HFG architecture

Session 2: Front-End Documents: *A Deep Dive*

Oklahoma Association of Healthcare Engineers

2019 Summer Regional Event

August 23, 2019

Session 2: FGI Front-End Documents: *A Deep Dive*

AGENDA

Learning Objectives

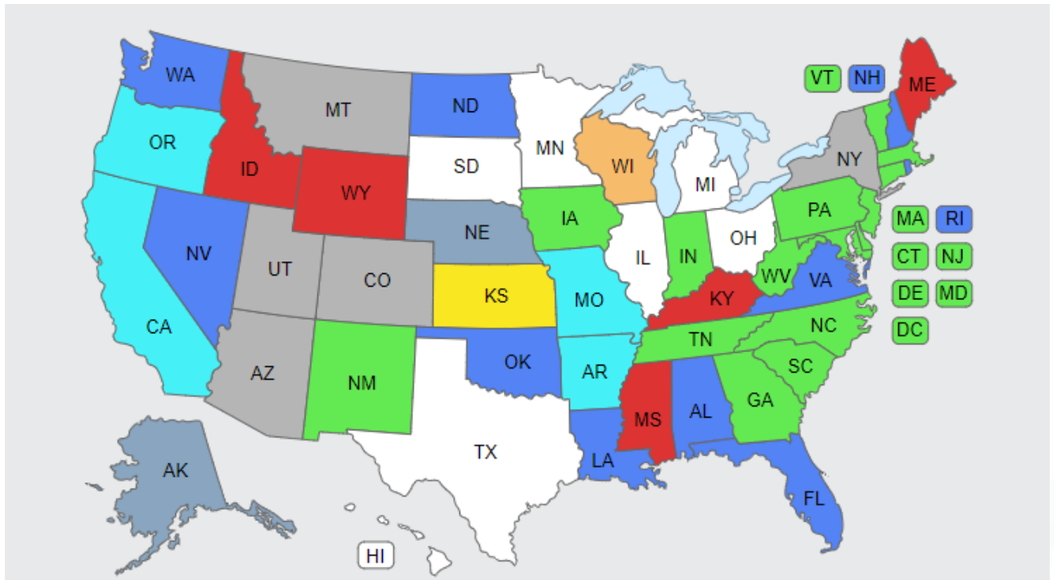
1. Understanding the governing body's responsibility in the delivery of the Owner provided documents
2. Understanding what deliverables are required
3. Understanding the timeline to deliver the documents and the impacts to the AEC providers
4. Understanding the different tools to assist in developing documents that in compliance with FGI

Speaker Profiles

MICHAEL TURNER: *Michael Turner is a Senior Project Manager with HFG Architecture. Michael manages multiple hospital client accounts and concurrently running projects. His project involvement includes all phases from planning to substantial completion with extensive experience working within an owner and construction manager team environment. He enjoys delivering high quality healthcare environments to our clients. Michael is licensed to practice in 24 states and The District of Columbia, is a member of AIA, and NCARB.*

DWAYNE ROBINETT: *Dwayne Robinett is the Managing Director of Oklahoma Operations and a Principal at HFG Architecture. With a career focus on healthcare, Dwayne has managed multiple hospital client accounts across the state and region and has extensive design experience across a multitude of healthcare project types. He is an accomplished medical planner with responsibilities for overall corporate strategy that focus on market growth, client retention, and overall quality and innovative design. Dwayne is a Licensed Architect in the State of Oklahoma, an AIA member, and a LEED Accredited professional since 2006.*

What are Front-End Documents



Other Regulatory Applications of the FGI *Guidelines*

Centers for Medicare and Medicaid Services. CMS has adopted by regulation the 2012 editions of the National Fire Protection Association (NFPA) 101: *Life Safety Code* and NFPA 99: *Health Care Facilities Code*. Otherwise, CMS regulation 482.41 requires hospitals to be constructed, arranged, and maintained to ensure the safety of the patient, and to provide facilities for diagnosis and treatment and for special hospital services appropriate to the needs of the community. To achieve this, CMS requires facilities to be in accordance with acceptable standards of practice, but leaves it up to the health care organization to determine which design standard to utilize.

KEY	
2018	
2014	
2010	
2006	
2001	
1996–97	
Equivalency*	
HVAC only	

**Guidelines* may be applied as an equivalency to state rules.

State Adoptions of the FGI:

Common Threads in all states

Adoption of FGI or equivalency

All states recognize the need for strategic thought process in creating or altering the functionality of healthcare spaces.

FGI identifies the Owner for being the expert in understanding the functional needs of new construction, major renovation or a project that changes the functional use of a health care facility. Before a governing body engages the architect, they should have identified the need for the functional criteria.

Items in the Front-End documents - Oklahoma

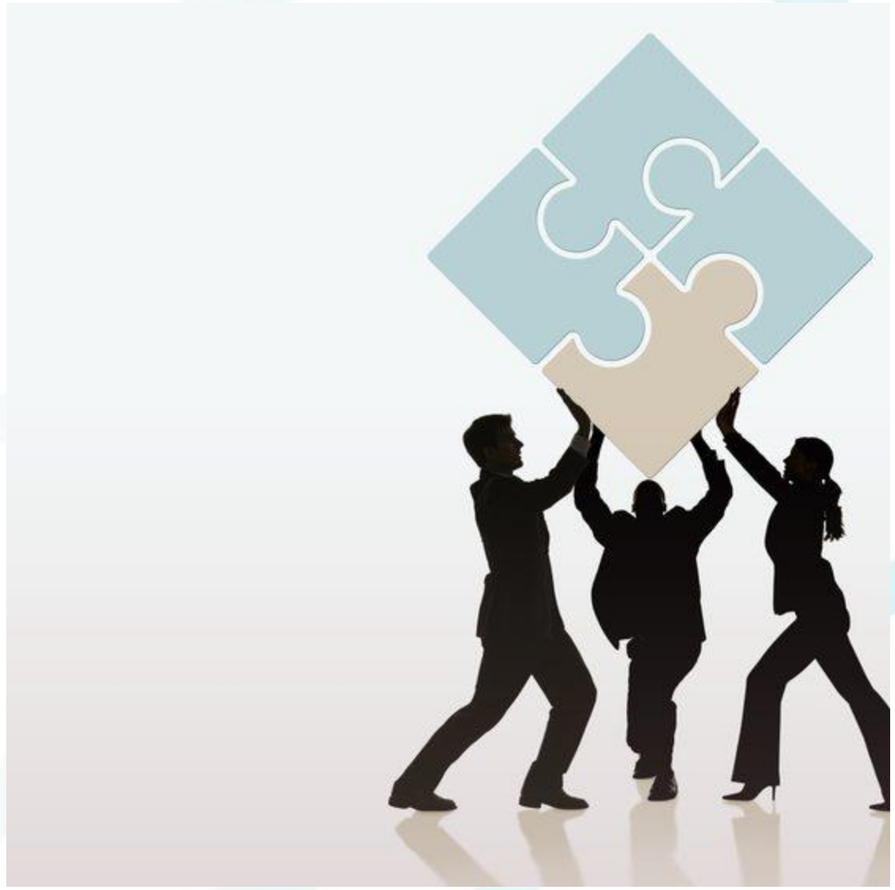
- 2018 FGI Parts 1.2 – 1.3
- Functional Program
- Functional Program includes the following:
  - Safety Risk Assessment
  - Infection Control Risk Assessment
  - Patient Handling and Movement Assessment
  - Patient Fall Prevention
  - Medical Safety
  - Psychiatric Patient Injury and Suicide Prevention
  - Patient Immobility
  - Security Risk
- NFPA 99 Risk Assessment (Year Adopted)
- Existing Plan with all spaces labeled

Parts 1.2 – 1.3

- 1.2 Planning, Design, Construction and Commissioning
- 1.2-1.1 Application
- 1.2-1.2 Multidisciplinary Project Team
- 1.2-1.3 Environmental Care and Facility Functional Considerations
- 1.2-2 Functional Program
  - 1.2-2.1 General
  - 1.2-2.2 Functional Program Content
- 1.2-3 Space Program
- 1.2-4 Safety Risk Assessment
  - 1.2-4.1 General
  - 1.2-4.2 Infection Control Risk Assessment
  - 1.2-4.3 Patient Handling and Movement Assessment
  - 1.2-4.4 Fall Prevention Assessment
  - 1.2-4.5 Medication Safety Assessment
  - 1.2-4.6 Behavioral and Mental Health Risk Assessment
  - 1.2-4.7 Patient Immobility Assessment
  - 1.2-4.8 Security Risk Assessment
- 1.2-5 Environment of Care Requirements
  - 1.2-5.1 Delivery of Care Model Concepts
  - 1.2-5.2 Patient, Visitors, Physicians, and Staff Accommodation and Flow
  - 1.2-5.3 Building Infrastructure and Systems Design
  - 1.2-5.4 Physical Environment Elements
- 1.2-6 Planning and Design Considerations and Requirements
  - 1.2-6.1 Acoustic Design
  - 1.2-6.2 Sustainable Design
  - 1.2-6.3 Wayfinding
  - 1.2-6.4 Design Considerations for Accommodations of Patients of Size
  - 1.2-6.5 Emergency Preparedness and Management
- 1.2-7 Renovation
  - 1.2-7.1 Phasing
  - 1.2-7.2 Isolation
  - 1.2-7.3 Maintenance of Air Quality and Utilities
  - 1.2-7.4 Existing Conditions
- 1.2-8 Commissioning
  - 1.2-8.1 Commissioning Requirements
  - 1.2-8.2 Commissioning Activities
  - 1.2-8.3 Commissioning Agent
- 1.3 Site
  - 1.3-1.1 General
- 1.3-2 Location
  - 1.3-2.1 Availability of Transportation
  - 1.3-2.2 Security
  - 1.3-2.3 Availability of Utilities
- 1.3-3 Site Features
  - 1.3-3.1 Signage
  - 1.3-3.2 Lighting
  - 1.3-3.3 Roads and Walkways
  - 1.3-3.4 Parking
  - 1.3-3.5 Emergency Access
  - 1.3-3.6 Landscape design features
  - 1.3-3.7 Transfer Support Features
- 1.3-4 Environmental Pollution Control

1.2 Planning, Design, Construction

- 1.2-1.2 Multidisciplinary Project Team
  - The scope and nature of the project shall dictate who needs to be involved
  - Who would the patient think is important in the team?



  - Appendix Notes
    - The multidisciplinary project team should be assembled as early as possible in the design process.
    - The multidisciplinary team should include administrators, clinicians, infection preventionists, architects and other design professionals, facility managers, safety officers, security managers, users of equipment, and support staff relevant to the areas affected by the project as well as those with knowledge of the organization's functional goal for the project. Inclusion of patient advocate / consumers, A/E consultants, and construction specialists should be considered.

- Assembly line mentality does not advance the primary mission of health care

1.2 Planning, Design, Construction

- 1.2-1.3 Environmental Care and Facility Functional Considerations
  - Architectural, Engineering and Construction activities should operate on the primary mission of health care “first, do no harm”
- 1.2-2 Functional Program
  - OSDH includes expectations for Functional Program inclusions along with the FGI
  - Maintain the functional program for future work on the facility
  - Completed as part of the project planning phase and updated throughout design and construction.
  - Functional program needs to match the drawings naming convention and vise versa.
  - Functional program must include the following:
    - Executive Summary – Narrative, Purpose of the project, Type and Size, Construction Type and Occupancy, Indirect Support Functions, Operational Requirements
    - Space program
    - Safety Risk Assessment
      - ICRA
      - Patient Handling and Movement Assessments
      - Fall Prevention Assessment
      - Medication Safety Assessment
      - Behavioral and Mental Health Risk Assessment
      - Patient Immobility Assessment
      - Security Risk Assessment

PROTECTIVE HEALTH SERVICES

Oklahoma State Department of Health
Creating a State of Health

Oklahoma State Department of Health
Protective Health Services – 0505
Medical Facilities
1000 NE 10th Street
Oklahoma City, OK 73117-1299
Telephone: (405) 271-6785
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PLAN REVIEW SUBMITTAL FORM: CHECK LIST
(Checklist does not have to be submitted with form)

Stage One Submittal (1copy of each):

☐Submittal Form

☐Preliminary Drawings

☐Functional Program
Functional Program must include:
- Safety Risk Assessment
- Infection Control Risk Assessment

Functional Program should contain the following as applicable
- Patient Handling and Movement Assessment
- Patient Fall Prevention
- Medical Safety
- Psychiatric Patient Injury and Suicide Prevention
- Patient Immobility
- Security Risks

☐Existing plan with all spaces labeled

☐Life safety plan

☐Location plan that shows the project location and relationship to other departments or tenants

☐Site plan if the building perimeter is altered or penetrated.

Stage Two Submittal (2 copies of each):

☐Submittal Form

☐Construction documents including specifications (only 1 copy is required)

☐Functional program
Functional Program must include:
- Safety Risk Assessment
- Infection Control Risk Assessment

Functional Program should contain the following as applicable
- Patient Handling and Movement Assessment
- Patient Fall Prevention
- Medical Safety
- Psychiatric Patient Injury and Suicide Prevention
- Patient Immobility
- Security Risks

☐Construction Schedule*

☐Contraction Name*

***If available. This information must be submitted before construction is started.**

1.2 Planning, Design, Construction Checklist and Tools

Regulation	FGI Requirement	Compliance/ Notes
General		
Project Team	Multidisciplinary groups/persons (stakeholders) affected by and integral to the design shall be included in the project planning and implementation process. At minimum, the multidisciplinary team shall include administrators, clinicians, infection preventionists, architects and other design professionals, facility managers, safety officers, security managers, users of equipment, and support staff relevant to the areas affected by the project as well as those with knowledge of the organization's functional goal for the project. The scope and nature of the project shall dictate others involved.	
Functional Program		
General Functional Program Requirements	A functional program shall be developed for new construction, major renovations, and projects that change the functional use of any facility space.	
	The governing body shall be responsible for developing, documenting, and updating the functional program.	
	Activities such as equipment replacement, fire safety upgrades, or minor renovations that will not change the facility's function or character shall not require a functional program.	
Functional Program Purpose	The functional program shall be used to determine the application of the Guidelines when developing facility projects.	
	(1) The functional program shall be completed as part of the project planning phase and updated, as needed, throughout the design and construction phases.	
	(2) Following its approval, the functional program shall serve as the basis for the project design and construction documents.	
	The facility shall retain the functional program with other design data to facilitate future alterations, additions, and program changes.	
Nomenclature in the Functional Program	The names for spaces and departments used in the functional program shall be consistent with those used in the Guidelines for Design and Construction of Hospitals and Outpatient Facilities. If acronyms are used, they shall be defined clearly.	
	The names and spaces indicated in the functional program shall also be consistent with those used on submitted floor plans.	
Functional Program Content		
Functional Program Executive Summary	An executive summary of the key elements of the functional program shall be provided and, at minimum, shall include the information outlined in Section 1.2-2.2 (Functional Program Content) in a project narrative.	
Purpose of the Project	Services to be provided, expanded, or eliminated by the proposed project shall be described.	
Project Type and Size	The type of health care facility(s) proposed for the project shall be identified as defined by the Guidelines.	
	Project size in square footage (new construction and/or renovation) and number of stories shall be provided.	
Construction Type/ Occupancy and Building Systems	New construction. If the proposed project is new construction that is not dependent on or attached to an existing structure, the following shall be included:	
	(1) A description of construction type(s) for the proposed project	

Tools – FGI Checklist For:

- Surgery
- Pharmacy
- Central Sterile Processing
- Nursing Unit
- Imaging
- Psychiatric
- Emergency Services
- Outpatient
- Kitchen and dietary services
- Physical Therapy

Functional Program Checklist

1.2-3 Space Programming

Sample Project - Micro Hospital

Space Summary

Date: 5/16/2019 — **22,308**

		SPACE	EXISTING Qty	EXISTING Area	Qty	Length	Width	Net	Gross	SubT	Total
	I	**ADMINISTRATION**									880
1	I-1	CEO/Clerk/HR/Open Office			1	20	20	400	417	417	400
2	I-2	Board Meeting Room / Conference			1	22	14	308	323	324	308
3	I-3	Workroom/Storage			1	8	6	48	54	55	48
		SUBTOTAL (NSF)									756
		GROSSING FACTOR									1.16
		TOTAL GSF IN SUITE									**880 SF**
	II	**ADMISSIONS & BUSINESS OFFICE**									628
1	II-1	Reception / Operator			1	8	8	64	71	71	64
2	II-2	Admissions			1	16	8	128	138	139	128
3	II-3	Patient Finance			1	16	8	128	138	139	128
4	II-4	Clerk			1	8	8	64	71	71	64
5	II-5	Work Room / Mail			1	10	14	140	150	151	140
		SUBTOTAL (NSF)									524
		GROSSING FACTOR									1.20
		TOTAL GSF IN SUITE									**628 SF**
	III	**CLINICAL LAB**									859
1	III-1	Director Office			1	8	8	64	71	71	64
2	III-2	Tech			1	10	8	80	88	88	80
3	III-3	Draw / Reception (1 chair)			1	10	8	80	88	88	80
4	III-4	Specimen Toilet			1	7.5	8	60	67	67	60
5	III-5	Storage			1	8	8	64	71	71	64
6	III-6	General Lab Area			1	20	16	320	335	336	320
7	III-7	Blood Bank			1	8	8	64	71	71	64
8	III-8	Staff Toilet			1	7.5	8	60	67	67	60
		SUBTOTAL (NSF)									792
		GROSSING FACTOR									1.08
		TOTAL GSF IN SUITE									**859 SF**

Tools

- Space Programming based on FGI Requirements
  - Assists in future space / land planning

1.2 Planning, Design, Construction Department Layout

- Understanding how departments communicate and interact with each other is important in the initial observation and design

1.2 Planning, Design, Construction Observation Report

01 **NUMBER OF WAITING ROOM CHAIRS TOTALED APPROXIMATELY 90**

02 **3 STAFF AT CHECK-IN**

03 **OVER A 15-MINUTE PERIOD:**
25 PEOPLE WERE OBSERVED IN WAITING
15 PEOPLE ARRIVED
15 PEOPLE WERE CALLED BACK
11 PEOPLE LEFT THE BUILDING

04 **ONE OF THE BRACE SHOP DOCTORS INDICATED 300 PATIENTS HAD BEEN SEEN THE PREVIOUS DAY**

05 **THERE ARE 6 iPAD STATIONS NOT IN USE BOLTED TO THE FLOOR. THERE IS SIGNAGE ON THE WALL VISIBLE FROM ENTRY DOORS.**

06 ONE TV IS LOCATED IN THE CORNER

07 FREE-STANDING FISH TANK

8A OFFICE SUPPLY DELIVERIES

8B PATIENTS OF ALL AGES AND MOBILITIES WERE OBSERVED

09 **PATIENTS MAY ENTER ON EITHER SIDE AND ARE EASILY LOST**

10 **THIS IS A PINCH-POINT AND QUICKLY BECOMES CONGESTED**

11 **THERE ARE 9 PODS WHICH MAY BE USED BY 1-2 DOCTORS**

12 THE DOCTORS DISLIKE THE SMALLEST POD AND WOULD RATHER SHARE THE LARGER ONES. THE SMALL POD IS USED FOR HAND PATIENTS WHO ARE NOT GENERALLY WHEEL-CHAIR BOUND. SMALL EXAMS WERE 8FTx10FT. HALL WAS 4'-0" WIDE.

13 **A PA SYSTEM IS IN PLACE**

14 **IT WAS INDICATED BY STAFF THAT THERE IS A CIRCULATION ISSUE WITH THE LOCATION OF PATIENT RECORDS**

15 **STAFF INDICATED SURGERY SCHEDULING SHOULD BE LOCATED NEAR THE DOCTORS**

16 **A SIGNIFICANT AMOUNT OF CROSS-TRAFFIC WAS OBSERVED**

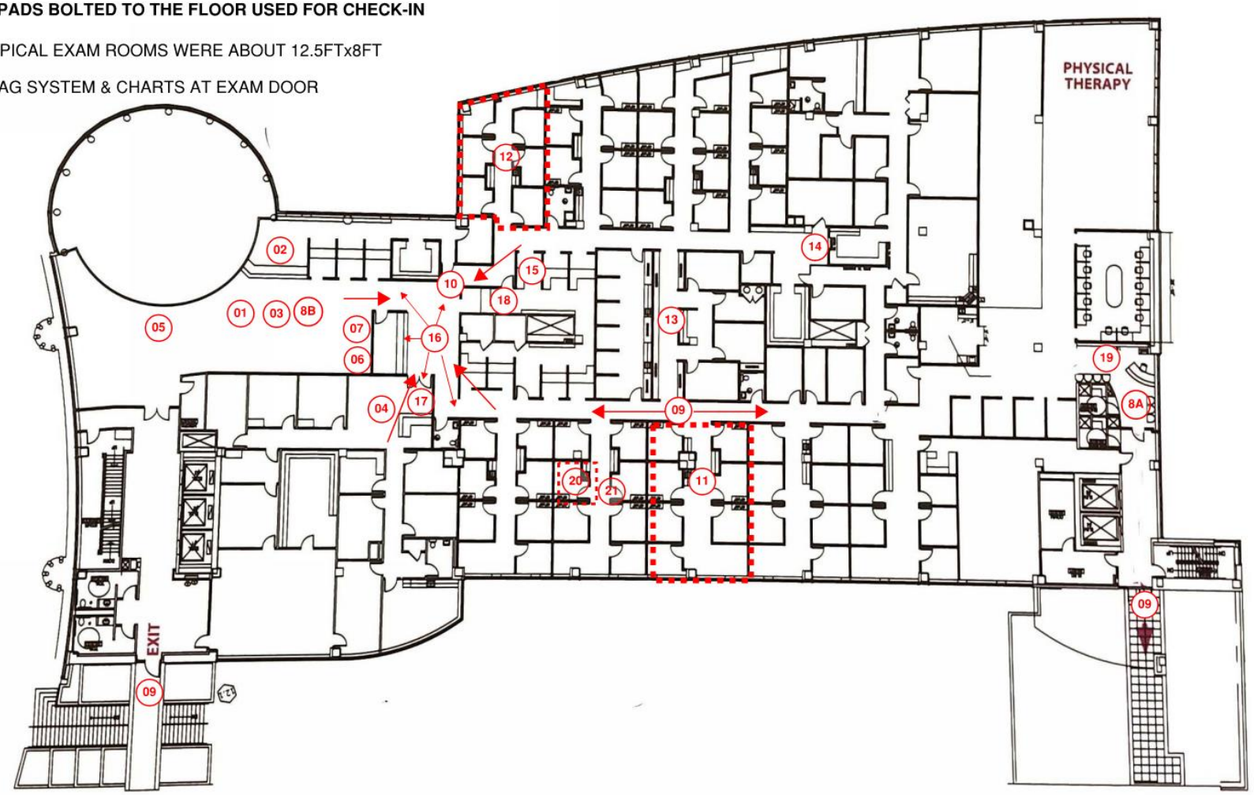
17 SIGNAL BELLS WERE SUSPENDED ON THE SHOP DOORS

18 **PHONE RANG OFTEN & WAS HEARD FROM WAITING**

19 **2 iPADS BOLTED TO THE FLOOR USED FOR CHECK-IN**

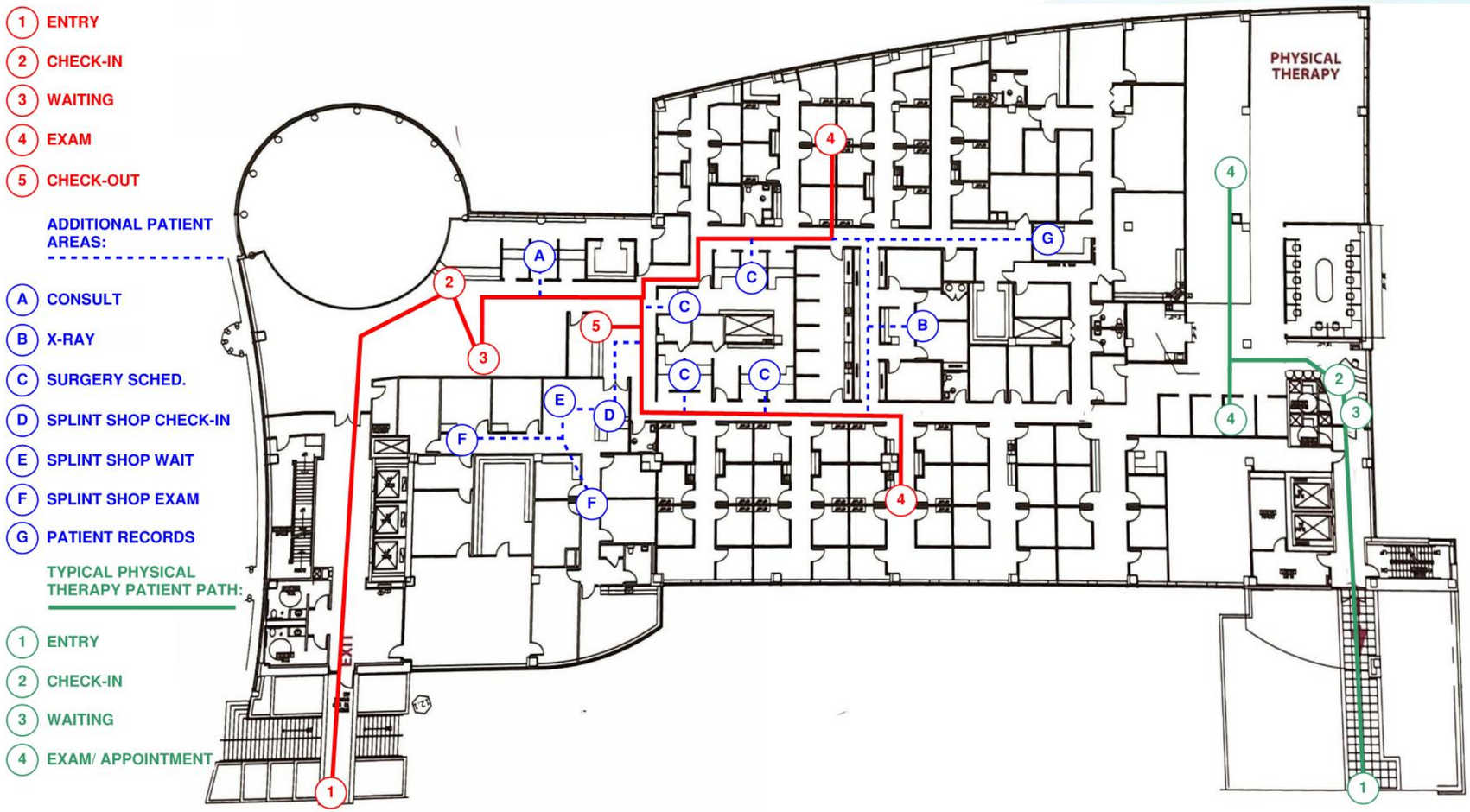
20 TYPICAL EXAM ROOMS WERE ABOUT 12.5FTx8FT

21 FLAG SYSTEM & CHARTS AT EXAM DOOR



NTS

1.2 Planning, Design, Construction
Patient Circulation



1.2 Planning, Design, Construction
Patient Circulation

Check In Census (time at quantity)

Qty	Frequency	Cum %	%
14	2	100.00%	0.00%
13	1	100.00%	0.00%
12	8	100.00%	0.00%
11	54	100.00%	0.01%
10	280	99.99%	0.04%
9	1221	99.95%	0.16%
8	4445	99.79%	0.59%
7	11848	99.20%	1.58%
6	25105	97.62%	3.34%
5	46167	94.28%	6.15%
4	61616	88.13%	8.20%
3	74802	79.93%	9.96%
2	81845	69.98%	10.90%
1	89466	59.08%	11.91%
0	354349	47.17%	47.17%

Check Out Queue Census (time at quantity)

Qty	Frequency	Cum %	%
11	2	100.00%	0.00%
10	2	100.00%	0.00%
9	13	100.00%	0.00%
8	76	100.00%	0.01%
7	337	99.99%	0.04%
6	1377	99.94%	0.18%
5	4822	99.76%	0.64%
4	13739	99.12%	1.83%
3	32460	97.29%	4.32%
2	61779	92.97%	8.22%
1	90648	84.74%	12.07%
0	545954	72.68%	72.68%

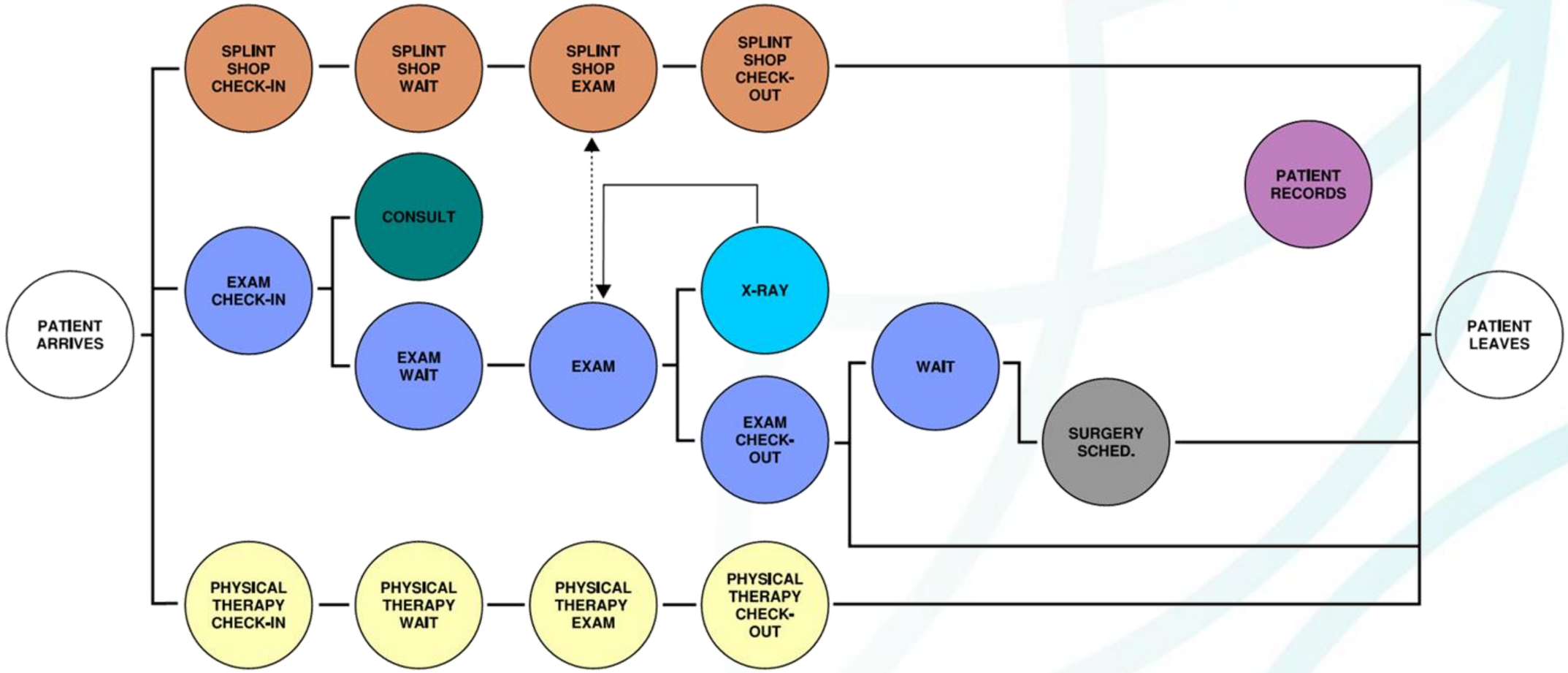
HFG

Patient Flow Simulation

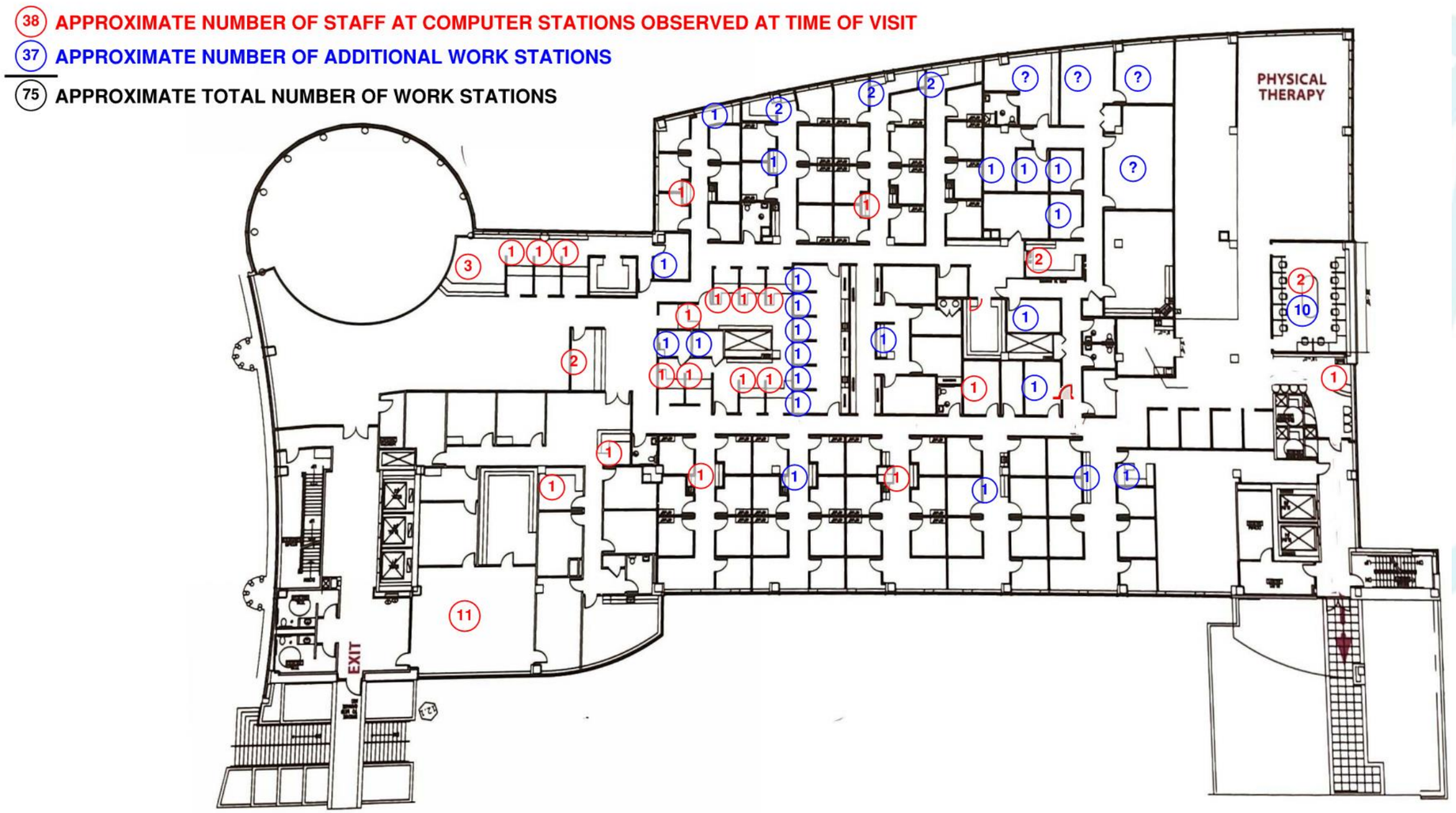
Check In Queue Census (time at quantity)

Qty	Frequency	Cum %	%
15	2	100.00%	0.00%
14	1	100.00%	0.00%
13	1	100.00%	0.00%
12	3	100.00%	0.00%
11	8	100.00%	0.00%
10	18	100.00%	0.00%
9	46	100.00%	0.01%
8	78	99.99%	0.01%
7	171	99.98%	0.02%
6	320	99.96%	0.04%
5	619	99.91%	0.08%
4	1224	99.83%	0.16%
3	2344	99.67%	0.31%
2	4434	99.36%	0.59%
1	8180	98.77%	1.09%
0	733760	97.68%	97.68%

1.2 Planning, Design, Construction
Patient Circulation



1.2 Planning, Design, Construction Staffing Plan



Safety Risk Assessment

Tools – The Center for Health Design

- 1.2-4 Safety Risk Assessment
  - 1.2-4.1 General
  - 1.2-4.2 Infection Control Risk Assessment
  - 1.2-4.3 Patient Handling and Movement Assessment
  - 1.2-4.4 Fall Prevention Assessment
  - 1.2-4.5 Medication Safety Assessment
  - 1.2-4.6 Behavioral and Mental Health Risk Assessment
  - 1.2-4.7 Patient Immobility Assessment
  - 1.2-4.8 Security Risk Assessment

Create an assessment for your project

- Explore SRA toolkit
- Assemble your multidisciplinary team
- Decide how to integrate the SRA with your existing process

Determine relevant Risk components for your project

- Define your goals and objectives for safety
- Review resources related to each risk component

Track progress towards objectives with the Safety Alignment Tool

- Engage leadership
- Spot ongoing opportunities to align organizational safety strategy with project design

Use the Historical Data Tool to identify areas of risk & vulnerability

- Understand the importance of assessing and accepting risk
- Enter historical data for each area of safety
- Review historical data to identify areas of concern and patterns of vulnerability

Apply evidence-based design with the Design Considerations Tool

- Discuss design options across risk areas
- Align design with operational processes
- Document decisions

Infection Control Risk Assessment

- 1.2-4.2 Infection Control Risk Assessment

Infection Control Risk Assessment
Matrix of Precautions for Construction & Renovation

Step One:
Using the following table, *identify* the Type of Construction Project Activity (Type A-D)

TYPE A	**Inspection and Non-Invasive Activities**. Includes, but is not limited to: ▪ removal of ceiling tiles for visual inspection only, e.g., limited to 1 tile per 50 square feet ▪ painting (but not sanding) ▪ wallcovering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.
TYPE B	**Small scale, short duration activities which create minimal dust** Includes, but is not limited to: ▪ installation of telephone and computer cabling ▪ access to chase spaces ▪ cutting of walls or ceiling where dust migration can be controlled.
TYPE C	**Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies** Includes, but is not limited to: ▪ sanding of walls for painting or wall covering ▪ removal of floorcoverings, ceiling tiles and casework ▪ new wall construction ▪ minor duct work or electrical work above ceilings ▪ major cabling activities ▪ any activity which cannot be completed within a single workshift.
TYPE D	**Major demolition and construction projects** Includes, but is not limited to: ▪ activities which require consecutive work shifts ▪ requires heavy demolition or removal of a complete cabling system ▪ new construction.

Step 1: _____

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Step Two:
Using the following table, ***identify* the Patient Risk Groups** that will be affected.
If more than one risk group will be affected, select the higher risk group:

Low Risk	Medium Risk	High Risk	Highest Risk
▪ Office areas	▪ Cardiology ▪ Echocardiography ▪ Endoscopy ▪ Nuclear Medicine ▪ Physical Therapy ▪ Radiology/MRI ▪ Respiratory Therapy	▪ CCU ▪ Emergency Room ▪ Labor & Delivery ▪ Laboratories (specimen) ▪ Medical Units ▪ Newborn Nursery ▪ Outpatient Surgery ▪ Pediatrics ▪ Pharmacy ▪ Post Anesthesia Care Unit ▪ Surgical Units	▪ Any area caring for immunocompromised patients ▪ Burn Unit ▪ Cardiac Cath Lab ▪ Central Sterile Supply ▪ Intensive Care Units ▪ Negative pressure isolation rooms ▪ Oncology ▪ Operating rooms including C-section rooms

Step 2 _____

Step Three: ***Match* the**

Patient Risk Group (***Low, Medium, High, Highest***) with the planned …
Construction Project Type (***A, B, C, D***) on the following matrix, to find the …
Class of Precautions (***I, II, III or IV***) or level of infection control activities required.
Class I-IV or Color-Coded Precautions are delineated on the following page.

IC Matrix - Class of Precautions: Construction Project by Patient Risk

	Construction Project Type			
Patient Risk Group	**TYPE A**	**TYPE B**	**TYPE C**	**TYPE D**
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicate that **Class III** or **Class IV** control procedures are necessary.

Step 3 _____

Infection Control Risk Assessment

Description of Required Infection Control Precautions by Class

	During Construction Project	Upon Completion of Project
CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection	1. Clean work area upon completion of task.
CLASS II	1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area 6. Remove or isolate HVAC system in areas where work is being performed.	1. Wipe work surfaces with cleaner/disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Upon completion, restore HVAC system where work was performed.
CLASS III	1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid.	1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Prevention & Control Department and thoroughly cleaned by the owner's Environmental Services Department. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with cleaner/disinfectant. 5. Upon completion, restore HVAC system where work was performed.
CLASS IV	1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures. 5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave work site. 6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.	1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Prevention & Control Department and thoroughly cleaned by the owner's Environmental Services Dept. 2. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 3. Contain construction waste before transport in tightly covered containers. 4. Cover transport receptacles or carts. Tape covering unless solid lid. 5. Vacuum work area with HEPA filtered vacuums. 6. Wet mop area with cleaner/disinfectant. 7. Upon completion, restore HVAC system where work was performed.

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Step 4. **Identify the areas surrounding the project area, assessing potential impact**

Unit Below	Unit Above	Lateral	Lateral	Behind	Front
Risk Group	Risk Group	Risk Group	Risk Group	Risk Group	Risk Group

Step 5. **Identify specific site of activity e.g., patient rooms, medication room, etc.**

_____

Step 6. **Identify issues related to: ventilation, plumbing, electrical in terms of the occurrence of probable outages**.

_____

Step 7. **Identify containment measures, using prior assessment. What types of barriers? (E.g., solids wall barriers); Will HEPA filtration be required?**

_____

(Note: Renovation/construction area shall be isolated from the occupied areas during construction and shall be negative with respect to surrounding areas)

Step 8. **Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (e.g., wall, ceiling, roof)**

Step 9. **Work hours: Can or will the work be done during non-patient care hours?**

Step 10. **Do plans allow for adequate number of isolation/negative airflow rooms?**

Step 11. **Do the plans allow for the required number & type of handwashing sinks?**

Step 12. **Does the infection prevention & control staff agree with the minimum number of sinks for this project?** (Verify against FGI Design and Construction Guidelines for types and area)

Step 13. **Does the infection prevention & control staff agree with the plans relative to clean and soiled utility rooms?**

Step 14. **Plan to discuss the following containment issues with the project team. E.g., traffic flow, housekeeping, debris removal (how and when),**

_____
_____
_____

Appendix: Identify and communicate the responsibility for project monitoring that includes infection prevention & control concerns and risks. The ICRA may be modified throughout the project. Revisions must be communicated to the Project Manager.

Steps 1-3 Adapted with permission V Kennedy, B Barnard, St Luke Episcopal Hospital, Houston TX; C Fine CA
Steps 4-14 Adapted with permission Fairview University Medical Center Minneapolis MN Forms modified /updated; provided courtesy of Judene Bartley, ECSI Inc. Beverly Hills MI 2002. Jbartley@ameritech.net Updated, 2009.

Infection Control Risk Assessment

Psychrometrics

- Awareness that OR rooms often have low temps with (sometimes) higher humidity levels and it is necessary as a practice to evaluate condensation in the building envelope.

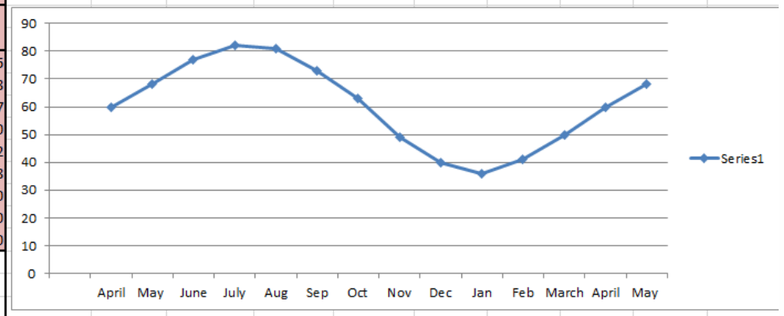
From The Building Science Corporation

- What Does Mold Need to Grow?
- Mold needs water to grow; without water mold cannot grow. Mold also needs food, oxygen and a temperature between 40 degrees and 100 degrees F. .....Molds prefer damp or wet material. Some molds can get moisture from the air when the air is very damp, that is when the relative humidity is above 80%. The high humidity makes surfaces damp enough for mold to grow.

The Center for Health Design

Step 8. Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (e.g., wall, ceiling, roof)

Project	Sample Project																
Assume interior air temperature is 62 degrees F and RH is 60% which will result in dewpoint at 45D F																	
Mean monthly temperature (F)																	
			April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	
			60	68	77	82	81	73	63	49	40	36	41	50	60	68	
Interior			62	Int Face	62	Int Face											
Exterior			36	Winter	82	Summer											
			Delta T Jan	Material	Delta T July	Material											
Material	R Value	R/RT	26	Temp	20.00	Temp											
Brick	0.8	0.027	0.703	36.703	0.54	81.46											
Air Cavity	1	0.034	0.879	37.582	0.68	80.78											
Air barrier	0.17	0.006	0.149	37.731	0.11	80.67											
1.5" rigid EPS insul	7.5	0.25	6.59	44.32	5.07	75.60											
5/8" densglass	0.56	0.02	0.49	44.81	0.38	75.22											
6" studwall insul	19	0.64	16.69	61.51	12.84	62.38											
5/8" Drywall	0.56	0.02	0.49	62.00	0.38	62.00											
		0.00	0.00	62.00	0.00	62.00											
	0	0.00	0.00	62.00	0.00	62.00											
Total	29.59																



Mean Average Monthly Temperatures

Dew Point Chart	Ambient Air Temperature (F)										
Relative Humidity	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	75	84	95	104	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	19	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	15	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83
30%	-6	4	13	20	28	36	44	52	61	69	77

Surface temperature at which condensation occurs

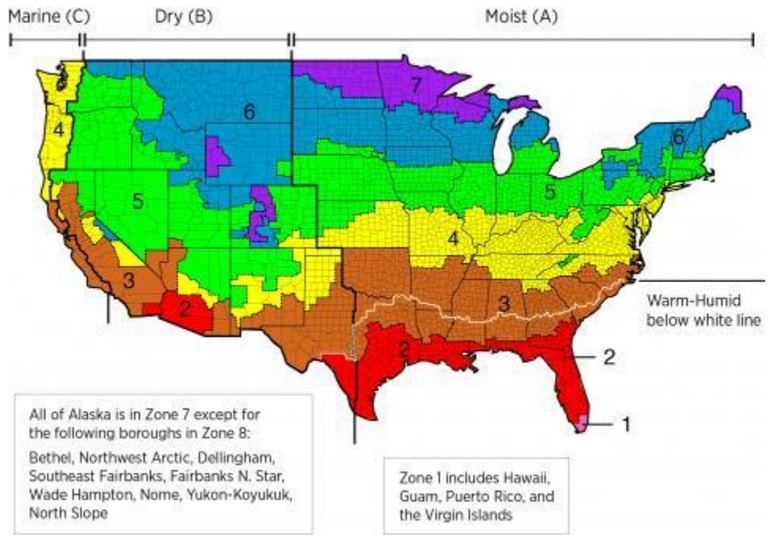
Infection Control Risk Assessment

The Center for Health Design

EXECUTIVE SUMMARY

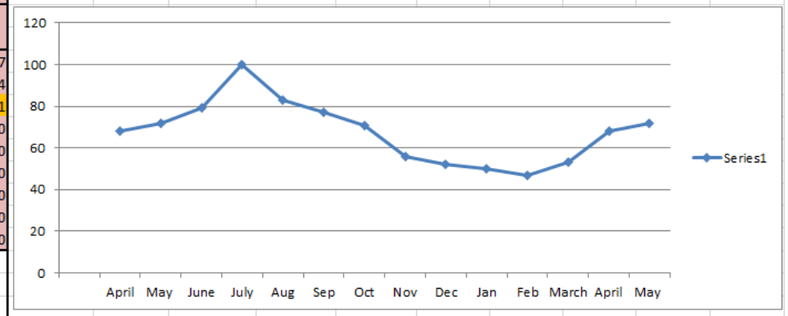
Psychrometrics

- We once investigated a project in Climate Zone 1that was getting moisture in the OR exterior wall. Upon investigation, we found they were operating the HVAC at 61D F and 80% RH. The CMU exterior wall had metal furring to hold the drywall off the CMU. The metal acted as a thermal bridge and the cold, moist air came into contact with the warm surface and the drywall was acting as a de-humidifier. Breaking the thermal bridge and modifying the controls to allow less humidity solved the problem.



Step 8. Consider potential risk of water damage. Is there a risk due to compromising structural integrity? (e.g., wall, ceiling, roof)

Mean monthly temperature (F)																	
			April	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	March	April	May	
			68	72	79	100	83	77	71	56	52	50	47	53	68	72	
Interior			61	Int Face	61	Int Face											
Exterior			50	Winter	100	Summer											
Material	R Value	R/RT	Delta T Jan 11	Material Temp	Delta T July 39.00	Material Temp											
Stucco	0.2	0.072	0.797	50.797	2.83	97.17											
8" CMU	1	0.362	3.986	54.783	14.13	83.04											
Furring and air	1	0.362	3.986	58.768	14.13	68.91											
5/8" Drywall	0.56	0.20	2.23	61.00	7.91	61.00											
		0.00	0.00	61.00	0.00	61.00											
		0.00	0.00	61.00	0.00	61.00											
		0.00	0.00	61.00	0.00	61.00											
		0.00	0.00	61.00	0.00	61.00											
	0	0.00	0.00	61.00	0.00	61.00											
Total	2.76																



Mean Average Monthly Temperatures

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	Ambient Air Temperature (F)										
Relative Humidity	20	30	40	50	60	70	80	90	100	110	120
90%	18	28	37	47	57	67	77	87	97	107	117
85%	17	26	36	45	55	65	75	84	95	104	113
80%	16	25	34	44	54	63	73	82	93	102	110
75%	15	24	33	42	52	62	71	80	91	100	108
70%	13	22	31	40	50	60	68	78	88	96	105
65%	12	20	29	38	47	57	66	76	85	93	103
60%	11	19	27	36	45	55	64	73	83	92	101
55%	9	17	25	34	43	53	61	70	80	89	98
50%	6	15	23	31	40	50	59	67	77	86	94
45%	4	13	21	29	37	47	56	64	73	82	91
40%	1	11	18	26	35	43	52	61	69	78	87
35%	-2	8	16	23	31	40	48	57	65	74	83
30%	-6	4	13	20	28	36	44	52	61	69	77

Surface temperature at which condensation occurs

Patient Handling 1.2-4.3

The Center for Health Design

- Locate departments and units that patients are frequently transported from/to as close to each other as possible (e.g., ED and imaging if ED imaging is a most frequent patient transport route).
- Provide patient elevators to accommodate patient beds/stretchers for the transportation of special patients such as patients of size.
- Minimize the time, physical effort and risks associated with transporting patients between departments and units through building design (e.g., ample corridor width, minimal turns, wide doorways without thresholds, open layout, elevators with ample spaces to accommodate bariatric beds, etc.). Beside the physical proximity, certain building elements (e.g., design of corridors, ramps, doorways) may facilitate or hinder patient movement between units and department within a hospital thus impact the time, physical effort, and risks associated with transporting patients.
- Select patient handling assistive devices at specific units or areas according to the following considerations and criteria:
  -patient dependency
  -patient weight and size
  -projected patient populations
  -patient handling tasks
  -transfer time
  -risk of injury
  -ease of use
  -space/structural/other requirements
- Designate enough conveniently located storage spaces for patient handling equipment and accessory supplies (e.g., slings, lateral transfer devices, slide boards) in each area where patient handling occurs, including rooms for patient care. Patient handling and movement assistive devices/equipment may take up precious patient care space. They should be stored away when not in use to avoid causing clutter that often result in other safety risks such as falls (see #F5). (This consideration is also relevant under the following category: unit layout.)
- Optimize locations of electrical supply for charging and/or using patient handling equipment so they are easily accessible for the users.
- Design the patient bathroom layout to facilitate safe and effective use of patient handling and movement equipment.
- Make patient room and bathroom doors wide and tall enough for the use of patient handling and movement devices.

Fall Prevention1.2-4.4

The Center for Health Design

- Protect entrances from weather (e.g., canopies, walk-off mats).
- If direct visibility is not possible through unit layout, consider availability of additional patient monitoring (e.g., video surveillance, alarms).
- Provide space for families to be present in the patient room (e.g., encourage communication about falls, increase the level of patient surveillance)
- Provide room layout with clear and unobstructed paths of travel (e.g., storage, dedicated locations for commonly used moveable items)
- Design location of call button/systems to be accessible and usable by the patient.
- Provide space on the opening side (door handle side) of the patient toilet room door to facilitate the use of equipment and/or assistive devices.
- Allow for smooth transitions in walking surfaces or between flooring types to avoid surface irregularities leading to trips.
- Use floor materials and patterning to accurately convey the actual floor conditions (e.g., the perception of a level floor vs. a step or stair).
- Select slip-resistant flooring in potential wet areas (e.g., bathrooms, entrances, kitchens) and on ramps and stairs.
- Secure walk-off mats, rugs and carpeting to the floor (e.g., entrances, lobbies, waiting areas).
- Provide low-level lighting in nighttime/dark conditions.
- Locate grab bars and hand rails to support patients while ambulating to the toilet.
- Consider ergonomic design in furniture selection to reduce staff fatigue (e.g., adjustable heights, standing workstations).
- Consider fall risks from furniture/equipment where procedures are performed (e.g., radiology, surgery, ED).

Medication Safety 1.2-4.5

- Design the medication safety zone (MSZ) to enable the clear visualization (labeling information) and organization of medication related products in the MSZ work space (e.g., use of adjustable fixtures, drawer and storage design, counter height and designs to minimize work surface clutter).
- Provide well-organized storage spaces/shelves at a height to enable visual differentiation and with a degree of separation to enable the selection of the correct medication.
- Design spaces for the integration of information technology required for medication safety (e.g., use of barcode readers, CPOE, etc.).
- Design spaces to enable point of care barcode verification to reduce errors in the transcription and administration of medication.
- Identify and provide the space needed for medication associated equipment (e.g., barcode reader, mobile medication cart, etc.) and safety technology (e.g., CPOE) in inpatient and outpatient medication safety zones.
- Locate the medication safety zones out of circulation paths to minimize distraction and interruption.

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- Standardize the design for clinically similar areas in the workspace, with regard to medication related equipment, information technology, supporting materials (e.g., labels, medication instructions) required to support the workflow for those tasks described in the functional program.
- Provide a visible sharps container accessible to personnel within the medication safety zone.
- Use visual clues such as a change in floor color to delineate a medication safety zone/ No Interruption Zone.
- Consider the different factors that may impact the sound quality and noise levels in medication safety zones including layout, selection of materials and HVAC and building system design.
- Use sound-absorbing materials (when permitted by infection control guidelines) to reduce noise levels in the medication safety zone.
- Specify USP-NF-specific lighting levels for the different tasks in the medication safety zone including: (i) Designated computer entry and handwritten order-processing locations, (ii) Pharmacy medication filling and checking, (iii) Pharmacy patient counseling, (iv) Sterile compounding and preparation, (v) Storeroom for pharmacy medication, (vi) Medication preparation area, (vii) Medication administration work areas (including the patient room).

Behavioral and Mental Health Risk Assessment 1.2-4.6

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- Control unit doors for entry and exit (e.g., sally port, locked with viewing panel) where warranted by the patient population.
- Design layout to eliminate blind spots and areas where staff can become isolated and overcome; where the layout cannot be changed, reduce the hazards by other means (e.g., corner mirrors or cameras).
- Design layout to maximize visibility and accessibility to all patient-occupied areas, including treatment spaces (e.g., exam rooms).
- Provide nurse stations/team care areas with open access to communication while being safe for staff.
- Provide separate secure rooms for patient at risk for suicide or harm to self and others in the ED (e.g., psychiatric, criminal).
- Provide visual access for staff to all areas of secure holding (including cameras or mirrors for blind spots) to mitigate self-harm and detect elopement.
- Ensure exterior areas accessible to the unit or patients are well lit.
- Include exterior fences and walls designed to mitigate elopement.
- Secure outdoor perimeter in a manner appropriate for the population served.
- Select and design exterior landscaping to eliminate access to roofs, fences or walls that could lead to elopement.
- Select non-toxic exterior and interior landscaping to preclude use as a weapon (e.g., branches).
- Select door handles and other hardware (closers, hinges) to reduce possible anchor points for hanging.
- Limit opening size of operable windows to mitigate jumping risk
- Specify security glazing to meet the risk of the room type (e.g., seclusion room, patient room, activity room, group room, corridor).
- Locate security in close proximity to behavioral health units to allow quick response times.
- Secure or design to mitigate jumping in any areas where the risk of jumping may be an issue (e.g., roof, balcony, porch, window).
- Include secure psychiatric/behavioral health units for those at risk of self-harm.
- Balance inpatient unit design between the need for a therapeutic environment and safety.
- Include secure storage for environmental service items
- Provide ceilings high enough to mitigate the risk of access to ceiling fixtures. (This consideration is also relevant under the following category: building envelope/structure.)
- Design ceilings with monolithic surfaces to restrict ceiling space access in higher-risk areas
- Provide space immediately outside the seclusion room for the response team to manage a patient needing seclusion.
  (This consideration is also relevant under the following category: room layout.)
- Incorporate room details designed to eliminate sharp edges and to have rounded outside corners.
- Specify mirrors made of non-breakable material.

Security Risk1.2-4.8

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- Limit and control points of entry into the site (vehicular and pedestrian).
- Design parking facilities according to specific security considerations including: limiting and controlling entries/exits; protective lighting; physical protective barriers; and video surveillance.
- Put in place penetration-resistant protective measures that extend from solid floor to solid ceiling or roof in the building envelope for highly security-sensitive areas.
- Implement segregation of authorized and unauthorized visitors in security-sensitive patient areas.
- Design the layout to ensure that patient and visitor paths or "screened public" paths do not pass through designated staff-only security zones.
- Design the workstations in patient care areas where there is a high risk of physical violence to staff to prevent unwanted access. (The degree of enclosure and protective material used should depend on the assessed vulnerability and patient population.)
- Position workstations in security-sensitive areas to provide staff direct access to an exit (safe drop-back zone), and equip them with strategically located duress alarms.
- Consider the protection of HVAC systems against chemical, biological and radiological attacks. (e.g., protection of outside air intakes, location of return air grilles and types of filtration).
- Put in place intrusion detection systems in high-risk areas of the hospital that are not staffed 24/7.
- Address the facility's role in responding to internal and external emergencies on its own, or in coordination with local emergency response or public health authorities based on the assessed risk.
- Consider a single unified or integrated system for access control, video surveillance and, when appropriate, parking access and egress, debit card functions and time and attendance needs.
- Enable the security system to completely shut down vehicular and pedestrian access if needed.
- Provide adequate and unobstructed lighting to enable surveillance of the grounds surrounding a healthcare facility.
  (This consideration is also related to the category: lighting.)
- Avoid/eliminate places of potential concealment/habitation in the landscape and maximize visibility (unobstructed sightlines).
- Locate ED reception or triage areas to provide unobstructed uninterrupted staff observation of public access points to the department, the public waiting area, including patients who are waiting for treatment, and the treatment area.
- Designate access-controlled and monitored (video and audio surveillance) patient/observation rooms for disruptive/aggressive patients or patients at high risk of elopement.
- Include access to panic buttons for security emergencies in high-risk areas (e.g., triage)

Security Risk1.2-6.1 ACOUSTIC DESIGN

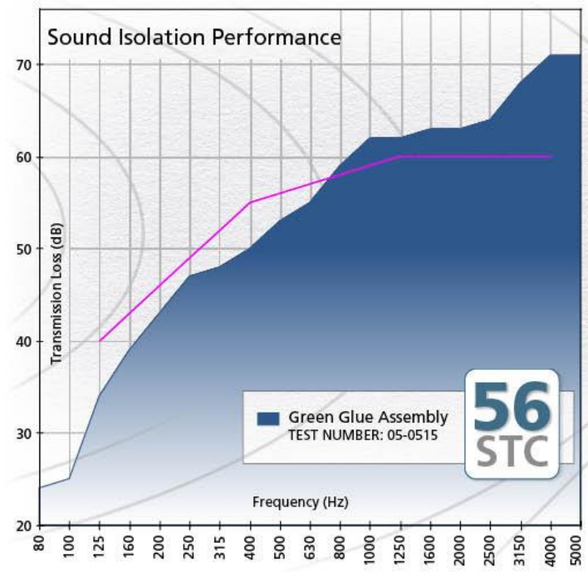
Sound Transmission Class (STC)

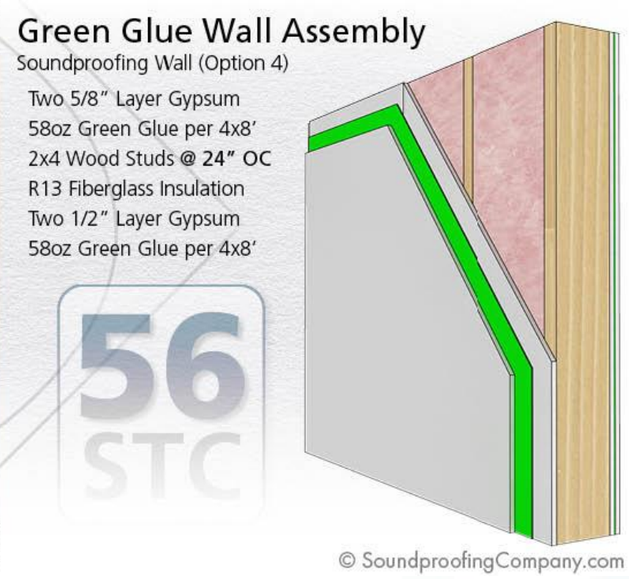
STC	Performance	Description
50-60	Excellent	Loud sounds heard faintly or not at all.
40-50	Very Good	Loud speech heard faintly but not understood.
35-40	Good	Loud speech heard but hardly intelligible.
30-35	Fair	Loud speech understood fairly well.
25-30	Poor	Normal speech understood easily and distinctly.
20-25	Very Poor	Low speech audible.

Adjacency Combination		STC_C
Patient Room	Patient Room (wall - same floor)	45
Patient Room	Patient Room (floor-to-floor)	50
Patient Room	Corridor (with entrance)	35
Patient Room	Public Space	50
Patient Room	Service Area	60
NICU Room	Patient Room	50
NICU	Corridor	50
Exam Room	Corridor (with entrance)	35
Exam Room	Public Space	50
Treatment Room	Room	50
Treatment Room	Corridor	35
Toilet Room	Public Space	45
Consultation Room	Public Space	50
Consultation Room	Patient Room	50
Consultation Room	Corridor (with entrance)	35
Patient Room	MRI Room	60
Exam Room	MRI Room	60
Exam Room	Exam Room (no electronic masking)	50
Exam Room	Exam Room (with electronic masking)	40
Public Space	MRI Room	50

Security Risk1.2-6.1 ACOUSTIC DESIGN

- Market responses to acoustic performance





1.3 SITE

- 1.3-3 Site Features
  - 1.3-3.1 Signage
  - 1.3-3.2 Lighting
  - 1.3-3.3 Roads and Walkways
  - 1.3-3.4 Parking
  - 1.3-3.5 Emergency Access
  - 1.3-3.6 Landscape design features
  - 1.3-3.7 Transfer Support Features

OTHER REGS NFPA – 99 Risk Assessment

NFPA 99 Risk Assessment

- ASHE Resources
- 2012 Changes – Levels to Categories
- Category 1 - Death
- Category 2 - Injury
- Category 3 - Discomfort
- Category 4 – No Affect
- Risk Categories for systems
  - Oxygen
  - Medical Air
  - Vacuum
  - WAGD
  - Electrical Systems
    - Essential Electrical Systems
      - Diesel Vs. Natural Gas Generators
  - Data
  - Phone
  - Nurse Call
  - Cable TV
  - Plumbing systems (potable water)
  - HVAC

- Risk Categories for Equipment

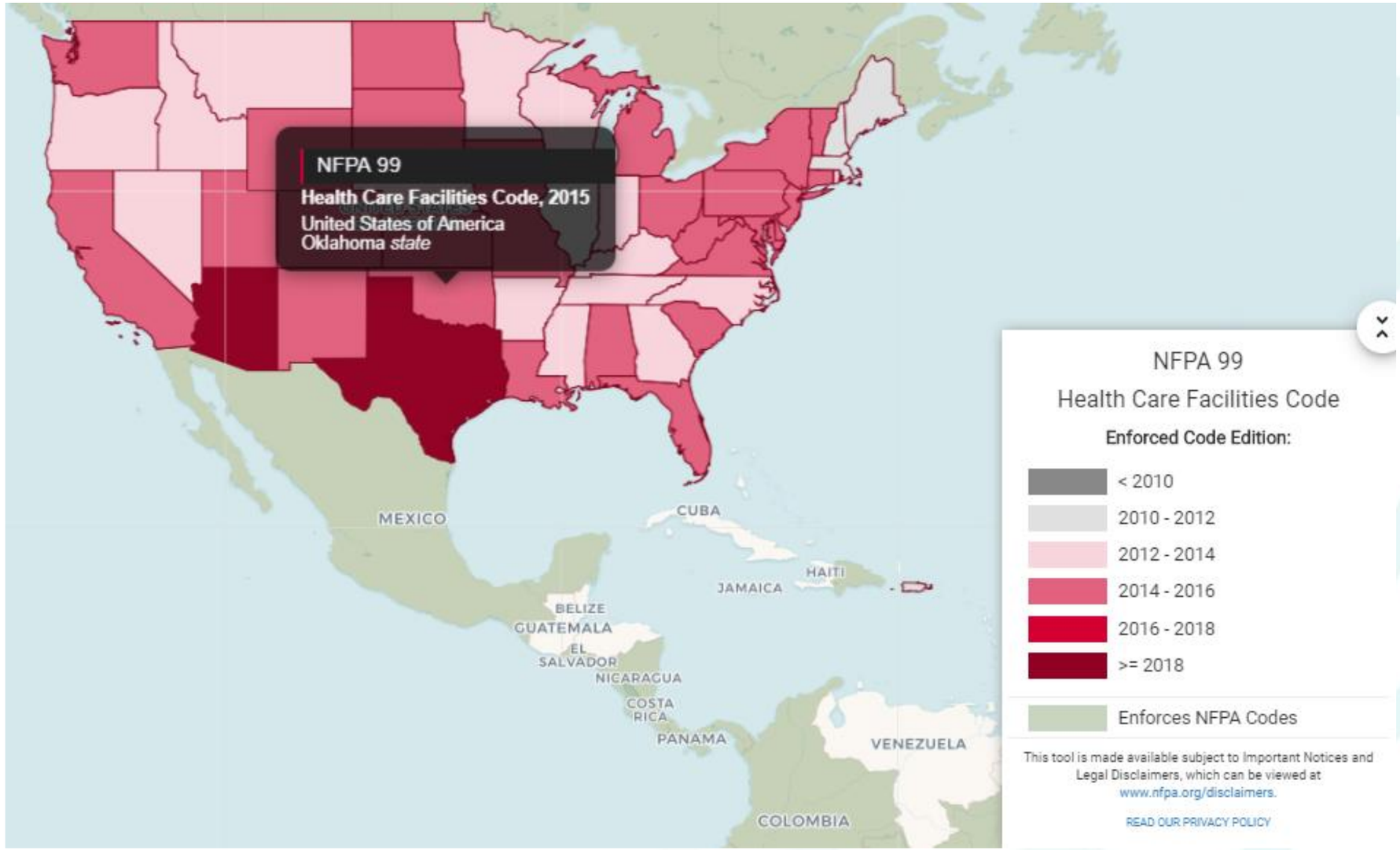
Category 1: Facility systems in which failure of such equipment or system is likely to cause major injury or death of patients or caregivers shall be designed to meet system Category 1 requirements as defined in the NFPA Code

Category 2: Facility systems in which failure of such equipment is likely to cause minor injury to patients or caregivers shall be designed to meet system Category 2 requirements as defined in the NFPA Code.

Category 3: Facility systems in which failure of such equipment is not likely to cause injury to patients or caregivers, but can cause patient discomfort, shall be designed to meet system Category 3 requirements as defined in the NFPA Code

Category 4: Facility systems in which failure of such equipment would have no impact on patient care shall be designed to meet system Category 4 requirements as defined in this code.

NFPA – 99 Risk Assessment



NFPA – 99 Risk Assessment

NFPA 99 Risk Assessment

- ASHE Resources

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Systems Risk Assessment Tool

Category Legend			Chapter 5				Chapter 6	Chapter 7				Chapter 8								Chapter 9			Chapters 10 and 11	Chapter 12
Room Name	**Room #**	**Space**	**Oxygen**	**Medical Air**	**Vacuum**	**WAGD**	**Electrical Systems**	**Data**	**Phone**	**Nurse Call**	**Cable TV**	**Potable Water**	**Non-Potable Water**	**Water Heating**	**Water Conditioning**	**Non-Medical Compressed Air**	**Black Waste Water**	**Gray Waste Water**	**Clear Waste Water**	**Heating**	**Ventilation**	**Air-Conditioning**	**Equipment** (See Equipment tab.)	**Emergency Management** (See Emergency Management tab.)
Waiting	100		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Reception	101		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Payment	102		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Manager's Office	103		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
X-Ray	104		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Consult	105		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Breakroom	106		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Treatment	107		2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Corridor	108		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
OR1	109		1	1	1	1	1	4	4	1	4	4	4	4	4	1	4	4	4	2	2	3		
OR2	110		1	1	1	1	1	4	4	1	4	4	4	4	4	1	4	4	4	2	2	3		
Treatment	111		2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Treatment	112		2	2	2	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Sterilization dirty	113		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Sterilization clean	114		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Doctor's office	115		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Doctor's restroom	116		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
Recovery	117		4	4	2	4	2	4	4	1	4	4	4	4	4	4	4	4	4	4	4	4		

NFPA – 99 Risk Assessment

NFPA 99 Risk Assessment

- ASHE Resources

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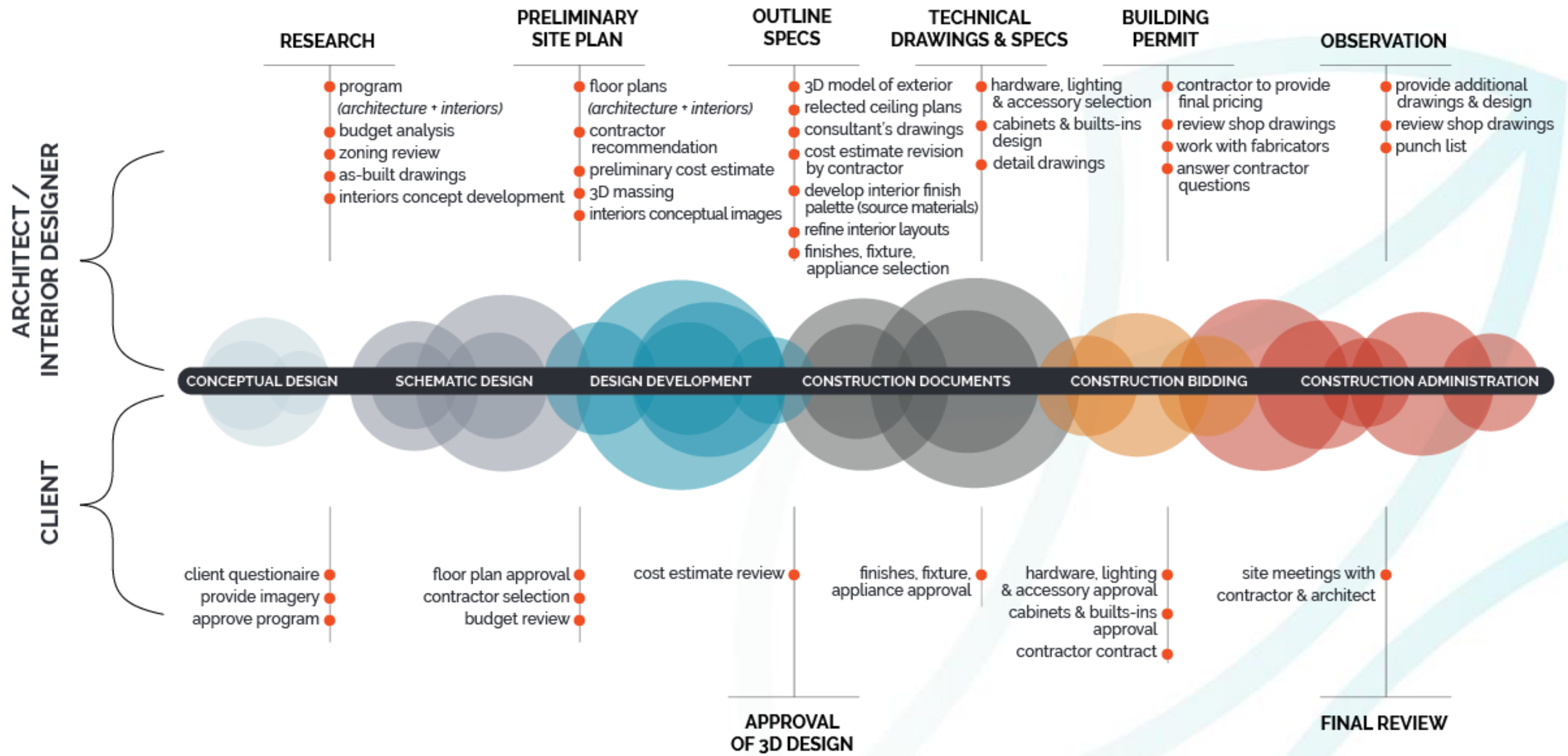
Electrical and Gas Equipment Assesment Tool

Electrical and Gas Equipment Assessment Tool

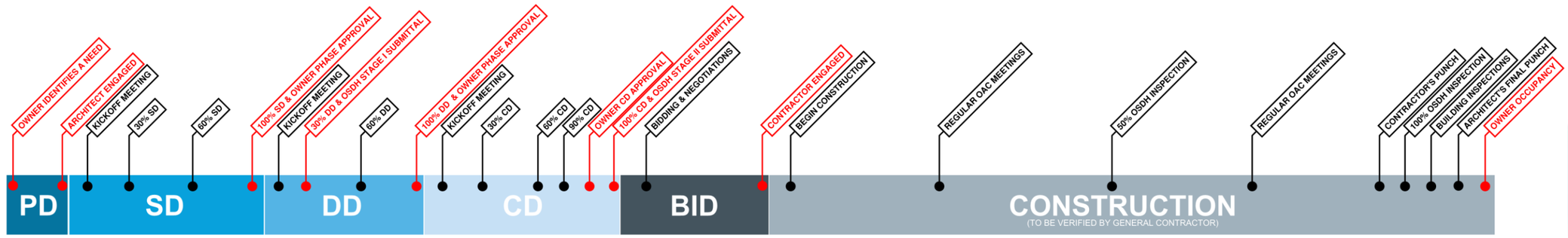
Category Legend

Equipment	Equipment Tag #	Category	Notes
X-ray	See equipment schedule	4	
Vacuum	See equipment schedule	1	
Med-gas manifold	See equipment schedule	1	
Gas cylinders	See equipment schedule	1	
Medical light	See equipment schedule	4	
Treatment chair	See equipment schedule	4	
Med-gas wall outlets	See equipment schedule	1	
WAGD wall outlet	See equipment schedule	1	
Surgical table	See equipment schedule	4	
Surgeon stool	See equipment schedule	4	
Vacuum gage	See equipment schedule	2	
Gas gauge	See equipment schedule	4	
Master alarm	See equipment schedule	1	
Ultrasonic cleaner	See equipment schedule	4	
Sterilizer / Autoclave	See equipment schedule	4	
Recovery chair	See equipment schedule	4	
Model trimmer	See equipment schedule	4	
Lathe	See equipment schedule	4	
Consult chair	See equipment schedule	4	

When should we start?



When should we start?



KEY PROJECT MILESTONES:

Pre-Design

Owner Identifies a need – Functional Programming Begins

SCHEMATIC DESIGN

PROJECT KICKOFF MEETING

OWNER TO BEGIN **OPR** DOCUMENTATION

30% SD – CONTINUE SCOPE DEVELOPMENT

60% SD – CONTINUE FRONT-END DOCUMENTATION, SUCH AS FP, ICRA, ETC.

DESIGN DEVELOPMENT

0% DD – ISSUE INITIAL FRONT-END DOCUMENTS FOR REVIEW AND COORDINATION

30% DD - ISSUE STAGE 1 SUBMITTAL TO OSDH

IMPACTS OF INCOMPLETE PLANNING

Decisions, Decisions, Decisions

Scenarios

- Late decisions in equipment
  - Change in Essential Electrical Systems loads
    - Single phase to 3 phase
  - Change in clearances and area calculations
  - Change in heat loads
- Change in Category Risk Category from 3 to 2
  - Change in Essential Electrical Systems
  - Change in devices i.e. zone valves, area alarms
- Change in Temp and Humidity controls
  - Change HVAC systems
  - Loads for equipment verify with Structural
  - Space for new HVAC equipment
- Change in Procedure types
  - Change in positive / negative pressures
  - Change in Equipment
  - Change in EES loads

Decisions, Decisions, Decisions

Scenarios

- Add anesthesia to a room
  - Change in med-gas line-up for medical air
  - Change in Risk Assessment (NFPA 99)
- Change from electric instruments to pneumatic
  - Add air compressor (cannot be placed in med-gas area)
  - Add compressor to EES
- Add Bronchoscopy to Endoscopy
  - Change HVAC systems for negative pressure
  - Loads for equipment verify with Structural
  - Space for new HVAC equipment
  - ICRA changes

Session 2

Contact Information

Oklahoma Association of Healthcare Engineers

2019 Summer Regional Event

HFG architecture

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