HELIPORT DESIGN
with particular reference to
PPR and Hospital Heliports
WORKSHOP # 1

HELIPORT DESIGN
ADVISORY CIRCULAR 150/5390-2B / DRAFT 150/5390-2C

Dr John Leverton
HAI Heliport Design AC Focal Point
Advisor - Infrastructure Development, AHS
Leverton Associates International
AC 150/5390-2B – 2004 = AC-2B

New AC 150/5390-2C – 2012 = AC-2C **

AC 150/5390-2A – 1994 = AC-2A

** NOT ISSUED – ONLY DRAFT AVAILABLE
AC 150/5390-2C (2012)
**AC 150/5390-2B (2004)**

**PRINCIPLE CHANGES**

---

**AC 150/5390-2C (2012)**

---

**Advisory Circular**

---

**U.S. Department of Transportation**

**Federal Aviation Administration**

---

**Subject:** Heliport Design

**Date Draft:** October 15, 2014

**AC No.: 150/5390-2C**

---

1. **PURPOSE:** This Advisory Circular (AC) provides recommendations for the design of heliports, including guidelines for the layout, equipment, and operations of heliports. It is intended to provide a comprehensive guide for the design and operation of heliports. This AC does not establish mandatory requirements or regulations and is not intended to be a comprehensive source of information for all aspects of heliport design.


3. **APPLICATION:** This AC applies to all heliports in the United States that are subject to Federal Aviation Administration (FAA) regulations. Heliports not subject to FAA regulations should refer to applicable local and state regulations. The FAA encourages the use of this AC for the design and operation of heliports.

4. **PRINCIPAL CHANGES**:
   - Changed the term "helicopter" to "heliport" throughout the document.
   - Added definitions for "heliport" and "heliport facility."
AC 150/5390-2C – new layout

Heliport Design AC Workshop - HeliExpo 2012

Change of format – Single Column / Figures in with the text rather than at the end of each chapter: some figures include color.
After 2 years work by FAA and HAI on updating a limited number of sections in AC-2B (summarized by the FAA at the 2011 HeliExpo), the FAA issued without any advanced notice issued a completely revised (new) Draft AC 150/5390-2C in May 2011!!

….. Industry/HAI made initial comments in July and submitted detailed comment on 31 October – FAA ‘feedback’ on some issues given at a meeting on 9 Dec 2011.

….. FAA have declined informal request by HAI to see revised version and the FAA Airports Division representatives were unable to attend HeliExpo or take part in this workshop!
PRESENTATION / DISCUSSION

• MAIN FOCUS WILL BE ON:-

PRIVATE USE HELIPORTS
(CHapter 2 - General Aviation Heliports)

HOSPITAL HELIPORTS (CHAPTER 4).

• TRANSPORT HELIPORTS (CHAPTER 3) – NOT ADDRESSED IN DEPTH.

NOTE: IN AC-2B and AC-2C ‘PRIVATE USE’ IS DESIGNATED AS ‘PPR’
i.e. PRIOR PERMISSION REQUIRED.

IN AC-2B/AC-2C ‘PPR/Private Use Heliports’ ARE COVERED IN THE
‘General Aviation Heliport’ Chapter 2: THERE ARE A NUMBER OF
RELAXATIONS IN THE REQUIREMENTS FOR ‘PPR Heliports’. 
COMMENTS BASED ON:-

(i) RESULTS OF DISCUSSIONS WITH FAA
(ii) REVIEW OF AC-2B AND DRAFT AC-2C

COMMENTS SHOULD NOT BE TAKEN AS STATEMENT OF ACTUAL FAA POLICY

THE VIEWS EXPRESSED ARE MY OWN AND MUST NOT BE TAKEN AS BEING REPRESENTATIVE OF THOSE OF THE FAA, HAI, HAI Heliport Committee or AHS.
COMMENTS BASED ON:-

(i) RESULTS OF DISCUSSIONS WITH FAA
(ii) REVIEW OF AC-2B

Also please note that I will NOT cover all aspects in the ACs
...... I will only address those issues which I consider
important and those which I have been asked questions on
during many meetings I have attended.

THE VIEWS EXPRESSED ARE MY OWN
AND MUST NOT BE TAKEN AS BEING
REPRESENTATIVE OF THOSE OF THE
FAA, HAI, HAI Heliport Committee or AHS.
AC 150/5390-2B Heliport Design was issued on 9/30/04 (30 September 2004) and is available on a number of FAA and other web sites - the following is one useful web site to obtain the document:-


[Hardcopies of AC-2B are NOT available from the FAA – they are available from a number of commercial suppliers at a fee.]

Draft AC 150/5390-2C Heliport Design

(made available in May 2011) is available on FAA web site:-

www.faa.gov/documentLibrary/media/.../draft_150_5390_2C.pdf
AC-2C MAJOR POLICY CHANGES

• Approach/Departure (8:1) Surface requirements: ‘penetrations’ allowed.
• Use of Alternate Approach/Departure Surfaces – provision removed.
• Curved Flights paths introduced.
• Safety Nets – new requirements.
• Hospital Heliports: FATO Length “Adjustment for Altitude” added.
• TLOF Size increased – Elevated Hospital Heliports. **
• Helicopter Protection Zone recommended for Hospital Heliports. **
• Hospital Heliports Ground Level FATO Surface Characteristics
• Taxiway/Taxi-Routes - new requirements.
• Hospital Heliports – Use of Medevac Helicopters: text changed.
• Flight Path Alignment markings and lights added.
• Heliport Perimeter Lighting requirements established.

** GA Heliport requirements applied to Hospital Heliports.
PRINCIPAL CHANGES

Extract from AC-2C

- Changed the term for the helicopter overall length (OL) to 'D' or 'D-value'.
- Added definitions for design loads for static and dynamic load-bearing areas (LBA).
- Added guidance for load-bearing areas larger than the TLOF, but less than the size of the FATO.
- Added guidance for turbulence effects.
- Added guidance to provide adequate clearance between parking areas and taxi routes and within parking areas.
- Added guidance for minimum dimensions of curved approach/departure airspace.
- Added guidance for Touchdown/Positioning Circle (TDPC) Marking.
- Added guidance for Flight Path Alignment Guidance markings and lights.
- Added an appendix providing guidance for Emergency Helicopter Landing Facility Requirements (EHLF).
- Added FATO to FATO separation distance for simultaneous operations.
- Revised standards for size of “H” for GA heliports.
- Added Heliport Protection Zone recommendation for hospital heliports.
- Minimum size of TLOF for Hospital Heliports removed.
- Heliport perimeter lighting requirements clarified.
HELIPORT PERIMETER LIGHT STANDARDS

ENGINEERING BRIEF 87 (EB # 87) – not dated: issued Jan 2012

A new raised light fixture (Type L·860HR) and a new semi flush light fixture (Type L·860HS) are specified in this Engineering Brief to identify the heliport perimeter in visual meteorological conditions. Both the light intensity and horizontal/vertical light distribution are characterized. The light emitting diode (LED) raised heliport fixture and LED semi flush fixture will be identified as: L·860HR (L) and L·860HS (L) respectively. Any of these fixtures may be used as Flight Path Alignment Lights and Landing Direction Lights as described in AC 150/5390·2.

FAA Website:  http://www.faa.gov/airports/engineering/engineering_briefs/media/EB_87.pdf
Don't forget comments on the **new** AC 150/5390-2C are based on the **DRAFT** AC 150/5390-2C and discussions on behalf of the HAI with the FAA and **not** the final version of AC150/5390-2C (AC-2C)
ALL REQUIREMENTS INDICATED APPLY TO AC 150/5390-2B (AC-2B) and AC 150/5390-2C (AC-2C) UNLESS STATED.
NOTICE REQUIREMENTS
108. **NOTIFICATION REQUIREMENTS.** Title 14 CFR part 157; *Notice of Construction, Activation, and Deactivation of Airports*; sets requirements for persons proposing to construct, activate, deactivate, or alter a heliport to give advance notice of their intent to the FAA. This includes changing the size or number of FATOs; adding, deleting, or changing an approach or departure route; or changing heliport status. An example of a heliport status change would be a change from private to public use or vice versa. When notification is required, file Form 7480-1 (see Figure 1-1 on page 7) with the appropriate FAA Airports Regional or District Office at least 90 days before construction, alteration, deactivation, or change in use. See the FAA Airports web site at [http://www.faa.gov/airports](http://www.faa.gov/airports) for contact information.
Draft AC-2C

a. The heliport layout diagram should be drawn to scale showing key dimensions, such as the TLOF size, FATO size, safety area size, distance from safety area perimeter to property edges, and approach/departure paths in relation to buildings, trees, fences, power lines, obstructions, schools, churches, hospitals, residential communities, waste disposal sites, and other significant features as specified on Form 7480-1 and as suggested in Figure 1-2 on page 8).

-Heliport proponents should complete FAA Form 7480-1 (Figure 1-1), a heliport layout diagram (Figure 1-2), and a heliport location map (Figure 1-3). FAA Form 7480-1 is from the FAA web site http://faa.gov.arp. The FAA web site also lists office addresses for FAA Airport District/Field Office or Regional Offices.
### REQUIRED NOTICE

**NOTICE OF LANDING AREA PROPOSAL**

<table>
<thead>
<tr>
<th>Name of Proponent, Individual, or Organization</th>
<th>Address of Proponent, Individual, or Organization (No., Street, City, State, Zip Code)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Establishment or Activation, Deactivation or Abandonment**

- [ ] Establishment or Activation
- [ ] Deactivation or Abandonment

**Location of Landing Area**

1. Associated City/State
2. County/State (Physical Location of Airport)
3. Distance and Direction From Associated City or Town

**Name of Landing Area**

- Latitude
- Longitude

**Purpose**

- [ ] Public
- [ ] Private
- [ ] Private Use of Public Land/Waters

**Type Use**

- [ ] Construction Dates
- [ ] To Begin
- [ ] Est. Completion

**C. Other Landing Areas**

- Direction From Landing Area
- Distance From Landing Area
- Magnetic Bearing of Runway(s) or Seawall
- Length of Runway(s) or Seawall(s) in Feet
- Width of Runway(s) or Seawall(s) in Feet
- Type of Runway Surface (Concrete, Asphalt, Tar, Etc.)

**D. Elevations**

- [ ] Dimensions of Final Approach and Take Off Area (FAA3) in Feet
- [ ] Dimensions of Touchdown and Runoff Area (TAOA) in Feet
- [ ] Magnetic Direction of Ingress/Egress

**E. Obstructions**

<table>
<thead>
<tr>
<th>Type</th>
<th>Height from terrain, feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**F. Operational Data**

1. Estimated or Actual Number Based Aircraft
2. Present (If not indicate by letter "E") Anticipated 5 Years Hence
3. Type of Aircraft
4. Engine
5. Main Engine
6. Towed-Dragger

**G. Other Considerations**

2. Average Number Monthly Landings

3. Are IFR Procedures For The Airport Anticipated
   - [ ] No
   - [ ] Yes
   - [ ] Within Years
   - [ ] Type Needed

4. Application for Airport License:
   - [ ] Has Been Made
   - [ ] Not Required
   - [ ] Will Be Made
   - [ ] County
   - [ ] Municipal Authority

**CERTIFICATION**: I hereby certify that all of the above statements made by me are true and complete to the best of my knowledge.

**Name, Title (and address if different than above) of person filing this notice – type or print**

**Signature**

**Date of Signature**

**Telephone No.**

---

**Required Notice of Heliport Development or Change**

**FAA Form 7480-1**

**AC-2B/AC-2C Figure 1-1**

---

**Levertown Associates International**

---

**Heliport Design AC Workshop - HeliExpo 2012**
AC-2C Figure 1-2

Updated vision of AC-2B Figure 1-2

Figure 1–2. Example of a Heliport Layout Diagram

Heliport Design AC Workshop - HeliExpo 2012

Note: Layout diagrams should be drawn to scale with key dimensions shown as TLOF size, FATO size, Safety Area size, distances from safety area perimeter to property edges, etc.
Example of a Heliport Location Map

AC-2B/AC-2C Figure 1-1

APPLICABILITY
AC-2C uses ‘must’ through the document instead of ‘should’ which, except in a few cases, is used in AC-2B.

The regulatory implications of using “must” and “shall” in the ‘advisory circular’ instead of “should” and “may” has been discussed by HAI with the FAA: HAI stated that the use of ‘must’ should be remove to avoid the unintended consequence of establishing new regulatory mandates or additional burden on the operating community.

FAA has stated they plan to retain use of “must” and “shall”.

Heliport Design AC Workshop - HeliExpo 2012
1. PURPOSE. This advisory circular (AC) provides recommendations for heliport design and describes acceptable requirements to develop a heliport. This AC applies to anyone who is proposing to construct, activate or deactivate a heliport.

2. APPLICABILITY. This AC is not mandatory and does not constitute a regulation except when Federal funds are specifically dedicated for heliport construction.
6. APPLICATION. The recommendations and standards in this AC are for planning and designing civil heliports. To the extent that it is feasible and practical to do so, the standards in this AC should be used in planning and designing improvements to an existing facility when significant expansion or reconstruction is undertaken. Conformity with these standards is a prerequisite to Federal grant-in-aid assistance. Modification to a heliport design standard related to new construction, expansion, reconstruction, or upgrade on a heliport that received Federal aid requires FAA approval. The request for modification should show that the modification will provide an acceptable level of safety, economy, durability, and workmanship. The recommendations and standards in this AC are not intended to be sufficient to design an instrument approach procedure.
APPLICABILITY

FAA Proposal prior to issue of Draft AC-2C

[Proposal to replace ‘2’ and delete ‘6’ in AC-2B]

2 APPLICABILITY: The Federal Aviation Administration (FAA) recommends the guidelines and specifications in this AC for materials and methods used in the construction of heliports. In general, use of this AC is not mandatory. However, use of this AC is mandatory for all projects funded with Federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charge (PFC). See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No. 9, Standards and Specifications. In addition, the recommendations, guidelines and specifications in this AC are highly recommended for all heliport projects.
1. PURPOSE. This advisory circular (AC) provides recommendations for heliport design, including heliports serving helicopters with single and tandem (front and rear) rotors. Basic concepts may be applied to facilities serving helicopters with dual (side by side) rotors, however standards based on Rotor Diameter will not apply. **

3. APPLICATION. The Federal Aviation Administration (FAA) recommends the guidelines and specifications in this AC for materials and methods used in the construction of heliports. In general, use of this AC is not mandatory. However, use of this AC is mandatory for all projects funded with Federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charge (PFC). See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No. 9, Standards and Specifications. For information about grant assurances, see http://www.faa.gov/airports/aip/grant_assurances/. The use of terms implying strict compliance applies only to those projects. Other Federal Agencies, states, or other authorities having jurisdiction over the construction of heliports should decide the extent to which these standards apply.

** Reference only to single main rotor helicopters agreed by FAA for FINAL AC-2C.
c. Planning. While the heliport itself may be simple, the planning and organization required to properly put one into place can be intimidating. To help make the process easier, the Federal Aviation Administration has published this AC 150/5390-2B, Heliport Design AC. This document describes physical, technical, and public interest matters that should be considered in the planning and establishment of a heliport. While this AC is a technical document intended to help engineers, architects, and city planners design, locate, and build the most effective heliport, it can be used by anyone considering the construction of a heliport.
Chapter 2: General Aviation Heliports

AC-2B 200 b

NOTE: To the extent that it is feasible and practical to do so, the standards and recommendations in this AC should be used in planning and designing improvements to an existing heliport when significant expansion or reconstruction is undertaken. Furthermore, existing PPR heliports may continue to follow the recommendations and standards applicable at the time of design.

** includes PPR Heliports
Chapter 4: Hospital Heliports
AC-2B 400 b

NOTE: To the extent that it is feasible and practical to do so, the standards and recommendations in this AC should be used in planning and designing improvements to an existing heliport when significant expansion or reconstruction is undertaken. However, existing hospital heliports may continue to follow the recommendations and standards applicable at the time of design.
GRANDFATHER CLAUSES NOT INCLUDED IN AC-2C

HAI requested such clauses are added to AC-2C: they are normal practice and considered essential. HAI suggested that the following text is included in the pre-amble and in front of Chapter 2 (General Aviation) and Chapter 4 (Hospital Heliports)

“To the extent that it is feasible and practical to do so, the recommendations in this AC should be used in planning and designing improvements to an existing heliport when significant expansion or reconstruction is undertaken. Furthermore, existing heliports may continue to follow the recommendations and standards applicable at the time of design.”
FIRE REQUIREMENTS

Topic NOT addressed in this Presentation.

NFPA 418
Standard for
Heliports
1990 Edition

New Edition - 2011

Heliport Design AC Workshop - HeliExpo 2012
FIRE REQUIREMENTS

4.2.2 The design of the heliport, including all the aeronautical components, **shall be in accordance with FAA AC 150/5390-2B, Heliport Design Advisory Circular.**
FIRE REQUIREMENTS

HAI Position – Heliport Design requirements should NOT be mandatory i.e. FAA is correct in giving Guidance in an Advisory Circular [Also LAI Position.]
HELICOPTER DIMENSIONS
Helicopter Dimensions

OL = Overall Length
RD = (Main) Rotor Diameter

(1 OL – 1 RD) = (approx.) 0.2 RD
1 OL = 1D = (approx.) 1.2 RD

**Internationally OL = D or D-value – also used in AC-2C**
Undercarriage Dimensions

UC = Maximum width or length of the undercarriage: used to define some characteristics.

UCw = undercarriage width: used for defining taxiway width

Length of Undercarriage

Width of Undercarriage (UCw)
GENERAL DESIGN CONSIDERATIONS
**Design Helicopter.** A generic helicopter that reflects the maximum weight, maximum contact load/minimum contact area, overall length, rotor diameter, etc. of all helicopters expected to operate at the heliport.

[AC-2B Par 101 b]

*Design Helicopter* used for FATO, TLOF and Safety area.

For Taxi Route/Taxiway maximum RD and UCw for Ground Taxi and Hover Taxi operations need to be considered.

Parking Areas are based on **individual helicopters**, group of helicopters or the *Design Helicopter*. 
• REQUIREMENTS LARGELY BASED ON A DESIGN HELICOPTER

• IMPORTANT PARAMETERS –

  – MAIN ROTOR DIAMETER (RD)
  
  – OVERALL LENGTH (OL) - ‘D’, ‘D FACTOR’ or D-value
  
  – MAXIMUM WEIGHT (MASS)
  
  – MAXIMUM UNDERCARRIAGE ‘SPREAD’ DIMENSION (WIDTH OR LENGTH) – (UC)
  
  – MAXIMUM UNDERCARRIAGE WIDTH (UCw)
  
  – UNDERCARRIAGE POINT LOADINGS/TIRE PRESSURES
  
  – UNDERCARRIAGE CONTACT AREA(S)
**APPROXIMATE RELATIONSHIPS**

- **FATO** = 1.5 OL / 1.5 D [1.5 x OVERALL LENGTH] **

- TAIL ROTOR SIZE: 1/6 TO 1/5 RD

- OL = 1.16 RD TO 1.2 RD

- ASSUME OL / D = 1.2 RD

  THAN 1.5 OL / 1.5 D FATO = 1.8 RD and
  
  1 RD TLOF = 0.83 OL / 0.83 D

**OL = ‘D’, ‘D-value’ or ‘D factor’: used Internationally and in AC-2C.**

*Heliport Design AC Workshop - HeliExpo 2012*
UNDERCARRIAGE SIZE APPROXIMATIONS

• UC - approximately 0.2 / 0.25 RD for ‘Skids’
  - approximately 0.4RD for ‘Wheels’

Exceptions: SH-60 Sikorsky Black Hawk/S-70 Fire Hawk (UC = 28.3 ft. i.e.. 0.52 RD) …… and most ‘helicopters with tail wheels.’

NOTE: Length-to-width (L/W) varies from 0.8 to 2
- value typically increases with helicopter size/weight
DESIGN HELICOPTER

- OFTEN DIFFICULT TO DECIDE
- CHOOSE ‘LARGER VALUES’ IF FEASIBLE
- WEIGHT: ADD 10-20 % FOR GROWTH OF TYPE OR SELECT HIGHER LIMIT
- **Hospital Heliports:** Provide facility capable of taking the US Army/National Guard ‘H-60’ Helicopter if feasible**. Basic characteristics of ‘H-60’ included in AC-2B. Again If Feasible Assume 20% Weight Increase.

** THIS IS A REQUIREMENT IN AC-2B IF FEDERAL FUNDING IS INVOLVED – THIS REFERENCE REMOVED IN AC-2C! [Not sure why!!] Consider the feasibility of accommodating large military helicopters that might be used in an emergency. NOTE: THERE IS ALSO THE S-70 FIRE HAWK.
DESIGN CONSIDERATIONS

• PRIVATE USE/PPR HELIPORTS and HOSPITAL HELIPORT: Design to the more demanding General Aviation (GA) Heliport requirements if “you can” i.e. if practical, technically feasible and economically reasonable. [My recommendation.] …. this is a requirement for Hospital Heliports “If Federal funds are used to build or modify a hospital heliport.”

• If high operational use, inclusion of at least one separate parking area is recommended. [Need to avoid one helicopter being parked on the side of a FATO/TLOF when it is being used by another helicopter].
OVERVIEW
GENERAL ASPECTS

• FAA Advisory Circulars (AC’s) give minimum requirements
  – if possible...base design on “larger dimensions” than minimum 'design helicopter'.
  – consider future use/potential growth

• Safety and Operational efficiency will be enhanced even if only some dimensions can be increased.

• FATO and TLOF can be turf or paved for PPR, Hospital and General Aviation Heliport. Paved TLOF recommended for Hospital Heliports ..... .... and for PPR Heliports with ‘high usage’

Paved TLOF essential for ‘heavy helicopters’ Bell 412, S-76 or ‘wet areas’
FATO/TLOF ‘SURFACE’

• **TLOF:**
  – aggregate turf or Portland cement/concrete recommended. Asphalt less desirable since it may ‘rut’ – safety issue: particularly true if /when ambient temperature is high and/or ‘medium weight’ helicopters are used’. *Portland cement essential for helicopters like the S-76 and Bell 214.*

• **ELEVATED TLOF:**
  – Wood, Metal, Composite Material, Concrete.

• **TLOF: ‘Rough’ Surface To Provide Skid Resistance Recommended**

• **ELEVATED SITES WITH TLOF ONLY** – Allow “space” to *work around* the helicopter.
HELIPORT TERMINOLOGY

FATO: Final Approach and Takeoff Area

TLOF: Touchdown and Liftoff Area

Safety Area
Circular heliports allowed ... however AC-2B and AC-2C gives impression that only Square (or Rectangular) allowed .... No “Circular Heliport” configurations shown in AC-2B or AC-2C: FAA wish to encourage use of “Square Layouts” since these provide ‘better’ Visual Cues ..... 

...... even so Circular Layouts are allowed e.g.

Par 201 b. TLOF Size.

Ground-level TLOF. For ground-level heliports, the minimum TLOF dimension (length, width, or diameter) should be 1.0 times the rotor diameter (RD) of the design helicopter.
SCOPE OF AC-2B

• AC-2B gives guidance for Heliports only i.e. does not cover Offshore Helidecks.

NOTE 1: ICAO ANNEX 14 Volume II – HELIPORTS, COVERS ALL HELIPORTS AND A HELIDECK IS CONSIDERED A HELIPORT ON A FLOATING OR FIXED OFFSHORE STRUCTURE.

NOTE 2: A FAA REPRESENTATIVE IN AUGUST 2004 STATED IT “WILL (??) ISSUE HELIDECK DESIGN REQUIREMENTS WHEN REVIEW OF ICAO ANNEX 14 IS COMPLETED IN 2006/2007.” HOWEVER SINCE THIS TIME FAA HAVE NOT REPEATED THIS AND HAVE NOT SHOWN ANY INTEREST IN ADDRESSING HELIDECKS

ANNEX 14 – Tranche 1 issued in 2009/Tranche 2 in 2013/Tranche 3 ????.
HELIPORT DESIGN AC-2B
“MAIN THINGS” NOT CHANGED FROM AC-2A

- 8:1 (12.5%) APPROACH/DEPARTURE SURFACE.

- BASIC SIZE OF TLOF FOR GENERAL AVIATION AND TRANSPORT. [TLOF for Hospital Heliports changed from 40 ft to ‘1RD or 40 ft’ minimum and size of TLOF for General Aviation elevated heliports changed from 1RD to 1OL (overall length) if FATO-outside-TLOF is non-load bearing.]

- SIZE OF FATO.

- TLOF OR FATO CAN STILL BE MARKED / LIGHTED. [BUT...SAFETY ZONE WIDTH INCREASED IF TLOF NOT MARKED].

- LITTLE CHANGE FOR TRANSPORT HELIPORTS.
• SAFETY ZONE WIDTH INCREASED WHEN / IF TLOF NOT MARKED.

• TLOF SIZE FOR PPR and HOSPITAL HELIPORTS = 1RD (1.5 UC in AC-2A). [SOME RELAXATIONS FOR PPR GROUND AND ELEVATED HELIPORTS.]

• TLOF SIZE FOR GENERAL AVIATION ELEVATED HELIPORTS 1OL/1D IF FATO-OUTSIDE-TLOF is NON-LOAD BEARING (1 RD in AC-2A).

• SIZE LIMITATION MARKING REQUIRED.*

• WEIGHT LIMITATION MARKING REQUIRED.*

*OPTIONAL FOR PPR.
NOTE: When the standard surface is incompatible with the airspace available at the heliport site, no operations may be conducted unless helicopter performance data supports a capability to safely operate using an alternate approach/departure surface. The site would be limited to those helicopters meeting or exceeding the required performance and approved by the FAA.

THIS – IN THEORY - ALLOWS STEEPER APPROACH/DEPARTURE SURFACES OR ‘CAT A/PERFORMANCE CLASS’ SURFACES TO BE USED WHEN MATCHED TO THE PERFORMANCE OF THE HELICOPTER.
AC-2B Par 204 b / 404 b

PROVISION REMOVED FROM AC-2C:

HAI has requested it is allowed and proposed:-

“Alternative Approach/Departure Surface

When the standard surface is incompatible with the airspace available at the heliport site, no operations should be conducted unless helicopter performance data supports a capability to safely operate using an alternate/alternative approach/ departure surface. The site should be limited to those helicopters meeting or exceeding the required performance and approved by the FAA.”
BASIC CONFIGURATION

---

No “Circular Heliport” configurations shown in AC-2B or AC-2C: FAA wish to encourage use of “Square Layouts” since these provide improved Visual Cues

----

Even so Circular Layouts are still allowed e.g.:

Par 201 b. TLOF Size.

Ground-level TLOF. For ground-level heliports, the minimum TLOF dimension (length, width, or diameter) should be 1.0 times the rotor diameter (RD) of the design helicopter.
A square or rectangular FATO or TLOF provides much better visual cues, particularly on approach, to the pilot then a circular FATO or TLOF ... this is generally agreed but not mentioned in AC-2B: thus design heliports with a square FATO and/or square TLOF if possible.**

..... and at a distance during nighttime operations, a square or rectangular pattern of FATO or TLOF edge lights provides the pilot with better visual cues than a circular pattern: this is stated in **AC-2B and Draft AC-2C.**

** LAI Recommendation
SQUARE /CIRCULAR FATOs/TLOFs

A square or rectangular FATO or TLOF provides much better visual cues, particularly on approach, to the pilot then a circular FATO or TLOF ... this is generally agreed but not mentioned in AC-2B: thus design a square FATO and/or square TLOF if possible.

Many in industry have questioned this view – HAI has requested the text on this aspect is removed from AC-2C: FAA position NOT known.

** LAI Recommendation
FATO/TLOF

• **AC -2B / AC-2C**
  – EACH TLOF MUST BE LOCATED IN A FATO.
  – SAFETY AREAS MUST NOT OVERLAP.

• **AC -2B / AC-2C** : TLOF *TECHNICALLY REQUIRED FOR HELIPORTS, BUT TLOF NEED NOT BE MARKED.*

*IF TLOF NOT MARKED, SAFETY AREA INCREASED FROM 1/3RD (10FT MIN. PPR/20FT MIN. GA) TO 1/2 OL (20FT OR 30FT MINIMUM).*
FATO/FATO SEPARATION

AC-2B 202 e / AC-2C 207 e

FATO/FATO Separation. If a heliport has more than one FATO, the separation between the perimeters of the two FATO, should be such that the respective Safety Areas do not overlap. This separation is based on the assumption that simultaneous approach/ departure operations will not take place.

AC-2B 202 e - Note: If simultaneous operations are planned, greater separation will be required.
AC-2C 207 e - If simultaneous operations are planned, a minimum 200 foot (61 m) separation is required.
FATO/FATO SEPARATION

TLOF Center-to Center Separation – approx 2.46 RD (2 OL/2 D)
FATO/FATO SEPARATION

TLOF Center-to-Center Separation – approx 2.46 RD (2 D)
FATO/TLOF SEPARATION

TLOF Center-to Center Separation – approx 2.46 RD (2D)

AC 150/5390-2B

NON-SIMULTANEOUS OPERATIONS

Heliport Design AC Workshop - HeliExpo 2012
FATO/FATO SEPARATION

AC 150/5390-2B

TLOF

FATO

Safety Area

… also need to consider ‘Airspace’

TLOF Center-to Center Separation –approx 2.46 RD (2 OL)
FAA Order 7110.65R-Air Traffic Control (February 16, 2006) indicates a separation of 200ft. for Simultaneous Helicopter Landings or Takeoffs.
**ELONGATED FATO/TLOF**

**AC-2B / AC-2C**

New Figure in
DRAFT AC-2C

RD: Rotor diameter of the design helicopter
OL: Overall length of the design helicopter

A – Minimum TLOF Width: 1.0 RD
C – Minimum FATO Width: 1.5 OL
E – Minimum Separation between the perimeters of the TLOF and the FATO: \[0.5\{1.5 \text{ OL} - 1.0 \text{ RD}\}\]
F – Minimum Safety Area Width: See Table 2-1
G. Minimum Landing Position length and width: 1.0 RD
ELONGATED FATO/TLOF

TERMINOLOGY

RD: Rotor diameter of the design helicopter
OL: Overall length of the design helicopter

A – Minimum TLOF Width: 1.0 RD
C – Minimum FATO Width: 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 2-1
G. Minimum Landing Position length and width: 1.0 RD
**AC-2B:** NOT REQUIRED FOR PPR OR HOSPITAL HELIPORTS

**AC-2C:** OPTIONAL FOR PPR – REQUIRED FOR HOSPITAL HELIPORTS

---

**Example:**
80 Feet is Added to the Basic FATO Length
For a Site Elevation of 3,200 Feet.
LOAD BEARING AREAS
SURFACE LOADING REQUIREMENTS

**FATO:** Varying Surface Requirements [Dynamic Load Bearing to Non-Load Bearing]

**TLOF:** Dynamic Load Bearing area (On all heliports)

**Safety Area:** No Surface Requirements

*Heliport Design AC Workshop - HeliExpo 2012*
**LOAD BEARING AREAS**

- **Dynamic Load Bearing (DLB)** - 1.5 Maximum Takeoff weight ... assumed to apply through two (2) points of contact: normally the two rear wheels on wheeled helicopter or the two aft skid contact areas on skid helicopter. [AC-2B Par 806 b.]

- **Static Load Bearing (SLB)** - Maximum Takeoff applied through all points of contact i.e. total wheel or skid contact area. [AC-2B Par 806 a.]

- **Ground Effect Area (GEA)** - a 20 lbs/sq.ft (98 kg/sq.m) live load” is also defined in AC-2B: this is in effect a GEA but it is not called this by FAA and term is not used in AC-2B
LOAD BEARING AREAS

PPR (Private Use)
LOAD BEARING AREAS

PPR (Private Use) - Can be the same as GA (General Aviation) ... but less demanding requirements allowed

[GA Defined later in presentation]
AC-2B / AC-2C.

–GROUND LEVEL: 1RD BUT IF PORTION IS PAVED, PAVED AREA CAN BE 2 UC. NEED TO BE LOCATED IN CENTER OF TLOF AND TO ENSURE THERE IS “NO LIP” BETWEEN PAVED AND UNPAVED AREAS.

–NOTE: TLOF is still 1RD and not 2UC!! Slightly confusing since all TLOF can be turf/un-paved – it must however be dynamic load bearing.

NOTE: 1.5 UC OF AC-2A CHANGED TO 2 UC IN AC-2B TO PROVIDE LARGER AREA AND BETTER VISUAL CUES.
PPR GROUND LEVEL HELIPORT

AC-2B / AC-2C

TLOF Marked.

TLOF 1RD DLB Area

FATO 1.5 OL – GEA
PPR GROUND LEVEL HELIPORT

TLOF Marked.

TLOF 1RD DLB Area

FATO 1.5 OL – GEA [OK to make it SLB]
PPR GROUND LEVEL HELIPORT

TLOF Marked.

Paved Portion of Ground Level TLOF 2 UC DLBA Area

FATO 1.5 OL – GEA

TLOF 1RD SLB Area ??
PPR GROUND LEVEL HELIPORT

FATO – 1.5 OL/1.5 D GEA

Safety Area
1/3 RD (Min 10 ft/3 m)

‘Landing Pad’ – 2UC DLB Area

TLOF – 1RD SLB Area ??

TLOF Marked
• **AC-2B / AC-2C.**

  – ELEVATED/ROOFTOP: 1RD BUT THE TLOF CAN BE 2 UC IF THERE IS A “SOLID SURROUNDING AREA” OF 1RD ABLE TO SUPPORT 20 lbs/sq ft **AND** HEIGHT ABOVE “SURROUNDING AREA” IS 30 Inches (75 cm) **OR LESS.**

  “Solid Surrounding Area” provides ‘ground effect area’

Also this NOT the same as the ‘PPR ground level heliports’ where the a ‘paved area’ of 2 UC can be located in a 1RD TLOF.
• AC 150/5390-2B.

- ELEVATED/ROOFTOP: 1RD BUT THE TLOF CAN BE 2 UC IF THERE IS A “SOLID SURROUNDING AREA” OF 1RD ABLE TO SUPPORT 20 lbs/sq ft AND HEIGHT ABOVE “SURROUNDING AREA” IS 30 Inches (75 cm) OR LESS. Text Change in AC being considered to address case were 2UC > 1RD

“Solid Surrounding Area” provides ‘ground effect area’

NOTE: 1.5 UC OF AC-2A CHANGED TO 2 UC IN AC-2B TO PROVIDE LARGER AREA AND BETTER VISUAL CUES.

Also this NOT the same as the ‘PPR ground level heliports’ where the a ‘paved area’ of 2 UC can be located in a 1RD TLOF.
PPR ELEVATED HELIPORT

AC-2B

TLOF 2UC DLB Area
30 inches (76 cm) or LESS above
“Surrounding Area” of 1RD

[Surrounding Area - GEA]

Heliport Design AC Workshop - HeliExpo 2012
PPR ROOFTOP HELIPORT

FATO – 1.5 D

TLOF – 1RD – GEA **

Safety Area
1/3 RD (Min 10 ft/3 m)

Landing Pad – 2UC DLB

** 20 lbs/sq.ft (98 kg/sq.m) live load
LOAD BEARING AREAS

Hospital Heliports
AC-2B  401 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).*

AC-2C  405 b

**TLOF Size.** The minimum TLOF dimension (length, width, or diameter) is equal to the rotor diameter (RD) of the design helicopter. *but not less than 40 feet (12 m).* ....

*Change proposed by Industry and agreed by FAA*
GROUND LEVEL
HOSPITAL HELIPORT

AC 150/5390-2C

TLOF 1RD

FATO - SLB

TLOF – DLB Area

FATO 1.5 OL

AC 150/5390-2B

TLOF 1RD (min 40 ft)

FATO – GEA ?

TLOF Marked
**FATO SURFACE CHARACTERISTICS**

**AC-2B 402 c. FATO Surface Characteristics.** The FATO outside of the TLOF need not be load bearing. There are some helicopter performance benefits and increased operational flexibility if the FATO outside the TLOF is load bearing. If the TLOF is marked, the FATO outside the TLOF and the Safety Area may extend into the clear airspace. If the TLOF is not marked (see Paragraph 409a) and/or it is intended that the helicopter can land anywhere within the FATO, the FATO outside the TLOF should, like the TLOF, be capable of supporting the dynamic loads of the design helicopter (Paragraph 806 b).

If the FATO is load bearing, the portion abutting the TLOF should be continuous with the TLOF and the adjoining edges should be at the same elevation. If it is unpaved, the FATO should be treated to prevent loose stones and any other flying debris caused by rotorwash.

Heliport Design AC Workshop - HeliExpo 2012
Ground-level hospital heliports. If the TLOF is marked, the FATO outside the TLOF must be load bearing capable of supporting the static loads of the design helicopter. If the TLOF is not marked and/or it is intended that the helicopter can land anywhere within the FATO, the FATO outside the TLOF and any FATO supporting structure must, like the TLOF, be capable of supporting the dynamic loads of the design helicopter.

Industry has proposed this changed to be same as in AC-2B: FAA said it should be same as GA!
GROUND LEVEL
HOSPITAL HELIPORT

AC-2B

- TLOF - DLB Area
- FATO “Need not be LB”

AC-2C

- FATO –SLB Area

TLOF Marked

Heliport Design AC Workshop - HeliExpo 2012
AC-2B: Elevated TLOF – same as for ground level heliport i.e. 1RD with min of 40 ft. (12 m)

AC-2C 405 b (1)

Elevated Hospital Heliport. If the FATO outside the TLOF is non-load-bearing, the minimum width, length or diameter of the TLOF is increased to the overall length (D) of the design helicopter.

Major change – Industry proposed it is 1RD: FAA stated it should be same as for GA heliports i.e. 1D
Major Change!!

Heliport Design AC Workshop - HeliExpo 2012
LOAD BEARING AREAS

General Aviation
GROUND LEVEL GA HELIPORT

TLOF – DLB Area

FATO - SLB Area **

FATO 1.5 OL /1 D
TLOF 1RD

** Industry proposed this should not be defined.
GROUND LEVEL GA HELIPORT

TLOF Marked

FATO – SLB Area

TLOF - DLB Area

TLOF NOT Marked

FATO – DLB Area

Increased Safety Area

FATO 1.5 OL / TLOF 1RD

Heliport Design AC Workshop - HeliExpo 2012
GROUND LEVEL GA HELIPORT

TLOF Marked

Same Applies to Elevated GA Heliports, but ....

TLOF NOT Marked

FATO – SLB Area

TLOF - DLB Area

FATO – DLB Area

Increased Safety Area

FATO 1.5 OL / 1.5D - TLOF 1RD

Heliport Design AC Workshop - HeliExpo 2012
AC-2B Par 202 c (1) / New wording in AC-2C 206 a (2)

Elevated Heliports. There are some helicopter performance benefits and increased operational flexibility if the FATO outside the TLOF is load bearing. The FATO outside of the TLOF need not be load bearing if the minimum width, length or diameter of TLOF is increased to 1.0 times the overall length (OL/ ‘D’) of the design helicopter. The FATO outside the TLOF may extend into clear airspace.
ELEVATED GA HELIPORT

TLOF 1 OL – DLB Area
(1OL/1D = Approx 1.2RD)
Par 202 b (2): The minimum distance between the TLOF perimeter and the FATO perimeter should be not less than the distance \([0.5 \times (1.5 \text{ OL} - \text{1RD})]\) where \text{OL} is the overall length and \text{RD} is the rotor diameter of the design helicopter. The relationship of the TLOF to the FATO and the Safety Area is shown in Figure 2-2. [Par 402 b (2) is similar.]

** Other values can apply

No Surface Requirement
FATO/TLOF SEPARATION

TLOF — 1RD (Dynamic Load Bearing)
FATO – 1.5 OL (Static Load Bearing)
Safety Area — 1/3 RD

Par 202 b (2):
The minimum distance between the TLOF perimeter and the FATO perimeter should be not less than the distance \[0.5 \times (1.5 \text{ OL} - 1\text{RD})\] where OL is the overall length and RD is the rotor diameter of the design helicopter. The relationship of the TLOF to the FATO and the Safety Area is shown in Figure 2-2. [Par 402 b (2) is similar.]

** Other values can apply
No Surface Requirement

Re-worded in AC-2C 207 a (2) / 406b (2) and formula re-stated as “0.75D - 0.5RD”.

New AC-2B Requirement
FATO/TLOF SEPARATION

MINIMUM DIMENSIONS

TLOF – 1RD
FATO – 1.5 OL/1.5D

Safety Area – 1/3 RD

FATO/TLOF Separation- [0.5 x (1.5 OL – 1RD)]
FATO/TLOF SEPARATION

MINIMUM DIMENSIONS

TLOF – 1RD

FATO – 1.5 OL

ADEQUATE SAFETY AREA

Safety Area – 1/3 RD

FATO/TLOF Separation- \([0.5 \times (1.5 \text{ OL} – 1\text{RD})]\)
FATO/TLOF SEPARATION

TLOF – Larger than 1RD

FATO – 1.5 OL

Safety Area – 1/3 RD

INADEQUATE SAFETY AREA
FATO/TLOF SEPARATION

TLOF – Larger than 1 RD

RD Size of ‘design helicopter’ must be stated on TLOF and NOT actual TLOF size

ADEQUATE SAFETY AREA

FATO = ‘TLOF + (1.5 OL – 1 RD)’

Safety Area – 1/3 RD
FATO/TLOF SEPARATION

TLOF – Larger than 1RD

RD Size of ‘design helicopter’ must be stated on TLOF and NOT actual TLOF size

ADEQUATE SAFETY AREA

FATO - Larger than 1.5 OL

Safety Area – 1/3 RD
FATO/TLOF SEPARATION

TLOF – Larger than 1RD

TLOF = 55 ft x 55 ft [RD = 44 ft]

RD Size of ‘design helicopter’ must be stated on TLOF and NOT actual TLOF size

ADEQUATE SAFETY AREA

FATO - Larger than 1.5 OL

Safety Area – 1/3 RD
FATO/TLOF SEPARATION

• TLOF is often made larger than the minimum value since this enhances the safety factors and increases the operational flexibility. In this case the size of the FATO must be increased.

• FATO = TLOF size + 2 x 0.5 (1.5 D – 1 RD) [or (0.75 D – 0.5RD)]
  = TLOF size + (1.5 D – 1 RD).

• Example: if RD = 44 ft (13.4 m) and OL = 52.5 ft (16.0 m) * and the TLOF is made 50 ft (15.24 m) instead of the minimum 1 RD of 44 ft (13.4 m), then FATO required is NOT 1.5 OL of 78.8 ft (24.0 m), but FATO = 84.8 ft (25.8 m). This increases the size of the FATO by the same amount as the TLOF i.e. 6 ft (1.8 m). The total area (FATO + Safety Area) i.e. 1.5 OL + 2 x ‘Safety Area’ ** will similarly be increased from a minimum of 108 ft (32.9 m) to 114 ft (34.8 m).

Note: In the example the numbers are rounded to the nearest 1/10th and thus the metric conversions are not exact.

*Size for Sikorsky S-76.

** Safety Area 1/3 RD – assuming standard makings are applied (see Tables 2-2 and 4-1 in AC-2B) – 14.66 ft (4.5 m) or rounded up 15 ft (4.6 m).
It is generally accepted that, if it is structurally and financially possible, a *load bearing area* larger than the minimum requirement of the 1RD is beneficial to all the heliport users - both the pilots and the passenger/patients – and as operational and safety advantages. For example a larger *load bearing area* at a PPR heliport allows more room for passengers and at a hospital heliport more room to maneuver a patient on a gurney out from under the main rotor and away from the tail rotor.
Even so, the requirement in Advisory Circular 150/5390-2B (AC-2B) for the FATO/TLOF can appear to discourage designing an elevated PPR or Hospital heliport with a load bearing area larger than the minimum size TLOF of 1RD since increasing the size of the TLOF results in an increase in the size FATO and safety area and hence ‘total area’ – and often cost. This was NOT the intent of AC-2B.

The current requirements for ‘lights’ are also not clear in the case where the load bearing area is larger than the minimum size TLOF of 1RD but less than the size of the FATO. In addition AC-2B does not appear to recognize that the safety net surrounds the ‘load bearing area’ and not simply the TLOF or FATO. These are oversights and are NOT intended to inhibit the designing the of load bearing area to be as large as possible.
Even so, the requirements in Advisory Circular 150/5390-2B (AC-2B) for the FATO/TLOF can appear to discourage designing an elevated PPR or Hospital heliport with a load bearing area larger than the TLOF of 1RD since an increase in the load bearing area results in an increase in the FATO and safety area and hence "total area" – and often cost. This was NOT the intent of AC-2B.

The following are suggestions to address this issue – this is NOT in AC-2B but has been discussed with representatives of ‘FAA Airports’ prior to December 2010 and he did not see any aspects which cause concern and indicated that revised text to cover this was being developed for including in AC-2C”.

In the case where the load bearing area is larger than the minimum size TLOF of 1RD but is less than the FATO. In addition AC-2B does not appear to recognize that the safety net surrounds the ‘load bearing area’ and not simply the TLOF or FATO. These are oversights and are NOT intend to inhibit the designing the load bearing area as large as possible.
ELEVATED HOSPITAL HELIPORT

“Hospital Roof-top”

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD (40 ft min.) – DLB

DLB = Dynamic Load Bearing Area
“Hospital Roof-top”

Safety Net

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LBA
“Hospital Roof-top”

LBA > 1RD
Safety Net

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LBA
“Hospital Roof-top”

LBA > 1RD

Safety Net

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LBA
“Hospital Roof-top”

LBA > 1RD

Safety Net

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LBA

Current Proposal – Black Stripes/Yellow Background
“Hospital Roof-top”

LBA > 1RD

Safety Net

Touchdown/Positioning ‘circle’ Marking 0.5 OL/0.5D inner diameter.

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LB A
"Hospital Roof-top"

LBA > 1RD

Safety Net

Touchdown/Positioning ‘circle’ Marking 0.5 OL inner diameter.

FATO 1.5 OL

SAFETY AREA - 1/3RD

TLOF 1 RD – LB A
PERIMETER LIGHTS

** LBA = Load Bearing Area

Flush (inset) lights
Current AC-2B

Flush (inset) – outer edge of LBA **
or
Raised lights – inner edge of safety net

Safety Net

Raised lights – outer edge of safety net

Heliport Design AC Workshop - HeliExpo 2012
FAA has included a provision to a *Load Bearing Area* (LBA) around the TLOF in AC-2C: however there was major industry concern on the way it was included in AC-2C, which to many seemed to imply that such a LBA would always be required or desirable on all hospital (and PPR) heliports, when of course it was intended to be optional. Even so a number of HAI members were very keen on seeing such a provision being included in AC-2C since it would provide a way of increasing the ‘work area’ and enhancing the safety of personnel on the heliport, without increasing the size of the TLOF, FATO and safety area: often, due to site or cost limitations such increases are not possible.

HAI proposed text changes to Chapter 1, Chapter 2 and Chapter 4 to provide, what was termed a *Load Bearing Pedestrian Area (LBPA)*. This included a new definition (106 w), new sections 206 b/405 c and 214 e/413 e and changes to the lighting sections. HAI also pointed out that the text in the DRAFT AC-2C 206 a/206 a (1) or 405a/405 b dealing with the TLOF size requirements was also consider confusing and changes were recommended.

The FAA has indicated it is going to retain the LBA requirement in Draft AC-2C and the changes proposed by HAI would NOT be made.
AC-2C

106 w. **Load-Bearing Area (LBA).** The portion of the FATO capable of supporting the dynamic load of the design helicopter.

405.b. **TLOF Size.** The minimum TLOF dimension (length, width, or diameter) is equal to the rotor diameter (RD) of the design helicopter, but not less than 40 feet (12 m). Increasing the load-bearing area (LBA) centered on the TLOF may provide some safety and operational advantages.

413 c. **LBA Markings.** At hospital heliports, the load bearing area may be increased without a corresponding increase in the length and width or diameter of the FATO. The LBA outside the TLOF is marked with 12-inch-wide (30 cm) diagonal black and white stripes. See Figure 4-26 for marking details.
Notes:
1. Extended pavement/structure markings begin flush with TLOF edge markings and end at the edge of the extended pavement/structure.
2. Extended pavement/structure markings are defined with 12 in [30 cm] wide black and white stripes on a 45° angle.

DRAFT AC-2C Figure 4-26

Note: FATO would not be marked and there would not be any FATO lights!
OTHER ISSUES
• EXISTING PPR AND HOSPITAL HELIPORTS MAY CONTINUE TO FOLLOW THE RECOMMENDATIONS AND STANDARDS APPLICABLE AT THE TIME OF DESIGN.

• HOSPITAL HELIPORTS: IF FEDERAL FUNDS ARE USED THE FACILITY SHOULD HAVE SUFFICIENT SIZE TO SUPPORT “NORMAL SIZE MILITARY MEDIVAC HELICOPTERS”.

[INDUSTRY RECOMMENDED THIS SHOULD APPLY TO ALL NEW HOSPITAL HELIPORTS WHEN PRACTICAL. AIM SHOULD BE TO DESIGN FOR BLACKHAWK/UH-60 USED BY U.S. ARMY AND NATIONAL GUARD. INFORMATION FOR UH-60 INCLUDED IN AC-2B.]
“If Federal funds are used to build or modify a hospital heliport, the facility is required to meet the requirements of Chapter 2 [General Aviation] as well as the additional recommendations in this chapter [Hospital Heliports]. In addition the facility should have sufficient size and weight bearing capacity to support the nominal sized military medivac helicopter that might land at heliport during emergencies.”
HOSPITAL HELIPORT REQUIREMENTS

HOSPITAL HELIPORTS
AC-2B Chapter 4

- One (1) Flight Allowed.
- Protection Zone not required.

GENERAL AVIATION HELIPORTS
AC-2B Chapter 2

- Two (2) Flight paths separation based on wind direction or 135° or more apart.
- Protection Zone of 280 ft (85 m) required.

Heliport Design AC Workshop - HeliExpo 2012
FAA Position on ‘Federal Funds’ are:-

• The reference to Federal Funds in Par 400b means “any form of Federal Funds from any federal agency” and should NOT be taken to refer to funds associated with the Airport Improvement Program (AIP). If Federal Funds are involved then Hospital Heliports should be designed to meet the General Aviation heliport requirements (and not the PPR requirements) embodied in Chapter 2 as well as those in Chapter 4.

• FAA Position: The State or agency approving the Hospital Heliport is responsible for ensuring that the requirements are met.
FAA Position on ‘Federal Funds’ are:-

• The reference to Federal Funds in Par 400b means “any form of Federal Funds from any Federal Agency” and should NOT be taken to refer to funds associated with the Airport Improvement Program (AIP). If Federal Funds are involved then Hospital Heliports should be designed to meet the General Aviation heliport requirements (and not the PPR requirements) embodied in Chapter 2 as well as those in Chapter 4.

• FAA Position: The State or agency approving the Hospital Heliport is responsible for ensuring that the requirements are met.
FAA Position on ‘Federal Funds’ are:-

• The reference to Federal Funds in Par 400b means “any form of Federal Funds from any federal agency specifically designated for the hospital heliport” and should NOT be taken to refer to funds associated with the Airport Improvement Program (AIP). If Federal Funds are involved then Hospital Heliports should be designed to meet the General Aviation heliport requirements embodied in Chapter 2 (and not the PPR requirements in Chapter 2) as well as those in Chapter 4.

• **FAA Position:** The State or agency approving the Hospital Heliport is responsible for ensuring that the requirements are met.
Requirement removed from AC-2C but ………..

“Recommendation” added that a 280 ft (85.3 m) HELIPORT PROTECTION ZONE (HPZ) is established at Hospital Heliports i.e.

409 HELIPORT PROTECTION ZONE (HPZ) It is recommended that a Heliport Protection Zone be established for each approach/departure surface. The HPZ is the area under the 8:1 approach/departure surface starting at the FATO perimeter and extending out for a distance of 280 feet (85.3 m), as illustrated in Figure 4-11 on page 128. The HPZ is intended to enhance the protection of people and property on the ground. This is achieved through heliport owner control over the HPZ. Such control includes clearing HPZ areas (and maintaining them clear) of incompatible objects and activities. Land uses discouraged in the HPZ are residences and places of public assembly. (Churches, schools, hospitals, office buildings, shopping centers, and other uses with similar concentrations of persons typify places of public assembly.) Fuel storage facilities should not be located in the HPZ.

Industry is concerned this will be taken by many to imply that a HPZ is essential – this is impossible at many hospital heliports.
End of this section ….

…… MORE TO COME