



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

Oklahoma Association of Healthcare Engineers  
2019 Fall Regional Event

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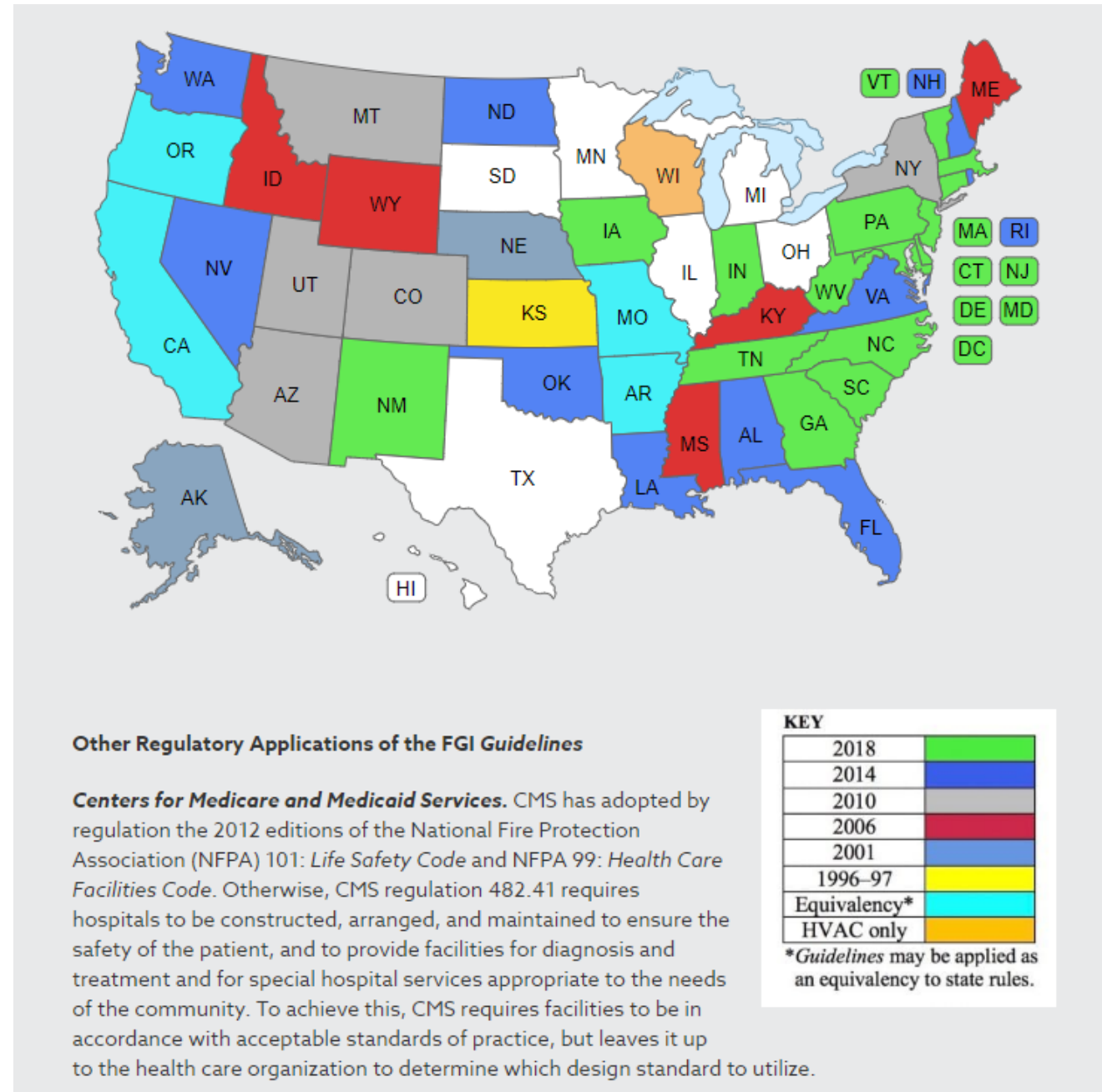
- Managing Director and Market Leader for HFG Architecture's Oklahoma Region.
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# Session 2 Learning Objectives

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 ARE IN COMPLIANCE WITH FGI

# What are Front-End Documents



## 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

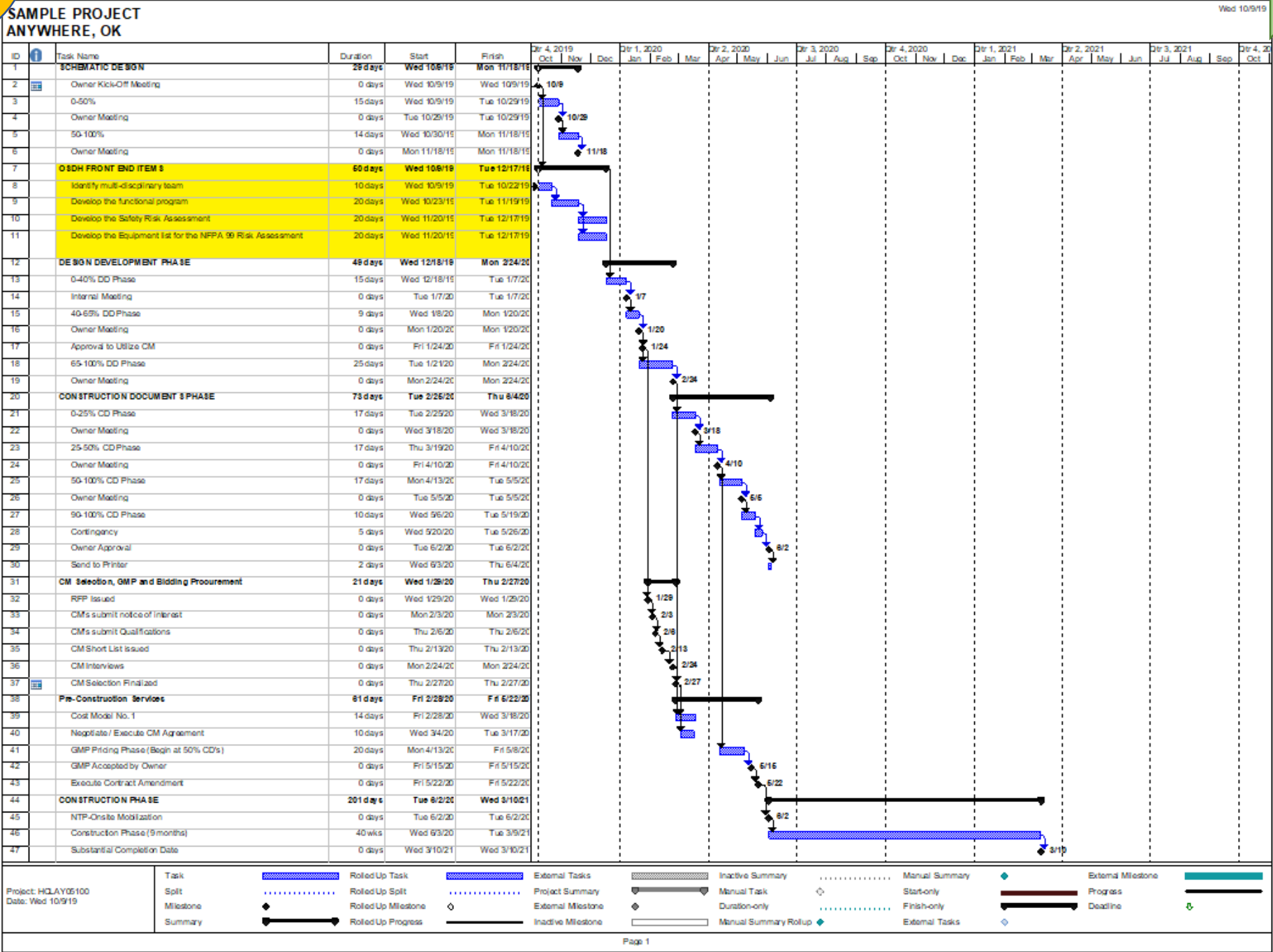
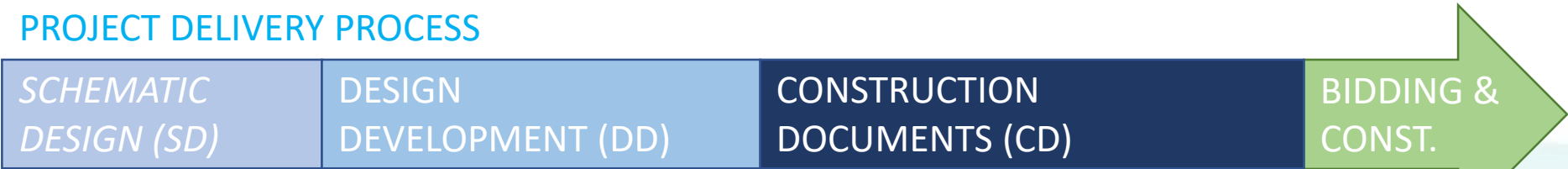
## Parts 1.2 – 1.3

- 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



# When should we start?

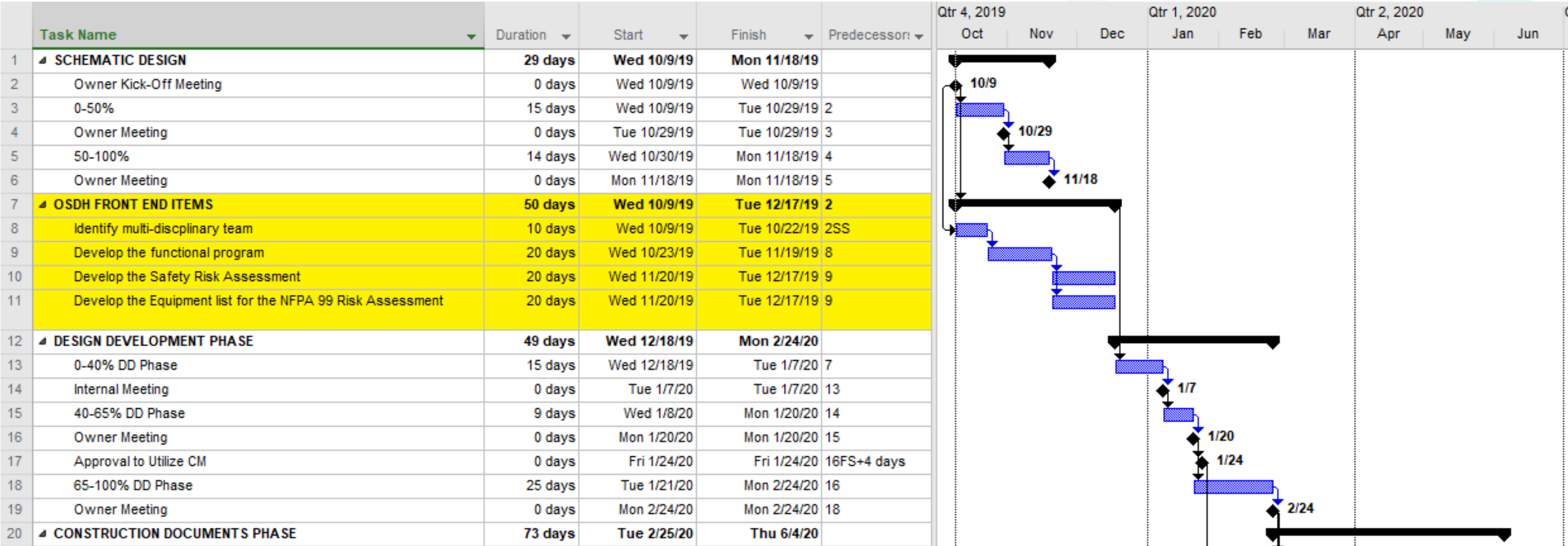
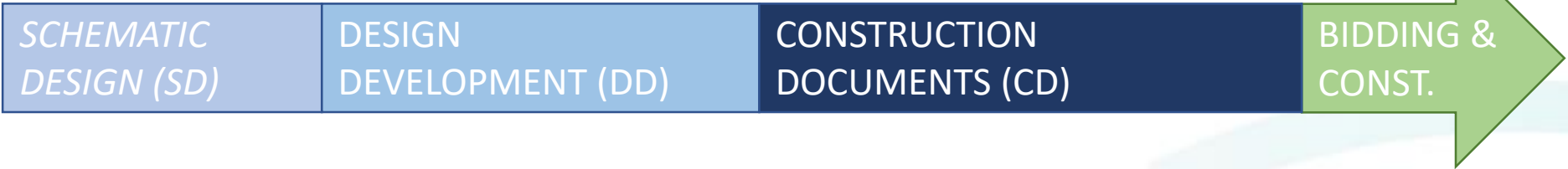
PLANNING/  
PRE-DESIGN  
(PD)



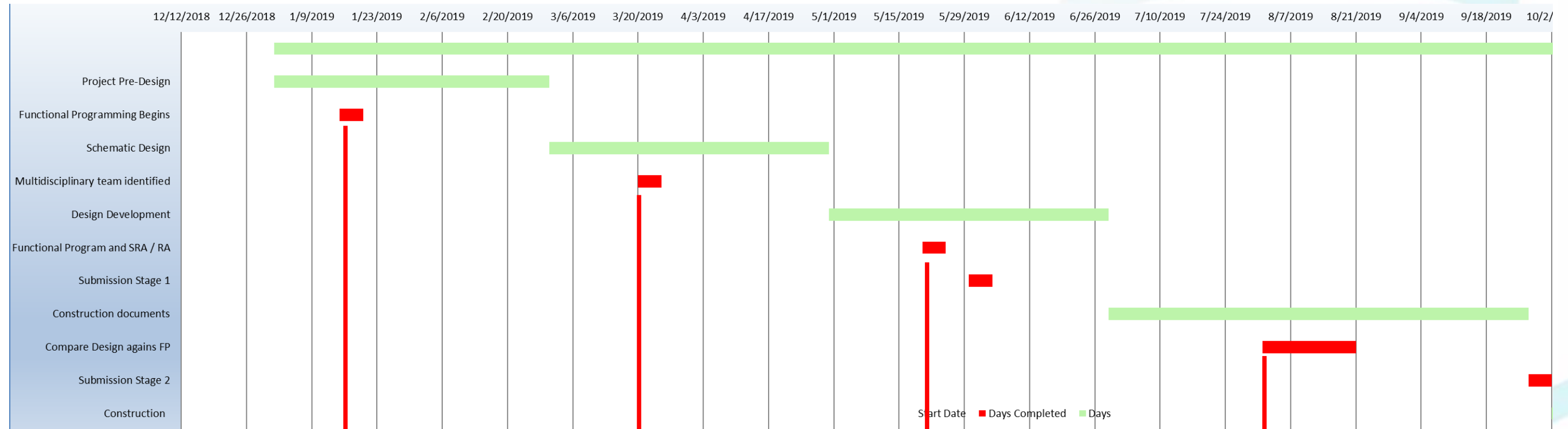
# When should we start?



PROJECT DELIVERY PROCESS



# When should we start?



The functional program begins when the ownership identifies a need

Team involvement is important as the functional program is developed

FP, SRA, ICRA, PHAMA, MSA, SECURITY, AS WELL AS RA READY FOR STAGE 1

FP should be reviewed and updated as the design is fully developed for Stage 2 submission

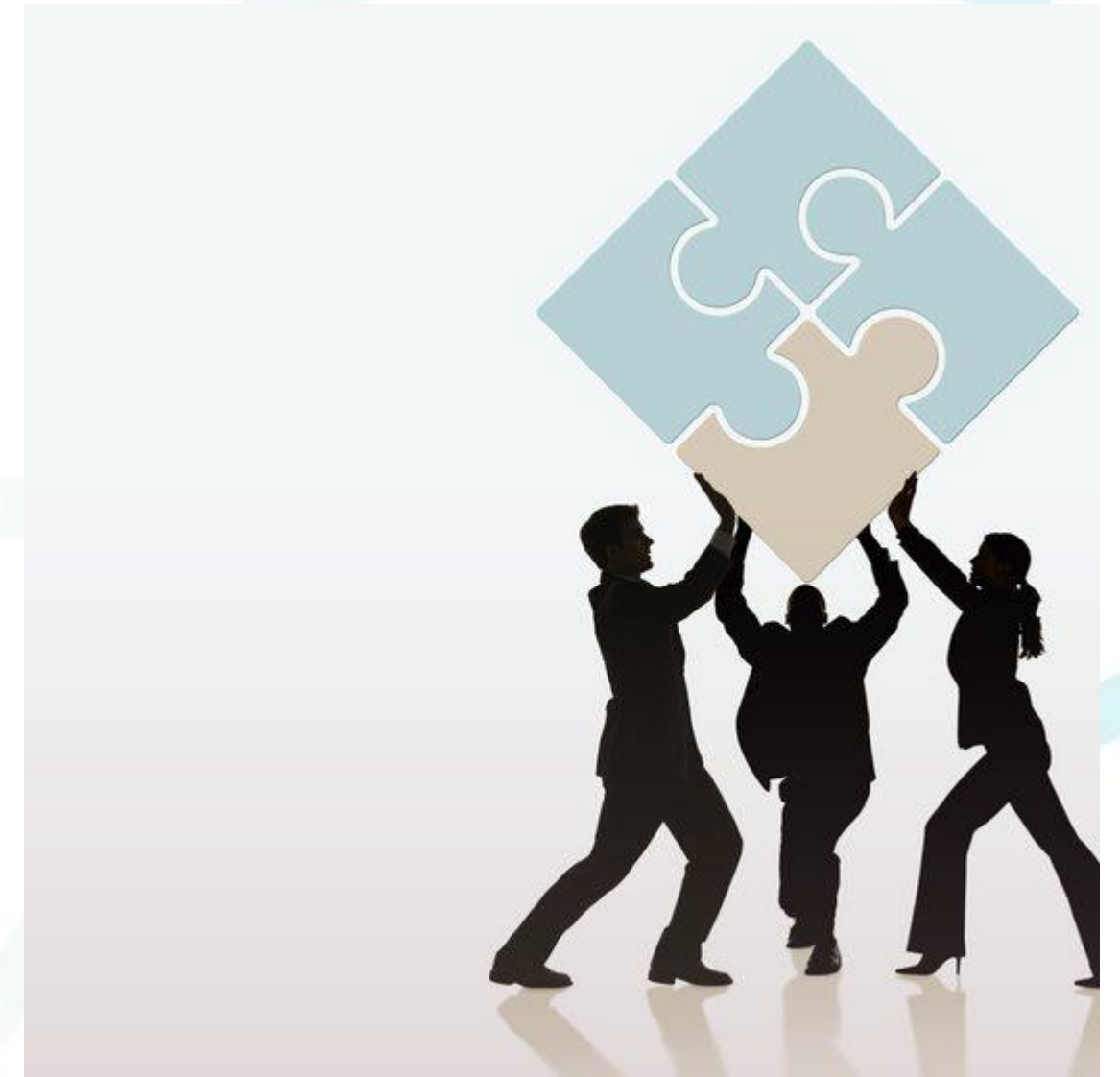


# 1.2 Planning, Design, Construction

- 1.2-1.2 Multidisciplinary Project Team
  - The scope and nature of the project shall dictate who needs to be involved

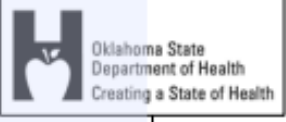
- Appendix Notes
  - The multidisciplinary project team should be assembled as early as possible in the design process.
  - The multidisciplinary team should include administrators, clinicians, infection preventionists, architects and other design professionals, facility managers, safety officers, security 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 vice 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

<b>PROTECTIVE HEALTH SERVICES</b>			<b>Oklahoma State Department of Health</b> Protective Health Services – 0505 Medical Facilities 1000 NE 10 <sup>th</sup> Street Oklahoma City, OK 73117-1299 Telephone: (405) 271-6785 FAX: (405) 271-1738
<b>PLAN REVIEW SUBMITTAL FORM: CHECK LIST</b> (Checklist does not have to be submitted with form)			
<b>Stage One Submittal (1 copy of each):</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Submittal Form</li> <li><input type="checkbox"/> Preliminary Drawings</li> <li><input type="checkbox"/> Functional Program               <ul style="list-style-type: none"> <li>Functional Program must include:                   <ul style="list-style-type: none"> <li>• Safety Risk Assessment</li> <li>• Infection Control Risk Assessment</li> </ul> </li> <li>Functional Program should contain the following as applicable                   <ul style="list-style-type: none"> <li>• Patient Handling and Movement Assessment</li> <li>• Patient Fall Prevention</li> <li>• Medical Safety</li> <li>• Psychiatric Patient Injury and Suicide Prevention</li> <li>• Patient Immobility</li> <li>• Security Risks</li> </ul> </li> </ul> </li> <li><input type="checkbox"/> Existing plan with all spaces labeled</li> <li><input type="checkbox"/> Life safety plan</li> <li><input type="checkbox"/> Location plan that shows the project location and relationship to other departments or tenants</li> <li><input type="checkbox"/> Site plan if the building perimeter is altered or penetrated.</li> </ul>		<b>Stage Two Submittal (2 copies of each):</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> Submittal Form</li> <li><input type="checkbox"/> Construction documents including specifications (only 1 copy is required)</li> <li><input type="checkbox"/> Functional program               <ul style="list-style-type: none"> <li>Functional Program must include:                   <ul style="list-style-type: none"> <li>• Safety Risk Assessment</li> <li>• Infection Control Risk Assessment</li> </ul> </li> <li>Functional Program should contain the following as applicable                   <ul style="list-style-type: none"> <li>• Patient Handling and Movement Assessment</li> <li>• Patient Fall Prevention</li> <li>• Medical Safety</li> <li>• Psychiatric Patient Injury and Suicide Prevention</li> <li>• Patient Immobility</li> <li>• Security Risks</li> </ul> </li> </ul> </li> <li><input type="checkbox"/> Construction Schedule*</li> <li><input type="checkbox"/> Contraction Name*</li> </ul>	
		<b>*If available. This information must be submitted before construction is started.</b>	

# 1.2 Planning, Design, Construction Checklist and Tools

Regulation	FGI Requirement	Compliance/ Notes
<b>General</b>		
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.	
<b>Functional Program</b>		
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.	
<b>Functional Program Content</b>		
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

## Tools

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

Date: 7/10/2019										72,854		
			FGI			STANDARD OF CARE						
	SPACE		Min.	Qty	Length	Width	Net	Gross	SubT	Total		Notes
2.5-2.2.8	Support Areas for the Psychiatric Patient Care Unit											
2.2.8.1	General											Support areas readily accessible to each patient care unit; one such support area shall be provided on each patient care floor
2.2.8.2	Administration Center / Nurse Station	2.1-2.8.2	Req'd	7	16	14	224	237	1,657	1,568		1 per 2 patient units; Counters, hand-washing station (min. 1) hand sanitation dispenser
2.2.8.3	Documentation Area		Req'd	0	8	6		54	-			included in Administration Center / Nurse Station above
2.2.8.4	Office(s)		Req'd	0	17	15.5		277	-			Quantity dictated by Owner's program; included in Administration Center / Nurse Station above
2.2.8.5	Multipurpose Room		Req'd	1	17	15.5	263.5	277	278	264		
2.2.8.7	Handwash Station	2.1-2.8.7	Req'd	0	5	3		19	-			Located in each room where hands-on patient care is provided (see common elements section); included in Administration Center / Nurse Station above
2.2.8.8	Med Safety Zone	2.1-2.8.8	Req'd	7	10	7.5	75	82	578	525		See Ch. 2 for requirements
2.2.8.9	Nourishment Area		Req'd	7	8	4	32	37	261	224		nourishment station OR kitchenette OR kitchen area w/ hand-washing, secured storage, refrigerator and facilities for meal prep and/or service
2.2.8.10	Ice-Making Equipment	2.1-2.8.10	Req'd	7	5	3	15	19	130	105		
2.2.8.11	Clean Work/Supply	2.1-2.8.11	Req'd	7	11	9	99	108	753	693		work counter, hand-washing station and storage; clean linen storage
2.2.8.12	Soiled Work/Holding	2.1-2.8.12	Req'd	7	11	9	99	108	753	693		hand-washing station, hopper, work counter, storage for waste/soiled linen
2.2.8.13	Equipment and Supply Storage	2.1-2.8.13.1 2.1-2.8.13.2 2.1-2.8.13.4	10 sf. / patient bed (equip. only)	150	5	3	15	19	2,777	2,250		Clean Linen Storage; permitted to be stored in clean workroom Wheelchair storage Emergency equipment Storage; can be located in alcove in corridor; 1 per unit Admin. supplies storage
2.2.8.14	Environmental Services	2.1-2.8.14	Req'd	7	10	9	90	98	687	630		permitted to serve more than 1 patient care unit on one floor
2.2.8.16	Consulation Room(s)		100sf	0	12	9		117	-			13 req'd; combined use with Visitor Rooms below (req. 1 for every 12 patient beds min.) Must meet acoustical performance requirements

# 1.2 Planning, Design, Construction

## Department Layout

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



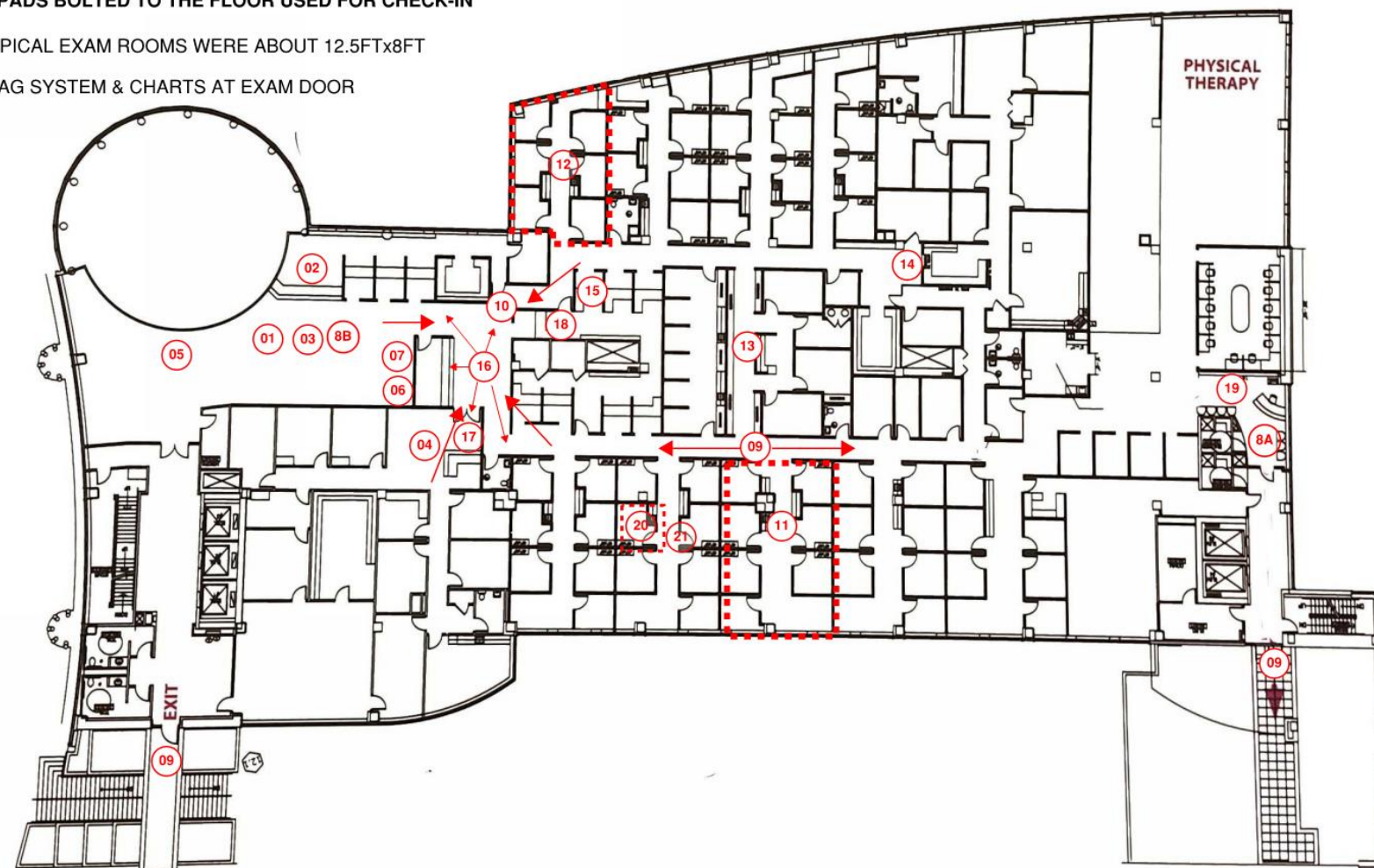


# 1.2 Planning, Design, Construction

## 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
- NTS

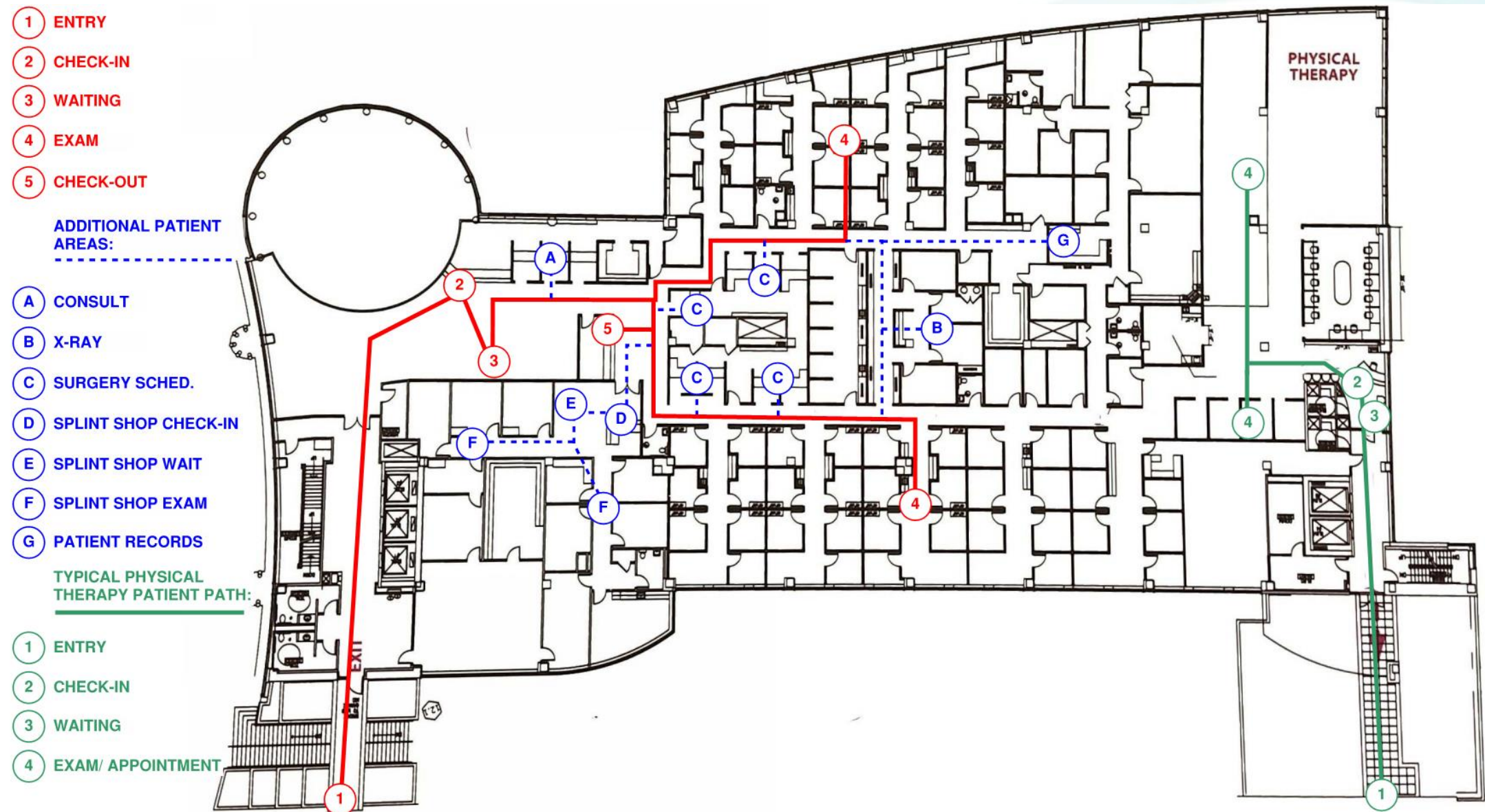
- 15 STAFF INDICATED SURGERY SCHEDULING SHOULD BE LOCATED NEAR THE DOCTORS
- 16 A SIGNIFICANT AMOUNT OF CROSS-TRAFFIC WAS OBSERVED
- 17 SIGNAL BELLS WERE SUSPENDED ON THE SHOP DOORS
- 18 PHONE RANG OFTEN & WAS HEARD FROM WAITING
- 19 2 iPADS BOLTED TO THE FLOOR USED FOR CHECK-IN
- 20 TYPICAL EXAM ROOMS WERE ABOUT 12.5FTx8FT
- 21 FLAG SYSTEM & CHARTS AT EXAM DOOR





# 1.2 Planning, Design, Construction

## Patient Circulation



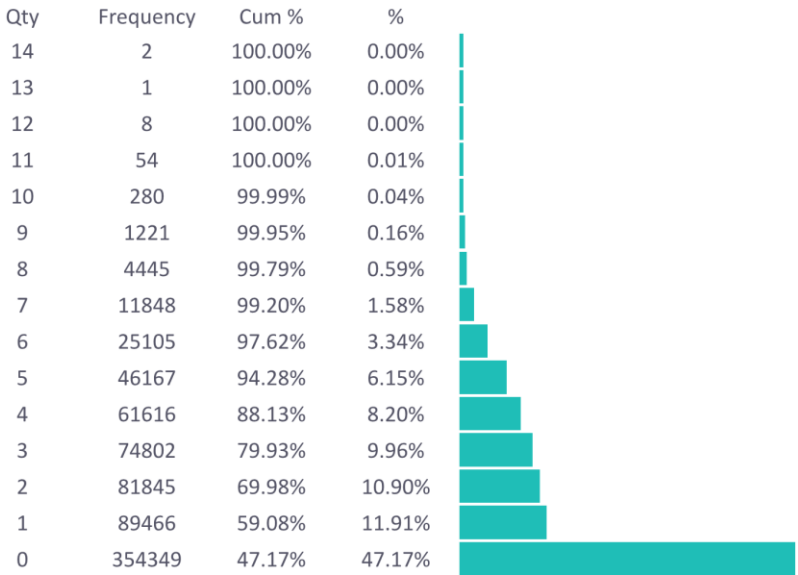
# 1.2 Planning, Design, Construction

## Patient Circulation

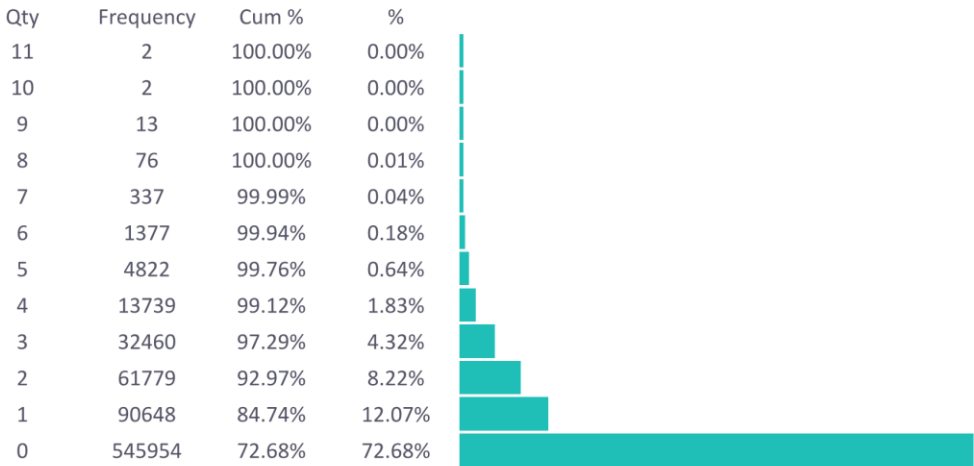


### Patient Flow Simulation

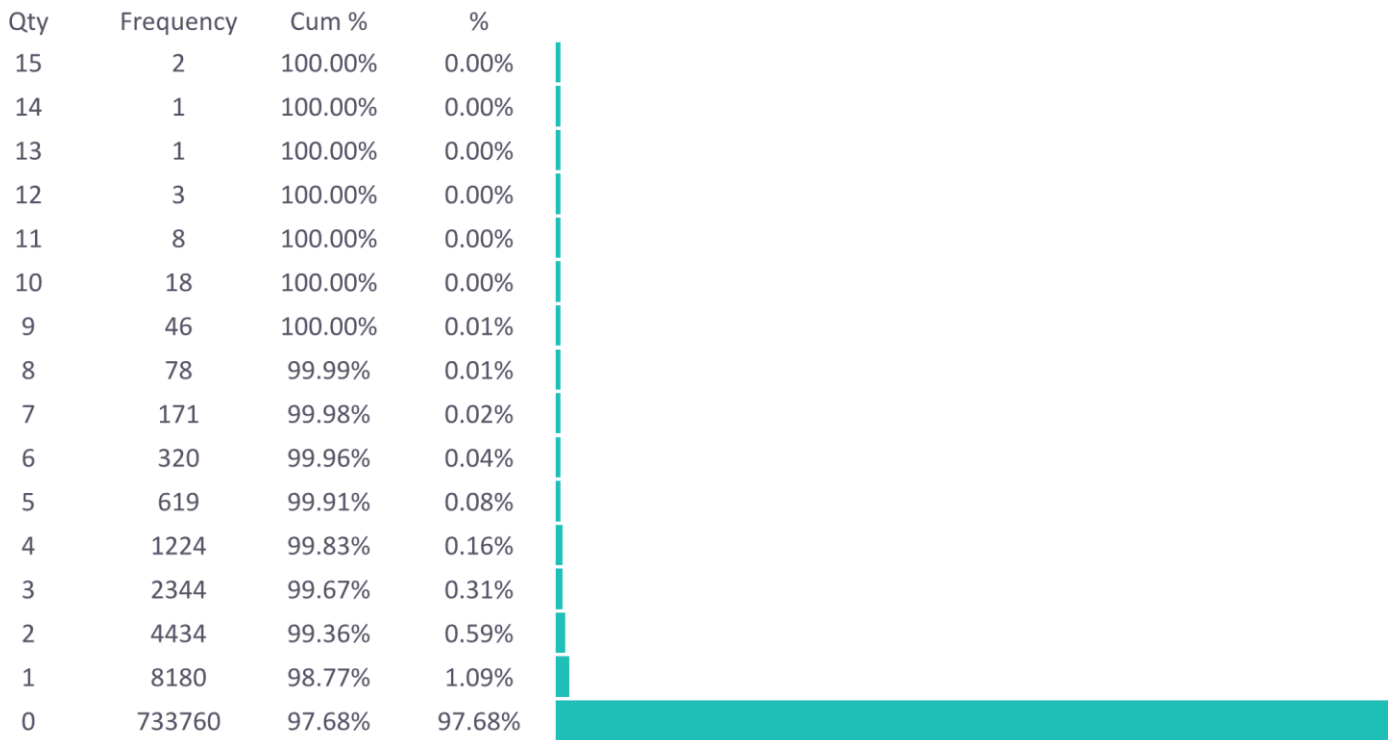
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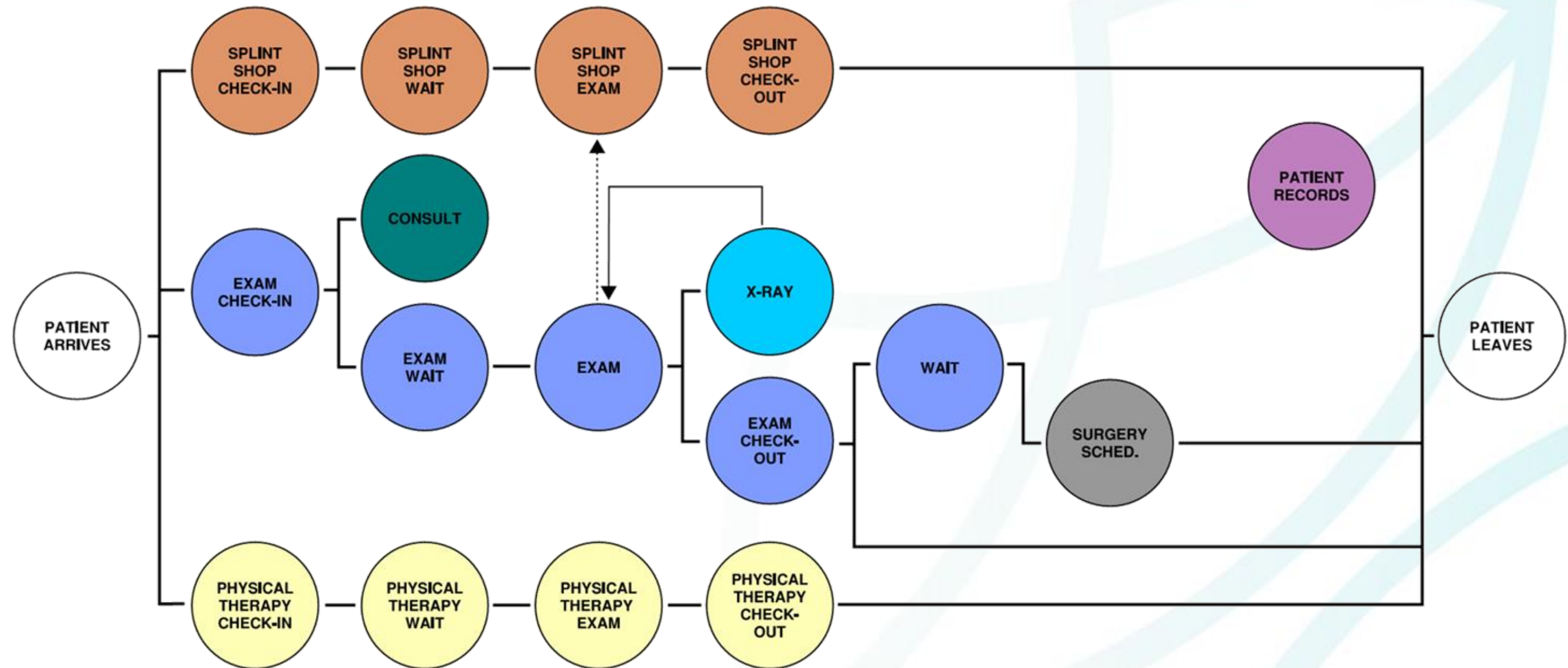


Check In Queue Census (time at quantity)



# 1.2 Planning, Design, Construction

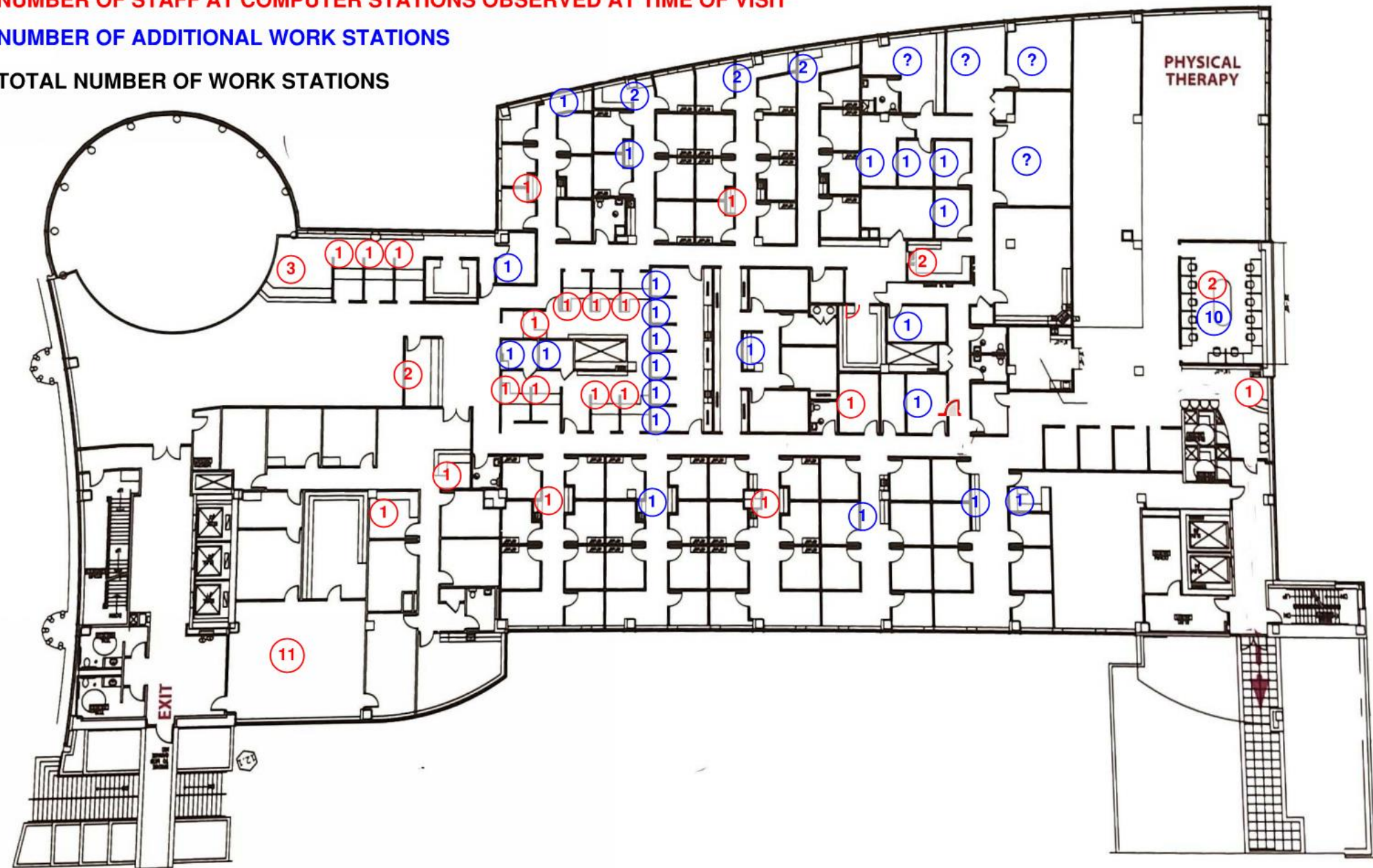
## Patient Circulation





# 1.2 Planning, Design, Construction Staffing Plan

- (38) APPROXIMATE NUMBER OF STAFF AT COMPUTER STATIONS OBSERVED AT TIME OF VISIT  
 (37) APPROXIMATE NUMBER OF ADDITIONAL WORK STATIONS  
 (75) APPROXIMATE TOTAL NUMBER OF WORK STATIONS





# 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



The Center for Health Design



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

# Safety Risk Assessment – Safety alignment tool

PHASE 1

**Successfully launching the facility project (strategic planning, facility master planning, process and operational planning)**

KEY: ■ 1: Not developed or just starting ■ 2: In development ■ 3: Working well- Fully developed/Ongoing ■ N/A

 **The Center for Health Design**

Key Safety Question	Rating Scale (1-3)	Additional Notes
We focus on safety as both a strategic and operational goal, as reflected in our mission, vision and values statements.		

PHASE 2

**Aligning the design to support the strategic vision and goals for the project (Programming and design)**

We approved a functional program that accommodates safety features to support our goals.

PHASE 3

**Maintaining the project's vision and goals and reengineering culture and processes (Construction and commissioning)**

During the construction and commissioning phases, we ensure that critical safety design features are - None -

PHASE 4

**Maximizing the facility investment (Sustainment)**

KEY: ■ 1: Not developed or just starting ■ 2: In development ■ 3: Working well- Fully developed/Ongoing ■ N/A

Key Safety Question	Rating Scale (1-3)	Additional Notes
We collected the final pre-occupancy measures for targeted safety outcomes.	<span style="border: 1px solid gray; padding: 2px;">- None -</span>	

# Safety Risk Assessment



The Center for Health Design

PROJECT READINESS

HISTORICAL DATA

DESIGN CONSIDERATIONS

[INTRODUCTION](#)
[\[ ALL CONSIDERATIONS \]](#)
[INFECTION CONTROL](#)
[PATIENT HANDLING](#)
[MEDICATION SAFETY](#)
[FALLS](#)
[BEHAVIORAL HEALTH](#)
[SECURITY](#)
[ICRA MATRIX](#)

## Design Considerations

For at-risk populations, identify potential harms and areas within the proposed project associated with those potential harms. Review and discuss the following design considerations for each risk component. Consider the at-risk groups, the spaces these groups are in, all of the potential areas of risk, and the potential outcomes.

This process may help identify the likelihood of events specific to your organization. Consider circumstances before, after, and during construction.

Search & Filter

Search

Search text

Risk Components

☐ Infection Control
 ☐ Patient Handling
 ☐ Medication Safety
 ☐ Falls
 ☐ Behavioral Health
 ☐ Security

Generic Risk Estimate

<Any>

INFECTION CONTROL - I1

Include physical separation/ isolation methods (e.g., separate soiled workroom, supply chain flow separation) in unit layout to prevent contamination of clean supplies and equipment.

Why?

Last updated by sgulick at 6/5/19 1:13pm

Activity Log

Applicable to this assessment

YOUR RISK ESTIMATE

YOUR COST MAGNITUDE

YOUR PRIORITY

Med-High

M: \$\$

H:+++

YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS

All clean and soiled rooms will be separate. This creates a higher square footage cost but the priority in keeping the rooms

BACKGROUND INFO

DESIGN CATEGORY:

Unit Layout

GENERIC RISK ESTIMATE:

Med-High

LOCATION/UNIT:

General Consideration

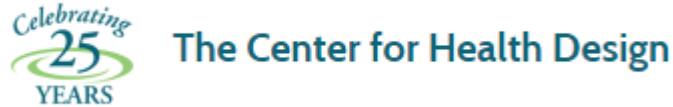
EVIDENCE SOURCE:

Research



# 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)**

<b>TYPE A</b>	<b>Inspection and Non-Invasive Activities.</b> Includes, but is not limited to: <ul style="list-style-type: none"><li>removal of ceiling tiles for visual inspection only, e.g., limited to 1 tile per 50 square feet</li><li>painting (but not sanding)</li><li>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.</li></ul>
<b>TYPE B</b>	<b>Small scale, short duration activities which create minimal dust</b> Includes, but is not limited to: <ul style="list-style-type: none"><li>installation of telephone and computer cabling</li><li>access to chase spaces</li><li>cutting of walls or ceiling where dust migration can be controlled.</li></ul>
<b>TYPE C</b>	<b>Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies</b> Includes, but is not limited to: <ul style="list-style-type: none"><li>sanding of walls for painting or wall covering</li><li>removal of floorcoverings, ceiling tiles and casework</li><li>new wall construction</li><li>minor duct work or electrical work above ceilings</li><li>major cabling activities</li><li>any activity which cannot be completed within a single workshift.</li></ul>
<b>TYPE D</b>	<b>Major demolition and construction projects</b> Includes, but is not limited to: <ul style="list-style-type: none"><li>activities which require consecutive work shifts</li><li>requires heavy demolition or removal of a complete cabling system</li><li>new construction.</li></ul>

**Step 1:** \_\_\_\_\_

**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
<ul style="list-style-type: none"><li>Office areas</li></ul>	<ul style="list-style-type: none"><li>Cardiology</li><li>Echocardiography</li><li>Endoscopy</li><li>Nuclear Medicine</li><li>Physical Therapy</li><li>Radiology/MRI</li><li>Respiratory Therapy</li></ul>	<ul style="list-style-type: none"><li>CCU</li><li>Emergency Room</li><li>Labor &amp; Delivery</li><li>Laboratories (specimen)</li><li>Medical Units</li><li>Newborn Nursery</li><li>Outpatient Surgery</li><li>Pediatrics</li><li>Pharmacy</li><li>Post Anesthesia Care Unit</li><li>Surgical Units</li></ul>	<ul style="list-style-type: none"><li>Any area caring for immunocompromised patients</li><li>Burn Unit</li><li>Cardiac Cath Lab</li><li>Central Sterile Supply</li><li>Intensive Care Units</li><li>Negative pressure isolation rooms</li><li>Oncology</li><li>Operating rooms including C-section rooms</li></ul>

**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

Patient Risk Group	Construction Project Type			
	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.		1. Clean work area upon completion of task.
	2. Immediately replace a ceiling tile displaced for visual inspection		
CLASS II	1. Provide active means to prevent airborne dust from dispersing into atmosphere.		1. Wipe work surfaces with cleaner/disinfectant.
	2. Water mist work surfaces to control dust while cutting.		2. Contain construction waste before transport in tightly covered containers.
	3. Seal unused doors with duct tape.		3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area.
	4. Block off and seal air vents.		4. Upon completion, restore HVAC system where work was performed.
	5. Place dust mat at entrance and exit of work area		
	6. Remove or isolate HVAC system in areas where work is being performed.		
CLASS III	1. Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system.		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. 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.		2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.
	3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.		3. Vacuum work area with HEPA filtered vacuums.
	4. Contain construction waste before transport in tightly covered containers.		4. Wet mop area with cleaner/disinfectant.
	5. Cover transport receptacles or carts. Tape covering unless solid lid.		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.		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. 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.		2. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction.
	3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units.		3. Contain construction waste before transport in tightly covered containers.
	4. Seal holes, pipes, conduits, and punctures.		4. Cover transport receptacles or carts. Tape covering unless solid lid.
	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.		5. Vacuum work area with HEPA filtered vacuums.
	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.		6. Wet mop area with cleaner/disinfectant.
			7. Upon completion, restore HVAC system where work was performed.

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](mailto:jbartley@ameritech.net) Updated, 2009.



# Infection Control Risk Assessment

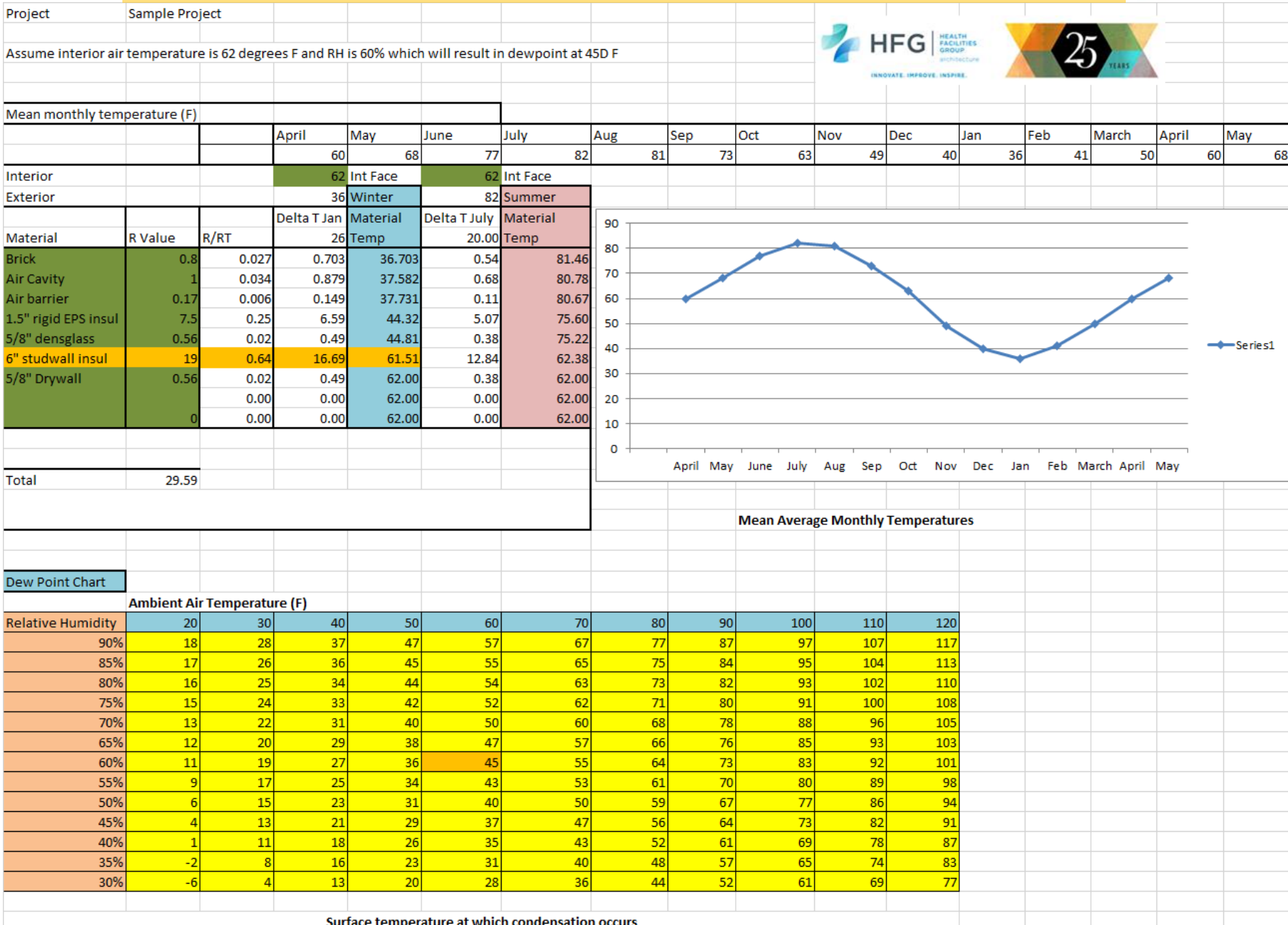
## Psychrometrics

- 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.

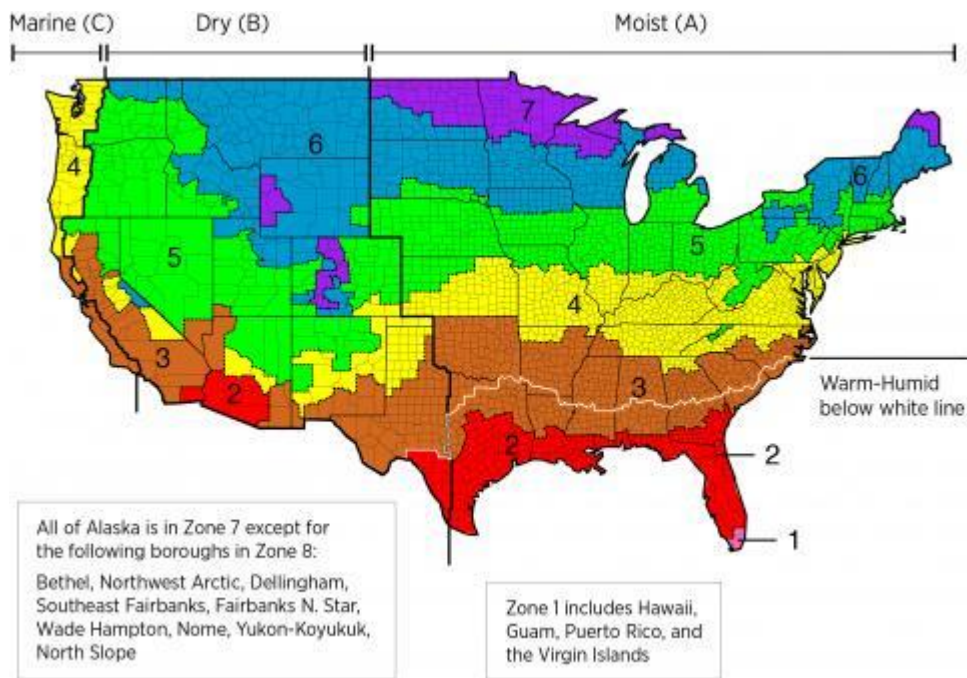
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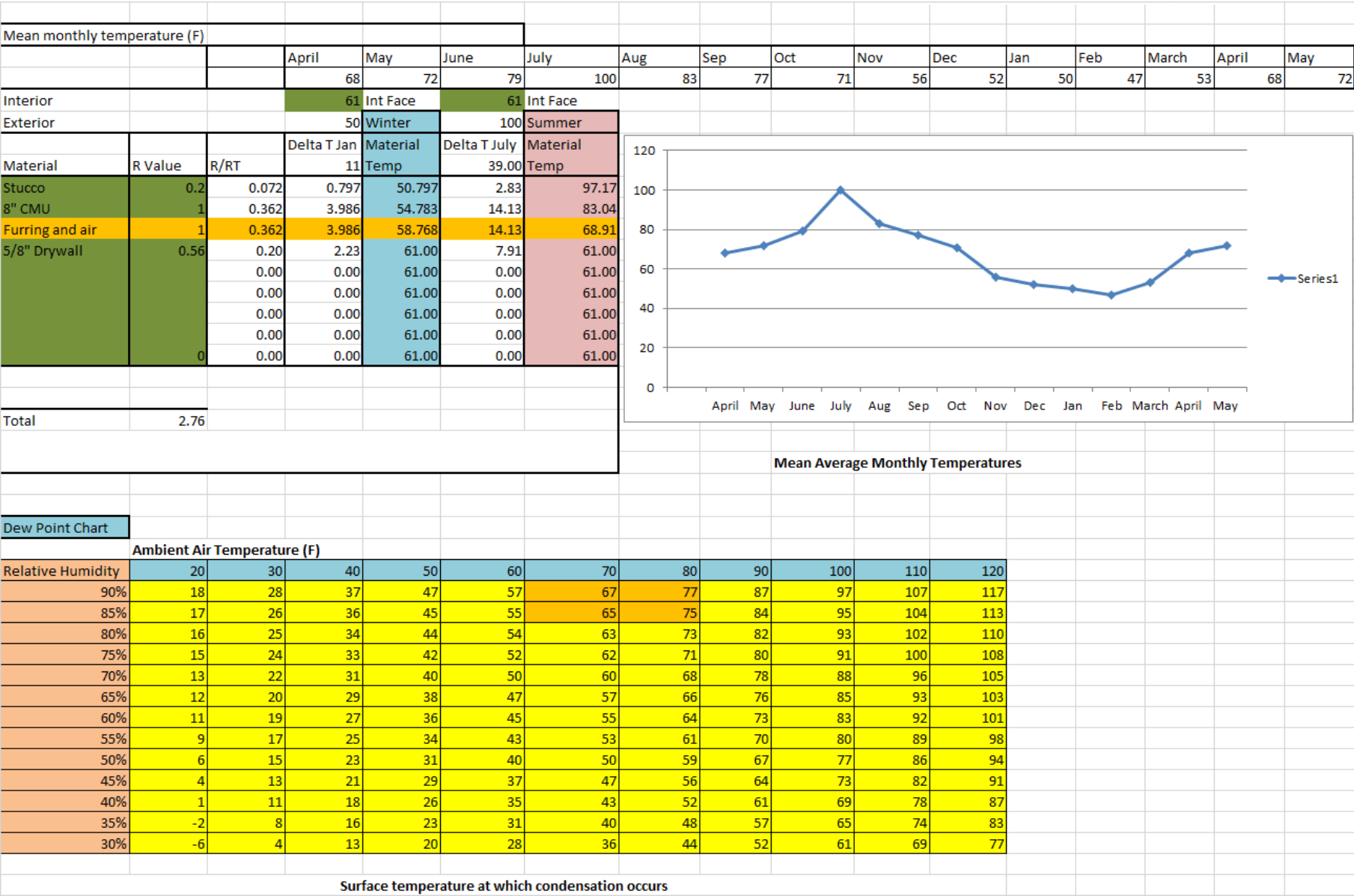
# Infection Control Risk Assessment

## Psychrometrics

- We once investigated a project in Climate Zone 2 that 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)



# Patient Handling 1.2-4.3



The Center for Health Design

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## Design Considerations

For at-risk populations, identify potential harms and areas within the proposed project associated with those potential harms. Review and discuss the following design considerations for each risk component. Consider the at-risk groups, the spaces these groups are in, all of the potential areas of risk, and the potential outcomes.

This process may help identify the likelihood of events specific to your organization. Consider circumstances before, after, and during construction.

### Patient Handling

Search & Filter

Search

Search text

Risk Components

☐ Infection Control
 ☒ Patient Handling
 ☐ Medication Safety
 ☐ Falls
 ☐ Behavioral Health
 ☐ Security

Generic Risk Estimate

PATIENT HANDLING - P1

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).

Why?

Last updated by sgulick at 6/6/19 9:27am

Activity Log

Applicable to this assessment

YOUR RISK ESTIMATE

YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS

COST MAGNITUDE

YOUR PRIORITY

YOUR RISK ESTIMATE

YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS

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YOUR PRIORITY

YOUR RISK ESTIMATE

YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS

COST MAGNITUDE

YOUR PRIORITY

BACKGROUND INFO

DESIGN CATEGORY:

Building Layout

GENERIC RISK ESTIMATE:

Med-Low

LOCATION/UNIT:

General Consideration

EVIDENCE SOURCE:

Opinion

2019 OAHE FALL REGIONAL EVENT

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# 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 patients of size 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.
- 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.
- 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.



# Fall Prevention 1.2-4.4



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PROJECT READINESS	HISTORICAL DATA	DESIGN CONSIDERATIONS												
INTRODUCTION   ALL CONSIDERATIONS   INFECTION CONTROL   PATIENT HANDLING   MEDICATION SAFETY <b>[ FALLS ]</b> BEHAVIORAL HEALTH   SECURITY   ICRA MATRIX														
<h2>Design Considerations</h2> <p>For at-risk populations, identify potential harms and areas within the proposed project associated with those potential harms. Review and discuss the following design considerations for each risk component. Consider the at-risk groups, the spaces these groups are in, all of the potential areas of risk, and the potential outcomes.</p> <p>This process may help identify the likelihood of events specific to your organization. Consider circumstances before, after, and during construction.</p> <h3>Falls ⓘ</h3> <table border="1"> <thead> <tr> <th>Search &amp; Filter</th> <th>FALLS - F1</th> <th>BACKGROUND INFO</th> </tr> </thead> <tbody> <tr> <td>           Search  <input type="text" value="Search text"/> </td> <td>           Protect entrances from weather (e.g., canopies, walk-off mats). <span>Why?</span>            Last updated by sgulick at 6/6/19 8:20am <span>Activity Log</span>            Applicable to this assessment ▾  <table border="1"> <thead> <tr> <th>YOUR RISK ESTIMATE</th> <th>COST MAGNITUDE</th> <th>YOUR PRIORITY</th> </tr> </thead> <tbody> <tr> <td>■ Med-High</td> <td>■ M: \$\$</td> <td>■ M:++</td> </tr> </tbody> </table>           YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS         </td> <td>           DESIGN CATEGORY:            Building Envelope/Structure            GENERIC RISK ESTIMATE:            ■ Med-Low            LOCATION/UNIT:            General Consideration            EVIDENCE SOURCE:            Opinion         </td> </tr> </tbody> </table>			Search & Filter	FALLS - F1	BACKGROUND INFO	Search <input type="text" value="Search text"/>	Protect entrances from weather (e.g., canopies, walk-off mats). <span>Why?</span> Last updated by sgulick at 6/6/19 8:20am <span>Activity Log</span> Applicable to this assessment ▾ <table border="1"> <thead> <tr> <th>YOUR RISK ESTIMATE</th> <th>COST MAGNITUDE</th> <th>YOUR PRIORITY</th> </tr> </thead> <tbody> <tr> <td>■ Med-High</td> <td>■ M: \$\$</td> <td>■ M:++</td> </tr> </tbody> </table> YOUR SOLUTIONS/ CLARIFICATIONS / EXPLANATIONS	YOUR RISK ESTIMATE	COST MAGNITUDE	YOUR PRIORITY	■ Med-High	■ M: \$\$	■ M:++	DESIGN CATEGORY: Building Envelope/Structure GENERIC RISK ESTIMATE: ■ Med-Low LOCATION/UNIT: General Consideration EVIDENCE SOURCE: Opinion
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YOUR RISK ESTIMATE	COST MAGNITUDE	YOUR PRIORITY												
■ Med-High	■ M: \$\$	■ M:++												



# Fall Prevention 1.2-4.4



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- 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



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ICRA MATRIX

## Design Considerations

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## Medication Safety

Search & Filter	MEDICATION SAFETY - M1	BACKGROUND INFO						
<p>Search</p> <input type="text" value="Search text"/> <p>Risk Components</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Infection Control</li> <li><input type="checkbox"/> Patient Handling</li> <li><input checked="" type="checkbox"/> Medication Safety</li> <li><input type="checkbox"/> Falls</li> <li><input type="checkbox"/> Behavioral Health</li> <li><input type="checkbox"/> Security</li> </ul> <p>Generic Risk Estimate </p>	<p>Clearly identify the purpose, associated work tasks and workflow in the functional and operational program for each medication safety zone in order to design ergonomic and efficient workspaces. (This consideration is also relevant under the following category: room layout.)</p> <p>Why?</p> <p>Last updated by sgulick at 6/6/19 7:09am </p> <p>Applicable to this assessment ▾</p> <table> <tr> <td>YOUR RISK ESTIMATE</td> <td>COST MAGNITUDE</td> <td>YOUR PRIORITY</td> </tr> <tr> <td> Med-Low</td> <td> M: \$\$</td> <td> M:++</td> </tr> </table>	YOUR RISK ESTIMATE	COST MAGNITUDE	YOUR PRIORITY	 Med-Low	 M: \$\$	 M:++	<p>DESIGN CATEGORY: Unit Layout</p> <p>GENERIC RISK ESTIMATE:  Med-Low</p> <p>LOCATION/UNIT: General Consideration</p> <p>EVIDENCE SOURCE:</p>
YOUR RISK ESTIMATE	COST MAGNITUDE	YOUR PRIORITY						
 Med-Low	 M: \$\$	 M:++						

# Medication Safety 1.2-4.5



The Center for Health Design

- 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.
- 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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PROJECT READINESS	HISTORICAL DATA	DESIGN CONSIDERATIONS						
INTRODUCTION   ALL CONSIDERATIONS   INFECTION CONTROL   PATIENT HANDLING   MEDICATION SAFETY   FALLS   [ BEHAVIORAL HEALTH ]   SECURITY   ICRA MATRIX								
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#### Search & Filter

Search

Risk Components  
☐ Infection Control  
☐ Patient Handling  
☐ Medication Safety  
☐ Falls  
☒ Behavioral Health  
☐ Security



# Behavioral and Mental Health Risk Assessment 1.2-4.6



The Center for Health Design

- 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.**
- **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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PROJECT READINESS	HISTORICAL DATA	DESIGN CONSIDERATIONS									
INTRODUCTION   ALL CONSIDERATIONS   INFECTION CONTROL   PATIENT HANDLING   MEDICATION SAFETY   FALLS   BEHAVIORAL HEALTH   [ <b>SECURITY</b> ]   ICRA MATRIX											
<h2>Design Considerations</h2> <p>For at-risk populations, identify potential harms and areas within the proposed project associated with those potential harms. Review and discuss the following design considerations for each risk component. Consider the at-risk groups, the spaces these groups are in, all of the potential areas of risk, and the potential outcomes.</p> <p>This process may help identify the likelihood of events specific to your organization. Consider circumstances before, after, and during construction.</p> <h3>Security ⓘ</h3> <table border="1"> <thead> <tr> <th>Search &amp; Filter</th> <th>SECURITY - S1</th> <th>BACKGROUND INFO</th> </tr> </thead> <tbody> <tr> <td>           Search  <input type="text" value="Search text"/> </td> <td>           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.           <div>             Why?           </div> </td> <td>           DESIGN CATEGORY:            Site Optimization             GENERIC RISK ESTIMATE:  <span style="color: orange;">■</span> Med-High             LOCATION/UNIT:            General Consideration             EVIDENCE SOURCE:            Consensus         </td> </tr> <tr> <td>           Risk Components  <input type="checkbox"/> Infection Control  <input type="checkbox"/> Patient Handling  <input type="checkbox"/> Medication Safety  <input type="checkbox"/> Falls  <input type="checkbox"/> Behavioral Health  <input checked="" type="checkbox"/> Security         </td> <td colspan="2"> <div>IS THIS CONSIDERATION APPLICABLE TO THIS ASSESSMENT?</div> <div> <input type="button" value="Yes"/> <input type="button" value="No"/> <input type="button" value="Needs Review"/> </div> </td> </tr> </tbody> </table>			Search & Filter	SECURITY - S1	BACKGROUND INFO	Search <input type="text" value="Search text"/>	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. <div>             Why?           </div>	DESIGN CATEGORY: Site Optimization  GENERIC RISK ESTIMATE: <span style="color: orange;">■</span> Med-High  LOCATION/UNIT: General Consideration  EVIDENCE SOURCE: Consensus	Risk Components <input type="checkbox"/> Infection Control <input type="checkbox"/> Patient Handling <input type="checkbox"/> Medication Safety <input type="checkbox"/> Falls <input type="checkbox"/> Behavioral Health <input checked="" type="checkbox"/> Security	<div>IS THIS CONSIDERATION APPLICABLE TO THIS ASSESSMENT?</div> <div> <input type="button" value="Yes"/> <input type="button" value="No"/> <input type="button" value="Needs Review"/> </div>	
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# Security Risk 1.2-4.8



The Center for Health Design

- 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.
- **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)**



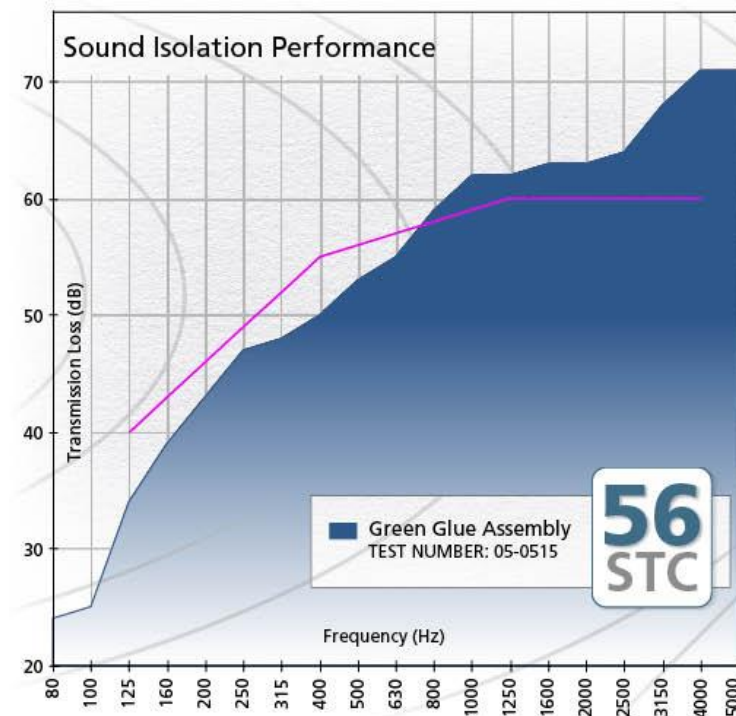
## 1.2-6.1 ACOUSTIC DESIGN

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 <sub>c</sub>
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

# 1.2-6.1 ACOUSTIC DESIGN

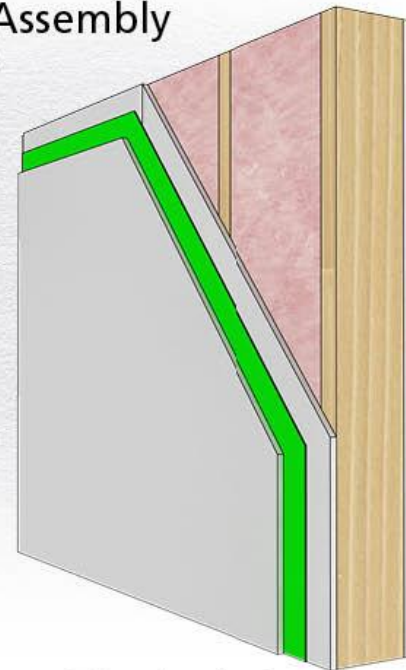
- Market responses to acoustic performance



## Green Glue Wall Assembly

Soundproofing Wall (Option 4)

Two 5/8" Layer Gypsum  
58oz Green Glue per 4x8'  
2x4 Wood Studs @ 24" OC  
R13 Fiberglass Insulation  
Two 1/2" Layer Gypsum  
58oz Green Glue per 4x8'



© SoundproofingCompany.com

**National Gypsum**  
2001 Rexford Road  
Charlotte, NC 28211  
704-365-7300  
ngcaia@nationalgypsum.com

© Ron Blank & Associates, Inc., 2012

**Acoustically Enhanced Gypsum Board  
Designed for High STC Wall Assemblies**



Please note: you will need to complete the conclusion quiz online at [RonBlank.com](http://RonBlank.com) to receive credit

Course #: NGC09L  
An AIA Continuing Education Program  
Credit for this course is 1 AIA HSW CE Hour





# 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

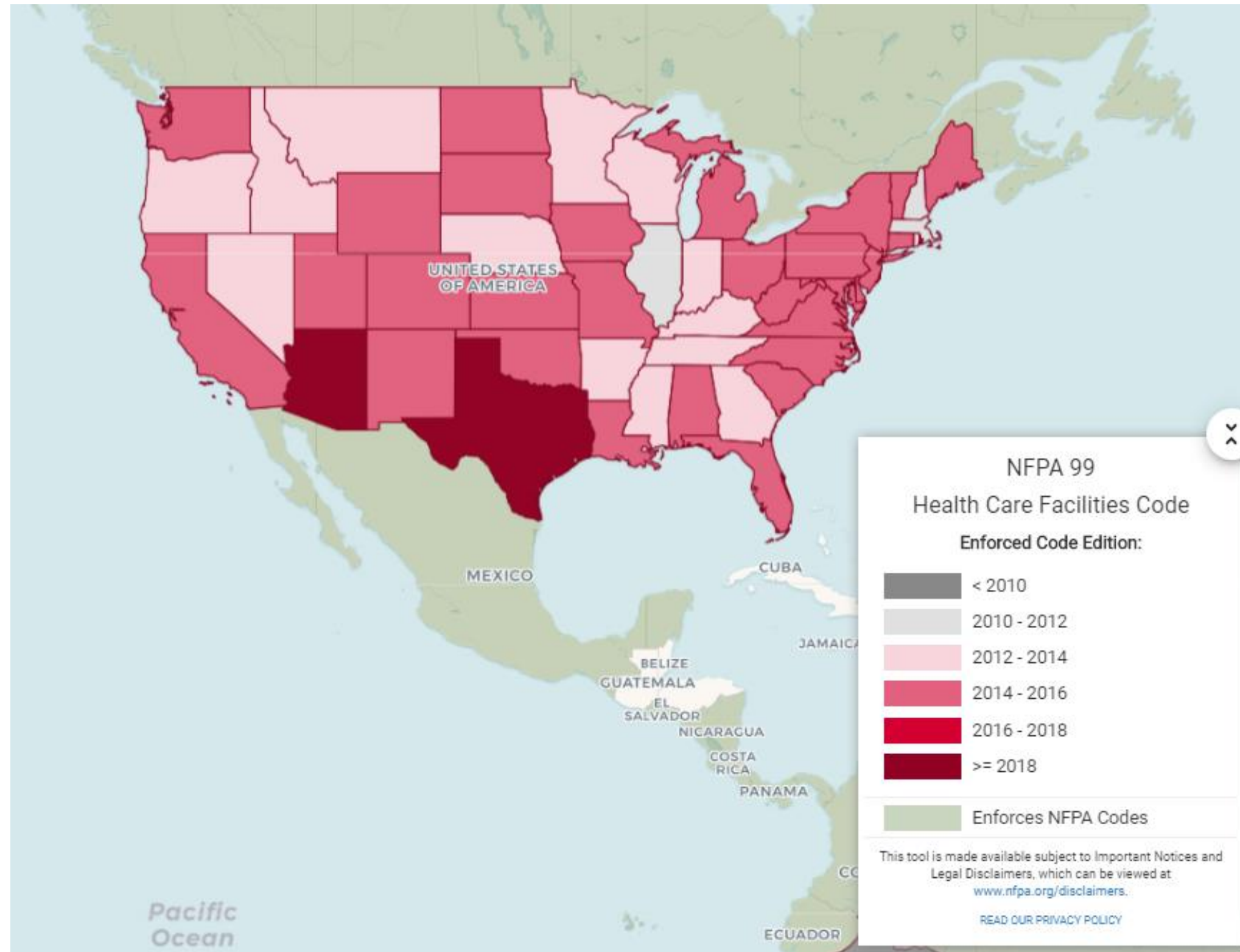
**Category 1:** Facility systems in which failure of such equipment or system is likely to cause major injury or death of patients or caregivers shall be designed to meet system Category 1 requirements as defined in the NFPA Code

**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

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	4		
Payment	102		4	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	4		
X-Ray	104		4	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	4		
Breakroom	106		4	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	4		
Corridor	108		4	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	4	1	4	4	4	2	2	3		
OR2	110		1	1	1	1	1	4	4	1	4	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	4		
Treatment	112		2	2	2	2	2	4	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	4		
Sterilization clean	114		4	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	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	4		
Recovery	117	4	4	2	4	2	4	4	1	4	4	4	4	4	4	4	4	4	4	4	4	4			



# NFPA – 99 Risk Assessment


## NFPA 99 Risk Assessment

- ASHE Resources



The Center for Health Design

### Electrical and Gas Equipment Assessment Tool

<div> <b>Electrical and Gas Equipment Assessment Tool</b>  </div>			
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	

# 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 Fall Regional Event



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