

Hospital Helipads

Safety, Regulatory and Liability Issues
Hospitals Must Know & Consider

Provided by the
National EMS Pilots Association



Disclaimer

- This presentation is intended to provide architects, contractors, hospital administrators, hospital staff, risk managers, safety officers, and air medical providers with important information and guidelines that must be considered when having a helipad which will be utilized for transporting patients either to or from a hospital by helicopter. This presentation should not be considered or used as a substitute for actual Federal Aviation Administration (FAA) and or Department of Transportation (DOT) regulations in regards to heliport design, construction or aviation operations. This presentation should be used for education and information only and when regulatory issues or questions arise regarding heliport or aviation operations you should always consult your local FAA Flight Standards District Office (FSDO) and State DOT representatives. Due to the constant changing and updating of Federal, State & Local regulations and Advisory Circulars referenced within this presentation you should always check the FAA's online data base to insure that you are using the most up to date and current regulations and advisory circulars available. If you need assistance in finding information or have questions regarding hospital heliport construction, air medical helicopter operations, safety standards, emergency action plans or transport criteria as they pertain to the air medical industry please feel free to contact NEMSPA and we will be more than happy to help you find the answers to your questions.

Questions

- All questions or comments in regards to this presentation and the information presented here in should be referred to the author;

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Objectives

- Learn what agencies are involved
- Know what regulations apply
- Identify what forms must be filed
- Identify best practices
- Understand location importance
- Understand basic design & safety principles
- Recognize & address liability issues

Agencies Involved

- **Federal Aviation Administration (FAA)**
- **Department Of Transportation (DOT)**
- **Occupational Safety and Health Association (OSHA)**
- **National Fire Protection Association (NFPA)**
- **State & Local Fire Marshalls**
- **State Air Medical Associations**
- **Local Zoning Commissions**
- **City Councils**
- **Neighborhood Associations**

Best Practices

- To help identify some of the best practices in the industry, you will see the symbol below on specific slides. These are not necessarily regulatory requirements but rather items that have been identified to improve safety and enhance operations.



Who To Contact

- Any time a helipad is to be constructed, updated, changed, moved or closed you should always contact your State DOT and regional FAA offices.

- **State Department of Transportation**

- Aeronautics Section

- <http://www.fhwa.dot.gov/webstate.htm>

- **FAA Flight Standards District Office**

- In your area go to:

- http://www.faa.gov/about/office_org/field_offices/fsdo/



Hire a Consultant



Best
Practices

- All too often hospitals contract with architectural and building firms that have never built or designed a helipad. This practice has caused significant delays, unsafe conditions and extremely high cost overruns.
- When contracting for a hospital helipad project, hospital administrators should always insist that whomever is awarded the contract hire a qualified consultant for the project.

Permanent Sites

The Federal Aviation Administration (FAA), Department Of Transportation (DOT), as well as many insurance underwriters and industry safety organizations highly recommend that all hospitals construct a Permanent, Certified landing area on their property for safety, liability and transport issues.

**Regulated by the
FAA and DOT**

Heliport Design Guide

AC 150/5390-2B



Federal Aviation Regulations 157

- **FAR 157.1 Applicability**

- C) The intermittent use of a site that is not an established airport which is used or intend to be used for less than one year and at which flight operations will be conducted only under VFR. For the purposes of this part, intermittent use of a site means:

- 1) The site is used or is intended to be used for no more than 3 days in any one week; and
 - 2) No more than 10 operations will be conducted in any one day at that site.

This indicates that any site used for more than one year, and or more than three days a week, and or with more than 10 operations (landings + takeoffs) per any given day for anything other than VFR, can not be considered intermittent and therefore should be certified.

Before You Begin

- **Federal Aviation Regulation: FAR Part 157**
 - Requires notification to the appropriate FAA Airport District/Field Office or Regional Office at least **90 days before** construction, alteration, deactivation, or the date of the proposed change in use.
 - FAA Notification includes a completed FAA Form 7480-1, a heliport layout diagram and a heliport location map.
 - Penalty for failure to provide notice; persons who fail to give notice are subject to civil penalty under 49 CFR 46301.
 - **References:**
 - **AC 150/5390-2B Section 104**
 - **FAR Part 157**

Completion

Best
Practices

- **NOTICE OF COMPLETION**

- Within 15 days after completion of any airport project covered by this part, the proponent of such project shall notify the FAA Airport District Office or Regional Office by submission of FAA Form 5010-5 or by letter. A copy of FAA Form 5010-5 will be provided with the FAA determination. Insure that FAA Form 5010-5 has been signed by the hospital administration prior to submission.

* ***By filling out and submitting this form you are allowing the DOT to disseminate your information to the public.***

– **Reference: FAR Part 157.9**

Definitions

- **Heliport**. The area of land, water or a structure used or intended to be used for the landing and takeoff of helicopters, together with appurtenant buildings and facilities.
- **Hospital Heliport**. A heliport limited to serving helicopters engaged in air ambulance, or other hospital related functions.
 - *Note: A designated helicopter landing area located at a hospital or medical facility is a heliport and not a medical emergency site.*
- **Medical Emergency Site**. An unprepared site at or near the scene of an accident or similar medial emergency on which a helicopter may land to pick up a patient in order to provide emergency medical transport.
 - **References: AC 150/5390-2B chapter 1**

Decision #1

ROOFTOP



OR

GROUND BASED



Rooftop vs. Ground

Some Pros and Cons

Rooftop

PROS	CONS
Security	Cost
Privacy	Complexity
*Safety	*Safety
Obstruction	Fuel

Ground

PROS	CONS
Cost	Privacy
Simplicity	Obstruction
*Safety	*Safety
Fuel	Security

*How safety is ultimately influenced will be predicated on the decisions an institution makes during planning and construction.

Helipad Location

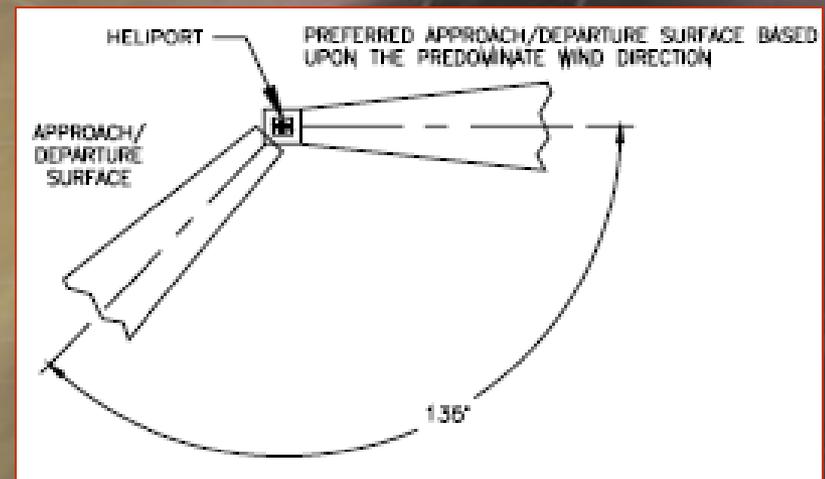
- Where a helipad is located in relationship to the hospital is critical to safe & effective operations.
 - At least two unobstructed flight paths into and out of the designated landing area are critical to safe operations.
 - Do not locate the landing area too close to the hospital or other structures.
 - Do not locate a helipad too far from the hospital. Long walking distances or distances requiring ambulance transport can negatively effect patient outcomes.
 - Do not allow a landing area to be surrounded by buildings, power lines, trees or parking garages.
 - Dependent on urban environment or future construction a rooftop helipads may be the better option for safe operations.

References: AC 150/5390-2B chapter 4, sections 401, 402, 403, table 4-1, Figure 4-1 & Figure 4-2

Approach / Departure Paths

- Approach/Departure paths should be such that downwind operations are avoided and crosswind operations are kept to a minimum. To accomplish this, a heliport should have more than one approach/departure path.
- The preferred flight approach/departure path should, to the extent feasible, be aligned with the predominate prevailing winds.
- Other approach/departure paths should be based on the assessment of the prevailing winds or when this information is not available the separation between such flight paths and the preferred flight path should be at least 135 degrees.

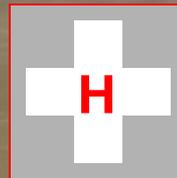
- **References:**
AC 150/5390-2B chapter 4
section 404a & figure 4-6



Planning for Growth

Approach / Departure Paths

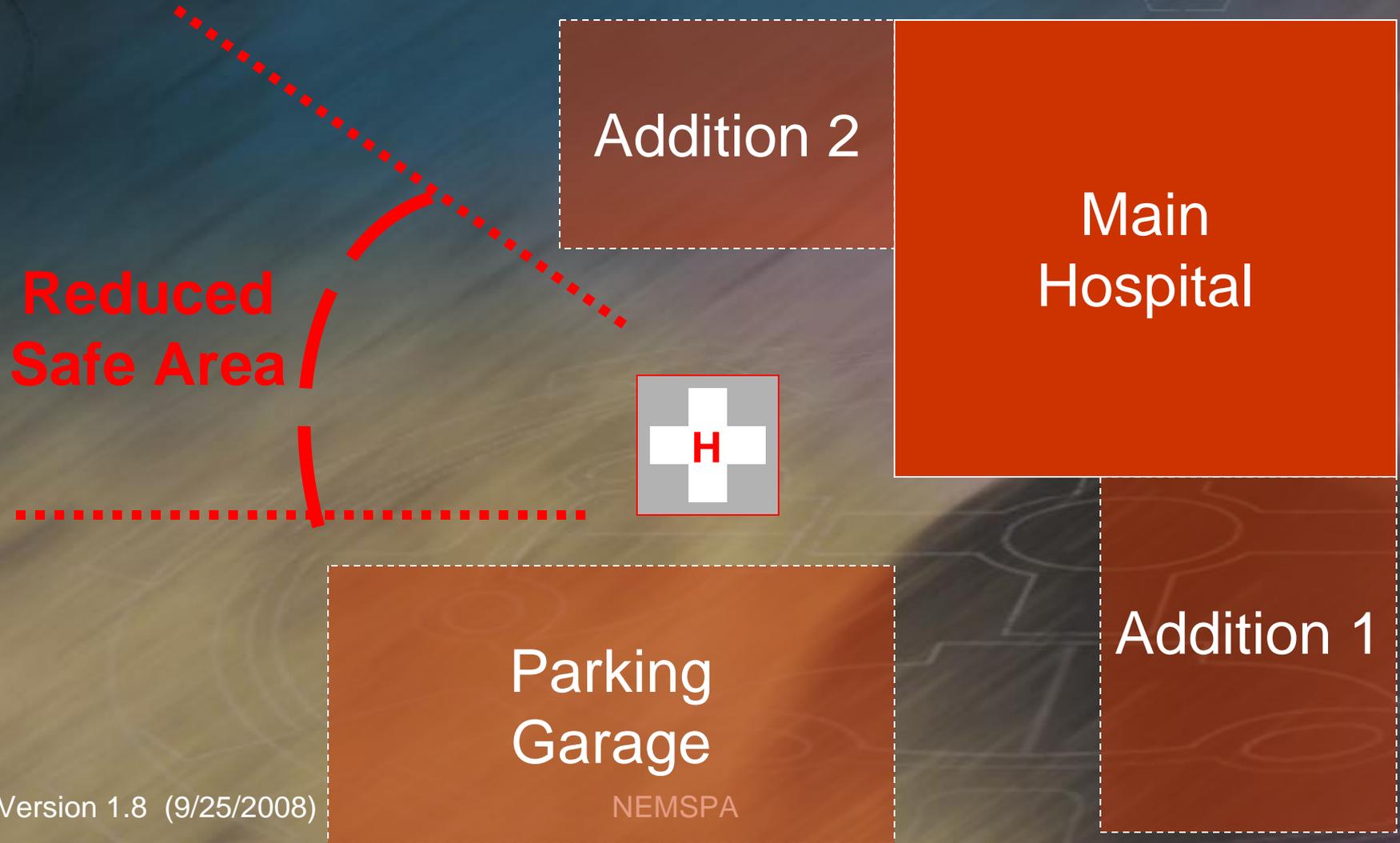
Safe Area



Main
Hospital

Planning for Growth

Approach / Departure Paths



Helipad Location

- **VENTILATION SYSTEMS**

- Insure that you identify the location of all heating, ventilation and air conditioning (HVAC) systems prior to construction. Avoid locating a landing area near these. Exhaust fumes from a helicopter's engines can cause serious problems for a hospital and their staff if ingested into the hospital's ventilation system.
- Pay particular attention to which way the prevailing winds will carry any exhaust fumes from the proposed landing site.





2 Specifics that must be considered



WEIGHT & ROTOR DIAMETER



How big to make the pad?

- **401. TOUCHDOWN AND LIFT-OFF AREA (TLOF).**

- **b. TLOF Size.** The minimum TLOF dimension (length, width, or diameter) should be 1.0 rotor diameter (RD) of the design helicopter, **but not less than 40 feet (12 m) for hospital pads.**

Reference: AC 150/5390-2B Chapter 4, section 401b

**Minimum of
40' X 40'**

Definitions

- **Final Approach and Takeoff Area (FATO)**. A defined area over which the final phase of the approach to a hover, or a landing is completed and from which the takeoff is initiated.
- **Safety Area**. A defined area on a heliport surrounding the FATO intended to reduce the risk of damage to helicopters accidentally diverging from the FATO. This area should be free of objects, other than those frangible mounted objects required for air navigation purposes.
- **Touchdown and Lift-off Area (TLOF)**. A load bearing, generally paved area, normally centered in the FATO, on which the helicopter lands or takes off.

– **References: AC 150/5390-2B chapter 1**

Hospital Helipad Layout

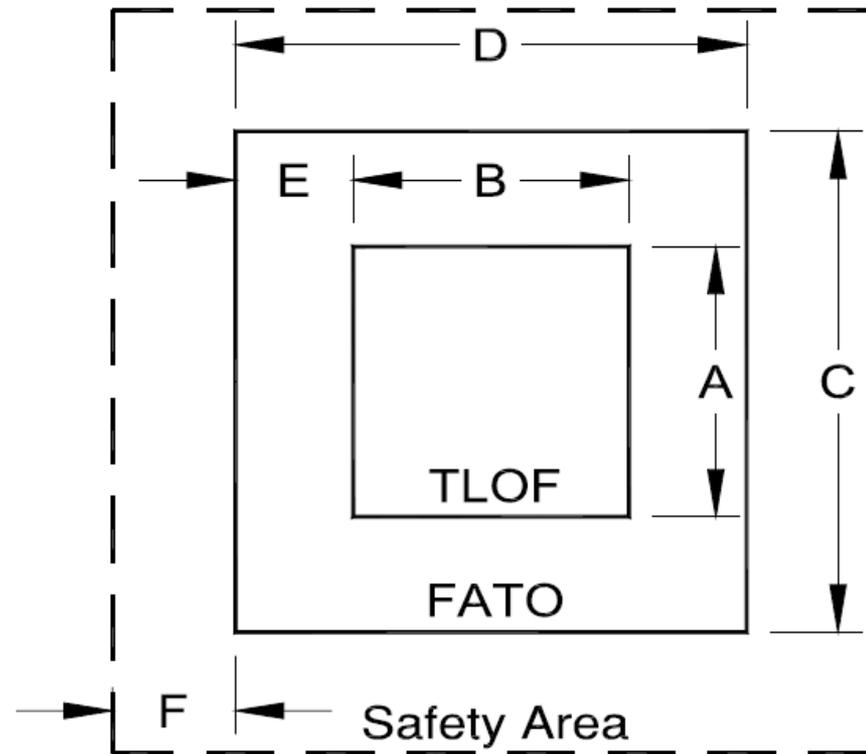
• Ref: AC 150/5390-2B

Figure 4-2

– TLOF/FATO/Safety Area Relationships and Minimum Dimensions: HOSPITAL

– **Example:**

- Rotor Diameter = 36 ft
- Overall Length = 42 ft
- A & B = 40 ft
- C & D = 54 ft
- E = 13.5 ft
- F – see fig. 4-1



A – Minimum TLOF Width: 1.0 RD but not less than 40 ft. (12 m)

B – Minimum TLOF Length: 1.0 RD but not less than 40 ft. (12 m)

C – Minimum FATO Width: 1.5 OL

D – Minimum FATO Length: 1.5 OL

E – Minimum separation between the perimeters of the TLOF and the FATO $[0.5(1.5 OL - 1.0 RD)]$

F – Minimum Safety Area Width: See Table 4-1

RD: Rotor diameter of the design helicopter

OL: Overall length of the design helicopter

Hospital Helipad Safety Area

- Reference: AC 150/5390 2B

Table 4-1. Minimum VFR Safety Area Width as a Function Hospital Helipad Markings

TLOF perimeter marked:	Yes	Yes	No	No
FATO perimeter marked:	Yes	Yes	Yes	Yes
Standard Hospital marking symbol:	Yes	No	Yes	No
Hospital heliports:	1/3 RD but not less than 10 ft (3 m)**	1/3 RD but not less than 20 ft (6 m)**	½ OL but not less than 20 ft (6 m)	½ OL but not less than 30 ft (9 m)

OL: overall length of the design helicopter
 RD: rotor diameter of the design helicopter

** Also applies when the FATO is NOT marked. The FATO should not be marked if (a) the FATO (or part of the FATO) is a non-load bearing surface and (b) the TLOF is elevated above the level of a surrounding load bearing area.

Ground Based Helipad Thickness

- For ground based helipads; in most instances a 6-inch thick (15 cm) Portland Cement Concrete (PCC) pavement is capable of supporting operations by helicopters weighing up to 20,000 pounds (9,070 kg). Larger helicopters will require a thicker concrete helipad. Consult the appropriate advisory circular for additional information.
 - **NOTE: DO NOT USE** asphalt for the TLOF, helicopters can sink into asphalt during hot weather causing a serious safety hazard.

Reference : AC 150/5390-2b Chapter 8, 807 a

6" {



Helipad Surface Design

Best
Practices

- Insure that when applying paint that the surface is properly prepared for a non-slip surface.
- When reapplying paint add silica sand to the paint to maintain the integrity of the non-slip surface.
- The addition of reflective glass beads into portions of the painted helipad surface, specifically boundary markings, help to identify these areas more clearly at night.

Rooftop Helipads

- **NFPA 418**

- 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 (15.2m) of the landing pad edge shall have a Class A rating.
 - (UL 790 Class A roof coverings are effective against severe fire test exposures. Under such exposures, roof coverings of this class afford a high degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.)

Drainage

– Land-based

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

– Rooftop

- The rooftop landing pad shall be pitched to provide drainage at a slope of 0.5 percent to 2 percent.
- Drains on and surrounding the helipad should restrict the spread of fuel in order to reduce fire and explosion hazards from fuel spillage. A fuel/water separating system is a very important safety addition to all helipad drainage structures.

Reference:

- **AC 150/5390-2B section 801 b.**
- **NFPA 418 4.7**

Wind Indicator

- A windsock to show the direction and magnitude of the wind is highly recommended and an important safety feature for all helipads.

- Minimum of 6-8 feet in length .
- Lighted for night operations.
- Not too close to the helipad.
- Ground based, elevated at least 10-15 feet above ground level and not blocked by any structures or vegetation.
- Rooftop based, not blocked by any architectural structures and elevated at least 10 feet above the surrounding structures.
- Placement to reflect accurate wind speed and direction.

- **Reference:**

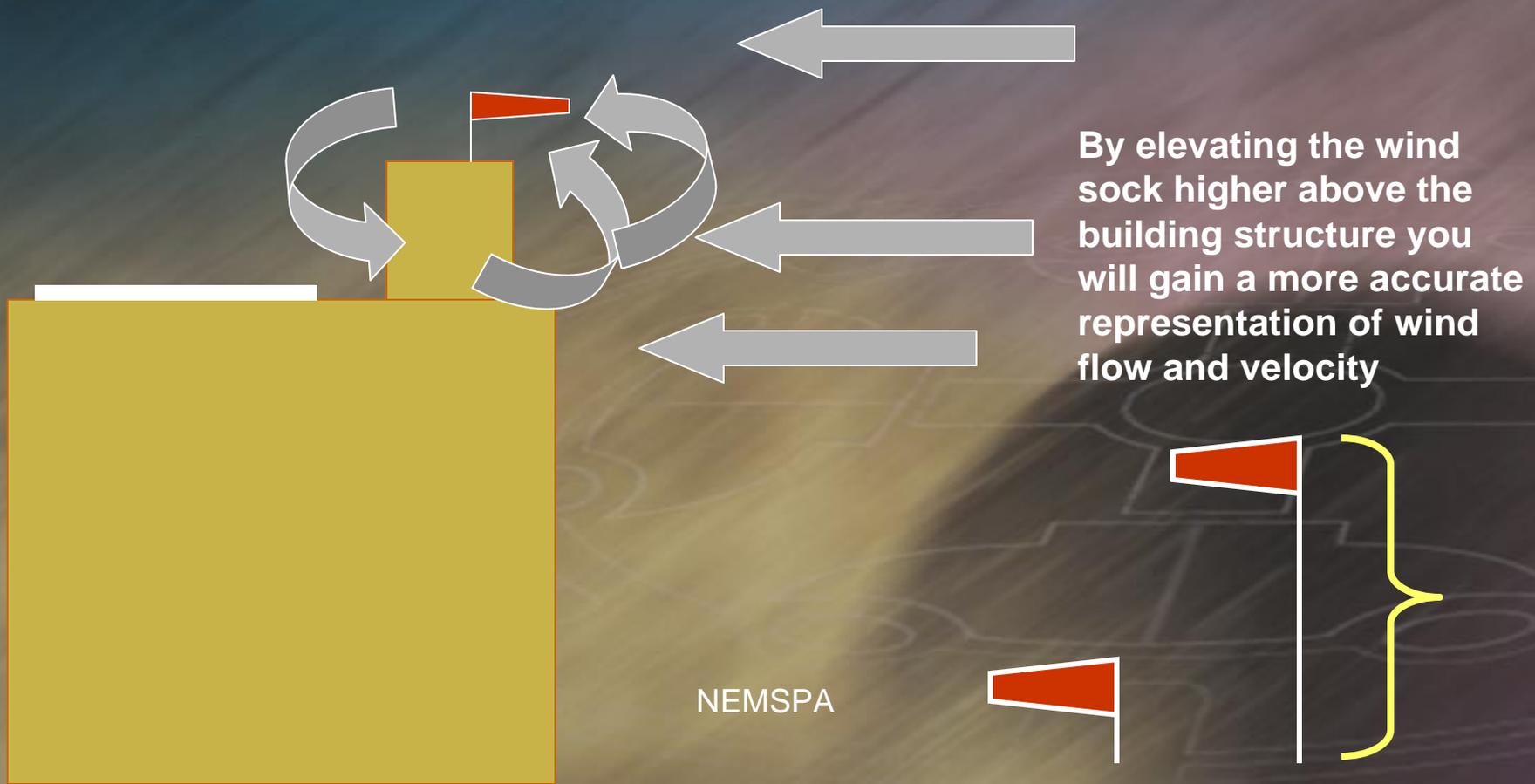
- **AC 150/5345-27d, Specifications for wind cone assemblies**

- **AC 150/5390-2B section 406, Heliport Design Guide**



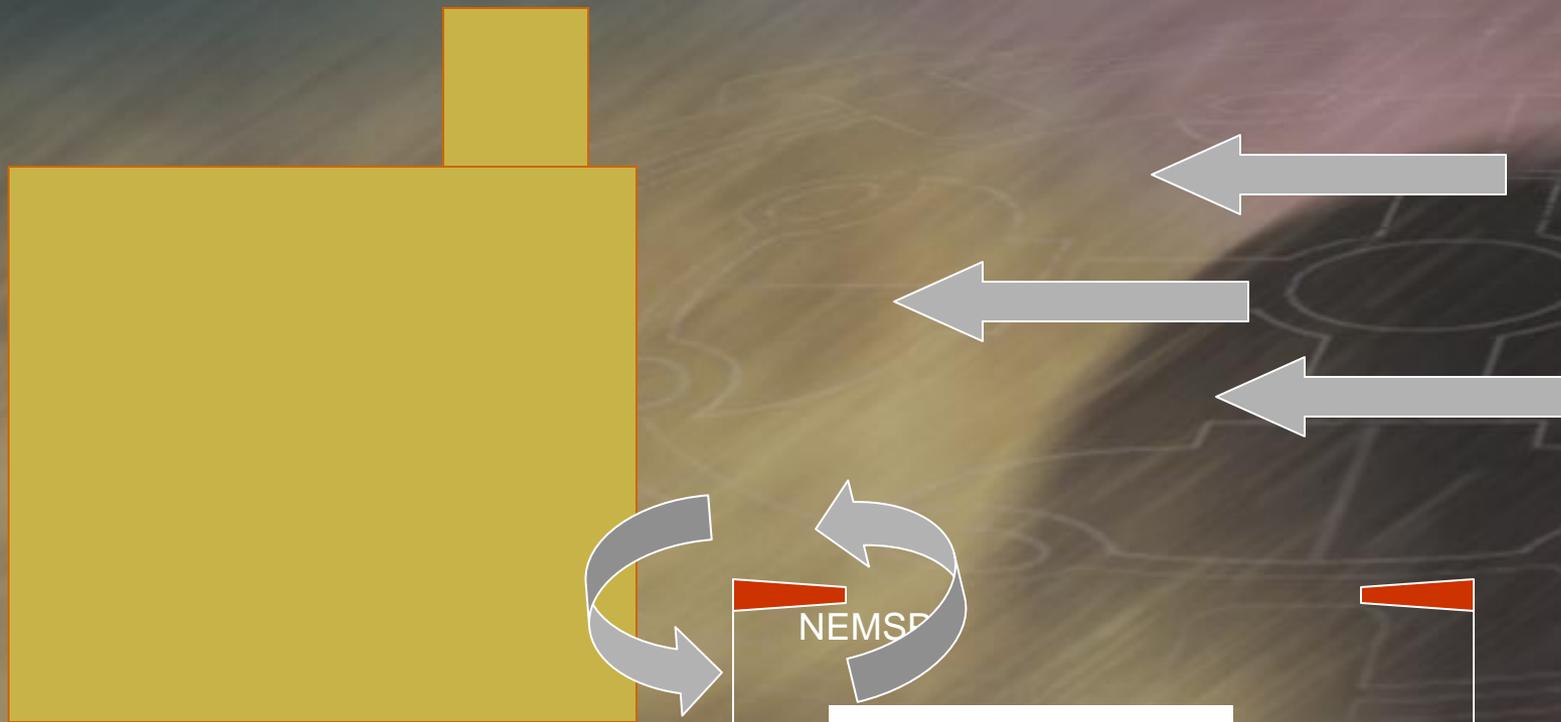
Wind Indicator Location

Windssocks need to be in free open air to indicate the correct wind direction.



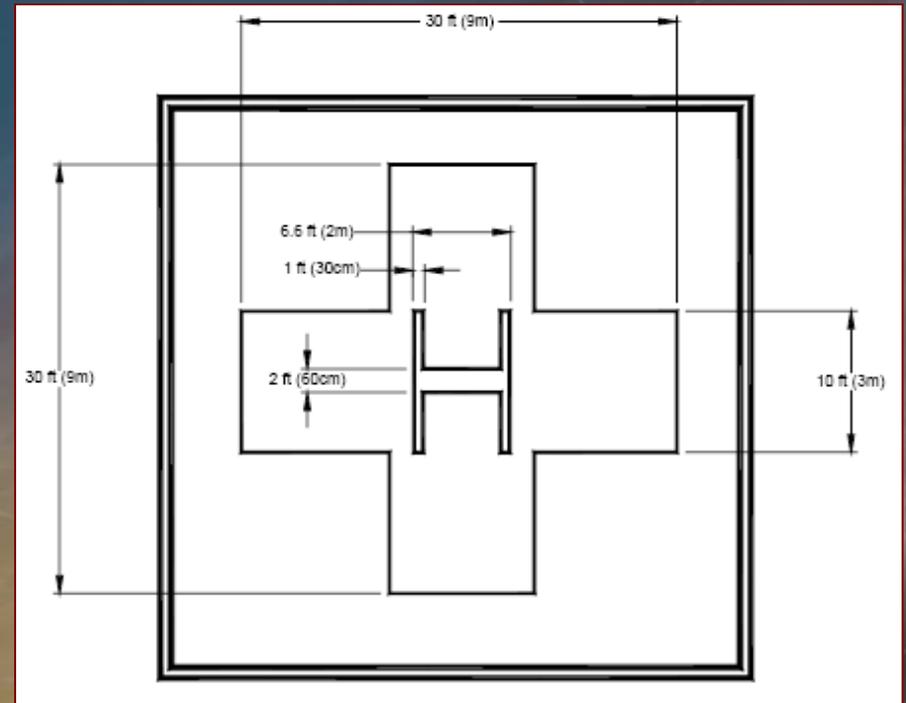
Wind Indicator Location

Location of the wind sock needs to be in an unobstructed location.



Hospital Helipad Marking

A red capital letter **H** should be located in the center of the **cross** and oriented in the preferred direction of takeoff and landing taking into account obstacles and prevailing winds

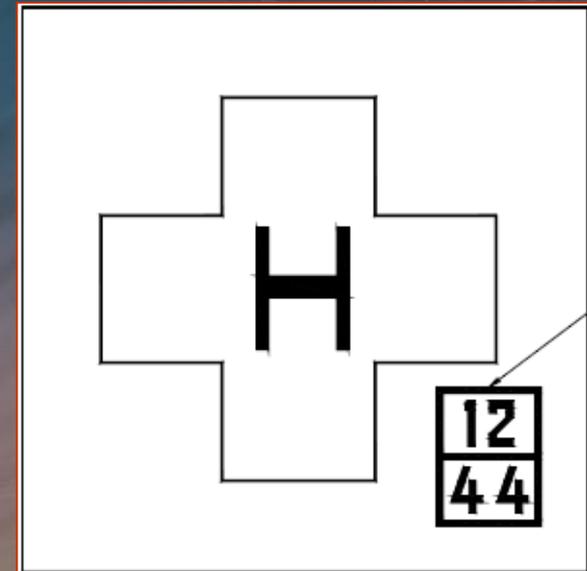


Reference: AC 150/5390-2b Figure 4-10a

Hospital Helipad Marking

- Max Weight

- Is indicated by the upper number and is in thousands of pounds.

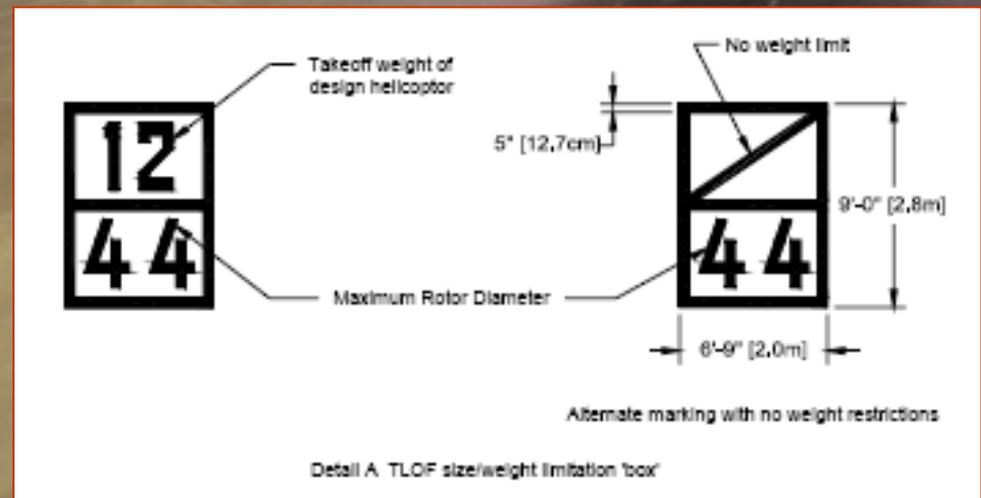


Max Rotor Diameter

- Is indicated by the lower number and is in feet.

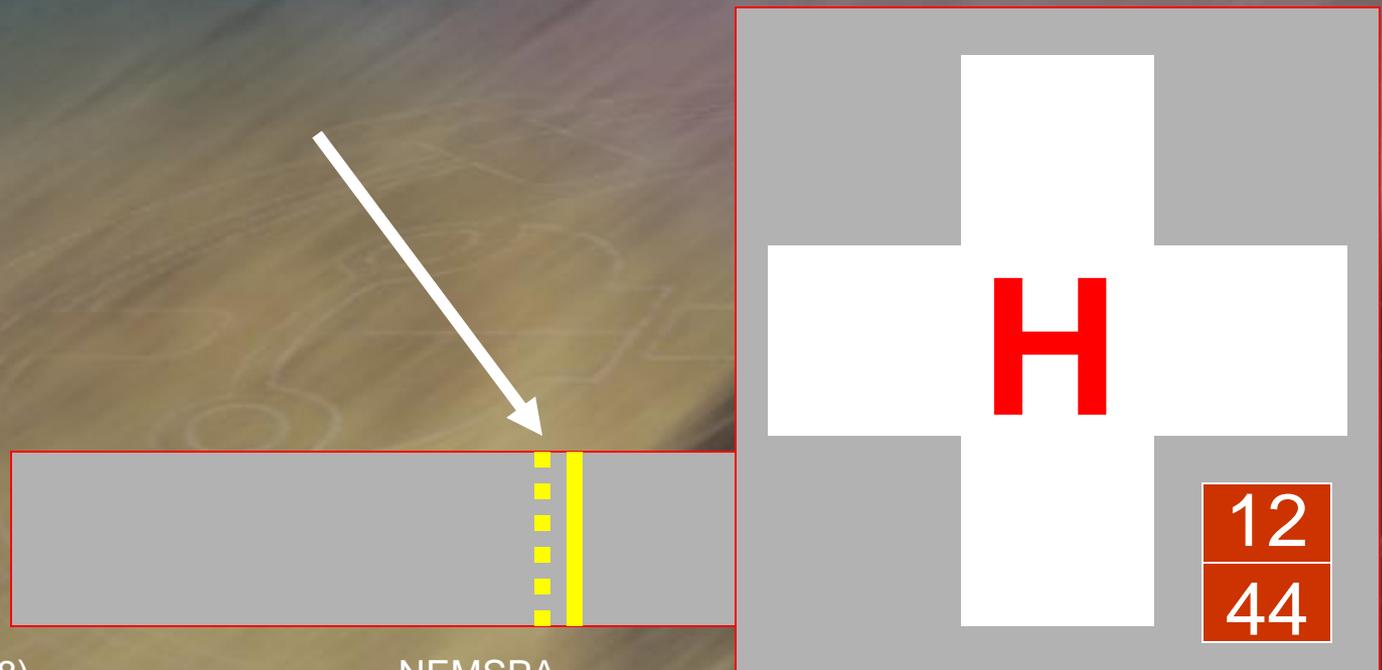
Reference: AC 150/5390-2b

Figure 4-12



Hospital Helipad Marking

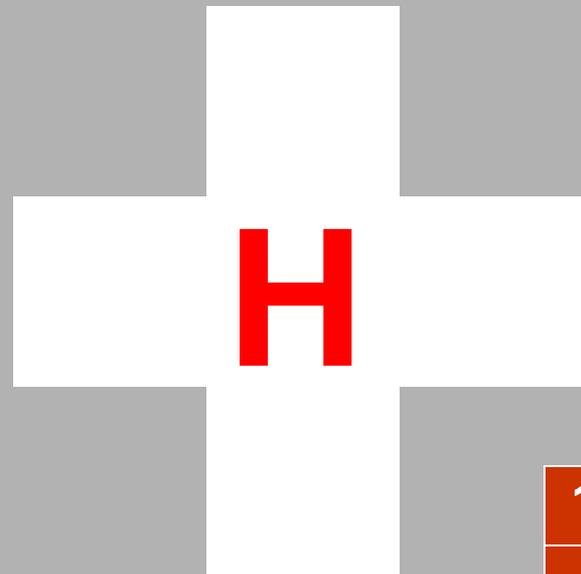
- Painting a “Marshalling Line” to indicate the location on the pad that individuals should not pass without permission is a good safety practices.



Hospital Helipad Marking

- Painting the name of the hospital on the helipad to include a radio frequency for communications or for pilot controlled lighting is another good safety practices.

XYZ Memorial Hospital



12

44

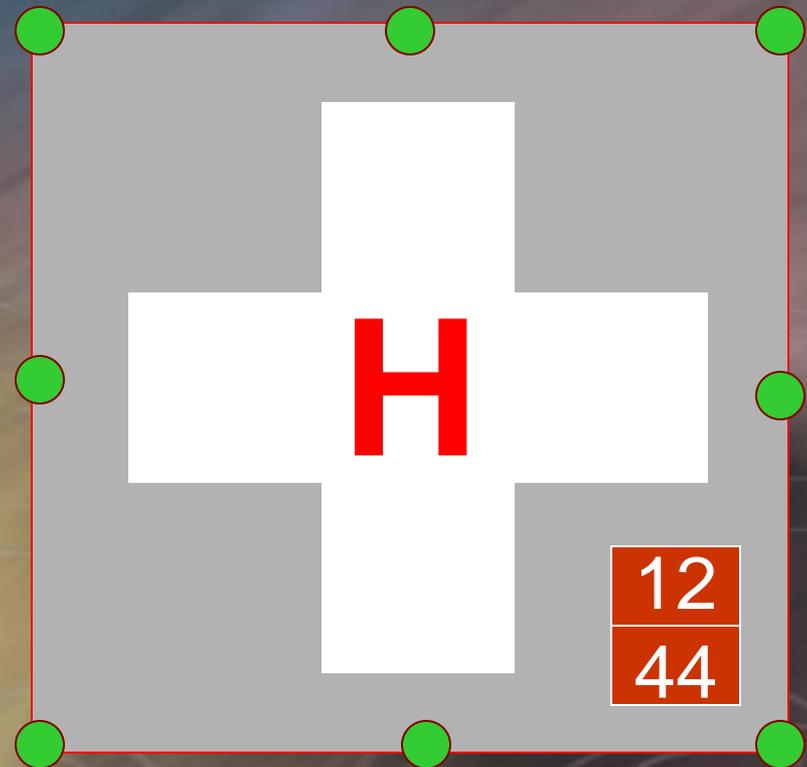
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Helipad Lighting

Flush green lights should define the TLOF perimeter. A minimum of three flush light fixtures is recommended per side of a square or rectangular TLOF. A light should be located at each corner with additional lights uniformly spaced between the corner lights with a maximum interval of 25 feet (8 m) between lights.

Reference: AC 150/5390-2B

Chapter 4 Section 410a



Helipad Lighting

- Flood lights should never be located high above the helipad, they can blind pilots during night operations, creating unsafe conditions.
- Flood lights should be installed at pad level and aimed down so as not to interfere with a pilots night vision.



Hospital Beacons

- When a beacon is provided it should:
 - Be located on the highest point of the hospital.
 - Not be blocked by any portions of the surrounding architecture.
 - Be on during the hours of darkness.
 - Flash white/green/yellow for hospital helipads. 
 - Be regularly checked on a preventive maintenance schedule.

- **Reference:**
**AC 150/5345-12E, Specifications for
Airport and Heliport Beacons.**

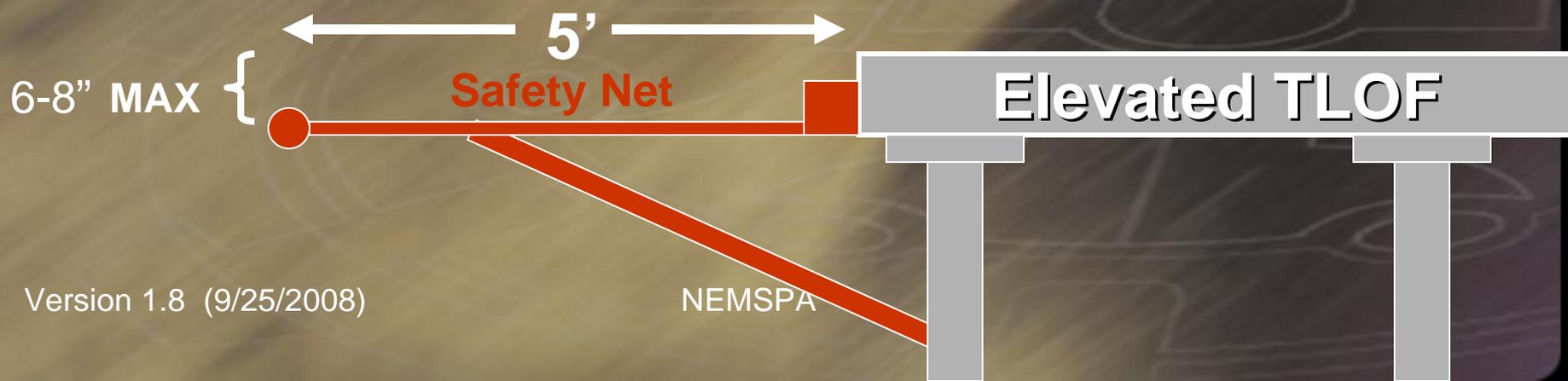


Elevated Helipads

- **Safety Net**

- When the Touchdown and Lift-Off (TLOF) area is on a platform elevated more than 30 inches (76 cm) above its surroundings, a safety net, not less than 5 feet wide from the edge of the pad (1.5 m), should be provided around the entire pad.
- The safety net should have a load carrying capability of 25 lb/ft² foot (122 kg/m²) and be anchored on all sides.

- **Reference: AC 150/5390-2B sec 401e & figure 4-4**



Safety Net

Best Practices

- **GOOD**



- **BAD**



The safety net should be installed no greater than 6 - 8 inches below the perimeter of the TLOF to prevent serious injury from a fall.

Elevated Helipads

- Access to Elevated TLOFs.
 - The Occupational Safety and Health Administration (OSHA) requires two separate access points for an elevated structure such as an elevated TLOF.
 - If stairs are used, they should be built in compliance with regulation 29 CFR 1910.24.
 - When ramps are required, they should be built in compliance with Appendix A of 49 CFR Part 37, Section 4.8 and state and local requirements.
 - The ramp surface should provide a slip-resistant surface.
 - The slope of the ramp should be no steeper than 12:1 (12 units horizontal in 1 unit vertical).
 - The width of the ramp should be not less than 4 feet (1.2 m) wide.

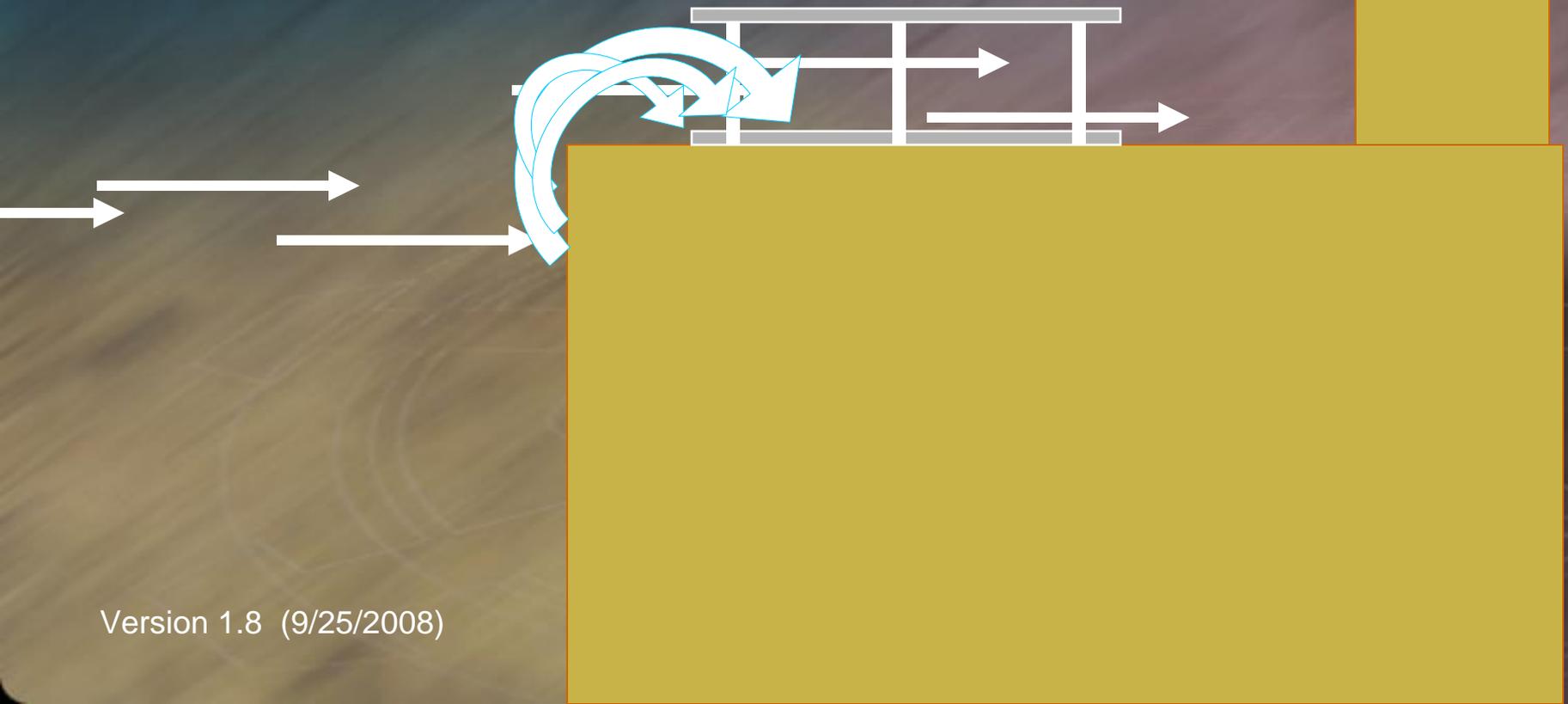
Turbulence

- Air flowing around and over buildings, stands of trees, terrain irregularities, etc. can create turbulence that can affect safe helicopter operations.
 - **Ground-Level:** Helicopter operations from sites immediately adjacent to buildings and other large objects are subjected to air turbulence effects caused by such features. Therefore, it may be necessary to locate the TLOF away from such objects in order to minimize air turbulence in the vicinity of the FATO and the approach/ departure paths.
 - **Elevated Heliports:** Elevating heliports 6 feet (1.8 m) or more above the level of the roof will generally minimize the turbulent effect of air flowing over the roof edge. While elevating the platform helps reduce or eliminate the air turbulence effects, a safety net may be required.

Turbulence

Raising the **TLOF** on elevated pads 6 feet or greater is highly recommended to both reduce the effect of turbulence & improve helicopter controllability.

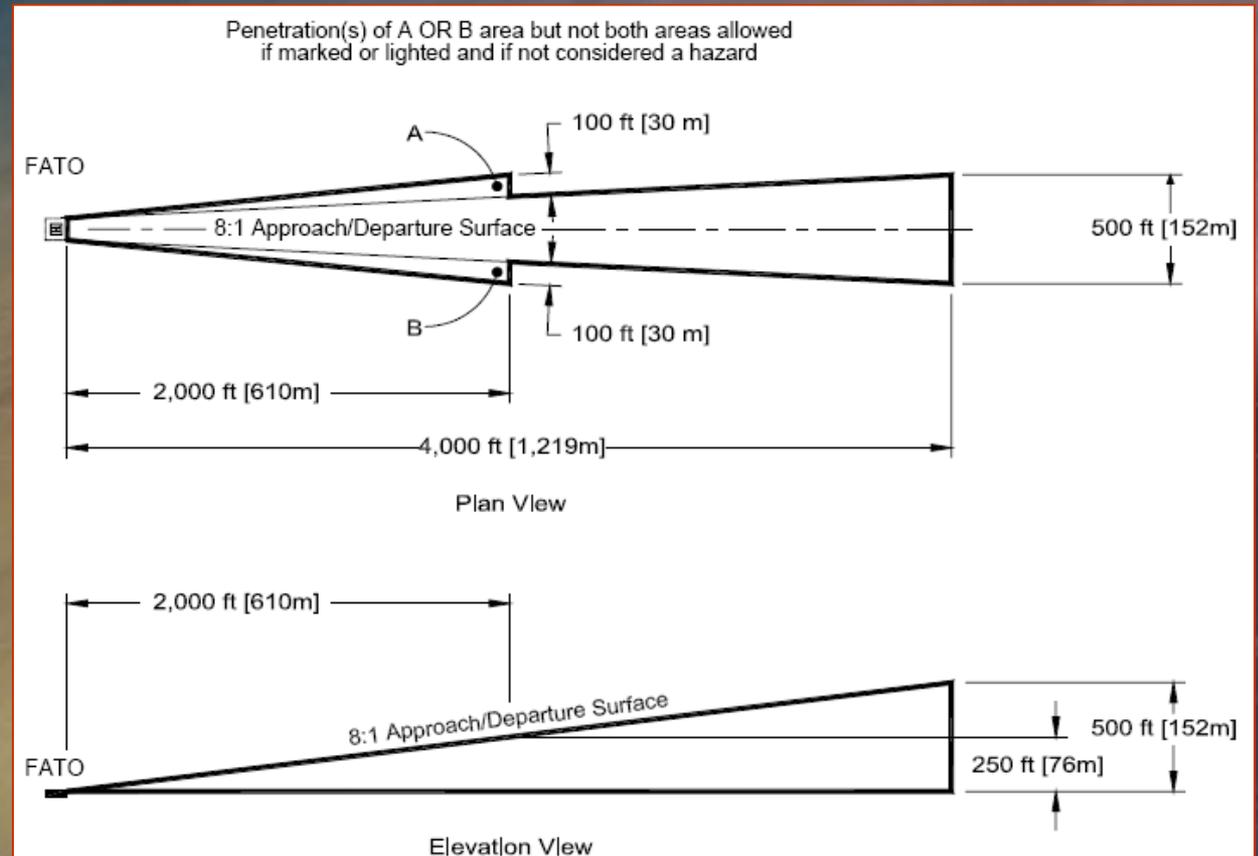
Best Practices



Is It A Hazard

- An **8:1** ratio from the Final Approach and Takeoff Area (FATO) out to 4,000 feet is what the FAA uses to determine if an object is a potential hazard to the airspace around a helicopter landing area. If a hazard penetrates this area it will either need to be removed or properly marked.

- Reference:**
AC 150/5390-2B
section 404b
figure 4-7



Marking Hazards

- All structures 200' and above or any vertical hazard within 5,000 feet of a helipad such as the hospital, antennas, towers or other structures that are deemed to be a hazard to navigable airspace need to be lighted with red obstruction lights.
- All power lines in the vicinity of the landing zone should be marked with the appropriate orange markers.

Reference: AC 150/5390-2B section 404, 411 & figure 4-7
AC 70/7460-1K Obstruction Marking and Lighting



FAA & Navigable Airspace

- **Obstruction Evaluation / Airport Airspace Analysis (OE/AAA)**
- If your organization is planning to sponsor any construction or alterations which may affect navigable airspace, you must file a Notice of Proposed Construction or Alteration ([Form 7460-1](#)) with the FAA.
 - Any construction or alteration exceeding 200 ft above ground level.
 - within 5,000 ft of a heliport which exceeds a 25:1 surface.
- FAA web site for Obstruction Evaluation and Airport Airspace Analysis
 - <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>

Cranes

- Flags should always be placed on top of cranes in the vicinity of helipads for daylight operations.
- The top of all construction cranes should be lighted during the hours of darkness.
- If possible cranes should be lowered at night if not in use.
- Always notify helicopter programs in your area when you have cranes or construction sites in the area.

***Many tower cranes are designed to weathervane when not in use.**



Trees

Best Practices

- **DO NOT** plant trees near the helipad landing area. Over time they will grow and create an unsafe situation. This may require the helipad to be closed until the trees can be removed.



Fences

Best
Practices

- A fence installed as a perimeter for a helicopter landing area is a potential hazard to flight operations.
- To help keep people away from the landing zone and maintain safety, a natural low lying vegetative barrier of plant material such as boxwood, holly or other evergreen type shrub is highly recommended.



Landscaping

Best
Practices

- Decorative bark, woodchips and small stone should never be used around the perimeter of a helicopter landing area. The helicopter's rotor wash can cause these items to become dangerous projectiles and the wood material is a fire hazard.



Hazards

Best Practices

- **DO NOT** locate a helicopter landing area next to flammable liquid storage tanks, compressed gas storage tanks, and or liquefied gas storage tanks. You must maintain a lateral distance of no less than 50 feet from the Final Approach & Takeoff Area (FATO).

Reference: NFPA 418 3.2.3



Version 1.8 (9/25/2008)



NEMSPA



National Fire Protection Codes

- **Pertinent NFPA Standards**

- **NFPA 10** Portable Fire Extinguishers
- **NFPA 403** Aircraft Rescue Services
- **NFPA 407** Aircraft Fuel Servicing
- **NFPA 409** Aircraft Hangars
- **NFPA 410** Aircraft Maintenance
- **NFPA 412** Aircraft Rescue and Fire-Fighting Foam Equipment
- **NFPA 418** Heliports
- **NFPA 422** Aircraft Accident Response Guide



Fire Extinguishers

Best Practices

- For safety purposes all heliports should be equipped with at least one fire extinguisher of the appropriate type.
- A fire hose cabinet or the appropriate extinguisher should be provided at each access gate/door and each fueling location.
- In cases where there is a refueling system involved a foam system may be the better option.

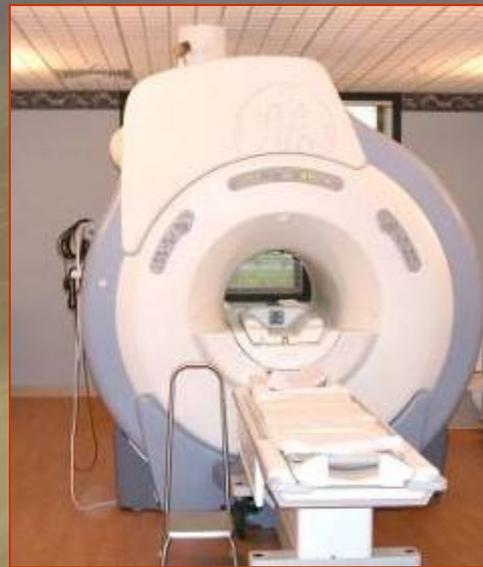


Magnetic Resonance Imagers

- Due to the impact that an MRI has on a helicopter's instrumentation a warning sign alerting pilots to the presence of a nearby MRI is highly recommended.

Reference:
DOT/FAA/RD-92/15

Potential Hazards of Magnetic Resonance
Imagers to Emergency Medical Service
Helicopter Operations



Other Magnetic Hazards

Best Practices

- An MRI is one of the more obvious hazards, but some that may be overlooked are large motors for elevators or ventilation systems near the helipad area.
 - “Steps should be taken to inform pilots of the locations of MRIs and other similar equipment.”
 - Reference: AC 150/5390-2B section 405



Zoning

Best
Practices

- To insure that potential hazards to navigation, such as cell towers, radio towers or additional buildings are not constructed near your hospital's landing area. It is highly recommended that the area around the helicopter landing pad within 5,000 feet be rezoned to limit the height of any new construction.

Reference:

AC 150/5390-2B; section 413, Zoning and compatible land use.

AC 150/5190-4A: A Model Zoning Ordinance to limit height of objects around airports

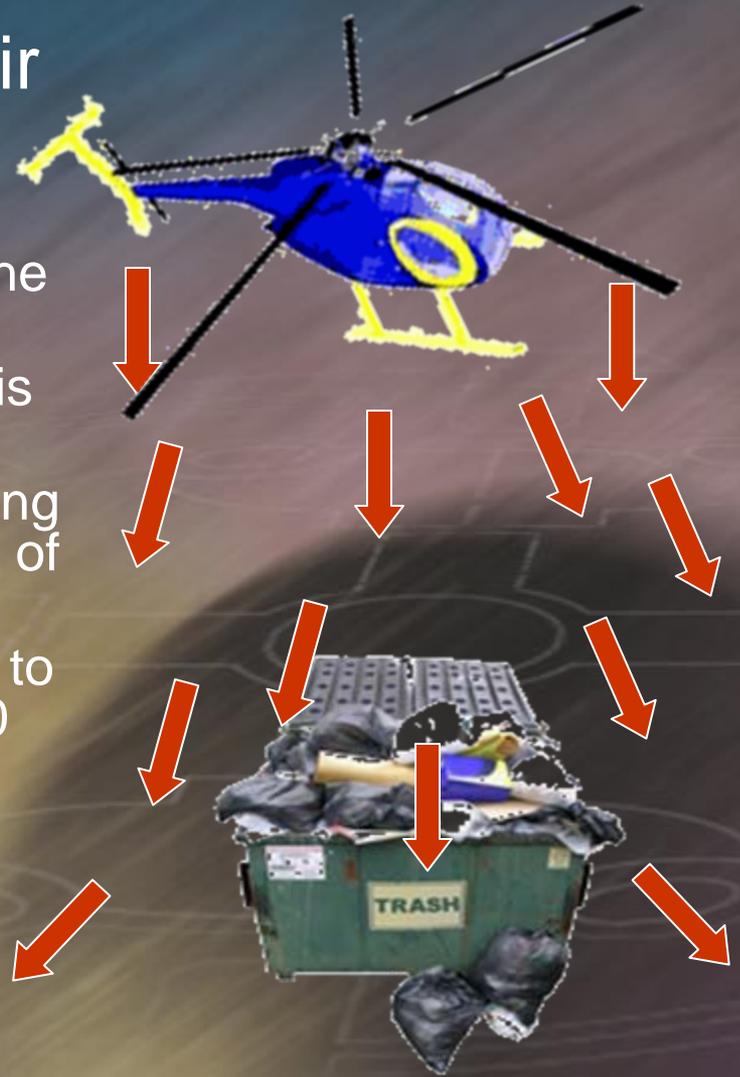
Construction Notification

- 14 CFR Part 77, *Objects Affecting Navigable Airspace*
 - Requires persons proposing any construction or alteration described in Section 77.13 (a) to give 30-day notice to the FAA of their intent.
 - Notification of the proposal should be made on FAA Form 7460-1, *Notice of Proposed Construction or Alteration*.
 - This includes any construction or alteration of more than 200 feet (61 m) above ground level (AGL) at its site or any construction or alteration of greater height than an imaginary surface located within 5,000 feet that penetrates a 25:1 sloping surface that extends outward and upward originating at the heliport.

Reference: AC 150/5390-2B Section 109

Rotor Wash

- All helicopters produce a significant downward flow of air during landing and takeoff.
 - The larger and heavier the helicopter the greater the velocity of wind produced.
 - A 75 to 100 mph downward flow of air is common.
 - Dumpsters in close proximity to a landing area should have a mechanical means of securing the lid.
 - Helicopter rotor wash has been known to pick up full sheets of $\frac{3}{4}$ " plywood 30-40 feet into the air.



Rotor Wash Safety Considerations

- **Dumpsters**
- **Construction areas**
- **Sand and dirt**
- **Portable equipment**
- **Parking areas**
- **Pedestrian traffic**
- **Loose debris**



Rotor Wash Issues

- Falls
- Eye injuries
- Head injuries
- Hand injuries
- Flying debris
- Property Damage



Hospital Liability

- What the lawyers say...
 - “If the crash occurred at a hospital landing zone, problems with the zone may make the hospital liable to the victims.”
 - National Trial Lawyers Journal, 02/01/2006
 - When Rescue Is Too Risky**
 - » Justin T. Green

Liability Reduction

- **How to Limit Liability**

- Permanent landing site
- Certified helipad
- Physical barriers around pad
- Posted warning signs
- Safety perimeter
- Written protocols
- Annual training



Signs

Best
Practices

- Posted on all sides of the helipad
- Language appropriate
- Visible
- Phone number listed



Security

Best
Practices

- Train and designate personnel to provide security.
- Set up security 7-10 minutes prior to arrival.
- Provide eye and hearing protection.
- Orient facing away from helipad.
- Block all traffic (vehicle & pedestrian) near the touchdown area during landing and takeoff.
- Secure a 200 foot area around the landing zone area for safety.
- Security personnel should stay on site until the helicopter has departed.



Communications

- Questions that air medical providers are going to ask a hospital.
 - Does your hospital use a privacy tone code (PL) on it's radio? If so what the frequency?
 - Does your hospital use a **Dual Tone - Multi Frequency** process (DTMF) to open the radios?
 - Do you use the standard Hospital Emergency Room Network (HERN) frequency for reports?
 - Do you use a different frequency for air medical communications?

Answering these questions will help avoid problems when trying to communicate with air medical provider.

Safety

- Some helicopters require a gurney to move patients while others have their own portable stretcher system.



- Safety tips to remember
 - Ask if a bed or gurney is needed.
 - Don't leave gurneys unattended.
 - Lock wheels when loading and unloading
 - Keep sheets and blankets secure.



Safety

Best
Practices

- Recommendations:
 - Do not approach a running helicopter unless instructed to do so by the crew.
 - Always approach from the front in full view of the pilot and only when the pilot says it is safe to do so.
 - Do not get involved with hot off-loading or on-loading of patients unless you have been properly trained to do so.
 - Secure all loose items in the vicinity of the landing area.

Incllement Weather

Best Practices

- Weather extremes such as snow, ice or heavy rain may make it impossible to use certain areas for landing zones. An alternate site or airport may be necessary. It is a good idea to have these locations and procedures in place before they are needed.



Snow & Ice Removal

- To insure maximum safety in and around the landing area, snow and ice should always be removed prior to the helicopters arrival whenever possible. A helicopter's rotor wash can propel large pieces of ice with dangerous velocity.

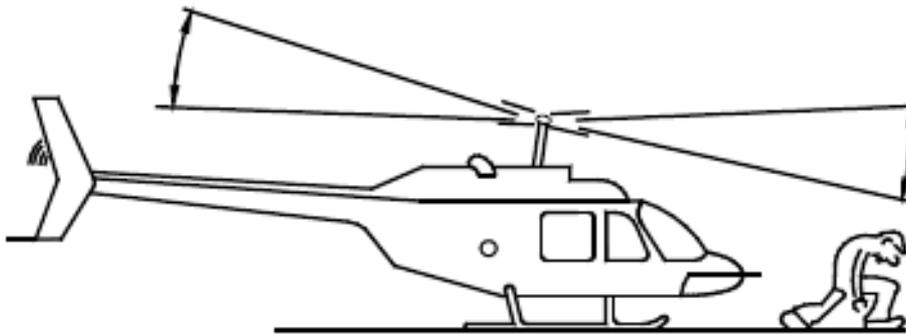


• **DO NOT** use rock salt to remove snow or ice. Due to its size it can become a projectile and cause serious injury.

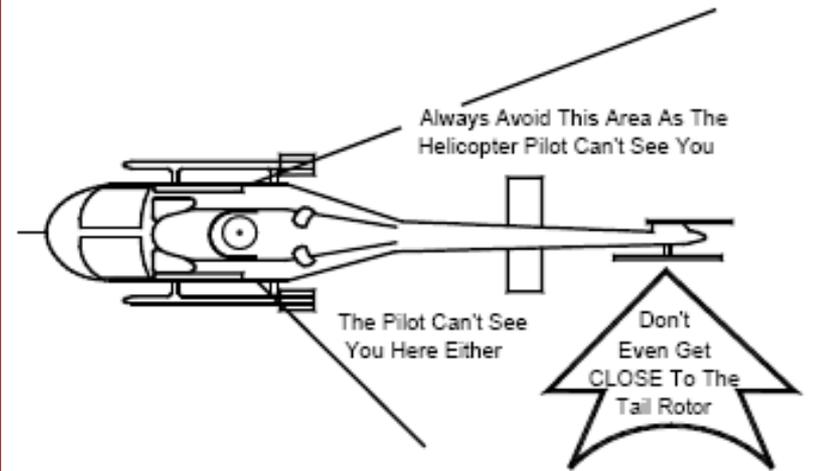
• Rock salt is also extremely corrosive and damaging to helicopters. Use a product containing urea.



Be alert around the helicopter



Approach And Leave The Helicopter In A Crouched Manner When Rotors Are Turning



SOP

Standard Operating Procedures

- All agencies that work with air medical helicopters should have written procedures and protocols set in place for their employee's covering at a minimum the following items.
 - Who can call for air medical transport.
 - When to call for air medical transport.
 - How and when to prepare for arrival.
 - Information to communicate.
 - What to do in case of an emergency (EAP).

Regular Training

Best
Practices

- Documented annual safety training for all employees and staff involved with helicopter operations is highly recommended. In most cases your local air medical program can assist with or provide this type of training.



EMERGENCIES

- **In case there is a helicopter emergency or accident at your facility:**
 - Make the appropriate 911 calls to fire rescue.
 - Contact the helicopter operator.
 - Do not approach the helicopter until it has stopped moving.
 - Report & document all incidents.

Prior education and training are the ultimate equalizer in an emergency situation. Contact the air medical provider in your area to help you outline a good emergency action plan.

Fixing Problems

Best
Practices

- If you have a problem or incident during an air medical transport use these rules of thumb.
 - Discuss the problem with the pilot and med team immediately.
 - Notify the flight program that day.
 - Follow up with a written detailed report within 48 hours to the transport agency.
 - Follow up again in 10 to 14 days to insure loop closure.

Communicating Hazards

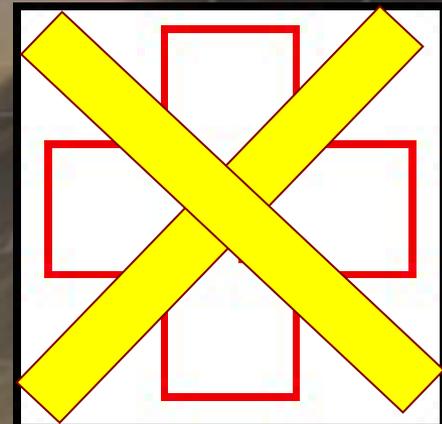
- Notify all helicopter operators that transport patients to or from your facility anytime:
 - There is any construction in the vicinity of the landing zone.
 - A large crane is erected within a ½ - 1 mile of a landing area.
 - An antenna is erected within 1-2 miles.
 - The landing site has been closed, changed or moved.

CLOSING A HELIPAD

- If for any reason you need to close a helipad landing area either temporarily or permanently. Place a large yellow X over the landing area to signal to all pilots not to land at this location.

- **Reference:**

- **AC 150/5390-2B Section 409 e,
and figure 4-11**



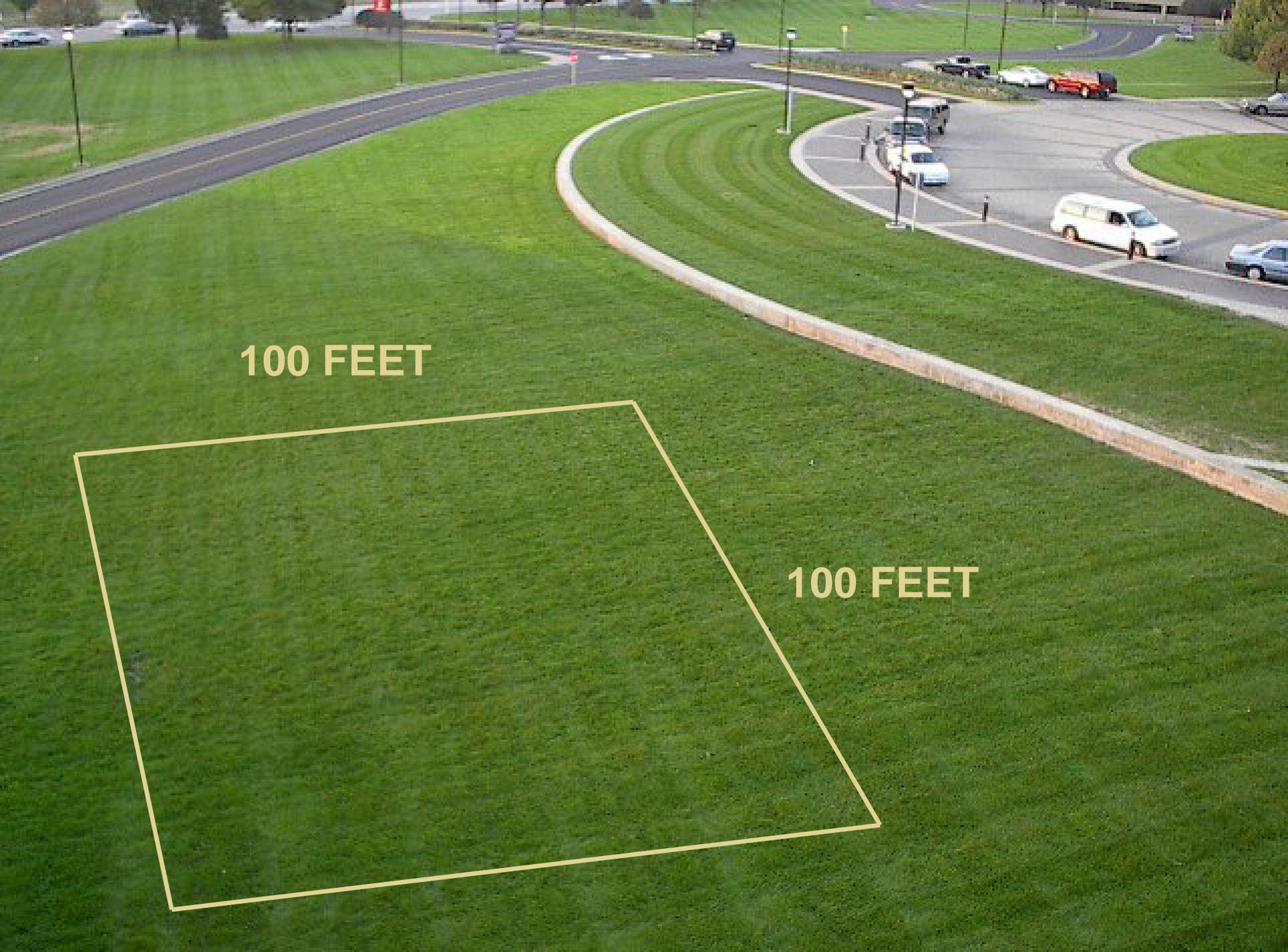
2 Helicopters and 1 Site

- If two helicopters are inbound to a facility at the same time but there is only one landing zone available, some solutions would be to.
 - Set up an alternate LZ onsite if possible.
 - Divert the second helicopter to an offsite LZ or airport if necessary.
 - Have the first helicopter depart as soon as their crew has been unloaded then land the second helicopter and unload their crew.
 - Always insure that both helicopters are aware of the other inbound helicopter.

Temporary Non-Standard Landing Zone Selection

- **Level: No more than a 5 degree slope.**
- **Firm: Concrete, asphalt or grass.**
- **No loose debris within 200 feet.**
- **No overhead obstructions**





100 FEET

100 FEET

Marking and Identification

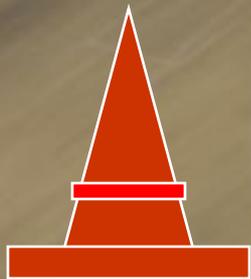


Non Permanent Locations:

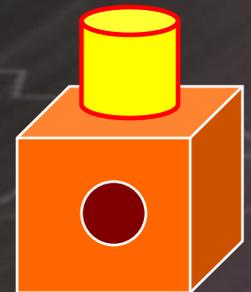
Mark all four corners of touchdown area, using;

- 4 Flares anchored to the ground, if you deem them safe.
- 4 Orange cones, weighted if possible.
- 4 Strobes, anchored to the ground.

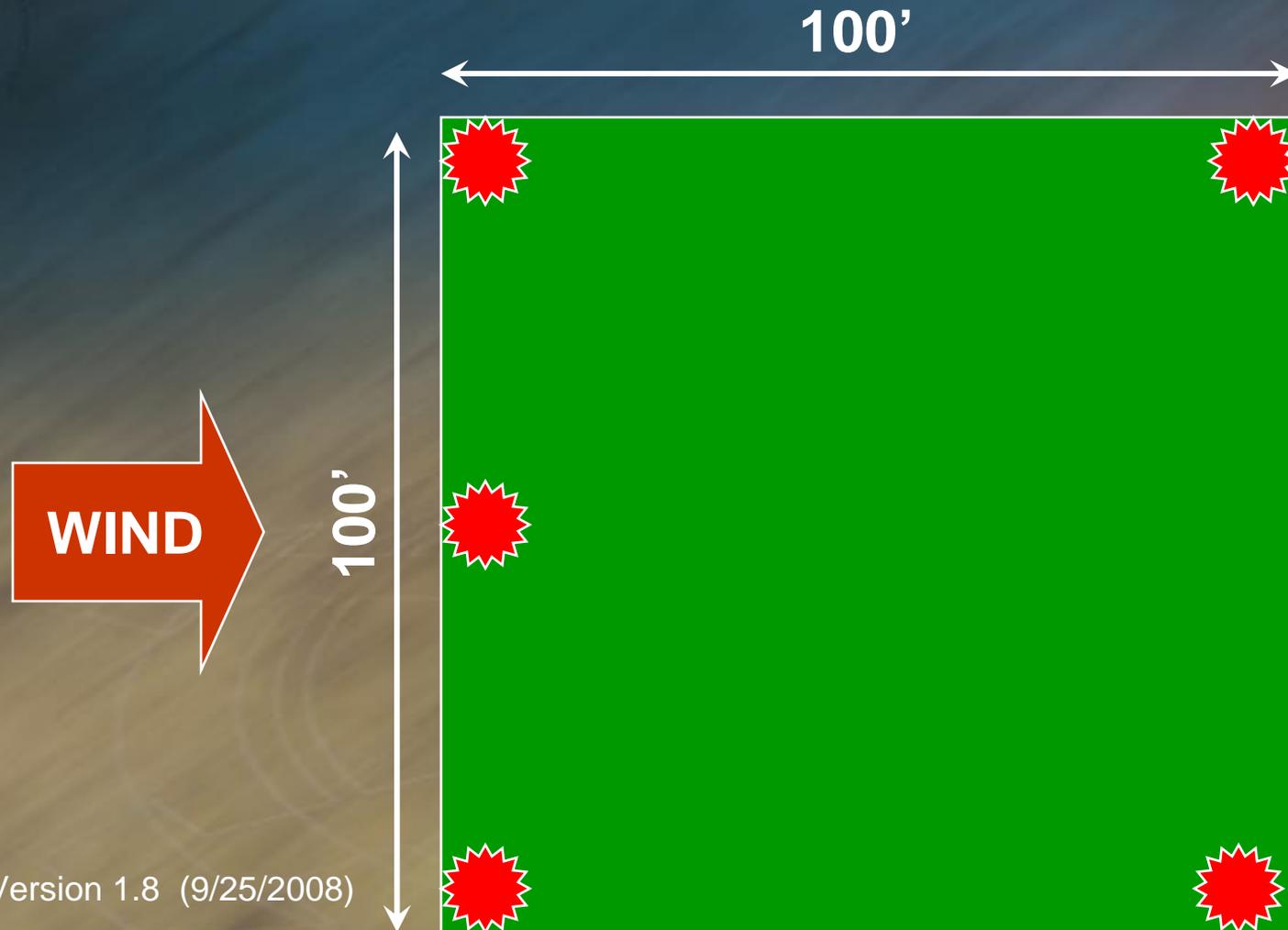
Use one additional marker on the side the wind is coming from.



Do Not Use:
*People, police tape or
fire hose*



Temporary landing zone setup



Sprinkler Systems

- Insure that any sprinklers that are in the vicinity of the landing area are turned off before the helicopter arrives.



DANGEROUS PRACTICES

- Calling multiple air medical programs after being turned down for weather without informing subsequently called operators of the weather turndown.
 - If you are ever turned down for transport by an air medical provider for weather always inform any subsequently contacted providers of this fact so that they have this information to make an informed safe decision.

DANGEROUS PRACTICES

- Calling two air medical providers when there is only one patient to transport, to see who gets there first.
 - This is a true safety hazard and a recipe for disaster. It may also initiate additional billing directly to the hospital by the other air medical provider that does not transport a patient. Worst of all this practice takes assets away from other regions that may desperately be in need of air medical transport.

Useful Links

ORGANIZATION	WEB ADDRESS
National EMS Pilots Association NEMSPA	http://www.nemspa.org
Air Medical Safety Advisory Council AMSAC	http://www.amsac.org
Federal Aviation Administration FAA	http://www.faa.gov
Department of Transportation DOT	http://www.dot.gov
National Fire Protection Association NFPA	http://www.nfpa.org
Occupational Safety & Health Administration OSHA	http://www.osha.gov
National Transportation Safety Board NTSB	http://www.nts.gov

If you have additional questions or
need information on heliports or
helicopter operations please
contact the

National EMS Pilots Association

NEMSPA



<http://www.nemspa.org>