

PROTECTION AGAINST EXPOSURE FIRES

1. GENERAL

1.01 This section outlines recommended standards of construction for preventing fire from entering and spreading through fire-resistive telephone buildings. Protection against exposure fires involves principally the provision of fire-resistive wall and roof surfaces and protection of the necessary openings for windows, doors, ventilation air intakes, and stairway and elevator shaft roof structures. The measures suggested for protection against exposure fires are also considered for protection against missiles and other hazards of strife.

1.02 The amount of protection to be provided is determined for each particular building depending on the character of adjacent buildings and their contents, and the distance between them and the telephone building. Any change in exposure which may occur from time to time is a matter for immediate reporting and attention and should be included for checking on inspection routine.

1.03 This section is revised and reissued to modify the requirements for the use of labeled windows in fire-resistive telephone buildings. For operation and maintenance application the section is dually numbered with this issue and the same number is assigned for uniformity.

1.04 The suggested standards of construction are based, in general, on the National Fire Codes, Volume III — Building Construction and Equipment, of the National Fire Protection Association; and the National Building Code, recommended by the National Board of Fire Underwriters.

1.05 Plans and specifications for new buildings or building additions should be submitted to Marsh and McLennan for their review as to the adequacy of fire protection and it is suggested in addition, that they be consulted whenever there is a change in the exposure of the building.

1.06 For the provision of adequate protection it is recommended that all fire doors, shutters, fire windows, and other similar protective devices for openings in exterior walls bear the label of Underwriters' Laboratories, Incorporated appropriate for the class of protection involved. Materials and devices are tested by Underwriters' Laboratories, Incorporated, for compliance with Laboratory standards of proper construction and performance with regard to their suitability for installation in accordance with regulations of the National Board of Fire Underwriters. Products tested and found to comply with the requirements are listed in Underwriters' Laboratories publications, and many listed products, inspected in current output, are labeled.

1.07 Where the following suggested measures are exceeded by the requirements of local or state codes, the legislated requirements are applicable.

2. WALL OPENINGS

2.01 Wall openings present the principal problem in protection against exposure fires and it is advisable that the openings be limited in size and number to the requirements for rapid egress from the building and for the provision of sufficient light and ventilation as proportionately suited to the various occupancies.

2.02 The avoidance of hazardous surroundings, where practicable, and as outlined in Section H21.111, Selection of Building Sites for Central Offices, is an important factor in limiting the requirements for exposure protection.

2.03 Although the standard protectives generally offer less fire resistance than the walls of which they form a part, they are designed to remain in position as an effective barrier against fire for the desired period of protection. With consideration of the degree of exposure outside the building, wall openings are

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classified D, E, or F, respectively, for severe, moderate or light exposure.

2.04 Telephone buildings in heavily developed commercial areas may require the protection of Class A or B labeled devices at openings exposed to buildings considered of particularly hazardous occupancy or where the nature of adjacent street or alley traffic warrants their consideration.

2.05 Windows

(a) Labeled windows are provided as single retardants for the protection of Classes E and F openings and are used in combination with fire shutters in Class D openings which require double retardants.

(b) Labeled windows when required are of steel frames and sash, glazed with approved 1/4" wired glass held in place by steel clips. Their use is restricted to the moderate or light exposures because of the inherent limitations of the glass which transmits radiant heat and flows at temperatures often reached in fires. The main variation between the types of labeled windows is the limitations as to the size of individual glass lights and the total exposed areas of glass, with the larger sizes and areas permitted in the Class F openings.

(c) The use of labeled windows is governed mainly by the degree of current fire exposure or the worst possible fire exposure of the building that could exist under the present building codes. If there is any knowledge of pending changes in the Building Codes or Zoning Requirements they also should be considered. The following recommendations should be considered when planning the type of window to be used.

(d) Building exposures requiring labeled windows.

(1) The side of the exposed building located less than 15 feet from any lot line except those fronting on a street.

(2) The exposed building located 15 or more feet from an exposing building or any lot line, but requiring a single retardant under the provisions of the National Building Code, 1955 Edition, Paragraph 803,

along with Standard 80-A found in NFPA's National Fire Codes, Volume III —Building Construction and Equipment.

(e) The automatic operation of windows is not generally required and is not recommended because of the accident hazard involved in the failure of the automatic device.

(f) Street front windows in first floor non-equipment space such as public offices, clerical offices and quarters may be glazed with plain glass, provided the outside exposure is separated from any equipment space by a ceiling high partition having a fire resistance rating of not less than one hour. In order to maintain the fire-resistive efficiency of this partition it is important that any view openings be protected in an approved manner. The use of wired glass as a single retardant is recommended to conform to the requirements for the use of wired glass in Class C openings in interior partitions. In the event it is considered desirable to use ordinary plate glass in the view openings it is suggested that steel shutters be provided.

(g) Where labeled windows are not required, the sash and frame are of noncombustible material, such as aluminum, steel, etc, in fire-resistive buildings.

2.06 Fire Shutters

(a) Rolling steel fire shutters are used in combination with windows to provide Class D labeled protection for openings in walls under severe exposure. Their use in telephone buildings, however, is determined by the requirements of local codes pertaining to fire-resistive construction or the recommendations of Marsh and McLennan in consideration of the severity of exposure, under the procedures outlined in Section H44.015, Fire and Safety Inspection and Advisory Services Rendered by Marsh and McLennan.

(b) Considerations of the high initial cost and subsequent maintenance and testing involved, indicate for new buildings definite fire protection advantages in omitting certain windows or spacing them farther apart. Where a serious exposure hazard develops at an existing building, similar advantages may be gained where practicable, by closing the exposed open-

ing with masonry. The practicability of these alterations, however, would depend largely upon the occupancy, and ventilation requirements of the space exposed.

(c) Where the conditions of construction and character of occupancy permit, installation of fire shutters on the interior face of the wall opening offers the advantages of protection from weather, appearance, and ease of access for operation.

(d) The automatic operation of fire shutters generally does not appear to be warranted in telephone buildings, and where required is limited to use on openings not intended for emergency exits.

(e) Rolling shutters should be provided with approved attachments for conveniently testing their operation from the inside of the building, and with approved safety attachments to prevent their operation while windows are being washed. These attachments are designed to prevent the shutters being left in an inoperative condition.

2.07 Doors

(a) Door openings in exposure walls normally do not serve to provide light or ventilation to the building and are therefore more easily protected by standard fire doors.

(b) Openings in exposure walls to provide exit to outside balconies associated with smokeproof towers and the opening into the tower from the balcony are generally protected by Class E labeled doors. Class D labeled doors are used in these locations, however, where the severity of the outside exposure warrants the use of Class D labeled protection for adjacent window openings in the building wall.

(c) Doors at openings used as exits are of the swinging type where practicable, opening in the direction of exit travel and are provided with self-closing devices.

(d) Self-closing doors are normally closed and latched in the closed position, and it is important that their closing is not prevented, by wedging or tying in the open position.

(e) Latching devices are provided on self-closing doors to prevent warping of the door under severe exposure in the closed position, and it is important that the devices be maintained in sound operative condition at all times.

2.08 Miscellaneous Openings

(a) Louvered or hooded openings in exposure walls for ventilation air intakes, etc, are generally equipped with automatic fire dampers or automatic rolling steel shutters.

(b) Equipment entrances, when required to be open, offer a definite fire hazard if temporary protection is not provided. Loading platforms associated with equipment installations are generally installed in a manner which prevents the use of the doors or windows normally intended to protect the exposure. It is considered advisable that temporary closures of incombustible materials be provided for protection of the openings when in use, and that loading platforms be constructed of incombustible materials for protection at the opening when in use.

2.09 Glass Blocks

(a) Glass block panels are suitable for use only in exterior walls of light exposure or where there is no exposure.

(b) Where used as window protectives under light exposure the panels are limited in area to 120 square feet.

(c) Where there is no exposure the panels are limited in area to 144 square feet.

(d) Glass blocks are not used in fire walls, party walls, enclosure walls of stairs or elevator shafts, or in any wall subject to moderate or severe exposure.

3. ROOF COVERING

3.01 Approved fire-resistive roof coverings are classified A, B or C, respectively, in consideration of their effectiveness against severe, moderate or light exposure from outside fires. The properties of roof coverings which are considered in determining their classification in-

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clude: (1) their flammability, (2) degree of heat insulation they afford the roof deck, (3) their stability under fire exposure, (4) absence of flying brand hazard, and (5) the frequency of repairs necessary to maintain their fire-resistive properties.

3.02 Fire-resistive telephone buildings generally require roof coverings of standard quality approved and listed by Underwriters' Laboratories as Class A or B.

3.03 Built-up roof coverings surfaced with gravel, crushed stone or slag, are generally provided on flat roofs for protection from severe or moderate exposure. Where asbestos felt is used for the built-up layers, the surfacing is not required. Other types of coverings acceptable for Class A or B installation include tin, copper or other metal; slate, clay or Portland cement tile, and asbestos shingle.

4. ROOF OPENINGS

4.01 Skylights

(a) Due to the considerations of high initial cost, attendant maintenance and hazard of leaks, it is desirable that the use of skylights be limited to locations where necessary equivalent light or ventilation can not be furnished by windows, or where skylights are required by local ordinances.

(b) The framework and sash of skylights are of galvanized iron, copper or monel metal, properly reinforced where span requires, securely fastened to angle irons on the roof.

(c) Skylights over stair, dumbwaiter, air or similar shafts are glazed in an approved manner with plain glass not over 3/16" thick, not over 18" wide, nor more than 720 square inches in area, protected with approved wire screens.

(d) Skylights for ventilation and other purposes which are inclined less than 80 degrees to the horizontal are glazed with 1/4" thick wired glass or 1/2" plate glass protected with approved wire screens. The panes are limited in width to 18" and in area to 1728 square inches.

(e) Where skylights inclined at an angle of 80 degrees or more to the horizontal are subject to exterior exposure, approved wired glass not less than 1/4" thick or 1/2" plate glass protected with approved wire screens are used. The unsupported surface of the glass is limited to 48" in either dimension and 720 square inches in area.

4.02 Scuttles

(a) Where scuttle openings are provided for access to the roof, their fascias and covers are constructed preferably with steel plates and angles. Scuttle openings are at least 2 feet by 3 feet in size.

(b) Scuttle covers are hinged and counter-balanced to facilitate operation and minimize accident hazard.

(c) Stairs or permanent ladders with handrails are provided to give ready access to the scuttles.