Transport Canada Transports Canada

Advisory Circular

Subject: **Standards Associated with H1 Classified Heliports**

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INTRODUCTION

(1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

(2) The purpose of this document is to reiterate some of the heliport standards detailed in the *Canadian Aviation Regulations* (CAR) 325 and provide clarification concerning heliport physical design characteristics associated with H1 classified heliports.

(3) The background of performance standards, how the H1 classification was derived and description of H1 classified heliports is reviewed and clarified.

(4) Guidance is provided concerning the performance requirements of helicopter operators operating into H1 classified heliports, how emergency landing areas are defined and their relationship to H1 classified heliports.

(5) The AC also provides guidance on the level of detail and intent of the obstacle limitation surfaces surveys required for H1 classified heliports, including the publishing of this information and other limitations associated with certified heliports.

1.2 Applicability

(1) This document applies to all Canadian heliport operators, heliport designers, Transport Canada Civil Aviation (TCCA) Headquarters and regional personnel, and helicopter operators operating into certified heliports.

1.2 Description of Changes

(1) Not applicable.

REFERENCES AND REQUIREMENTS

2.0 REFERENCE DOCUMENTS

(1) It is intended that the following reference materials be used in conjunction with this document:

- (a) *Aeronautics Act* (R.S., 1985, c. A-2);
- (b) Part III, Subpart 5 of the Canadian Aviation Regulations (CARs) — *Heliports*;
- (c) Standard 325 of the CARs — *Heliport Standards*;
- (d) ICAO – International Standards and Recommended Practices – Annex 6, Part III – *International Operations – Helicopters.*

2.1 Cancelled Documents

(1) Not applicable.

(2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.2 Definitions and Abbreviations

(1) The following **definitions** are used in this document:

Category A with respect to normal and transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in Chapter 527 or 529 [of the CARs] and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.

Congested area *[ICAO definition]* - in relation to a city, town or settlement, any area which is substantially used for residential, commercial or recreational purposes.

Congested hostile environment *[ICAO definition]* - a hostile environment within a congested area. *(see hostile environment)*

D. *[ICAO definition]* - The largest overall dimension of the helicopter when rotor(s) are turning measured from the most forward position of the main rotor tip path plane to the most rearward position of the tail rotor tip path plane or helicopter structure.
Note.— "D" is sometimes referred to in the text using the terminology "D-value".

Emergency landing area - means an area where an unavoidable landing or ditching may take place with a reasonable expectancy of no injuries to persons or damage to property on the surface.

FATO - means a final approach and take-off area, which consists of a defined area over which the final phase of a helicopter approach manoeuvre to hover or land is completed and from which the take-off manoeuvre is commenced.

Hostile environment *[ICAO definition] - an* environment in which:

a) a safe forced landing cannot be accomplished because the surface and surrounding environment are inadequate; or
b) the helicopter occupants cannot be adequately protected from the elements; or
c) search and rescue response/capability is not provided consistent with anticipated exposure; or
d) there is an unacceptable risk of endangering persons or property on the ground.

Landing decision point (LDP) - the point used in determining landing performance from which, an engine failure occurring at this point, the landing may be safely continued or a balked landing initiated.

Obstacle information – as detailed in ICAO Annex 15 – Aeronautical Information Services (AIS), NAV CANADA requires; the type of obstacle, obstacle position, represented by geographical coordinates in degrees, minutes, second and hundredths of seconds and obstacle elevation and height to the nearest foot or meter.

Operations in performance Class 1 *[ICAO definition]* - operations with performance such that, in the event of a critical engine failure, performance is available to enable the helicopter to safely continue the flight to an appropriate landing area, unless the failure occurs prior to reaching the take-off decision point (TDP) or after passing the landing decision point (LDP), in which cases the helicopter must be able to land within the rejected take-off or landing area.

Survey – examine and record the area and features of an area of land so as to construct a map, plan or description. This has generally been accepted to be a top-view, 2 dimensional map or plan with possible added descriptions.

Take-off decision point (TDP) - the point used in determining take-off performance from which, an engine failure occurring at this point, either a rejected take-off may be made or a take-off safely continued.

TLOF - means a touchdown and lift off area, which consists of a load-bearing area on which a helicopter may touch down or lift off.

V_{TOSS} – Take-off safety speed. The minimum speed at which climb shall be achieved with the critical engine inoperative, the remaining engines operating within approved operating limits.

(3) The following **abbreviations** are used in this document:

(a) **(A)RFM**: (Aircraft) Rotorcraft Flight Manual.

(b) **CAR(s)**: Canadian Aviation Regulations.

(c) **FMS**: Flight Manual Supplement.

(d) **HOM**: Heliport Operations Manual.

(e) **ICAO**: International Civil Aviation Organization.

(f) **POI**: Principal Operations Inspector.

(g) **STC**: Supplemental Type Certificate.

3.0 BACKGROUND

3.1 Performance Based Standards

In 1999 after several years of consultation with industry stakeholders Transport Canada Civil Aviation introduced, significantly updated voluntary performance based heliport standards to replace the much older prescriptive heliport standards and recommended practices detailed in TP 2586. In June 2007 Canadian Aviation Regulations 305 and the associated Heliport Standards detailed in CARs 325 came in to force. The new regulations recognized the uniqueness of heliports and established a stand-alone structure different from the certified airport regulations (CAR 302).

Canada, as signatory of the Chicago Convention on International Civil Aviation, has an obligation to either follow international standards or develop their own standards consistent with international practices in areas such as heliport design and operations, and helicopter operations including performance class operations. As such, the Canadian Heliport Standards CAR 325 closely follows the intent and technical design detailed in the international standards and recommended practices of ICAO Annex 14 Volume II – Heliports and also includes elements of ICAO Annex 6, Part III – International Operations – Helicopters.

The Canadian Aviation Regulation differ slightly from the international (ICAO) standards pertaining to helicopter performance class operations when operating within a built-up area or in ICAO terminology, ‘operating in a congested hostile environment’. In order for Canada as an ICAO signatory, to meet the intent of the international standards and to also conform to the CARs regulatory applicability criteria for heliport operations within a built-up area, CARs 305 and 325 incorporated in part helicopter operational performance standards, which are applied on a site specific (individual heliport) basis and not applied across a broad spectrum incorporating all certified heliports.

The CARs 325 standards are written in a hybrid style; that is to say, prescriptive standards are used when required, usually to establish a minimum baseline in line with the recognized safety perimeters usually associated with lighting and markings and performance or objective standards

are used when more than one way could be employed to achieve the required standard. This regulatory and standards structure has allowed for many heliports to be designed, built and certified that in the past may not have been possible, especially in highly congested built-up areas. Improvements in technology and helicopter performance can allow access to previously restrictive heliport locations.

3.2 Heliport Classification

CAR 305 and 325 introduced a heliport classification structure attached to each approach and take-off surface, assigning a level of required performance based upon the availability of emergency landing areas and the obstacle environment along and around each of the approach/take-off surfaces (pathways). The performance requirements recognized the risk and exposure to third parties at or around the heliport and its associated pathways. As the risk and exposure increased, usually due to reduced or no emergency landing areas, the level of performance required increased. This concept fundamentally follows the standards presented in ICAO Annex 14 Volume II and Annex 6, Part III; with some slight Canadian variations.

H1 classified heliports (pathways) usually located within very congested built-up areas at both roof-top and surface level heliports and found at many hospital locations present the highest degree of challenge for heliport designers and operators, helicopter operators and Transport Canada Inspectors. These heliports have few or no available emergency landing areas and are typically within an obstacle rich environment, thus the performance requirements of the helicopter operating into these locations is the highest.

The H1 heliport classification is the most demanding with regards to performance requirements and as such has some very specific heliport standards. This AC will expand and provide guidance for these specific H1 classified heliports standards.

Note: All regulations and standards referenced in this AC are reproduced in Appendixes A and B.

4.0 HELICOPTER PERFORMANCE REQUIREMENTS FOR H1 OPERATIONS

H1 classified approach and take-off surfaces require helicopters operating along these pathways into these heliports to demonstrate certain performance conditions to normally achieve flyaway and obstacle clearance. The helicopters using the heliport must be operated at a weight, and in such a manner that, in case of an engine failure at any time during approach or take-off, the helicopters can either land and safely stop on the FATO or TLOF area, or safely continue the flight to an appropriate landing area. In addition, helicopters permitted to use an H1 heliport shall be multi-engined and capable of remaining at least 4.5 meters (15 feet) above all obstacles within the approach/departure area when operating in accordance with their aircraft flight manual with one engine inoperative

The heliport standard for H1 classified heliports requires the operation to be conducted in accordance with the Aircraft (Rotorcraft) Flight Manual (AFM / RFM). Category “A” limitations or supplement information provide performance criteria, departure and arrival profiles and sometimes specific procedures consistent with the H1 classified heliport criteria with the exception of obstacle height clearance. All conditions and limitations contained in the supplement must be followed for the performance charts to be applicable. Third party supplement information sometimes may only address a portion of the RFM limitations, this does not negate the requirements for helicopter operators to follow additional RFM limitations not addressed in the supplement.

The information detailed in Category “A” or performance class 1 operations is consistent with the FAR 29-2C Certification of Transport Category Rotorcraft and is in line with the requirements detailed in ICAO Annex 6 Part 3 and also in the EASA Rotorcraft Operations standards. Canadian heliport standards for obstacle height clearance are 4.5 meters which is consistent with

some helicopter certification performance limits. Category “A” certification and performance class 1 operations have the additional requirement to be at or above 10.7 meters (35 feet) at V_{TOSS} for further obstacle height clearance.

Appendix C is reproduced from the ICAO Annex 6 Part 3 Helicopter Operations Standards and depicts a typical ‘performance class 1’ departure profile from a surface level and an elevated (roof-top) heliport. The approach profiles have not been included because in most cases the departure from an H1 classified heliport is more critical with regards to performance requirements until optimal speed and altitude have been gained. The ICAO diagrams show the requirement to obtain V_{TOSS} to avoid further obstacles by at least 10.7m, while the Canadian standard, as mentioned above, only requires a clearance of 4.5m throughout the approach or departure profile.

It is the responsibility of the helicopter company to determine if their helicopter can operate to and from a specific heliport and is being operated in accordance with their respective RFM, including any supplemental information. This applies to all heliport classifications: H1, H2 and/or H3. In the context of heliport certification, a heliport inspector may confirm the company data, and that inspector may consult with the helicopter company POI or an SME on the specific aircraft type.

The heliport regulations detailed in CAR 305.19 and 305.20 (see appendix A) require the Heliport operator to identify the classification and any limitations of their heliport.

Many heliports are designed and built with a specific critical aircraft design in mind (that may even be identified in the respective HOM). There sometimes is confusion between identifying the ‘design’ helicopter versus the ‘critical’ helicopter. Many heliports are designed for a specific helicopter type that may not necessarily be the critical helicopter. Regulation 305.20 and the subsequent requirement to list any limitations is based upon the maximum helicopter overall length and load bearing strength of the TLOF and not necessarily based upon a specific helicopter type. It is the responsibility of the helicopter operator to ensure that they are operating their specific helicopter type in accordance with any limitations identified in the CFS as per CAR 602.96. This is especially critical for H1 classified heliports.

The actual link to helicopter operations (pilot conduct) is through CAR 602.96 as detailed below. It should be noted that the only way that the PIC can be “satisfied” that the aerodrome is suitable for the intended operations is for the heliport operator to publish any “limitations” (305.20) or restrictions in the CFS as required in 602.96(3)(d).

CAR 602.96 reads in part, (1) this section applies to persons operating VFR or IFR aircraft at or in the vicinity of an uncontrolled or controlled aerodrome.

(2) Before taking off from, landing at or otherwise operating an aircraft at an aerodrome, the pilot-in-command of the aircraft shall be satisfied that . . .

> (b) the aerodrome is suitable for the intended operation.

(3) The pilot-in-command of an aircraft operating at or in the vicinity of an aerodrome shall . . .

> (d) where the aerodrome is an airport (includes heliport), comply with any airport (heliport) operating restrictions specified by the Minister in the *Canada Flight Supplement*.

5.0 INSUFFICIENT, UNREACHABLE OR UNSUITABLE EMERGENCY LANDING AREAS

Most H1 classified heliports are classified as such because they do not have suitable emergency landing areas. The heliport designer or heliport operator determines the initial suitability of existing emergency landing areas based upon the design helicopter information and critical helicopter performance. It is then the responsibility of the Transport Canada Heliport Inspector POI to verify and confirm the suitability and reachability of the identified emergency landing areas.

The heliport inspector may consult with the air operator POI or appropriate SME. This has become more prevalent in recent years as the area around many heliports has become more built-up and available emergency landing areas have decreased resulting in a re-classification to H1 of the approach and take-off pathways. This in turn may result in the requirements for a different helicopter type able to meet the H1 performance requirements.

The specific criteria for each heliport classification with regards to reachable emergency landing areas and obstacle clearance is detailed in CAR 325.19(1) reproduced in Appendix B.

'**Reachable'**, as stated above, is in relation to the altitude and air speed of the helicopter and thus the available helicopter performance (power) required. The heliport (approach/take-off pathways) are classified based upon the design helicopter (usually the intended user). As stated before, the design helicopter may not be the most critical helicopter from a performance point of view. The heliport operator should be providing emergency landing location information to users of their facility so that the helicopter operator can then determine if they can operate safely within the parameters of the classification for the particular approach and take-off surfaces, on any given day with its associated environmental conditions (wind, density altitude, temperatures, humidity, etc.).

What may be reachable for one helicopter type may not be for another. This concept has been used by some heliport designers to designate a H3 as a H2 due to not enough emergency landing areas for single engine operations, and in some cases the heliport was classified H1 because the H2 'emergency landing areas' were not close enough, or they were not located in the appropriate areas. 'Reachable' also means recognizable to the crew as an appropriate emergency landing area if required. This applies for day and night operations.

'**Suitable'** is somewhat subjective. Consideration must be taken for size of emergency landing area, terrain, slope of ground, proximity to persons or buildings and possible ground control of persons or vehicles. Consideration must be taken for flying parts, such as rotor blades, from an (emergency) landing helicopter. Sloped ground can be an issue. Sloped ground near a roadway or highway may cause the 'landing' helicopter to roll towards oncoming traffic, thus it would not be acceptable. Overflight of a rail-line or a roadway MAY be acceptable if positive control of traffic can be assured or some form of a verification can be provided to ensure that a (rail-line) is clear, otherwise the height minimums of 6.0m for rail-lines and 4.3m for roadways must be used for obstacle clearance slope calculations.

Areas that typically are NOT allowed or are no longer accepted, include school yards, parking lots (hospital, business or shopping malls), roads and highways, building rooftops. SOME parking lots may be acceptable if control of traffic or verification can be provided. This might occur at a parking lot that is used infrequently. Most parking lots are full of people and vehicles and thus in most cases are unacceptable.

6.0 FATO/TLOF MINIMUM SIZE FOR H1 HELIPORTS

The heliport regulation and standards detailed in CAR 305.25(6) and 325.25(5) identifies the requirements for H1 classified heliports to conform to the minimum size required in RFMs for Category "A" operations. This is a physical characteristics size limitation and not an operational limitation. This is consistent with the FAR 29-2C Rotorcraft certification performance requirements for single-engine operations when conducting flights to/from heliports that require Category "A" operations. The Rotorcraft certification standards are based partly upon the ability of the pilot flying to see the perimeter markings (lighting) for the heliport during a single-engine failure procedure. In some cases a helicopter operator may obtain a specific STC, which if approved by National Aircraft Certification can add to or take the place of limitations and/or supplement information contained in the RFM.

The Rotorcraft Flight Manuals produced by the helicopter manufacturers use a variety of terms when describing the required dimensions as a landing surface. They include, FATO, TLOF, helipad, heliport, landing surface and some make reference to helideck size. In all cases the intent is to establish a hard surface that is visible and load supporting for the helicopter to land on if an engine failure occurs.

Most RFMs when making reference to Category 'A' operations, will have different dimensions for circular and square landing surfaces. There might be different dimensions published for day and night operations as well as surface level versus elevated/roof-top heliports.

In most cases CAR 325.25(5)(a) will be applicable to surface level heliports and all cases (for surface level heliports) the FATO minimum size will never be less than 1.5 X **D**. ('**D**' defined in section 2.3 of this AC.) 1.5 X **D** is also applicable as a minimum size when no dimensions are supplied in the RFM.

CAR 325.25(5)(b) is applicable to elevated/roof-top heliports and in all cases (for elevated/roof-top heliports) the TLOF minimum size will never be less than 1.0 X **D**. 1.0 X **D** is also applicable as a minimum size when no dimensions are supplied in the RFM.

Heliport designers and heliport manufacturers need to pay special attention when reviewing the RFM Category 'A' dimensions to establish the most restrictive or demanding dimension that would be applicable for the intended operations.

Caution must also be exercised when referring to the RFM information as some manuals only provide criteria for off-shore 'helideck' procedures and/or dimensions for offshore helicopter operations, which are not categorized as Category 'A' operations. This information is **not valid** to be used in relation to on-shore surface level or on-shore elevated/roof-top heliports. Many 'off-shore' procedures establish a different level of acceptable risk and may allow for departure profiles that may not be available within the on-shore environment.

Note: Heliports may have more than one classification and thus limitations/restrictions may not apply to all of the classified approach and take-off surfaces identified.

7.0 H1 SURVEY REQUIREMENTS

CAR 305.29(3) requires a heliport operator/designer operating (intending to operate) a heliport with H1 classified approach/departure pathways, to submit a survey of the approach/departure path area that identifies obstacle information. This information that includes location and height of the obstacles, may be needed by the helicopter operator to calculate the performance requirements of the helicopter at this facility in order to meet CAR 325.19(2)(a). It would be the responsibility of the helicopter air operator to obtain all necessary additional survey information, if required for performance calculations, from the heliport operator directly. Transport Canada is not involved in this process. As there is no specific OLS for H1 classified heliports, there are no additional diagrams required and the heliport operator/designer need not publish slope information for H1 classified approach/departure pathways. Further details of the standards required of the H1 survey are found in CAR 325.29(3).

It should be noted that two surveys are required; that can be presented as a single survey covering both requirements. A survey out to 625 meters identifies obstacles that may affect helicopter performance and a survey out to 1000 meters identifies obstacle that need to be considered for marking and lighting (CAR 325.37(1)).

7.1 Publication of Slopes

Publication of slopes is only applicable to heliports with H3 and/or H2 classified approach/take-off surfaces. Some heliport operators have had published by NAV CANADA slopes associated with

H1 classified heliports. Although there are no specific regulations prohibiting the publishing of H1 slope angles, it does present misleading information and consideration should be made to not publish the H1 slopes.

As a result of these “H1 slope” calculations, a number of issues have been identified that complicate the non-standard (and not required) use of slopes at H1 classified heliports.

The publication of an H1 slope, identified as the slope joining from the edge of the safety area to the height of the most restrictive obstacle within the approach/departure pathway may lead a pilot to believe that the identified slope needs to be adhered to in order to avoid all obstacles on that approach/departure pathway. In actuality there may be few or no other restricting obstacles towards (from) the highest obstacle. Additionally, adherence to the published slope may eliminate any drop-off advantage that could be used from elevated or roof-top heliports.

The departure/arrival profile flown by one helicopter might be quite different than others in order to meet the requirements of CAR 325.19(2)(a). The onus is placed upon the helicopter operators to operate their helicopters in accordance with their Aircraft Flight Manual (AFM) to clear the identified obstacles.

CAR 305.08(1) requires a heliport applicant (operator/designer) to submit to the Minister for approval a Heliport Operations Manual that shall include the physical specifications of the heliport and the provisions of CAR 305.57(b) in addition to other provisions. Transport Canada inspectors may be hesitant to approve unverifiable information for which there is no regulatory requirement.

TC inspectors have no way to verify slope information provided for H1 classified approach / departure pathways unless additional information is provided from the heliport operator/designer. If this information is provided, individual regional inspectors may choose to accept the slopes provided for publication, which may in turn impose a more restrictive operating environment.

8.0 INFORMATION PUBLISHED IN CANADA FLIGHT SUPPLEMENT (CFS)

8.1 Sketches Depicting Obstacles

NAV CANADA has suggested the following format for scale sketch depiction at heliports that have H1 classified heliports.

a) Roof-top H1 classified heliports with specific approach/take-off surfaces should have 3 sketches. Appendix D shows some examples of depiction. Roof-top heliports are the most difficult to initially find, thus the 1:50,000 sketch is required, then an additional closer-in sketch that will likely have obstacles along the final pathway and a final sketch depicting the heliport with immediate obstacles such as elevator shafts, AC units, towers, etc.;
b) Surface level (or slightly elevated) H1 classified heliports should have 2 sketches; surface level heliports tend to have well defined approach/take-off corridors or pathways into and out of the heliports and are usually much easier to find (ground references, etc.), thus the 1:50,000 is not required; and
c) Roof-top or surface H1 classified heliports that are surveyed for 360 degrees should have 1 sketch. The 360 degree surveyed sites should only require a single sketch of mid-range out to a 1000 meters identifying prominent obstacles. This only applies if a full survey is conducted of all prominent obstacle for 360 degrees around the heliport.

Information with regards to each prominent obstacle shall include the latitude and longitude to 100th of a second, general compass direction and distance to obstacle, height ASL (in feet or meters) and single or double word descriptor. NAV CANADA may not publish all of this

information, however they do require it for depiction location purposes. Due to CFS diagram size limitations NAV CANADA will only publish 4 or 5 prominent obstacles.

All H1 heliports would normally be listed in the CFS as PPR and the onus would be placed upon the heliport operator and the helicopter operators to discuss exact obstacle location information for performance calculations. The CFS heliport entries do not include a scale for the specific diagrams as this is for information only and not to be used for performance calculations.

It is the responsibility of the heliport operator to draft the CFS information and diagrams (CAR 305.17(2)). Transport Canada only verifies this information prior to submission the NAV CANADA.

8.2 Additional Information Published in CFS

NAV CANADA publishes the load bearing strength and the maximum overall helicopter length in the HELI DATA section for each applicable heliport. This relates to the critical helicopter type. The maximum overall helicopter length relates only to obstacle clearance (from the FATO or TLOF outer edge) and is not related to possible Category “A” operational TLOF/FATO size.

The specific category/classification, bearings and slope for each approach/departure pathway is detailed in the individual heliport PRO section of the CFS. The definitions of the heliport approach/departure classifications (H1, H2 and H3) [in addition to being detailed in CAR 325.19] are published in the GENERAL section of the CFS under Procedures (PRO).

Operating restrictions/limitations that are specified by the Minister in order to comply with the Airport/Heliport Certificate issued for the aerodrome/heliport will be annotated with (CAR 602.96) within the HELI DATA section of the CFS for weight and length limits and the PRO section of the CFS for classification of approach and take-off pathways to emphasize the regulatory requirement.

Alternate approach/departure pathway information not published in the CFS or not made available by the heliport operator, have NOT been assessed and thus cannot be arbitrarily flown.

The heliport standards were created in part to ensure that there is a reasonable expectancy of no injuries to persons or damage to property on the surface. Approaches and departures along non-assessed pathways results in operations outside of the defined heliport standards.

9.0 SUMMARY

Performance based heliport standards were introduced almost 20 years ago, in part, to recognize the benefits of newer technology and improved helicopter performance especially when operating in obstacle rich environments with limited or no emergency landing areas such as those heliport locations found within cities at many hospitals. As the built-up areas around heliports continue to be developed the likelihood of heliports being re-classified as H1 becomes more common. This AC has re-affirmed the applicable standards that are associated with H1 classified heliports. Heliport designers and operators are encouraged to plan and anticipate for future potential development around their heliports so as to not limit the usability and viability of the heliport.

10.0 INFORMATION MANAGEMENT

(1) Not applicable

11.0 DOCUMENT HISTORY

(1) Not applicable

12.0 CONTACT OFFICE

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APPENDIX A — RELEVANT PART III – SUBPART 5 - CANADIAN AVIATION REGULATIONS

Division III — Operator of a Heliport

Obligations of an Operator

305.17(2) The operator of a heliport shall

(*a*) review each aeronautical information publication as soon as possible after its issuance and immediately after the review notify the Minister and the provider of aeronautical information services of any inaccurate information contained in the publication that pertains to the heliport that they operate.

Division IV — General Certification Requirements

Heliport Classification

305.19 The operator of a heliport shall determine the heliport classification in accordance with standard 325 — *Heliport Standards* in respect of

(*a*) the classification of non-instrument heliports; and

(*b*) performance requirements of helicopters that are expected to use the heliport.

Operational Limits

305.20 The operator of a heliport shall determine, and record in their heliport operations manual, the heliport operational limitations in accordance with the applicable heliport standard with respect to

(*a*) load bearing strength of the TLOF when required by the applicable heliport standard;

(*b*) the maximum helicopter overall length for which each operational area at a heliport is certified; and

(*c*) the heliport classification as specified in paragraph 305.19(*a*) and category as determined in accordance with the applicable heliport standard.

Division V — Physical Characteristics

305.25(6) The operator of an H1 heliport shall ensure that the heliport meets the special requirements for an H1 heliport set out in the applicable heliport standard in respect of FATOs and TLOFs.

Division VI — Obstacle Limitation Surfaces

305.29(3) The operator of an H1 heliport shall conduct a survey of the approach and take-off surface to determine obstacle information and submit a copy to the Minister at the time of the initial heliport certification and after that at least once every five years, unless no new obstacle has been established in the approach and take-off surface during the five-year period and a report to that effect is made to the Minister.

APPENDIX B — RELEVANT PART III – SUBPART 5 – CARs - STANDARDS

325.19 *Heliport Classification*

Classification of Non-Instrument Heliports

(1) For the purposes of paragraph 305.19(*a*) of the *Canadian Aviation Regulations*, the heliports classifications, in respect of non-instrument, heliports are the following:

Information note 1:

Heliports are classified by the obstacle environment within which the heliport is located, and the availability of emergency landing areas. The obstacle environment and the availability of emergency landing areas will dictate the performance capabilities required by the helicopters using the heliport.

Information note 2:

Heliports are divided into two categories: instrument and non-instrument. Non-instrument heliports have three classifications: H1, H2 and H3.

(a) a non-instrument heliport is classified as H1 if the heliport is located within an obstacle environment where

(i) there is no emergency landing area within 625 m from the FATO, and

(ii) the helicopters using the heliport can be operated at a weight, and in such a manner that, in case of an engine failure at any time during approach or take-off, the helicopters can either

(A) land and safely stop on the FATO or TLOF area, or

(B) safely continue the flight to an appropriate landing area;

(b) a non-instrument heliport is classified as H2 if the heliport is located within an obstacle environment where

(i) the height of the obstacles are infringing the first section slope of the approach and take–off surface set out in Table 4-1, and

(ii) there are reachable emergency landing or rejected take-off areas within 625 m of the FATO in relation to the altitude of the helicopter and its performance with one engine inoperative;

(c) a non-instrument heliport is classified as H3 if the heliport is located within an obstacle environment where

(i) the height of obstacles do not penetrate any of the obstacle limitation surface (OLS) requirements set out in Table 4-1,

(ii) there are reachable emergency landing areas or rejected take-off areas within 625 m of the FATO in relation to the altitude of the helicopter and its performance during autorotation.

Information note:

The main factor in determining the suitability of emergency landing areas will be the helicopter type with the most critical performance characteristics the heliport is intended to serve.

Helicopter Performance Requirements

(2) For the purposes of paragraph 305.19(*b*) of the *Canadian Aviation Regulations*, the heliport classifications in respect of performance requirements of helicopters that are expected to use the heliport are the following:

(a) helicopters permitted to use an H1 heliport shall be multi-engined and capable of remaining at least 4.5 m (15 feet) above all obstacles within the approach/departure area in accordance with subsection 325.29(3) when operating in accordance with their Aircraft Flight Manual with one engine inoperative; and

(b) helicopters permitted to use an H2 heliport shall be multi-engined.

Special Requirements for H1 Heliports

325.25(5) For the purposes of subsection 305.25(6) of the *Canadian Aviation Regulations,* the following constitute the special requirements for H1 heliports:

Final Approach and Take-off Areas (FATO)

(h) the requirements for a FATO, in respect of H1 heliports, are the following :

(i) the dimension of the FATO shall not be less than the dimensions specified in paragraph 325.25(1)(a),

(ii) the dimensions of the FATO of an H1 heliport shall not be less than the dimensions of the landing and take-off surface where specified in the Aircraft Flight Manual (AFM) for Category A operation for the helicopter type with the most critical performance characteristics the heliport is intended to serve, and

(iii) if the Aircraft Flight Manual does not specify dimensions for the landing and take-off surface, the dimensions shall comply with the technical specifications set out in paragraph 325.25(1)(a);

Touchdown and Lift-off Areas (TLOF)

(i) the requirements for an TLOF, in respect of H1 heliports, are the following:

(i) the dimension of the TLOF shall not be less than the dimensions specified in paragraph 325.25(3)(a),

(ii) the dimensions of the TLOF of an H1 heliport shall not be less than the dimensions of the landing and take-off surface where specified in the Aircraft Flight Manual (AFM) for Category A operation for the helicopter type with the most critical performance characteristics the heliport is intended to serve, and

(iii) if the Aircraft Flight Manual does not specify dimensions for the landing and take-off surface, the dimensions shall comply with the specifications set out in paragraphs 325.25(2)(a) or 325.25(3)(a) which ever are applicable to the heliport.

Special Requirements for non-instrument FATO in respect of H1 Heliports

325.29(3) For the purposes of subsection 305.29(2) of the *Canadian Aviation Regulations*, the requirements in respect of approach or take-off surfaces for a non-instrument FATOs, are the following:

(a) in the case of an approach or take-off Surfaces, an H1 heliport shall comply with the following requirements respecting its OLS instead of the technical specifications provided in subparagraph 325.29(1)(a)(v) and (1)(b)(iv):

(i) the take-off and approach OLS shall commence at the edge of the safety area and shall continue in a line that links the maximum elevation points of all critical obstacles within the approach/departure path,

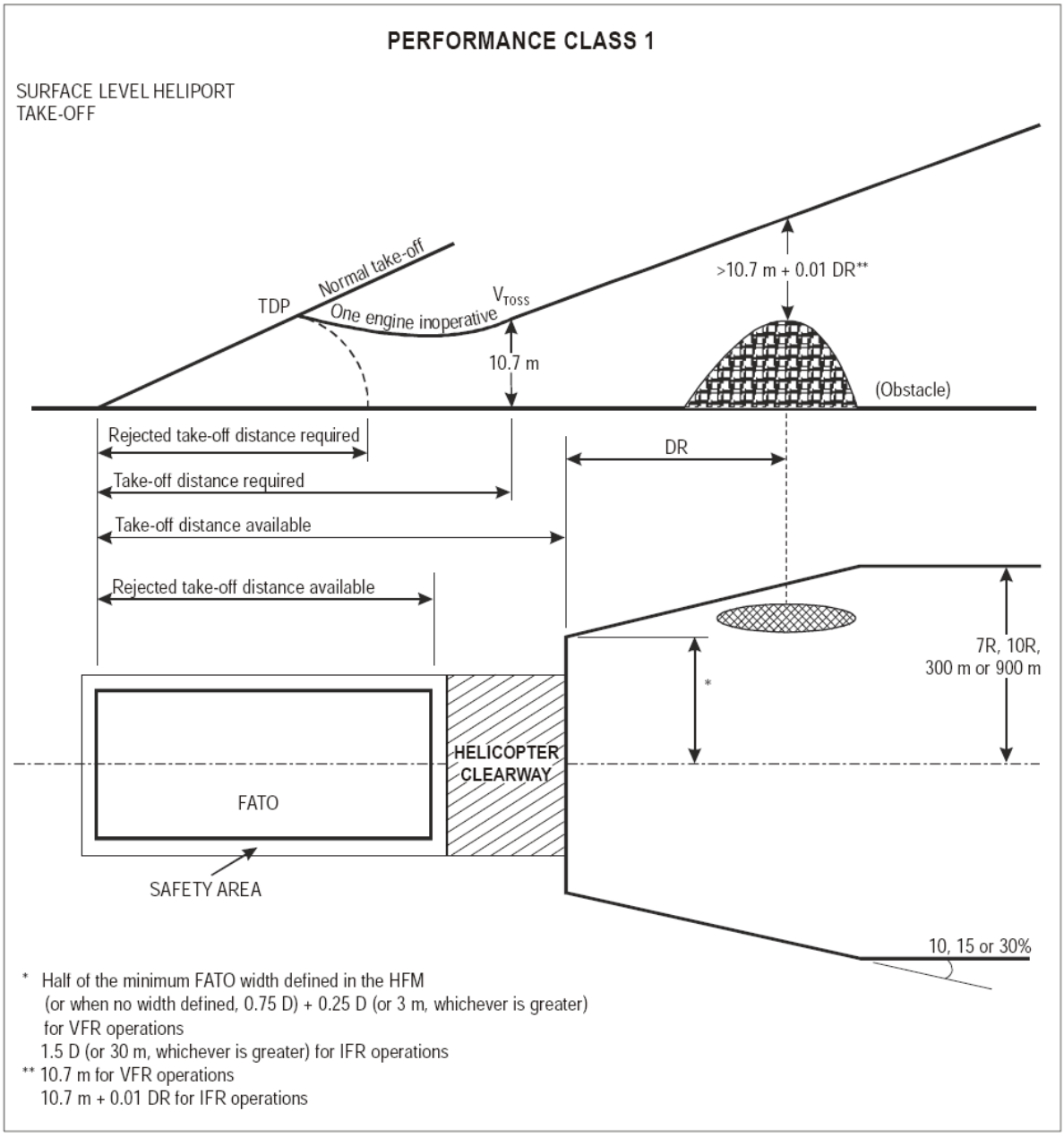
(ii) a survey of the approach/departure path area that determines obstacle information shall be carried out by the heliport operator at least once every five years unless no new obstacles have been established in the approach/departure path area during the five-year period and a report to that effect is made to the certifying authority,

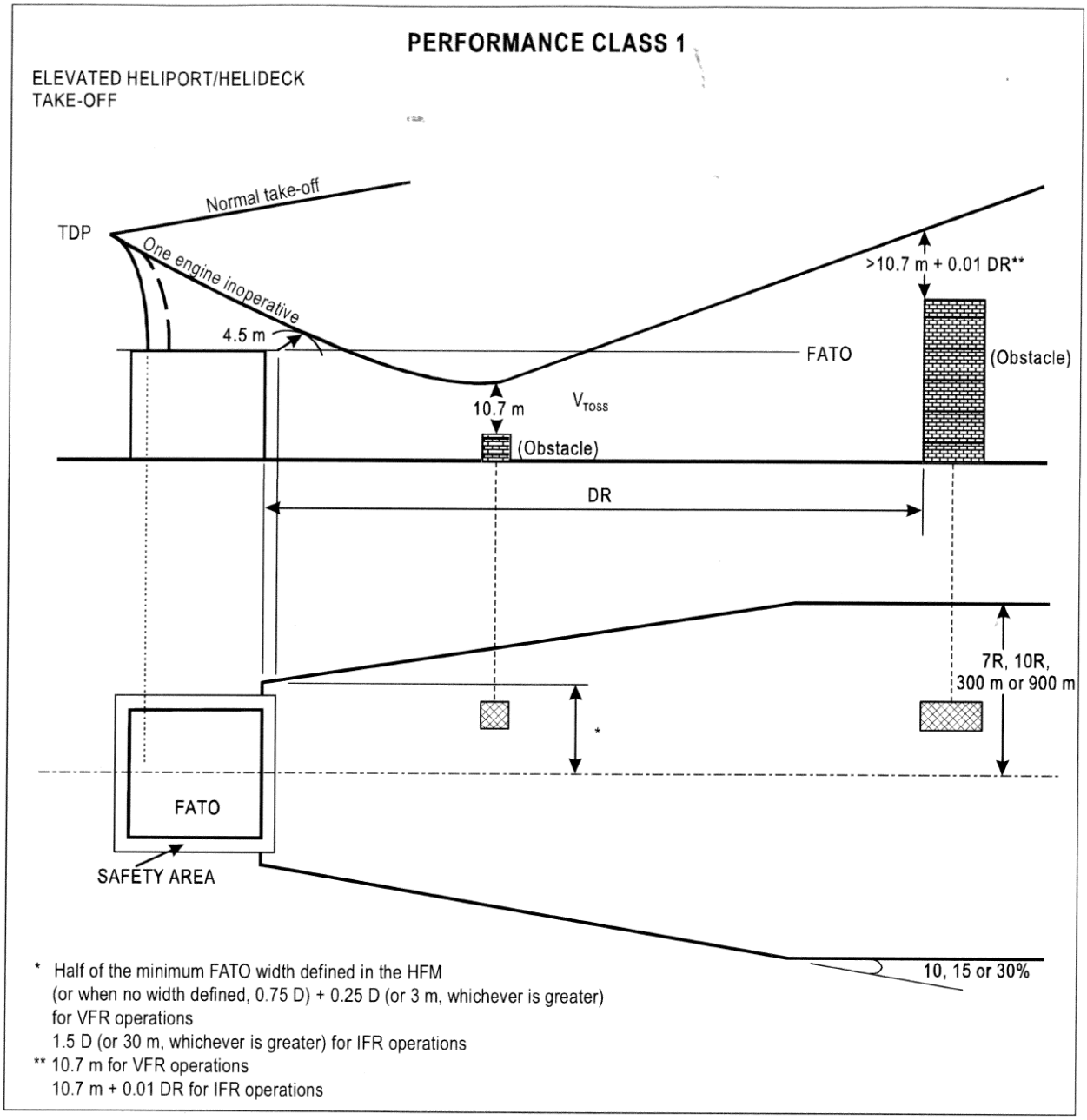
(iii) the obstacle survey shall be updated each time new construction is carried out that will penetrate the slope of the OLS established under subparagraph 325.29(3)(c)(i),

(iv) the approach/departure path area shall consist of a quadrilateral area on the surface of the earth lying directly below the approach/take-off surface, with the point of origin at the end of the area declared suitable for take-off as specified in the HOM, and extend at the lessor of the point beyond where no obstacle that would adversely affect safety exists or 625 m, and

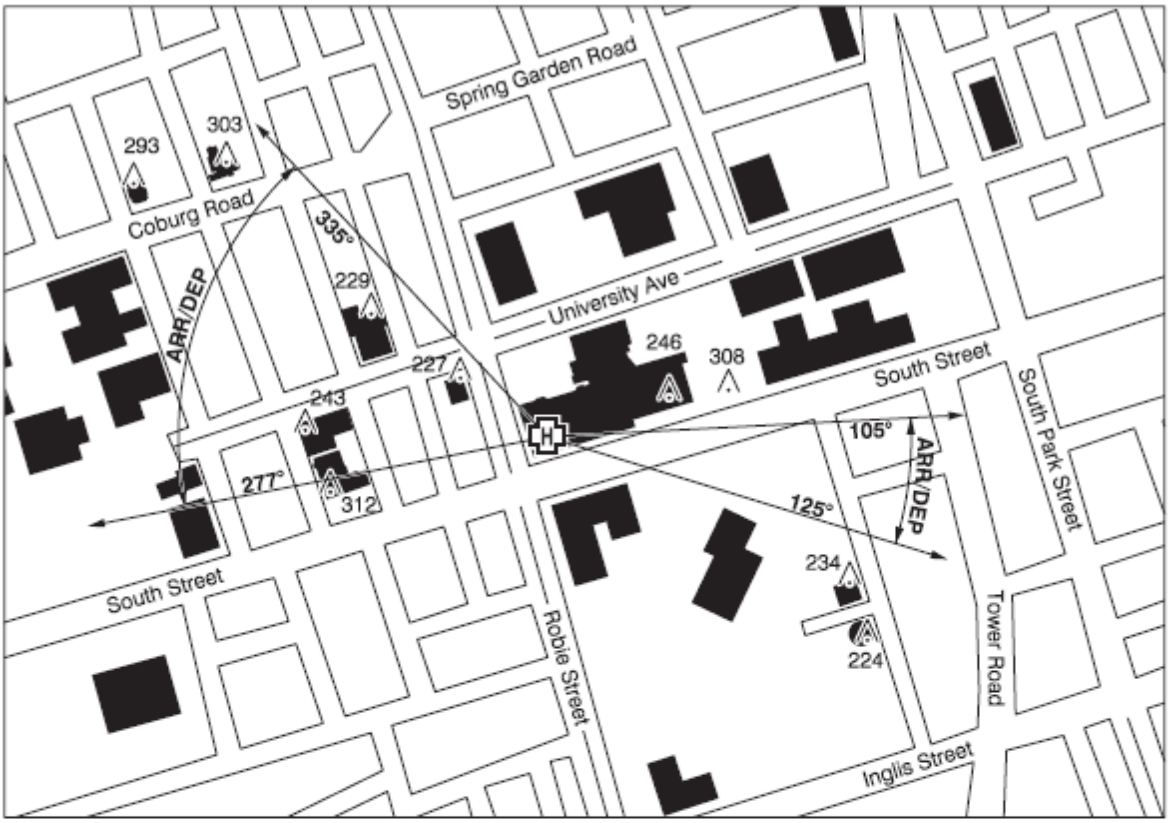
(v) the width of the approach/departure path area at its point of origin shall be the same as the width of the safety area and increase at the rate of 0.15D where ‘D’ is the distance from the point of origin.

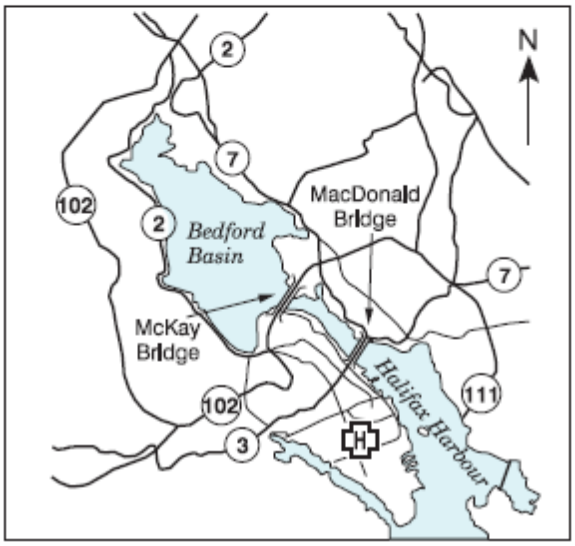
APPENDIX C — ICAO ANNEX 6 PART 3 – PERFORMANCE CLASS OPERATIONS

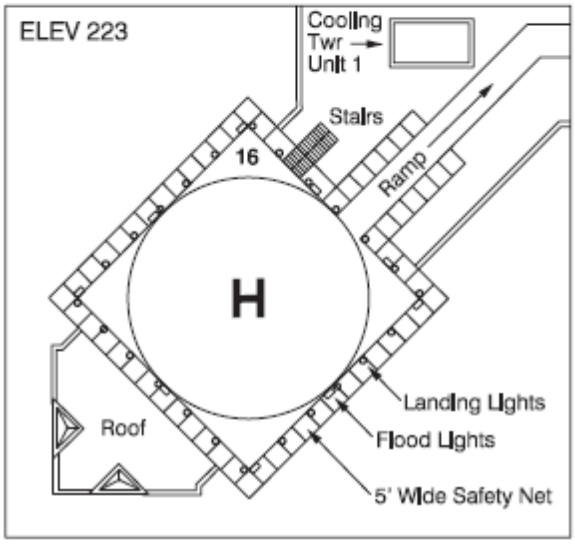


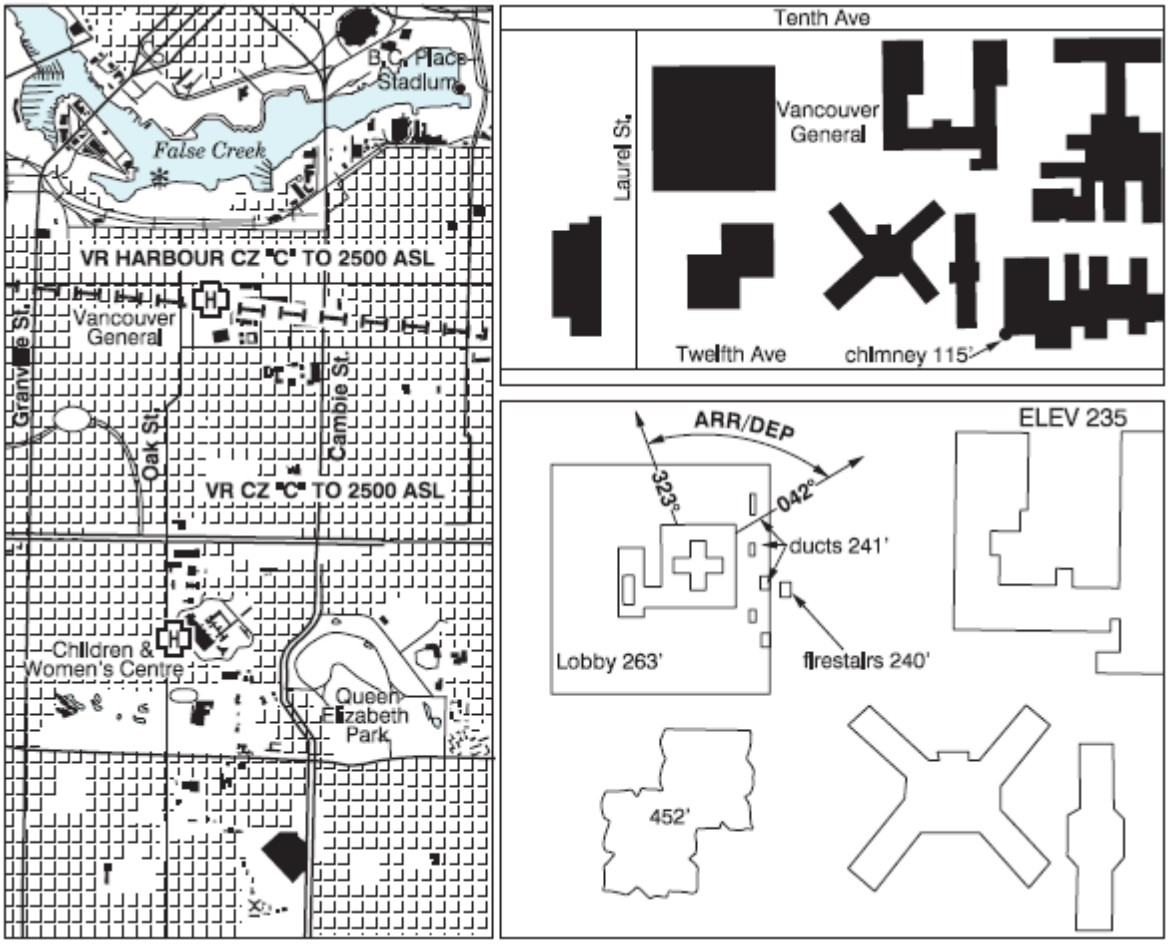

PERFORMANCE CLASS 1
ELEVATED HELIPORT/HELIDECK
TAKE-OFF
Normal take-off
TDP
One engine inoperative
4.5 m
FATO
>10.7 m + 0.01 DR**
(Obstacle)
10.7 m
V_{TOSS}
(Obstacle)
DR
7R, 10R,
300 m or 900 m
*
FATO
SAFETY AREA
10, 15 or 30%
* Half of the minimum FATO width defined in the HFM
(or when no width defined, 0.75 D) + 0.25 D (or 3 m, whichever is greater)
for VFR operations
1.5 D (or 30 m, whichever is greater) for IFR operations
** 10.7 m for VFR operations
10.7 m + 0.01 DR for IFR operations

APPENDIX D — SUGGESTED NAVCANADA CFS DEPICTIONS








B.C. Place Stadium
False Creek
VR HARBOUR CZ "C" TO 2500 ASL
Vancouver General
Granville St.
Oak St.
Cambie St.
VR CZ "C" TO 2500 ASL
Children & Women's Centre
Queen Elizabeth Park
Tenth Ave
Laurel St.
Vancouver General
Twelfth Ave
chimney 115'
ARR/DEP
323°
042°
ducts 241'
ELEV 235
Lobby 263'
firestairs 240'
452'