

(Fine print note) In a few cases it may be necessary to bunch wires of the operating circuit on the rear of the control panel. This is permitted, provided the wires are taped and painted with an insulating paint.

3203 - Requirements for Elevator Switches.

- a. A switch disconnecting all conductors of the motor circuit shall be located within sight of the motor, unless permission to locate it elsewhere is given by the inspection department.
- b. Alternating current motors, which are dependent upon phase relation for direction of rotation, and which are liable to damage through phase failure, shall be protected against such hazard, as prescribed in Section 2308.
- c. In garages, hatch limit switches and other spark-emitting devices shall be placed at least four feet above the line of the lowest floor level.

3204 - Grounding Equipment - Exceptions.

- a. Conduit or armored cable attached to elevator cars need not be grounded.
- b. Motor and motor generator sets mounted on metal beams, which form part of the structural metal frame of a building, shall be deemed to be grounded.
- c. The shifting cable need not be grounded if provided with approved strain insulators.

ARTICLE 33.ELECTRICALLY OPERATED ORGANS.3301 - General.

a. The requirements of this article shall apply to those electrical circuits and parts of electrically operated organs which are employed for the control of the sounding apparatus and key-boards. All other wiring and equipment shall conform to the provisions of this Code which are applicable to the installation of equipment of the current capacity and voltage employed.

3302 - Source of Energy.

a. The source of energy shall be either a self-excited generator rated at not over 15 volts, or a primary battery.

b. The generator shall either be permanently and effectively insulated, both from ground and from the motor driving it, or both generator and motor frames shall be grounded, as prescribed in Article 17 of this Code.

3303 - Requirements for Cable in Organ Installations.

a. All conductors, except common return wires inside the organ proper, the organ sections and the organ console, shall be cabled.

b. The separate conductors of the cable shall be not smaller than No. 22, and shall have either rubber, cotton or silk insulation. The cotton or silk may be saturated with paraffine if desired.

c. The separate conductors shall be either bunched or cabled. In either event they shall be enclosed in one or more braided outer coverings. A tape may be substituted for an inner braid. The outside covering of a cable not run in conduit shall either be flame-proof, or covered with a closely wound fire-proof tape.

d. The common return wire shall be not smaller than No. 14, shall be of either the rubber-covered or the slow-burning type, and shall not be contained in the cable. It may be run in contact with the cable or placed under an additional covering, enclosing both cable and return wire.

5304 - Method of Installing Organ Cables.

a. All wiring and devices within the organ, or any of its parts, shall be neatly disposed and securely fastened.

(Fine print note) It is not found to be either necessary or feasible in organ structures to require the use of non-combustible, non-absorptive insulating material for the supports or enclosures of current-carrying parts.

b. Cables between parts of the organ and between the console and the organ shall be installed in a workmanlike manner, shall be securely fastened in position, and shall be kept from contact with other wires. Conduit may be used, but shall not be required.

5305 - Fuses.

a. Circuits shall be so subdivided and protected at the source by approved enclosed fuses of not over 30 amperes rating that every wire will be protected by one or more such fuses. No other fuses in the organ circuits shall be required.

ARTICLE 34MOTION PICTURE PROJECTORS AND EQUIPMENT.3401 - General.

a. The so-called professional types of projectors, such as are commonly used in theatres and motion picture houses, shall be located in fireproof booths.

(Fine print note) The professional projector employs a film which is 1-3/8 inches wide and has on each edge 8.4 perforations per inch.

b. Projectors of the non-professional or miniature type, if employing only approved slow-burning (cellulose acetate or equivalent) film, may be operated without a booth.

c. The booth or enclosure for projectors of the professional type shall be constructed and ventilated so as to conform to the requirements of the existing ordinances of the City of Portland.

3402 - Projectors of Professional Type.

a. The arc lamp house shall be composed entirely of metal having a thickness not less than No. 24 U. S. sheet metal gage (.025-inch), except where the use of approved insulating material is necessary. Details of construction shall conform to the requirements of Section 5615 of this Code. An incandescent lamp enclosure shall conform to the above requirements so far as may be practicable.

b. Conductors not smaller than No. 4 shall be employed to supply the projector outlet. Deviation from this rule will be allowed only under special permission.

c. Rheostats, transforming devices and any substitute therefor, shall be of types expressly designed and approved for the purpose. They shall be judged as component parts of the projector equipment as to installation and location.

d. Top and bottom magazines shall be so designed in some approved manner as to prevent the entrance of flame. No solder shall be used in their construction. The front side of each magazine shall consist of a door swinging horizontally and equipped with a substantial latch.

e. An automatic shutter shall be provided and permanently attached to the gate frame. The construction of the shutter shall be such as to shield the film from the beam of light whenever the film is not running at operating speed.

f. A motor-generator set installed in the projector enclosure shall, unless of the enclosed type, have the commutator end or ends suitably enclosed by wire screens.

3405 - Projectors of Non-Professional Type.

a. Motion picture projecting machines not intended for installation and use in permanent and ventilated booths, shall be permitted only for projecting film of an approved slow-burning (cellulose acetate or equivalent) type.

b. All such equipment shall be expressly approved, including current-controlling devices and other essential operating parts.

c. The source of illumination of the projected view shall be an incandescent lamp of a pattern expressly intended for stereopticon use, or for motion picture projection.

d. Rheostats, transformers, switches and other current controlling devices shall have no live parts exposed.

e. The slow-burning (cellulose acetate or equivalent) film shall have a permanent distinctive marker for its entire length, identifying the manufacturer and the slow-burning character of the film stock.

f. Machines shall be marked with the name or trade mark of the maker, and with the voltage and current rating for which they are designed, and shall also be plainly marked, "For use with slow-burning film only."

ARTICLE 35.RADIO EQUIPMENT.3501 - General.

- a. Radio wiring and equipment shall, in addition to the special rules herein given, comply with all other applicable requirements of this Code.
- b. Antenna, or counterpoise, shall not cross over any street or public way except by special permission from the Electrical Division, Bureau of Buildings. When permission is granted, a permit shall be issued for a period not to exceed one year; provided, however, that such permit is revocable at any time at the discretion of the Chief Electrical Inspector if the installation thereunder has become a hazard to life or property, or conflicts with future construction of any public utility. Such permit may, at any time, be revoked by the Council.
- c. Antenna, or counterpoise, shall not be attached to any pole or other structure carrying light, power or signaling wires.
- d. No antenna or counterpoise shall be constructed over a street or public property over or under any electric light or power wires of any circuit of more than 600 volts, or any railway trolley or feeder wires without a permit so to do having first been granted by the Council, and then only in accordance with such requirements and safeguards that shall be contained in such permit.

3502 - Installation Requirements; Antenna and Counterpoise.

a. Antenna and counterpoise outside buildings shall be kept well away from all electric light or power wires of any circuit of more than 600 volts, and from railway, trolley or feeder wires, so as to avoid the possibility of contact between the antenna or counterpoise and such wires under accidental conditions.

b. Antenna and counterpoise where placed in proximity to electric light or power wires of less than 600 volts, or signal wires, shall be constructed in a strong and durable manner, and shall be so located and provided with suitable clearances as to prevent accidental contact with such wires by sagging or swinging. Transmitting antenna shall be so installed as to prevent undue induction in other conductors.

(Fine print note) Aerial systems of this class, unless properly arranged, installed, and supported, may result in personal hazard and fire hazard by accidental crosses with other current-carrying lines. In the case of transmitting antenna, if placed approximately parallel with, or closely adjacent to light, power or signalling wires (either inside or outside of buildings), dangerous or troublesome voltages may be induced in such wiring.

c. Splices and joints in antenna system shall be soldered unless made with approved splicing devices.

d. The preceding paragraphs of this section shall not apply to light and power circuits used as receiving antenna, but the devices used to connect the light and power wires to radio receiving sets shall be of approved type.

3503 - Requirements for Receiving Stations Only.

a. Lead-in conductors shall be of copper, approved copper-clad steel or other metal which will not corrode excessively, and in no case shall they be smaller than No. 14, except that bronze or copper-clad steel not less than No. 17 may be used.

b. Lead-in conductors on the outside of buildings shall not come nearer than four inches to electric light and power wires unless separated therefrom by a continuous and firmly fixed non-conductor, which will maintain permanent separation. The non-conductor shall be in addition to any insulating covering on the wire.

c. Each lead-in conductor shall enter the building through a non-combustible, non-absorptive insulating bushing slanting upward toward the inside or by an equivalent device designed to give equivalent protection.

d. Each lead-in conductor shall be provided with an approved protective device (lightning arrester), which will operate at a voltage of 500 volts or less, properly connected and located, either inside the building at some point between the entrance and the set which is convenient to ground, or outside the building as near as practicable to the point of entrance. The protector shall not be placed in the immediate vicinity of easily ignitable stuff, or where exposed to inflammable gases or dust or flyings of combustible materials.

e. If an antenna grounding switch is employed, it shall, in its closed position, form a shunt around the protective device. Such a switch shall not be used as a substitute for the protective device.

(Fine print note). It is recommended that an antenna grounding switch be employed, and that in addition a switch rated at not less than 30 amperes, 250 volts, be located between the lead-in conductor and the receiver set.

f. If fuses are used, they shall not be placed in the circuit from the antenna through the protective device to ground.

g. The protective grounding conductor may be bare and shall be of copper, bronze or approved copper-clad steel. The protective grounding conductor shall be not smaller nor have less conductance per unit of length, than the lead-in conductor and in no case shall be smaller than No. 14 if copper nor smaller than No. 17 if of bronze or copper-clad steel. The protective grounding conductor shall be run in as straight a line as possible from the protective device to a good permanent ground. Preference shall be given to water piping. Other permissible grounds are grounded steel frames of buildings or other grounded metal work in the building, and artificial grounds such as driven pipes, rods, plates, cones, etc. Gas piping shall not be used for the ground.

h. The protective grounding conductor shall be guarded where exposed to mechanical injury. An approved ground clamp shall be used where the protective grounding conductor is connected to pipes or piping.

i. The protective grounding conductor may be run either inside or outside the building. The protective grounding conductor and ground, installed as prescribed in the preceding paragraphs g, and h, may be used as the operating ground.

(Fine print note) It is recommended that in this case the operating grounding conductor be connected to the ground terminal of the protective device.

If desired, a separate operating grounding connection and ground may be used, this operating grounding conductor being either bare or provided with an insulated covering.

j. Wires inside buildings shall be securely fastened in a workmanlike manner and shall not come nearer than 2 inches to any electric light or power wire not in conduit unless separated therefrom by some continuous and firmly fixed non-conductor, such as porcelain tubes or approved flexible tubing, making a permanent separation. This non-conductor shall be in addition to any regular insulating covering on the wire.

k. Storage battery leads shall consist of conductors having approved rubber insulation. The circuits from storage batteries shall be properly protected by fuses or circuit breakers rated at not more than 15 amperes and located preferably at or near the battery.

l. Attachment plugs and receptacles of the standard type commonly used with 125 volt portable devices shall not be used with radio equipment unless such equipment is expressly approved for use on light or power circuits.

3504 - Requirements for Transmitting Stations.

a. Lead-in conductors shall be of copper, bronze, approved copper-clad steel or other metal which will not corrode excessively, and in no case shall be smaller than No. 14.

b. Antenna and counterpoise conductors and wires leading therefrom to ground switch, where attached to buildings, shall be firmly mounted 5 inches clear of the surface of the building, on non-absorptive insulating supports such as treated pins or brackets, equipped with insulators having not less than 5 inches creepage and air-gap distance to inflammable or conducting material, except that the creepage and air-gap distance for continuous wave sets of 1000 watts and less input to the transmitter, shall be not less than 3 inches.

c. In passing the antenna or counterpoise lead-in into the building a tube or bushing of non-absorptive, insulating material, slanting upward toward the inside, shall be used and shall be so insulated as to have a creepage and air-gap distance of at least 5 inches to any extraneous body, except that the creepage and air-gap distance for continuous wave sets of 1000 watts and less input to the transmitter, shall be not less than 3 inches. If porcelain or other fragile material is used it shall be protected where exposed to mechanical injury. A drilled window pane may be used in place of a bushing provided creepage and air-gap distance as specified above is maintained.

d. A double-throw knife switch having a break distance of at least 4 inches and a blade not less than $1/8$ inch by $1/2$ shall be used to join the antenna and counterpoise lead-in to the grounding conductor. The switch may be located inside or outside the building. The base of the switch shall be of non-absorptive insulating material. This switch shall be so mounted that its current-carrying parts will be at least 5 inches clear of the building wall or other conductors, except that for continuous wave sets of 1000 watts and less input to the transmitter, the clearance shall be not less than 3 inches. The conductor from grounding switch to ground shall be securely supported.

(Fine print note) It is recommended that the switch be located in the most direct line between the lead-in conductors and the point where grounding connection is made.

e. Antenna and counterpoise conductors shall be effectively and permanently grounded at all times when station is not in actual operation and unattended, by a conductor at least as large as the lead-in and in no case smaller than No. 14 copper, bronze, or approved copper-clad steel. This protective grounding conductor need not have an insulated covering or be mounted on insulating supports. The protective grounding conductor shall be run in as straight a line as possible to a good permanent ground. Preference shall be given to water piping. Other permissible protective grounds are the grounded steel frames of buildings and other grounded metal work in buildings and artificial grounding devices such as driven pipes, rods, plates, cones, etc. The protective grounding conductor shall be protected where exposed to mechanical injury. A suitable approved ground clamp shall be used where the protective grounding conductor is connected to pipes or piping. Gas piping shall not be used for the ground.

(Fine print note) It is recommended that the protective grounding conductor be run outside the building.

f. The operating grounding conductor shall be of copper strip not less than $3/8$ inch wide by $1/32$ inch thick, or of copper, bronze, or approved copper-clad steel having a periphery, or girth, of at least $3/4$ inch, such as a No. 2 wire, and shall be firmly secured in place throughout its length.

g. The operating grounding conductor shall be connected to a good permanent ground. Preference shall be given to water piping. Other permissible grounds are grounded steel frames of buildings or other grounded metal work in the building, and artificial grounding devices such as driven pipes, rods, plates, cones, etc. Gas piping shall not be used for the ground.

h. Where the current supply is obtained directly from lighting or power circuits, the conductors whether or not lead covered shall be installed in approved metal conduit, armored cable or metal raceways.

3505 - Protection against High Potential Surges.

a. When necessary to protect the supply system from high-potential surges and kick-backs there shall be installed in the supply line as near as possible to each radio-transformer, rotary spark gap, motor and generator in motor generator sets and other auxiliary apparatus one of the following:

1. Two condensers (each of not less than 1/10 microfarad capacity and capable of withstanding 600 volt test) in series across the line with mid-point between condensers grounded; across (in parallel with) each of these condensers shall be connected a shunting fixed spark-gap capable of not more than 1/32 inch separation.

2. Two vacuum tube type protectors in series across the line with the mid-point grounded.

3. Resistors having practically zero inductance connected across the line with mid-point grounded.

(Fine print note) It is recommended that this third method be not employed where there is a circulation of power current between the mid-point of the resistors and the protective ground of the power circuit.

4. Lightning arrestors such as the aluminum cell type.

PART V.ARTICLE 36WIRING REQUIREMENTS FOR BUILDINGS OF CERTAIN OCCUPANCIES.3601 - General.

a. All new electrical work installed in buildings, or portions of buildings, included in the following occupancies shall conform to all applicable requirements of this Code and, in addition thereto shall comply with the special provisions of this Article.

b. Any building or portion of a building which is hereafter converted or altered to one of the following occupancies shall thereupon become subject to all the requirements of this Article relative to such occupancy.

GARAGES.3602 - General.

a. The requirements of sections 3603 to 3606, inclusive, shall apply to that building or portion of a building used for housing or sheltering self-propelled vehicles (other than electric) and having sufficient floor area to permit the storage therein of more than two vehicles; also every portion of such building that is in or below the uppermost story thereof used for such purpose and which is not separated therefrom by tight unplastered fire walls and fireproof floors (as covered in the Building Code of the City of Portland).

3603 - Special Wiring Requirements in Garages.

A. All conductors (except those required for pendant lamps or portable connections) shall be installed in rigid metal conduit; provided, however, that flexible metal conduit or armored cable may be used in finished walls, floors, and ceilings or where flexibility of connections is necessary. (As, for example, in the connection of motors and similar appliances) and metal raceways may be used in offices and show rooms.

b. Outlet and junction boxes shall be located at least 4 feet above the floor level except as noted in section 3604(a) hereof; provided, that pull boxes and splice boxes may be located less than 4 feet above the floor level if such boxes contain no bare live parts whatever and if the conduit ends entering same are thoroughly sealed. This exception shall not apply to any outlet, switch, receptacle or cutout box.

3604 - Requirements for Portables in Garages.

a. Approved portable cord designed for rough usage, such as hard service cord, stage cable or packinghouse cord, shall be used to connect portable lamps, motors or other appliances. The portable cord shall carry the male end of an approved pin-plug connector, or equivalent, the female end being of such design, or so hung, that the connector will break apart readily at any position of the cable. The connector shall be kept at least four feet above the floor.

b. Flexible cord leads for portable lamps shall be equipped with handle, socket, hook and substantial guard, the guard being securely attached to the socket or the handle. Approved keyless sockets of moulded composition or metal sheathed porcelain type or other keyless sockets approved for the purpose shall be used.

3605 - Use of Charging Cables in Garages.

a. Approved Type S cord shall be used for charging purposes.

b. Connectors shall be of approved type and of at least 50 amperes capacity, and shall be so designed, or so hung, that at least one will break apart readily at any position of the cable. Live parts shall be guarded from accidental contact. The fixed, or wall connector shall be kept at least four feet above the floor and, if not located on a switchboard or charging panel, shall be guarded from accidental contact.

3606 - Location of Equipment in Garages.

a. Cutouts, switches, attachment plug receptacles and fixed lamp holding devices shall be located at least 4 feet above the floor, except in a show room separated by a partition from the garage proper.

b. Switchboards and charging panels, at or upon which are mounted devices which, in operation, may produce a spark, shall be located in a room or enclosure provided for the purpose, unless all such spark producing devices are at least four feet above the floor or surrounded by vapor-proof enclosures.

c. Generators or motors which do not actually form a part of the vehicle equipment shall be of the totally enclosed type or shall be so located that unenclosed sparking or arcing parts are at least 2 feet above the floor. Generators and motors unless of the totally enclosed type, which are located more than 2 feet but not more than 4 feet above the floor, shall be equipped with wire screens of not less than No. 14 mesh, placed over openings at the commutator end.

EXTRA-HAZARDOUS LOCATIONS.3607 - General.

a. Extra-hazardous locations shall comprise rooms or compartments in which highly inflammable gases, liquids, mixtures, or other substances are manufactured, used or stored in other than original containers.

See also

Motors and control equipment, Sections 2302 and 2304(d).

Fixtures, lamps, and receptacles, sections 1902(i), 1903(g) and (j), 1905(b), (c), (d), and (e).

Fuses and circuit breakers, section 1302(b).

Resistance devices, section 2401(a).

3608 - Wiring and Equipment in Extra-hazardous Locations.

a. Conductors installed in extra-hazardous locations shall be installed in rigid metal conduit; provided, however, that armored cable may be used in finished walls, floors and ceilings or where flexibility of connection is necessary.

b. Fixtures shall comply with section 1902(i), of this Code. Lamps shall be enclosed in guarded vapor-proof globes.

c. Devices and apparatus which tend to create sparks, or arcs, and thus ignite highly inflammable contents, shall not be placed in extra-hazardous locations, unless such devices and apparatus are of the fully enclosed type, especially approved for the location.

d. Switches and motors shall not be located under any hood or in any vent pipe.

MOTION PICTURE STUDIOS AND EXCHANGES.3609 - General.

a. A motion picture exchange, factory, laboratory or studio shall be deemed to be that building, or portion of a building, in which motion picture films are manufactured, exposed, developed, printed, re-wound, repaired, stored, etc.

3610 - Wiring and Equipment.

- a. Rigid metal conduit or metal raceway shall be employed as the wiring method, except that armored cable or flexible metal conduit may be installed in finished walls, floors or ceilings and where flexibility of connection is necessary.
- b. Side wall lamp outlets shall consist of receptacles enclosed in approved outlet boxes equipped with open-end guards riveted to the covers of the boxes.
- c. Pendant lamps shall be suspended by means of approved reinforced cords, armored cord or armored cable, and shall be protected by substantial wire guards.
- d. Each lamp portable shall be composed of approved hard service flexible cord, approved composition or approved metal-sheathed porcelain keyless socket, handle, hook and substantial guard. The cord shall carry the male end of an approved pin-plug connector or equivalent, the female end being of such design, or so hung, that the connector will break apart readily at any position of the cord. The connector shall be kept at least one foot above the floor.
- e. At patching tables, approved composition, or metal-sheathed porcelain keyless sockets, shall be employed and shall be equipped with suitable means to guard lamps from mechanical injury.
- f. In film-storage vaults lamps shall be installed on rigid fixtures and enclosed in vapor-proof globes. Such lamps shall be controlled by a double pole (single pole on identified wiring systems) switch, located outside the vault. Electric motors, or portable lamps, shall not be placed in the vault.
- g. Motors shall be of the enclosed type. Rheostats shall be placed in cabinets which enclose all live parts, leaving only the operating handles exposed.

PLACES OF ASSEMBLAGE, INCLUDING THEATRES AND MOTION PICTURE HOUSES.**3611 - General**

- a. Assembly halls, including theatres, minor theatres and motion picture houses, shall, in addition to other applicable requirements of this Code, have all wiring and equipment installed in compliance with the special provisions of sections 3612 to 3621, inclusive, hereof, insofar as they apply.

b. Exit lights shall be deemed to be lights in exit signs and all lights in lobbies, stairways, corridors and other portions of the theatre to which the public has access, which are normally kept lighted during the performance. Exit lighting shall comply with the requirements of Section 3623.

3612 - Wiring Methods Required.

a. Conductors shall be installed in rigid metal conduit or metal raceways except that, in finished walls, floors, or ceilings, and where flexibility of connection is necessary, flexible metal conduit and armored cable may be used. Metal raceways shall not be used for stage wiring.

3613 - Special Requirements for Stage Wiring, and Equipment.

a. The switchboard shall be of the dead-front type, and shall carry a metal hood running the full length of the board and protecting the latter from falling objects.

b. Dimmers shall be so connected that they will be dead when their respective circuit switches are open.

c. Footlights shall be wired in conduit, receptacles and their terminals being enclosed in approved boxes, or fittings, or wires shall be encased in metal trough composed of No. 20 U. S. sheet metal gage (.0375), treated to prevent oxidation. Conductors shall be soldered to receptacle terminals, which will be inaccessible. Receptacle terminals shall be kept at least one-half inch from the metal of the trough or box.

d. Footlights, border lights and proscenium side lights shall be so wired that not more than 20 receptacles will be connected on a No. 14 wire-branch circuit nor more than 30 receptacles on a No. 12 wire branch circuit. The connected load on any branch circuit shall not exceed that permitted by section 1805 of this Code.

e. Borders and proscenium side lights shall be constructed, as prescribed in paragraph (d) of this section; shall be suitably stayed and supported, and shall be so designed that the flanges of the reflectors or other adequate guards will protect the lamps from mechanical injury and from accidental contact with scenery or other combustible material.

f. Border cables shall be of approved type and suitably supported. They shall be employed only where flexibility is required.

g. Approved slow-burning wire shall be used for wiring the border.

h. Borders shall be suitably suspended. If wire rope is used, each length shall be insulated by at least one strain insulator, placed close to the border.

i. Stage and gallery pockets shall be of approved type, and shall be controlled from the switchboard. Feeds for arc pockets shall be not smaller than No. 6, and the receptacles shall have a capacity of not less than 35 amperes. Feeds for incandescent pockets shall be not smaller than No. 12, and the receptacles shall have a capacity of not less than 15 amperes. Feeds to pockets shall be of ample size to supply all receptacles therein at full rating. Plugs for arc and incandescent pockets shall not be interchangeable.

j. Lamps installed in scene docks shall be so located and guarded as to be free from mechanical injury.

k. Curtain motors shall be of the enclosed type.

l. Where stage flue dampers are released by an electrical device, the circuit operating the latter shall be normally closed, and shall be controlled by at least two approved single pole switches enclosed in approved iron boxes having self-closing doors without locks or latches, one switch being placed at the electrician's station and the other where designated by the inspection department. The device shall be designed for the full voltage of the circuit to which it is connected, no resistance being inserted. It shall be located in the loft above the scenery and shall be enclosed in a suitable iron box having a tight, self-closing door.

3614 - Equipment in Dressing Rooms.

a. Pendants for lights shall be composed of approved reinforced cord, armored cable or armored cord.

b. Lamps shall be protected by approved guards, sealed or locked in place.

3615 - Portable Arc Lamps.

a. Arc lamps shall be substantially constructed entirely of metal not less than No. 20 U. S. sheet metal gage (.0375-inch), except where approved insulating material is necessary. The design shall be such as to provide proper ventilation while retaining sparks, and to prevent carbons or other live parts of lamp from making contact with metal of hood.

b. Hoods for other than lens lamps shall have the front opening equipped with a self-closing, hinged door frame, carrying either wire gauze or glass. Hoods for lens lamps may have a stationary front, and a solid door on either back or side.

- c. Mica shall be used for the insulation of the lamp frame.
- d. Arc lamp frames and standards shall be so installed and guarded as to prevent their becoming grounded.
- e. The switch on the standard shall be of such design that accidental contact with any live part will be impossible.
- f. Stranded connections in lamp and at switch and rheostat shall be provided with approved lugs.
- g. Rheostats shall be enclosed in a substantial, properly ventilated metal case, affording a clearance of at least one-inch between case and resistance element. If the rheostat is mounted on the standard, a clearance of three inches above the floor shall be maintained.
- h. A qualified operator shall be employed for each lamp, or for each two lamps not more than ten feet apart, and so placed that one operator can properly watch and care for both.

3616 - Portable Bunches and Strips.

- a. Substantial metal shall be employed and the wiring shall not be exposed.
- b. Where the cable passes through the metal, an approved bushing shall be employed, and the cable shall be so anchored as to relieve the connections of any mechanical strain.
- c. Portable strips shall conform to the requirements of paragraphs (d), (e) and (f) of Section 3613 of this Code.
- d. Where the cable passes through the metal, an approved bushing shall be employed, and the cable shall be so anchored as to relieve the connections of serious mechanical strain.

3617 - Portable Plugging Boxes.

- a. The construction shall be such that no current-carrying part will be exposed.
- b. Each receptacle shall have a current-carrying capacity of 30 amperes, and shall be protected by approved fuses mounted on slate or marble bases enclosed in a fire-proof cabinet equipped with self-closing doors.
- c. Bus bars shall have a current-carrying capacity equal to the sum of the ampere ratings of all the receptacles. Approved lugs shall be provided for the connection of the master cable.

3618 - Portable Conductors.

- a. Pin-plug connectors shall be so designed that tension on the cable will not cause serious mechanical strain on the connections. The female half shall be attached to the live end of the cable.
- b. Flexible conductors used from receptacles to arc lamps, bunches and other portable equipment shall be approved stage cable, except that for the purpose of feeding a stand lamp under conditions where conductors are not liable to severe mechanical injury, an approved reinforced cord may be used, provided cutout designed to protect same is not fused over 15 amperes capacity.

3619 - Lights on Scenery.

- a. Brackets shall be wired internally, and the fixture stem shall be carried through to the back of the scenery, where a suitable bushing shall be placed on the end of the stem. Fixtures shall be securely fastened in place.

3620 - String or Festoon Lights.

- a. Joints in wiring shall be staggered where practicable.
- b. Lamps enclosed in lanterns or similar devices shall be equipped with approved guards.

3621 - Special Electrical Effects.

- a. Devices used for simulating lightning, waterfalls, etc., shall be so constructed and located that flames, sparks, etc., cannot come in contact with combustible material.

EXIT LIGHTING REQUIREMENTS.**3622 - General.**

- a. To comply with the Building Code of the City of Portland, it will be necessary to install wiring for exit lights in the classes of buildings noted below:

1. In theatres; including motion picture houses.
2. In assembly halls fitted with or without a platform or stage, used for purposes of general assemblage, for lodge halls, for dancing, for skating, for lectures, for musicals, for entertainments, for exhibitions, or as churches or for public worship. The requirements do not apply to assembly halls with a

seating capacity of less than 100 persons. (Allow one person for each seven square feet of floor area for seating capacity, and one person for each 14 square feet of floor area for general exhibitions, roller skating, dancing or other similar uses).

3. In public or private hospitals having accommodations for more than ten convalescent, ambulatory patients, or more than six patients confined to bed, of which not over one-half are quartered above the first story.

4. In buildings requiring fire escapes or enclosed stairways if occupied at night.

b. The service feeding the exit lighting system in the classes of buildings noted in paragraph (a) shall be installed in accordance with Section 1514 of this Code; provided, however, that, in existing buildings of the classes mentioned in items 3 and 4, above, not previously provided with exit lighting, connection may be made to existing branch lighting circuits.

c. Not more than one set of fuses shall be interposed between the service fuses and exit lights. No power or heating appliance, no plug receptacle, and no portable extension cord shall be connected to any branch circuit supplying exit or emergency lights. (For exception see paragraph (b) above).

d. Exit lights shall be controlled from one point or from as few points as practicable. Such lights shall be controlled only from the distribution center. (See also Section 3623(d).

3623 - Exit Lights in Places of Assemblage, Including Theatres and Motion Picture Houses.

a. Exit lighting shall be provided in places of assemblage noted in items 1 and 2, of paragraph (a), Section 3622, in the following places: projection room, at all exits from house and stage, and in all spaces, passageways, stairways leading from such exits to the street. In the places of assemblage noted in item 1 of paragraph (a), Section 3622, there shall be provided in the main auditorium a sufficient number of emergency lights connected with the exit lighting system to provide the minimum average intensity of illumination prescribed by paragraph (b) of this Section.

b. There shall be provided sufficient illumination to permit all persons to safely traverse the spaces lighted; in no case shall the average intensity over the spaces traversed be less than .25 foot-candle.

(Fine print note) In general the use of one-tenth watt per square foot will provide the required .25 foot-candle average intensity.

c. The general illumination in the places specified in paragraph (a), of this section, (except main auditorium) may be furnished from the exit lighting system; provided, however, that there shall also be furnished in the places specified additional illumination from the general lighting system sufficient to furnish an average intensity of .25 foot-candle. In some cases, the general lighting units installed in the auditorium, and other portions of the building, may be so located that they will light the traversed spaces to the intensity specified.

d. No part of the exit lighting system in theatres, minor theatres and motion picture houses shall pass through the stage switchboard, or be controlled from the stage. The point of control for the exit lighting branch circuits shall be located in the lobby or other location in the front of the house. (The requirements for main service switch are given in Section 1514).

e. At each exit, there shall be placed a permanent exit sign with letters not less than eight inches in height for theatres and motion picture houses, and not less than six inches in height for other places of assemblages, which shall be illuminated by a red light. The letters of the sign shall be of a color which will be in contrast to the background, so that they will be plainly visible from distant parts of the house. All exit signs shall be connected to the exit lighting system.

3624 - Exit Lights in Hospitals.

a. Exit lighting shall be provided in hospitals of the class noted in paragraph (a), of Section 3622, in the following places: corridors, stairs, operating rooms, and for fire escape markers. The average intensity of illumination in the spaces specified shall not be less than that prescribed in paragraph (b) of Section 3623, and shall be furnished by both the general lighting system and the exit lighting system. (For requirements for fire escape markers, see paragraph (b), Section 3625).

(Fine print note) The building code provides that exit lights shall be kept burning from $\frac{1}{2}$ hour before sunset to $\frac{1}{2}$ hour after sunrise.

3625 - Exit Lights in Buildings Requiring Fire Escapes.

a. Buildings, which require fire escapes or enclosed stairways, shall have emergency lights provided in the following places: in all corridors, halls, stairways, and other passage ways leading to the street and at the point of egress to each fire escape.

b. The lights indicating the location of each fire escape may be in the form of a metal box surrounding the light, with a glass front having "Fire Escape" in letters on same not less than three inches in height, or a red glass globe or shade not less than four inches in diameter surrounding the light. Such electric light shall be not less than 25-candle power.

c. The average intensity of illumination in the spaces specified in paragraph (a), of this section, shall be not less than that prescribed in paragraph (b) of Section 3623. (See also note under section 3624(a)).

Section 3626: That Ordinance No. 44018, entitled: "An Ordinance (to be known as the Electrical Code) regulating the installation and operation of electric wires, appliances, apparatus and devices in or about buildings and on private or public property (with certain exceptions) in the City of Portland, Oregon; providing a penalty for the violation of same and repealing Ordinance No. 37682 and all other ordinances or parts of ordinances in conflict therewith and declaring an emergency," passed by the Council December 12, 1923, as amended by Ordinance No. 46554, be and the same is hereby repealed, and all other ordinances in conflict herewith are each hereby expressly repealed.

Section 3627: Inasmuch as this ordinance is necessary for the immediate preservation of the public health, peace and safety of the City of Portland in this: that the present ordinance regulating the installation and operation of electric wires, appliances and apparatus in or about buildings in the City of Portland, which is inadequate and obsolete, may be replaced without further delay, therefore an emergency is hereby declared to exist and this ordinance shall be in force and effect from and after its passage by the Council.

Passed by the Council, JUN 23 1926

GEO. L. BAKER

Mayor of the City of Portland

Attest:

Georg Fink

Auditor of the City of Portland