

TABLE OF CONTENTS

Paragraph	Page
Chapter 1. Introduction	1
101. Background	1
102. General	1
103. Facilities	1
104. Planning.....	1
105. Existing heliports.....	1
106. Location.....	1
107. AC organization	2
108. Explanation of terms	2
109. Selection of approach/departure paths.....	6
110. Notification requirements	6
111. Hazards to air navigation.....	9
112. Federal assistance.....	10
113. Environmental impact analyses.....	10
114. Access to heliports by individuals with disabilities.....	11
115. State role.....	11
116. Local role.....	11
117. Related referenced material.....	11
 Chapter 2. General Aviation Heliports.....	 13
201. General	13
202. Applicability.....	13
203. Prior permission required (PPR) facilities.....	14
204. Access by individuals with disabilities.....	14
205. Heliport site selection	14
206. Basic layout	14
207. Touchdown and liftoff area (TLOF).....	15
208. Final approach and takeoff area (FATO)	20
209. Safety area	22
210. VFR approach/departure paths.....	22
211. Heliport protection zone (HPZ).....	29
212. Wind cone	29
213. Taxiways and taxi routes.....	29
214. Helicopter parking	35
215. Heliport markers and markings	44
216. Heliport lighting	53
217. Marking and lighting of difficult-to-see objects.....	58
218. Safety considerations.....	61
219. Visual glideslope indicators (VGSI)	64
220. Terminal facilities.....	64
221. Zoning and compatible land use.....	64

Chapter 3. Transport Heliports	65
301. General	65
302. Applicability.....	65
303. Access by individuals with disabilities.....	65
304. Heliport site selection.....	65
305. Basic layout.....	67
306. Touchdown and liftoff area (TLOF).....	67
307. Final approach and takeoff area (FATO).....	71
308. Safety area.....	72
309. VFR approach/departure paths.....	73
310. Heliport protection zone (HPZ).....	76
311. Wind cone.....	76
312. Taxiways and taxi routes.....	77
313. Helicopter parking.....	77
314. Heliport markers and markings.....	88
315. Heliport lighting.....	93
316. Marking and lighting of difficult-to-see objects.....	100
317. Safety considerations.....	103
318. Visual glideslope indicators (VGSI).....	105
319. Terminal facilities.....	107
320. Zoning and compatible land use.....	107
Chapter 4. Hospital Heliports.....	109
401. General.....	109
402. Applicability.....	109
403. Access by individuals with disabilities.....	109
404. Heliport site selection.....	109
405. Basic layout.....	112
406. Touchdown and liftoff area (TLOF).....	112
407. Final approach and takeoff area (FATO).....	114
408. Safety area.....	116
409. VFR approach/departure paths.....	118
410. Heliport protection zone (HPZ).....	123
411. Wind cone.....	123
412. Taxiways and taxi routes.....	126
413. Helicopter parking.....	130
414. Heliport markers and markings.....	138
415. Heliport lighting.....	147
416. Marking and lighting of difficult-to-see objects.....	154
417. Safety considerations.....	157
418. Visual glideslope indicators (VGSI).....	159
419. Zoning and compatible land use.....	159
Chapter 5. Helicopter Facilities on Airports.....	161
501. General.....	161

502.	Applicability.....	161
503.	Touchdown and liftoff area (TLOF).....	161
504.	Final approach and takeoff area (FATO).....	161
505.	Safety area.....	161
506.	VFR approach/departure paths.....	161
507.	Heliport protection zone (HPZ).....	162
508.	Taxiways and taxi routes.....	162
509.	Helicopter parking.....	162
510.	Security.....	162
Chapter 6. Instrument Operations.....		165
601.	General.....	165
602.	Planning.....	165
603.	Airspace.....	165
604.	Final approach reference area (FARA).....	165
605.	Improved lighting system.....	165
606.	Obstacle evaluation surfaces.....	166
Chapter 7. Heliport Gradients and Pavement Design.....		169
701.	General.....	169
702.	TLOF gradients.....	169
703.	FATO gradients.....	169
704.	Safety area gradients.....	169
705.	Parking area gradients.....	169
706.	Taxiway and taxi route gradients.....	169
707.	Design loads.....	171
708.	Pavement design and soil stabilization.....	171
Appendix A. Emergency Helicopter Landing Facilities (EHLF).....		175
Appendix B. Helicopter Data.....		179
Appendix C. Dimensions for Marking Size and Weight Limitations.....		185
Appendix D. Associated Publications and Resources.....		187

LIST OF FIGURES

Figure 1–1.	Form 7480-1, Notice of Landing Area Proposal.....	7
Figure 1–2.	Example of a Heliport Layout Plan.....	8
Figure 1–3.	Example of a Heliport Location Map.....	10
Figure 1–4.	Offsite Development Requiring Notice to the FAA.....	12
Figure 2–1.	Essential Features of a Heliport: General Aviation.....	13

Figure 2–2. TLOF/FATO Safety Area Relationships and Minimum Dimensions: General Aviation.....	16
Figure 2–3. Elongated FATO with Two Takeoff Positions: General Aviation	17
Figure 2–4. Elevated Heliport: General Aviation	19
Figure 2–5. Additional FATO Length for Heliports at Higher Elevations: General Aviation	21
Figure 2–6. Non-load-bearing FATO and Safety Area: General Aviation	23
Figure 2–7. VFR Heliport Approach/Departure and Transitional Surfaces: General Aviation	25
Figure 2–8. Curved Approach/Departure: General Aviation	26
Figure 2–9. VFR PPR Heliport Lateral Extension of the 8:1 Approach / Departure Surface: General Aviation.....	27
Figure 2–10. VFR PPR Heliport Lateral Extension of the Curved 8:1 Approach / Departure Surface: General Aviation	28
Figure 2–11. Flight Path Alignment Marking and Lights: General Aviation	30
Figure 2–12. Heliport Protection Zone: General Aviation.....	31
Figure 2–13. Taxiway/Taxi Route Relationship – Paved Taxiway: General Aviation.....	32
Figure 2–14. Taxiway/Taxi Route Relationship – Unpaved Taxiway with Raised Edge Markers: General Aviation	33
Figure 2–15. Taxiway/Taxi Route Relationship – Unpaved Taxiway with Flush Edge Markers: General Aviation.....	34
Figure 2–16. Parking Area Design – “Taxi-through” Parking Positions: General Aviation	37
Figure 2–17. Parking Area Design – “Turn-around” Parking Positions: General Aviation	38
Figure 2–18. Parking Area Design – “Back-out” Parking Positions: General Aviation.....	39
Figure 2–19. “Turn-around” Parking Position Marking: General Aviation.....	40
Figure 2–20. “Taxi-through” and “Back-out” Parking Position Marking: General Aviation.....	41
Figure 2–21. Parking Position Identification, Size, and Weight Limitations: General Aviation.....	43
Figure 2–22. Standard and Alternate TLOF Marking: General Aviation	46
Figure 2–23. Standard Heliport Identification Symbol, TLOF Size and Weight Limitations: General Aviation.....	47
Figure 2–24. Extended Pavement / Structure Marking: General Aviation	48
Figure 2–25. Paved TLOF/Paved FATO – Paved TLOF/ Unpaved FATO – Marking: General Aviation	49
Figure 2–26. Unpaved TLOF/Unpaved FATO – Marking: General Aviation	50
Figure 2–27. Marking a Closed Heliport: General Aviation.....	52
Figure 2–28. Elevated TLOF – Perimeter Lighting: General Aviation	53
Figure 2–29. TLOF/FATO Flush Perimeter Lighting: General Aviation.....	55
Figure 2–30. TLOF Flush and FATO Raised Perimeter Lighting: General Aviation	56
Figure 2–31. Landing Direction Lights: General Aviation.....	57
Figure 2–32. Airspace Where Marking and Lighting are Recommended: Straight Approach: General Aviation.....	59
Figure 2–33. Airspace Where Marking and Lighting are Recommended: Curved Approach: General Aviation.....	60
Figure 2–34. Caution Sign: General Aviation	62
Figure 2–35. Visual Glideslope Indicator Siting and Clearance Criteria: General Aviation.....	63
Figure 3–1. Typical Transport Heliport: Transport.....	66
Figure 3–2. TLOF/FATO Safety Area Relationships and Minimum Dimensions: Transport.....	68
Figure 3–3. Elongated FATO with Two Takeoff Positions: Transport	69
Figure 3–4. Elevated Heliport: Transport	70
Figure 3–5. Additional FATO Length for Heliports at Higher Elevations: Transport	71
Figure 3–6. Non-load-bearing Safety Area: Transport	74
Figure 3–7. VFR Heliport Approach/Departure and Transitional Surfaces: Transport.....	75

Figure 3–8. Curved Approach/Departure: Transport.....	78
Figure 3–9. Flight Path Alignment Marking and Lights: Transport	79
Figure 3–10. Heliport Protection Zone: Transport.....	80
Figure 3–11. Taxiway/Taxi Route Relationship, Centerline and Edge Marking: Transport	81
Figure 3–12. “Turn-around” Helicopter Parking Position Marking: Transport.....	82
Figure 3–13. “Taxi-through” Helicopter Parking Position Marking: Transport.....	83
Figure 3–14. Parking Area Design – “Turn-around” Parking Positions: Transport	85
Figure 3–15. Parking Area Design – “Taxi-through” Parking Position.....	86
Figure 3–16. Parking Position Identification, Size and Weight Limitations: Transport.....	87
Figure 3–17. Standard Heliport Identification Symbol, TLOF Size and Weight Limitations: Transport ..	89
Figure 3–18. Paved TLOF/Paved FATO – Paved TLOF/Unpaved FATO – Marking: Transport	90
Figure 3–19. Marking a Closed Heliport: Transport.....	93
Figure 3–20. TLOF and FATO Flush Perimeter Lighting: Transport	94
Figure 3–21. FATO Raised and TLOF Flush Perimeter Lighting: Transport	95
Figure 3–22. Optional TLOF Lights: Transport	97
Figure 3–23. Elevated FATO – Perimeter Lighting: Transport.....	98
Figure 3–24. Landing Direction Lights: Transport.....	99
Figure 3–25. Airspace Where Marking and Lighting are Recommended: Straight Approach: Transport	101
Figure 3–26. Airspace Where Marking and Lighting are Recommended: Curved Approach: Transport	102
Figure 3–27. Caution Sign: Transport.....	104
Figure 3–28. Visual Glideslope Indicator Siting and Clearance Criteria: Transport	106
Figure 4–1. Essential Features of a Ground-level Hospital Heliport: Hospital	110
Figure 4–2. TLOF/FATO Safety Area Relationships and Minimum Dimension: Hospital	111
Figure 4–3. Elongated FATO with Two Takeoff Positions: Hospital	113
Figure 4–4. Additional FATO Length for Heliports at Higher Elevation: Hospital	115
Figure 4–5. Rooftop Hospital Heliport: Hospital.....	117
Figure 4–6. VFR Heliport Approach/Departure and Transitional Surfaces: Hospital.....	119
Figure 4–7. Curved Approach/Departure: Hospital	120
Figure 4–8. VFR Heliport Lateral Extension of the 8:1 Approach / Departure Surface: Hospital	121
Figure 4–9. VFR Heliport Lateral Extension of the Curved 8:1 Approach/Departure Surface: Hospital	122
Figure 4–10. Flight Path Alignment Marking and Lights: Hospital	124
Figure 4–11. Heliport Protection Zone: Hospital.....	125
Figure 4–12. Taxiway/Taxi Route Relationship – Paved Taxiway: Hospital.....	127
Figure 4–13. Taxiway/Taxi Route Relationship – Unpaved Taxiway with Raised Edge Markers: Hospital	128
.....	
Figure 4–14. Taxiway/Route Relationship – Unpaved Taxiway with Flush Edge Markers: Hospital	129
Figure 4–15. Parking Area Design – “Taxi-through” Parking Positions: Hospital	132
Figure 4–16. Parking Area Design – “Turn-around” Parking Positions: Hospital	133
Figure 4–17. Parking Area Design – “Back-out” Parking Positions: Hospital.....	134
Figure 4–18. “Turn-around” Helicopter Parking Position Marking: Hospital.....	135
Figure 4–19. “Taxi-through” and “Back-out” Helicopter Parking Position Marking: Hospital	136
Figure 4–20. Parking Position Identification, Size, and Weight Limitations: General Aviation.....	137
Figure 4–21. Standard Hospital Heliport Identification Symbols: Hospital	139
Figure 4–22. Alternative Hospital Heliport Identification Symbols: Hospital	140
Figure 4–23. Paved TLOF/Paved FATO – Paved TLOF/Unpaved FATO – Marking: Hospital	141
Figure 4–24. Unpaved TLOF/Unpaved FATO – Marking: Hospital	142
Figure 4–25. TLOF Size and Weight Limitations: Hospital.....	144

Figure 4–26. Extended Pavement or Structure Marking: Hospital	145
Figure 4–27. Marking a Closed Heliport: Hospital.....	147
Figure 4–28. Flush TLOF/FATO Perimeter Lighting: Hospital	149
Figure 4–29. Elevated TLOF, Safety Net and Lighting Heliport Partial Elevation: Hospital	150
Figure 4–30. Flush TLOF and Raised FATO Perimeter Lighting: Hospital	151
Figure 4–31. Landing Direction Lights: Hospital	153
Figure 4–32. Airspace Where Marking and Lighting are Recommended: Hospital.....	155
Figure 4–33. Airspace Where Marking and Lighting are Recommended: Curved Approach: Hospital ..	156
Figure 4–34. Caution Sign: Hospital.....	158
Figure 4–35. Visual Glideslope Indicator Siting and Clearance Criteria: Hospital	160
Figure 5–1. Heliport Located on an Airport: On Airport.....	163
Figure 6–1. FARA/FATO Relationship: Precision.....	166
Figure 6–2. Heliport Instrument Lighting System (HILS): Non-precision.....	167
Figure 6–3. Heliport Approach Lighting System.....	168
Figure 7–1. Heliport Grades and Rapid Runoff Shoulder: Gradients and Pavement	170
Figure 7–2. Helicopter Landing Gear Loading: Gradients and Pavement	172
Figure 7–3. FATO Elevation	173
Figure A-1. Rooftop Emergency Landing Facility	177
Figure B–1. Helicopter Dimensions.....	184
Figure C–1. Form and Proportions of 36 Inch (91 cm) Numbers for Marking Size and Weight Limitations	185
Figure C–2. Form and Proportions of 18 Inch (45.7 cm) Numbers for Marking Size and Weight Limitation	186

LIST OF TABLES

Table 2-1. Minimum VFR Safety Area Width as a Function of General Aviation and PPR Heliport Markings.....	15
Table 2-2. Taxiway/Taxi Route Dimensions – General Aviation Heliports.....	36
Table 3-1. Taxiway and Taxi Route Dimensions – Transport Heliports	77
Table 4-1. Minimum VFR Safety Area Width as a Function of Hospital Heliport Markings.....	116
Table 4-2. Taxiway / Taxi Route Dimensions – Hospital Heliports.....	130
Table 5-1. Recommended Distance between FATO Center to Runway Centerline for VFR Operations	161