



MHCEA

MINNESOTA HEALTHCARE ENGINEERS ASSOCIATION



Dustin Rehkamp
Healthcare Architect
ACHA, AIA



Justin Thiner
Dunham
Electrical Engineer
PE, LEED AP BD+C



Brian Burke
Dunham
Mechanical Engineer
PE, LEED AP BD+C

Audience Questions for Polling?

What Industry do you work in?

- A. Healthcare Organization
- B. A/E Consultant
- C. Construction
- D. Other Vendor
- E. No Idea

Presentation Overview

- Code requirements for Healthcare design in MN
- IBC
- NFPA
- What is FGI
- What MN adopting FGI 2022 means
- Planning Basics
- Lessons Learned
- Recommendations and Resources
- Questions

Where to start

Accreditation

Certification

Code

Licensure

Reimbursement

LIST OF FACILITY TYPES FROM
CSM WEBSITE



This page provides basic information about Medicare and/or Medicaid provider compliance with Life Safety Code (LSC) requirements and includes links to applicable laws, regulations, and compliance information.

Hospitals - Section 1861(e)(9) of the Social Security Act	←	HOSPITALS
Nursing Homes - Section 1819(d) of the Social Security Act	←	NURSING HOMES
Section 1919 (d) of the Social Security Act	←	'NURSING FACILITIES'
ICF/IIDs - Section 1905 of the Social Security Act	←	'INTERMEDIATE CARE FACILITIES'
Hospitals - 42 CFR 482.41	←	HOSPITALS
Long Term Care - 42 CFR 483.90(a)&(b)	←	LONG TERM CARE FACILITIES
ICF/IIDs - 42 CFR 483.470	←	'INTERMEDIATE CARE FACILITIES'
Hospices Furnishing inpatient care - 42 CFR 418.100(d)	←	HOSPICES
Ambulatory Surgery Centers - 42 CFR 416.44	←	AMBULATORY SURGERY CENTERS
Religious Nonmedical Health Care Institutions - 42 CFR 403.742	←	RELIGIOUS HEALTH CARE
Religious Nonmedical Health Care Institutions - 42 CFR 403.744	←	RELIGIOUS HEALTH CARE
Religious Nonmedical Health Care Institutions - 42 CFR 403.745	←	RELIGIOUS HEALTH CARE
Programs of All-Inclusive Care for the Elderly - 42 CFR 460.72	←	ELDER CARE

Where to start



Accreditation – FGI 2018



Certification/Reimbursement – 42 CRF NFPA 99 and 101 (and many others)



Code – Minnesota Building Code and associated codes



Licensure – in MN FGI 2022

Who is enforcing what

Accreditation

DNV
TJC
AAAHF
AAAAF

Certification/Reimbursement – CMS

Code

DLI
Local Building Official
Local Fire Marshal
Etc...

Licensure – DOH (all things contiguous with Hospital except walk or skyway.) Was Minnesota Rules 4640 and 4645 – Replaced with 2022 FGI



Accreditation

Accreditation is one of the paths hospitals can take to be declared in compliance with the Medicare Conditions of Participation (CoPs)

Certification/Reimbursement

The Social Security Act (the Act) mandates the establishment of minimum health and safety and standards that must be met by providers and suppliers participating in the Medicare and Medicaid programs. These standards are found in the 42 Code of Federal Regulations. The Secretary of the Department of Health and Human Services has designated CMS to administer the standards compliance aspects of these programs.

Requirements for facilities receiving Medicare, Medicaid and other government payments.

Licensure

State Survey Agencies, under agreements between the State and the Secretary, carry out the Medicare certification process. The State Survey Agency is also authorized to set and enforce standards for CLIA and Medicaid.



What is a Hospital?

- Minnesota Building Code – I-2 - More than 5 incapable of self-preservation on a 24-hour basis
- NFPA 101 - LSC defines Healthcare as 1 or more inpatients.

Where to start

Minnesota Department of Health

- Minnesota Rules 4640 and 4645 – Replaced with 2022 FGI Guidelines per SF2122 and HF 1670

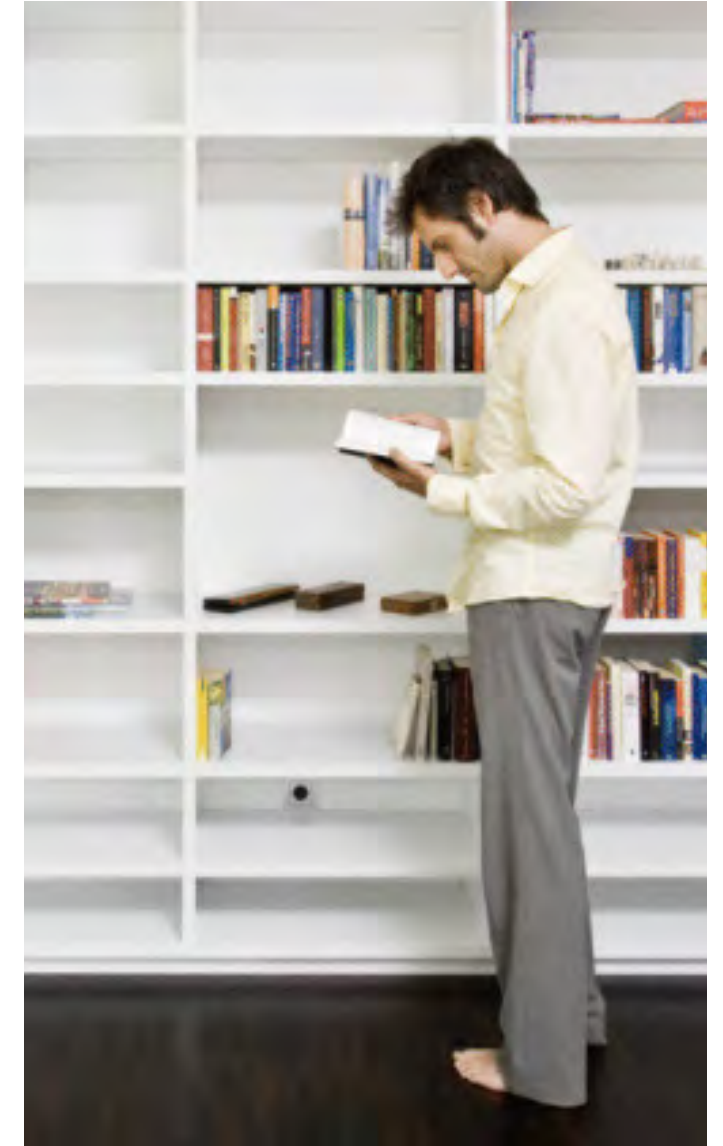
2020 Minnesota Building Code

- Based on 2018 IBC

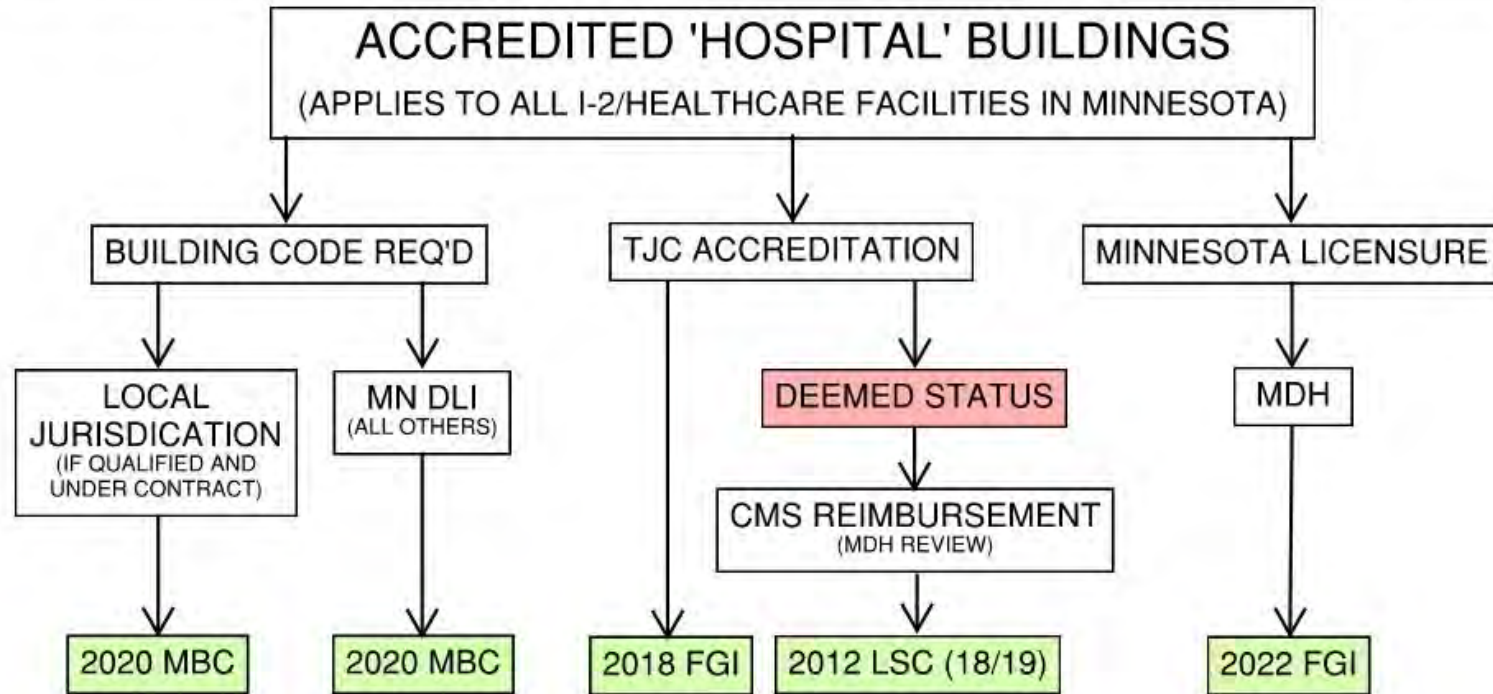
NFPA 101-2012

2020 Minnesota Energy Code

2020 Minnesota Accessibility Code



PATH TO APPLICABLE CODES FOR 'HOSPITAL' BUILDINGS IN MINNESOTA



Healthcare Code Basics

- IBC - Chapter 4
- NFPA 101 -2012
 - Chapters 18 and 19
- Occupancy
- Construction Type
- Building Size
- Defend-in-place
- Care Suites



Types of Occupancy

IBC

- Assembly (see Section 303): Groups A-1, A-2, A-3, A-4 and A-5.
- **Business** (see Section 304):
 - Group B.
 - Ambulatory Care Facility
- Educational (see Section 305): Group E.
- Factory and Industrial (see Section 306): Groups F-1 and F-2.
- High Hazard (see Section 307): Groups H-1, H-2, H-3, H-4 and H-5.
- **Institutional** (see Section 308): Groups I-1, I-2, I-3 and I-4.
- Mercantile (see Section 309): Group M.
- Residential (see Section 310): Groups R-1, R-2, R-3 and R-4.
- Storage (see Section 311): Groups S-1 and S-2.
- Utility and Miscellaneous (see Section 312): Group U.

LSC

Business Chapters 38/39
AHCO Chapters 20/21

Health Care Chapters 18/19

Storage Chapter 42

Construction Type

Commentary Table 8.1 Cross-Reference of Building Construction Types										
NFPA 220 / NFPA5000	I(442)	I(332)	II(222)	II(111)	II(000)	III(211)	III(200)	IV(2HH)	V(111)	V(000)
IBC	-	IA	IB	IIA	IIB	IIIA	IIIB	IVHT	VA	VB

IBC 2015

- Type I (A,B)
- Type II (A,B)
- Type III (A,B)
- Building Height
- Building Area

LSC 2012

- I (332), II (222)
- II (111), II (000)
- III (211), III (200)
- Building Height
- Limited only by travel distances



Construction Type

TABLE 506.2^{a, b}—continued
ALLOWABLE AREA FACTOR (A_i = NS, S1, S13R, or SM, as applicable) IN SQUARE FEET

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
I-1	NS ^{d, c}	UL	55,000	19,000	10,000	16,500	10,000	18,000	10,500	4,500
	S1	UL	220,000	76,000	40,000	66,000	40,000	72,000	42,000	18,000
	SM	UL	165,000	57,000	30,000	49,500	30,000	54,000	31,500	13,500
I-2	NS ^{d, i}	UL	UL	15,000	11,000	12,000	NP	12,000	9,500	NP
	S1	UL	UL	60,000	44,000	48,000	NP	48,000	38,000	NP
	SM	UL	UL	45,000	33,000	36,000	NP	36,000	28,500	NP

TABLE 504.4^{a, b}
ALLOWABLE NUMBER OF STORIES ABOVE GRADE PLANE

OCCUPANCY CLASSIFICATION	SEE FOOTNOTES	TYPE OF CONSTRUCTION								
		TYPE I		TYPE II		TYPE III		TYPE IV	TYPE V	
		A	B	A	B	A	B	HT	A	B
I-1 Condition 2	NS ^{d, c}	UL	9	4	3	4	3	4	3	2
	S	UL	10	5						

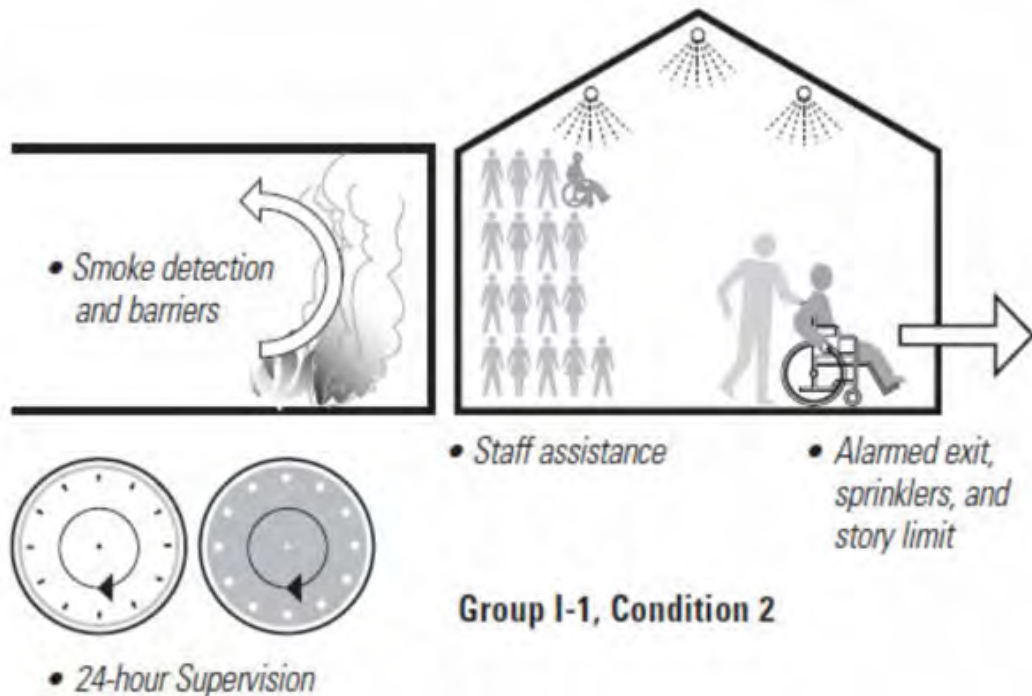
Table 18.1.6.1 Construction Type Limitations

Construction Type	Sprinklered [†]	Total Number of Stories of Building [‡]			
		1	2	3	≥4
I (442)	Yes	X	X	X	X
	No	NP	NP	NP	NP
I (332)	Yes	X	X	X	X
	No	NP	NP	NP	NP
II (222)	Yes	X	X	X	X
	No	NP	NP	NP	NP
II (111)	Yes	X	X	X	NP
	No	NP	NP	NP	NP
II (000)	Yes	X	NP	NP	NP
	No	NP	NP	NP	NP
III (211)	Yes	X	NP	NP	NP
	No	NP	NP	NP	NP
III (200)	Yes	NP	NP	NP	NP
	No	NP	NP	NP	NP
IV (2HH)	Yes	X	NP	NP	NP
	No	NP	NP	NP	NP
V (111)	Yes	X	NP	NP	NP
	No	NP	NP	NP	NP
V (000)	Yes	NP	NP	NP	NP
	No	NP	NP	NP	NP

X: Permitted. NP: Not permitted.

DEFEND-IN-PLACE

- SOME PATIENTS MAY BE INCAPABLE OF SELF-PRESERVATION. THEREFORE THE STRATEGY TOWARD LIFE SAFETY IN HEALTHCARE DESIGN IS ABOUT MOVING PEOPLE TO A SAFE ENVIRONMENT WHICH MAY OR MAY NOT BE OUTSIDE OF THE BUILDING. THE NATURE OF THE OCCUPANTS WITHIN I-2 BUILDINGS DICTATES A STRATEGY TO MOVE PATIENTS TO DIFFERENT COMPARTMENTS WITHIN THE BUILDING IN THE EVENT OF AN EMERGENCY.



18.1.1.3 Total Concept.

18.1.1.3.1 All health care facilities shall be designed, constructed, maintained, and operated to minimize the possibility of a fire emergency requiring the evacuation of occupants.

18.1.1.3.2 Because the safety of health care occupants cannot be ensured adequately by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities; adequate, trained staff; and development of operating and maintenance procedures composed of the following:

- (1) Design, construction, and compartmentation
- (2) Provision for detection, alarm, and extinguishment
- (3) Fire prevention procedures and planning, training, and drilling programs for the isolation of fire, transfer of occupants to areas of refuge, or evacuation of the building

Walls in the IBC

Fire Walls – 706

- IBC uses these to allow changes in protection, floor area and number of stories

Fire Barriers – 707

- Used to separate shafts, stairways, exit passageways, horizontal exits, incidental uses, control areas, separated occupancies

Fire Partition – 708

- 1 Hour rated corridor I-1 and I-3 (with exceptions)
- Tenant separation walls

Smoke Barriers – 709

- Separates smoke compartments
- 1 Hour rated – 20 min or 45 min opening

Smoke Partitions – 710

- Extend to underside of floor above
- Required in corridor walls in I-2 occupancy
- 710.5.2.2 smoke and draft control doors only required on elevator lobby doors



407.5 Smoke barriers.

Smoke barriers shall be provided to subdivide every *story* used by persons receiving care, treatment or sleeping into not fewer than two smoke compartments. *Smoke barriers* shall be provided to subdivide every *story* with an *occupant load* of 50 or more persons, into not fewer than two *smoke compartments*. The *smoke barrier* shall be in accordance with Section 709.

Premium Code Insights :  Minnesota Sonar

407.5.1 Smoke compartment size.

Stories shall be divided into smoke compartments with an area of not more than 22,500 square feet (2092 m²) in Group I-2 occupancies.

>

Premium Code Insights :  Minnesota Sonar

407.5.2 Exit access travel distance.

The distance of travel from any point in a smoke compartment to a smoke barrier door shall be not greater than 200 feet (60 960 mm).

407.5.3 Refuge area.

Refuge areas shall be provided within each *smoke compartment*. The size of the refuge area shall accommodate the occupants and care recipients from the adjoining *smoke compartment*. When a *smoke compartment* is adjoined by two or more *smoke compartments*, the minimum area of the refuge area shall accommodate the largest *occupant load* of the adjoining compartments. The size of the refuge area shall provide:

1. Not less than 30 net square feet (2.8 m²) for each care recipient confined to bed or stretcher.
2. Not less than 6 square feet (0.56 m²) for each ambulatory care recipient not confined to bed or stretcher and for other occupants.

Areas or spaces permitted to be included in the calculation of refuge area are *corridors*, sleeping areas, treatment rooms, lounge or dining areas and other low-hazard areas.

407.5.4 Independent egress.

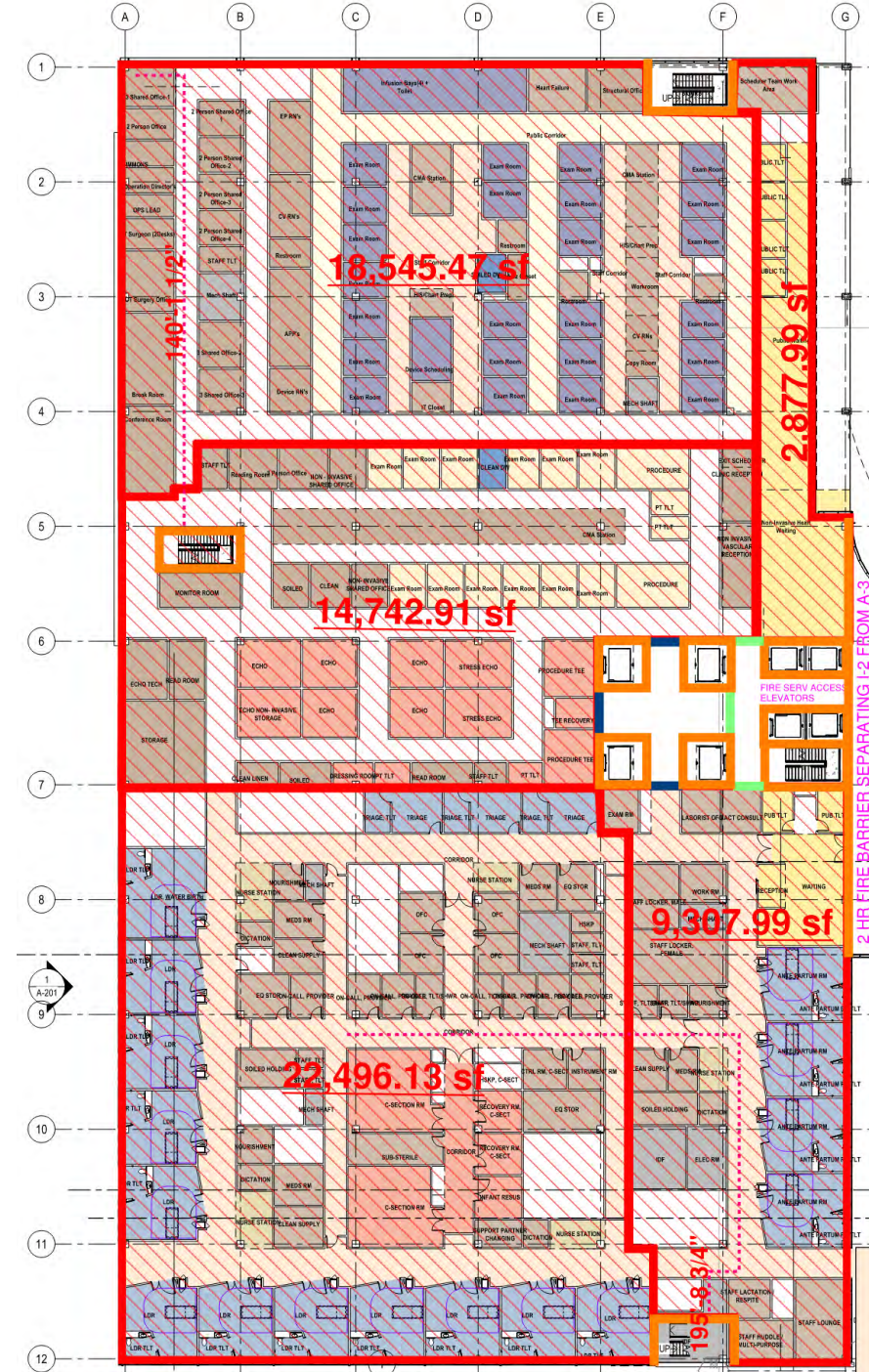
A *means of egress* shall be provided from each *smoke compartment* created by *smoke barriers* without having to return through the smoke compartment from which *means of egress* originated. *Smoke compartments* that do not contain an exit shall be provided with direct access to not less than two adjacent smoke compartments.

407.5.5 Horizontal assemblies.

Horizontal assemblies supporting *smoke barriers* required by this section shall be designed to resist the movement of smoke. Elevator lobbies shall be in accordance with Section 3006.2.

SMOKE COMPARTMENTS

• A BUILDING IS SEPARATED INTO TWO OR MORE SMOKE COMPARTMENTS FOR THE PURPOSE OF FACILITATING THE HORIZONTAL RELOCATION OF THE OCCUPANTS TO AN AREA SEPARATED FROM THE FIRE AREA BY SMOKE BARRIERS



TYPES OF SUITES (NFPA 101)

- NON-PATIENT CARE SUITES – A HEALTH CARE SUITE THAT IS NOT INTENDED FOR PATIENT SLEEPING OR CARE
- PATIENT CARE NON-SLEEPING SUITE – A HEALTH CARE SUITE PROVIDING CARE FOR ONE OR MORE PATIENTS NOT INTENDED FOR OVERNIGHT PATIENT SLEEPING
- PATIENT CARE SLEEPING SUITE – A HEALTH CARE SUITE CONTAINING ONE OR MORE BEDS INTENDED FOR OVERNIGHT PATIENT SLEEPING

BENEFITS OF CARE SUITES

- THERE ARE NO CORRIDORS WITHIN SUITES THEREFORE THE WALLS AND OPENINGS WITHIN THE SUITES ARE NOT SUBJECT TO REQUIREMENTS FOR SMOKE PARTITIONS.
- AISLES ARE NOT SUBJECT TO SAME REQUIREMENTS AS CORRIDORS – ITEMS CAN BE STORED IN AISLE, ENCROACHMENT IS MORE FLEXIBLE, ETC.
- NO LIMIT TO THE NUMBER OF INTERVENING ROOMS PERMITTED PROVIDED TRAVEL DISTANCES ARE MET AND MAX NUMBER OF DOORS ARE NOT EXCEEDED (3 DOORS)

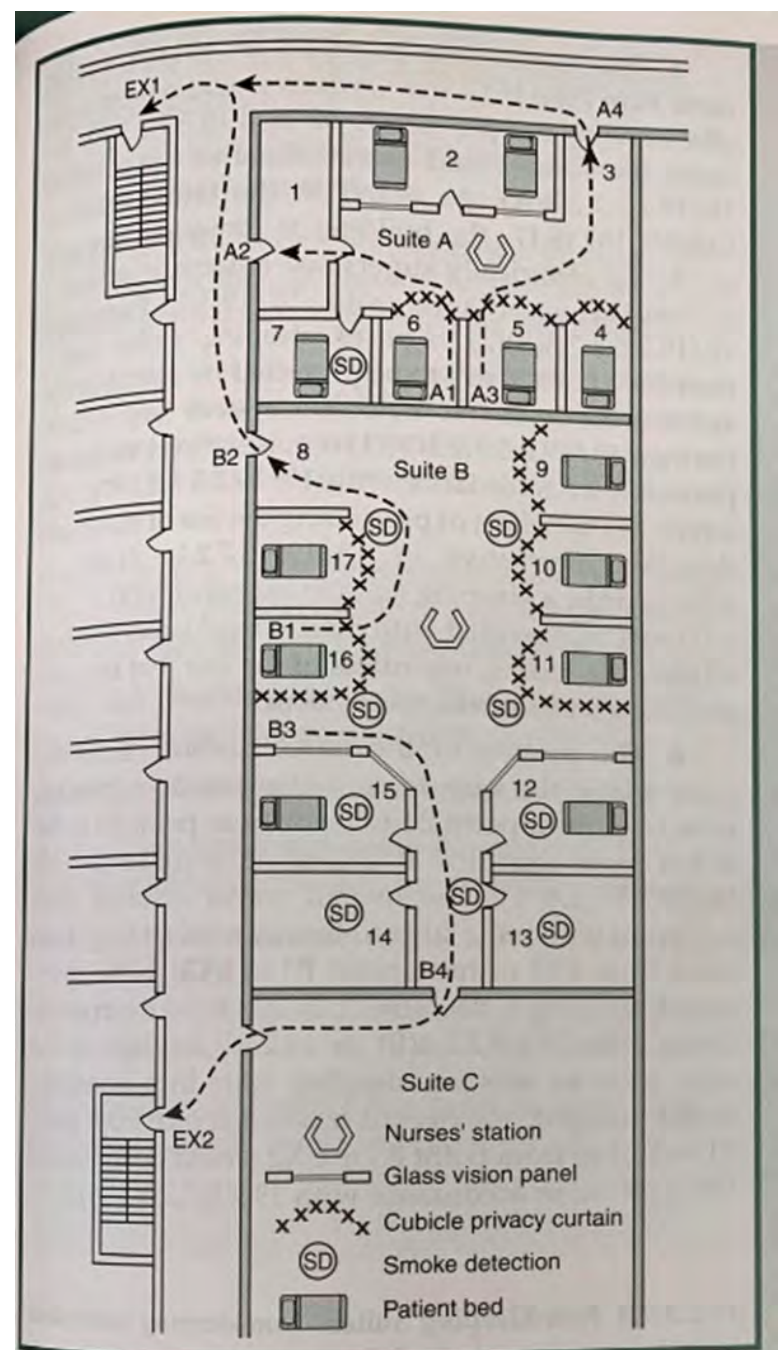
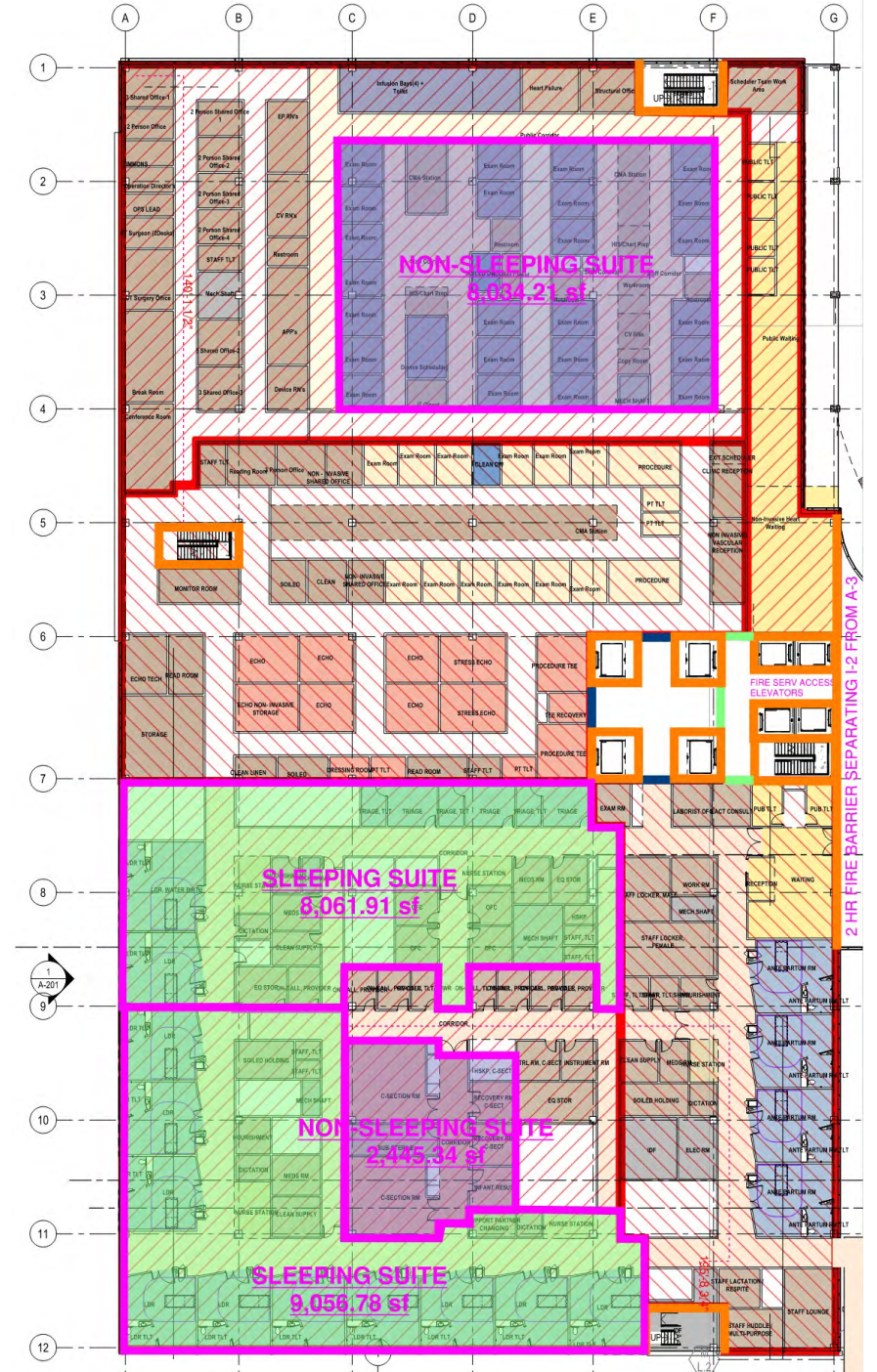


Exhibit 18/19.17 Sleeping suites for patient care.

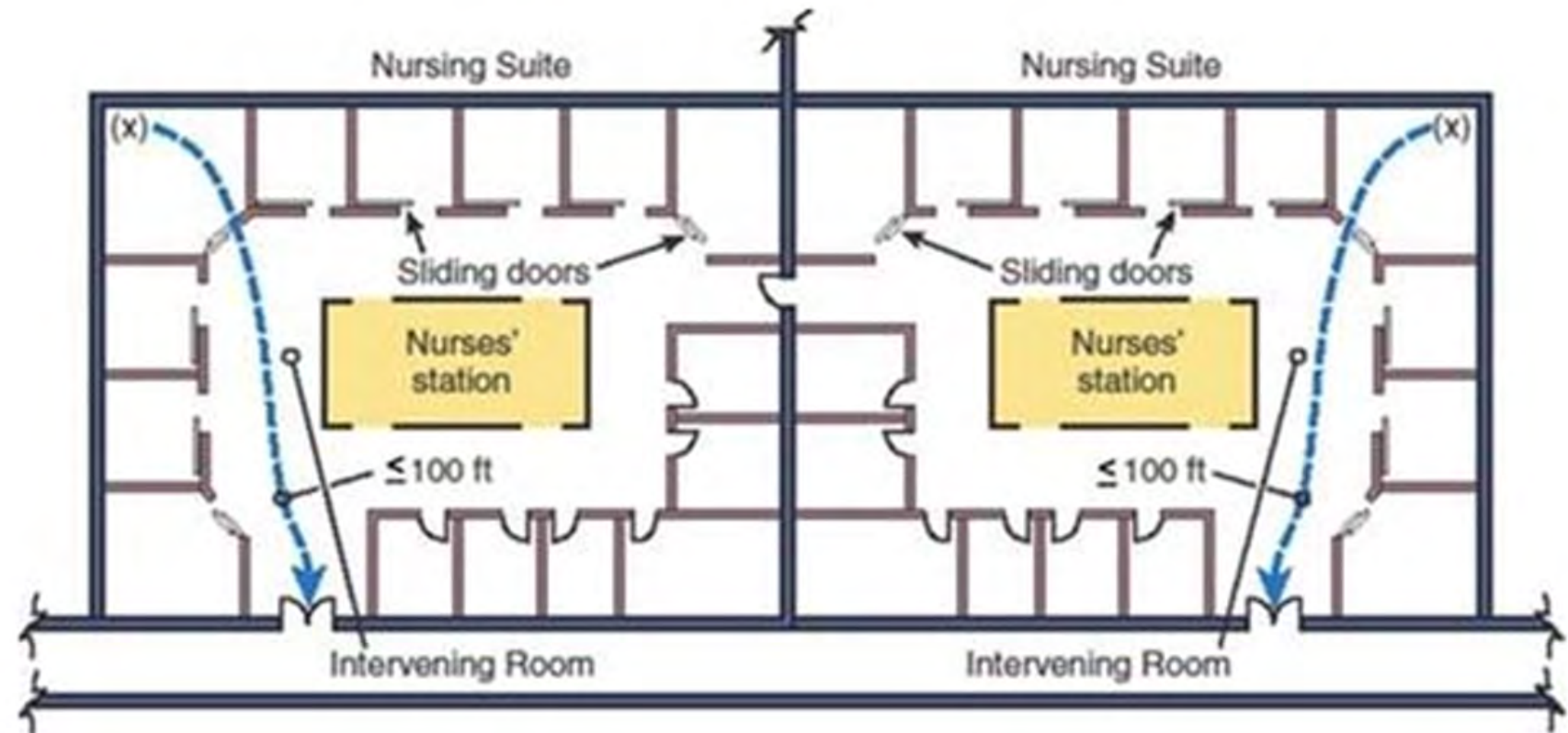
CARE SUITES

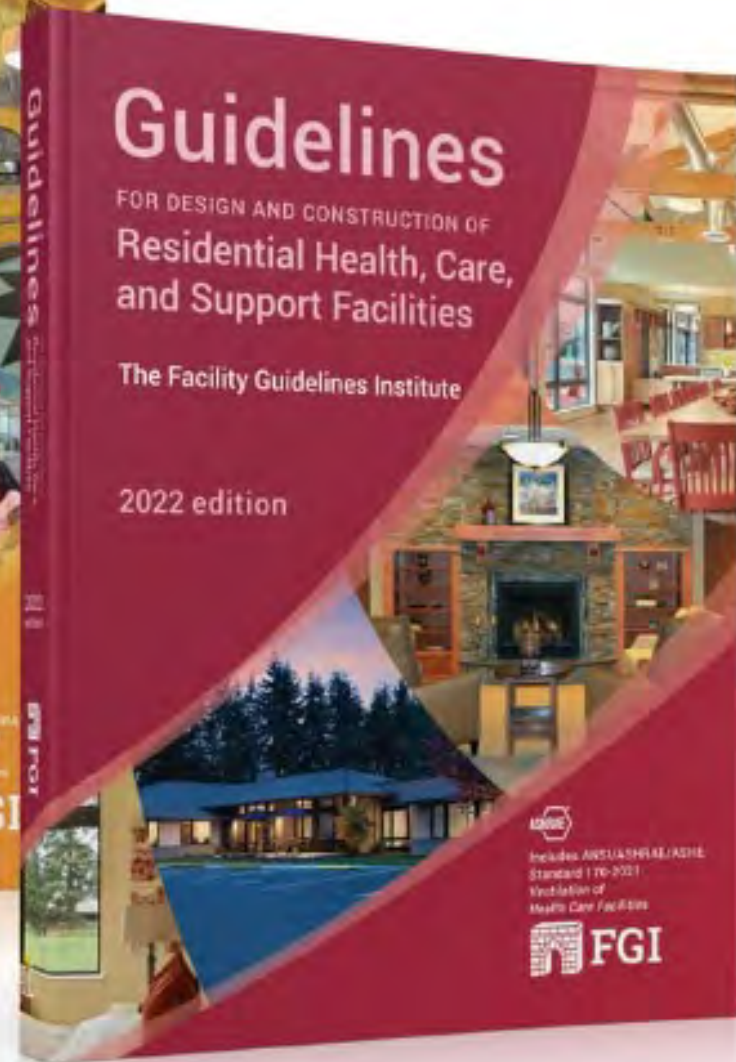
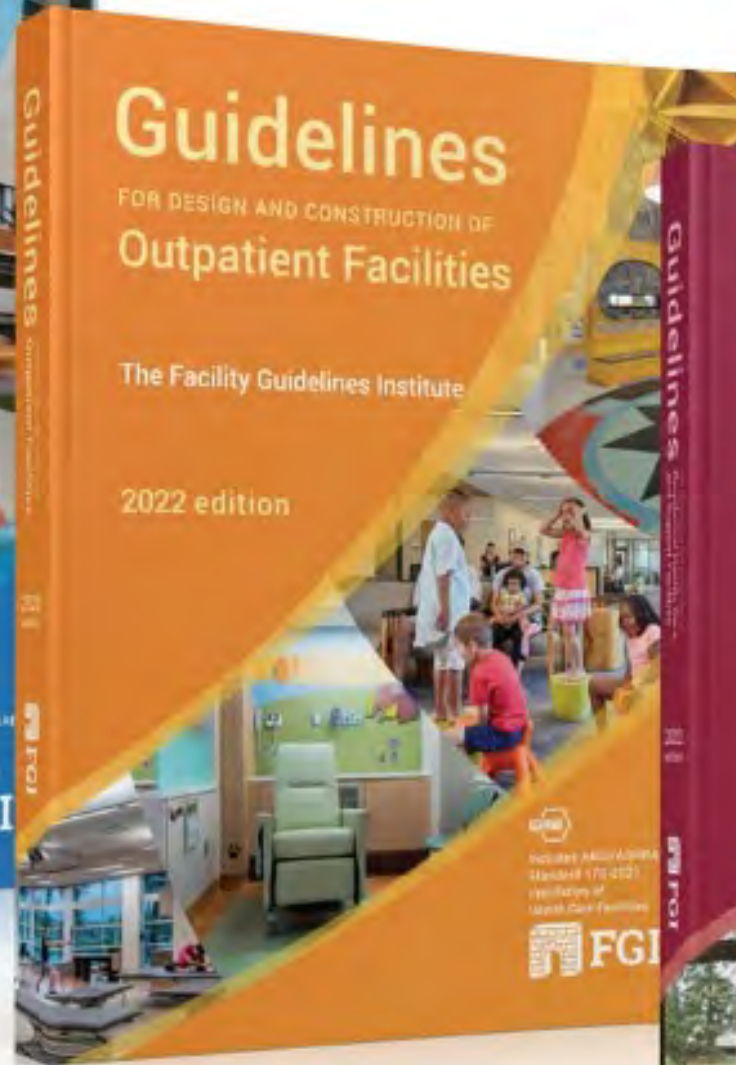
• A ROOM OR ROOMS SHARING A MEANS OF EGRESS SEPARATED FROM THE REMAINDER OF THE BUILDING BY WALLS, DOORS, FLOORS, OR CEILINGS



TRAVEL DISTANCES WITHIN SUITES (NFPA 101)

- EACH SUITE MUST HAVE ONE EXIT ACCESS TO A CORRIDOR OR TO A HORIZONTAL EXIT – SECOND EXIT ACCESS DOOR, IF REQUIRED (SLEEPING SUITE >1000SF) CAN EXIT INTO ANOTHER SUITE PROVIDED SEPARATION RATING IS EQ. TO CORRIDOR.
- TRAVEL DISTANCE TO EXIT SUITE MUST NOT EXCEED 100'-0" FROM ANY POINT WITHIN THE SUITE.
- TRAVEL DISTANCE TO AN EXIT (STAIR, HORIZONTAL EXIT, BUILDING EXTERIOR) FROM ANY POINT WITHIN SUITE MUST NOT EXCEED 200'-0"





History of the *Guidelines*



FACILITY GUIDELINES INSTITUTE

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Facility Guidelines Institute

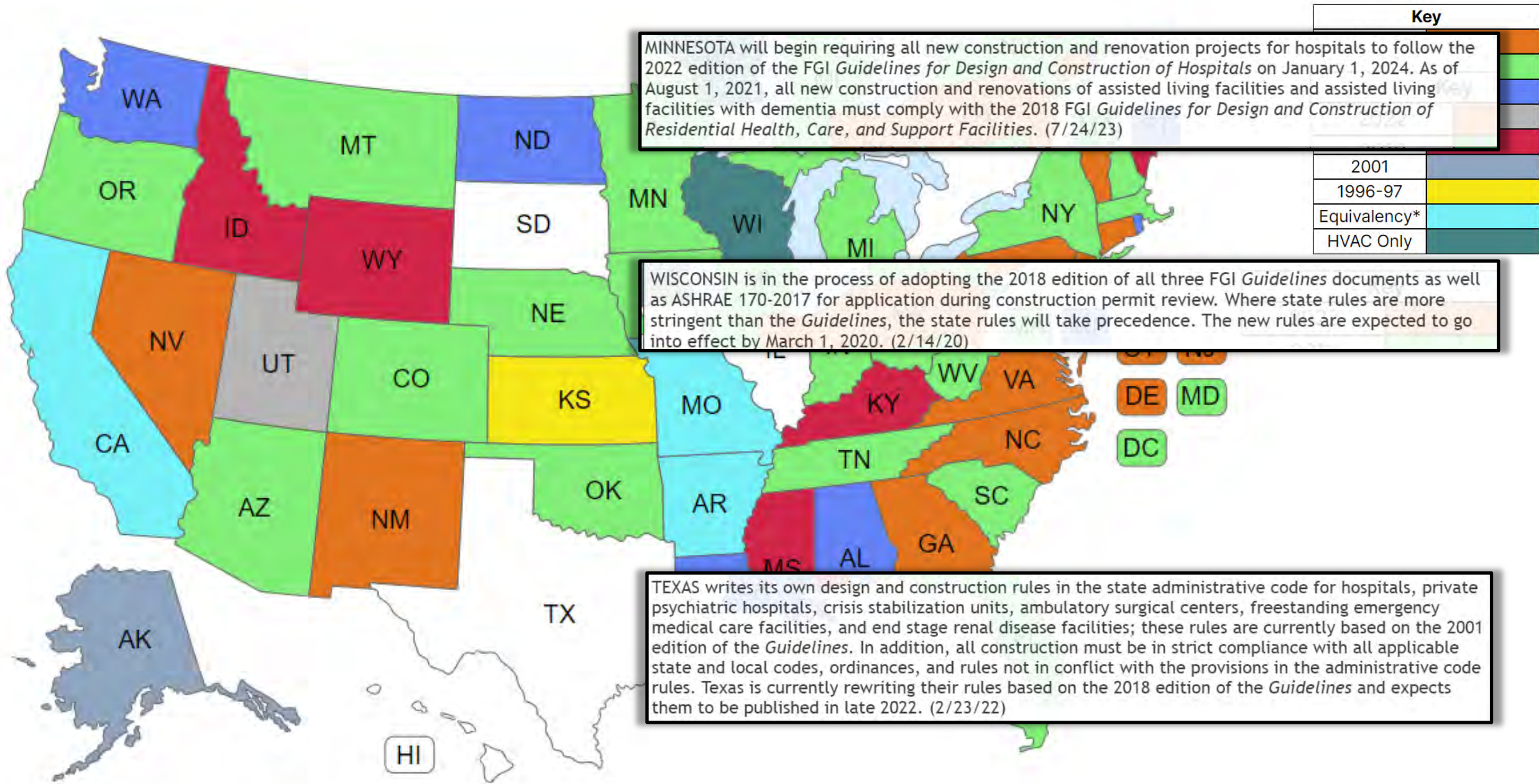
The keystone to health care planning, design, and construction



[Adoption Map](#) >

[Errata & Addenda](#) >

[Proposal Site](#) >



Resources

Resources listed on this page include a variety of articles, webinars, and links supporting the development of the 2014, 2018, and 2022 editions of the *Guidelines for Design and Construction* documents. Also provided here are links to FGI-supported research efforts, information about education provided by FGI, and links to other resources of interest to *Guidelines* users.



What's New

Check here for the newest white papers, webinars, update articles, and other resources.

Alignment of Standards for Facility Ventilation

Alignment of Standards for Facility Ventilation Bryan Langlands and Michael Sheerin ASHRAE and FGI have collaborated...



Design of Behavioral Health Crisis Units

This white paper supports the minimum requirements for behavioral health crisis units included in the...



Updates on the 2022 FGI Guidelines

Read articles and review PowerPoints about the content of the 2022 edition of the FGI...



Dashboard
Account Management
Purchased Guidelines
Bookmarks
2022
Hospital
Outpatient
Residential
2018
Hospital
Outpatient
Residential
Read-Only Guidelines
2022
2018
2014
Hospital and Outpatient
Residential

Title

HOSPITAL – DIGITAL BOOK

Copyright

Dedication

Preface

Acknowledgments

About the Guidelines

Major Additions and Revisions

Glossary

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Introduction

▶ Chapter 1.2

Planning, Design, Construction, and Commissioning

▶ Chapter 1.3

Site

▶ Chapter 1.4

Equipment

▶ Chapter 2.1

Common Elements for Hospitals

▶ Chapter 2.2

Specific Requirements for General Hospitals

▶ Chapter 2.3

Specific Requirements for Children's Hospitals

▶ Chapter 2.4

Specific Requirements for Critical Access and Other Small Hospitals

▶ Chapter 2.5

Specific Requirements for Behavioral and Mental Health Hospitals

▶ Chapter 2.6

Specific Requirements for Rehabilitation Hospitals

▶ Chapter 2.7

Specific Requirements for Mobile/Transportable Medical Units

Introduction to ASHRAE 170 - 2021

ASHRAE 170 - 2021

▶ Health Care Facility Nomenclature Conventions

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SPECIFIC / UNIQUE REQUIREMENTS

HOSPITAL – DIGITAL BOOK

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Section 1.1-6	Equivalency Concepts
Section 1.1-7	English/Metric Measurements
Section 1.1-8	Codes, Standards, Documents

▼ Chapter 2.1	Common Elements for Hospitals
Section 2.1-1	General
▶ Section 2.1-2	Patient Care Units and Other Patient Care Areas
▶ Section 2.1-3	Diagnostic and Treatment Areas
▶ Section 2.1-4	Patient Support Facilities
▶ Section 2.1-5	General Support Facilities
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▶ Section 2.1-7	Design and Construction Requirements
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Table 2.1-2	Locations for Nurse Call Devices in Hospitals
Table 2.1-3	Oxygen, Vacuum, Medical Air, WAGD, and Instrument Air Systems (Outlets/Inlets)
Table 2.1-4	Hot Water Use—General Hospital
Table A2.1-a	Maximum Length of Hot Water System Pipe or Tube

OUTPATIENT – DIGITAL BOOK

List of Acronyms

- ▶ Chapter 1.1 Introduction
- ▶ Chapter 1.2 Planning, Design, Construction, and Commissioning
- ▶ Chapter 1.3 Site
- ▶ Chapter 1.4 Equipment
- ▶ Chapter 2.1 Common Elements for Outpatient Facilities
- ▶ Chapter 2.2 Specific Requirements for General and Specialty Medical Services Facilities
- ▶ Chapter 2.3 Specific Requirements for Outpatient Imaging Facilities
- ▶ Chapter 2.4 Specific Requirements for Birth Centers
- ▶ Chapter 2.5 Specific Requirements for Urgent Care Centers
- ▶ Chapter 2.6 Specific Requirements for Infusion Centers
- ▶ Chapter 2.7 Specific Requirements for Outpatient Surgery Facilities
- ▶ Chapter 2.8 Specific Requirements for Freestanding Emergency Care Facilities
- ▶ Chapter 2.9 Specific Requirements for Endoscopy Facilities
- ▶ Chapter 2.10 Specific Requirements for Renal Dialysis Centers
- ▶ Chapter 2.11 Specific Requirements for Outpatient Behavioral and Mental Health Centers
- ▶ Chapter 2.12 Specific Requirements for Outpatient Rehabilitation Therapy Facilities
- ▶ Chapter 2.13 Specific Requirements for Mobile/Transportable Medical Units
- ▶ Chapter 2.14 Specific Requirements for Dental Facilities

Introduction to ASHRAE 170 - 2021

ASHRAE 170 - 2021

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SPECIFIC / UNIQUE
REQUIREMENTS

Appendix material, intended to be advisory only, is offset and begins with the letter "A" following the corresponding section in the main text.

2.2-3.1.3.1 General

(1) Application. Hospitals that offer more than basic emergency care services shall have facilities that meet the requirements in this section for

*(2) Security. The emergency department shall be designed to assure that access control can be maintained at all times.

A2.2-3.1.3.1 (2) Security

a. *All-hazards approach.* The design of the emergency department should promote an all-hazards approach to the safe emergency department. Specific security recommendations can be found in *Security Design Guidelines for Healthcare Facilities*.

b. *Perimeter security.* The exterior perimeter of the emergency department should have the capability to be secured to

2.2-3.1.3.1 General

(1) Application. Hospitals that offer more than basic emergency care services shall have facilities that meet the requirements in this section for the services they provide.

*(2) Security. The emergency department shall be designed to assure that access control can be maintained at all times.

*2.2-3.1.3.2 Entrance. Entrances shall meet the requirements in Section 2.1-6.2.1 (Vehicular Drop-Off and Pedestrian Entrance) as amended in this section.

(1) The site design shall provide a signed route from public thoroughfares that directs ambulance traffic to the ambulance entrance to the emergency department and vehicle traffic to the public entrance.

*(2) Paved emergency access to permit discharge of patients from automobiles and ambulances shall be provided.

(3) The emergency department entrance shall be clearly marked.

(4) Where a raised platform/dock is used for ambulance discharge, a ramp or elevator/lift to grade level shall be provided for pedestrian and wheelchair access.

(5) The emergency vehicle entry cover/canopy shall provide shelter for both the patient and the emergency medical crew during transfer between an emergency vehicle and the building.

(6) The emergency bays shall be sized so they are compatible with horizontal and vertical vehicle clearances of EMS providers.

*(7) Ambulance entrances shall provide a minimum of 6 feet (1.83 meters) in clear width to accommodate gurneys for individuals of size, mobile patient lift devices, and accompanying attendants.

(8) Transfer provisions shall be considered based on the patient handling and mobility assessment (Section 1.2-4.3).

(9) A video surveillance system shall be provided for each emergency department public entrance.

(10) Where emergency department public entrances may be locked, a duress alarm system that is conspicuously located, readily accessible, and immediately available shall be provided.

2.2-3.1.3.3 Reception and triage areas

(1) Location

(a) Reception and triage areas shall be located to provide a means for observation of the main entrance to the department and the public waiting area.

(b) Public access points to the treatment area shall be under direct observation of the reception and triage areas.

*(2) Triage area. The triage area shall include the following:

(a) Access to language translation services

(b) Provisions for patient privacy. See sections 2.1-2.1.2 (Patient Privacy) and 1.2-6.1.6 (Design Guidelines for Speech Privacy) for requirements.

(c) Handwashing station. Handwashing stations

APPENDIX

A2.2-3.1.3.1 (2) Security

a. *All-hazards approach.* The design of the emergency department should promote an all-hazards approach to the safety and security of those working in, visiting, or seeking emergency services. The layout and design should provide secured access or the ability to lock down the emergency department. Specific security recommendations can be found in *Security Design Guidelines for Healthcare Facilities*, Section 02.02: Emergency Departments, published by the International Association for Healthcare Security & Safety.

b. *Perimeter security.* The exterior perimeter of the emergency department should have the capability to be secured to control access and provide safety in the event of a disaster or situations requiring a higher level of security.

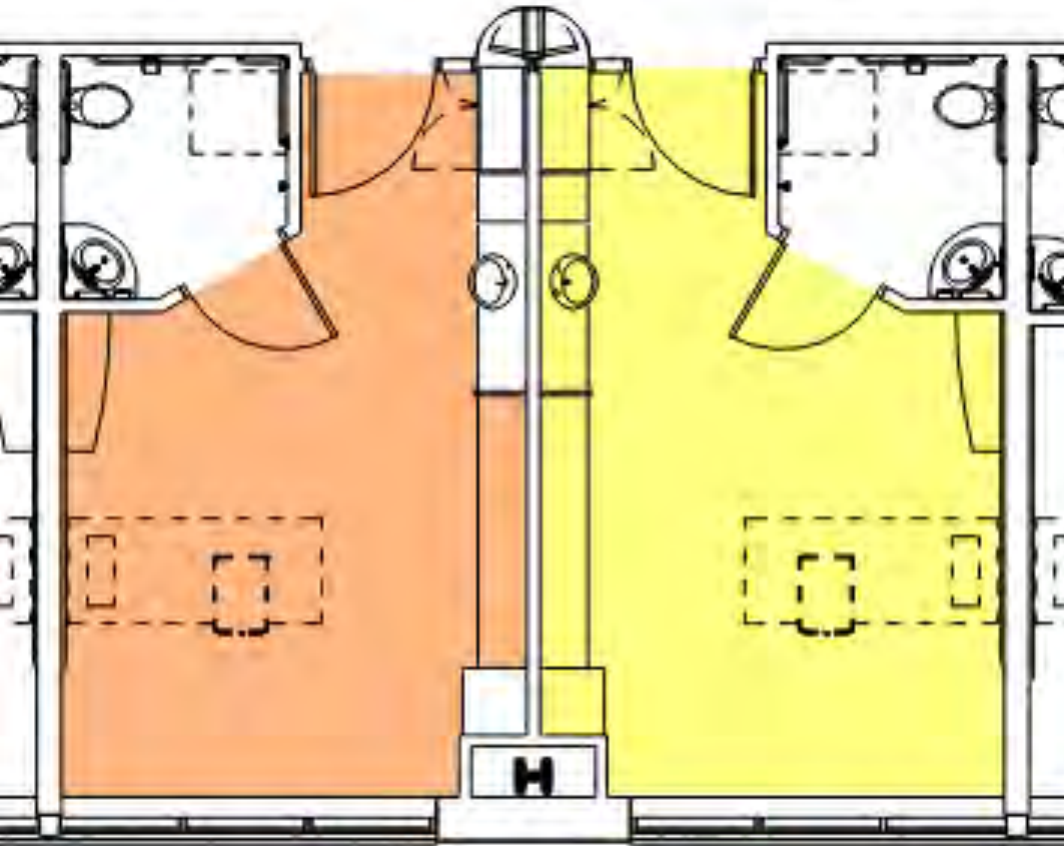
A2.2-3.1.3.2 Public vehicle access should be located a sufficient distance from the entrance to provide for safe movement of pedestrians and/or wheelchair traffic.

A2.2-3.1.3.2 (2) The paved emergency access should accommodate short-term parking close to the entrance of the emergency department.

A2.2-3.1.3.2 (7) Where the emergency department does not have separate public and ambulance entrances, clearances should be provided that are sufficient to accommodate pedestrian, wheelchair, and gurney movement at the emergency department entrance.

A2.2-3.1.3.3 (2) Consider providing a separate area for patients waiting for triage. This area should have appropriate ventilation and be clearly visible from the triage station.

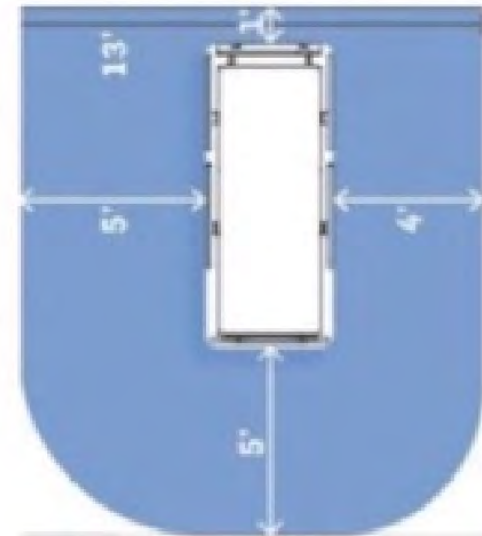
Clear Floor Area



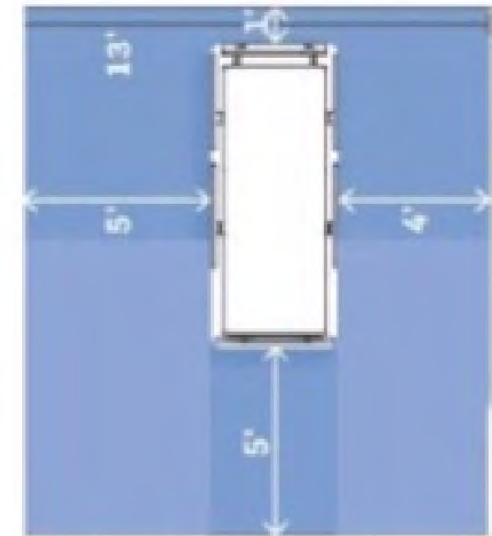
- The floor area of a defined space that is available for function use excluding toilet rooms, closets, lockers, wardrobes, alcoves, vestibules, anterooms and auxiliary work areas. Door swings and floor space below sinks, counters, cabinets, modular units or other wall hung equipment that is mounted to provide useable floor space count toward “clear floor area”. Space taken up by fixed encroachments that do not interfere with room functions can be included in calculating clear floor area.

The required minimum distance between the outermost dimensions of a specified options (patient bed, exam table) and any fixed or immovable element in the environment. Outside corners can be measured radially.

Clearances



Radius



Full area

Patient Care Station

- **Bay:** A space for human occupancy with one hard wall at the headwall and three soft walls.
- **Cubical:** A space intended for patient care that has at least one opening and no door and is enclosed on three sides with full-height or partial height partitions
- **Room:** A space intended for patient care that has four walls and a door



Handwashing Stations

- Needed in each ROOM where hands-on patient care is provided. At least one handwashing station shall be provided for every four PATIENT CARE STATIONS or fewer.
- Hand sanitation dispensers and handwashing stations shall be provided.
- The number and placement of both handwashing stations and hand sanitation dispensers shall be determined by the ICRA.
- Handwashing stations in patient care areas shall be located so they are visible and unobstructed.



Individuals of Size

To determine need, consider the following in the planning phase:

- Projected weight capacities for individuals of size in population being served
- Projected number of spaces required to accommodate individuals of size
- Projected number of expanded-capacity lifts required

Design response for accommodations for care of individuals of size

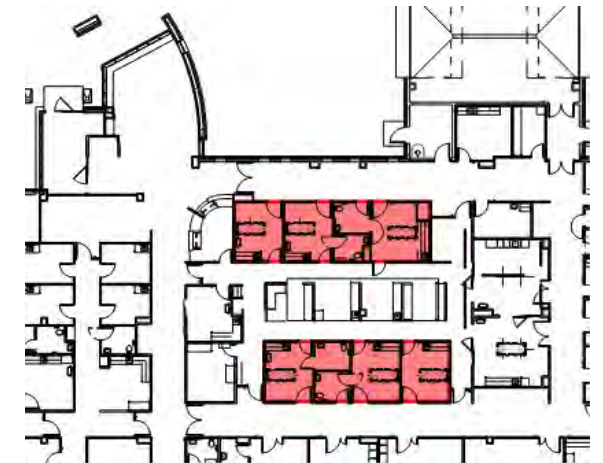
- Increased operation and storage space – larger equipment & more staff
- Ingress/egress to treatment and service areas

FGI 2.1-2.3 Accommodations for Care of Individuals of Size

- Patient Rooms, All, Toilet Rooms, Bathing Facilities, Exam & Treatment Rooms, Waiting Area

Room Names Matter

- Clean Workroom/Utility vs. Clean Supply
- Soiled Utility vs. Soiled Hold
- Storage Room – could require rating
- Corridor vs. Aisle
- Airborne Infectious Isolation (All) vs. Negative Pressure
- Treatment/Exam vs. Procedure



Procedure Vs. Treatment Rooms

I Occupancy

Procedure Rooms

Laminar Flow Diffusers

MERV 13 Filters

Positive Pressure

Ducted Return

15 ACH

30% to 60% RH

70°-75° F

Exam/Treatment Rooms

Standard Diffusers

MERV 7 Filters

No Pressure Required

Plenum Return is Okay

6 ACH

30% to 60% RH

70°-75° F

ASHRAE 170

- Which version do I use?
 - CMS adopted NFPA 99–2012 references ASHRAE 170-2008
 - Joint Commission FGI Guidelines 2018 references ASHRAE 170-2017
 - Minnesota Department of Health FGI Guidelines 2022 references ASHRAE 170-2021
- Joint Commission, Minnesota Department of Health, and CMS
 - ASHRAE 170-2008

ASHRAE 170 - Operating Rooms

Version of Guidelines for Design & Construction of Healthcare Facilities	Pressure Relationship	Min. OA ACH	Min. Total ACH	Recirculated by means of room units	RH%	Temp (°F)	Comments
1992-1993 AIA	Positive (no magnitude)	3	15	No	50-60	70-75	
2001 AIA	Positive (+0.01" wg)	3	15	No	30-60	68-73	
2006 AIA	Positive (+0.01" wg)	3	15	No	30-60	68-73	
2010 FGI / ASHRAE 170-2008	Positive (+0.01" wg)	4	20	No	30-60	68-75	CMS Enforced
2014 FGI / ASHRAE 170-2013	Positive (+0.01" wg)	4	20	No	20-60	68-75	
2018 FGI / ASHRAE 170-2017	Positive (+0.01" wg)	4	20	No	20-60	68-75	

ASHRAE 170 - Endoscopy

Guidelines for Design & Construction of Healthcare Facilities	Pressure Relationship	Min. OA ACH	Min. Total ACH	Recirculated by means of room units	RH%	Temp (°F)	Comments
1992-1993 AIA	-----			Not Addressed		-----	
2001 AIA	Negative	2	6	No	30-60	68-73	New to the Guidelines
2006 AIA	No Requirement	2	6	No	30-60	68-73	
2010 FGI / ASHRAE 170-2008	Positive	2	15	No	30-60	68-73	CMS Enforced
2014 FGI / ASHRAE 170-2013	No Requirement	2	6	No	20-60	68-73	
2018 FGI / ASHRAE 170-2017	No Requirement	2	6	No	20-60	68-73	
Bronchoscopy 2001 AIA to 2018 FGI	Negative (-0.01 in wg)	2	12	No	NR	68-73	All Air Exhausted

2022 Medical Gas

- Table 2.1-3
 - Additional room types have been added
 - Medical Gas types and quantities have been updated
 - Minimum quantities
 - Clinical needs must still be met

Table 2.1-3 (continued)

Oxygen, Vacuum, Medical Air, WAGD, and Instrument Air Systems (Outlets/Inlets)¹

Section	Location	Oxygen	Vacuum	Medical Air	WAGD ²	Instrument Air
DIAGNOSTIC AND TREATMENT LOCATIONS						
2.1-3.2	Exam room	1/room	1/room	—	—	—
2.1-3.4.4	Phase I post-anesthetic care unit (PACU) patient care station	2/station	3/station	1/station	—	—
2.1-3.4.5	Phase II recovery patient care station	1/station	1/station ⁷	—	—	—
2.2-3.1.2.6	Treatment room for basic emergency services	1/gurney	1/gurney	—	—	—
2.2-3.1.3.3 (2)	Triage room or area in the emergency department	1/station	1/station	— ⁸	—	—
2.2-3.1.3.6 (1)	Emergency department treatment room or area	1/gurney	1/gurney	1/gurney	—	—
2.2-3.1.3.6 (2)	Trauma/resuscitation room	2/gurney	3/gurney	1/gurney	—	—

Plumbing

- The High Points
 - Domestic Hot Water
 - Maximum non-recirculated fixture branch piping is 10 feet in length
 - Handwashing Sinks
 - The discharge point of handwashing faucets shall be 10 inches above the bottom of the basin
 - Handwash sinks shall be anchored to withstand 250 pounds of vertical or horizontal force
 - Scrub Sinks
 - Shall be foot, knee, or sensor controls
 - Bedpan Management
 - Bedpan Rinsing
 - Bedpan washer-disinfector
 - Disposable Bedpan Macerator

Electrical FGI

Table 2.1-1 Receptacle requirements for common Hospital spaces.

- Added space types for receptacle requirements.
 - **Low-acuity patient treatment station**
 - 4 receptacles convenient to patient chair
 - **Interior Human Decontamination Room**
 - 4 receptacles in the space.

Electrical Components

Table 2.1-1 Nurse Call Devices in Hospitals

Table 2.1-2

Locations for Nurse Call Devices in Hospitals*

Section	Location	Patient Station	Bath Station	Emergency Call Station	Nurse Master Station	Notes
PATIENT CARE UNITS						
2.1-2.2.6	Patient toilet room		•			2
2.2-2.2.2	Medical/surgical unit patient bed	•		•		1, 2, 3
2.2-2.6.2	Intensive care unit (ICU) patient care station	•		•		1, 2
2.2-2.9.2	Neonatal intensive care unit (NICU) infant care station	•		•		4
2.2-2.10.3	Labor/delivery/recovery (LDR) and Labor/delivery/recovery/postpartum (LDRP) room	•		•		1, 2, 3
2.2-2.11.3.1	Newborn nursery			•		
2.2-2.11.3.2	Continuing care nursery			•		
2.2-2.16.2	Hospice and/or palliative care room	•		•		1, 2, 3
2.5-2.4.2	Alzheimer's and other dementia unit patient bedroom	•				
SUPPORT AREAS						
2.1-2.8.2	Nurse/control station				•	
DIAGNOSTIC AND TREATMENT AREAS						
2.1-2.4.3	Seclusion room anteroom			•		
2.1-3.2	Exam room			•		
2.2-3.5.2.1 (2)	Class 1 imaging room			•		
2.1-3.4.3	Pre-procedure patient care room or area	•		•		1, 2
2.1-3.4.4	Phase I post-anesthetic care unit (PACU) patient care station			•		2

Section	Location	Patient Station	Bath Station	Emergency Call Station	Nurse Master Station	Notes
2.2-3.1.3.6 (1)	Emergency department treatment room	•				1, 2
2.2-3.1.3.6 (6)	Low-acuity patient care station	•				
2.2-3.1.3.6 (7)(a)	Interior human decontamination room	•		•		1
2.2-3.3.2	Observation unit patient care station			•		
2.2-3.4.2	Procedure room (including endoscopy)			•		2
2.2-3.5.2.1 (2)	Class 2 imaging room			•		2
2.2-3.4.3	Operating room			•		2
2.2-3.5.2.1 (3)	Class 3 imaging room			•		2
2.5-3.4.2.2 (2)	Electroconvulsive therapy (ECT) treatment room			•		2
2.5-3.4.2.3 (2)	ECT pre-treatment patient care area			•		2
2.5-3.4.2.3 (3)	ECT recovery patient care station			•		2

*These devices are listed in UL 1069: *Standard for Hospital Signaling and Nurse Call Equipment*.

Notes

- One device shall be permitted to accommodate patient station and emergency call station functions.
- A visible signal shall be activated in the corridor at the patient's door, at the nurse/control station, and at all duty stations. In multi-corridor patient care units, additional visible signals shall be installed at corridor intersections.
- Two-way voice communication shall be provided with the nurse/control station.
- The patient station requirement applies only to private NICU rooms.

Electrical Components

2.2-3.1.3.3 (2)(e) Duress Alarm in Triage and Reception

- Access to a duress alarm for security emergencies.



Electrical Lighting

2.1-8.3.4 Lighting

- Luminaires in patient areas to have smooth, cleanable, impact-resistant lenses concealing the light source.
- Patients shall be able to adjust illumination without having to get out of bed.
- Incandescent and halogen light sources that produce heat shall not be used.

Electrical Lighting

2.1-8.3.4 Lighting

Night Lighting

- At least one night-light fixture shall be located in each patient room
- Night-lights used by staff that illuminate the path from the entry to the bedside shall be switched at the room entrance.
- The night-light fixture shall be located no more than 18” from the finished floor , illuminating the pathway from the bed to the toilet room.
- Night-light color temperature shall be 2,700k or warmer.

Electrical Generators

Table 1.2-5 Noise Criteria

Table 1.2-5
Maximum Design Criteria for Noise in Interior Spaces Caused by Building Systems¹

Room Type	NC ^{2,3}	dBA
Patient Care Units		
Patient room	40	45
NICU sleep area	30	35
NICU staff and family areas	35	40
Quiet room ⁴	—	—
Diagnostic and Treatment Locations		
Multiple-occupant patient care area	45	50
Exam/treatment room	40	45
Procedure room	40	45
Class 2 imaging room	40	45
Operating room ⁵	50	55
Class 3 imaging room ⁶	50	55
Telemedicine room	25	30
Support Areas		
Medication safety zone	40	45
Testing/research lab, minimal speech	55	60
Research lab, extensive speech	50	55
Group teaching lab	45	50
Public Areas		
Corridor and public area	45	50
Conference room	35	40
Teleconferencing room	25	30
Auditorium		
Large lecture room	30	35

Maximum Design Criteria for Noise in Interior Spaces Caused by Building Systems¹

Room Type	NC ^{2,3}	dBA
Administrative Areas		
Private office	40	45

¹Additional spaces shall be added based on the functional program.

²See Sound & Vibration 2.0, available from publisher Springer, for a discussion of room noise rating criteria.

³Spaces shall be designed to fall below the maximum values shown in this table with no rattles or tonal characteristics.

⁴This is not a minimum requirement, though it is recommended that for a quiet room background noise from the HVAC system should be a minimum of NC 30 and a maximum of NC 40.

⁵See appendix section A1.2-6.1.4.1 (Room noise levels in operating rooms) for more information on operating rooms.

2.1-8.3.3.1 (3) Essential Electrical System Acoustic Considerations for Generators

Generators design shall assure the maximum noise levels found in Table 1.2-5 are not exceeded.

Minnesota Administrative Rule 7030



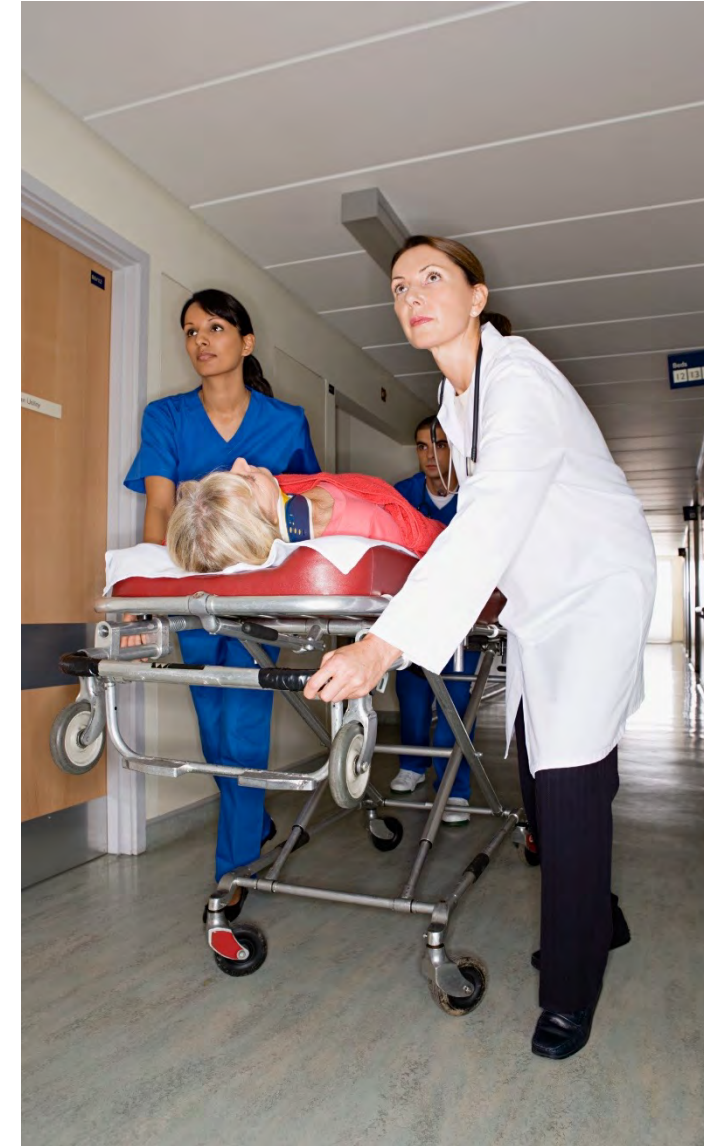
Questions?



Panic Devices

1010.1.10 Panic and Fire Exit Hardware

Doors serving a Group H occupancy and doors serving rooms or spaces with an occupant load of 50 or more in a Group A or E occupancy shall not be provided with a latch or lock other than panic hardware or fire exit hardware.



Horizontal Exits

IBC

- Outside wall to outside wall
- Refuge area for occupants
- 2 Hour rated fire barrier
- 90 minute doors
- “Window like openings” are 120 minute rated. \$\$\$\$\$
- Fire/Smoke Dampers

LSC

- Outside wall to outside wall
- Refuge area for occupants
- 2 Hour rated fire barrier
- 90 minute doors
- “Window like openings” are 120 minute rated. \$\$\$\$\$
- Fire Dampers
- Inside corners where HE meets exterior wall must be protected

Special Locking, IBC

1010.1.9.6 Controlled Egress Doors in Groups I-1 and I-2

Electric locking systems, including electromechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the means of egress in Group I-1 or I-2 occupancies where the clinical needs of persons receiving care require their containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or an approved automatic smoke or heat detection system installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following



Special Locking, cont. IBC

1010.1.9.6 Controlled egress doors in Groups I-1 and I-2. Electric locking systems, including electro-mechanical locking systems and electromagnetic locking systems, shall be permitted to be locked in the means of egress in Group I-1 or I-2 occupancies where the clinical needs of persons receiving care require their containment. Controlled egress doors shall be permitted in such occupancies where the building is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or an *approved automatic smoke or heat detection system* installed in accordance with Section 907, provided that the doors are installed and operate in accordance with all of the following:

1. The door locks shall unlock on actuation of the *automatic sprinkler system* or *automatic fire detection system*.
2. The door locks shall unlock on loss of power controlling the lock or lock mechanism.
3. The door locking system shall be installed to have the capability of being unlocked by a switch

located at the *fire command center*, a nursing station or other approved location. The switch shall directly break power to the lock.

4. A building occupant shall not be required to pass through more than one door equipped with a controlled egress locking system before entering an exit.
5. The procedures for unlocking the doors shall be described and approved as part of the emergency planning and preparedness required by Chapter 4 of the *International Fire Code*.
6. All clinical staff shall have the keys, codes or other means necessary to operate the locking systems.
7. Emergency lighting shall be provided at the door.
8. The door locking system units shall be listed in accordance with UL 294.

Exceptions:

1. Items 1 through 4 shall not apply to doors to areas occupied by persons who, because of clinical needs, require restraint or containment as part of the function of a psychiatric treatment area.
2. Items 1 through 4 shall not apply to doors to areas where a *listed* egress control system is utilized to reduce the risk of child abduction from nursery and obstetric areas of a Group I-2 hospital.

Special Locking, cont. LSC

18.2.2.2.5.2* Door-locking arrangements shall be permitted where patient special needs require specialized protective measures for their safety, provided that all of the following criteria are met:

- (1) Staff can readily unlock doors at all times in accordance with 18.2.2.2.6.
- (2) A total (complete) smoke detection system is provided throughout the locked space in accordance with 9.6.2.9, or locked doors can be remotely unlocked at an approved, constantly attended location within the locked space.
- (3)*The building is protected throughout by an approved, supervised automatic sprinkler system in accordance with 18.3.5.1.
- (4) The locks are electrical locks that fail safely so as to release upon loss of power to the device.
- (5) The locks release by independent activation of each of the following:
 - (a) Activation of the smoke detection system required by 18.2.2.2.5.2(2)
 - (b) Waterflow in the automatic sprinkler system required by 18.2.2.2.5.2(3)

Lesson Learned

Career Development

Planning

Building Code

Resources

- **FGI Guidelines** <https://fgiguidelines.org/>
- **NFPA** <https://www.nfpa.org/>
- **ACHA** <https://healtharchitects.org/>
- **HCD Conference** <https://www.hcdexpo.com/>
- **PDC Summit** <https://www.ashe.org/education/pdc-summit>
- **VA TIL** <https://www.cfm.va.gov/til/dGuide.asp>
- **AIA Academy of Health** <https://www.aia-mn.org/get-involved/committees/health-design-kc/>
<https://network.aia.org/home>
- **CMS Website** <https://www.cms.gov/medicare/health-safety-standards/certification-compliance>



What is your current role?

- Principal
- Planner
- Project Manager
- Project Architect
- Interior Designer
- Designer
- Other



Healthcare Design Experience

- More than 15 years
- 10-15 years
- 5-10 years
- Just starting
- None
- Experience, What's that?

