Errata for FIRST PRINTING *Guidelines for Design and Construction of Health Care Facilities*, 2006 ed.

CHAPTER 1.1, INTRODUCTION

1.1-7.3.3 Technical Standards . . .

1.1-7.3.3.2 The Fire Safety Evaluation System (FSES) has become widely recognized as a method for establishing a safety level equivalent to that of the Life Safety Code. It may be useful for evaluating compliance with the Life Safety Code in renovations of existing facilities ~~that will be affected by renovation~~ and in new facility designs. For purposes of these Guidelines, use of the FSES is permitted, subject to AHJ approval, ~~not intended to be used~~ for new construction and renovation projects. (The FSES is intended as an evaluation tool for fire safety only.)

CHAPTER 2.1, GENERAL HOSPITALS

2.1-3.2.2 Airborne Infection Isolation Room(s)

2.1-A3.2.2.4 (4) In general, reliance on a substantial pressure differential ~~(~~of ≥ 0.01"wg~~/1~~ (2.5Pa) will maintain the appropriate directional airflow . . .

2.1-~~*~~3.2.5 Protected Units

~~A3.2.5 Protected Units~~

~~The purpose of this section is to lend guidance in the design of units that by their very nature require a protected environment for the treatment and care of their patients. The following units fall within this intended guidance, although this list is not inclusive: transplant units, burn units, nurseries, units for immunosuppressed populations, and neonatal intensive care units. Portions of emergency departments where the initial triage occurs may be incorporated as part of the triage service while an assessment of potential infection and contamination is made prior to processing the suspected patient. Consideration for appropriate pressurization and air exchange rates to control contamination should be addressed.~~

NOTE: The Steering Committee of the Health Guidelines Revision Committee, the multidisciplinary consensus body responsible for updating the Guidelines, has determined that, because the term “protected unit” is not defined in the document, the appendix language for this entry should be ignored. The original idea was to include a paragraph for protected units as a placeholder for certain units *not yet defined*, so it is inappropriate to apply the language to particular hospital units.

2.1-10.2 HVAC Systems

2.1-10.2.2 Requirements for Specific Locations . . .

2.1-10.2.2.4 Operating and delivery rooms

*(1) Air supply . . .

~~**2.1-A10.2.2.4 (3)(a)** Operating and delivery room ventilation~~

2.1-A10.2.2.4 (1) Operating and delivery room air supply

~~**a.** The operating and delivery room ventilation systems should operate at all times to maintain the air movement relationship to adjacent areas. The cleanliness of the spaces is compromised when the ventilation~~

~~system is shut down. For example, airflow from a less clean space such as the corridor can occur, and standing water can accumulate in the ventilation system (near humidifiers or cooling coils).~~

~~a~~**b.** The recommended air change rate in an operating room is 20 to 25 air changes per hour (ACH) for ceiling heights between 9 feet (2.74 meters) and 12 feet (3.66 meters).

~~b~~**c.** The system should provide a single directional flow regime, with both high and low exhaust locations.

~~c~~**d.** A face velocity of around 25 to 35 fpm (0.13 to 0.18 m/s) is sufficient from the non-aspirating diffuser array provided the array size itself is set correctly. The non-aspirating diffuser array size should be set appropriately such that it covers at least the area footprint of the table plus a reasonable margin around it. In the cited study, this margin is 21 inches (53.34 centimeters) on the short side and 12 inches (25.40 centimeters) on the long side.

d. If additional diffusers are required, they may be located outside this central diffuser array. Up to 30 percent of the central diffuser array may be allocated to non-diffuser items (medical gas columns, lights, etc.).

Note: The above conclusions were derived from studies conducted by the National Institutes of Health: Farhad Memarzadeh and Andrew P. Manning, "Comparison of Operating Room Ventilation Systems in the Protection of the Surgical Site" (ASHRAE Transactions 2002, Vol. 108, pt. 2) and Farhad Memarzadeh and Zheng Jiang, "Effect of Operation Room Geometry and Ventilation System Parameter Variations on the Protection of the Surgical Site" (IAQ 2004).

~~e. If additional diffusers are required, they may be located outside this central diffuser array. Up to 30 percent of the central diffuser array may be allocated to non-diffuser items (medical gas columns, lights, etc.).~~

2.1-A10.2.2.4 (3)(a) Operating and delivery room ventilation rates

The operating and delivery room ventilation systems should operate at all times to maintain the air movement relationship to adjacent areas. The cleanliness of the spaces is compromised when the ventilation system is shut down. For example, airflow from a less clean space such as the corridor can occur, and standing water can accumulate in the ventilation system (near humidifiers or cooling coils).

2.1-10.2.4 HVAC Air Distribution . . .

2.1-10.2.4.4 Air outlets and inlets

(1) Fresh air intakes . . .

(2) Relief air . . .

(3) Exhaust outlets from areas that may be contaminated shall be above roof level, arranged to minimize recirculation of exhaust air into the building, and directed away from personnel service areas.

(~~3~~4) Gravity exhaust . . .

(~~4~~5) Construction requirements. . .

2.1-10.3.4 Power Generating and Storing Equipment

2.1-10.3.4.1 Emergency electrical service . . .

(2) Where stored fuel is required, storage capacity shall permit continuous operation for at least ~~4~~ 24 hours.

Table 2.1-2 Ventilation Requirements for Areas Affecting Patient Care in Hospitals and Outpatient Facilities

[8] ~~The ranges listed are the minimum and maximum limits where control is specifically needed.~~ Where relative humidity ranges are indicated, ~~T~~the maximum and minimum limits are not intended to be independent of a space's associated temperature. The humidity is expected to be at the higher end of the range when the temperature is also at the higher end, and vice versa. See Figure 2.1-1 for a graphic representation of the indicated ~~changes~~ ranges on a psychrometric chart. Shaded area is acceptable range.

[9] Where temperature ranges are indicated, the systems shall be capable of maintaining the rooms at any point within the range during normal operation. A single figure indicates a heating or cooling capacity of at least the indicated temperature. This is usually applicable when patients may be undressed and require a warmer environment. Nothing in these guidelines shall be construed as precluding the use of temperatures lower than those noted when the patients' comfort and medical conditions make lower temperatures desirable. Unoccupied areas such as storage rooms shall have temperatures appropriate for the function intended. See Figure 2.1-1 for a graphic representation of the indicated ranges on a psychrometric chart. Shaded area is acceptable range.

NOTE: The psychrometric chart shown on page 132 is Figure 2.1-1.

Table 2.1-3 Filter Efficiencies for Central Ventilation and Air Conditioning Systems in General Hospitals

Notes . . .
2. MERV = minimum efficiency ~~rating~~ reporting value. . . .

CHAPTER 2.3, PSYCHIATRIC HOSPITALS

2.3-8.5.2 Fire Detection and Suppression System

2.3-8.5.2.1 Fire alarm and detection systems . . .

2.3-~~8.2.5.2~~ 8.5.2.2 Fire extinguisher cabinets and fire alarm pull stations shall be . . .

CHAPTER 2.4, REHABILITATION FACILITIES

2.4-9.2.4 HVAC Air Distribution . . .

2.4-9.2.4.4 Air outlets and inlets

(1) Fresh air intakes . . .

(2) Relief air . . .

(3) Exhaust outlets from areas that may be contaminated shall be above roof level, arranged to minimize recirculation of exhaust air into the building, and directed away from personnel service areas.

(~~3~~4) Gravity exhaust . . .

CHAPTER 3.1, OUTPATIENT FACILITIES

3.1-7.1 Plumbing

3.1-7.1.1 General

3.1-7.1.1.1 Applicability. . . . See Section ~~3.3-6.1~~ 3.3-5.1 for requirements for small primary (neighborhood) outpatient facilities.

3.1-7.2 Heating, Ventilating, and Air-Conditioning (HVAC) Systems

3.1-7.2.1 Applicability

These requirements . . . . See Section ~~3.3-6.2~~ 3.3-5.2 for requirements for small primary (neighborhood) outpatient facilities. . . .

3.1-7.2.3 Ventilation Requirements for Specific Locations

3.1-~~*~~7.2.3.1 Operating rooms

*(1) Air supply . . .

(3) Ventilation rates

*(a) Operating room ventilation systems shall operate at all times, except during maintenance and conditions requiring shutdown by the building's fire alarm system.

~~**3.1-A7.2.3.1 Ventilation for operating rooms**~~

~~**a.** The operating and delivery room ventilation systems should operate at all times to maintain the air movement relationship to adjacent areas. The cleanliness of the spaces is compromised when the ventilation system is shut down. For example, airflow from a less clean space such as the corridor can occur, and standing water can accumulate in the ventilation system (near humidifiers or cooling coils).~~

3.1-A7.2.3.1 (1) Air supply for operating rooms

a~~b~~. The recommended air change rate in an operating room is 20 to 25 air changes per hour (ACH) for ceiling heights between 9 feet (2.74 meters) and 12 feet (3.66 meters).

b. The system should provide a single directional flow regime, with both high and low exhaust locations.

c. A face velocity of around 25 to 35 fpm (0.13 to 0.18 m/s) is sufficient from the non-aspirating diffuser array provided the array size itself is set correctly. The non-aspirating diffuser array size should be set appropriately such that it covers at least the area footprint of the table plus a reasonable margin around it. In the cited study, this margin is 21 inches (53.34 centimeters) on the short side and 12 inches (25.40 centimeters) on the long side.

d. If additional diffusers are required, they may be located outside this central diffuser array. Up to 30 percent of the central diffuser array may be allocated to non-diffuser items (medical gas columns, lights, etc.).

Note: The above conclusions~~recommended ventilation rates in the previous paragraph~~ were derived from studies conducted by the National Institutes of Health: Farhad Memarzadeh and Andrew P. Manning, ~~titled~~ "Comparison of Operating Room Ventilation Systems in the Protection of the Surgical Site" (~~Memarzadeh~~ ASHRAE Transactions 2002, Vol. 108, pt. 2) and Farhad Memarzadeh and Zheng Jiang, "Effect of Operation Room Geometry and Ventilation System Parameter Variations on the Protection of the Surgical Site (~~Memarzadeh~~ IAQ 2004).

3.1-A7.2.3.1 (3)(a) Ventilation rates for operating rooms

The operating and delivery room ventilation systems should operate at all times to maintain the air movement relationship to adjacent areas. The cleanliness of the spaces is compromised when the ventilation system is shut down. For example, airflow from a less clean space such as the corridor can occur, and standing water can accumulate in the ventilation system (near humidifiers or cooling coils).

3.1-7.2.5 HVAC Air Distribution . . .

3.1-7.2.5.4 Air outlets and inlets

(1) Fresh air intakes

(a) Fresh air intakes shall be located at least 25 feet (7.62 meters) from exhaust outlets of ventilating systems, combustion ~~equipment stacks~~ vents (including those serving rooftop air-handling equipment), medical-surgical vacuum systems, plumbing vents, or areas that may collect vehicular exhaust or other noxious fumes. (Prevailing winds and/or proximity to other structures may require greater clearances.)

(b) ~~The requirement for a 25-foot (7.62-meter) separation also pertains to the distance between the intake and the exhaust and/or gas vent off packaged rooftop units.~~

~~(c)~~ Plumbing and vacuum vents that terminate at a level above the top of the air intake may be located as close as 10 feet (3.05 meters).

(c~~d~~) The bottom of outdoor air intakes serving central systems shall be as high as practical, but at least 6 feet (1.83 meters) above ground level or, if installed above the roof, 3 feet (~~0.~~91.44 centimeters) above roof level.

(2) Relief air. Relief air is exempt from the 25-foot (7.62-meter) separation requirement. Relief air is defined as air that otherwise could be returned (recirculated) to an air handling unit from the occupied space, but is being discharged to the outdoors to maintain building pressure, such as during outside air economizer operation.

(3) Exhaust outlets. . . .

(~~3~~4) Gravity exhuast. . . .

(~~4~~5) Construction requirements. . . .

CHAPTER 4.1, NURSING FACILITIES

4.1-10.2.4 HVAC Air Distribution . . .

4.1-10.2.4.3 Air outlets and inlets

(1) Fresh air intakes

(a) Fresh air intakes shall be located at least 25 feet (7.62 meters) from exhaust outlets of ventilating systems, combustion ~~equipment stacks~~ vents (including those serving rooftop air-handling equipment), medical vacuum systems, plumbing vents, or areas that may collect vehicular exhaust or other noxious fumes. (Prevailing winds and/or proximity to other structures may require greater clearances.)

(b) Plumbing and vacuum vents that terminate at a level above the top of the air intake may be located as close as 10 feet (3.05 meters).

(c) The bottom of outdoor air intakes serving central ventilating systems shall be as high as practical, but at least 6 feet (1.83 meters) above ground level or, if installed above the roof, 3 feet (91.44 centimeters) above roof level.

(2) Relief air. Relief air is exempt from the 25-foot (7.62-meter) separation requirement. Relief air is defined as air that otherwise could be returned (recirculated) to an air handling unit from the occupied space, but is being discharged to the outdoors to maintain building pressure, such as during outside air economizer operation.

(3) Exhaust outlets. . . .

INDEX and RELOCATION MATRIX

Some entries in the index and the relocation matrix are incorrect in the printed book. However, these are correct on the CD enclosed with the book.

CD

The software user license was inadvertently left off the CD that accompanies the Guidelines book. The license follows this page.

THE AMERICAN INSTITUTE OF ARCHITECTS and THE FACILITY GUIDELINES INSTITUTE SOFTWARE LICENSE AGREEMENT FOR THE "GUIDELINES FOR DESIGN AND CONSTRUCTION OF HEALTH CARE FACILITIES – 2006 EDITION"

IMPORTANT-READ CAREFULLY BEFORE USING THIS CD-ROM.

THE SOFTWARE PRODUCT ON THE ENCLOSED CD-ROM IS LICENSED ONLY TO THE USER. BY USING THIS SOFTWARE, YOU INDICATE YOUR ACCEPTANCE OF THE TERMS OF THIS END USER LICENSE AGREEMENT.

This is a legal agreement between you, the end user, and The American Institute of Architects ("the AIA") and The Facility Guidelines Institute ("FGI"). The enclosed CD-ROM, user instructions, and other accompanying documents ("the Software"), which are located in the back pocket of the "*Guidelines for Design and Construction of Health Care Facilities – 2006 Edition"* are licensed by the AIA and FGI for use only on the terms set forth herein.

BY USING THIS SOFTWARE, YOU ARE AGREEING TO BECOME BOUND BY THE TERMS OF THIS AGREEMENT, WHICH INCLUDES THE SOFTWARE LICENSE AND CERTAIN DISCLAIMERS OF WARRANTY ("the Agreement"). THIS AGREEMENT CONSTITUTES THE COMPLETE AGREEMENT BETWEEN YOU AND THE AIA and FGI.

Carefully read the following terms and conditions before using this Software. By using this Software you indicate your acceptance of the terms and conditions of this Agreement.

LICENSE

Pursuant to this Agreement, the AIA grants you a nontransferable, nonexclusive license to use the Software only on a single terminal connected to a single computer.

The Software is protected by copyright law, including without limitation by US Copyright Law, international treaty provisions, and applicable laws in the country in which it is being used and may not be copied without written permission from the AIA and FGI. Except you may either (a) make one copy of the Software solely for backup or archival purposes or (b) transfer the Software to a single hard disk provided that you keep the original solely for backup or archival purposes.

YOU MAY NOT CREATE ANY DERIVATIVE WORKS BASED ON THE SOFTWARE. A DERIVATIVE WORK IS DEFINED AS A TRANSLATION OR OTHER FORM IN WHICH THE SOFTWARE MAY BE RECAST, TRANSFORMED OR ADAPTED.

Except as expressly set forth above, you are prohibited from

(1) copying, in any format (including digital), altering, modifying, or adapting the Software or any of the material contained on the Software.

(2) using the material contained on the Software as a model for incorporation into other word processing software or other medium.

(3) translating, decompiling, disassembling, or reverse engineering the Software.

(4) mounting the Software on a local area network ("LAN").

(5) loaning, renting, leasing or selling the Software to others for commercial or any other purposes.

Unauthorized use of the Software and the material on the Software will result in automatic termination of this license.

INTELLECTUAL PROPERTY

All intellectual property, including copyrights, trade secrets, and any confidential information contained on the Software, is owned by FGI or the AIA. FGI or the AIA retains all intellectual property rights in any images or elements contained on the Software and also retains all rights not expressly granted.

The "American Institute of Architects ®", "AIA ®" and the "AIA eagle and column symbol" are registered trademarks and service marks of the AIA and may not be used without written permission from the AIA. Requests to use AIA trademarks and service marks must be submitted in writing to the General Counsel's Office at: The American Institute of Architects, 1735 New York Avenue, NW, Washington, DC 20006-5292.

TERM

This license is effective until terminated. This license will automatically terminate upon the conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of this Agreement. You agree upon such termination to return the full product, including the "*Guidelines for Design and Construction of Health Care Facilities – 2006 Edition"* to: The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006 for a full refund.

continued

LIMITED WARRANTY AND REMEDIES

The AIA and FGI warrant that the original Software is free from defects in material and workmanship, assuming normal use, for a period of 30 days from the date of purchase as evidenced by a copy of your proof of purchase. If a defect occurs during this 30-day period, you may return the faulty Software, along with a dated proof of purchase, and the AIA and FGI will replace the Software free of charge.

Your sole and exclusive remedy in the event of a defect is expressly limited to the replacement of the defective Software at no additional charge, within 30 days of purchase as outlined above.

THE FOREGOING WARRANTY DOES NOT EXTEND TO ANY SOFTWARE THAT HAS BEEN DAMAGED AS A RESULT OF ACCIDENT, MISUSE, ABUSE, OR AS A RESULT OF SERVICE OR MODIFICATION BY ANYONE OTHER THAN THE AIA.

In no event will the AIA , FGI or their suppliers be liable for direct, indirect, special, incidental, or consequential damages, expenses, lost profits, lost saving, or other damages arising out of the use of or inability to use the Software or user documentation, even if advised of the possibility of such damages. Some states do not allow the above limitation or exclusion of incidental or consequential damages, so the above limitations may not apply to you.

EXCEPT AS EXPRESSLY SET FORTH ABOVE, NO OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, ARE MADE WITH RESPECT TO THIS SOFTWARE.

U.S. GOVERNMENT RESTRICTED RIGHTS

The SOFTWARE and/or user documentation are provided with restricted and limited rights. Use, duplication, or disclosure by the Government is subject to restrictions as set forth in FAR 52.2227-14 (June 1987) Alternate III (g)(3) (June 1987), FAR 52.227-19 (June 1987), or DFARS 52.227-701 (c)(1)(ii) (June 1988), as applicable.

GENERAL

This Agreement shall be governed by and construed under New York law without regard to its choice of law rules, and, where applicable, the laws of the United States. Any disputes under this Agreement or relating to the Software shall be litigated in the local or Federal courts located, and the parties hereby consent to personal jurisdiction and venue, in New York.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN YOU AND THE AIA SUPERSEDING ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.