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3.3 General Definitions.

3.3.1 Area.

3.3.1.1* **Critical Area.** The area calculated to be one-half the overall length of the helicopter multiplied by three times the width of the widest portion of the fuselage.

3.3.1.2 **Helicopter Storage and Servicing Area.** That part of a rooftop hangar normally used for the storage and servicing of one or more helicopters, not including any adjacent or contiguous areas or structures, such as shops, storage areas, and offices.

3.3.1.3* **Practical Critical Fire Area (PCA).** The area, for foam discharge purposes, calculated as one-half the fuselage length multiplied by three times the fuselage width.

3.3.2 **Critical Area.** See 3.3.1.1.

3.3.3 **Emergency Evacuation Facility.** A designated and clear area at rooftop or ground level intended exclusively for emergency/rescue operations by helicopters.

3.3.4* **Foam Fire-Extinguishing System.** A low-expansion foam fire-extinguishing system.

3.3.5 **Helicopter Storage and Servicing Area.** See 3.3.1.2.

3.3.6 **Helipad Support Structure.** A structure used for helipad and/or helicopter maintenance or storage that is not classified as a rooftop hangar.

3.3.7* **Heliport.** An identifiable area located on land, on water, or on a structure that also includes any existing buildings or facilities thereon, used or intended to be used for landing and takeoff of helicopters.

3.3.7.1 **Offshore Landing Heliport.** A heliport located on fixed or mobile structures and vessels in a marine environment that do not have means of entry and egress connected directly to shore.

3.3.8 **Overall Length.** The length of a helicopter from the main rotor fully extended to the tail rotor fully extended.

3.3.9 **Practical Critical Fire Area (PCA).** See 3.3.1.3.

3.3.10 **Rooftop Hangar.** A structure on top of a building where helicopters are housed, stored, or maintained.

3.3.11 **Rooftop Landing Pad.** The entire load-bearing surface intended for the touchdown and lift off (TLOF) of helicopters.

3.3.12 **Temporary Landing Site.** A site intended to be used for a period of less than 30 consecutive days, and for no more than 10 operations per day.

Chapter 4 General Requirements — Land-Based Facilities

4.1 **General.** The requirements in this chapter shall apply to all land-based facilities. (See Chapter 8 for requirements pertaining to

4.3.2 Oxygen and other medical gases shall be stored and used in accordance with Section 9.4 of NFPA 99, *Standard for Health Care Facilities*.

4.3.3 Aboveground flammable liquid storage tanks, compressed gas storage tanks, and liquefied gas storage tanks shall be laterally located at least 50 ft (15.2 m) from the edge of the final approach and takeoff (FATO) area as defined in FAA A/C 150/5390-2B, *Heliport Design Advisory Circular*.

4.4 Fire-Fighting Access.

4.4.1 The heliport shall have at least one access point for fire-fighting/rescue personnel, and, where practical, a second access point shall be available and located remotely from the first.

4.4.2 Fences shall not prevent access by fire-fighting/rescue personnel.

4.5 **Landing Pad Pitch.** The heliport shall be pitched or sloped so that drainage flows away from access points and passenger holding areas.

4.6 No Smoking.

4.6.1 No smoking shall be permitted within 50 ft (15.2 m) of the landing pad edge.

4.6.2 NO SMOKING signs shall be erected at access/egress points to the heliport.

4.7 **Fueling System.** Fueling systems shall be designed in accordance with NFPA 407, *Standard for Aircraft Fuel Servicing*.

4.7.1 Fixed fueling dispensing equipment shall be located outside of rooftop hangars.

4.7.2 Fueling equipment shall not hinder or obstruct access to exits or fire-fighting equipment.

4.7.3 Fuel pump manifolds shall be located 25 ft (7.6 m) from rooftop hangars and fixed fire protection equipment.

Chapter 5 Rooftop Landing Facilities

5.1 **General.** The requirements in Chapters 4 and 5 shall apply to all rooftop landing facilities.

5.2* **Structural Support.** Main structural support members that could be exposed to a fuel spill shall be made fire resistant using listed materials and methods to provide a fire-resistance rating of not less than 2 hours.

5.3 **Landing Pad Pitch.** The rooftop landing pad shall be pitched to provide drainage at a slope of 0.5 percent to 2 percent.

5.3.1 The pitch of the pad shall be designed to protect, at a minimum, the primary egress path, passenger holding area, rooftop hangar, and fire protection activation systems.

5.3.2 Drainage flow shall not penetrate alternate egress



the overall length of the helicopter multiplied by three times the width of the widest portion of the fuselage.

3.3.1.2 Helicopter Storage and Servicing Area. That part of a rooftop hangar normally used for the storage and servicing of one or more helicopters, not including any adjacent or contiguous areas or structures, such as shops, storage areas, and offices.

3.3.1.3* Practical Critical Fire Area (PCA). The area, for foam discharge purposes, calculated as one-half the fuselage length multiplied by three times the fuselage width.

3.3.2 Critical Area. See 3.3.1.1.

3.3.3 Emergency Evacuation Facility. A designated and clear area at rooftop or ground level intended exclusively for emergency/rescue operations by helicopters.

3.3.4* Foam Fire-Extinguishing System. A low-expansion foam fire-extinguishing system.

3.3.5 Helicopter Storage and Servicing Area. See 3.3.1.2.

3.3.6 Helipad Support Structure. A structure used for helipad and/or helicopter maintenance or storage that is not classified as a rooftop hangar.

3.3.7* Heliport. An identifiable area located on land, on water, or on a structure that also includes any existing buildings or facilities thereon, used or intended to be used for landing and takeoff of helicopters.

3.3.7.1 Offshore Landing Heliport. A heliport located on fixed or mobile structures and vessels in a marine environment that do not have means of entry and egress connected directly to shore.

3.3.8 Overall Length. The length of a helicopter from the main rotor fully extended to the tail rotor fully extended.

3.3.9 Practical Critical Fire Area (PCA). See 3.3.1.3.

3.3.10 Rooftop Hangar. A structure on top of a building where helicopters are housed, stored, or maintained.

3.3.11 Rooftop Landing Pad. The entire load-bearing surface intended for the touchdown and lift off (TLOF) of helicopters.

3.3.12 Temporary Landing Site. A site intended to be used for a period of less than 30 consecutive days, and for no more than 10 operations per day.

Chapter 4 General Requirements — Land-Based Facilities

4.1 General. The requirements in this chapter shall apply to all land-based facilities. (See Chapter 3 for requirements applying to offshore heliports.)

4.2* Plans. Plans for construction and protection of heliports shall be approved by the authority having jurisdiction.

4.3 Tank Locations.

4.3.1 Storage, handling, and use of flammable and combustible liquids shall be in accordance with NFPA 30, *Flammable and Combustible Liquids Code*.

pressed gas storage tanks, and liquefied gas storage tanks shall be laterally located at least 50 ft (15.2 m) from the edge of the final approach and takeoff (FATO) area as defined in FAA A/C 150/5390-2B, *Heliport Design Advisory Circular*.

4.4 Fire-Fighting Access.

4.4.1 The heliport shall have at least one access point for fire-fighting/rescue personnel, and, where practical, a second access point shall be available and located remotely from the first.

4.4.2 Fences shall not prevent access by fire-fighting/rescue personnel.

4.5 Landing Pad Pitch. The heliport shall be pitched or sloped so that drainage flows away from access points and passenger holding areas.

4.6 No Smoking.

4.6.1 No smoking shall be permitted within 50 ft (15.2 m) of the landing pad edge.

4.6.2 NO SMOKING signs shall be erected at access/egress points to the heliport.

4.7 Fueling System. Fueling systems shall be designed in accordance with NFPA 407, *Standard for Aircraft Fuel Servicing*.

4.7.1 Fixed fueling dispensing equipment shall be located outside of rooftop hangars.

4.7.2 Fueling equipment shall not hinder or obstruct access to exits or fire-fighting equipment.

4.7.3 Fuel pump manifolds shall be located 25 ft (7.6 m) from rooftop hangars and fixed fire protection equipment.

Chapter 5 Rooftop Landing Facilities

5.1 General. The requirements in Chapters 4 and 5 shall apply to all rooftop landing facilities.

5.2* Structural Support. Main structural support members that could be exposed to a fuel spill shall be made fire resistant using listed materials and methods to provide a fire-resistance rating of not less than 2 hours.

5.3 Landing Pad Pitch. The rooftop landing pad shall be pitched to provide drainage at a slope of 0.5 percent to 2 percent.

5.3.1 The pitch of the pad shall be designed to protect, at a minimum, the primary egress path, passenger holding area, rooftop hangar, and fire protection activation systems.

5.3.2 Drainage flow shall not penetrate alternate egress points, stairways, ramps, hatches, and other openings not designed for drainage.

5.4 Landing Pad Construction Materials.

5.4.1 The rooftop landing pad surface shall be constructed of approved noncombustible, nonporous materials.

5.4.2 The contiguous building roof covering within 50 ft (15.2 m) of the landing pad edge shall have a Class A rating.



5.5* Means of Egress. At least two approved means of egress from the rooftop landing pad edge to the roof shall be provided and shall be remotely located from each other.

5.5.1 For heliports occupied by 50 or more people, two approved means of egress from the roof shall be provided and shall be remotely located from each other, not less than 30 ft (9.1 m) apart.

5.5.2 For heliports occupied by fewer than 50 people, one approved means of egress from the roof shall be provided.

5.5.3 Means of egress from the rooftop landing pad and roof shall not obstruct flight operations.

5.6 Fire-Fighting Access.

5.6.1 The helicopter rooftop landing pad shall have at least two access points for fire-fighting purposes.

5.6.2 Access for fire-fighting personnel through the landing pad egress shall be permitted.

5.6.3* Where required by the authority having jurisdiction, an approved access to the building's interior shall be provided through each required exit stairway that extends onto the roof.

5.7 Fire Protection. A foam fire-extinguishing system with either a fixed discharge outlet(s) in accordance with 5.7.3 or a hose line(s) in accordance with 5.7.4 shall be designed and installed to protect the rooftop landing pad, unless otherwise permitted by the following:

- (1) A foam fire-extinguishing system shall not be required for heliports located on open parking structures or buildings that are not normally occupied.
- (2) For H-1 heliports, two portable foam extinguishers, each having a rating of 20-A:160-B, shall be permitted to be used to satisfy the requirement of Section 5.7.

5.7.1 Where trained personnel are not available, fixed fire protection outlet(s) shall be provided.

5.7.2* The foam discharge rate shall be as shown in Table 5.7.2.

Table 5.7.2 Foam Discharge Rates for Fixed Discharge Systems Only

Foam	Discharge Rate	
	gpm/ft ²	(L/min)/m ²
AFFF	0.10	4.1
Fluoroprotein	0.16	6.5
Protein	0.20	8.1

5.7.3 The area of application of foam discharge for fixed discharge outlet systems shall be the entire rooftop landing pad for a duration of 5 minutes.

Table 5.7.4 Practical Critical Fire Areas for Hose Line Systems Only

Helicopter Category	Helicopter Overall Length*	Practical Critical Fire Area	
		ft ²	m ²
H-1	Less than 50 ft (15.2 m)	375	34.8
H-2	50 ft (15.2 m) up to but not including 80 ft (24.4 m)	840	78.0
H-3	80 ft (24.4 m) up to but not including 120 ft (36.6 m)	1440	133.8

*Helicopter length, including the tail boom and the rotors.

5.7.5 The water supply for the foam system shall be from a source approved by the authority having jurisdiction.

5.7.5.1 Fire pumps, if used, shall be installed in accordance with NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*.

5.7.5.2 Standpipes and hose stations, if used, shall be installed in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

5.7.5.3 Where freezing is possible, freeze protection shall be provided.

5.7.6 The foam components shall be installed in an area of the heliport and shall not penetrate the approach takeoff surface, transitional surfaces, and safety area as defined in FAA A/C 150/5390-2B, *Heliport Design Advisory Circular*.

5.7.7 At facilities where there is more than one rooftop landing pad, the supply of foam available shall be sufficient to cover an incident on at least one of the pads.

5.7.8 Where fixed foam systems utilizing fixed deck nozzles or oscillating foam turrets, or both, are installed, system components shall be listed or approved.

5.8 Fire Alarm. A means of communication shall be provided from the roof area to notify the fire department of emergencies.

5.8.1 Where buildings are provided with a fire alarm system, a manual pull station shall be provided for each designated means of egress from the roof. (See 5.5.1.)

Chapter 6 Rooftop Hangars

6.1 Construction.

6.1.1 Building construction of the rooftop hangar shall be as a minimum Type II (111) construction in accordance with NFPA 909, *Standard on Types of Building Construction*.



(9.1 m) apart.

5.5.2 For heliports occupied by fewer than 50 people, one approved means of egress from the roof shall be provided.

5.5.3 Means of egress from the rooftop landing pad and roof shall not obstruct flight operations.

5.6 Fire-Fighting Access.

5.6.1 The helicopter rooftop landing pad shall have at least two access points for fire-fighting purposes.

5.6.2 Access for fire-fighting personnel through the landing pad egress shall be permitted.

5.6.3* Where required by the authority having jurisdiction, an approved access to the building's interior shall be provided through each required exit stairway that extends onto the roof.

5.7 **Fire Protection.** A foam fire-extinguishing system with either a fixed discharge outlet(s) in accordance with 5.7.3 or a hose line(s) in accordance with 5.7.4 shall be designed and installed to protect the rooftop landing pad, unless otherwise permitted by the following:

- (1) A foam fire-extinguishing system shall not be required for heliports located on open parking structures or buildings that are not normally occupied.
- (2) For H-1 heliports, two portable foam extinguishers, each having a rating of 20-A:160-B, shall be permitted to be used to satisfy the requirement of Section 5.7.

5.7.1 Where trained personnel are not available, fixed fire protection outlet(s) shall be provided.

5.7.2* The foam discharge rate shall be as shown in Table 5.7.2.

Table 5.7.2 Foam Discharge Rates for Fixed Discharge Systems Only

Foam	Discharge Rate	
	gpm/ft ²	(L/min)/m ²
AFFF	0.10	4.1
Fluoroprotein	0.16	6.5
Protein	0.20	8.1

5.7.3 The area of application of foam discharge for fixed discharge outlet systems shall be the entire rooftop landing pad for a duration of 5 minutes.

5.7.4* The area of application of foam discharge for hose line systems shall be the practical critical fire area for the category of the helicopter landing facility in accordance with Table 5.7.4 for a duration of 2 minutes.

5.7.4.1 A fixed discharge outlet system shall be either fixed stationary nozzles around the perimeter or one or more oscillating monitor/nozzle(s).

Category	Length*	ft*	m*
H-1	Less than 50 ft (15.2 m)	375	34.8
H-2	50 ft (15.2 m) up to but not including 80 ft (24.4 m)	840	78.0
H-3	80 ft (24.4 m) up to but not including 120 ft (36.6 m)	1440	133.8

*Helicopter length, including the tail boom and the rotors.

5.7.5 The water supply for the foam system shall be from a source approved by the authority having jurisdiction.

5.7.5.1 Fire pumps, if used, shall be installed in accordance with NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*.

5.7.5.2 Standpipes and hose stations, if used, shall be installed in accordance with NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*.

5.7.5.3 Where freezing is possible, freeze protection shall be provided.

5.7.6 The foam components shall be installed in an area of the heliport and shall not penetrate the approach takeoff surface, transitional surfaces, and safety area as defined in FAA A/C 150/5390-2B, *Heliport Design Advisory Circular*.

5.7.7 At facilities where there is more than one rooftop landing pad, the supply of foam available shall be sufficient to cover an incident on at least one of the pads.

5.7.8 Where fixed foam systems utilizing fixed deck nozzles or oscillating foam turrets, or both, are installed, system components shall be listed or approved.

5.8 **Fire Alarm.** A means of communication shall be provided from the roof area to notify the fire department of emergencies.

5.8.1 Where buildings are provided with a fire alarm system, a manual pull station shall be provided for each designated means of egress from the roof. (See 5.5.1.)

Chapter 6 Rooftop Hangars

6.1 Construction.

6.1.1 Building construction of the rooftop hangar shall be as a minimum Type II (111) construction in accordance with NFPA 220, *Standard on Types of Building Construction*, except for the floor, which shall have a minimum 2-hour fire resistance rating.

6.1.2 Other helicopter support operations within the rooftop hangar, such as offices, medical supplies, gas storage, and fire protection equipment, shall meet the following criteria:

- (1) They shall be separated by walls and ceilings having a minimum fire resistance rating of 1 hour.

