

SUPPLEMENTAL ORDER

In re: Proposed Children's Memorial Hospital Rooftop Heliport to be located in Chicago, Illinois

I. Introduction

Children's Memorial Hospital (CMH) in Chicago, Illinois is relocating from its current Lincoln Park location to the Streeterville neighborhood. In conjunction with this move, CMH has applied for a permit to open a private rooftop hospital heliport on its new building, as the hospital has a heliport at its current Lincoln Park facilities. After receiving approval from the City of Chicago for its building and heliport plans, CMH initiated the heliport application process in 2006 with the Illinois Department of Transportation's Division of Aeronautics (IDOT). According to CMH, out of concern for safety, CMH self-imposed the following restrictions on heliport usage: only CMH-approved EMS pilots who have completed CMH's online training program, on-site orientation, and have either reviewed the training program or landed on the heliport within the preceding 180 days can land or depart from the heliport, if they are flying a twin-engine helicopter, transporting a CMH patient from a medical facility more than 40 miles away from CMH or a donated organ for a CMH patient, and the wind velocity is under 25 knots with gust spreads under 15 knots.

The Streeterville Organization of Active Residents (SOAR), a non-profit volunteer organization that represents Streeterville residents, raised several concerns with IDOT over CMH's heliport proposal. IDOT then chose to conduct several days of a continuing public hearing to hear testimony from expert witnesses retained by CMH, SOAR, and IDOT and received petitions and heard testimony, both oral and written, from thousands of interested citizens on issues both pro and con as to the heliport. After extensive review, this Supplemental

Order presents the findings of the Director of Aeronautics of IDOT, based on all evidence received, that a permit will be issued for the CMH heliport.

II. Statement of Facts

A. **Factual Background**

According to the CMH website, in 1882, in a small house at the corner of Belden and Halsted, Julia Foster Porter founded what would later become CMH. Almost ten years later, CMH moved to its current location in Lincoln Park, where it has operated a heliport for over twenty years. *Id.*; (Doc. 7 p. 22). CMH has 270 beds, 1,100 pediatric specialists, and treated over 146,000 children in 2010. Each year, approximately 78 children receive the benefit of the heliport, either through transport as a patient or as the recipient of a transported organ. (Doc. 64 p. 27-28).

In April 2006, after study, CMH decided to build a new facility, the Ann and Robert H. Lurie Children's Hospital of Chicago, at 225 E. Chicago Avenue. CMH began the process of obtaining approvals for the hospital and heliport from the City of Chicago on March 14, 2007. (Doc. 64 p. 19). Concerned citizens and healthcare providers wrote to city officials in support of and in opposition to the heliport. (Doc. 108 p. 1-7,078; Doc. 109 p. 1-69). The Chicago Plan Commission and the Zoning Committee of the City Council heard CMH's plans, which included the rooftop heliport, and the full Chicago City Council unanimously approved the plans on February 6, 2008. (Doc. 64 p. 20). Construction began afterwards, and the hospital is scheduled to open in June 2012. https://www.childrensmemorial.org/newsroom/construction_.aspx.

B. **CMH's Application for an Original Certificate of Approval**

CMH contacted IDOT on October 17, 2006 to discuss the heliport application process. (Doc. 102 p. 1). As required by the IDOT Aviation Safety Rules, an initial inspection of the

proposed site was scheduled for November 8, 2006. 92 Ill. Admin. Code 14.115 (2011); (Doc. 102 p. 12-14). Gary D. Stevens,¹ former Flight Safety Coordinator for IDOT, conducted the initial inspection and sent a follow-up letter on November 16, 2006 in which he wrote that he found it “feasible to locate a heliport on the roof of the proposed Children’s Hospital.” (Doc. 102 p. 24). He further wrote that an accurate survey would be needed to determine precise approach and departure paths. (Doc. 102 p. 24). In addition, Stevens recommended the design of the heliport take into account the wind currents in the area and the heliport’s elevation, namely by providing “a larger landing surface (50’ x 50’ is recommended), a small weather station for wind direction and velocity and positioning the landing pad in as far as practical from the building walls.” (Doc. 102 p. 24).

CMH originally submitted a draft expert report on the proposed heliport prepared by Rowan, Davies & Irwin, Inc. (RWDI) in its December 7, 2007 Comprehensive Heliport Report and later provided the final report in its application. (Doc. 6 p. 38-91; Doc. 7 p. 57-138). SOAR responded by writing to IDOT and providing copies of its expert’s analysis of the draft RWDI report. (Doc. 103 p. 8-49). In anticipation of a public hearing and in light of the complexity of the matter, IDOT contacted Professor Michael Selig of the University of Illinois at Urbana-Champaign on March 4, 2008 to retain his services as an independent expert for IDOT. (Doc. 10 p. 1). Dr. Selig is the leader of the University of Illinois’s Applied Aerodynamics Group and widely published in wind energy, wind tunnel testing, and flight simulation. Through the University of Illinois, IDOT arranged for Dr. Selig to provide “an unbiased evaluation of the validity of a wind study analysis conducted by Rowan, Davies & Irwin, Inc. (RWDI)” as well as an unbiased evaluation of the “rebuttal to the RWDI report provide by the Streeterville

¹ Mr. Stevens retired from IDOT in 2010 and played no role in the Director’s decision and Supplemental Order.

Organization of Active Residents (SOAR) through Professor Thomas Corke of Notre Dame University.” (Doc. 11 p. 7; Doc 12 p. 1).

On June 2, 2008, CMH submitted its Federal Aviation Administration (FAA) Form 7480-1 to IDOT, which was then submitted by IDOT to the FAA, pursuant to 92 Ill. Admin. Code 14.115. (Doc. 8 p. 1-12). IDOT submitted the form to the FAA, and on July 7 FAA Flight Standards District Office Aviation Safety Inspectors and representatives from IDOT visited the site as part of the FAA’s case review. (Doc. 104 p. 95). IDOT received comments from various divisions of the FAA on August 14, 2008, then compiled the comments into the “Notice of Federal Airspace Determination,” which was sent to CMH on August 18, 2008. (Doc. 9 p. 2-4).

In the “Notice of Federal Airspace Determination,” the FAA and its Flight Standards District Office found that “[h]elicopter operations can be conducted safely at this heliport,” so long as the following conditions were met:

- the heliport is operated for private use and with visual flight rules (VFR);
- the routes of ingress and egress are kept obstruction-free;
- the heliport is designed using AC 150/5390-2B “Heliport Design;”
- landing areas in the vicinity are Chicago Police Marine Helistop, Stroger Hospital, St. Mary of Nazareth Hospital, and Midway International Airport;
- none of the buildings within a 5,000’ radius of the heliport penetrate the approach or transition surfaces of the approach and departure paths;
- the approach and departure paths are adhered to as shown in the application;
- the takeoff/landing area is appropriately marked;
- a non-obstructing wind indicator is maintained adjacent to the takeoff/landing area; and

- the applicable rules and regulations are followed.

(Doc. 9 p. 2-3). In addition, the FAA recommended CMH perform the following tasks:

- prohibit helicopters from operating at night unless specific lighting is installed;
- prevent unauthorized people from accessing the takeoff/landing area during helicopter flights;
- provide fire protection; and
- adhere to the FAA's Advisory Circular on Heliport Design in establishing heliport operations.

(Doc. 9 p. 3).

While waiting for an airspace determination from the FAA, CMH proceeded to submit its application for a heliport with IDOT. (Doc. 7 p. 1-589). In its Form AER 2060, CMH certified that it owned the property on which the heliport would reside, as required by the IDOT Aviation Safety Rules. 92 Ill. Admin. Code 14.115; (Doc. 7 p. 2-3). Following the release of the FAA's favorable airspace determination, IDOT published a "Notice" on September 17, 2008, stating that "on or after October 6, 2008" an Order would be entered, issuing a Certificate of Approval for the heliport. (Doc. 29 p. 1-3; Doc. 30 p. 1-2). Affected people were invited to submit comments or request a hearing on the validity or reasonableness of the Order. (Doc. 29 p. 2-3). IDOT received numerous comments; most of them supported the proposed heliport. (Doc. 108 p. 7,079-15.329; Doc. 109 p. 70-167). On December 17, 2008, IDOT met with SOAR and CMH to listen to SOAR's concerns over the heliport and to more fully understand their expert information. (Doc. 39 p. 1; Doc. 40 p. 1-60; Doc. 41 p. 1-185).

During December of 2008, IDOT retained an additional expert, Raymond Syms, to review the documents provided by CMH and SOAR, conduct a test flight of the site, and conduct

an on-site evaluation. (Doc. 13 p. 1-9; Doc. 14 p. 3; Doc. 16 p. 1-9; Doc. 17 p. 1-2). With over 40 years of aviation experience, Syms has an extensive client list of public and private entities for which he has planned, developed, operated, and/or evaluated aeronautical facilities and operations. (Doc. 16 p. 1-9). On April 23, 2009, IDOT published its preliminary order, stating that no heliport operations were authorized until the Certificate of Approval had been issued, and the Certificate of Approval would be issued upon completion and final inspection of the heliport, if all of IDOT and the FAA's requirements were met. (Doc. 31 p. 1-3; Doc. 32 p. 1-2). Once again, members of the public were invited to submit comments or request a hearing on the preliminary order. (Doc. 31 p. 3).

C. IDOT Public Hearing

Due to the strong public interest in CMH's heliport application, IDOT felt that there would be benefit to hold a continuing public hearing in the Streeterville neighborhood, the site of the proposed heliport. 620 ILCS 5/51, 56 (2011). IDOT appointed retired Cook County Circuit Judge Richard E. Neville as the moderator of the public hearing. 620 ILCS 5/51; (Doc. 45 p. 2). Since the hearing was deemed an "informational process" and does not follow formal rules of evidence, Judge Neville considered several formal motions but found that no cross-examination would be permitted, however questions could be submitted to him for review before and during the hearing by the lawyers and public alike. 620 ILCS 5/51; (Doc. 45 p. 3-4). IDOT hearings are not bound by the rules of evidence, and "no informality in any proceeding or in the manner of taking testimony . . . shall invalidate any order, decision, rule, ruling or regulation made, approved or confirmed by the Department." 620 ILCS 5/51.

1. Continuing hearing - July 22-25, 2009.

IDOT originally intended to commence the public hearing in February of 2009, but on January 7, 2009, CMH submitted a letter to IDOT, requesting the hearing be delayed until after the Washington D.C. National Transportation Safety Board (NTSB) hearings on Emergency Medical Service (EMS) helicopter operations scheduled in February. (Doc. 64 p. 22; Doc. 105 p. 1). The NTSB Washington hearings were designed to review current and future safety regulations of emergency aeronautical transport, particularly by helicopter, of medical emergencies. CMH requested the delay of the public hearing in order to “assess the information” discussed at the NTSB Washington hearings. (Doc. 105 p. 1). IDOT agreed to the request and rescheduled the CMH heliport hearing to begin in June, 2009. (Doc. 45 p. 2; Doc. 105 p. 2). However, SOAR submitted a “Written Request for Hearing as to the Validity or Reasonableness of IDOT’s Order Regarding the Proposed Children’s Memorial Hospital Heliport and Motion for an Evidentiary Hearing in which the Safety of the Proposed Heliport Can be Fully Explored” on April 29, 2009 in which a delay until mid-July was requested. (Doc. 43 p. 5). SOAR requested the delay in order to obtain necessary information to fully prepare for the hearing and secure an alternate expert. (Doc. 43 p. 5). In response, Judge Neville issued an Order to reschedule the continuing public hearing for July 22, 23, and 24. (Doc. 45 p. 3).

IDOT published a “Notice of Hearing” on June 19, 2009, announcing that “a hearing concerning the issuance of a Certificate of Approval” would be held at 303 E. Superior in Chicago, IL on July 22-24 from 6 pm-10 pm and on July 25 from 1pm–5 pm, if needed. (Doc. 33 p. 1; Doc. 34 p. 1-2). The purpose of the hearing was “to ensure that the proposed Lurie Children’s Heliport will be constructed and operated consistent with the ‘Aviation Safety Rules.’” (Doc. 33 p. 1). The public was invited to submit materials or arrange to testify at the

hearing. (Doc. 33 p. 1). IDOT received letters for and against the heliport. (Doc. 108 p. 15,330-15,336; Doc. 109 p. 168-169; Doc. 110 p. 1-31).

On the first day of the continuing hearing, July 22, 2009, CMH made a presentation, during which John George and Alan Farkas, attorneys for CMH; Patrick Magoon, President and CEO of CMH; Dr. Ranna Rozenfeld, Medical Director of the Critical Care Team; Robert McKenna; Jeffrey Jackson, Project Manager from Landrum & Brown; Meiring Beyers, Mechanical Engineer from RWDI; and Rex Alexander, Regional Operation Manager for Omni Flight Helicopters spoke. (Doc. 64 p. 17-67, 74-132). Afterwards, Judge Neville questioned the presenters based on questions submitted by the lawyers and the other attendees. (Doc. 64 p. 140-151). In the second day of the hearing, SOAR made its initial presentation. (Doc. 65 p. 37-178). Richard Porter, attorney for SOAR; Gail Spreen, President of SOAR; Dr. Patrick Veillette, aeronautical engineer and retained expert; Dr. Brian Bledsoe; Dr. Thomas Corke, Director of the Notre Dame Hessert Laboratory for Aerospace Research and retained expert; and Patty Frost, SOAR board member spoke, and Judge Neville once again posed questions from the lawyers and other attendees. (Doc. 65 p. 37-185).

Throughout the hearing, members of the public were welcome to testify or provide personal statements on the record. (Doc. 62 p. 1-585; Doc. 63 p. 1-13; Doc. 64 p. 67-69; Doc. 65 p. 14-36; Doc. 66 p. 5-33; Doc. 67 p. 9-163; Doc. 68 p. 5-28; Doc. 69 p. 8-88; Doc. 70 p. 5-16). Two entire days of the hearing, July 24 and 25, were dedicated to allowing interested citizens to provide testimony. (Doc. 67 p. 9-163). After the hearing, comments continued to be submitted to IDOT in support and in opposition. (Doc. 108 p. 15,377-15,344; Doc. 109 p. 170-193).

2. Additional steps for transparency.

Subsequent to the first four days of the continuing hearing, IDOT sought additional information and expert evaluation. On August 5, 2009, IDOT requested additional materials from CMH to assist one of its experts, Ray Syms, in completing his evaluation. (Doc. 105 p. 71-72). SOAR objected to IDOT's request on the grounds that the information should have been presented during the hearing or beforehand "to allow the public and SOAR's experts to review, comment upon, and test the Application." (Doc. 105 p. 73). CMH provided IDOT with the requested information on October 5, 2009. (Doc. 87 p. 1-7). SOAR then submitted assessments by its own experts of CMH's additional material. (Doc. 89 p. 1-18).

On February 8, 2010, SOAR filed an objection to CMH's actual construction of the heliport and asked that construction be halted. (Doc. 106 p. 3-4). IDOT responded by issuing an "Interim Order" that denied SOAR's request for IDOT to halt construction, citing IDOT's lack of authority to take such an action. (Doc. 35 p. 1-2). The "Interim Order" was published on March 13, 2010 in the *Chicago Tribune* newspaper. (Doc. 36 p. 1-2)

In an effort to maintain transparency throughout the process, IDOT posted a "CMH Hospital Heliport Application" webpage on the official IDOT website on March 22, 2010. http://www.dot.il.gov/aero/cmh_app.html. The webpage provides the full Administrative Record IDOT utilized in reaching its decision. *Id.* SOAR submitted additional correspondence and documents for the record, which IDOT then posted online. (Doc. 106 p. 39).

3. Additional expert steps.

During the first four days of the continuing hearing, SOAR's experts and concerned members of the community raised issues about the safety of opening a heliport in Streeterville, due to the strong winds in the area. (Doc. 64 p. 68-69, Doc. 65 p. 66, 74-87, 118-151, 158; Doc.

66 p. 4-8, 11-13; Doc. 67 p. 12-16, 32-38, 46-55, 61-66, 70-85, 90-99, 135-140, 144-149; Doc. 68 p. 5-7, 14-17; Doc. 69 p. 23-24, 39-43, 50-57, 69-77; Doc. 70 p. 13-16; Doc. 73 p. 31-34, 48-49, 79-116, 367). It was the opinion of some people that a more comprehensive wind study should be completed. In an effort to respond to these concerns, IDOT consulted with several aerospace experts to locate and retain additional experts, highly qualified and equipped to conduct an air wake/wind study. In June 2010, Dr. Joseph Horn, a Georgia Institute of Technology-educated Ph.D. in Aerospace Engineering and an Associate Professor in Pennsylvania State University's Department of Aerospace Engineering, and Continuum Dynamics, Inc. (CDI) were retained to conduct further independent studies for IDOT. (Doc. 19 p. 1-15; Doc. 21 p. 1-6; Doc. 22 p. 1-15; Doc. 24 p. 1; Doc. 25 p. 1; Doc. 26 p. 1-2; Doc. 27 p. 1-2; Doc. 28 p. 1-2; Doc. 106 p. 106).

Dr. Horn enjoys an excellent reputation and has extensive experience studying the effect of airwakes² on helicopters landing on U.S. Navy ships, making him well-suited for the task of assisting IDOT. (Doc. 21 p. 1-6). Moreover, one of SOAR's own experts, Dr. Patrick Veillette, had stated that landing helicopters on U.S. Navy ships was a "very equivalent and applicable example[]" of the turbulent winds affecting a landing at CMH's proposed heliport. (Doc. 65 p. 180-81). Dr. Horn and the CDI team, led by Princeton University-educated Ph.D. in Mechanical and Aerospace Engineering, Dr. Jeffrey Keller, presented their findings in the "Analysis of Urban Airwake Effects on Heliport Operations at the Chicago Children's Memorial Hospital." (Doc. 94 p. 1-102). SOAR's experts, Dr. Corke and Dr. Veillette, requested additional information from Dr. Horn and CDI to assist them in their review of the report. (Doc. 107 p. 42-47). Dr. Horn and CDI provided study results and responses to their questions. (Doc. 95 p. 1-7;

² An "airwake" is the "disturbed air flow (wind field) due to the presence of buildings, structures, and other obstacles." (Doc. 94 p. 10).

Doc. 96 p. 1-6; Doc. 97 p. 1-16; Doc. 98 p. 1-16; Doc. 99 p. 1-8; Doc. 100 p. 1-8; Doc. 101 p. 1-8).

On June 4, 2011, IDOT published a “Notice of Continuation of Hearing,” informing the public that a continuation of the hearing would be held on June 23 and 24, 2011 from 4-9 pm. (Doc. 37 p. 1; Doc. 38 p. 1-2). The purpose of the continuation of hearing was “to discuss the effect of wind and airwakes on helicopter operations at the proposed Lurie Children’s Heliport.” (Doc. 37 p. 1). Interested members of the public were once again invited to submit materials or provide testimony at the hearing. (Doc. 37 p. 1; Doc. 109 p. 194-196; Doc. 110 p. 32-37).

4. Continuing hearing - June 23-24, 2011.

On June 23, IDOT continued its hearing on the proposed CMH heliport in Northwestern University Law School’s Thorne Auditorium at 375 East Chicago Avenue in the Streeterville neighborhood. (Doc. 79 p. 1, 3). Judge Neville presided as monitor again. Alan Farkas, one of CMH’s attorneys; Richard Porter, SOAR’s attorney; and Ellen Schanzle-Haskins, Chief Counsel for IDOT, gave opening remarks.³ (Doc. 79 p. 3-29). IDOT’s experts, Dr. Horn and CDI’s Dr. Joseph Keller then presented their findings and the methodology for their report. (Doc. 79 p. 29-71, 74-117; Doc. 81 p. 1-87)). Afterwards, CMH’s experts testified. Patrick Magoon; Rex Alexander; and Stephanie Hanes, a Sales Manager for Vaisala, CMH’s Automated Weather Observing System (AWOS) provider, spoke on behalf of CMH. (Doc. 79 p. 118-175; Doc. 84 p. 1-2; Doc. 85 p. 1-62). Judge Neville concluded the evening by asking the experts the pertinent

³ During his opening remarks, Attorney Richard Porter of SOAR challenged the report issued by IDOT experts Dr. Horn and CDI, stating that the study produced did not meet their contractual obligations with IDOT. In her remarks, IDOT Counsel Ellen Schanzle-Haskins reminded the audience that the topic of the hearing was not “to talk about whether they [Dr Horn and CDI] fulfilled the terms of their contract” and indicated her disappointment that this contractual issue was inappropriately raised and suggested that IDOT was satisfied that the Horn report fulfilled the contractual obligation. (Doc. 79 p. 27).

questions submitted by the lawyers and audience members. (Doc. 78 p. 1-36; Doc. 79 p. 175-192).

That evening, Thursday, June 23, 2011, SOAR served IDOT with a “Motion to Terminate Hearing on the Application of Children’s Memorial Hospital for a Hospital Heliport,” suggesting that the earlier hearing dates in 2009 should stand alone and no further public hearing days should be allowed. (Doc. 60 p. 1-68). A copy of the motion had been given to Judge Neville moments before the hearing began. Due to the timing of the motion, Judge Neville informed SOAR that he was “not inclined to grant it.” (Doc. 80 p. 5). Before the hearing reconvened on Friday, SOAR, IDOT, and CMH engaged in a lengthy e-mail exchange with respect to SOAR’s motion, during which the motion was rejected by Judge Neville. (Doc. 107 p. 66-71).

Prior to the completion of the continuation of hearing on Friday, June 24, the attorneys for the parties discussed SOAR’s four most recent motions on the record: “Motion to Compel,” “Motion to Reschedule Public Hearing,” “Motion to Order Deposition and Cross-Examination of the Illinois Department of Transportation’s Expert Witnesses,” and “Motion to Terminate Hearing on the Application of Children’s Memorial Hospital for a Hospital Heliport.” (Doc. 56 p. 1-8; Doc. 57 p. 1-5; Doc. 58 p. 1-4; Doc. 59 p. 1-12; Doc. 60 p. 1-68; Doc. 80 p. 3-7). Since IDOT had provided SOAR with the requested documents, SOAR withdrew its “Motion to Compel.” (Doc. 56 p. 1-8; Doc. 80 p. 6). Judge Neville denied the remaining three motions. (Doc. 80 p. 5-7).

While on the record, IDOT reiterated that Friday’s hearing would not be the conclusion of the public comment period, and people were welcome to continue to submit comments to IDOT. (Doc. 80 p. 9). SOAR suggested a fourteen-day period following the hearing for IDOT

to continue to accept comments, and all parties agreed to the extended comment period. (Doc. 80 p. 10).

Judge Neville welcomed the audience and announced the additional fourteen-day public comment period. (Doc. 80 p. 10-13). Dr. Thomas Corke, Dr. Patrick Veillette, and Patty Frost spoke again on behalf of SOAR. (Doc. 80 p. 16-107). Following SOAR's presentation, two IDOT experts, Ray Syms and Jerry Lay, testified and presented slides of their recent helicopter landing on the CMH heliport, pursuant to statutory authority that permits an IDOT helicopter to land on an uncertificated area.⁴ 620 ILCS 5/47; 92 Ill. Admin. Code 14.950; (Doc. 80 p. 107-144; Doc. 82 p. 1-17; Doc. 83 p. 1-2).

Judge Neville then asked all of the experts from CMH, SOAR, and IDOT who had testified on that day to join him on stage to answer the questions submitted by the audience. (Doc. 78 p. 1-36; Doc. 80 p. 144-160). IDOT Aeronautics Director Susan Shea closed the hearing and encouraged people to submit any additional written material over the next fourteen days. (Doc. 80 p. 160-163). While members of the public had made statements on the record with the court reporter, IDOT received a significant amount of additional comments after the final date of the continuation of hearing, June 24, 2011. (Doc. 75 p. 1-9; Doc. 76 1-6; Doc. 77 p. 1-17; Doc. 79 p. 72-73, 151-152; Doc. 108 p. 15,345-15,355; Doc. 109 p. 197-369; Doc. 110 p. 38-39).

⁴ Although the Chicago Municipal Code prohibits a helicopter from landing on an unlicensed heliport, except in cases of emergency, Illinois courts have long recognized that a local ordinance cannot restrict the State from "carrying out a statutory duty encompassing a statewide concern." Chicago, Ill., Code tit.10, ch. 36, art. III, §§ 470, 510 (2011); *City of Joliet v. Snyder*, 317 Ill. App. 3d 940, 945, 741 N.E.2d 1051, 1055 (3rd Dist. 2000). IDOT and its experts legally landed on CMH's heliport, because they were carrying out the statutory duty of regulating heliports in the State. 620 ILCS 5/25, 42.

III. Analysis

Under Section 42 of the Illinois Aeronautics Act, the Department is authorized to “classify and approve airports and restricted landing areas and any alterations or extensions thereof.” 620 ILCS 5/42. Airports and restricted landing areas are approved by the Department via a Certificate of Approval after consideration of the following factors and such other factors IDOT regards as having an important bearing, (“considered factors”):

proposed location, size and layout, the relationship of the proposed airport or restricted landing area to the then current national airport plan, the then current Federal airways system, the then current State airport plan, and the then current State airways system, whether there are safe areas available for expansion purposes, whether the adjoining area is free from obstructions based on a proper glide ratio, the nature of the terrain, the nature of the uses to which the proposed airport or restricted landing area will be put, the possibilities for future development, and such other factors as, under the circumstances, it regards as having an important bearing thereon.

620 ILCS 5/48. The General Assembly permits the Department to promulgate rules in furtherance of the Aeronautics Act by providing the following: “the Department may perform such acts, issue, amend, change, abrogate or rescind such decisions and orders, prescribe such forms, and make, promulgate, and amend, change, abrogate or rescind such reasonable general or special rules, rulings, regulations, and procedure, and establish such minimum standards, as may be necessary.” 620 ILCS 5/28. Pursuant to this authority, the Department issued rules, elaborating on the requirements for an original Certificate of Approval, specifically for a heliport. 92 Ill. Admin. Code 14.810.

IDOT may take the following factors into consideration when deciding whether to issue an original Certificate of Approval for a heliport:

1. the heliport’s proposed location;
2. the heliport’s size and layout;
3. the relationship of the proposed heliport to the then current State and Federal Airport and Airways System;

4. whether there are safe areas available for expansion purposes;
5. whether the adjoining areas are free from obstructions based on a proper glide ratio;
6. the nature of the terrain;
7. the nature of the uses to which the proposed heliport will be put;
8. the possibilities for future development; and
9. the minimum standards contained in . . . Subpart H.

Id. The additional minimum standards referred to in number nine above (“minimum standards”) include design and layout requirements, obstructions, facilities, the responsibility of a hospital heliport certificate holder, and the restrictions on the use of the heliport. 92 Ill. Admin. Code 14.810-14.850, 14.870, 14.880. For purposes of this decision, all considered factors as outlined in 620 ILCS 5/48 were reviewed in the context of the extent to which they apply in this scenario and all minimum standards as required in 92 Ill. Admin. Code 14.810 have been reviewed and assessed in reaching the conclusion to issue the Certificate of Approval for the heliport, pursuant to 620 ILCS 5/42. The considered factors are set forth in subsection A below and the minimum standards are set forth in subsection B below.

A. Considered Factors

1. Heliport’s proposed location.

Under the IDOT Aviation Safety Rules, a heliport’s proposed location may be considered when determining whether to issue an original Certificate of Approval. 92 Ill. Admin. Code 14.810. The City of Chicago permits rooftop heliports. Chicago, Ill., Code tit.10, ch. 36, art. III, § 380. CMH’s heliport will be a rooftop heliport located in Chicago, Illinois on Chicago Avenue where Mies van der Rohe Drive intersects with Chicago Avenue. (Doc. 7 p. 2, 8; Doc. 64 p. 56). The latitude is 41 53’ 74N” with a longitude of -87 37’ 18”W and an elevation of 1,020’ 4”MSL. (Doc. 7 p. 2). In total, the heliport will be 411 feet above street level. (Doc. 79 p. 32). It will be surrounded by Prentice Women’s Hospital to the east, the American Dental Association to the

west, and the Affinia Hotel on its south-side. (Doc. 64 p. 56). The proposed location is appropriate as affirmed by the Chicago City Council when issuing the zoning permit.

2. Heliport's size and layout.

A heliport's size and layout may also be taken into account when making a Certificate of Approval determination. 92 Ill. Admin. Code 14.810. CMH's heliport has a Final Approach and Take-off area (FATO) of 132 feet by 132 feet and a Touchdown and Lift-off area (TLOF) of 66 feet by 66 feet. (Doc. 7 p. 2). Leading away from the heliport will be a 20-foot wide walkway that leads to a penthouse with two trauma elevators, which can take people from the heliport level to any floor in the hospital. (Doc. 64 p. 56). The size and layout exceed the minimum requirements for the design and layout of a hospital heliport, which are discussed in further detail in Section III.B.1.

3. Relationship of the proposed heliport to the then current State and Federal airport and airways system.

Another factor that can be considered for a Certificate of Approval is the proposed heliport's relationship to the then current State and Federal airport and airways system. 92 Ill. Admin. Code 14.810. Using the FAA Online System, IDOT plotted CMH's proposed heliport location to determine its relationship to other aeronautical facilities on record and found no conflicts. With the information provided by IDOT, the FAA also evaluated whether there are any conflicts with existing aeronautical facilities. In its "Notice of Federal Airspace Determination," the FAA made note of the landing areas in the vicinity but raised no conflicts or objections. (Doc. 9 p. 2-4). Based upon the analysis performed by IDOT and the FAA, CMH's proposed heliport does not conflict with the current State and Federal airport and airways system.

4. Whether there are safe areas available for expansion purposes.

For a Certificate of Approval, IDOT's Aviation Safety Rules allow for the consideration of several factors, including whether there are safe areas available for expansion purposes. 92 Ill. Admin. Code 14.810. At this time, CMH has made no indication that it plans to expand the heliport or add another heliport. Should CMH decide to alter the existing heliport in the future or expand in the future, it will be required to seek approval from the FAA and IDOT, as required by law. 92 Ill. Admin. Code 14.120. Based on the foregoing, consideration of this factor does not affect issuance of a Certificate.

5. Whether the adjoining areas are free from obstructions based on a proper glide ratio.

Certificate of Approval determinations can also examine whether the areas adjoining the proposed heliport are free from obstructions based on a proper glide ratio. 92 Ill. Admin. Code 14.810. During the initial inspection, IDOT determined that there appeared to be no obstructions but stated that an accurate survey would be needed to determine whether there were in fact any obstructions within the glide ratio. (Doc. 102 p. 24). In its "Heliport Application," CMH provided a detailed map and listed all nearby obstructions. (Doc. 7 p. 13-15). Based upon the information provided, IDOT finds no obstructions based on a proper glide ratio. This finding is discussed in greater detail in Section III.B.2.

6. Nature of the terrain.

The nature of the terrain or surface of a heliport can be considered when deciding whether to grant an Original Certificate of Approval, however this primarily applies to ground-level surface heliports. 92 Ill. Admin. Code 14.810. A heliport must be constructed fairly level with only minor pitch for drainage purposes. Initial and subsequent inspection of CMH's heliport revealed a level rooftop heliport with proper drainage addressed.

7. Nature of the uses to which the proposed heliport will be put.

An additional factor that can be considered is the nature of uses to which the proposed heliport will be put. 92 Ill. Admin. Code 14.810. CMH's heliport will be a private hospital heliport. (Doc. 7 p. 2). A "hospital heliport" is defined as a "heliport/vertiport limited to serving only helicopters/VTOL aircraft engaged in air ambulance, or hospital related functions." 92 Ill. Admin. Code. 14.105. In keeping with its status as a hospital heliport, only helicopter EMS providers approved by CMH will be permitted to utilize the heliport to transport critically ill and injured children from other hospitals and organs donated for transplant. (Doc. 64 p. 29, 113). Furthermore, the heliport will only be utilized for CMH patients. (Doc. 64 p. 29).

8. Possibilities for future development.

The possibility for future development is another factor that may be considered for a Certificate of Approval. 92 Ill. Admin. Code 14.810. This concerns whether there are future development possibilities in the area that could affect the heliport. 92 Ill. Admin. Code 14.810. CMH addressed this concern by providing a list of all buildings in the area that are currently approved for construction and buildings that have been proposed. (Doc. 7 p. 15). None of the currently approved or proposed buildings is within CMH's approach/takeoff paths, so they will not affect the heliport. (Doc. 7 p. 13, 15).

B. Requirements - Minimum standards

The final element to be considered for a Certificate of Approval requires analysis of six minimum requirements set forth by IDOT. 92 Ill. Admin. Code 14.810. These minimum requirements govern the following areas: design and layout requirements, obstructions, heliport marking, facilities, responsibility of Certificate Holder, and restrictions on use of the heliport. 92

Ill. Admin. Code 14.810-14.850, 14.870, 14.880. Each of these standards will be discussed in further detail.

1. Design and layout requirements.

For design and layout, the IDOT Aviation Safety Rules require all heliports to have two defined approach/takeoff paths that are a minimum of 90 degrees apart, however 180 degrees is recommended. 92 Ill. Admin. Code 14.820, app. G illus. C. According to the illustration provided in IDOT's rules, the approach/takeoff paths must be a minimum of 100 feet wide at the FATO edge and widen until they are a minimum of 500 feet wide 4,000 feet away from the edge. 92 Ill. Admin. Code 14 app. G illus. C. However, the illustration also states that the approach/takeoff paths must widen at an 8 to 1 ratio for a distance of 4,000 feet starting from the FATO edge. *Id.* Interpreting its own rules, IDOT believes that the more specific requirement of 100 feet to 500 feet governs, as opposed to the more general ratio requirement; the ratio requirement applies to the obstruction clearance slope, not the approach/takeoff paths themselves. *Id.* The TLOF, or helipad size, must be a minimum of 1-rotor in diameter, or 40 feet by 40 feet, whichever is greater. 92 Ill. Admin. Code 14 app. H tbl. A. The minimum FATO size, or object-free area, must be 2-rotors in diameter, or 100 feet by 100 feet, whichever is greater. *Id.*

CMH's approach/takeoff paths are 92 degrees apart, which surpasses the 90 degree minimum requirement. (Doc. 7 p. 8). As for the widening of the approach/takeoff paths, CMH's approach/takeoff paths are 100 feet wide at the FATO edge and 500 feet wide at 4,000 feet away from the FATO edge, which meets the 100 to 500 feet minimum requirement. 92 Ill. Admin. Code 14 app. G illus C; (Doc. 7 p. 13).

CMH has limited the use of its heliport to twin-engine helicopters. (Doc. 64 p. 30). The largest rotor diameter for an EMS twin-engine helicopter is 44 feet, which is greater than 40 feet. 92 Ill. Admin. Code 14 app. H tbl. A. As a result, the minimum required TLOF is 44 by 44 feet, but IDOT recommended 50 by 50 feet. *Id.*; (Doc. 102 p. 24). CMH's TLOF is 66 by 66 feet, which exceeds the statutory TLOF minimum and IDOT's recommendation. (Doc. 7 p. 2). Regarding the FATO, 100 by 100 feet is the minimum requirement, since 100 feet exceeds a two-rotor diameter of 88 feet. 92 Ill. Admin. Code 14 app. H tbl. A. CMH's FATO is 132 by 132, which also exceeds the required FATO minimum. (Doc. 7 p. 2). CMH's heliport meets or surpasses IDOT's minimum requirements for design and layout.

2. Obstructions.

Certificate of Approval eligibility requires a heliport to initially and continuously be free of obstructions on all approach/takeoff paths within the applicable glide ratio and height limit. 92 Ill. Admin. Code 14.830. For a rooftop hospital heliport, the first approach/takeoff path must have a minimum obstruction clearance slope of 8 to 1, while the second path must have a minimum slope of 5 to 1. 92 Ill. Admin. Code 14 app. G illus. C, D. CMH's northeast approach/takeoff path has no obstructions, which surpasses the required 8 to 1 obstruction clearance slope. (Doc. 7 p. 13-15). The southeast approach/takeoff path has five obstructions that are taller than the heliport: McClurg Center Tower at 333 E. Ontario, 340 On the Park at 340 E. Randolph Street, The Streeter at 345 E. Ohio St., 2 East Erie at 2 E. Erie Street, and the River East Center at 350 E. Illinois. (Doc. 7 p. 13-15). The River East Center has the smallest obstruction clearance slope at 8.87 to 1, which exceeds the recommended minimum of 8 to 1 for the first approach/takeoff path and the required minimum of 5 to 1 for a second approach/takeoff

path. (Doc. 7 p. 13-15). As a result, CMH's heliport is free of obstructions on all approach/takeoff paths within the applicable glide ratio.

3. Heliport marking.

All heliports must be marked with the usable landing area clearly delineated from an altitude of 500 feet above ground level. 92 Ill. Admin. Code 14.840. A rooftop or elevated hospital heliport must be marked with a red "H" in the middle of a white cross. 92 Ill. Admin. Code 14 app. G illus. F. In addition, there must be a white perimeter stripe around the TLOF. 92 Ill. Admin. Code 14 app. G illus. F. CMH's heliport is currently correctly marked with a yellow "X," indicating that the heliport is not operational, and the "Hospital Heliport Layout Map" depicts an intent to mark the heliport with an "H" in the middle of a cross, as required for use. (Doc. 7 p. 9; Doc. 106 p. 40-41). Before IDOT can issue a Certificate of Application and before the heliport is opened, CMH will be required to apply the clearly delineated markings that show the heliport as being operational. 92 Ill. Admin. Code 14.115, 14.840.

4. Facilities.

At a minimum, hospital heliports must provide the following facilities: spectator, vehicular, and perimeter access control (security and access can be controlled by the hospital); one 20-pound fire extinguisher (two where fueling is present); an identification beacon; marked FATO and/or TLOF identifiable from 500 feet above ground level; perimeter and/or flood lighting, if night use of the heliport is permitted; a horizontal safety fence for heliports elevated 30 inches or higher; and a wind direction/velocity indicator (must be lighted, if night use is permitted). 92 Ill. Admin. Code 14.850, app. H tbl. B. Lead-in lights, arrows, and a paved TLOF are recommended facilities, not required. 92 Ill. Admin. Code 14.850, app. H tbl. B.

CMH will be controlling access to the heliport by requiring key cards to access the elevators and stairs that lead to the roof, thereby controlling spectator and perimeter access since it is a rooftop heliport. (Doc. 64 p. 65). Vehicular access is inapplicable in this scenario. (Doc. 64 p. 65). The heliport will be monitored by security 24-hours a day 7-days a week via a closed-circuit TV system. (Doc. 64 p. 63). Two 20-pound fire extinguishers are provided on the heliport, thereby exceeding IDOT's minimum requirement, since fueling will not be permitted on CMH's heliport. (Doc. 64 p. 61-62). In addition, a foam suppression system has been installed above the heliport and a dry pipe sprinkler system below the heliport for fire protection. (Doc. 64 p. 61).

Regarding lighting, there will be a rotating beacon on the heliport, which meets the identification beacon requirement for all trauma centers. (Doc. 7 p. 9; Doc. 64 p. 63). As discussed in Section III.B.3, whether the FATO or TLOF is appropriately marked will have to be determined with a site inspection. Additionally, perimeter lighting surrounds the helipad, thereby meeting the perimeter and/or flood lighting requirement for night flights. (Doc. 64 p. 63). A safety fence made out of galvanized mesh net on a steel tube frame surrounds the perimeter of the heliport, as required, since CMH's heliport is elevated over 30 inches. (Doc. 7 p. 9). As for the mandatory wind direction/velocity indicator, five wind socks, with at least one of them lit for nighttime use, will be provided at different locations on the heliport. (Doc. 7 p. 9; Doc. 64 p. 59-60). Although lead-in lights are only recommended for hospital heliports, CMH will be providing a pulse light approach slope indicator (PLASI), which surpasses the recommendation. (Doc. 64 p. 59, 61, 125-26). As illustrated, CMH meets or exceeds the minimum requirements for facilities on the heliport.

5. Responsibility of a hospital heliport Certificate Holder.

The holder of a hospital heliport Certificate of Approval bears the responsibility of enforcing applicable federal, State, and local aviation laws and regulations. 92 Ill. Admin. Code 14.870. The Certificate Holder must maintain the terms and conditions outlined in the Certificate of Approval and its supporting Order in addition to the following: 1) immediately depicting on the heliport with a contrasting “X” over the FATO/TLOF any circumstances that would make landing or take-off hazardous; 2) supervising or causing the supervision of all aeronautical activity connected with the heliport in the interest of safety; 3) providing IDOT with an up-to-date name and phone number for the Certificate Holder or his/her designee; 4) creating local heliport rules that will be reviewed and approved by IDOT; 5) developing and following operational maintenance and repair practices that ensure the heliport and approaches are hazard-free; 6) upon request, furnishing IDOT with information on aircraft using the heliport as an operating base, people exercising managerial or supervisory functions at the heliport, accidents, and the nature and extent of aeronautical activity occurring at the heliport; and 7) obliterating all signs and markings that could indicate the heliport is operational prior to IDOT issuing an Order closing a heliport, when a Certificate of Approval is being rescinded.⁵ 92 Ill. Admin. Code 14.870.

CMH has proven that it will designate with an “X” over the FATO/TLOF any condition that renders landing or takeoff from the heliport hazardous, given that it has already marked the heliport with a yellow “X,” thereby indicating that CMH does not have a Certificate of Approval, and the heliport is not in use. (Doc. 106 p. 40-41). As for having all aeronautical activity related

⁵ It is premature to state whether CMH will obliterate all signs and markings that might indicate the heliport is operating before IDOT issues an Order of Rescission, since no such Order has been issued to CMH for the proposed heliport. However, as discussed previously, the fact that CMH currently has an “X” on the helipad to indicate that the heliport should not be utilized seems to be a good indicator that CMH will comply with the Order of Rescission requirement in the future. (Doc. 106 p. 40-41).

to the heliport supervised in the interest of safety, CMH has indicated that it plans to form a Heliport Review Committee to review “the use of the heliport and consider the latest advances in technology to continue to advance the safety of the heliport.” (Doc. 64 p. 30, 126; Doc. 71 p. 44-45). Membership of the Heliport Review Committee will consist of the Transport Team Medical Director, Transport Team Manager, Chief Nurse Executive, Chief Government and Community Relations Officer, in-house legal counsel, the Alderman of the 42nd Ward (or his/her designee), and three independent leaders of the residential and business community. (Doc. 71 p. 44). Additionally, the operations of the helicopter providers will be reviewed by an independent third party. (Doc. 64 p. 30).

At this time, IDOT does not have contact information for the Certificate Holder or his/her designee. However, this information is usually obtained during the final inspection of a heliport that must occur before a Certificate of Approval is issued. 92 Ill. Admin. Code 14.115, 14.870. CMH has drafted local heliport rules called the “Heliport Operating Procedures for Ann & Robert H. Lurie Children’s Hospital of Chicago/Streeterville Facility” (Operating Procedures). (Doc. 64 p. 126-127; Doc. 71 p. 32-45). In its Operating Procedures, CMH presented operational, maintenance, and repair practices for the property under its control in a manner that will ensure the heliport and approaches are free from hazards to the operation of aircraft. (Doc. 71 p. 32-44). Examples of CMH’s practices that will keep the heliport and approaches free from hazards are as follows: accommodating only one aircraft at a time for landing or take-off, permitting people on the helipad only when the blades stop rotating and the pilot has given an “All Clear” signal, performing routine inspections of the heliport, managing snow and ice on the heliport, limiting personnel access to the heliport, and monitoring all heliport activity via closed-circuit TV and in-person viewing from the heliport shelter. (Doc. 71 p. 32-43). In addition to

these practices, the Operating Procedures state that CMH will only permit CMH-approved EMS providers to use the heliport if the wind velocity is under 25 knots with gust spreads under 15 knots and the pilots have completed CMH's online training program, on-site orientation, and have either reviewed the online training program or landed on the heliport within the preceding 180 days. (Doc. 71 p. 35).

IDOT has not requested information on aircraft using the heliport as an operating base, because the heliport will not be used as a base. (Doc. 71 p. 34). Information on the person exercising managerial or supervisory functions at the heliport has also not been requested yet. There is no information to obtain on accidents at CMH's proposed heliport, since it is a brand-new heliport that has yet to open. However, IDOT knows the nature and extent of aeronautical activity that will be occurring at the heliport, which will namely be the transport of CMH patients and donated organs. (Doc. 71 p. 32). Although IDOT does not have the contact information for the Certificate Holder yet, by meeting the other requirements, CMH has sufficiently illustrated that it will be able to uphold the responsibility of a hospital heliport Certificate Holder.

6. Restrictions on use.

Finally, hospital heliports have specific restrictions on use. 92 Ill. Admin. Code 14.880, app. H tbl. C. The IDOT Aviation Safety Rules place the following restrictions on the use of hospital heliports: a maximum of six helicopters can be based at the heliport, only EMS can transport passengers, and only non-corrosive de-icing agents are permitted. 92 Ill. Admin. Code 14.880, app. H tbl. C. Furthermore, commercial maintenance of helicopters and flight instruction on the heliport is prohibited. 92 Ill. Admin. Code 14.880, app. H tbl. C.

No helicopters will be based out of CMH's proposed heliport, so the maximum of six is not surpassed. (Doc. 71 p. 34). In addition, only EMS will be transporting passengers, as required. (Doc. 64 p. 113; Doc. 71 p. 34). Regarding de-icing agents, the CMH heliport will have a sensor-activated "snow melting system" that de-ices and removes snow from the helipad and the ramps that lead to the penthouse, leaving de-icing agents unnecessary. (Doc. 64 p. 63-64). Since no helicopters will be based out of the heliport and only EMS will be transporting passengers, namely patients, no commercial maintenance of helicopters or flight instruction will occur at CMH's heliport. (Doc. 71 p. 34). Consequently, CMH will be abiding by all of the restrictions on use for a hospital heliport.

C. Overall Safety Considerations

Safety is not a stand-alone factor to be considered when granting a Certificate of Approval; the overall purpose of the Illinois Aeronautics Act, however, is to further "public interest and aeronautical progress by providing for the protection and promotion of safety in aeronautics." 60 ILCS 5/25; *see* 620 ILCS 5/48 (listing the factors to be considered for a Certificate of Approval); 92 Ill. Admin. Code 14.810 (listing the factors to be considered for a Certificate of Approval for a heliport). Furthermore, the General Assembly authorized IDOT to promulgate the IDOT Aviation Safety Rules for the "purpose of protecting and insuring the general public interest and safety, the safety of persons receiving instruction concerning, or operating, using or traveling in, aircraft, and of persons and property on land or water." 60 ILCS 5/28. The law and IDOT recognize that in order to protect "the safety of persons operating, using, or traveling in, aircraft, and of persons and property on the ground," IDOT must "classify and approve airports and restricted landing areas and any alterations or extensions thereof." 620 ILCS 5/42. By use of the administrative factors and process required to grant a Certificate of

Approval, IDOT must make an informed and thoughtful determination grounded in protecting public safety. *See* 620 ILCS 5/42 (linking safety with IDOT's Certificate of Approval determination); 92 Ill. Admin. Code 14.810 (providing factors for a Certificate of Approval).

Since safety is the overarching goal of the Aeronautics Act, Aviation Safety Rules, and the requirement of IDOT approval of heliports, it should be extrapolated that if a heliport meets all of the factors that must be taken into consideration for a Certificate of Approval, then the heliport is deemed safe in the eyes of the law. *See* 60 ILCS 5/25, 28, 42 (providing safety as the purpose of the Illinois Aeronautics Act). It is noted that two of SOAR's experts, Dr. Patrick Veillette and Dr. Thomas Corke, define safety with two different standards. (Doc. 73 p. 44-45, 102). While Dr. Veillette believes safety should be analyzed from a risk assessment perspective "to determine whether or not risk levels associated with the proposed heliport could be controlled sufficiently to warrant further development of the rooftop heliport concept," Dr. Corke wants safety assessed from a "wind impact perspective" by answering five prescribed questions in a "quantitative, validated way." (Doc. 73 p. 44-45, 102).

Critics of CMH's heliport appear to raise three primary complaints regarding the safety of the heliport: 1) a desire for CMH to utilize the Chicago Police Marine Helistop⁶ at 250 N. Breakwater Access Dr. as a permanent alternative to a rooftop heliport at CMH; 2) the lack of designated emergency landing areas; and 3) the effect of the strong winds in Streeterville on helicopters approaching and attempting to land at or depart from the proposed heliport. (Doc. 64 p. 68-69, Doc. 65 p. 66-87, 118-151, 158; Doc. 66 p. 5-13; Doc. 67 p. 12-16, 32-38, 46-55, 61-66, 70-85, 90-99, 135-140, 144-149; Doc. 68 p. 5-7, 14-17, 17-18; Doc. 69 p. 23-24, 39-43, 50-57, 69-77; Doc. 70 p. 13-16; Doc. 73 p. 31-34, 48-49, 79-116, 367). CMH has made repeated

⁶ "Chicago Police Marine Helistop" is the official name for the heliport people are referring to when they mention the "heliport near Navy Pier," "Marine Unit," or the "heliport at Dime Pier." They are all the same heliport.

commitments to operate the heliport “in the safest condition possible,” as it does in Lincoln Park. (Doc. 64 p. 26, 151). However, in order to assure that each of the safety concerns raised is given thoughtful consideration, each one is addressed.

1. Utilizing an alternate location.

Under the IDOT Aviation Safety Rules, IDOT can “suggest an alternative” site, if the proposed site is deemed unacceptable during the initial inspection. 92 Ill. Admin. Code 14.115. During the FAA and IDOT inspections, the FAA found “[h]elicopter operations can be conducted safely at this heliport” so long as certain conditions were met, and IDOT found it “feasible to locate a heliport on the roof of the proposed Children’s Hospital.” (Doc. 9 p. 2; Doc. 102 p. 24). As a result, no alternate site was recommended. (Doc. 102 p. 24). IDOT does not have the authority to mandate use of an alternate site now or, arguably, at any point in the application process. *See* 92 Ill. Admin. Code 14.115 (permitting IDOT to *suggest* an alternate site). Furthermore, IDOT does not have the authority to require an applicant to use property that is potentially owned by another party, such as the City of Chicago in the case of the Chicago Police Helistop.

Additionally, CMH made a strong showing that the extra transport time and additional transfer disruption which would be caused by the use of the Chicago Police Helistop would lead to “great risk to already fragile children.” (Doc. 64 p. 49). CMH conducted test runs with ambulances at various times between 9:00 AM and 9:00 PM and found the travel time from the Chicago Police Helistop to CMH is six to eleven minutes. (Doc. 6 p. 145). CMH illustrated that the extra time transport caused by using the Chicago Police Helistop would have led to a severe risk impact for 64% of the 78 children who utilized the CMH heliport in Lincoln Park from August 2006 to August 2007. (Doc. 6 p. 145). The remaining 36% of patients would have had a

significant risk impact, so all 78 children would have encountered “severe to significant risks” due to the extra time resulting from use of an off-site heliport. (Doc. 6 p. 140, 145; Doc. 64 p. 49). Regarding the additional transfers that would result from using the Chicago Police Helistop, 59% of the 78 children would have had a severe risk impact, and 33% would have encountered significant risk impact, meaning 72 of the 78 patients would have faced severe to significant risk. (Doc. 6 p. 140, 145; Doc. 64 p. 49).

Based upon the record, I find that the location of the CMH heliport is appropriate and the “alternative site” complaint to be unpersuasive, as the site is unavailable and even if made available, could put CMH patients at further risk.

2. Lack of designated emergency landing areas.

Another concern raised about the proposed CMH rooftop heliport is the lack of designated emergency landing areas. (Doc. 64 p. 68-69; Doc. 65 p. 67-74; Doc. 68 p. 17-18; Doc. 69 p. 50-57). However, designation of emergency landing areas is not a requirement for issuance of a Certificate of Approval. 620 ILCS 5/48; 92 Ill. Admin. Code 14.810. Furthermore, the FAA does not require an emergency landing area. Heliport Design, FAA AC 150/5390-2B (September 30, 2004); (Doc. 104 p. 95-96). Since FAA regulations, the Illinois Aeronautics Act, and the Aviation Safety Rules do not require designation of emergency landing areas, IDOT cannot suddenly require one, as such would constitute an *ex post facto* requirement.

During the hearing, the experts were asked about the presence of emergency landing areas along the flight paths. (Doc. 80 p. 131). IDOT’s experts, Jerry Lay and Ray Syms, responded by pointing out that the existence of potential emergency landing areas depended entirely upon when and where a helicopter experienced difficulties. (Doc. 80 p. 146-147, 152). Since it is not possible to predict where on a flight path a helicopter may face trouble, it is

correspondingly not possible to determine where emergency landing areas may be needed. SOAR's expert, Dr. Patrick Veillette, seemed to concur when he stated that wherever a helicopter experienced an emergency, a pilot would "look between your feet" to find an emergency landing area. (Doc. 80 p. 149). Moreover, emergency landing areas cannot be reasonably designated along every mile of CMH's flight paths. Lay, who landed on the CMH heliport, stated that during his flight, he did not see "any totally unsafe area that I could not be able to put this helicopter down with my abilities and my experience." (Doc. 80 p. 147).

CMH is only permitting pilots who are recently trained on the specifics of the CMH heliport or have recent experience in landing on the CMH rooftop to utilize the heliport. (Doc. 71 p. 35). Additionally, CMH testified that it is requiring only twin-engine larger helicopters to be used at this heliport, and experts testified as to the additional control and emergency safeguards afforded by twin-engine helicopters, since "a twin engine helicopter precludes a lot of the difficulties . . . [and] has more capability of carrying the helicopter." (Doc. 80 p. 139-141, 150-152). Finally, as stated by IDOT expert, Jerry Lay, there are places in the vicinity of the heliport that are safe for landing, such as a park that is in close proximity. (Doc. 80 p. 147).

Based upon the record, I find the "lack of a designated emergency landing area" concern or argument to be unpersuasive.

3. Wind effect on helicopters in Streeterville.

Finally, the most prevalent concern expressed was the effect of the strong winds in the Streeterville area on helicopters. (Doc. 64 p. 68-69, Doc. 65 p. 66, 74-87, 118-151, 158; Doc. 66 p. 5-13; Doc. 67 p. 12-16, 32-38, 46-55, 61-66, 70-85, 90-99, 135-140, 144-149; Doc. 68 p. 5-7, 14-17; Doc. 69 p. 23-24, 39-43, 50-57, 69-77; Doc. 70 p. 13-16; Doc. 73 p. 31-34, 48-49, 79-116, 367). Following its initial inspection, IDOT raised the issue of the local wind currents and

the height of the proposed heliport, recommending that the design of the heliport take these factors into consideration. (Doc. 102 p. 24). CMH responded by constructing a larger landing surface of 66 feet by 66 feet and providing an on-site AWOS and wind socks. (Doc. 64 p. 121-124).

In its application, CMH submitted a wind tunnel test that was performed by RWDI to “determine the likely number of days that wind conditions above the heliport would be within published wind operational limits for helicopter flight.” (Doc. 7 p. 61). Using the February 2008 plans for CMH, which depicted the helipad to be at 401 feet, and U.S. Department of Interior (DOI) and U.K. Civil Aviation Authority’s (CAA) general wind criteria for helicopter operational limits, RWDI concluded that the heliport would experience favorable wind conditions 92%-87% of the time or approximately 27 days per month. (Doc. 7 p. 57, 61-62, 65, 78). However, CMH pledged to restrict use of the heliport to days when the wind is less than 25 knots with a 15 knot gust spread. (Doc. 87 p. 35). Additionally, CMH has a stated policy that the heliport will only be used in extreme patient emergency and that currently, the existing CMH heliport is used on average for the benefit of 78 children per year. (Doc. 64 p. 49, 52-53).

SOAR criticized RWDI’s findings on the basis that they did not take into account loss of control of the helicopter due to wind or the wind conditions along the flight paths, RWDI’s reliance on an outdated building plan, and overstatement of the potential utilization due to an insufficient margin of safety. (Doc. 73 p. 48-49, 79, 112-113). Furthermore, SOAR expert, Dr. Corke, believed that the wind surrounding the heliport is so severe that the heliport will only be operational 40% of the time. Based off of the average of 78 children who use the heliport each year, CMH claimed that even if Dr. Corke is correct, CMH is “still saving 30 lives a year,” which “is plenty [of] reason to move forward.” (Doc. 70 p. 43-44). In response to SOAR’s

concerns and in order to make a thoughtful and informed decision, IDOT commissioned its own wind study. (Doc. 19 p. 1-15; Doc. 22 p. 1-15).

IDOT retained Dr. Joseph Horn and CDI to work together to “investigate the effect of wind and airwakes on helicopter response and control margins during approach and landing at the proposed rooftop helipad.” (Doc. 19 p. 1-3; Doc. 22 p. 1-3). The objective was to ascertain whether the airwakes “have the potential to cause severe vehicle upset, loss of control margin, loss of power margins, or excessive pilot workload.” (Doc. 94 p. 7). They utilized computational fluid dynamics (CFD) computations of the wind around the heliport and the expected approach paths combined with flight dynamics model computations of helicopter response and pilot control activity for a light single-engine helicopter, the Bell 206-L3. (Doc. 94 p. 88). Although the Bell 206-L3 would not be permitted to land on CMH’s proposed heliport under CMH’s rules (only permits dual-engine helicopters), it was chosen in an effort to be conservative. (Doc. 94 p. 39-40). The simulations were conducted at CMH’s operational wind limit for the heliport, 25 knots mean wind; the correct measurements for the building were utilized; and additional turbulence was added to create a more conservative approach. (Doc. 94 p. 89). The CFD computations were double-checked with the results from RWDI’s wind tunnel test. (Doc. 94 p. 88). In addition, the flight dynamics model was compared to the results of actual flight tests. (Doc. 94 p. 7).

The flight simulations showed that CMH’s heliport operational wind limits “are acceptable although approaching the limits for helicopter operations based on the representative aircraft examined in this study.” (Doc. 94 p. 7). The simulations did not predict “a severe upset of the aircraft or loss of control, although some of the simulated wind conditions could result in relatively intense pilot workload.” (Doc. 94 p. 7). Since there are uncertainties and

approximations involved in all studies, Dr. Horn and CDI recommended CMH lower the wind operating limits to 20 knots maximum mean wind speed initially, then perhaps expand the limits via flight testing as is the practice of the U.S. Navy. (Doc. 94 p. 90). They also recommended the AWOS be tested by “using actual data from the heliport, benchmarked against other wind measurements in the area” for accuracy. (Doc. 94 p. 90).

As illustrated, IDOT’s experts attempted to address all of the concerns raised by SOAR over RWDI’s wind study by analyzing whether the wind is likely to lead to a loss of control of a helicopter, studying the wind conditions along the flight paths, and utilizing the current building dimensions of CMH. SOAR raised concerns over IDOT’s study as well. (Doc. 80 p. 19-92; Doc. 86 p. 37-97, 122-162).

SOAR criticized the report issued by Dr. Horn and CDI, claiming that it was not properly verified or validated, was not conservative, and did not test real world variables. (Doc. 86 p. 37-52, 122-130). In response to the allegation that the study was not properly verified or validated, Horn and CDI claim that “[t]he verification and validation methods used in this study are consistent with verification and validation methods commonly used in the field of flight simulation.” (Doc. 90 p. 4). The fact that comparison of the flight tests and flight simulation results show a significant over-prediction of pilot workload proves that the analysis is conservative. (Doc. 90 p. 8). Moreover, Dr. Horn and CDI did not run the simulations under “ideal conditions,” so the analysis was conservative. (Doc. 90 p. 9). The simulations were run under the maximum operating wind speeds permitted for the heliport, and an “ideal” pilot was not utilized. (Doc. 90 p. 9). As for the lack of real world variable testing, Horn and CDI believe that the analyses mandated by Dr. Corke and Dr. Veillette are prohibitively expensive, if not technologically impossible in most cases. (Doc. 90 p. 10-11). If the variables required by Dr.

Veillette alone were taken into account, then it could possibly result in over 2.8 million different permutations for testing. (Doc. 90 p. 10). Overall, Dr. Horn and CDI found that Dr. Corke and Dr. Veillette's comments showed

unfamiliarity with several key standard practices in the rotorcraft simulation community; misunderstandings regarding which features of rotorcraft operations and flight dynamics are important to safe operation and which are, at most, tangential; advocacy of modeling approaches for complex urban wind fields that are beyond the state of the art of current computational methods; application of unrepresentative and inappropriate metrics for assessing errors in the analysis; misunderstanding of currently accepted flight test procedures for comparable operational situations; and advocacy of changes to the rotorcraft model that are of very doubtful relevance to the problem under study.

(Doc. 90 p. 1).

IDOT's independent expert, University of Illinois professor Dr. Selig, wrote in support of Dr. Horn and CDI's report, finding the following: "Standard and accepted engineering methods for modeling and simulation of helicopter flight dynamics in a turbulent environment were applied, and a robust, reliable and high-fidelity method for modeling the vortical urban airwake was employed for more realism." (Doc. 91 p. 1). Providing further confidence in Horn and CDI's findings, Selig also wrote that Horn and CDI are "quite experienced with modeling and simulation of helicopter flight dynamics in turbulent environments, and they are leaders in the field." (Doc. 91 p. 1). Horn, CDI, and Selig all agree that no study is perfect, including this one; however they believe that "more study and more refinement would not lead to substantially different conclusions. (Doc. 90 p. 3, 11; Doc. 91 p. 1). Selig stated, "I agree with the conclusions and recommendations given in the report." (Doc. 91 p. 1).

Based upon the record, I find that the CMH heliport wind limits are acceptable; that the study and analysis of Dr. Horn and CDI is credible; that the methods and the engineering standards used by Dr. Horn and CDI were appropriate and commonly used in the industry; and

that the criticisms of the Horn and CDI reports were not persuasive. I recommend that CMH lower the wind operating limits to 20 knots maximum mean wind speed initially and expand to 25 knots if appropriate after flight testing. I further recommend that the AWOS be tested by using actual data from the heliport benchmarked against other wind measurements in the area for accuracy.

IV. Order

On August 4, 2008, Children's Memorial Hospital filed an application for approval of a hospital heliport, owned and operated by CMH, to be known as the Ann and Robert H. Lurie Children's Hospital Heliport and to be located in Chicago in Cook County, Illinois at 225 E. Chicago Avenue. On September 17, 2008, IDOT issued a Notice of Intent to enter an Order approving the application for the heliport. On April 14, 2009, IDOT issued an Order to be served April 23, 2009 approving the application for the heliport. The Order, dated April 14, 2009, provided that it would take effect twenty (20) days after its service date, unless IDOT found a hearing necessary or that a longer period appropriate. Finding a hearing necessary, IDOT served a Notice of Hearing dated June 14, 2009 and a Notice of Continuation of Hearing dated May 31, 2011. On July 22, 23, 24, and 25, 2009 and June 23 and 24, 2011, IDOT conducted a hearing on the application. IDOT's findings are presented in this Supplemental Order.

IT IS, THEREFORE, ORDERED BY THE DIVISION OF AERONAUTICS AS

FOLLOWS:

1. The Order dated April 14, 2009 shall stand.

Susan R. Shea

Susan R. Shea, Ph.D.
Director of Aeronautics

DATED:

October 14, 2011

TO BE SERVED:

October 14, 2011

Certified Under

SEAL OF THE

ILLINOIS DEPARTMENT OF TRANSPORTATION

