



# Construction Section Update

NCHEA 2018 Pinehurst Conference  
March 16, 2018

# TODAY'S PRESENTERS

Jeff Harms

Engineering Supervisor

Bob Strother

Life Safety Supervisor

Don Schlagle

Engineering Plan Reviewer

Brad Morris, PE

Engineering Plan Reviewer

Additional DHSR Staff is present in the audience.

**\*Please hold your questions until the end of the session.\***

# MISSION

To ensure that the construction and operation of buildings regulated by the Division provide a

safe, healthy and suitable environment

for residents, patients, and inmates using those facilities.



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Division of Health Service Regulation

## North Carolina Division of Health Service Regulation

What We Do | Citizens | Providers | A-Z Index | Search DHHS:  GO

### Council Building Move Information



The **Division of Health Service Regulation** oversees medical, mental health and adult care facilities, emergency medical services, and local jails. We check to see that people receiving care in these facilities are safe and receive appropriate care. We make certain that medical buildings are built only when there is a need for them.

Effective July 5, 2007, the **Division of Facility Services** was renamed the **Division of Health Service Regulation**.

#### What's New?

#### Quick Links

<a href="#">Declaratory Rulings</a>	<a href="#">Adult Care Facility Star Ratings</a>	<a href="#">How to Start a Facility</a>
<a href="#">Legislative Actions</a>	<a href="#">Adult Care Home Violations and Penalties</a>	<a href="#">Licensed Facilities</a>
<a href="#">Public Notices</a>	<a href="#">Adult Care Star Rating Program</a>	<a href="#">NC State Medical Facilities Plan</a>
<a href="#">Reports</a>	<a href="#">File a Complaint</a>	<a href="#">Rules and Regulations</a>
<a href="#">Rule Actions</a>	<a href="#">Forms and Applications</a>	<a href="#">State Approved Infection Control Course for Adult Care Homes</a>
		<a href="#">Volunteer Health Services Act</a>

#### Sections

<a href="#">Certificate of Need</a>	<a href="#">Health Care Personnel Registry</a>	<a href="#">Acute and Home Care</a>	<a href="#">NC Medical Care Commission</a>
<a href="#">Complaint Intake Unit</a>		<a href="#">Adult Care</a>	<a href="#">NC State Health Coordinating Council</a>
<a href="#">Construction</a>	<a href="#">Medical Facilities Planning</a>	<a href="#">Mental Health</a>	
<a href="#">- Jails and Detention</a>	<a href="#">Office of Emergency Medical Services</a>	<a href="#">Nursing Home</a>	
	<a href="#">Radiation Protection Section</a>		

#### Licensure and Certification

#### Commission/Council

**nc.gov** E-mail questions or comments Or send questions and comments to:  
DHSR Webmaster, 2701 Mail Service Center, Raleigh, NC 27699-2701



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NC DHSR: Rules and Regulations

	Chapter 13 Subchapter O	
Home Care Agency	10A NCAC Chapter 13 Subchapter J	
Home Health Agency	10A NCAC Chapter 13 Subchapter J	Appendix B (PDF, 464 KB)
Hospice Agency	10A NCAC Chapter 13 Subchapter K	Appendix M (PDF, 719 KB)
Hospice Inpatient	10A NCAC Chapter 13 Subchapter K	Appendix M (PDF, 719 KB)
Hospital	10A NCAC Chapter 13 Subchapter B	Appendix A (PDF, 2.13 MB) Appendix V (PDF, 392 KB)
Hospital - Psychiatric Units	10A NCAC Chapter 13 Subchapter B  Chapter 27 Subchapter C D E F	
Intermediate Care Facility for Individuals with Intellectual Disabilities (ICF/IID)	10A NCAC Chapter 26 Subchapter C  Chapter 27 Subchapter C D E F G	Appendix J (PDF, 432 KB)
Jails, Local Confinement Facilities	10A NCAC Chapter 14 Subchapter J	
Laboratory, Pap Smear, HIV Testing, Mammogram	10A NCAC Chapter 13 Subchapter M	Appendix C (PDF, 3.78 MB)

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# HL Licensure Rules

## SECTION .6000 - PHYSICAL PLANT

- 10A NCAC 13B .6001 LOCATION**  
**10A NCAC 13B .6002 ROADS AND PARKING**

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996;  
Repealed Eff. January 1, 2018.

### 10A NCAC 13B .6003 DEFINITIONS

In addition to the definitions set forth in G.S. 131E-76, the following definitions shall apply in Sections .6000 through .6200 of this Subchapter:

- (1) "Construction documents" means final building plans and specifications for the construction of a facility that a governing body submits to the
- (2) "Construction Section" means the Construction Section of the Division of Health Service Regulation.
- (3) "Division" means the Division of Health Service Regulation of the North Carolina Department of Health and Human Services.
- (3) "Facility" means a hospital as defined in G.S. 131E-76.

*History Note:* Authority G.S. 131E-76; 131E-79; S.L. 2017-174;  
Temporary Adoption Eff. December 1, 2017.

## SECTION .6100 - GENERAL REQUIREMENTS

### 10A NCAC 13B .6101 GENERAL

The design, construction, maintenance and operation of a facility shall be in accordance with those codes and standards listed in Rule .6102, LIST OF REFERENCED CODES AND STANDARDS of this Section, and codes, ordinances, and regulations enforced by city, county, or other state jurisdictions with the following requirements:

- (1) Notify the Division when all construction or renovation has been completed, inspected and approved by the architect and engineer having responsibility, and the facility is ready for a final inspection. Prior to using the completed project, the facility shall receive from the Division written approval for use. The approval shall be based on an on-site inspection by the Division or by documentation as may be required by the Division;
- (2) In the absence of any requirements by other authorities having jurisdiction, develop a master fire and disaster plan with input from the local fire department and local emergency management agency to fit the needs of the facility. The plan shall require:
  - (a) Training of facility employees in the fire plan implementation, in the use of fire-fighting equipment, and in evacuation of patients and staff from areas in danger during an emergency condition;
  - (b) Conducting of quarterly fire drills on each shift;
  - (c) A written record of each drill shall be on file at the facility for at least three years;
  - (d) The testing and evaluation of the emergency electrical system(s) once each year by simulating a utility power outage by opening of the main facility electrical breaker(s). Documentation of the testing and results shall be completed at the time of the test and retained by the facility for three years; and
  - (e) Disaster planning to fit the specific needs of the facility's geographic location and disaster history, with at least one documented disaster drill conducted each year.

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996.

### 10A NCAC 13B .6102 LIST OF REFERENCED CODES AND STANDARDS

The following codes and standards are adopted by reference including subsequent amendments. Copies of these publications can be obtained from the various organizations at the addresses listed:

- (1) The North Carolina State Building Code, current edition, all volumes including subsequent amendments. Copies of this code may be purchased from the N.C. Department of Insurance Engineering and Codes Division located at 410 North Boylan Avenue, Raleigh, NC 27603 at a cost of two hundred fifty dollars (\$250.00).

## North Carolina

### Rules for Licensing Hospitals



January 1, 1996

Acute Care Branch  
Medical Facilities Licensure Section  
Division of Facility Services  
North Carolina Department of Human Resources

# FGI Adopted – Senate Bill 42

Effective Date - January 1, 2018

**GENERAL ASSEMBLY OF NORTH CAROLINA  
SESSION 2017**

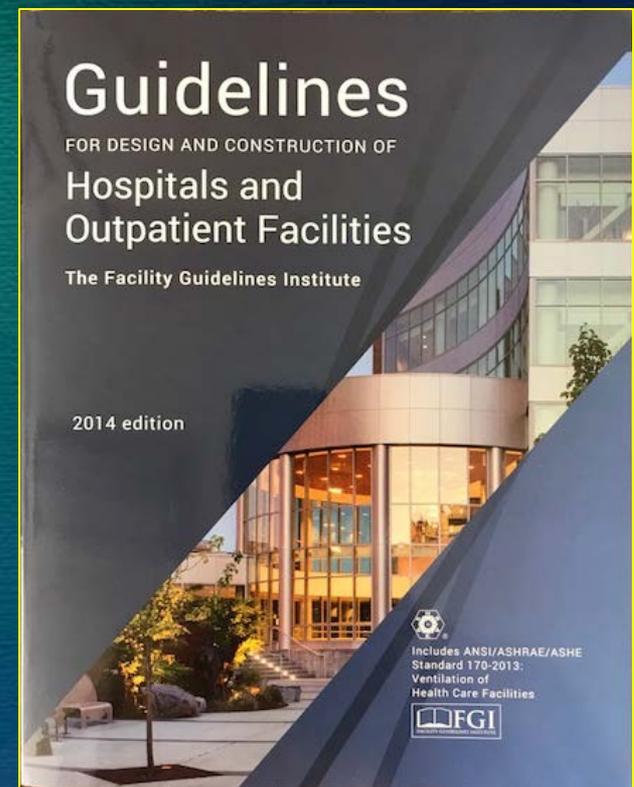
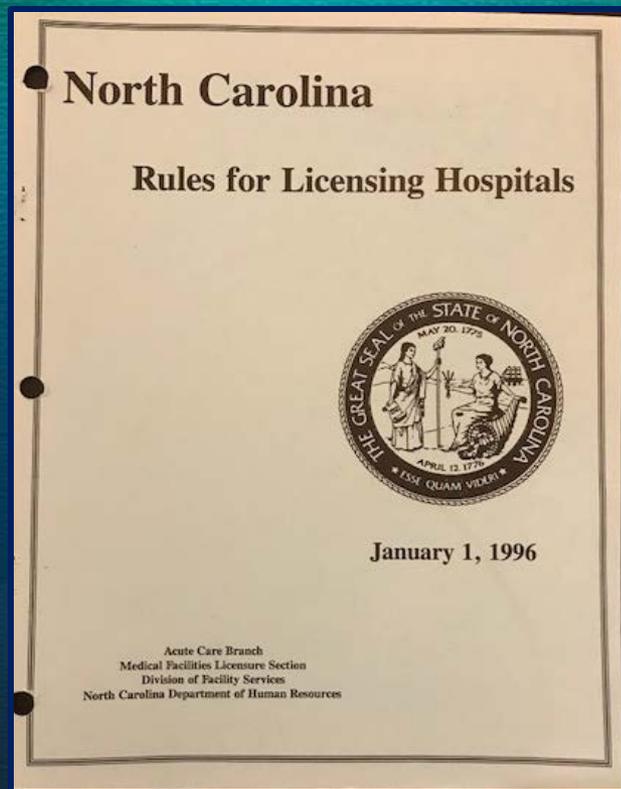
**SESSION LAW 2017-174  
SENATE BILL 42**

AN ACT DIRECTING **THE MEDICAL CARE COMMISSION TO ADOPT** THE  
RECOMMENDATIONS OF THE AMERICAN SOCIETY OF HEALTHCARE  
ENGINEERING'S FACILITY GUIDELINES INSTITUTE.

The General Assembly of North Carolina enacts:

- SECTION 1.(a)** Definitions. – For purposes of this section and its implementation:
- (1) Commission or Medical Care Commission. – The Medical Care Commission created by Part 10 of Article 3 of Chapter 143B of the General Statutes.
  - (2) **Hospital Facilities** Rules. – Means all of the following:

# The 1996 Physical Plant Rules Have Changed



**\*\* All the rest of the 10A NCAC 13B Rules are still in effect \*\***

# Changes Due to FGI

## SECTION .6000 - PHYSICAL PLANT

10A NCAC 13B .6001 LOCATION  
10A NCAC 13B .6002 ROADS AND PARKING

FGI has 1.3 Site Section

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996;  
Repealed Eff. January 1, 2018.

### 10A NCAC 13B .6003 DEFINITIONS

In addition to the definitions set forth in G.S. 131E-76, the following definitions shall apply in Sections .6000 through .6200 of this Subchapter:

- (1) "Construction documents" means final building plans and specifications for the construction of a facility that a governing body submits to the Construction Section for approval as specified in Rule .3102 of this Subchapter.
- (2) "Construction Section" means the Construction Section of the Division of Health Service Regulation.
- (3) "Division" means the Division of Health Service Regulation of the North Carolina Department of Health and Human Services.
- (3) "Facility" means a hospital as defined in G.S. 131E-76.

Two New Def. and Two Merged from .3000

*History Note:* Authority G.S. 131E-76; 131E-79; S.L. 2017-174;  
Temporary Adoption Eff. December 1, 2017.

## SECTION .6100 - GENERAL REQUIREMENTS

Stays the same

### 10A NCAC 13B .6101 GENERAL

The design, construction, maintenance and operation of a facility shall be in accordance with those codes and standards listed in Rule .6102, LIST OF REFERENCED CODES AND STANDARDS of this Section, and codes, ordinances, and regulations enforced by city, county, or other state jurisdictions with the following requirements:

- (1) Notify the Division when all construction or renovation has been completed, inspected and approved by the architect and engineer having responsibility, and the facility is ready for a final inspection. Prior to using the completed project, the facility shall receive from the Division written approval for use. The approval shall be based on an on-site inspection by the Division or by documentation as may be required by the Division;
- (2) In the absence of any requirements by other authorities having jurisdiction, develop a master fire and disaster plan with input from the local fire department and local emergency management agency to fit the needs of the facility. The plan shall require:
  - (a) Training of facility employees in the fire plan implementation, in the use of fire-fighting equipment, and in evacuation of patients and staff from areas in danger during an emergency condition;
  - (b) Conducting of quarterly fire drills on each shift;
  - (c) A written record of each drill shall be on file at the facility for at least three years;
  - (d) The testing and evaluation of the emergency electrical system(s) once each year by simulating a utility power outage by opening of the main facility electrical breaker(s). Documentation of the testing and results shall be completed at the time of the test and retained by the facility for three years; and
  - (e) Disaster planning to fit the specific needs of the facility's geographic location and disaster history, with at least one documented disaster drill conducted each year.

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996.

### 10A NCAC 13B .6102 LIST OF REFERENCED CODES AND STANDARDS

Stays the Same

The following codes and standards are adopted by reference including subsequent amendments. Copies of these publications can be obtained from the various organizations at the addresses listed:

- (1) The North Carolina State Building Code, current edition, all volumes including subsequent amendments. Copies of this code may be purchased from the N.C. Department of Insurance Engineering and Codes Division located at 410 North Boylan Avenue, Raleigh, NC 27603 at a cost of two hundred fifty dollars (\$250.00).

# Changes Due to FGI

## 10A NCAC 13B .6103 APPLICATION OF PHYSICAL PLANT REQUIREMENTS

Stays the Same

The physical plant requirements for each facility shall be applied as follows:

- (1) New construction shall comply with the requirements of Section .6000 of this Subchapter;
- (2) Existing buildings shall meet licensure and code requirements in effect at the time of construction, alteration, or modification;
- (3) New additions, alterations, modifications, and repairs shall meet the technical requirements of Section .6000 of this Subchapter, having jurisdiction may approve alternative measures where the facility can demonstrate to the Division's satisfaction that the alternative measures are equivalent to the requirements of Section .6000 of this Subchapter;
- (4) Rules contained in Section .6000 of this Subchapter are minimum requirements and not intended to prohibit buildings, systems or other equipment from being used where the facility can demonstrate to the Division's satisfaction that the use of such buildings, systems or other equipment is safe and effective;
- (5) Equivalency: Alternate methods, procedures, design criteria, and functional variations from the physical plant requirements, because of special circumstances, may be approved by the authority having jurisdiction when the facility can effectively demonstrate to the Division's satisfaction, that the intent of the physical plant requirements is achieved and the effectiveness of the facility; and
- (6) Where rules, codes, or standards have any conflict, the most stringent requirement shall apply.

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996.

## 10A NCAC 13B .6104 ACCESS AND SAFETY

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996;  
Repealed Eff. January 1, 2018.

Incorporated in FGI Part 1

# Important New Section Per FGI

## 10A NCAC 13B .6105 INCORPORATION BY REFERENCE AND APPLICATION OF THE REQUIREMENTS OF THE GUIDELINES

(a) The Guidelines for the Design and Construction of Hospitals and Outpatient Facilities are incorporated herein by reference, including all subsequent amendments and editions; however, the following chapters of the Guidelines shall not be incorporated herein by reference:

- (1) Chapter 2.6;
- (2) Chapter 3.1;
- (3) Chapter 3.2;
- (4) Chapter 3.3;
- (5) Chapter 3.4;
- (6) Chapter 3.5;
- (7) Chapter 3.6;
- (8) Chapter 3.7;
- (9) Chapter 3.8;
- (10) Chapter 3.9;
- (11) Chapter 3.10;
- (12) Chapter 3.11;
- (13) Chapter 3.12; and
- (14) Chapter 3.14.

Note: FGI [2018] will not have the Chapter 3 references to Outpatient Facilities. HL and Outpatient have become separate books. Mobile Units is in Ch. 2.8 of the 2018 edition.

In August of 2019, Chapter 2.6 Rehab Hospitals will be included.

# New Section continued..

(b) The Guidelines for the Design and Construction of Hospitals and Outpatient Facilities incorporated by this Rule may be purchased from the Facility Guidelines Institute online at <https://www.fgiguilines.org/guidelines-main/purchase/> at a cost of two hundred dollars (\$200.00) or accessed electronically free of charge at <https://www.fgiguilines.org/guidelines/2014-hospital-outpatient/read-only-copy/>.

(c) A new facility or any additions or alterations to an existing facility whose construction documents were approved by the Construction Section on or after January 1, 2018 shall meet the standards established in:

(1) Sections .6000 through .6200 of this Subchapter; and

(2) the edition of the Guidelines for the Design and Construction of Hospitals and Outpatient Facilities that was in effect at the time the construction documents were approved by the Construction Section.

(d) An existing facility whose construction documents were approved by the Construction Section prior to January 1, 2018 shall meet those standards established in Sections .6000 through .6200 of this Subchapter that were in effect at the time the construction documents were approved by the Construction Section.

(e) Any existing building converted from another use to a new facility shall meet the requirements of Paragraph (c) of this Rule.

*History Note: Authority G.S. 131E-79; S.L. 2017-174;  
Temporary Adoption Eff. December 1, 2017.*

# Changes Due to FGI

## SECTION .6200 - CONSTRUCTION REQUIREMENTS

10A NCAC 13B .6201	MEDICAL, SURGICAL AND POST-PARTUM CARE UNIT
10A NCAC 13B .6202	SPECIAL CARE UNIT
10A NCAC 13B .6203	NEONATAL LEVEL I AND LEVEL II NURSERY UNIT
10A NCAC 13B .6204	NEONATAL LEVEL III AND LEVEL IV NURSERY
10A NCAC 13B .6205	PSYCHIATRIC UNIT
10A NCAC 13B .6206	SURGICAL DEPARTMENT REQUIREMENTS

Requirements for These Functions  
Found in FGI Now

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996;  
Amended Eff. November 1, 2004;  
Repealed Eff. January 1, 2018.

## 10A NCAC 13B .6207 OUTPATIENT SURGICAL FACILITIES

(a) When a facility elects to share outpatient surgical facilities with inpatient surgical facilities, the outpatient operating room and support areas shall meet the same physical plant requirements as inpatient, general operating rooms and support areas.

(b) When a facility elects to provide separate, non-sharable outpatient surgical facilities, the operating rooms and support areas shall meet the physical plant construction requirements of Outpatient Surgical Licensure requirements of 10A NCAC 13C .1400.

Remains the Same

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996.

# Repealed Section

10A NCAC 13B .6208	OBSTETRICAL DEPARTMENT SERVICES
10A NCAC 13B .6209	EMERGENCY SERVICES
10A NCAC 13B .6210	IMAGING SERVICES
10A NCAC 13B .6211	LABORATORY SERVICES
10A NCAC 13B .6212	MORGUE
10A NCAC 13B .6213	PHARMACY SERVICES
10A NCAC 13B .6214	DIETARY SERVICES
10A NCAC 13B .6215	ADMINISTRATION
10A NCAC 13B .6216	MEDICAL RECORDS SERVICES
10A NCAC 13B .6217	CENTRAL MEDICAL AND SURGICAL SUPPLY SERVICES
10A NCAC 13B .6218	GENERAL STORAGE
10A NCAC 13B .6219	LAUNDRY SERVICES
10A NCAC 13B .6220	PHYSICAL REHABILITATION SERVICES
10A NCAC 13B .6221	ENGINEERING SERVICES
10A NCAC 13B .6222	WASTE PROCESSING
10A NCAC 13B .6223	DETAILS AND FINISHES
10A NCAC 13B .6224	ELEVATOR REQUIREMENTS
10A NCAC 13B .6225	MECHANICAL REQUIREMENTS
10A NCAC 13B .6226	PLUMBING AND OTHER PIPING SYSTEMS REQUIREMENTS
10A NCAC 13B .6227	ELECTRICAL REQUIREMENTS

*History Note:* Authority G.S. 131E-79;  
Eff. January 1, 1996;  
Amended July 1, 1996;  
Repealed Eff. January 1, 2018.

These Requirements Now Found in FGI

# New Section

## 10A NCAC 13B .6228 NEONATAL LEVEL I, II, III, AND IV NURSERIES

A facility that provides neonatal services as specified in Rule .4305 of this Subchapter shall meet the requirements of the Guidelines for the Design and Construction of Hospitals and Outpatient Facilities, as incorporated by reference in Rule .6105 of this Subchapter, as follows:

- (1) a Neonatal Level I nursery shall comply with the requirements of Section 2.2- 2.12;
- (2) a Neonatal Level II nursery shall comply with the requirements of Sections 2.2-2.12 and 2.2-2.12.3.3;
- (3) a Neonatal Level III nursery shall comply with the requirements of Section 2.2- 2.10; and
- (4) a Neonatal Level IV nursery shall comply with the requirements of Section 2.2- 2.10.

*History Note: Authority G.S. 131E-79; S.L. 2017-174;  
Temporary Adoption Eff. December 1, 2017.*

} These Requirements Now Found in FGI

### From Previous Rules

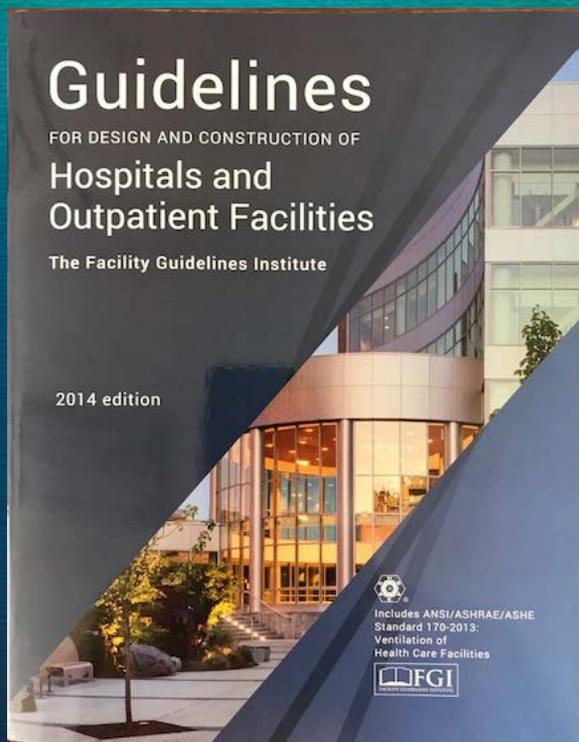
Neonatal Level I Nursery  
Neonatal Level II Nursery  
Neonatal Levels III and IV Nursery

### FGI

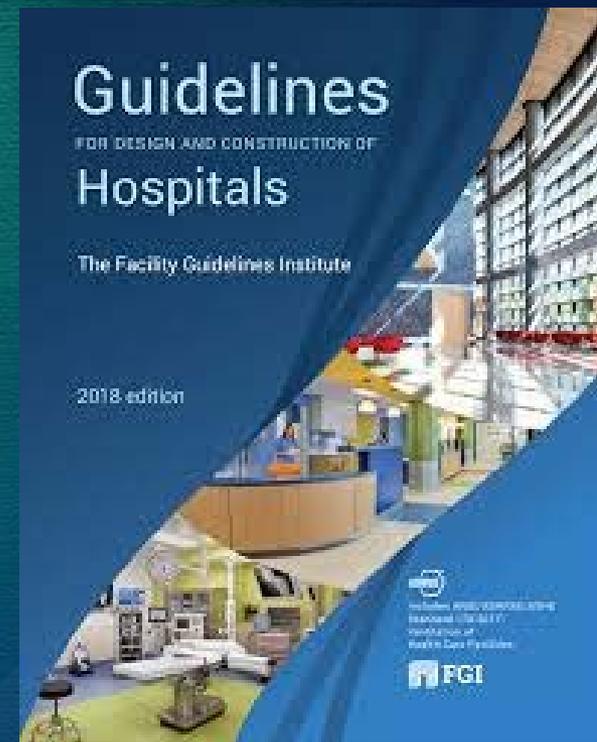
Newborn Nurseries  
Continuing Care Nursery  
Neonatal Intensive Care Unit (NICU)

# Use Current Edition

Rule 10A NCAC 13B .6105 Incorporates Subsequent Editions of the Guidelines



2014



2018

# Why FGI?

Comprehensive – 250 pages vs 25

Consensus Based – Multidisciplinary Process

Credible – HGRC (112 Member Health Guidelines Revision Committee – Who's Who of Experts)

Current – 4 year cycle (Evolutionary)

Continually Improving – Solicit Public Comments Worldwide

Research – Funds Clinical/Evidence Based Validates Req'mts

# Are They Guidelines?

- They are Rules in NC– The Physical Plant Standard

Hill-Burton Act 1945-47 – Funding for Facilities if Treat Everyone

General Standards in the Federal Register - 1947

Minimum Requirements for Const. and Equipment for  
Medical Facilities - 1973

Guidelines for Construction and Equipment – 1984 - Deregulate

AIA Published the Document – 1985 – Multidisciplinary HGRC

1992-93 First Time HGRC had AHJ's (3)

1998 – FGI was Created to Protect the Intellectual Property of  
the Guidelines: Became Consensus based and Advised by  
Research

# Plan Submittals

- Any DD plans submitted before 1/1/2018 can continue to be reviewed under the 13B (old) Licensure Rules.
- Any projects received after 1/1/2018 will be reviewed under FGI.
- If a project has been reviewed per 13B (old) Rules and the owner wishes to now continue the project subject to FGI, a re-review will have to be done by Construction Section and additional review fee charged. (Case by case).
- Review fees remain the same.

# Few Equivalencies to be Written

- DHSR will write Division Directive 42 Equivalencies Sparingly. Basis Must be an Acceptable Nat'l Std.

Secretary of DHHS has the Equivalency Powers

Secretary Grants This to  
DHSR Division Director

Who in Turn  
Authorizes  
Construction Section  
Chief to Write  
Equivalencies

Waivers – Only Division Director  
Does It But Historically Does Not  
Waive Licensure Rules for  
Construction Items – Mostly  
Policy Items. Waivers Must be  
Reissued Every Year.

An equivalency can only be written  
for a Rule, not a code or standard!

# Consequences to the Rule Change?

## Things Required:

Functional Program (1996 + Tahlia)  
Safety Risk Assessment  
Slide 16-McMillan Pazdan Smith Ppt.  
Commissioning  
Acoustical Requirements  
Clearances  
Larger Doors (45.5" x 83.5" ILO 41.5 x 80)  
Medication Safety Zones  
Bariatric Accommodations  
Handrails Both Sides Corridors  
Bedpan Washers in Patient Rooms  
Lav in Patient Toilet and in Room  
ASHRAE 170 + Addenda

## Things Not Required:

Operable Windows in Patient Rooms  
Windows in Nursery (Only NICU)  
Iso power  
Certain Number of Isolation Rms.  
All Room Ante Rooms (check ICRA)  
Low returns  
116 degree water  
Line of Sight View of Patient in CT  
Pat. Toilet W/I 50' of CT, PET, MRI  
2 Scrub Sinks per OR  
Guesswork as to What a Hybrid OR is

# If You Want to Ask DHSR an FGI Question

- Don't call HELP DESK at 919 855-3893.
- Put specific FGI questions in writing and email to [DHSR.Construction.Admin@dhhs.nc.gov](mailto:DHSR.Construction.Admin@dhhs.nc.gov)
- Use Project Number if already assigned.  
(e.g. – HL-11025 RAJ/RWW)
- Supervisor + Reviewer will jointly address the Q.

# Typical Recent FGI Questions



# FGI Question – Functional Program

Does a Functional Program have to be submitted for every project?

- Functional Programs must be submitted for new construction, major renovations, and changes of use of a facility space.
- Typical equipment replacement and minor renovations that don't change the function of a space will not require a full functional program but a descriptive scope statement is still needed.
- Projects submitted without a functional program will trigger a notification to the owner and not be placed in line for review until received.
- DHSR will not approve, edit, or make review comments on Functional Programs. We will look for the architectural space requirements included in order to apply the FGI requirements.

# FGI Question - Hospitals Only?

Are outpatient surgical centers being held to the FGI standards or are we just focusing on hospitals for the time being?

- FGI is applied to the physical plant portion of hospital licensure rules only – no other licensed facilities at this time.
- Remember, FGI [2014] has a hospital section and an outpatient facility section. FGI [2018] covers hospitals only.

# FGI Question – Old AHU's and ACH

Our 1992 AHU's achieve 15 air changes in the OR's. Will the adoption of FGI [2014] require upgrading the mechanical equipment to 20 ACH's per Table 7.1 of ASHRAE 170?

- The adoption of FGI does not require existing building systems to automatically be upgraded to the most current standard if no adverse patient care outcomes are occurring.
- If a new project were to be done to the surgical suite that required augmentation or replacement of the AHU(s) then current air changes would apply.
- And if at any time the hospital did a risk audit and decided air exchanges needed to be improved to maintain acceptable infection control measures for procedures that are currently being done or for additional types of procedures desired to be done, the minimums of Table 7.1 would then have to be met.

# FGI Question – AHU Upgrade

When replacing an AHU or terminal units serving an old OR that does not have non-aspirating supply diffusers, will the array have to be provided? (The OR is not being renovated).

- Replacing an AHU or terminal units only would not necessarily trigger the most up to date laminar aspiration or air curtain system.
- This determination must be made by an honest risk, and infection control assessment by the governing body of the hospital. They must consider the nature of their patient case load. What procedures will they want to continue to provide? What level of surgery will they provide in the future?
- Will the existing supply and return locations provide the necessary asepsis for the level of invasiveness being performed?
- Only the altered, renovated, or modernized portions of an existing building system (or component) are required to meet FGI req'mts.

# FGI Question – Isolated Power?

If the hospital is going to do an OR renovation project can the isolated power panels be removed?

- DHSR will only require what the current Hospital Licensure Rules require as well as what is in relevant codes and standards that are attached by reference .
- FGI does not include isolated power as a requirement per se.
- The NC Electrical Code and NFPA 99 require either isolated power or GFCI protection to be provided in wet procedure locations.
- However, NFPA 99 also requires the assignment of risk categories (Category 1 through 4) to systems, equipment and activities that are provided in a health care facility. FGI - SRA also.
- The hospital, not DHSR, must decide whether isolated power or GFCI protected branch circuits would be appropriate to install for the patients they are treating.
- Careful consideration has to be given to the safety and reliability of power to critical equipment and systems, especially in operating rooms.

# FGI Question – Remove Iso Power?

- Too much leakage in the existing panels. Can they be removed?
- If a project that includes iso power is submitted and reviewed before Jan.1, 2018, but is finished after Jan. 1 can FGI be used to not require the isolated power?
- Can we remove our existing isolated power panels?

Risk Assessment

Future Flexibility  
or Limitations?

Common Sense

# Life Safety Item

NFPA 101 says 3 or fewer simultaneous non-amb patients  
can be a B-Occupancy



But CFR 482.41 (b)(i) requires *“Outpatient surgical departments must meet the provisions applicable to Ambulatory Health Care Occupancies, regardless of the number of patients served.”*

# Life Safety Item - BS

- Continuous or Recurring Tamper Alarm?



NFPA 101 9.7.2.1 - Tamper indication shall sound and be displayed.

NFPA 72 provides an allowance to silence the signal. However, NFPA 101 does not.

A 60 second recurring interval of the alarm tone is allowable by DHSR.

# Life Safety Item – Curb Cuts

Change in Elevation – Egress Path drops Off Sidewalk Into Parking Area



Change of direction not allowed without a buffer.



# Life Safety Item - BS

- Emergency Lighting to the public way.



NFPA 101 [2012]

A.7.9.1.1 – Emergency lighting outside the building should provide illumination to either a public way or a distance away from the building that is considered safe.

# Exits to be Maintained/Corridors Full Width



# Can Fire, Smoke and Combination Dampers be Installed at Floor Level in Hospitals?

BM

- The Short Answer:

The code specifically requires ducts penetrating floors in an I-2 to be protected by a shaft.

\*See next slide for the code reference answer\*

# Can Fire, Smoke and Combination Dampers be Installed at Floor Level in Hospitals?

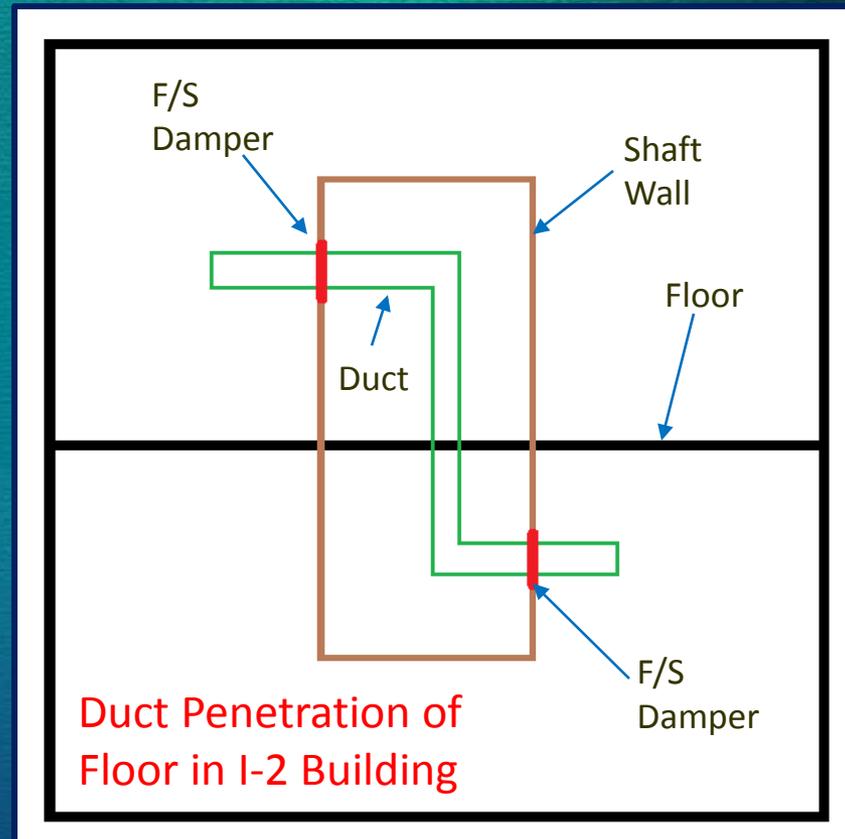
BM

- Horizontal dampers are not prohibited in Hospitals (I-2 occupancies) per se, but NCSBC 716.6 requires duct penetrations of a floor or floor/ceiling assembly to be protected with a shaft per NCSBC 708. In this type occupancy, 716.5.3 requires fire and smoke dampers at duct penetrations of a shaft unless the exceptions can be met. (e.g. – subducts, ASTM E119 assembly, 909 system)
- Do not be fooled by the exceptions of 716.6.1 – they do not apply to I-2 or I-3 occupancies.

# Can Fire, Smoke and Combination Dampers be Installed at Floor Level in Hospitals?

BM

- In a recent email chain from a project in Winston Salem, NCDOT determined that shafts must extend above and below the floor that is being penetrated by a duct. Also, ducts must enter and exit the shaft horizontally in the vertical plane of the shaft.



# Fire and Smoke Damper Inspection Items

- Single or double sided installation
- Rough openings not correct
- Angles do not overlap wall surface material by 1 inch as required
- Typical screw spacing
- Caulking not to be used unless specified by installation instructions
- Smoke dampers must have means for activation per NCSBC/NCSMC



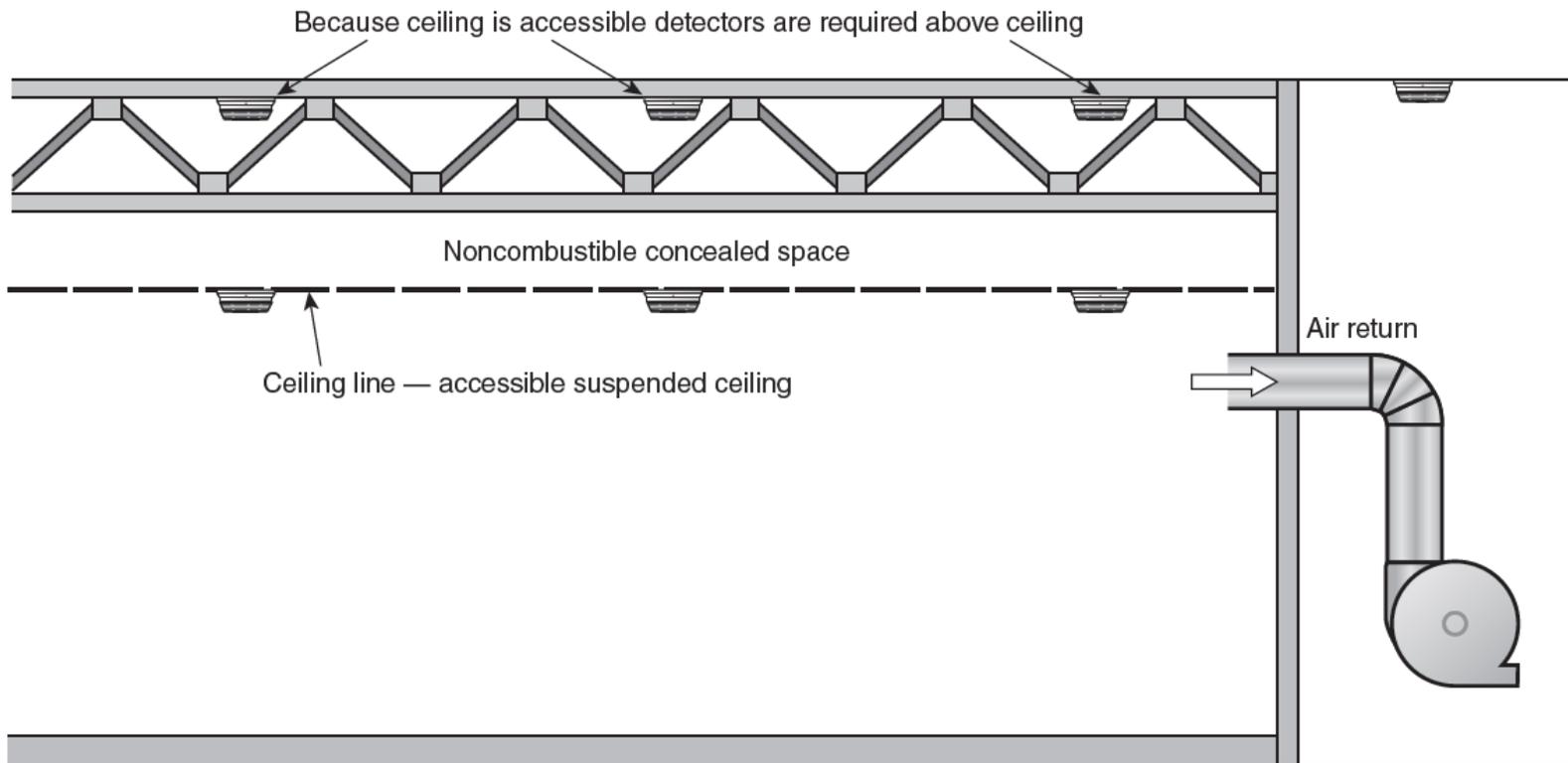
# Fire and Smoke Damper Inspection Items (cont)

## NCSBC 716.3.3.2

- Means for smoke damper activation
  1. Duct detector within 5 feet of the damper
  2. Spot type detector on each side okay when installed in wall above smoke barrier doors
  3. Where a damper is installed in air transfer opening a spot type detector installed within 5 feet horizontally
  4. Damper in a corridor wall permitted to be controlled by smoke detection in the corridor
  5. Where total coverage is provided smoke dampers can be controlled by the smoke detection system

**17.5.3.1\* Total (Complete) Coverage.** Where required by other governing laws, codes, or standards, and unless otherwise modified by 17.5.3.1.1 through 17.5.3.1.5, total coverage of a building or a portion thereof, shall include all rooms, halls, storage areas, basements, attics, lofts, spaces above suspended ceilings, and other subdivisions and accessible spaces.

# Fire and Smoke Damper Inspection Items (cont)



*Total Coverage — Scenario 3. (Source: Aon Fire Protection Engineering, Lincolnshire, IL)*

**NFPA 72 [2016] 17.5.3.1**

# 2012 NC Building Code 716.2: All dampers must be installed in accordance with the building code, the manufacturer's instructions, and the damper listing.

**Nailor Industries Inc.**

**INSTALLATION INSTRUCTIONS**  
**CURTAIN TYPE FIRE DAMPERS • STANDARD & WIDE FRAME**  
 1 1/2" & 3" HRL. LABEL • VERTICAL & HORIZONTAL MOUNT  
 MODEL SERIES: (D) 0100, 0300, (D) 0500

**QUALIFICATIONS:**

- Meets all the requirements of UL 655 and CANULC-S112.
- Meets the requirements for NFPA 80, 90A and 101, as well as IBC and NBC (Canada) building codes.
- California State Fire Marshal Listing No. 03225-0935-0113.
- City of New York Board of Standards and Appeals, Cal. No. 469-88-8A.

**NOTES:**

- Installation shall be in accordance with the appropriate requirements of the National Fire Protection Association Standard NFPA 90A latest edition.
- Damper Sleeves: Sleeve thickness must be equal to or thicker than the duct connected to it. Sleeve gauge requirements are listed in the SMACNA Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems and in NFPA 90A. If a break-away style duct/sleeve connection is not used, damper sleeves up to 30" wide by 24" (914 x 610) high of not less than 10 gauge (1.61) coated steel, or larger sleeves of not less than 14 gauge (1.90) thick coated steel may be attached to the duct with screws or other types of mechanical fasteners. The maximum sleeve thickness for such rigid joints is 10 gauge (3.51) for coated steel. The connecting duct shall not be continuous thru the wall or floor opening but shall terminate at the sleeve. Sleeves shall extend a maximum of 6" (152) on either side of the wall or floor opening or 10" (254) on one side when incorporating a factory installed access door.
- Break-away duct/sleeve connections:
  - Rectangular ducts must use one or more of the following connections if the gauge is less than the requirement in note 2 for rigid connections:
 

PLAIN 1/2" SLIP	HEMMED 1/2" SLIP	DOUBLE 1/2" SLIP	INSIDE SLIP JOINT
  - In addition:
    - A maximum of two #10 sheet metal screws on each side and on the bottom, located in the center of the slip pocket and penetrating both sides of the slip pocket may be used.
    - One of the above connections on the top and bottom joints with flat drive slip connections on the side joints may be used for dampers up to 20" (508) in height.
  - Round and oval duct may be attached to the round or oval collar which is part of the damper/sleeve in the following manner:
    - Duct diameters 22" (559) and smaller must use three #10 sheet metal screws equally spaced around the circumference.
    - Duct diameters over 22" (559) up to and including 36" (914) may use five #10 sheet metal screws equally spaced around the circumference.
    - Duct diameters larger than 36" (914) wide or diameter may use eight #10 sheet metal screws equally spaced around the circumference.

Dimensions are in inches (mm).

1 of 4

4 IOM-FDINST Page 1.050

Nailor Industries Inc. reserves the right to change any information concerning product or specification without notice or obligation.

(400) beyond the fire separator and/or factory installed access door. Sleeve shall terminate on both sides of wall within dimensions shown.

## 4. Damper Orientation

Damper is designed to operate with blades running horizontally and must be installed with center line of damper frame within the wall or floor when they are in the closed position. Use "Mount With Arrow Up" label as a guide for proper damper orientation. Horizontal mount dampers may be installed with actuator above or below the floor.

## 5. Mounting Angles

Mounting angles shall be a minimum of 1 1/2" x 1 1/2" x 20 gage steel (38 x 38 x 1.0). For openings in metal stud and wood stud and concrete/masonry walls of sizes 90" x 49" or 49" x 90" (2286 x 1245 or 1245 x 2286) and less mounting angles are only required on one side of the wall or top of the floor and must be attached to both the sleeve and the wall. Mounting angles may be installed directly to the metal stud under the wall board on metal stud wall installations only. Larger openings and floor installations require mounting angles on both sides of the partition and must be attached only to the sleeve. Mounting angles must overlap the partition a minimum of 1" (25). Do not weld or fasten angles together at corners of dampers. Ruskin fire/smoke dampers may be installed using Ruskin FAST angle for one angle installation or Ruskin PFMA for two angle installations.

### a. Mounting Angle Fasteners

Sleeve: #10 bolts or screws, 3/16" (3) steel rivets or 1/2" (13) long welds.

Masonry Wall or Floor: #10 self-tapping concrete screws  
 Wood/Steel Stud Wall: #10 screws.

### b. Mounting Angle Fastener Spacing

For one angle installations the sleeve fasteners shall be spaced at 6" (152) o.c. and the wall or floor fasteners shall be spaced at 12" (305) o.c. with a minimum of 2 fasteners on each side, top and bottom. Screw fasteners used in metal stud must engage

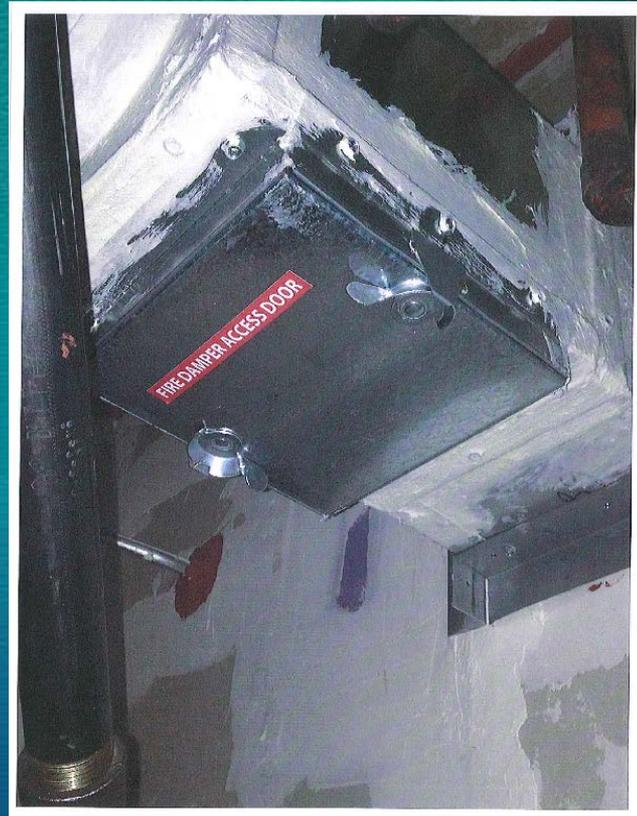
**2012 NC Building Code 716.2:** All dampers must be installed in accordance with the building code, the manufacturer's instructions, and the damper listing.



**2012 NC Mechanical Code 607.4: All damper access doors must be identified by a label not less than ½”.**

**Dampers equipped with fusible links, internal operators, or both shall be provided with an access door that is not less than 12 in. (305 mm) square or provided with a removable duct section.**

**[NFPA 80 19.2.3]**

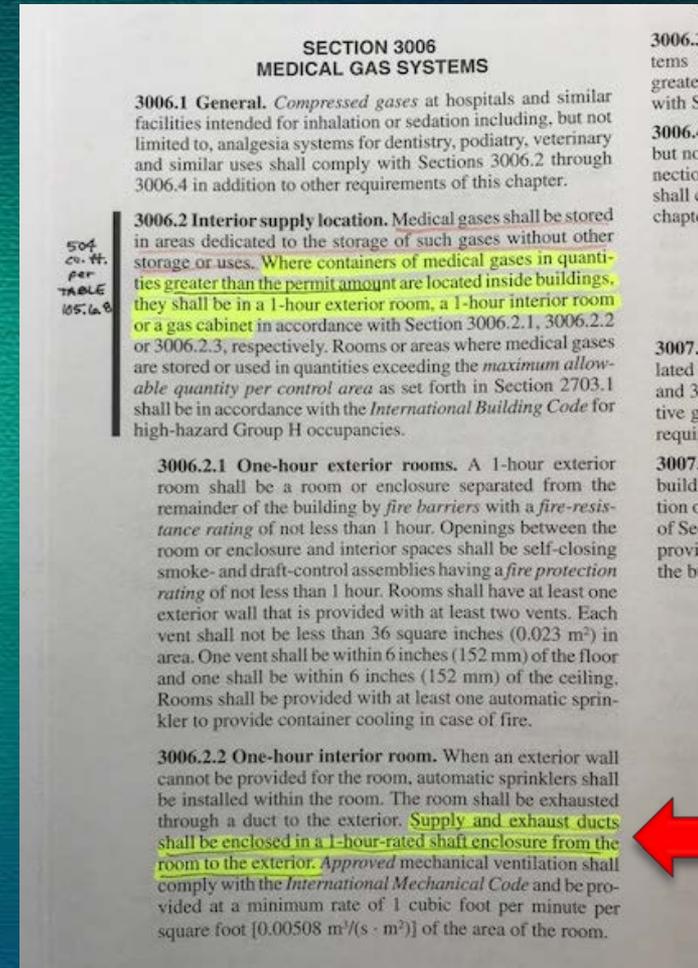
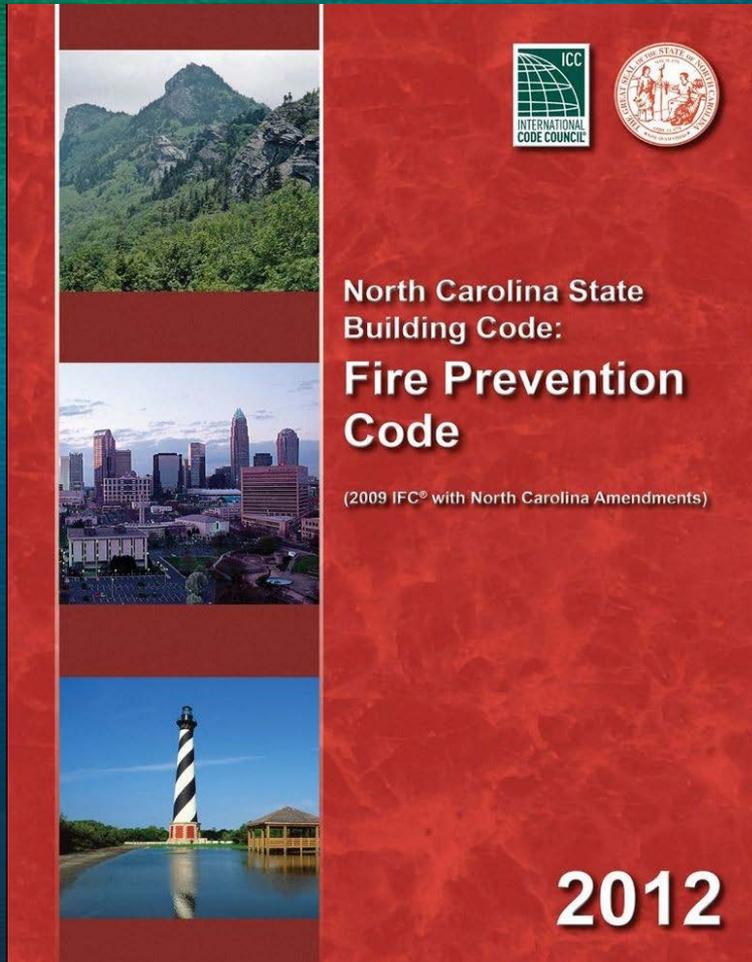


**2012 NC Mechanical Code 405.2:** In Group I-2 occupancies, each air distribution system shall be equipped with a manual emergency control to stop supply and return air in an emergency.

- Must be readily accessible.
- Must be clearly identified.
- Preferably at the constantly attended location.



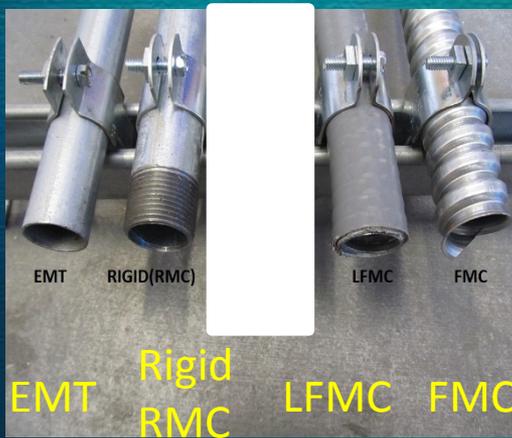
# Fire Code Requires Duct Protection



3006.2.2 – Supply and Exhaust Ducts in a 1-Hour Rated Shaft Enclosure to the Exterior

# Electrical Items Regularly Missed

Can the following types of cables and conduits be used in a patient care area?



	HCF AC Cable	HCF MC Cable
	TYPE AC CABLE	TYPE MC CABLE
<b>Complies with NEC 517.13</b>	Yes	Yes
<b>Armor Ground Path</b>	• Interlocked armor	• Interlocked armor
<b>Conductor Limit</b>	• 16 AWG AL bonding strip	• Full-Sized AL ground/bond conductor
<b>Conductor Assembly</b>	4 current-carrying conductors Individually paper wrapped conductors	None Overall nonmetallic tape covering

AC	MC	MC <sup>4P</sup>
AC Cable	MC Cable	MC <sup>4P</sup> Cable
<ul style="list-style-type: none"> <li>• Only 4 current carrying conductors</li> <li>• 14-1 AWG conductor sizes</li> <li>• 16 AWG aluminum bonding strip</li> <li>• Armor is Listed and Identified for grounding</li> <li>• Individually paper-wrapped conductors</li> </ul>	<ul style="list-style-type: none"> <li>• No conductor limit</li> <li>• 18 AWG-2000 kcmil conductor sizes</li> <li>• Green copper ground</li> <li>• Armor NOT Identified for grounding</li> <li>• Mylar tape covering conductors</li> <li>• 350% better ground performance than AC cable</li> </ul>	<ul style="list-style-type: none"> <li>• No conductor limit</li> <li>• 14-10 AWG conductor sizes (initially)</li> <li>• Full-sized bare aluminum ground</li> <li>• Armor Listed and Identified for grounding</li> <li>• Mylar tape covering conductors</li> <li>• 350% better ground performance than AC cable</li> </ul>

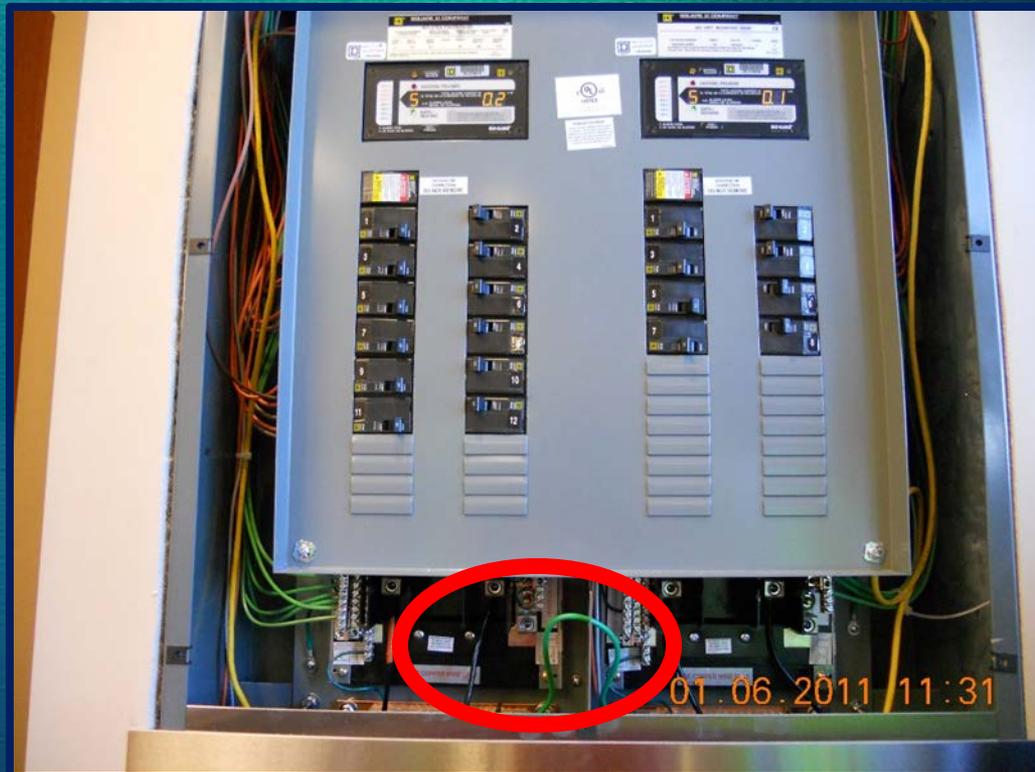
YES

YES

NO

# Electrical Issues (Cont)

- **North Carolina Electrical Code 517.14:** The equipment grounding terminal buses of the normal and essential branch-circuit panel boards serving the same individual patient care vicinity shall be connected together with an insulated continuous copper conductor not smaller than 10 AWG.



# Nurse Call Items Regularly Missed

- Cross Corridor Zone Lighting
- 7.3.3.1.8.2 (2) Notification Signals : Visual signals shall be provided at corridor intersections where individual patient room door or care space signals are not directly visible from the associated nursing station. (2015 NFPA 99)



# Nurse Call Items Regularly Missed

- A. Power must be supplied from the Critical Branch
- B. Verify all dome lights work and that all calls are addressed properly
- C. Emergency call station is provided at EACH toilet, bath, shower, or tub. This means you cannot share an emergency call station between two or more fixtures.



# Generator Fuel Tank

(3 Distinct Requirements)

- NFPA 99 6.4.1.1.18(2)(d)  
Alarm when the main fuel tank contains less than 4 hour operating supply
- NFPA 110 5.5.2  
Alarm when the tank level drops to the required run capacity as required by Table 4.1(a)
- NFPA 110 5.5.3  
Main fuel tank capacity of at least 133 percent of either the low-fuel sensor as required by 5.5.2 or the required run time specified in 4.1(a)

# Generator Load testing

## (NFPA 110 7.13 INSTALLATION ACCEPTANCE)

- New level 1 installations SHALL NOT be considered as meeting this standard until the acceptance tests have been conducted and test requirements met (conducted IAW 7.13.4.1.1 thru 7.13.4.1.4)
- (1) Load test with building loads or other loads that simulate intended building load shall be continued for not less than 1.5 hours
- (2) After completion of step 1 the prime mover shall be allowed to cool down for not less than 5 minutes
- (3) Then a 2-hour, full load test as follows:
  - Minimum of 30 % of nameplate KW rating for 30 minutes
  - Then minimum of 50% of nameplate KW rating for the next 30 minutes, then 100 % of nameplate KW rating for the next 60 minutes

# Generator Load Testing

(NFPA 110 7.13 INSTALLATION ACCEPTANCE continued)

- NFPA 110 7.13.4.4 (7.13.4.4.1 thru 7.13.4.4.3)  
Crank Cycle Testing and Battery Charge Rate Monitoring
- NFPA 110 5.6.5 and 5.6.6  
All Safeties - To be tested on site as recommended by the manufacturer
- NFPA 110 5.6.5.6  
Remote E-Stop – Located outside the room housing the prime mover or elsewhere on the premises where the prime mover is located outside the building



# Temporary Generator

- Must maintain readiness status at all times (provide power life safety / critical in 10 seconds)
  - Oil Change
  - Load Bank Testing
  - Replacement of Units
- Temporary or portable units must comply with all requirements of a permanent generator
  - All alarms connected both local and remote panels
  - Fuel tank capacities and availability on site
  - Unit must comply with lighting and remote shutdown etc.
- Must be submitted as a separate project or as part of a replacement project

# Air Handling Units

## ASHRAE 170

- Pre Filters –See table 6.4
- Final Filters – See table 6.4
- 6.4.4 Filter Frames
  1. Durable
  2. Proportioned For Air Tight Fit
  3. **All Joints Gasketed or Sealed** to provide a positive seal against air leakage.

# Air Handling Units (Cont)

## Filters



Filters Missing

Pre



Falling Out

Pre



Crumbled



No Gaskets

Final filters



Installed backwards

**With the conditions as noted above  
Balance report valid?**

# Air Handling Units (cont)

- ASHRAE 170 Table 7.1 Design Parameters  
Please note the table requirements are code minimums as adopted by NC
- Design must include any variance you are willing to accept on the final TAB report.
- Please verify the designer has reviewed and accepted the balance report prior to our arrival at final inspection

# Radiology Equipment EPO's

- What is the source of power?
  1. Powered from actual equipment power supply
  2. Powered by a separate individual breaker
- Will the EPO work when needed?
- Protecting the Breaker



# Radiology Equipment EPO's (cont)

- Separate breaker Protection (some options)
  - Provide identification similar to what is done for a fire alarm panel circuit
  - Provide a warning in the panel box indicating do not shut off
  - Provide locking tab to prevent accidental turning off of breaker
  - Label warning if this breaker is not on the EPO will not work

# Smoke/Heat Detector Installation

- Typical installation 30 foot spacing and no more than 15 feet from end of hall
- Smoke not within 3 feet of supply return or exhaust
  - If excessive air flow more distance may be required
- Spaces open to the Corridor must be protected



# Smoke and Heat Detector Installation



Three feet?  
Not Even by the Metric System.



# Sprinkler Systems

## Common Deficiencies

- No labels for Control Valves
- Intermediate heads not provided in freezers /coolers with automatic defrost
- Improper amount of spare sprinklers and no wrench in the spare head cabinet
- Tamper Supervisory audible indication



# Sprinkler Systems

## Common Deficiencies

- **Control valve labels do not indicate area served**
  - 6.7.4.3 Control valve shall identify the portion of the building served
- **Intermediate heads not provided in freezers /coolers with automatic defrost**
  - 8.3.2.5(10) coolers and freezers with auto-defrost SHALL be provided with intermediate-temperature classification or higher
- **Improper amount of spare sprinklers and no wrench in the spare head cabinet**
  - 6.2.9.5 (1)(2)(3) less than 300 = 6, 300 – 1000 = 12, over 1000 = 24
- **Sprinkler Head within 2'-6" of a horizontal discharge diffuser**
  - NFPA 13 (2016) Table 8.3.2.5(a)

Typical HVAC ceiling tile diffusers that are intended to move air along the ceiling, such as the one pictured in [Exhibit 8.5](#), must be treated as horizontal discharge according to [A.8.3.2.5](#). If the HVAC system runs hot, ordinary temperature-rated sprinklers within 2 ft 6 in. (750 mm) of the diffuser are subject to nuisance activation. Ordinary temperature-rated sprinklers are listed for use for temperatures no more than 100°F (38°C). Per [Table 8.3.2.5\(a\)](#), sprinklers classified as intermediate temperature-rated or higher need to be used in such situations. Some air diffusers in ceilings can be set up to discharge in multiple directions, including horizontally along the ceiling.



**EXHIBIT 8.5** Typical Office Area Diffuser.

# Sprinkler Systems



2018 paint corrode sprinkler



Sprinkler piping exposed to elements

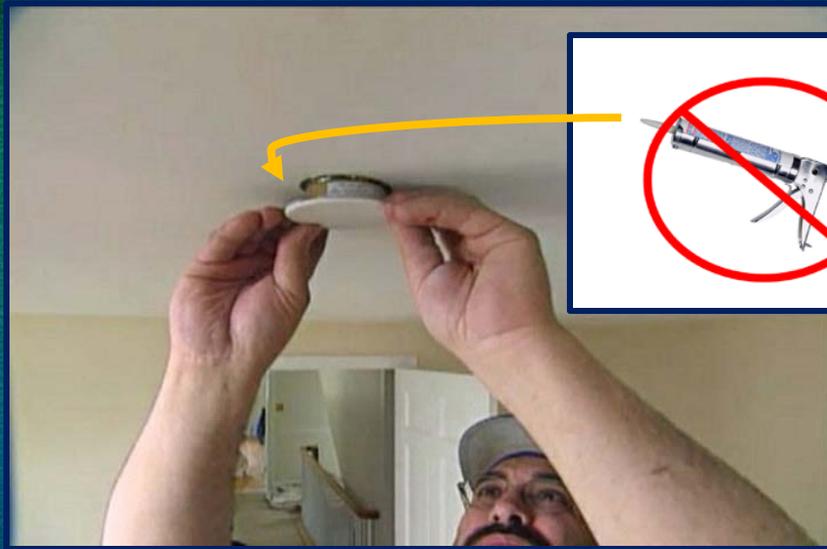


Clean Head



Properly labeled control valve

# Bad Ideas



Glued in place with caulking



Easy path not so easy to install without instructions



Mudded in place

# MRI Scanners

## FGI 2.2-3.4.4.1 MRI Suite

Shall be sized and configured in compliance with the manufacturer's technical specifications

## FGI 2.2-3.4.4.2 Space requirements

- Accommodate the clearances in the manufacturer's technical specifications
- Minimum clearance of 4 feet on all sides of the gantry assembly or table
- Door swing shall not encroach on these minimum clearances



# MRI Scanners (Cont)

## FGI 2.2-3.4.4.3 Planning Configuration of the MRI Suite

- American college of Radiology's Guidance Document for Safe MR Practices
- Spaces around, above and below to facilitate adherence to U.S. Food & drug Administration requirements for the safety of the 5-gauss zone
- Layout to include all functions listed in item 3 including
- Control vestibule visible from the control room
- 5 Gauss areas physically restricted by use of key locks or pass-key locking system

**This does not mean a mag lock system which is required to release on fire alarm.**

# MRI Scanner (cont)

## Quench Safety Exclusion Zone

FGI 2.2-3.4.4.4 – Cryogen vent emergency exhaust and passive pressure relief to be provided in accordance with the equipment manufacturer's technical specifications.

(ACR) American College Radiology

- 25 foot radius marked with surface warnings and signage
- Should be free of the following:
  - Service Equipment - Air Intakes - Operable Windows –
  - Unsecured Doors
- Anyone required to enter this zone including maintenance personnel and contractors should only be permitted to do so after receiving specific instruction on quench risks and response



# NFPA 99 Medical Gas Inspector (New in 2018)

- 5.1.12.3 System Inspection

- 5.1.12.3.1.1

System inspections SHALL be performed prior to concealing piping distribution systems in walls, ceilings, chases, trenches, underground, otherwise hidden from view.

- 5.1.12.3.1.3

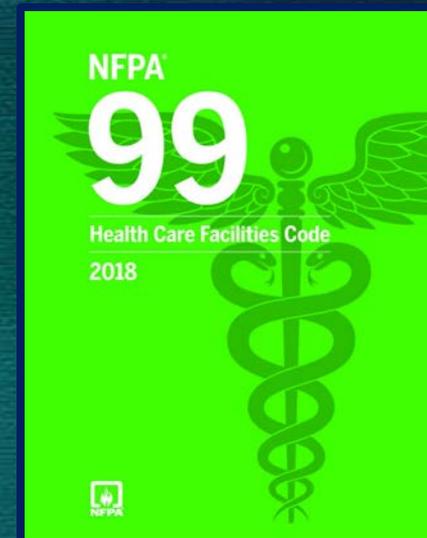
Person technically competent and experienced in the field of medical gas and vacuum pipeline inspections and testing and meeting the requirements of ASSE 6020

- 5.1.12.3.1.4

Inspections shall be performed by a part other than the installing contractor

- 5.1.12.3.1.5

Inspection permitted by in house personnel when the owner is not the installer provided in house personnel meet the requirements of 5.1.12.3.1.3



# NFPA 99 Medical Gas Inspector (cont)

- 5.1.12.3.2.2 INSPECTIONS

- 5.1.12.3.2.1

Initial pressure tests witnessed by an ASSE 6020 inspector.

- 5.1.12.3.2.2

Inspection for the presence of and correctness of labeling and valve tagging required by this code for all concealed components and piping distribution systems.

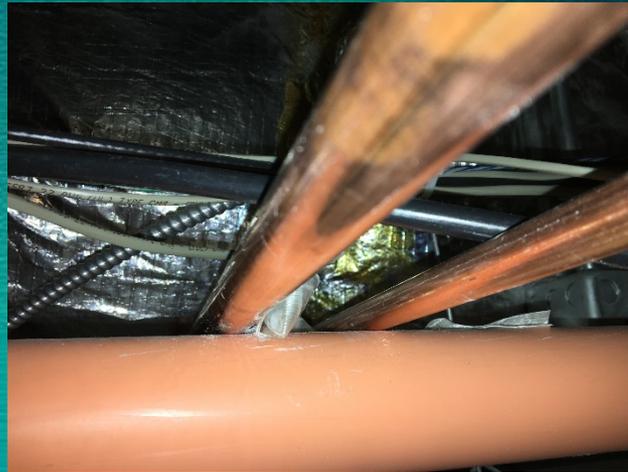
- 5.1.12.4.1.4

Testing of the cryogenic fluid central supply system conducted by a party technically competent and experienced in the field of cryogenic fluid systems and meeting the requirements of ASSE 6035.

# NFPA 99 Medical Gas Inspector (cont.)



Silver Solder



Med gas not labeled & supported by sprinkler pipe



Non compliant Vacuum system



Support stands on top of sheetrock ceiling

Ceiling boom



# TR/TER Rooms and 12 ft. Separation

- *Is it acceptable to allow small electric motors such as smoke damper actuators, transformers in power supplies, transformers in isolated power panels, lighting ballasts, etc. to be located within 12' of TR or TER rooms?*
- Per NFPA 99 [2012, 2015] 7.3.1.2.2.4 (E) and A.7.3.1.2.2.4 (E), the TER (and TR) shall be located no closer than 12' to permanent sources of electromagnetic interference including imaging equipment, transformers, motors, VFD's, etc.

# TR/TER Room and 12 ft. Separation

- Although the code does not stipulate any minimum thresholds of electromagnetic interference that is allowed, DHSR believes the intent is to limit exposure to larger equipment, transformers, VFD's etc.
- In an existing building do not locate new IT rooms next to these items.
- In existing TR room do not add new equip that will not comply.

# Mag Lock Drawings PE Stamped

- *I was cited for not having an engineer stamp the drawing for putting mag locks in our building. Why?*
- This is a requirement of the NC Professional Engineer Licensing Board, not DHSR. Drawings for life safety systems have to be sealed and signed by a PE licensed to practice in North Carolina. Magnetic locking systems were specifically included in this requirement.

We should be called out for the final -  
not to do your punch list



Items not complete at time of inspection

# ANY QUESTIONS?



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