammable dust and vapours may be generated shall not take place in bowling alleys while occupied by the public.

(2) Draft ventilation shall be provided to dissipate the fumes during sanding and finishing operations, and all electric fans, refrigerators and other electrical equipment which may cause ignition shall be turned off during the process and remain off until the fumes have dissipated.

PART XIII.—EXIT LIGHTS AND SIGNS.<sup>2</sup>

103. The dimensions of any exit sign shall be such that if the normal power fails, the word "EXIT" on a sign can be seen clearly by a person in any part of the auditorium or access passage.

104. (1) Battery operated exit signs shall be continuously energised from a rechargeable battery charger only, during the whole of the time the building is occupied by the public.

(2) At least two lights in parallel shall be incorporated in a battery operated sign to ensure that adequate illumination will be supplied from the remaining lamp should one fail.

105. Exit signs which will emit illumination after an energising source has been removed shall contain lettering of such dimensions that the sign can be clearly seen by a person in any part of the auditorium at least six minutes after the removal of such source and any radiation emitted shall comply with the standards laid down by the Radio Substances Act, 1954.

106. Except where the Commissioner otherwise approves, the switches controlling any exit sign shall be installed on the main switchboard or on a sub or control board, whichever is located nearest to the foyer or front entrance to the building.

107. Illuminated exit signs with direction indicators at drive-in theatres shall be of such dimensions and height above the ground that they can be plainly seen by drivers of oncoming traffic and shall be so placed as to guide drivers to the exit.

## PART XIV.—GENERATING EQUIPMENT—ENGINE AND BATTERY ROOMS.

108. (1) Where the supply of electricity in a public building is, or is intended to be derived from special generating apparatus on the premises or otherwise under the control of the owner, occupier or person having charge or control of the public building, the use of such plant, together with switchboard and fittings, shall in all cases be subject to the approval of the Commissioner.

(2) Boilers, steam engines gas engines or internal combustion engines and all electrical generating equipment used for the supply of electricity to such premises shall be placed in a position approved by the Commissioner and no other premises shall be supplied with electricity from any part of the installation of a public building.

109. (1) A person shall not enter an engine room in a public building unless he is authorised to do so by the owner or occupier or the person in charge or control of the building or by the Commissioner.

(2) Every engine room shall have an external entrance independent of any other entrance to or exit from the main building.

<sup>1</sup> For projection apparatus using arc lamps refer to regulation 18 of these regulations.

<sup>2</sup> Attention is drawn to regulation 23 of the Public Buildings Regulations made under the Health Act, 1911, relating to the location and type of signs permitted in Public Buildings.

(3) The door to the external entrance shall be hung to open outwards and be capable of being opened from the inside without a key.

(4) No engine room, switch room or machinery room shall be used for any purpose unless approved by the Commissioner.

110. (1) Rooms containing gas, diesel and petrol engines shall be so ventilated that no explosive mixture of gas or vapour can accumulate.

(2) Exhaust gases shall be conducted as directly as possible to the outer air through a pipe or duct of adequate size, arrangement and construction.

(3) The temperature of an engine room shall be kept below a value designated by the Commissioner.

111. Cotton and oily waste and similar inflammable material in engine or battery rooms must be kept in receptacles which, when not open for use, shall be kept closed.

112. The owner, occupier or person having charge or control of a public building in which there is a generating plant and switch gear shall ensure that the plant and gear is under the control of a competent person and adequately maintained.

113. Accumulators or batteries shall be placed in a separate room or compartment of approved fire resisting construction and the room shall be used for no other purpose whatsoever.

114. No power machinery or equipment used for the generation of electricity shall be installed within 30 ft. 0 in. of any tent or structure occupied by the public.

#### PART XV.—BATTERIES AND CHARGERS FOR PUBLIC BUILDINGS.

115. A cell or battery shall be of such a rating that it can supply and maintain at not less than 90 per cent. of the systems rated voltage, the total load of circuits supplying safety lighting/power, for a period of at least one hour generally or three hours in a hospital.

116. All batteries used in public buildings, whether acid or alkaline type, shall be capable of meeting the requirements of emergency service and acid type batteries shall have thick and rugged plates.<sup>1</sup>

117. Only rechargeable batteries shall be used in public buildings.

118. Sealed cells or batteries used in public buildings shall be fitted with safety vents.

119. (1) Connections to battery terminals shall be made by using an approved type of connection or clamp.

(2) Spring loaded clips shall not be used in battery connections.

120. (1) Batteries that have sealed cells shall only be recharged or charged by a constant current charger that has been set at a rate not exceeding the maximum permissible continuous overcharge current of the cells used.

(2) Batteries that have acid or alkaline cells shall only be recharged or charged by a constant potential charger that has been set at the correct charging voltage.

(3) Chemically treated washers shall be installed under each lead acid battery terminal to prevent the formation of salts on the connections.

121. The output from the charger shall be adjusted to permit the safety lighting cell or battery to be recharged from a fully discharged to a fully charged condition within the normal time lapse between the periods of occupation of the building.

122. The owner, occupier or person having charge or control of a public building containing battery chargers shall—

(a) ensure that they are properly maintained; and

(b) maintain a record of the date of installation of the battery and the date and details of servicing.<sup>2</sup>

#### PART XVI.—MISCELLANEOUS.

123. Where by these regulations an act is required to be done or forbidden to be done in relation to a public building the owner, occupier or person having charge or control of the public building has, unless the contrary intention appears, the duty of causing to be done the act so required to be done, or of preventing from being done the act so forbidden to be done, as the case may be.

124. The owner, occupier or person in charge or control of a public building or other person who—

(a) fails to do any act that by these regulations he is required to do; or

(b) does any act that by these regulations he is forbidden from doing, commits an offence and is liable on conviction to a penalty not exceeding \$200, and in the case of a continuing offence, to an additional penalty not exceeding \$4 for each day that the offence continues.

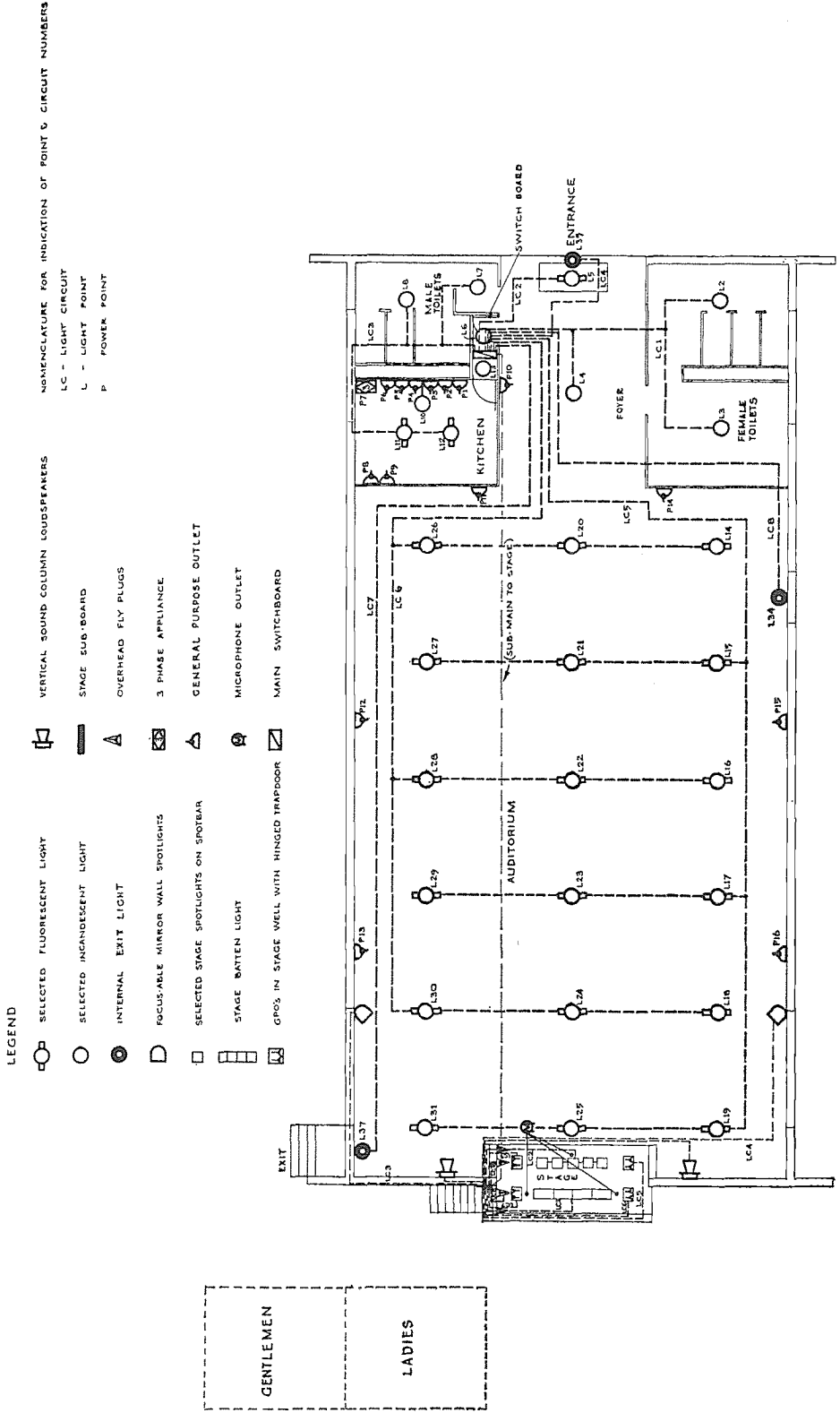
<sup>1</sup> Appendix B to these regulations contains details of battery and charger recommendations.

<sup>2</sup> Appendix B to these regulations contains the form of an acceptable battery service record chart.

Appendix "A".

TYPICAL DRAWINGS.

- No. 1—Public hall internal electrical layout (with stage).
- No. 2—Public hall external lighting layout.
- No. 3—Public hall main switchboard layout (with battery supply).
- No. 4—Emergency and critical systems in hospitals, and connection to normal supply.



**LEGEND**

SELECTED FLUORESCENT LIGHT  
 SELECTED INCANDESCENT LIGHT  
 INTERNAL EXIT LIGHT  
 FOCUSABLE MIRROR WALL SPOTLIGHTS  
 SELECTED STAGE SPOTLIGHTS ON STROBEAR  
 STAGE BATTEN LIGHT  
 GPOS. IN STAGE WELL WITH HINGED TRAPDOOR

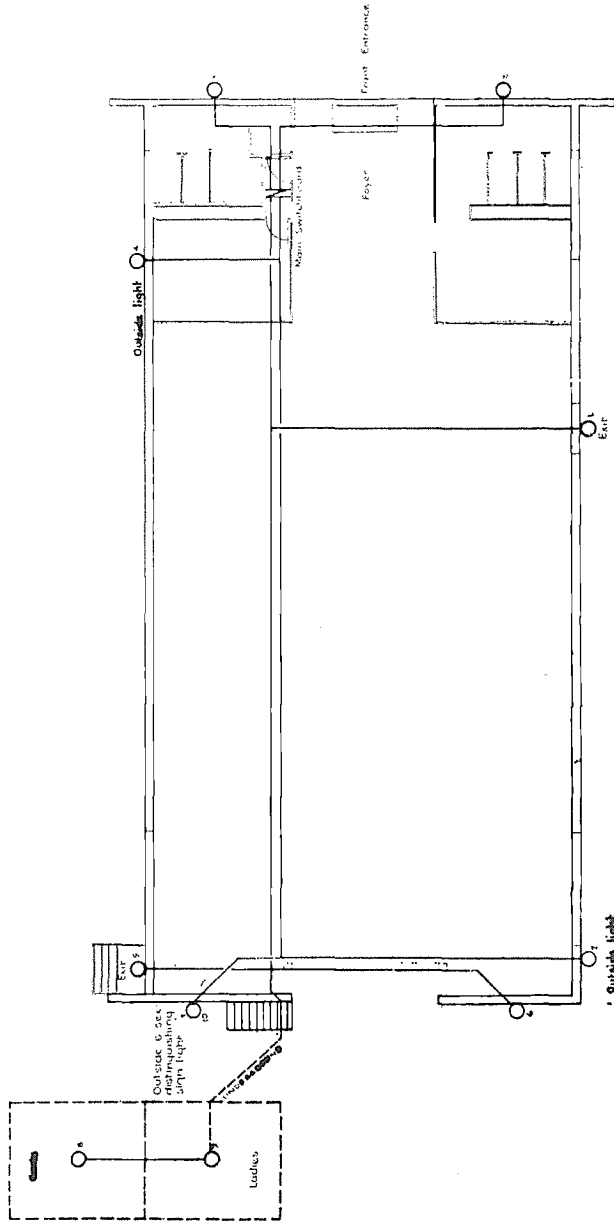
VERTICAL SOUND COLUMN LOUDSPEAKERS  
 STAGE SUB-BOARD  
 OVERHEAD FLY PLUGS  
 3 PHASE APPLIANCE  
 GENERAL PURPOSE OUTLET  
 MICROPHONE OUTLET  
 MAIN SWITCHBOARD

NOMENCLATURE FOR INDICATION OF POINT & CIRCUIT NUMBERS  
 LC - LIGHT CIRCUIT  
 L - LIGHT POINT  
 P - POWER POINT

**NOTES**

1. Exit lights may be energised from a battery charger, located at the main switchboard or sub or control board nearest to the front entrance.
2. Altering the "EXIT" sign may be illuminated by an approved type of luminous fitting with sufficient light retention and brilliance to satisfy Public Health requirements, in the event of a failure of the power supply.
3. Stage well fly plugs may require multiple circuits & not merely one, circuit as shown.
4. Where a 3 phase installation exists in the building, the lighting circuits in the auditorium shall be connected over two or more phases.
5. Auditorium lights to be alternately wired on at least two separate groups. & controlled as required in the S.A.A. rules.

TYPICAL PUBLIC HALL (INTERNAL ELECTRICAL LAYOUT) (WITH STAGE) DRG NO 1



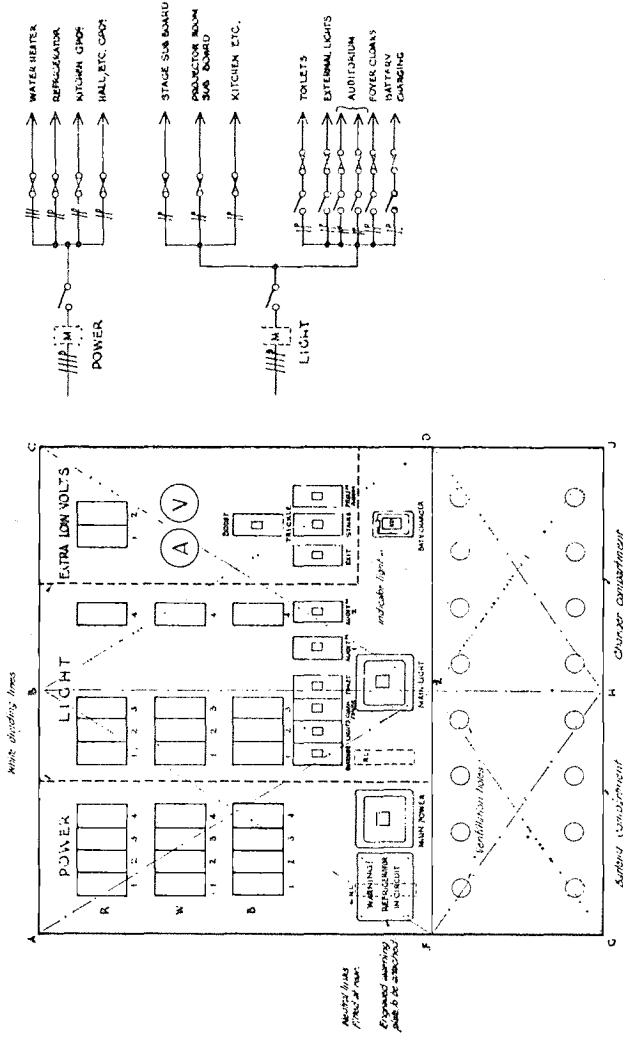
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CIRCUIT NO 1 ALWAYS 1, 5, 6, 8, 9  
CIRCUIT NO 2 LIGHTS 3, 4, 7, 10

TYPICAL PUBLIC HALL  
EXTERNAL LIGHTING LAYOUT  
DRG NO 2

Notes:

1. ALL EXTERNAL LIGHT CIRCUITS TO BE SWITCHED AT THE MAIN SWITCHBOARD BY THE APPROVED OR CONTROL BOARD OTHER THAN THE INTERNAL CIRCUITS AND TO BE ON SAME CIRCUIT AS INTERNAL LIGHTS.
2. INTERNAL CIRCUITS AND EXTERNAL LIGHTS TO BE ON SAME CIRCUIT AS INTERNAL LIGHTS.
3. AS INTERNAL LIGHTS.
4. WHERE THE INSTALLATION IS SUPPLIED FROM MORE THAN ONE PHASE EACH SEPARATE CIRCUIT OF THE OUTSIDE LIGHTS SHALL BE CONNECTED TO A DIFFERENT PHASE.
5. TO BE PROVIDED FOR ALL:
  - (1) ONE REMOTE APPROACH LIGHT
  - (2) INTERNAL TOILET LIGHT
  - (3) REMOTE APPROACH LIGHT(S)
6. THESE MAY BE CONNECTED IN CIRCUIT WITH ONE OF THE OTHER AUTOMATICALLY WHEN CHANGING PHASES ARE PROVIDED FOR THE BUILDING.
7. POSITION OF EXTERNAL TOILET TO BE SHOWN.



TYPICAL PUBLIC HALL  
MAIN SWITCHBOARD LAYOUT

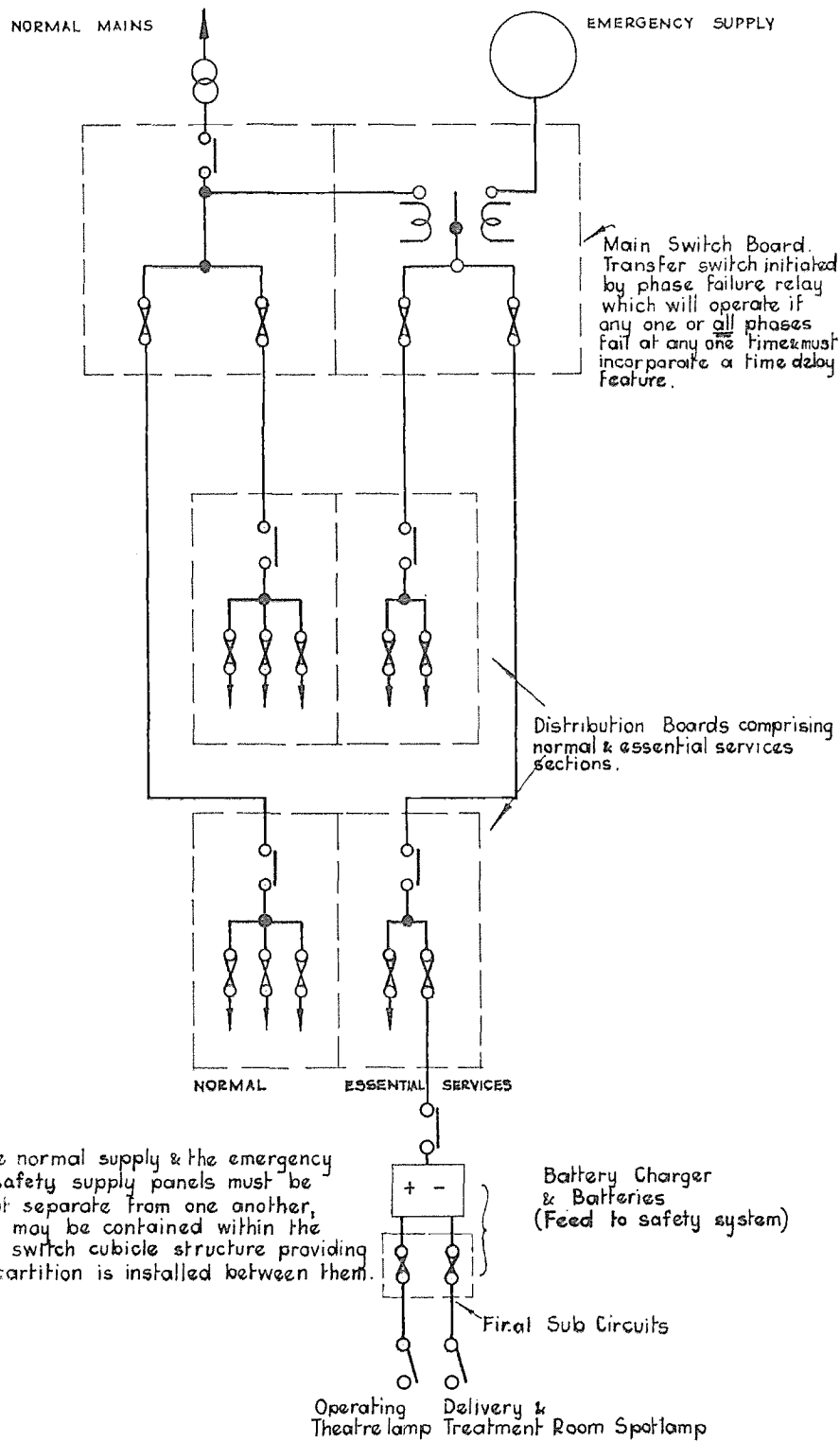
DRG. NO 3

**FUSE LEGEND**

INSULATION COLOR	VOLTS	CIRCUIT
RED	1	SPARE
•	2	AUDITORIUM
•	3	TOILETS
•	4	PRODUCTION SUB. BO.
WHITE	1	WATER HEATER
•	2	REFRESHMENT SUB. BOARD
•	3	EXTERNAL LIGHTS
•	4	STAGE SUB. BO.
BLUE	1	WATER HEATER
•	2	KITCHEN GPO
•	3	BATTERY CHARGER
•	4	SPARE

**NOTES.**

- If the sub-board is accessible to the public visitors shall be advised, where appropriate, power is provided, maximum & external limits shall be distributed over 2 or more premises.
- The Battery and charger shall comply with the detailing to Batteries and chargers supply, safety & performance in the Buildings. Switchgear shall comply with the detailing to Batteries. Together in each sequence to enable easy identification groups of fuses/cbs legend shall be provided where numbers are used for identification.



**TYPICAL DRG No. 4**  
**EMERGENCY & SAFETY SYSTEMS IN HOSPITALS**  
**SHOWING CONNECTIONS TO NORMAL SUPPLY**

## Appendix "B".

## DETAILS RELATING TO BATTERY CHARGERS AND BATTERIES.

1. *Selection of Alkaline Cells or Batteries where Regular Service is Unlikely:*

If the equipment is to be installed in localities remote from regular servicing and is to be provided for the purpose of energising safety lighting/power circuits during a normal power failure, then consideration should be given to the installation of alkaline cells or batteries of the type—

- (a) with extra electrolyte to permit topping up once every two to three years depending upon conditions of charge and discharge;
- (b) that have sealed cells or batteries.

Special alkaline cells with extra electrolyte would be suitable for almost any installation irrespective of capacity and voltage.

Sealed cells are of advantage where the load is not likely to require a battery whose ampere hour capacity exceeds 30, and whose voltage exceeds 12. Overcharging can cause overheating in the former case and in the latter, cell reversal during excessive discharge will dry out the electrolyte, thus reducing the life.

2. *Selection of Lead Acid Cells or Batteries for Emergency Use:*

Although a home lighting type of battery may be used for this purpose, its life is expected not to exceed four years, its maintenance is high and the charge rate must be increased with age to maintain it in a fully charged condition (owing to antimonial poisoning). A satisfactory lead acid battery for emergency use, is the Plante type complying with BSS 440:1964 and which employs pure lead positive plates and can be continuously charged at the normal rate with a constant potential float type charger without decreasing its life. This can be expected to last up to 20 years with adequate maintenance.

3. *Use of Trickle Chargers for Lead Acid Batteries:*

Trickle chargers should not be used to charge lead acid batteries where they cannot be adequately maintained, as continual adjustment of the charging rates are necessary to maintain a fully charged condition.

4. *Provision of Normal-Boost Charging Facilities:*

- (1) Maximum performance can be expected if the constant potential charger charging a lead acid battery has normal and boost switching facilities to maintain the battery in a fully charged condition.
- (2) No switching facilities are necessary while charging an open type alkaline cell or battery as the battery automatically accepts as much charge as it requires.

5. *Low Electrolyte Specific Gravity-Lead Acid Batteries:*

Greater life can be expected if the battery contains an electrolyte acid purity complying with BS 3031/1958 and whose specific gravity does not exceed 1.210 at 15°C.

6. *Selection of Emergency Lighting Systems and Types Available.*

- (1) A "maintained" system with automatic switch, in which the emergency circuit is maintained in use as required, from a transformer at the correct voltage but is transferred by an automatic switch to the battery in the event of a failure of the normal supply.
- (2) A "floating" battery system in which the battery floats across the charger, and supplies the load if the normal power fails. If boost-charge facilities are provided, the circuit should be arranged so that they are disconnected in the event of any external load being switched on.
- (3) A "non-maintained" system with automatic switch, in which the emergency circuit is not energised during periods when the normal supply is available, but is brought into operation by the automatic switch upon failure of the normal supply. This system will only be approved where evidence is provided to show that regular and frequent testing of the installation will occur, and where a monitor is provided to indicate a fault in the unit.

7. *Recommended Hospital Services and Equipment to be Supplied from a Safety/Emergency Source:*

Guidance as to whether an alternator fed system should be provided will be determined by the importance attributed to the above services and to the reliability of the local supply, which may be obtained from the supply authority's records of past power failures. Some service facilities may be operated only intermittently during normal supply failures.



It may be possible to programme the use of facilities so that only the most essential of the above are all in use at the one time.

However, extreme caution must be exercised in the selection of a generator or battery system of adequate capacity to cope with the required load.

The emergency system referred to in regulation 77 of these regulations will be required to energise a number or all of the following services depending upon the Commissioner's ruling—

- (a) supplies to battery charging installations supplying operating, labour ward and treatment room lamps and spot lamps;
  - (b) supplies to at least one in every four lights in every corridor and also stairs, landing, exit lights and signs, ramp and passage lights and all ways and approaches to exits; also, lights used for general illumination in operating theatres, labour wards and treatment rooms not already energised from a battery system;
  - (c) electric current to lighting in switchrooms and plant rooms;
  - (d) in hospital buildings containing lifts, electric supplies to the lighting in all passenger lifts and lighting and power to one goods or service lift to enable its operation, if required;
  - (e) electric supplies to effluent and drain pumps essential to prevent overflow/flooding of these services;
  - (f) alarm systems, such as water flow devices in connection with sprinkler systems, and automatic fire detection systems; gas warning systems which indicate the existence of low gas pressure and hence, the possibility of exhaustion; duty boiler with associated equipment and electrostatic precipitator derangement signals;
  - (g) alerting systems, when these are used for alerting or issuing instructions during an emergency;
  - (h) nurses' stations—lighting for emergency work, unless corridor lighting is so placed as to provide adequate illumination;
  - (i) nurses' call systems to important in-patient areas, anaesthetizing and emergency departments;
  - (j) telephone switchboards and important inter-departmental communications where not already energised from a battery;
  - (k) to lighting and temperature controlled cribs in nurseries;
  - (l) intensive care units lighting and power receptacles including isolated places where diagnostic equipment, electrocardiographs, heart pacers and oxygen tents may be located;
  - (m) lighting in medication preparation areas;
  - (n) lighting and power receptacles in dispensing pharmacies;
  - (o) blood bank areas—lighting where required by personnel for cross-matching and typing, and power for blood bank refrigerators;
  - (p) critical suction systems, including lighting and receptacles at pump locations;
  - (q) psychiatric patient bed areas; lighting only;
  - (r) refrigerated medical storage, i.e., bone and tissue banks and the storage of biological preparations; and
  - (s) any other areas deemed necessary by the Commissioner.
-



**TYPICAL PUBLIC BUILDING BATTERY**

**SERVICE RECORD CHART**

**BATTERY MAINTENANCES :**

1. The person in charge of every Public Building containing batteries and chargers shall ensure that they are properly maintained.
2. Regular checks, not exceeding two weeks apart, must be carried out to ensure that the battery is capable of supplying the emergency load at all times.
3. Test data shall be written in the spaces provided on this chart and kept in a readily accessible position for inspection by the Public Health Authorities as required.
4. Battery Tests are to be carried out with the charger disconnected.

**Battery Details**

**Charger Details**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. Type.....</li> <li>2. Capacity (Amp.-hours).....</li> <li>3. Voltage.....</li> <li>4. Date of Installation.....</li> </ol> | <ol style="list-style-type: none"> <li>1. Type.....</li> <li>2. Capacity (Maximum Charging Rate).....</li> <li>3. Voltage.....</li> <li>4. Date of Installation.....</li> </ol> |
|--|---|

**ALKALINE BATTERIES**

\*\* { (i) The value of the discharge current shall be determined from the amp.-hour capacity of the battery at the appropriate hour rate, depending upon the manufacturer's instructions (5 hour rate for general purpose type cells).  
 (ii) These tests shall only be applied after the battery has been fully charged.

Charging Rate	Electrolyte Level Adjusted		Specific Gravity of Electrolyte 1.16 (min.), 1.20 (max.)	Volts on Open Circuit	**Load Tests			Date Tested
	Yes	No.			Replace Battery (0-1.08V/Cell)	Recharge Battery (1.08-1.28V/Cell)	Battery Fully Charged (above 1.28V/Cell)	