

**Brian J. Schulz**, AIA, ACHA, LEED AP  
Studio Design Leader, Gresham Smith  
Jacksonville, FL  
brian.schulz@greshamsmith.com

**Nancy McLaren**, FACHE  
Director Construction Services  
UF Health – Jacksonville  
Jacksonville, FL  
nancy.mclaren@jax.ufl.edu

**AI IMPACT 2024**  
**40<sup>th</sup> Annual FPC Seminar + Expo**  
**Sept 29 - Oct 1, 2024**

**Penny Houchens**, IIDA, LEED AP,  
Principal, Gresham Smith  
Nashville, TN  
penny.houchens@greshamsmith.com

**Ben Roseborough**, PE, CxA, HFDP, LEED AP  
Principal, TLC Engineering Solutions  
Jacksonville, FL  
ben.roseborough@tlc-eng.com

## *Advancing Healthcare: Patient-Centric Design and Sustainable Growth at UF Health North*

**Course Number:** AHCA 2024.11

Credit Designation: 1 LU/HSW

AIA CES Provider Number: E240

October 1, 2024



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OBJECTIVE

Understand the objective of long-term planning is not to predict what will be built but instead to establish a development framework which allows facilities to respond and adapt to community health needs.

2

OBJECTIVE

Understand the impact of access to natural elements such as daylight, vegetated roofs and other outdoor spaces on patient and caregiver well-being.

3

OBJECTIVE

Consider practical opportunities in which breakrooms and respite areas can provide essential rest and rejuvenation for caregivers in the future

4

OBJECTIVE

Understand the challenges of MEP system expansion and how architectural related solutions allow for optimal integrated design results

3

# Advancing Healthcare:

## Patient-Centric Design and Sustainable Growth at UF Health North

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Orlando, Florida

October 1, 2024



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# Introduction

- Case study focused on the phased development of the UF Health North campus
- Describe the UF Health mission and their history in Jacksonville
- Decision to expand to North Jacksonville
- Developing a hospital campus master plan that can expand to 300 beds
- Creating a facility that elevates the patient experience and emphasizes staff well being
- Engineering scalable, flexible and adaptable systems and infrastructure
- Lessons Learned

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# Speakers



**Nancy McLaren**

FACHE

Director of Construction  
Services

UF Health Jacksonville



**Brian Schulz**

AIA, ACHA, LEED AP

Studio Design Leader

Gresham Smith  
Jacksonville



**Penny Houchens**

IIDA, LEED AP

Principal

Gresham Smith  
Nashville



**Ben Roseborough,**

PE, CxA, HFDP, LEED AP

Principal

TLC Engineering Solutions  
Jacksonville

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## History of UF Health / Shands Jacksonville

Mid 1940s  
Senator  
William  
Shands was  
recruited to  
develop a  
teaching  
hospital in  
Gainesville



1958



The UF Teaching Hospital opened in Gainesville, FL.

1971



UF College of Medicine established a satellite campus in Jacksonville at Duval Medical Center; this was renamed University Hospital in 1971.

1983



University Hospital established the state's first Level I trauma center, offering the highest level of care for major traumatic injuries.

1999



University Hospital and Methodist Medical Center merged into Shands HealthCare as Shands Jacksonville, which included a hospital, associated clinics and the university campus.

2013



Shands Jacksonville was renamed UF Health Jacksonville.

2015



UF Health North medical office building opened on Jacksonville's Northside. The facility includes an emergency room, diagnostics services, outpatient surgery & physician offices.

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## UF Health Mission

At UF Health, our passion is to bridge discoveries with clinical care, leading to new advances that bring hope and healing to those we care for, our patients and their families — transforming lives.

**LIFE TRANSFORMED**

At UF Health, our passion is to bridge discoveries with clinical care, leading to new advances that bring hope and healing to those we care for, our patients and their families — transforming lives.

MISSION	VISION	VALUES
<b>PATIENT CARE</b> <b>EDUCATION</b> <b>SCIENTIFIC DISCOVERY</b> <b>COMMUNITY ENGAGEMENT</b>	At UF Health, we share a common vision — to improve health, collaboration and a solution-driven focus are at the core of our efforts to deliver outstanding care and the best possible outcomes.	UF Health's values center around our steadfast commitment to our faculty, staff, students, patients and communities.
UF Health's mission is to promote health through outstanding and high-quality patient care, innovative and rigorous education in the health professions and biomedical sciences, and high-impact research across the spectrum of basic, translational and clinical investigations. Our patients and communities are at the heart of all we do.	For our patients, to train the health care providers of tomorrow, and to advance discoveries that lead to new clinical treatments.	

**OUR VALUES UNITE US IN OUR VISION. TOGETHER, WE TRANSFORM LIVES AND OFFER HOPE.**

UFHealth  
UNIVERSITY OF FLORIDA HEALTH

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## UF Health Expands to North Jacksonville



North Jacksonville was a rapidly growing but medically underserved area of Duval County. In 2006, UF Health Jacksonville determined that putting a hospital in that location would provide much needed medical services and an economic boost to the community as well as fiscal diversity for the institution. Leadership envisioned the project as a community hospital with access to the sophistication and advanced technology normally found in an academic medical center.

The vision became to build a “bedless hospital” initially with beds being constructed when appropriate. The Phase 1 project included two hospital floors housing Emergency, Imaging, Surgery and support services. It included four floors of physician office space immediately above the two hospital floors.

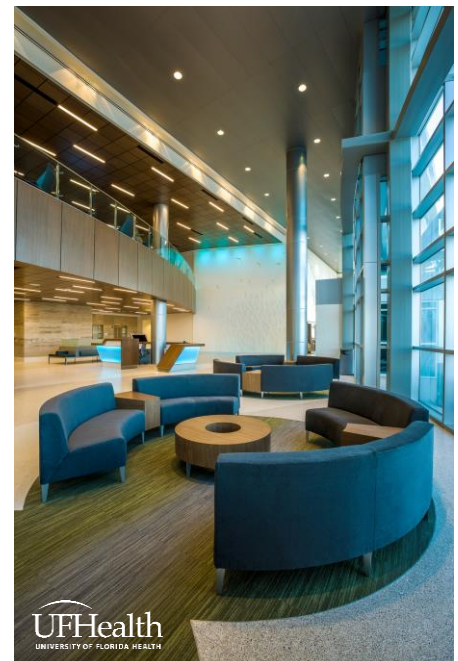
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## Project Goals

### UF Health North Campus

- Become the provider of first choice for the primary and secondary service area.
- Campus master plan to allow for expansion to a 300-bed facility with minimal disruption to the facility.
- Create an economically sustainable facility.
- Eliminate unnecessary barriers between departments to reduce staff redundancy and increase staffing efficiency.
- Create an environment where community physicians and UF Physicians can practice side by side.
- Provide a positive patient experience for each patient.
- Project the image of a high-tech cutting edge medical facility.
- Integrate technology into the building and culture of the facility.
- Create a facility where physicians will want to practice medicine.
- Create a community hospital designed to facilitate best practices for clinicians.
- Conserve capital for future expansions.



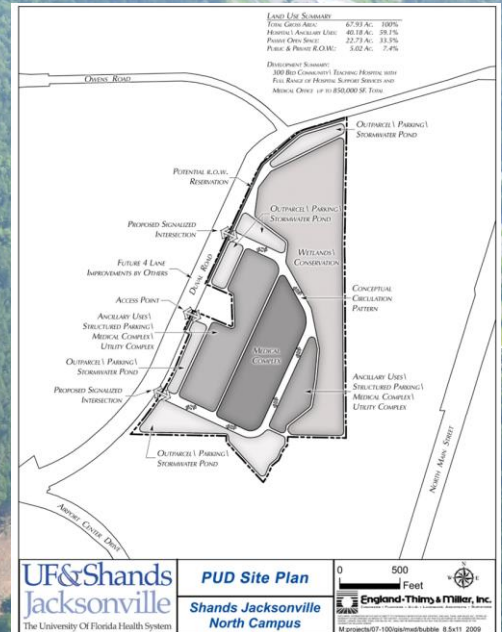
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## Long Term Planning

The objective of Long-Term Planning is not to predict what will be built but instead to establish a development framework which will allow the facility to respond to community health needs.

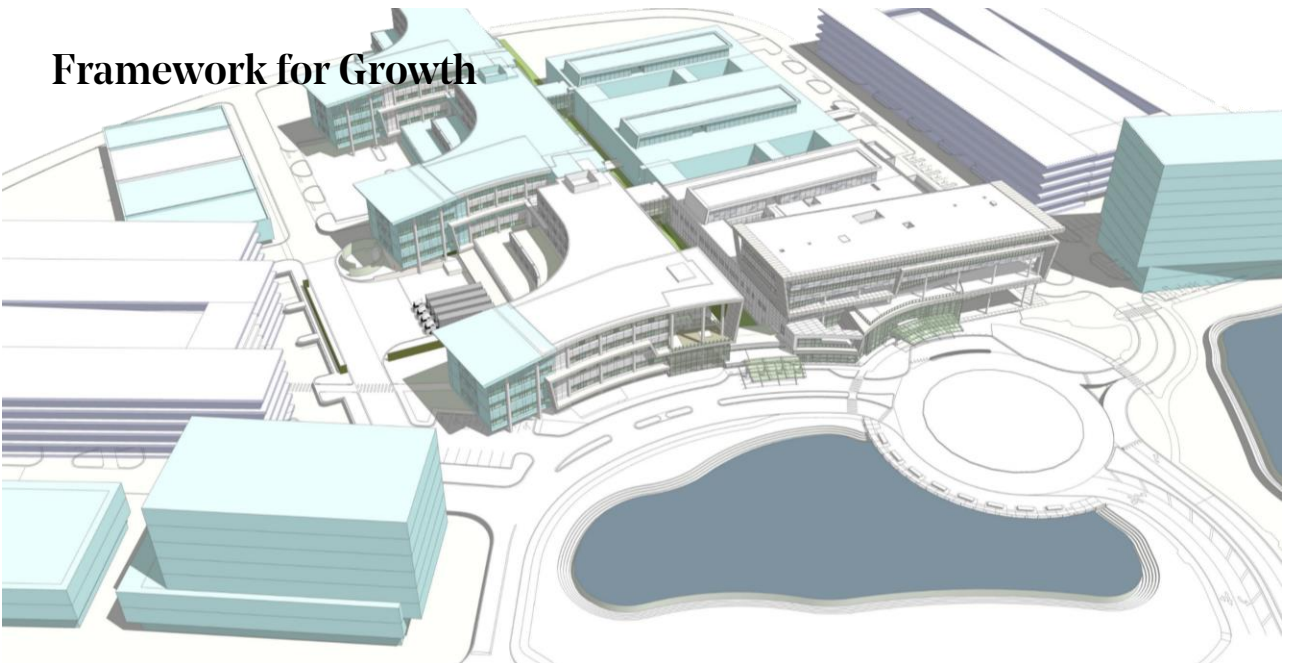
This framework should allow for orderly development in an incremental and cost-effective manner. The framework should facilitate the highest and best use of the site.



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# Framework for Growth



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## Framework for Growth

### Phase 1

- Freestanding Emergency Department
- Imaging & Diagnostics
- Pharmacy
- Lab
- Surgery
- 4 stories / 110,000 SF Medical Offices

Opened in February 2015



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## Framework for Growth

### Phase 1

- Freestanding Emergency Department
- Imaging & Diagnostics
- Pharmacy
- Lab
- Surgery
- 4 stories / 110,000 SF Medical Offices

### Phase 2

- 92 Bed Tower Addition
- Med Surg
- ICU
- LDRP

Opened in May 2017



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## Internal Courtyard



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## Framework for Growth

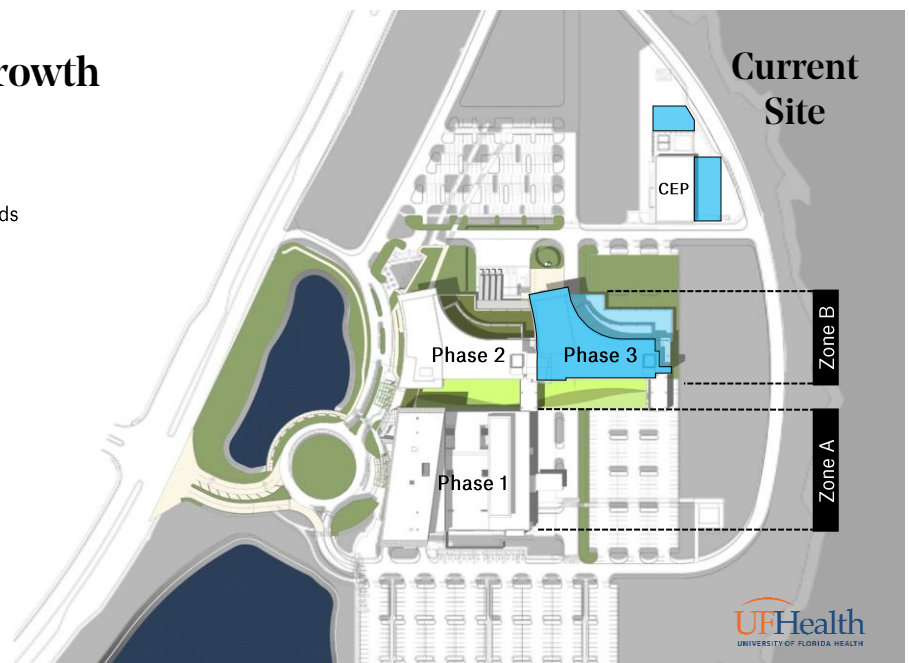
### Phase 3

- 124 Bed Addition  
includes: 48 Rehab Beds  
76 Acuity Adaptable Beds
- Expanded Support Services
- Expand CEP

Opened in July 2024

### Phase 1 & 2 Renovations

- Expand Dietary
- Expand Pharmacy
- Expand Materials Mgmt.
- Expand EVS
- Expand ED
- Expand Lab & Blood Bank
- Expand Surgery
- Relocate SPD



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## Current State



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## Framework for Growth

### Beds

- Potential capacity for 500 Beds
- PUD currently allows for 300

### Medical Offices

- Potential for approximately 400k SF
- The full buildout assumes parking structures



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# Parking

What is the trigger for structured parking?

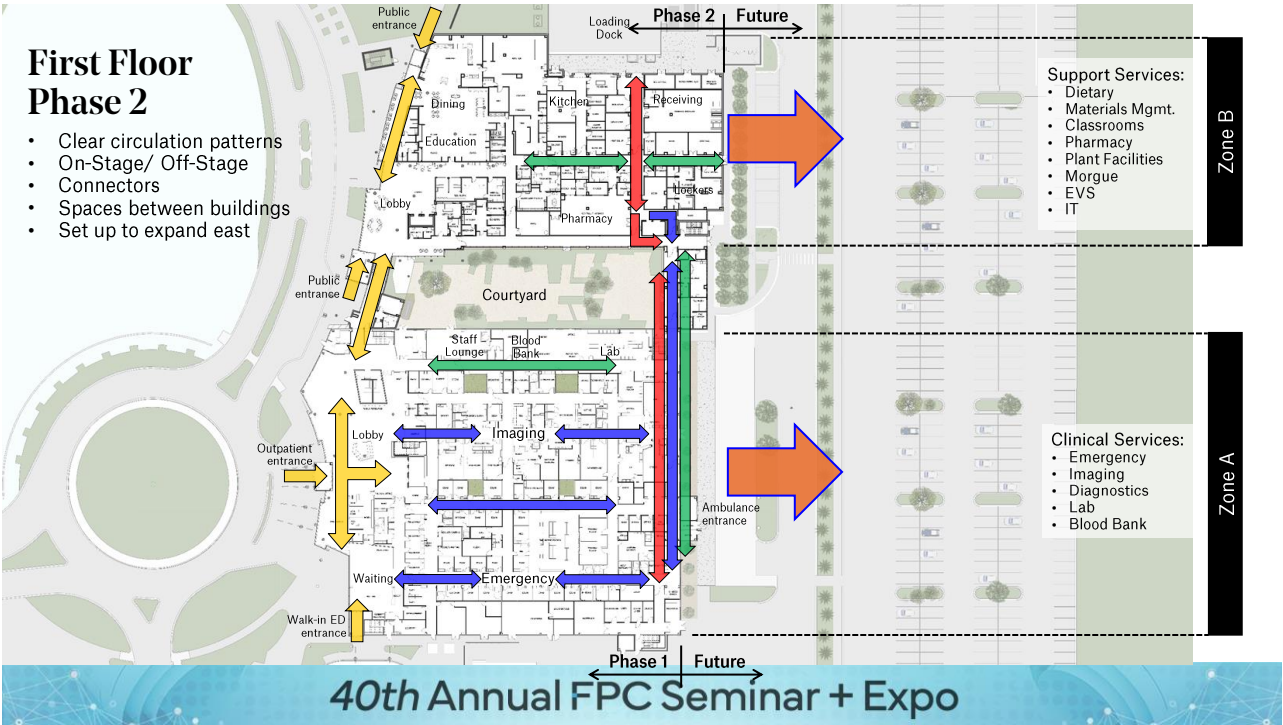
Tower	Beds	Cars	Park Struct 1	Park Struct 2
A	92	391	130	261
B	124	527	176	351
C	124	527	176	351
D	32	136	45	91
End Caps				
A	36	153	51	102
B	48	204	68	136
C	48	204	68	136
Max Beds				
PUD	504			
	300			
MOBs				
A	210,500	632	632	
B	150,000	750	750	
C	60,000	300		300
D	60,000	300		300
E	48,000	240		240
Total	528,500	4364	2096	2268



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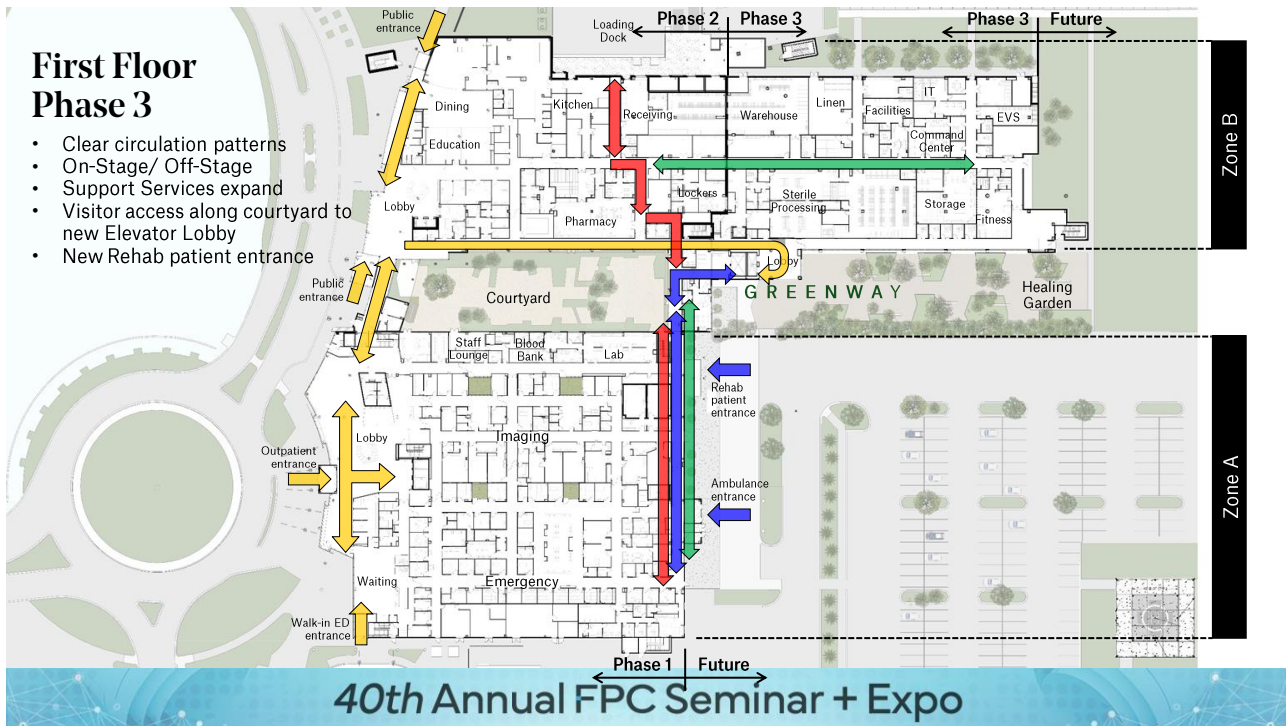
# First Floor Phase 2

- Clear circulation patterns
- On-Stage/ Off-Stage
- Connectors
- Spaces between buildings
- Set up to expand east



## First Floor Phase 3

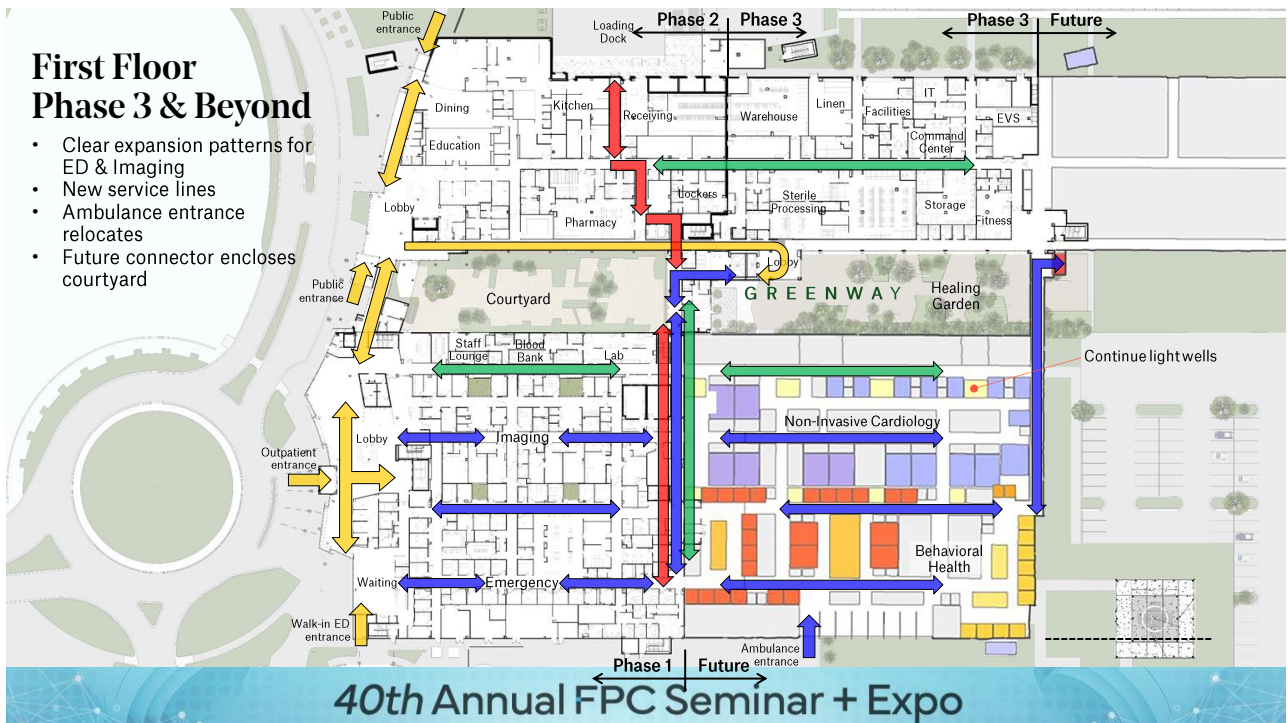
- Clear circulation patterns
- On-Stage/ Off-Stage
- Support Services expand
- Visitor access along courtyard to new Elevator Lobby
- New Rehab patient entrance



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## First Floor Phase 3 & Beyond

- Clear expansion patterns for ED & Imaging
- New service lines
- Ambulance entrance relocates
- Future connector encloses courtyard

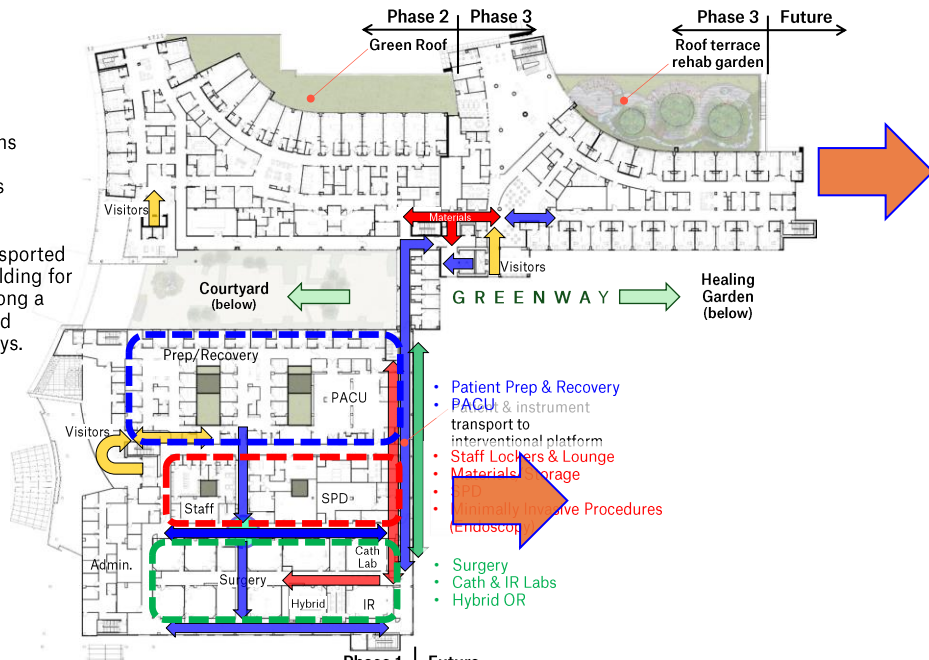


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## Second Floor Phase 3

- Clear circulation patterns
- On-Stage/ Off-Stage
- Clear department zones
- Set up to expand east

Patients are discreetly transported to the Clinical Services building for diagnostics & treatment along a 2nd floor connector to avoid crossing the public pathways.

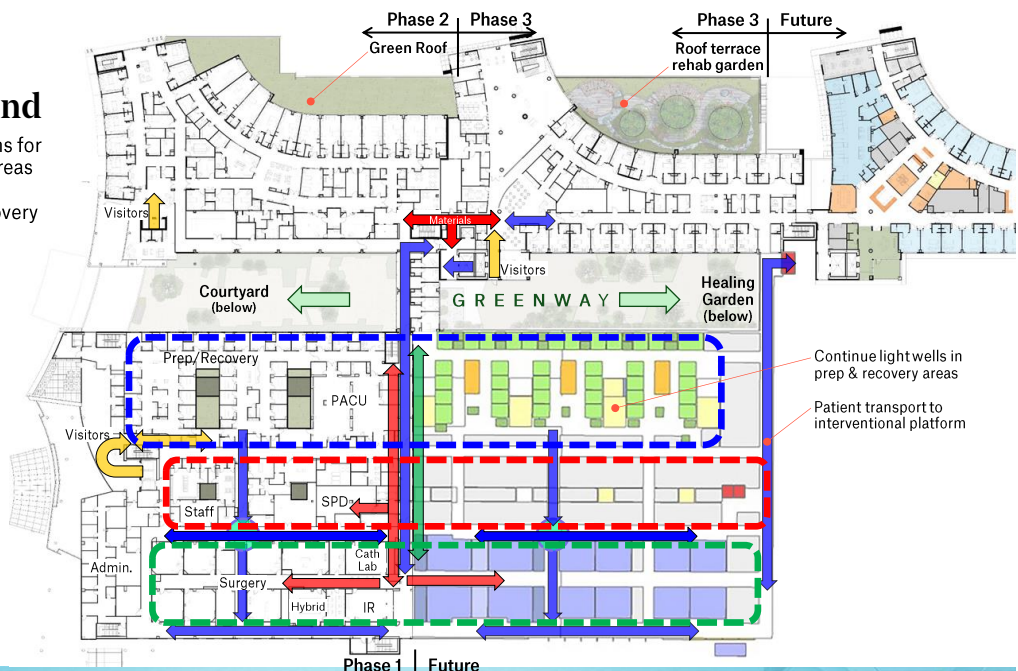


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## Second Floor Phase 3 & Beyond

- Clear expansion patterns for Surgery & Procedural areas
- Clear functional zones
- Light wells in prep/recovery
- 2nd connector to/from inpatient beds



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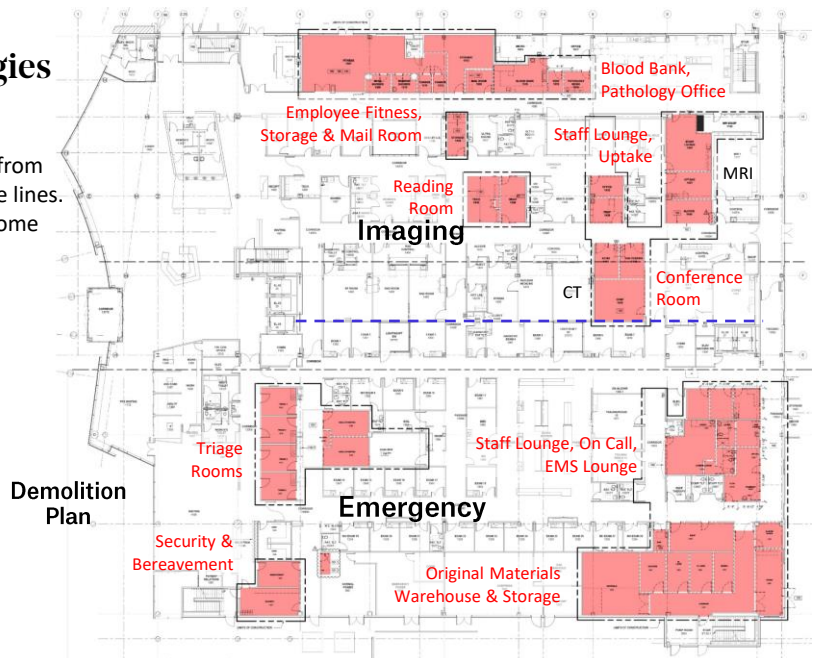
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## In Place Expansion Strategies

- Identify soft space for department expansions.
- Relocate less critical functions away from growing departments and key service lines.
- New bed tower expansion allowed some functions to move out of Phase 1.
  - Security
  - Fitness Center
  - Warehouse



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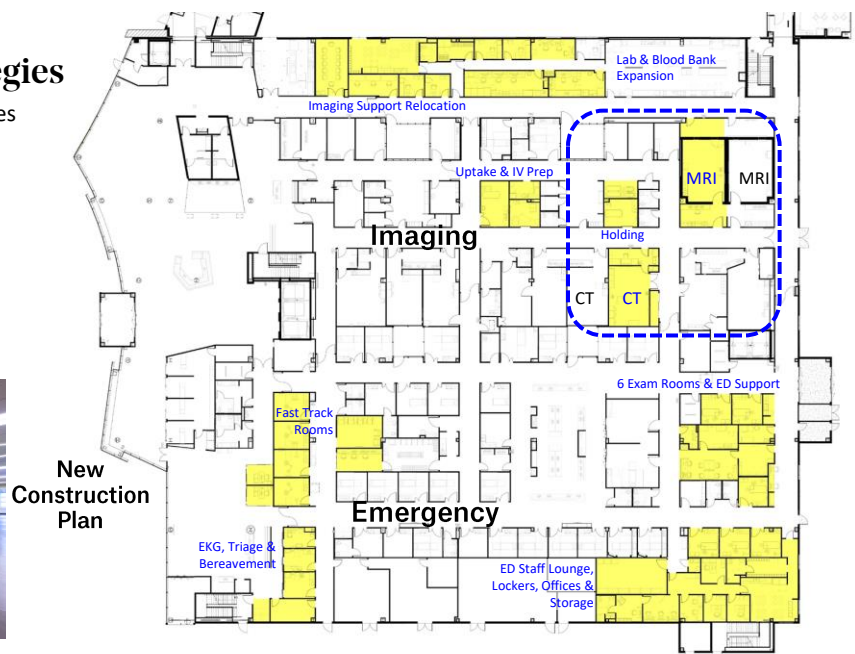
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## In Place Expansion Strategies

- Anticipate growth in key service lines
- Imaging
  - Added 2nd MRI
  - Added 2nd CT
- Emergency
  - Added 6 exam rooms
- Expanded Blood Bank



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## In Place Expansion Strategies Example: Imaging

- During Phase 1 Planning, the volumes did not justify a 2nd MRI or CT on day one.
- “Soft space” size appropriately for future modalities to be added in Imaging



MRI Renovation  
UF Health North, Jacksonville, FL



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## In Place Expansion Strategies Example: Imaging

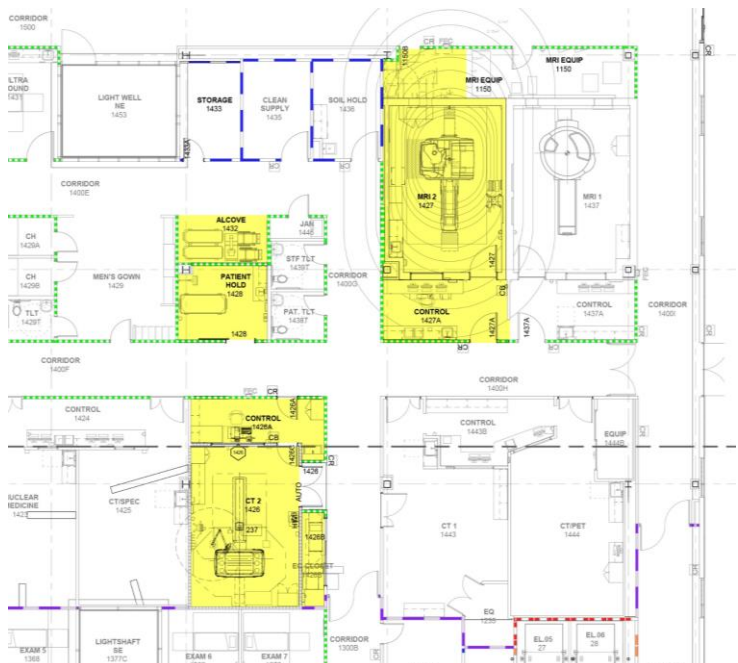
- The Imaging department has added a 2<sup>nd</sup> MRI and CT to keep up with increased demands as part of a growing campus.
- Redundancy resolves high demand issues while sharing with the ED



MRI Renovation  
UF Health North, Jacksonville, FL



CT Renovation



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# Design Drivers

## Patient Safety



- Reduce negative events; non-slip floors, handrails, patient lifts, bed alarms, line of sight to patients
- Infection control
- Clinical alarms, telemetry, active shooter

## Quality + Efficiency



- Fast track rooms (ED) improve throughput
- Standardized ED Exam Rooms, ORs & Patient Rooms
- Nursing capability with flexibility to meet other needs (pandemic, mass casualty, etc.)
- Expanded support departments to handle additional capacity

## Adaptability / Resiliency



- Acuity Adaptable Rooms allow for surges in acuity levels (ICU during pandemic)
- Surgery platform allows for multiple types/sizes of interventional rooms
- Ability for non-patient care spaces to accommodate surge event
- Ability to switch HVAC controls (positive/negative)

## Integration of Technology



- Fast access to data (cellular, WIFI, hard-wired)
- Virtual Desktop Infrastructure (VDI, staff)
- Telehealth
- Infrared cameras (COVID)
- Technology for wayfinding, apps

## Healthy, Sustainable Buildings



- Air quality and ventilation, high efficiency HVAC systems
- Building orientation, improved thermal envelope, reduce energy use
- Vegetated roofs reduce runoff & provide additional thermal barrier
- Low emitting and recycled materials
- LED lighting coupled with access to natural daylight
- Reduce waste & recycling programs
- Conserve water at cooling towers, high efficiency plumbing fixtures

## Human Experience



- Abundance of natural light, views, family areas for respite, privacy, lighting levels, noise reduction, roof garden, vegetated roofs
- Empowerment (Staff - respite, efficiency, safety; + patient/family - make easier to use) self sufficiency and recovery needs, rehab needs to control environment
- Communication (keeping high touch in the high tech; proactive communication with families, telehealth; leveraging tech but incorporating high touch)

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## Design Guidelines – Experiential Goals



Remarkable Experience • Innovative Facility • Connection to Nature • Supportive Environment



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## Inspiration



provide

heal

nurture

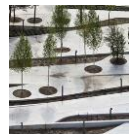
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## Early Concepts



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## Identity Strategy

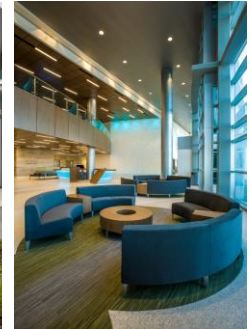


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### Design Elements – Phase One

- Ease of Wayfinding
- Hierarchy Structure of Experiences
- Guest Experience
- Connection to Nature
- Terraces
- Lightwells
- Amenities – choice of space
- Green Roofs



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## Connection To Nature



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## Design Elements – Phase Two

- Continued Design Language
- Continued Emphasis - Connection to Nature
- Courtyards
- Terraces
- Nursing Unit Design – Support Staff Experience



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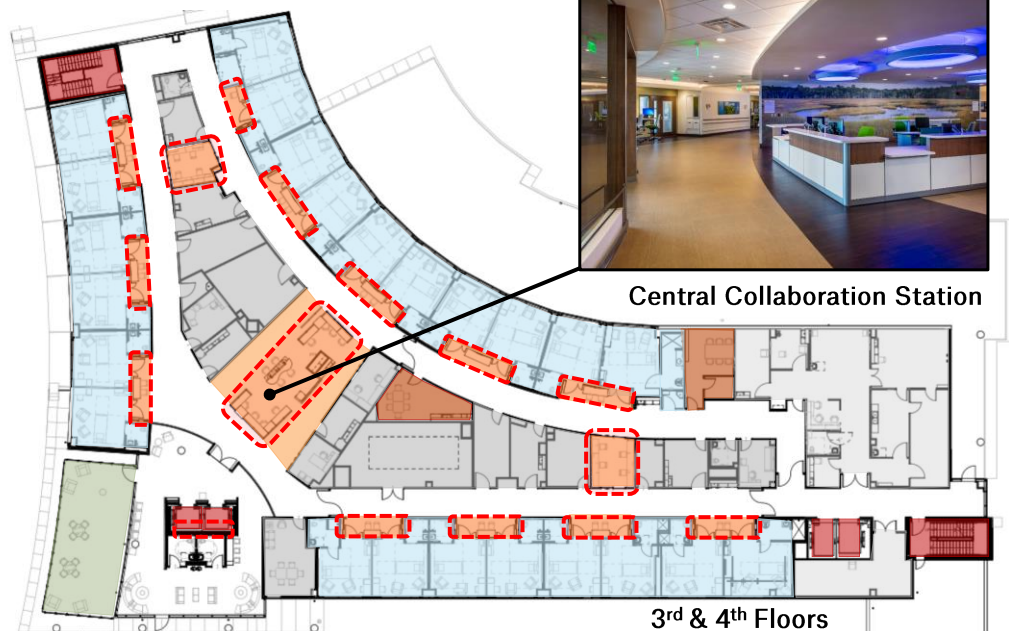
## Phase Two



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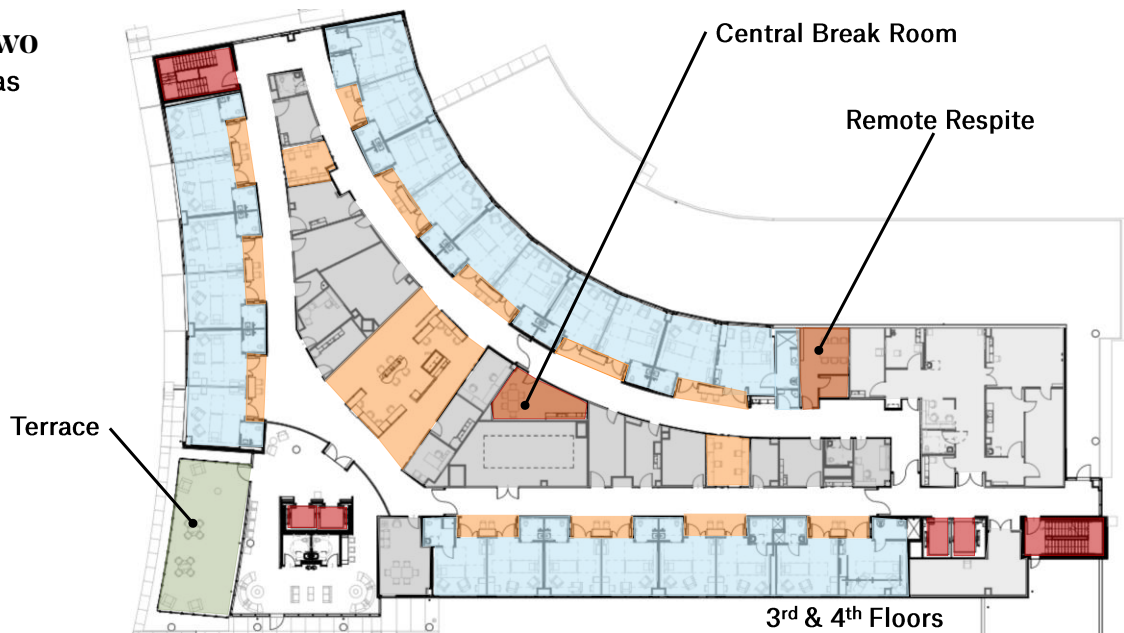
## Phase Two Nursing Unit



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## Phase Two Staff Areas



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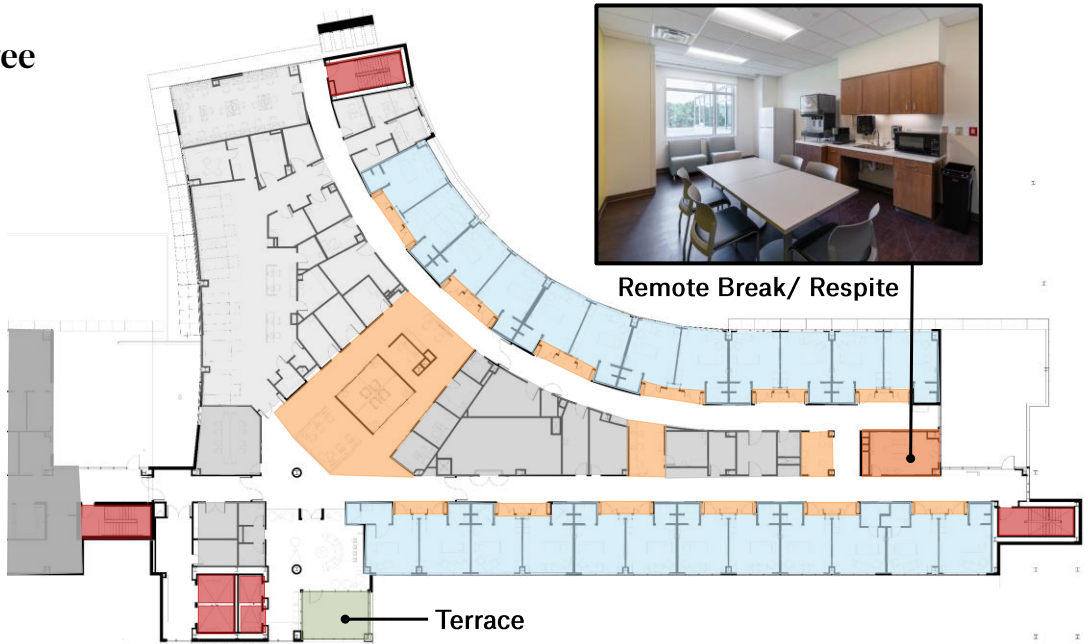
## Phase Three Nursing Unit



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## Phase Three Staff Areas



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Research Excellence Award 2022



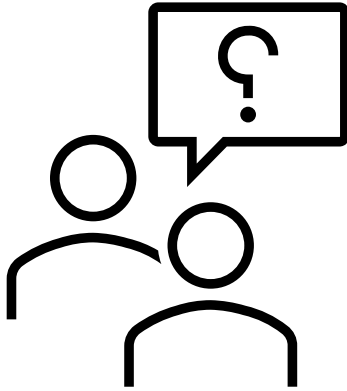
**Caring for the Caregiver:**  
How Evidence Based Design Can Partner with  
Healthcare Systems to Reduce Staff Burnout

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## Research Question:

Do nurses take breaks, where do they take them and what design features impact nurse engagement and satisfaction with breaks?



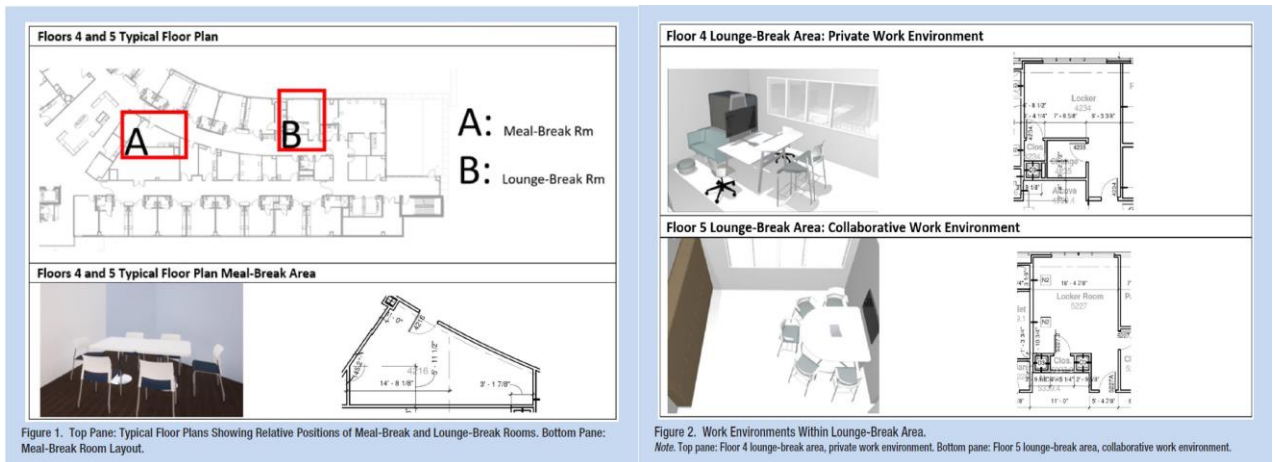
## Methods:

- RN Design Thinking Focus Groups
- RN Online survey
- Press Ganey Results
- PIR Sensors & Card Swipe Data
- Behavior Mapping

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## Environment



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## Layout



**4<sup>th</sup> Floor Staff Respite Room**

- Heads down space
- Couch facing window
- Smaller collaborative zones



**5<sup>th</sup> Floor Staff Respite Room**

- Group work zone
- High top table and stools
- Open workspace

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## Design Elements – Phase Three

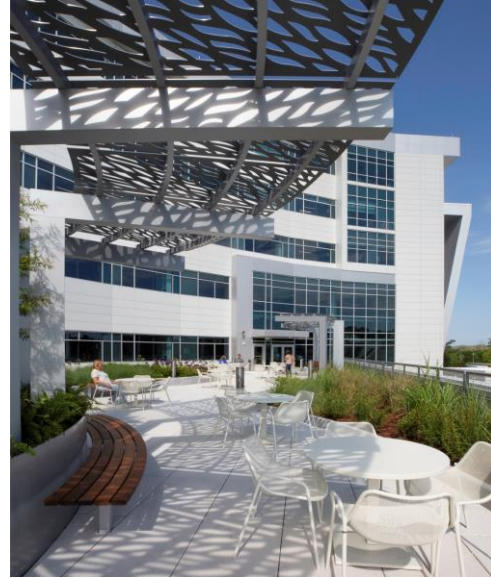
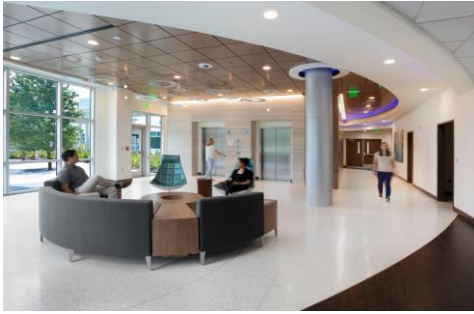
- Continue Design Language from previous Phases
- New Service Lines
- Reevaluation of what was done in Phase Two
- Revisit Nursing Unit Layout
- Revisit Staff Break and Respite



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### Phase Three

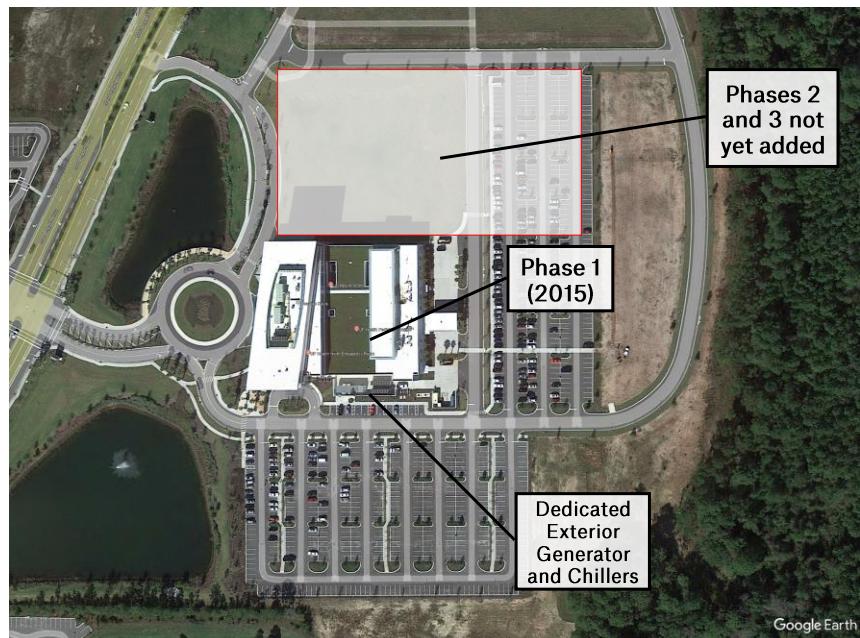


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### Phase One MEP

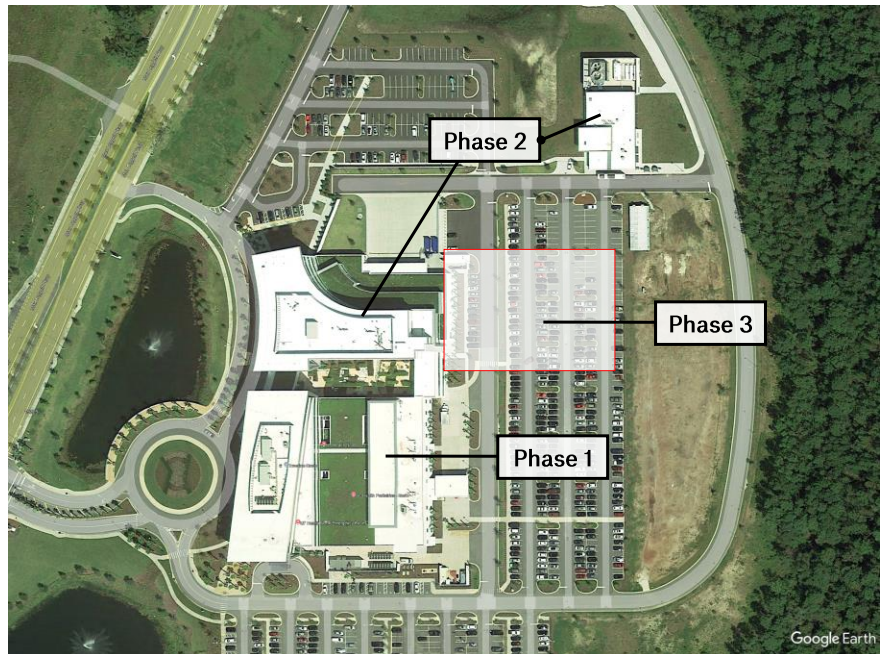
- Developer driven
- Designed to be stand-alone from future expansions
- Equipment Dedicated to Phase 1:
  - (2) air-cooled chillers
  - exterior generator
  - Medical gas manifolds, vacuum pump, and air compressor



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## Phase Two MEP

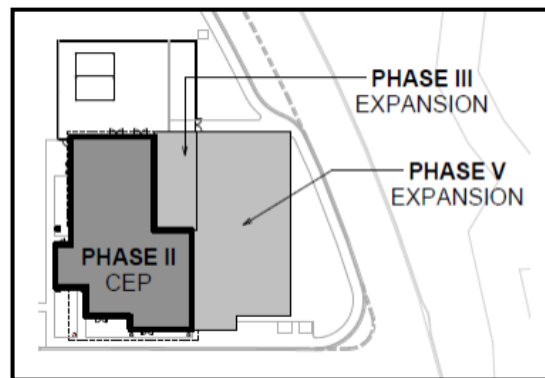


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## Phase Two MEP – Patterns of Growth

- Originally planned for smaller Phase III Expansion

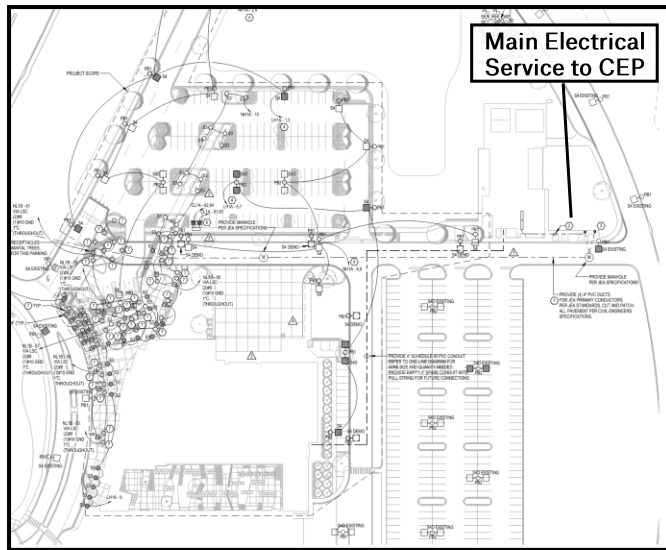


Original Conceptual for Growth of CEP

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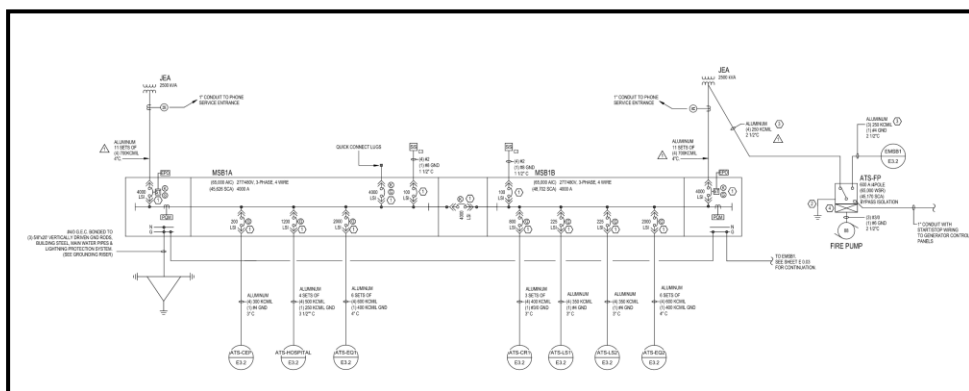
## Phase Two MEP – Electrical



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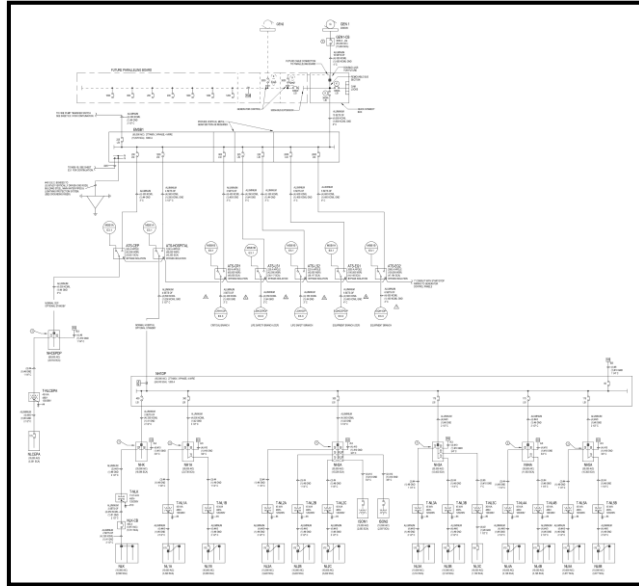
## Phase Two MEP – Electrical



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## Phase Two MEP – Electrical

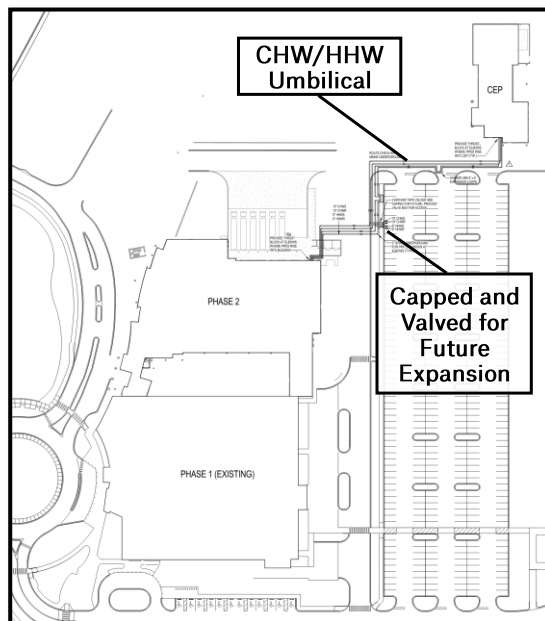


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## Phase Two MEP – Mechanical

- New CEP
  - Water Cooled Chillers
  - Cooling Towers
  - Condensing Boilers
- Umbilical serves Phase Two from CEP

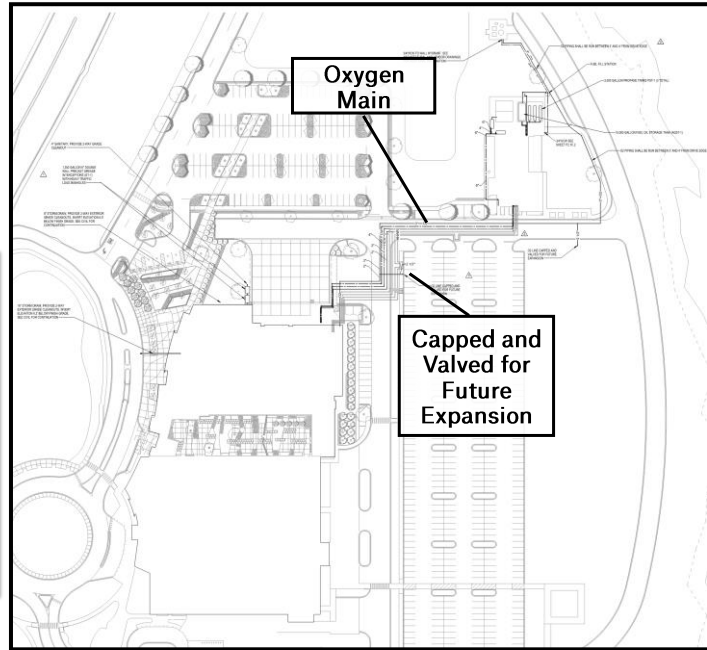
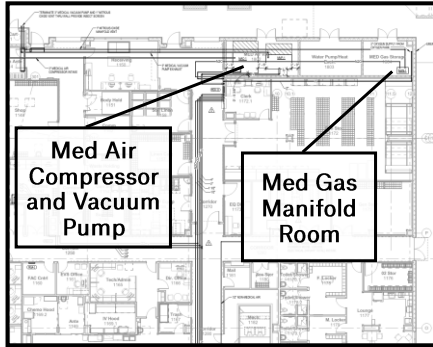


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### Phase Two MEP - Plumbing

- Bulk Oxygen Farm serving Phase 2 and beyond
- All other med gases derive from Phase 2 building

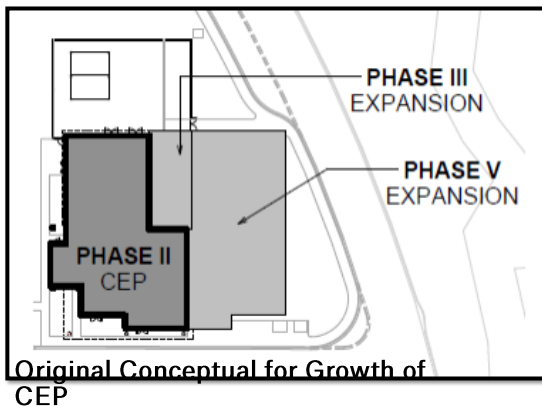


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### Phase Three MEP – Patterns of Growth

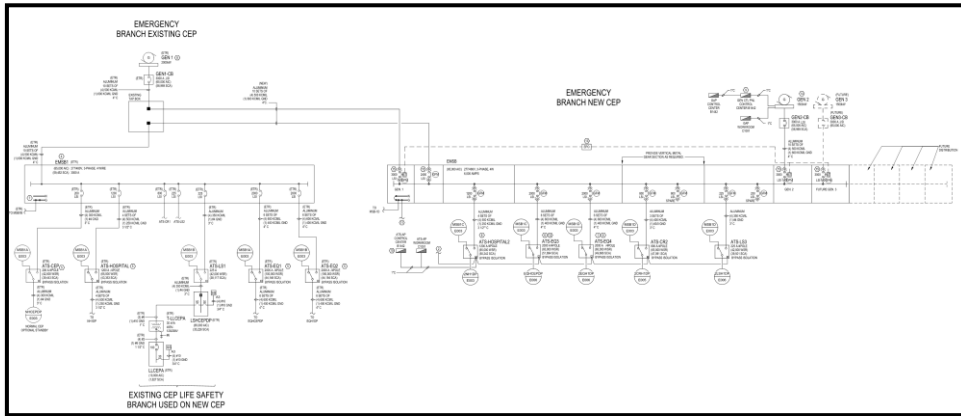
- Actual Expansion of CEP shifted more capacity into Phase Three



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## Phase Three MEP – Electrical

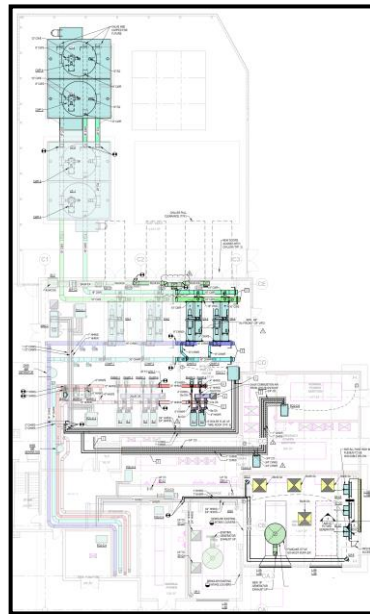


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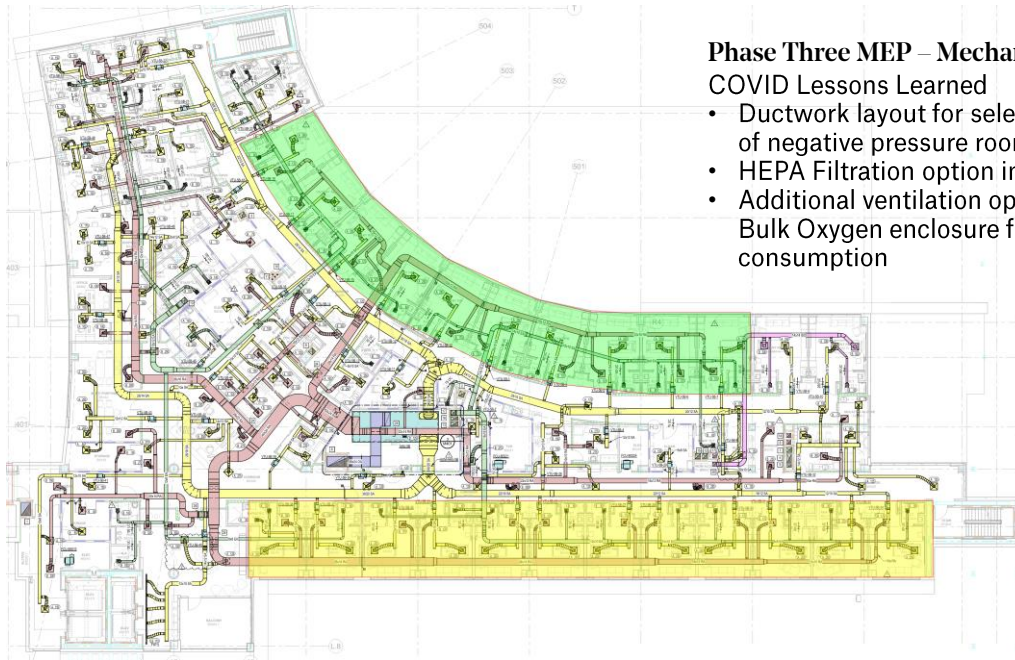
## Phase Three MEP – Mechanical

- Two new water-cooled chillers and cooling towers
  - Doubled cooling capacity
- Two new condensing boilers
- Support for two new generators
  - One future and one current



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### Phase Three MEP – Mechanical

#### COVID Lessons Learned

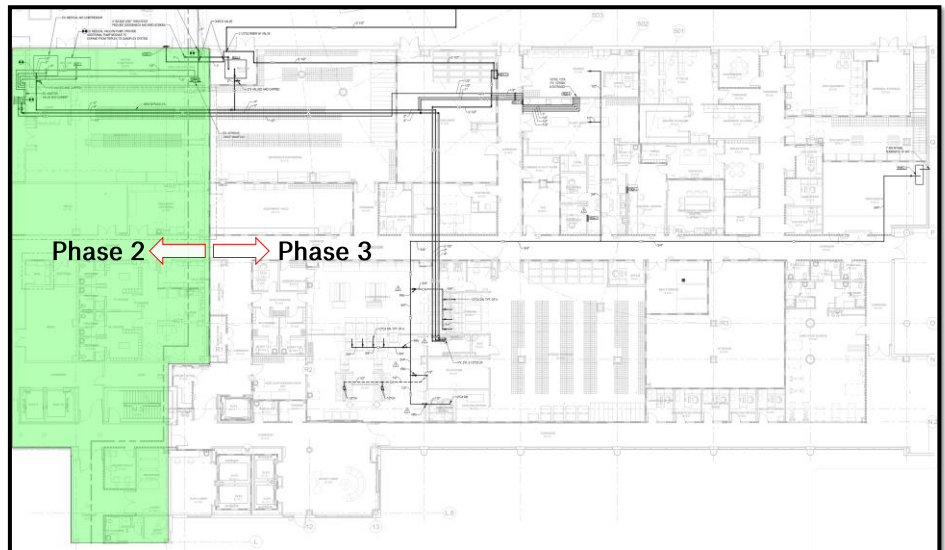
- Ductwork layout for selective banks of negative pressure rooms
- HEPA Filtration option in AHUs
- Additional ventilation openings in Bulk Oxygen enclosure for peak consumption

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### Phase Three MEP – Plumbing

- Extended Oxygen and Medical Vacuum
- Added additional capacity for Medical Air



Phase 2 ← → Phase 3

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## Enabling Projects

Develop a phased construction approach to maintain ongoing operations



Temporary Egress Path



Temporary Dietary Trailers



Temporary ED Storage Trailers



Temporary Blood Bank

## 40th Annual FPC Seminar + Expo

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## Growing Pains & Lessons Learned

- Maintain good as-built drawings
- Discontinued products
- Mockup new room types
- Site specific vendor drawings
- Lighting & color temperature
- Expansion joint detailing
- UPS Phasing
- Helipad permitting

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**Thank you for your attention!**



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