

This Is A Fire Fresh Document

FIRESAFETY

APPLICATION CRITERIA FOR TELEPHONE EQUIPMENT BUILDINGS

CONTENTS	PAGE
1. GENERAL	1
2. FIRESAFETY PRACTICES	2

1. GENERAL

- 1.01 This section outlines application criteria for the 760-600 series firesafety practices for telephone equipment buildings. Applicable practices are identified and the firesafety recommendations are presented according to building size.
- 1.02 This section is being updated to reflect refinements in firesafety covered in the Network Service Protection Task Force Report (NSPTFR). Whenever this section is reissued, the reason(s) for reissue will be given in this paragraph.
- 1.03 The recommendations in this section are based, in general, on the National Fire Protection Association (NFPA) standards, the Model Building and Fire Codes, insurance and property risk management considerations, technical advice of Bellcore and consensus opinion of Company subject matter experts.
- 1.04 Where local, state, federal or Occupational Safety and Health Act (OSHA) regulations require higher degrees of protection, the legislated criteria should be

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followed to the extent required. Where those provisions are in conflict with this section, a variance means should be found by seeking "equivalent protection" through alternative installation methods which will satisfy the intent of this section.

- 1.05 A telephone equipment building is any building which has dedicated areas to house telephone equipment, and whose operational loss is considered service affecting (loss of network or service to customers). Telephone equipment areas are those spaces which contain switching and/or transmission equipment (all types) and associated support facilities; eg. batteries, dc power plants, standby engines, distributing frames, and cable entrance facilities.
- 1.06 There are other areas within a telephone equipment building which, because of their critical nature, shall also be treated as telephone equipment space. These spaces house equipment such as network service accounting related computer based systems; eg. AMARC, CAMAC, ETS, TASC, etc. Customer service systems such as TSPS operator console areas, DA operator console areas, repair service and assignment bureaus, test boards, etc. Control centers such as SCCs, FMACs and BOCCs should also be treated as telephone equipment spaces except for interior finishes and furnishings, which may be treated as a non-telephone equipment space (Section 760-610-200). However, those customer service systems which have the capability of remoting their service to another location, need not be treated as telephone equipment space. Whenever customer service systems are located within telephone equipment areas, they shall adhere to the finishes and furnishing requirements for telephone equipment spaces.
- 1.07 Telephone equipment buildings are classified as "Business Occupancies" in the Model Building Codes and as "Special Purpose Industry" by the NFPA Life-Safety Code.
- 1.08 This section is based on Company Firesafety Policy and applies to both new and existing facilities. However, there may be cases in existing buildings where it is impractical to retrofit the building to comply with certain sections. Therefore, sound engineering judgment should be exercised in these cases to ensure the intent of the sections are achieved.

2. FIRESAFETY PRACTICES

- 2.01 Tables A and B and the following paragraphs summarize application criteria for the engineering considerations of firesafety for telephone equipment buildings. The basic philosophy of these criteria is to provide a sound basis for fire

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protection in all telephone equipment buildings. Local building code requirements should also be adhered to provided they are not in conflict with this section. Since the larger buildings generally have more complicated fire problems, have a higher potential for fires, and represent a larger investment and service commitment, these facilities require additional attention which is reflected in the firesafety requirements presented in Tables A and B.

- 2.02 The sections listed in Table A detail firesafety requirements for **Site Selection, Finishes and Furnishings, Kitchen/Cafeteria, Standby Engines, Building Construction, Telephone Equipment Installation, Exposure Protection, Type of Construction, Egress/Access, Compartmentation, Firestopping, HVAC Systems, Smoke Control, Portable Fire Extinguishers, Suppression Systems, Detection Systems and Engineering Provisions for the Firesafety Plan.**
- 2.03 **Standby Engines:** Of particular importance is the concrete diking and provisioning of fuel level and warning indication at the point of fill (normally outside the building) on day tanks. Buildings which are considered as having a concentration of telecommunication services as determined by Company service protection policies should also be provided automatic shut-off valves on the fuel supply lines as they enter the building and as they leave inside fuel tanks.
- 2.04 **Types of Construction:** Building construction sections pertaining to firesafety are listed in Tables A and B and are discussed in the following paragraphs.
- (a) Equipment buildings with an ultimate gross area of less than 500 square feet shall be of Limited Combustible (LC) construction; ie. construction in which columns, piers, beams, girders, joists, trusses, floors and floor-ceiling assemblies, roof and roof-ceiling assemblies, walls, and/or partitions are of noncombustible materials but do not obtain a 1-hour rating.
 - (b) Equipment buildings with an ultimate gross area of more than 500 square feet but less than 1500 square feet shall be of Protected Limited Combustible (PLC) construction; ie. construction in which columns, piers, bearing walls, girders, joists, trusses, floors and floor-ceiling assemblies, and roofs and roof-ceiling assemblies are of non-combustible materials and shall have a fire resistance rating of not less than 1 hour.

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- (c) Equipment buildings with an initial gross area in excess of 1500 square feet shall be of fire-resistive (FR) construction; ie. construction in which columns, piers, girders, trusses, and bearing walls supporting more than one floor or roof shall have a 3-hour fire rating. Floors of more than one story shall have a 2-hour fire rating. Girders, trusses, beams, and bearing walls supporting only one floor or roof shall have a 2-hour fire rating.
- (d) The square foot limitations for new buildings as outlined in (b) and (c) are intended as guidelines for establishing design parameters. If, however, the initial building is under 1500 square feet but the growth factor is such that the ultimate square footage will be beyond 2500 square feet, the building shall be of FR construction.
- (e) In an existing building where there is a replacement of telephone equipment and where the existing building is in excess of 1500 square feet, PLC construction (1-hour rated) is acceptable up to a maximum of 2500 square feet. Beyond 2500 square feet, the existing building must meet the requirements of FR construction.
- (f) When existing buildings, 2500 square feet or less, do not meet PLC requirements, either a new building is required or the existing building must be upgraded. In many cases, it will not be possible to upgrade to fully achieve PLC construction. However, in these cases, the PLC requirements may be achieved by: (1) on the building exterior, upgrading the wall and roof services with noncombustible material and (2) on the building interior, providing a 5/8-inch layer fire-rated gypsum board, or equivalent, on walls, ceiling surfaces and where feasible, to the underside of the flooring assembly.
- (g) Enlargement of existing buildings (less than 1500 square feet) up to 2500 square feet shall meet the PLC construction requirements for the addition. The existing building shall meet the requirements as addressed in (f). The total structure for buildings in excess of 2500 square feet shall comply with (e).

2.05

Compartmentation: The sections for interior compartmentation to reduce the likelihood of serious spread of fire within a telephone building are listed in Tables A and B and are discussed in the following paragraphs.

- (a) Equipment buildings with an ultimate gross area of less than 500 square feet need not have interior compartmentation.

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- (b) Equipment buildings with an ultimate gross area of more than 500 square feet but less than 10,000 square feet require interior compartmentation per the control documentation, except for Cable Entrance Facilities (CEFs) and power rooms.
- (c) Equipment buildings with an ultimate gross area of more than 10,000 square feet require interior compartmentation for all areas described in the control documentation. However, compartmentation of CEFs and power rooms on a retrofit basis is required only in existing buildings greater than 25,000 square feet.
- (d) Above grade CEFs, which are generally not associated with the larger buildings; ie. ultimately less than 25,000 square feet, do not require compartmentation.
- (e) Whenever compartmentation is provided for CEFs, Section 919-240-610 "Cable Entrance Facility System Design," should be reviewed for gas venting requirements.
- (f) Consider compartmentation of Modular Distribution Frame (MDF) areas if physical conditions permit and cabling can be properly firestopped at wall penetrations.
- (g) Avoid placement of more than one switching and/or transmission central office system in the same compartment as long as the resulting compartments are greater than 2000 square feet.

2.06 **Heating, Ventilating and Air Conditioning (HVAC) Systems:** Where smoke control is not provided, telephone equipment areas and below grade spaces shall have a manually activated means of venting or purging with outside air to remove smoke. This can be accomplished by using the air handling system economizer serving that particular space.

2.07 **Smoke Control:** In new equipment buildings of three levels with an ultimate gross area of more than 25,000 square feet, a smoke control and evacuation system as outlined in the sections listed in Tables A and B is required.

2.08 **Portable Fire Extinguishers:** In addition to the proper placement and distribution of portable fire extinguishers in telephone equipment buildings, a pair of KS-22240 Fire Resistant Gloves should be provided in a KS-8439 container located at the main entrance of each central office equipment area. These gloves

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are intended for use after the extinguishment of a fire to separate bundles of wires in order to put out any burning embers.

2.09

Suppression Systems: The suppression system sections to be considered for firesafety in equipment buildings are discussed in the following paragraphs and are listed in Tables A and B.

- (a) The use of automatic suppression systems (sprinklers, Halon 1301) are not recommended for telephone equipment areas. As an exception, sprinklers may be installed in a CEF wherever there is a sufficiently high concentration of telecommunication service as determined by Company service protection policies. This exception does not apply, however, to a CEF that is considered a cable pit or is located above grade, and as such, sprinklers should not be provided under these conditions. An alternate to installing sprinklers where required by code, in some cases, may be to ask for equivalence through installation of smoke detection.
- (b) Sprinklers are not recommended in areas which contain alternating current (AC) primary or secondary electrical distribution equipment, such as switchgear, transformers, etc.
- (c) Sprinklers should not be placed, if at all possible, on floors of buildings above telephone equipment areas.
- (d) Sprinklers may be used in other parts of telephone equipment buildings such as office areas and storerooms, depending on local code provisions. Sprinklers are also recommended in below-grade building storage, receiving-loading docks, maintenance shops, and other non-telephone equipment areas involving a concentration of combustible materials. Sprinklers are specifically recommended to protect below grade non-equipment areas within a telephone central office equipment building that is identified by Company service protection policies as having a concentration of telecommunication services.
- (e) The Halon 1301 systems should only be considered in special circumstances such as when lifesafety, protection of vital customer services, and/or major potential revenue loss suggest its use in specific areas. For these individual cases, all factors and costs must be examined to arrive at a supportable decision. Design consideration for such systems should be in accordance with Section 760-640-400.

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- (f) The application recommendations for standpipe and hose systems in equipment buildings are shown in Section 760-640-310, Table 1 and generally based upon a function of building height (number of stories) and area per floor. Consideration should also be given to providing a standpipe and hose system wherever a sprinkler system is installed.

2.10 **Detection Systems:** The sections related to the installation of Early Warning Fire Detection Systems (EWFDS) in equipment buildings are discussed in the following paragraphs and are listed in Tables A and B.

- (a) EWFDS shall be installed throughout all spaces in telephone equipment buildings (including all telephone equipment and non-telephone equipment type of areas).
- (b) EWFDS shall be continuously monitored for alarms 24 hours a day by a control center. Monitoring indication shall include detection and trouble conditions and, where provided, sprinkler system supervisory signal operation.
- (c) TSPS, DA, SCC, FMAC, and BOCC areas, or other similar type facilities which are occupied continuously, require EWFD only when they are within an equipment building.

2.11 **Engineering Provisions for the Firesafety Plan:** A Fire Command Station and Communications System are required in all multistory equipment buildings with greater than 100,000 square feet and normally occupied by 100 or more people. Fire Protection Floor Plans and Signs are required in all multistory equipment buildings either greater than 25,000 square feet or normally occupied by 100 or more people.

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TABLE A

CATEGORY APPLICATION CRITERIA FOR TELEPHONE EQUIPMENT BUILDINGS

FIRESAFETY PRACTICES	GROSS SQUARE FEET						
	0-500	500-1500	1500-3000	3000-10,000	10,000-25,000	25,000-100,000	100,000
1. Site Selection	*	*	*	*	*	*	*
2. Finishes/Furnishings	*	*	*	*	*	*	*
3. Kitchen/Cafeteria	*	*	*	*	*	*	*
4. Standby Engines	*	*	*	*	*	*	*
5. Bldg. Construction Practices	*	*	*	*	*	*	*
6. Telephone Eqpt. Installation	*	*	*	*	*	*	*
7. Exposure Protection	*	*	*	*	*	*	*
8. Type of Construction (See Para. 2.04)	LC*	PLC*	FR*	FR*	FR*	FR*	FR*
9. Egress/Access	*	*	*	*	*	*	*
10. Compartmentation (See Para. 2.05)	NA	*	*	*	*	*	*
		(Except CEFs & Power Rooms)					
11. Firestopping	*	*	*	*	*	*	*
12. HVAC Systems (See Para. 2.06)	*	*	*	*	*	*	*
13. Smoke Control (See Para. 2.07)	NA	NA	NA	NA	NA	*	*
14. Portable Extinguisher (See Para. 2.08)	*	*	*	*	*	*	*
15. Suppression System (See Para. 2.09)	*	*	*	*	*	*	*
16. Detection System (See Para. 2.10)	*	*	*	*	*	*	*
17. Engineering Provisions for Firesafety Plan (See Para. 2.11)	NA	NA	NA	NA	NA	*	*

*See Support Documentation in Table B

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TABLE B

SUPPORT DOCUMENTATION FOR TELEPHONE EQUIPMENT BUILDINGS

CATEGORY	SECTION NO.	SECTION TITLE
1. Site Selection	760-610-100	Considerations Related to Site Selection
2. Finishes/Furnishings	760-610-200	Considerations for Interior Finishes and Furnishings
3. Kitchen/Cafeteria	760-610-300	Considerations for Cafeteria(s)/Kitchen(s)
4. Standby Engines	760-610-400	Considerations for Standby Engines
5. Building Construction Practices	760-620-100	Fire Protection During Construction
6. Telephone Equipment Installation	760-620-200	Considerations During Central Office Equipment Installation and Removal
7. Exposure Protection	760-630-100	Protection Against Exposure Fires
8. Type of Construction	760-630-200	Fire Resistance Ratings of Structural Elements
9. Egress/Access	760-630-300	Egress/Access Requirements
10. Compartmentation	760-630-400	Compartmentation
11. Firestopping	760-630-410	General Firestopping Considerations for Floor and Wall Penetrations and Protection of Cable Runs
12. HVAC Systems	760-640-100	Considerations for Heating, Ventilating, and Air-Conditioning Systems
13. Smoke Control	760-640-110	Considerations for Smoke Control Systems
14. Portable Extinguisher	760-640-200	Distribution of Portable Extinguishers
15. Suppression System	760-640-300 760-640-310 760-640-320 760-640-400	General Considerations for Suppression Systems Standpipe and hose Systems Considerations for Pumps for Fire Service Design Considerations for Halon Flooding Systems
16. Detection System	760-650-100	Fire Detection Systems
17. Engineering Provisions for the Firesafety Plan	760-660-100	Engineering Provisions for the Firesafety Plan

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