

Evolution of a Dynasty:

A look at the evolution of Hybrid OR design at the World-Renowned Cleveland Clinic Heart and Vascular Institute

March 9, 2021

Michael C. Zambo AIA, ACHA, EDAC
Nate Price PE, CHFM





The American
Institute
of Architects

Academy of
Architecture for Health
an AIA Knowledge Community

Evolution of a Dynasty:

A look at the evolution of Hybrid OR design at the World-Renowned Cleveland Clinic Heart and Vascular Institute

March 9, 2021

Moderated by: Rita Ho





The American
Institute
of Architects

Academy of
Architecture for Health

an AIA Knowledge Community

Case Study Series

As part of the Academy's multi-channel, on-line approach, these sessions provide emerging and experienced professionals with convenient and economical opportunities to develop their chosen area of interest.

During this session, attendees will follow the evolution of hybrid OR design at the Cleveland Clinic, explore the lessons learned in creating the best environment for treating patients and learn the best way to improve them and their delivery method in the future.



**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

Copyright notice

This presentation is protected by US and International Copyright laws. Reproduction, distribution, display and use of the presentation without written permission of the speaker is prohibited.

© The American Institute of Architects (2021)

Compliance Statement

“AIA Knowledge” is a Registered Provider with The American Institute of Architects Continuing Education Systems (AIA/CES). Credit(s) earned on completion of this program will be reported to AIA/CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon special request.

This program is registered with AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.



**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

AIA/CES Reporting Details

Your CES credits from this event will be automatically reported given your engaged attendance during the entire event today.

If you are watching in a group setting and have multiple people in the room, please make sure the person who registered for the course, includes your name and AIA member number in their post webinar survey.

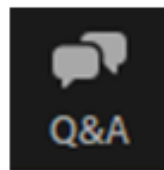
We encourage all registrants to fill out the post webinar survey. Your feedback is important and informs us of future webinar topics to better meet listener needs.

Questions?

Submit a question to the moderator via the Q&A tool, at the bottom of your screen.

Content-related questions will be answered during the Q&A portion, at the end of the presentation, as time allows. Any questions not answered during Q&A, will be answered and posted online within two (2) weeks.

Tech support questions will be answered by AIA staff promptly.





**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

Michael C. Zambo, AIA, ACHA, EDAC
Principal
Bostwick Design Partnership



Nate Price, PE, CHFM
Senior Director, Construction and Engineering
Cleveland Clinic



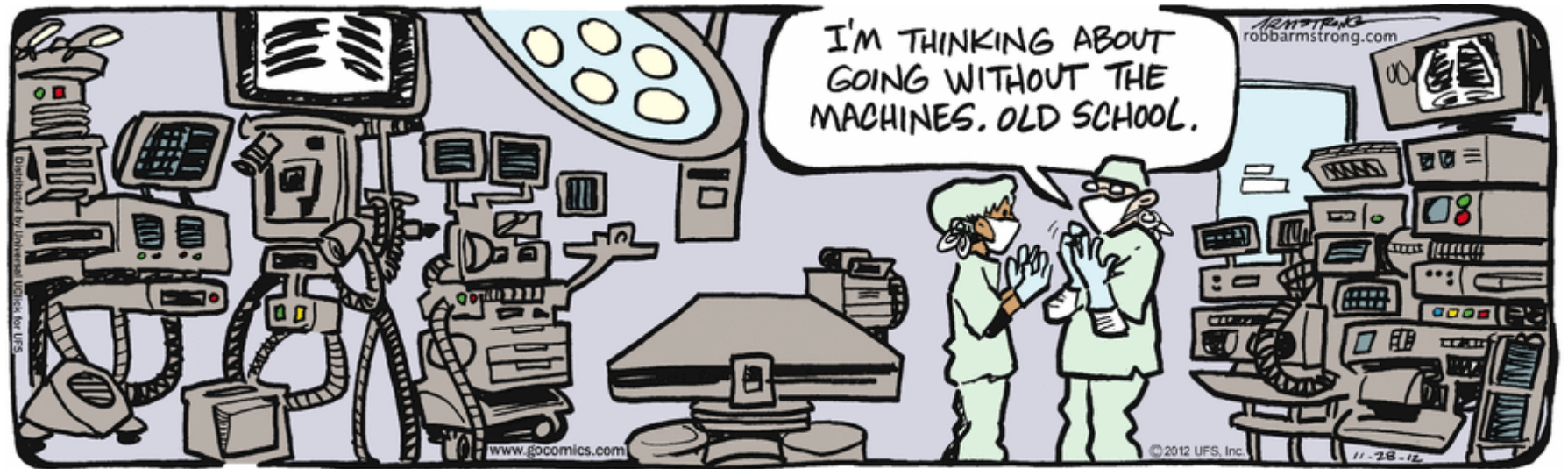
Evolution of a Dynasty

Nate Price
Cleveland Clinic

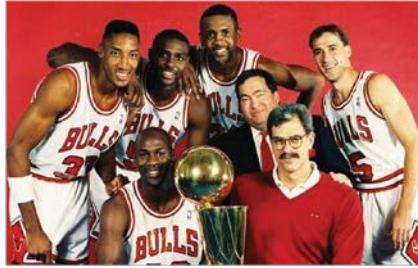
Michael Zambo AIA, ACHA, EDAC
Bostwick Design Partnership

 **Cleveland Clinic**

Bostwick
Design
Partnership 



What is a Dynasty?



5 YEARS
Chicago Bulls



276 YEARS
Ming Dynasty



8 YEARS
Dynasty the TV Series



24 YEARS #1
CC Heart & Vascular



What is a Dynasty?



CC Heart & Vascular – 27 Years as #1



HEALTH

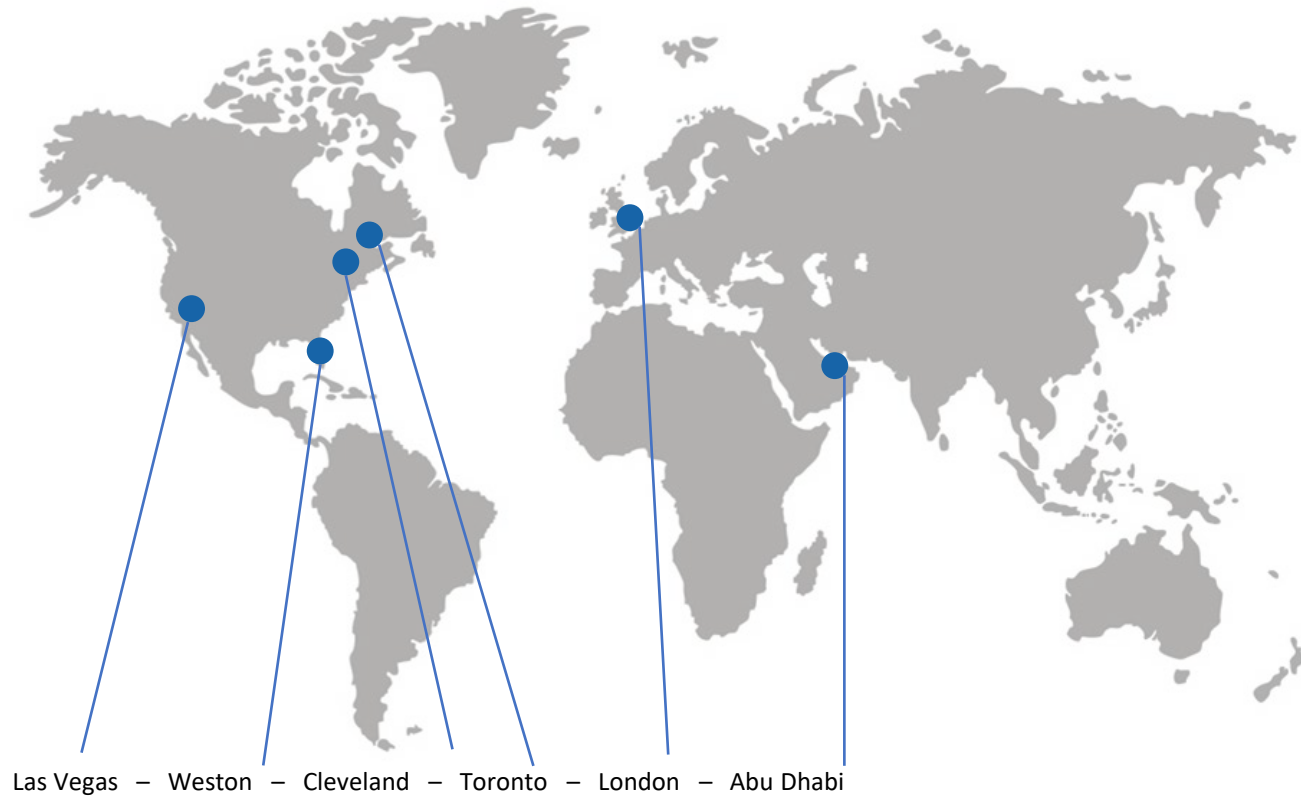
Cleveland Clinic named No. 2 hospital in world

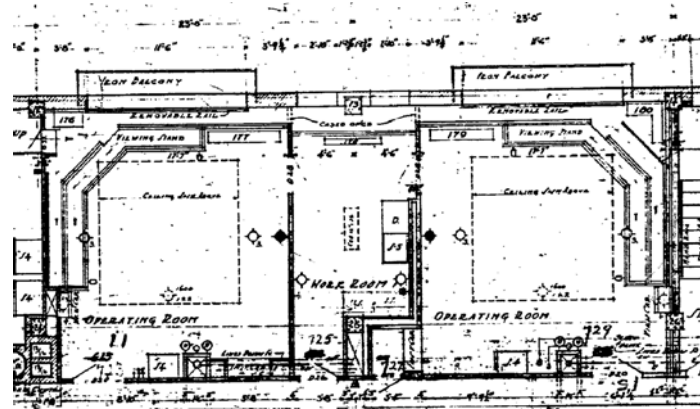


The Miller Family Pavilion on the Cleveland Clinic's main campus. Newsweek ranked the Clinic as the second-best hospital in the world in its World's Best Hospitals list for 2021. Courtesy Cleveland Clinic









~270 sf



1999 – First hybrid like room in Memphis, TN

2000 – First ‘fixed’ hybrid in country at CC

2004 – Changed from Heart Institute to Heart & Vascular Institute

2008 – Masterplan for Heart Institute.

2014 – First Robotic Hybrid in the US.

Administration awareness

Budget

Space

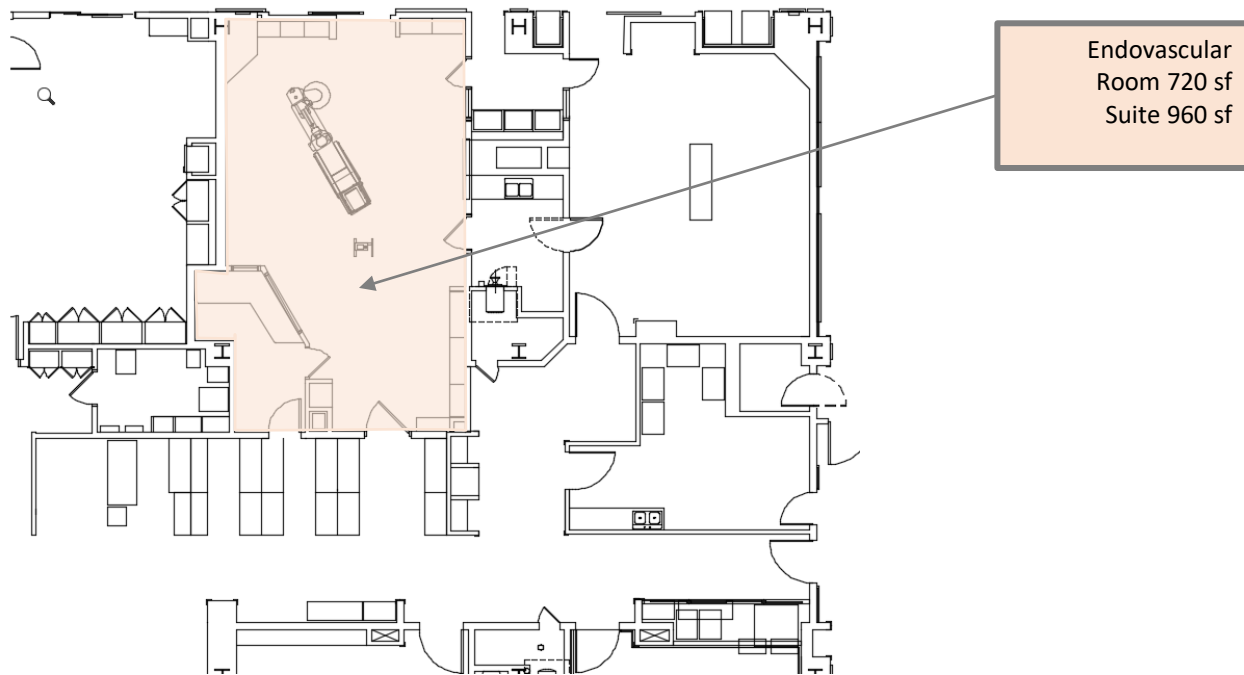
Structure

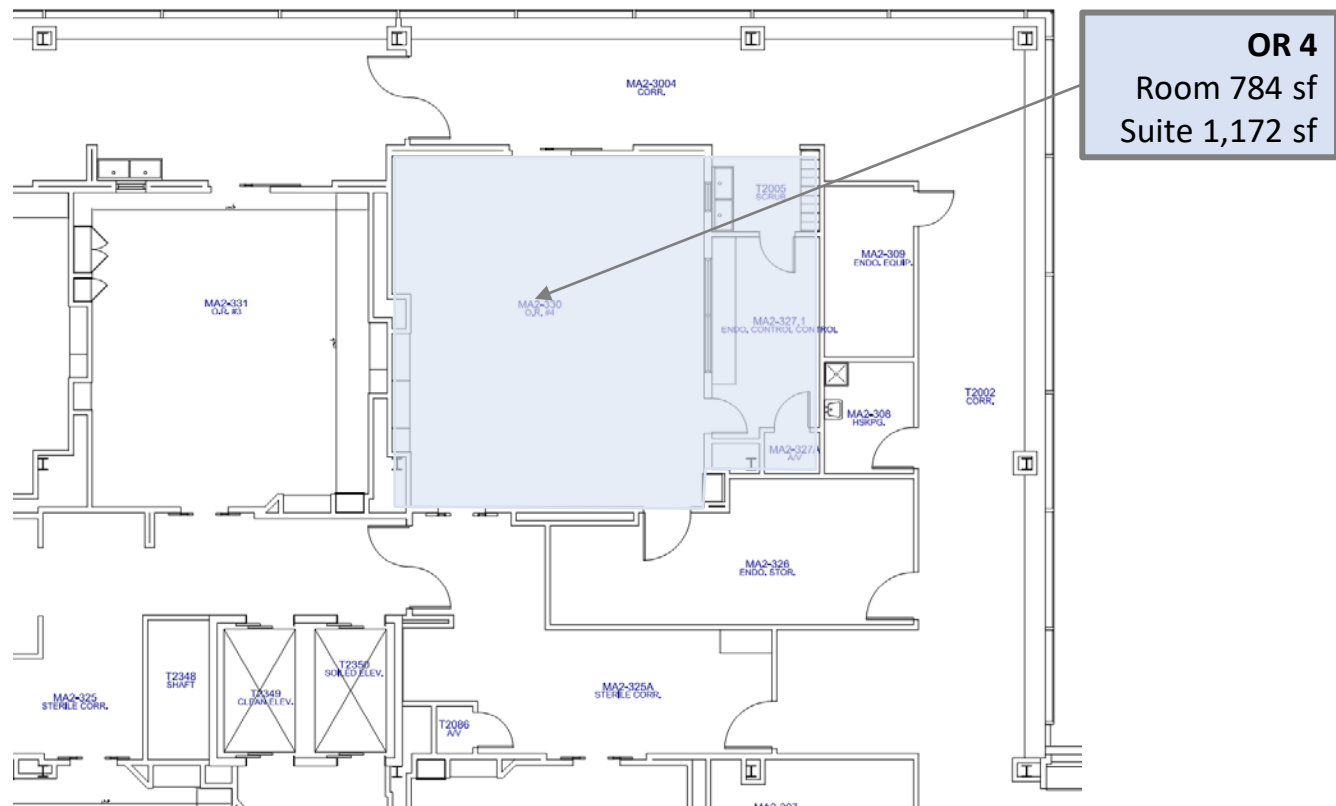
Design time

Not just surgeons – Anesthesiologist, Vendor,
Nurses, Tech, AV Integrator, Infection Control

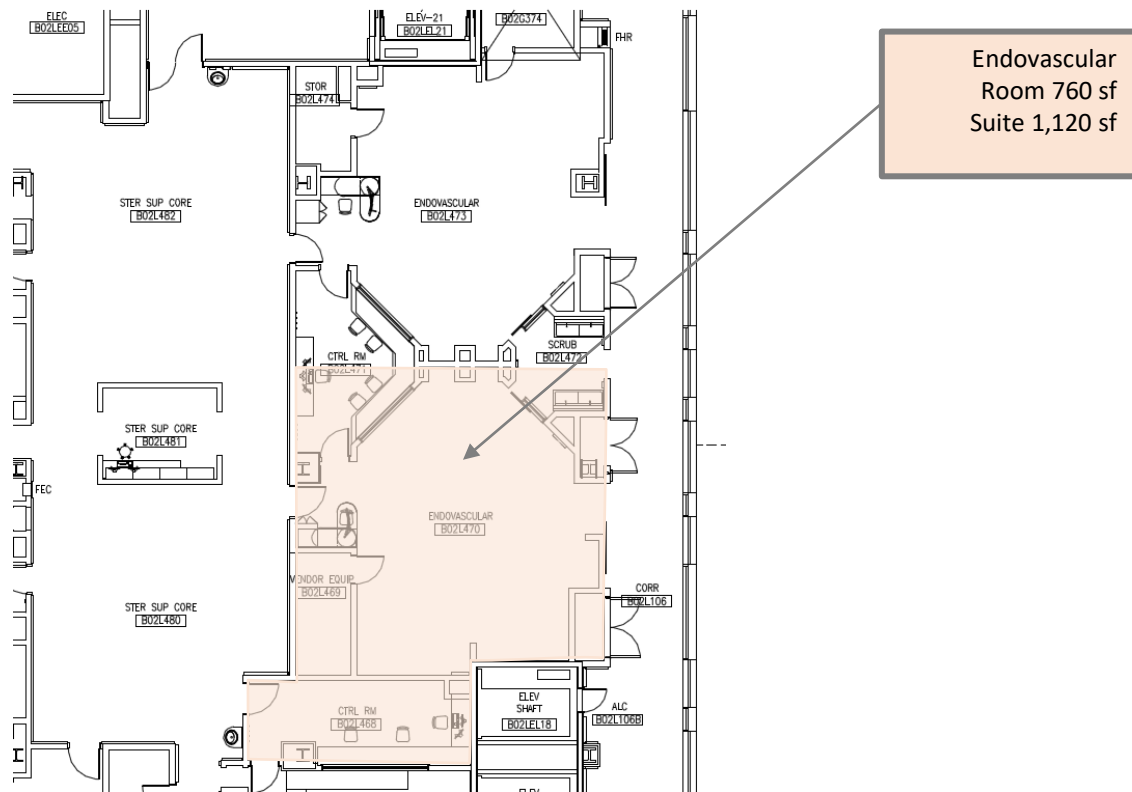
Customizing standard equipment – FDA approval

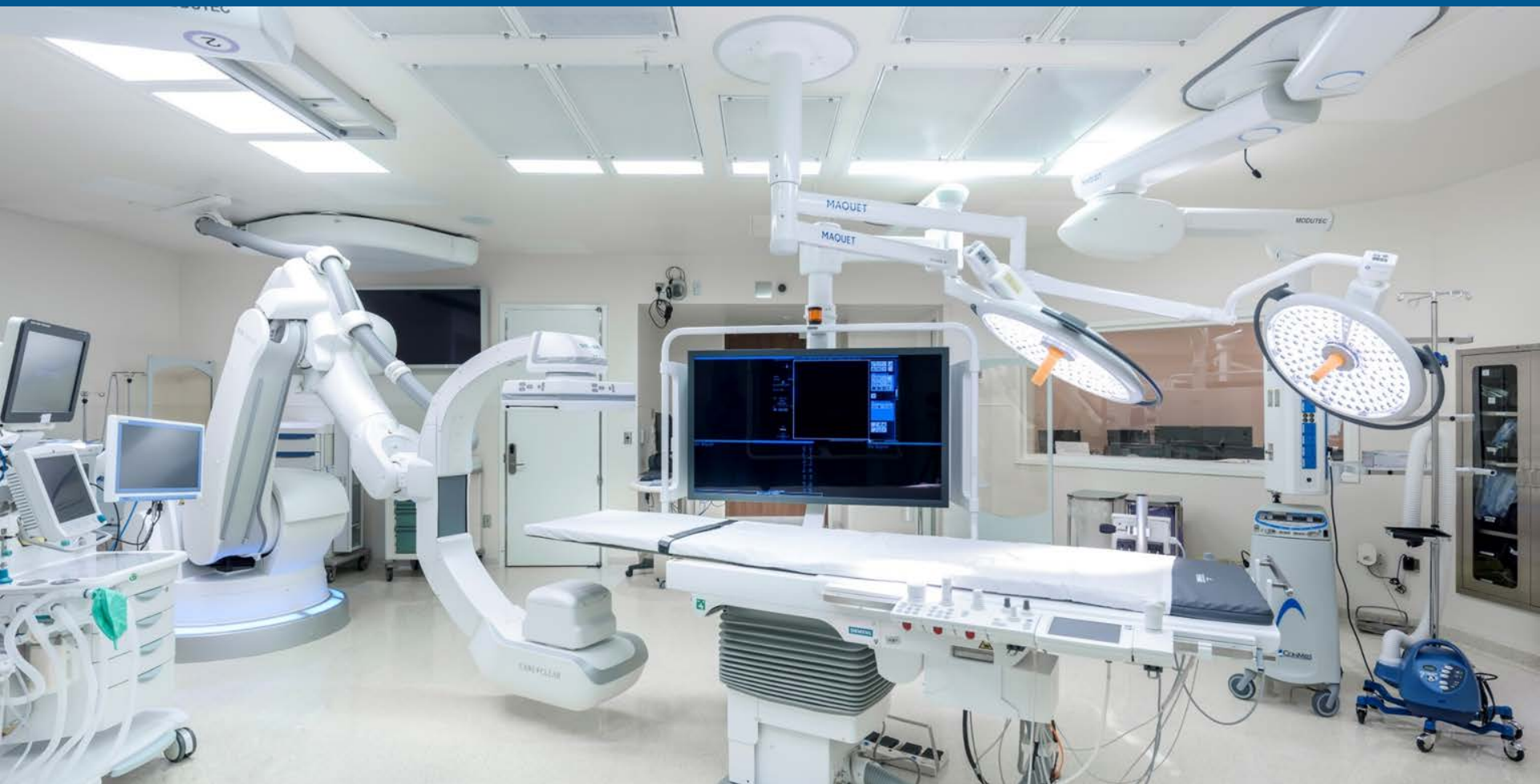






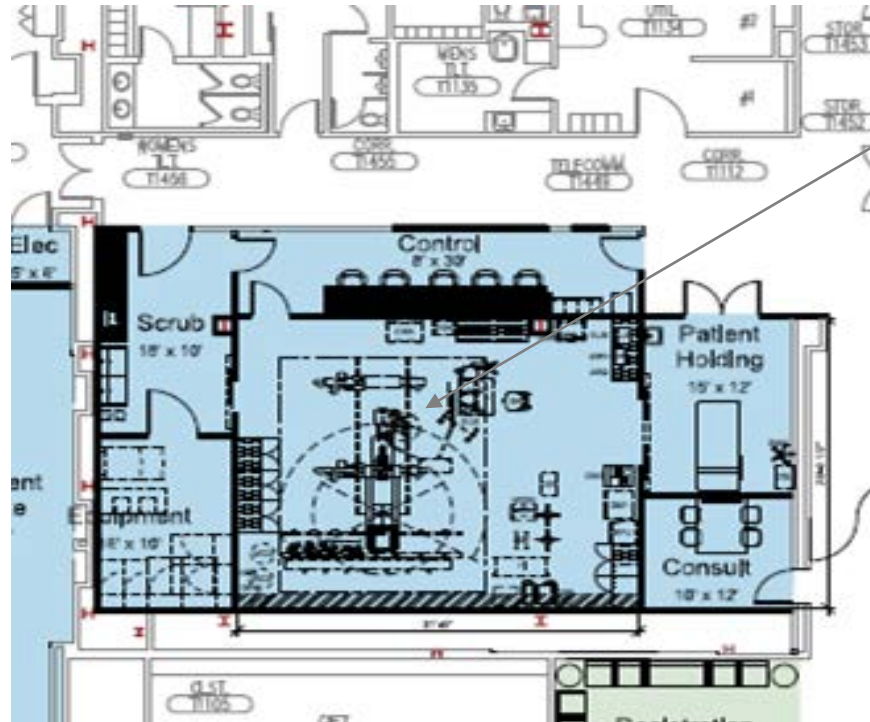






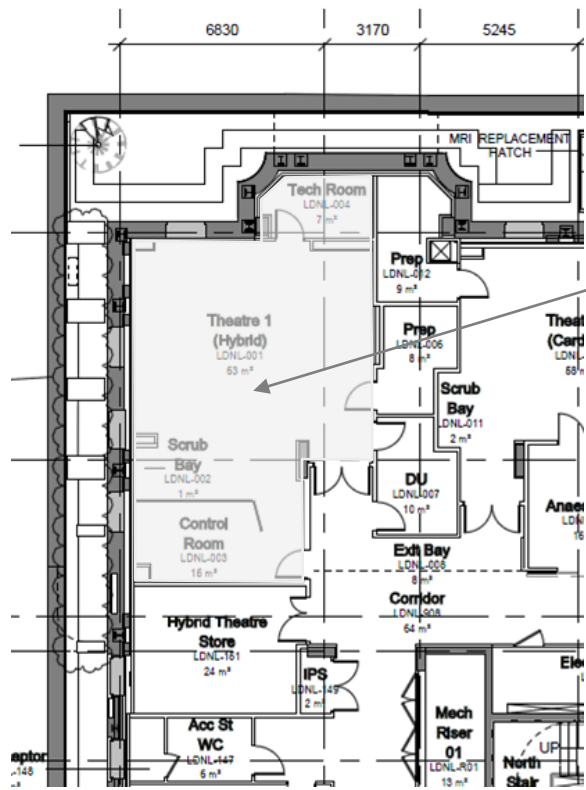


1st Floor, Fairview Hybrid OR



Hybrid OR
Room 750 sf
Suite 1,610 sf

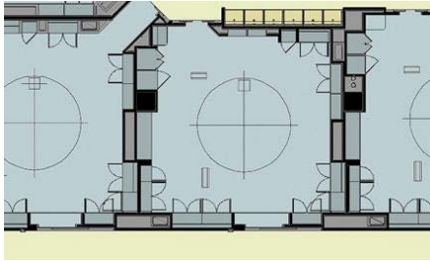




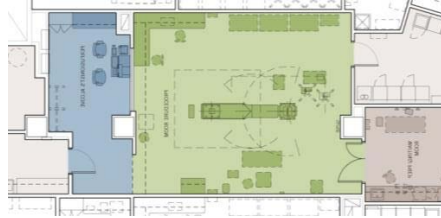
London
Room 678 sf
Suite 936 sf



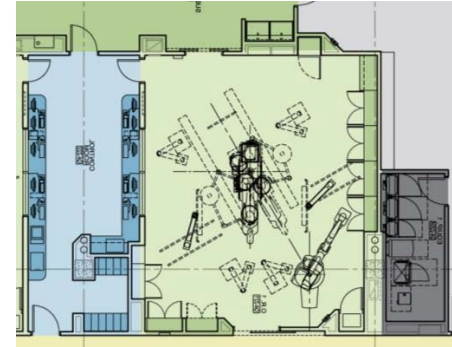
Key Room Factors - Size



Standard OR
400 Sq. FT.
Scrub



Cath Lab
500 Sq. FT.
Scrub
Control Room



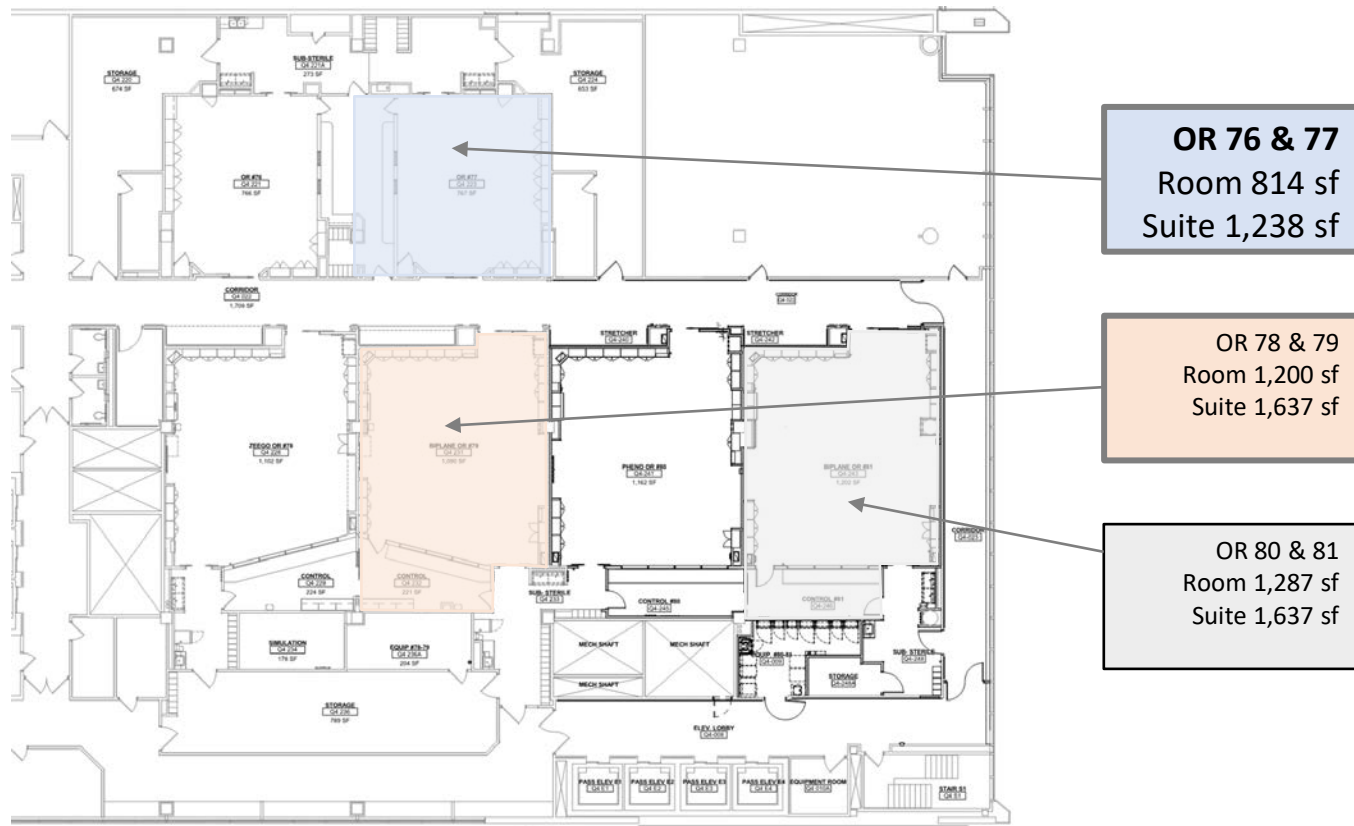
Hybrid OR – 'The Beast'
750 Sq. FT.
Scrub
Control Room

Key Room Factors - Size



Hybrid OR – ‘Son of Beast’
1,200 Sq. FT.
Scrub/Sub Sterile
Control Room
Equipment

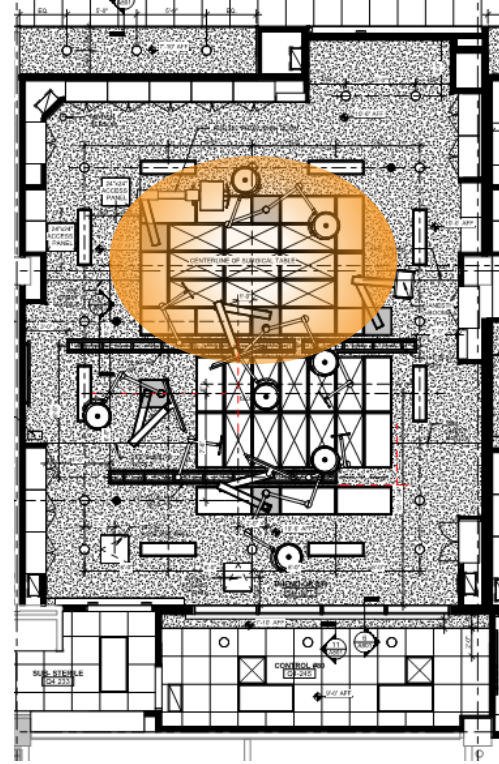
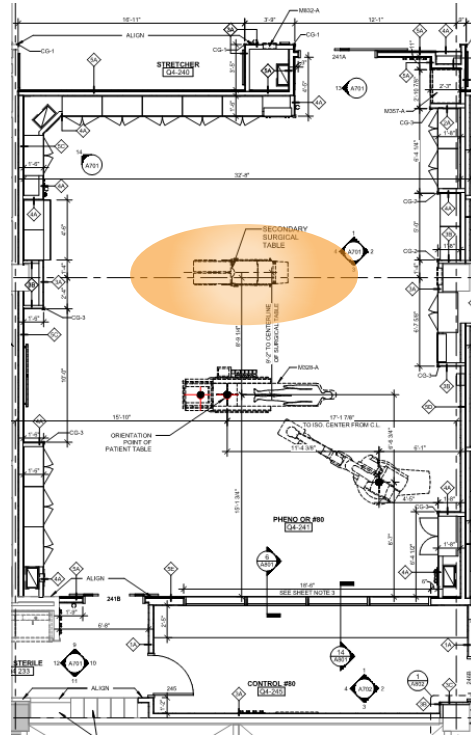
Q4 Hybrid OR's



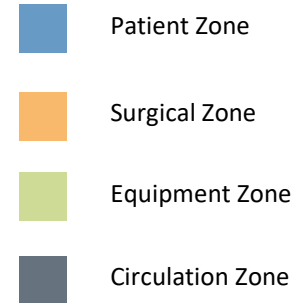
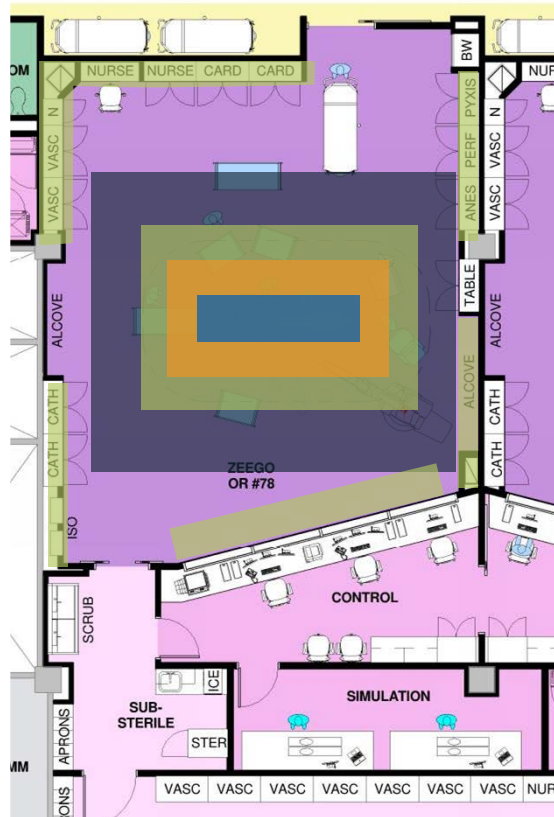




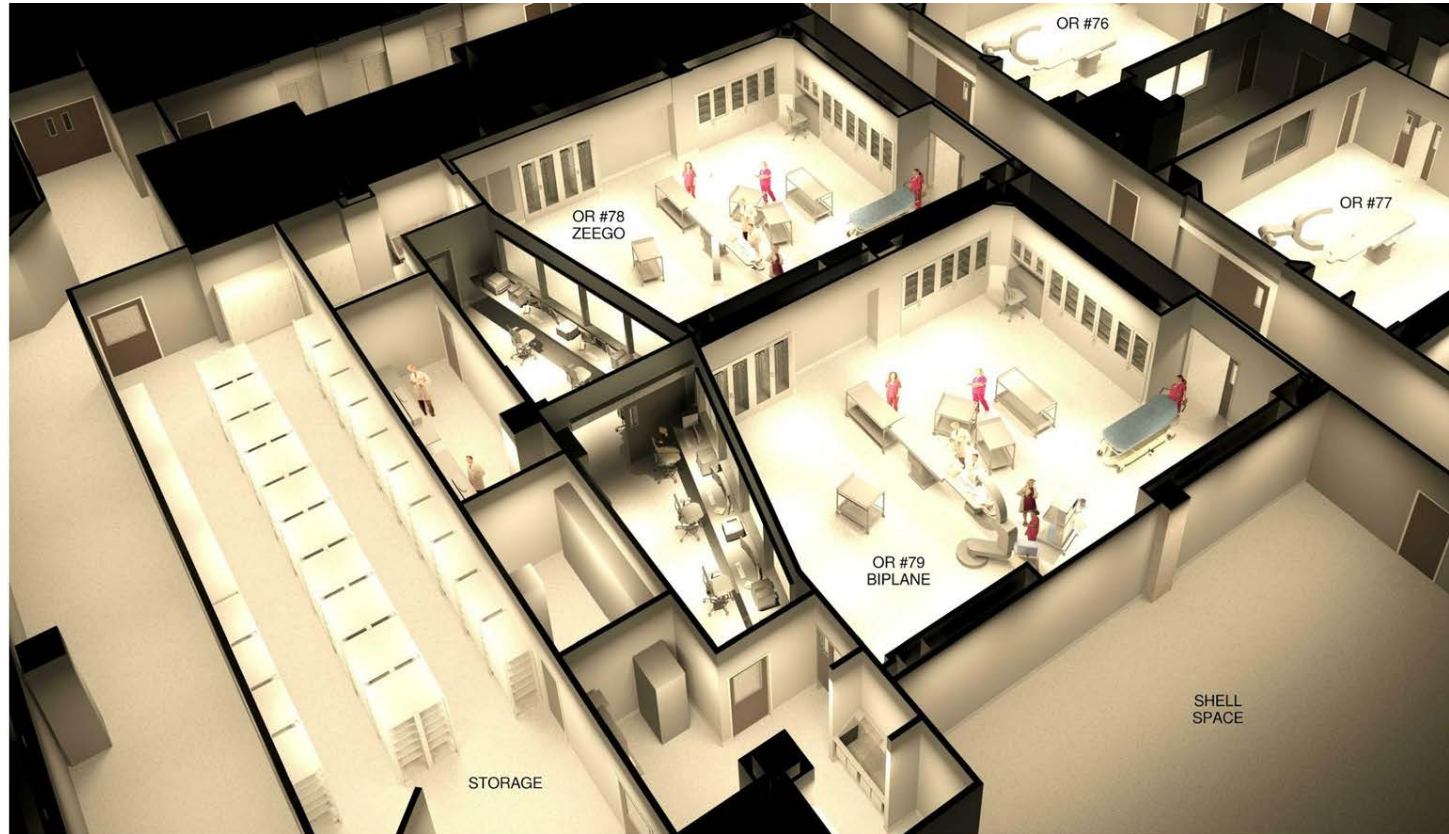
Key Room Factors - Size

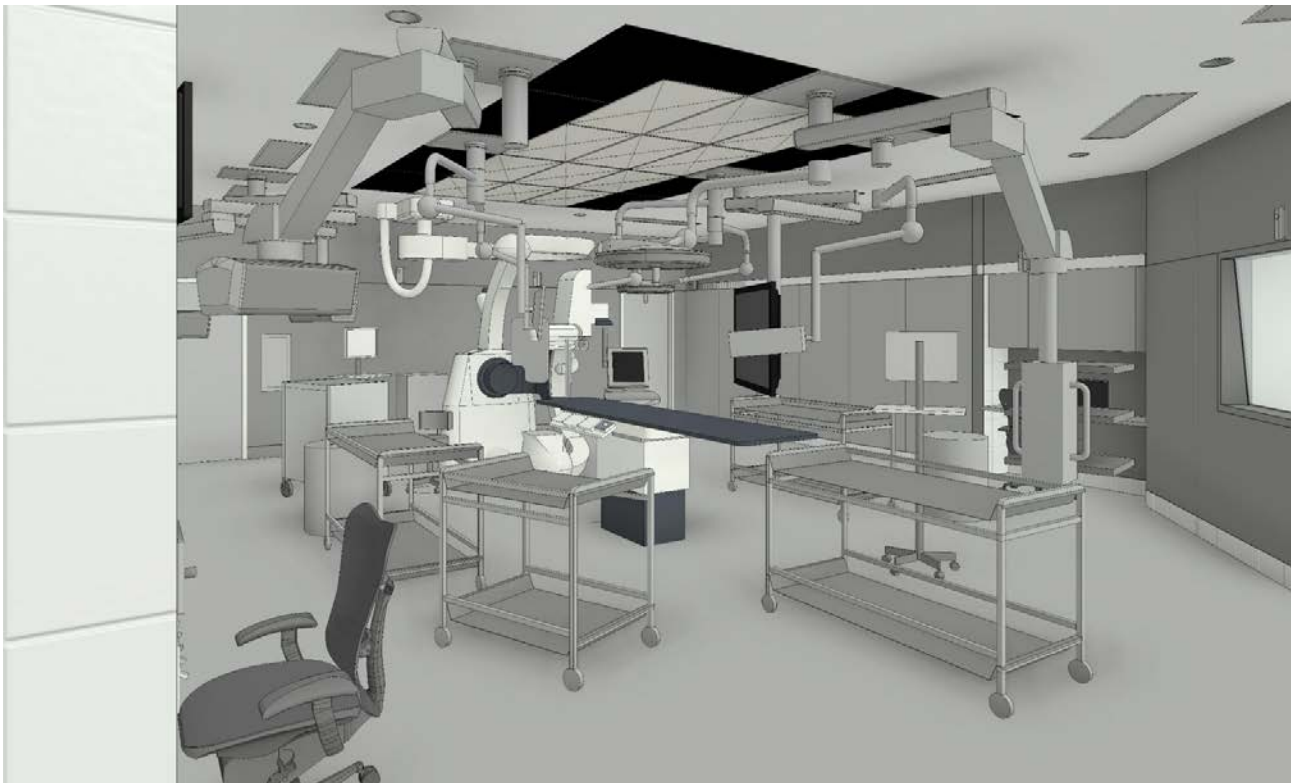


Key Room Factors - Size

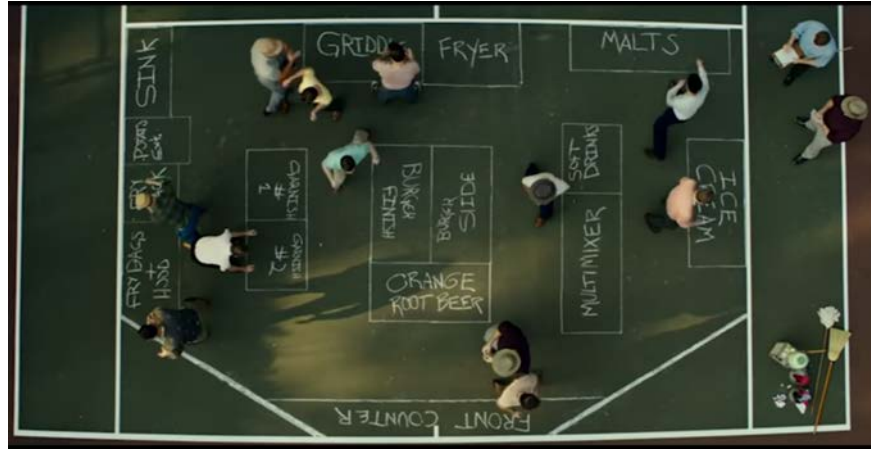


Mock-Ups – Static 3D

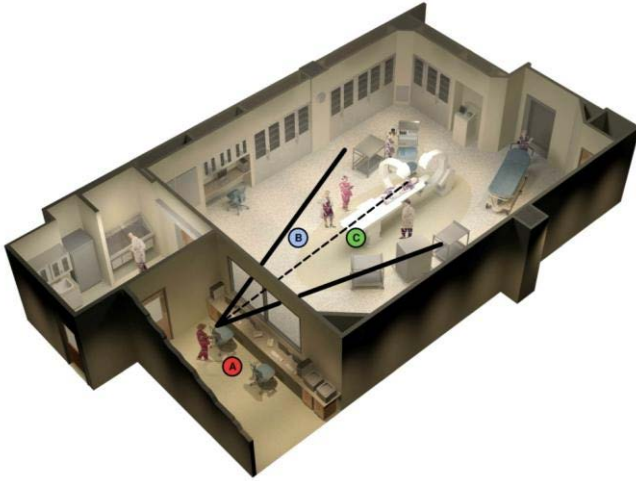




Mock-Ups – Live space



Key Room Factors – Orientation



CONTROL ROOM AT HEAD/FOOT:

- A** SMALLER CONTROL ROOM
- B** LONGER VIEW DISTANCE
- C** VIEW DOWN LENGTH OF PATIENT



CONTROL ROOM AT SIDE:

- A** LONGER CONTROL ROOM
- B** SHORTER VIEW DISTANCE
- C** MORE OBSTRUCTIONS







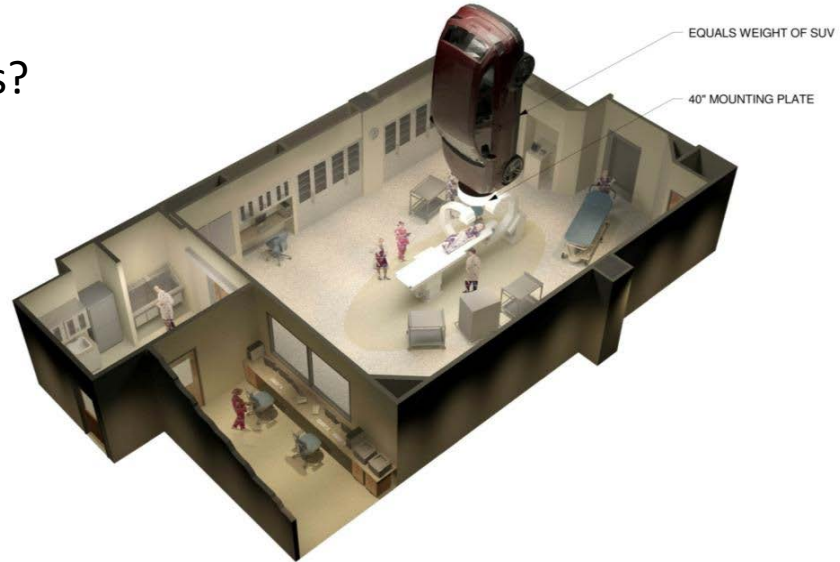
Can Room Support Loads?

40" Circle

4,000#

SUV

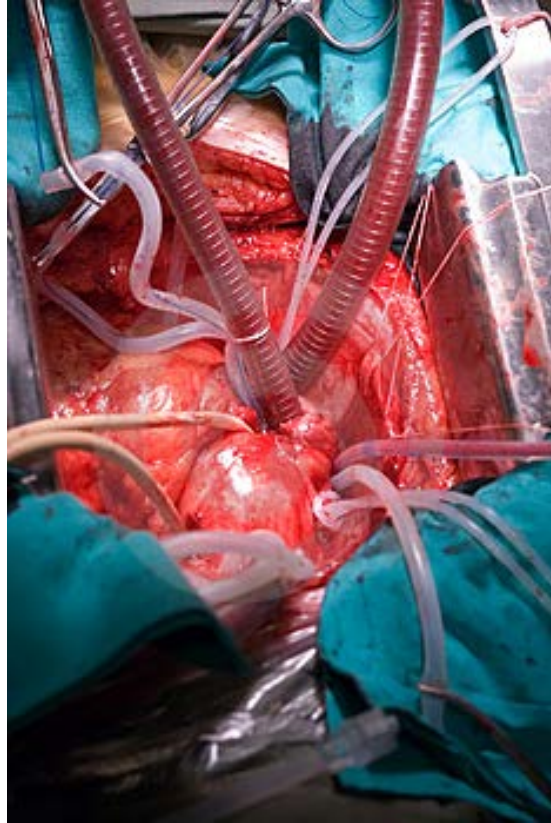
Full Grown Shark



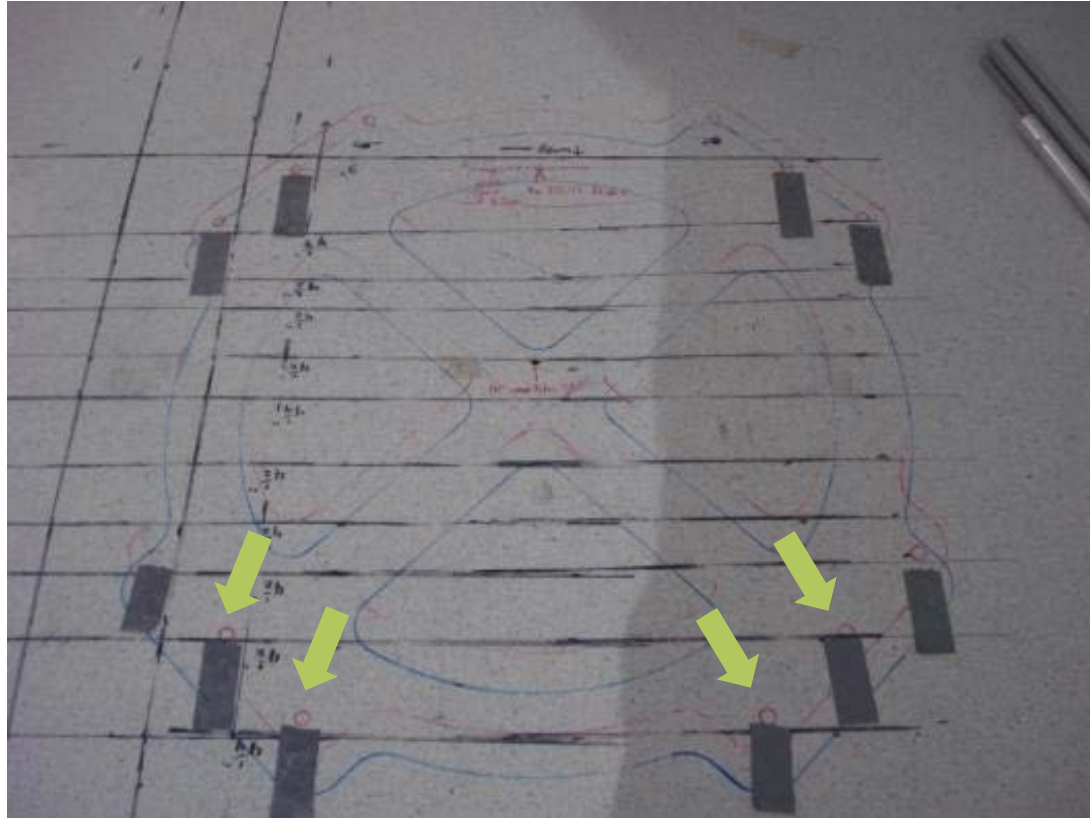
Key Room Factors - Structure



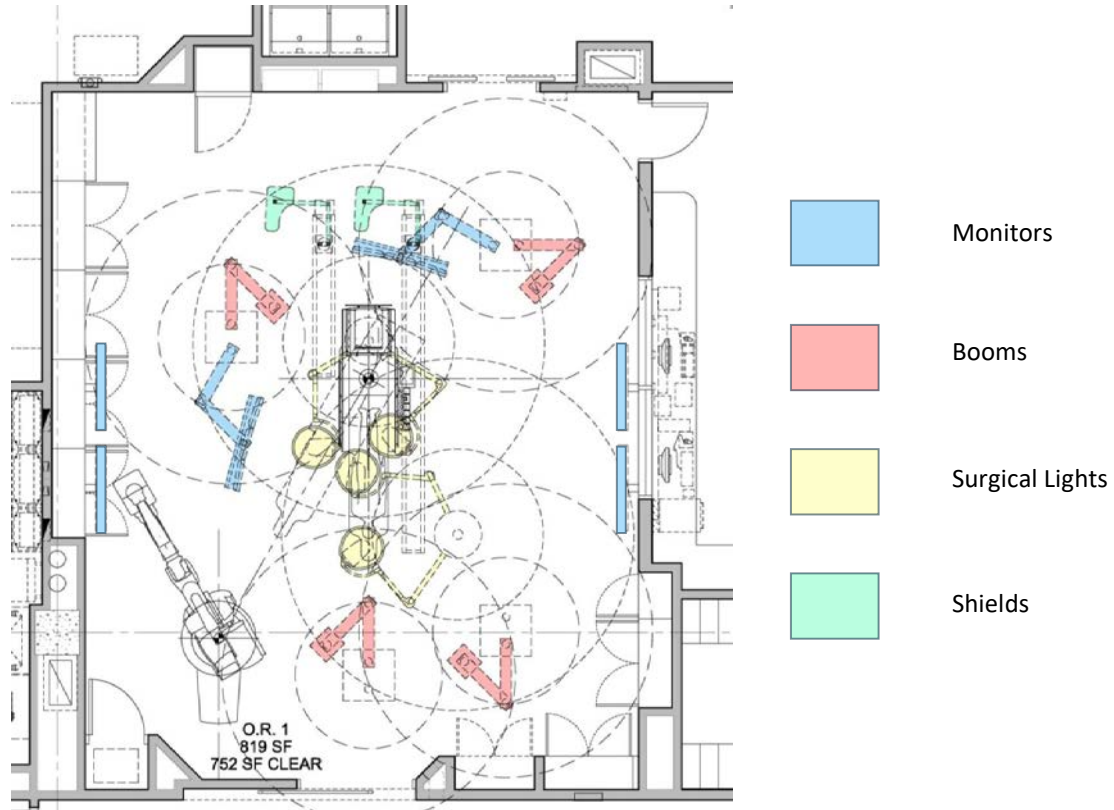


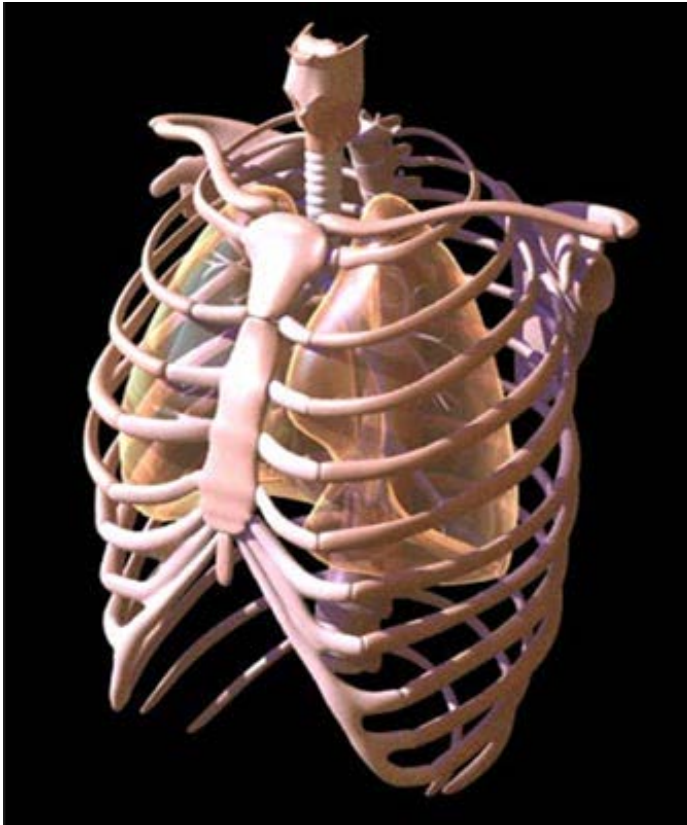


Key Room Factors - Structure



Key Room Factors - Equipment





Key Room Factors - Infrastructure



Key Room Factors - Infrastructure



Key Room Factors - Infrastructure



Key Room Factors – Wall Finishes

Drywall with Paint
Drywall with Sheet Wall Protection



GOOD

Drywall with Solid Surface
\$100K premium



BETTER

Stainless Steel Panels
\$300K premium



BEST

Key Room Factors – Monitors

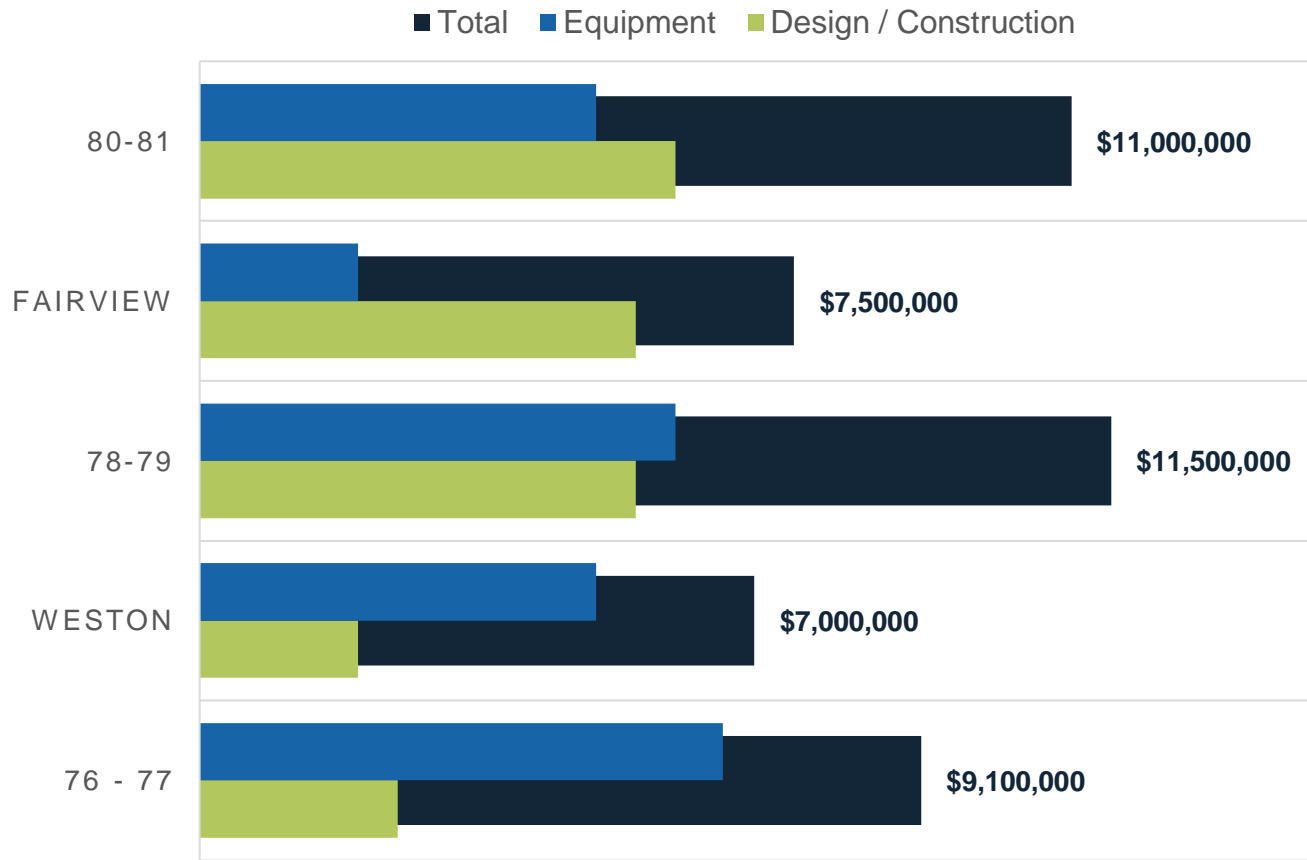
- Size
- Clarity
- Quantity
- Weight



Integrated O.R.'s



Cost Evolution



Construction

\$500/SF - \$650 SF

Wildcards

- Infrastructure – Support of future needs?

- Code upgrades

- Flooring – Sheet vs Terrazo vs Vendor Specific (GE)

- Casework – SS vs Plam vs Solid Surface

- A.V Integration – Custom vs. vendor out of the box

 - Teaching capabilities throughout institution and world.

- Monitors

Floor to floor height – Minimum 16'-0"

Soft Cost

Equipment

Move in



Schedule – How long should it take?

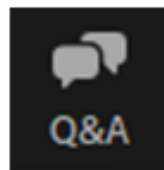


Questions?

Submit a question to the moderator via the Q&A tool, at the bottom of your screen.

Content-related questions will be answered during the Q&A portion, at the end of the presentation, as time allows. Any questions not answered during Q&A, will be answered and posted online within two (2) weeks.

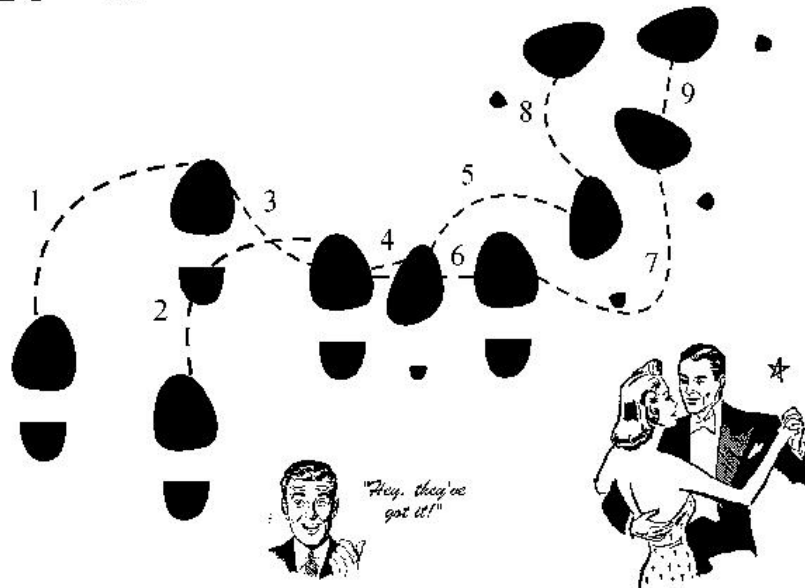
Tech support questions will be answered by AIA staff promptly.



Lessons Learned: Never enough room



Rhumba!



Lessons Learned: Room Setup – ‘The Dance’



Construction

Plan for the future

Above ceiling coordination PRIOR to starting construction – work large to small

- Structure

- Ductwork

- Med Gas

- Technology

- Electrical

Understand building structure – will it support the equipment?

Impact of spaces above AND below.

6 Sided Shielding

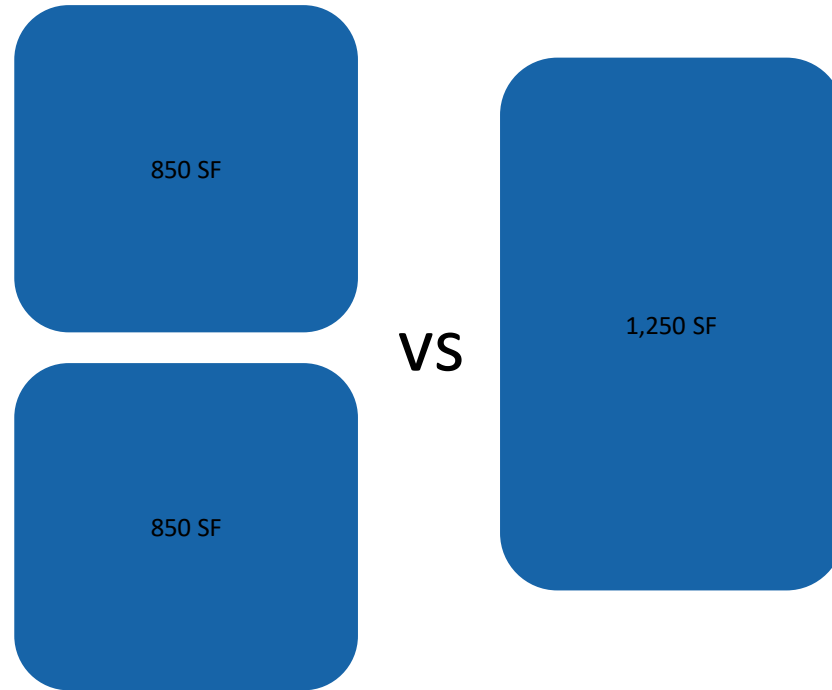
Renovation Notes – what if its not a great shell space?

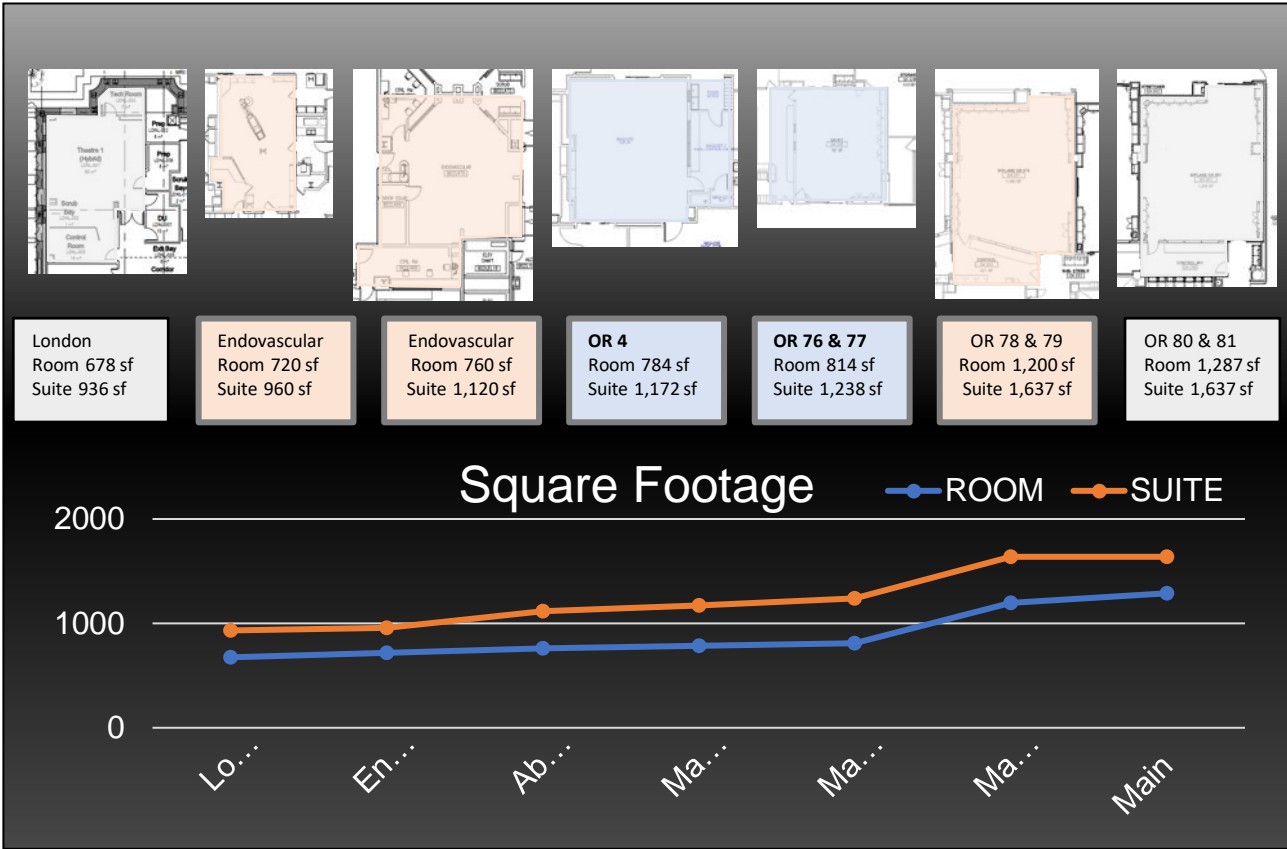
- Add time
 - Design
 - Construction
 - Downtime.
- Increase your budget
 - Higher \$'s/SF
 - Increase your contingency

Just don't do it



Size Matters

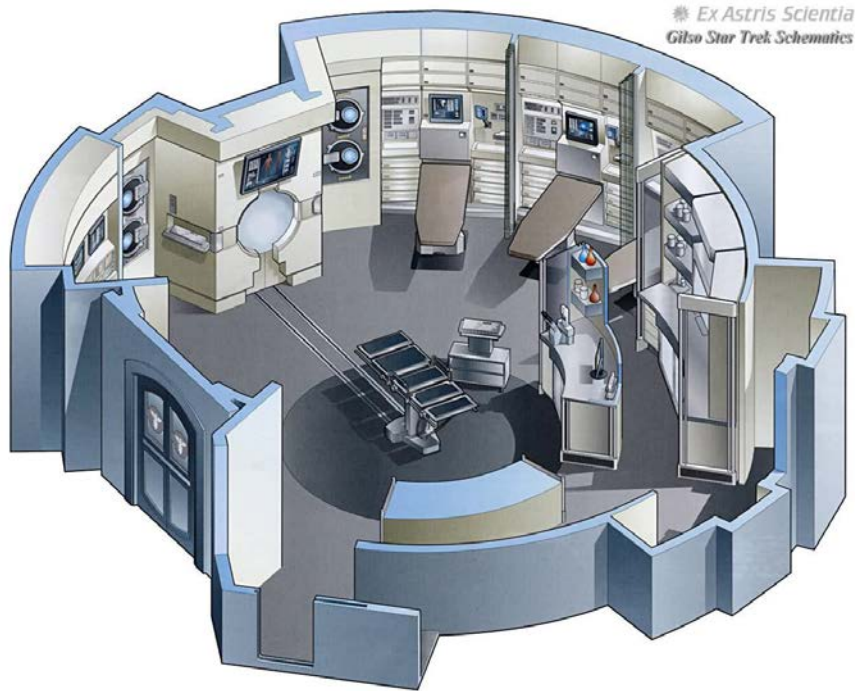




What's next?



Was Star Trek So Far Off?





**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

Time for Questions and Comments

???-!!!



**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

Michael C. Zambo, AIA, ACHA, EDAC
Principal
Bostwick Design Partnership
zambom@bostwickdesign.com
216-870-6195



Nate Price, PE, CHFM
Senior Director, Construction and Engineering
Cleveland Clinic
pricen2@ccf.org





The American
Institute
of Architects

Academy of
Architecture for Health

an AIA Knowledge Community

CES Reminder

The URL to the webinar survey <https://www.research.net/r/AAH21LC02> will be emailed to you or the individual who registered your site.

The survey closes **Friday, March 12th** at 12:30am ET.

For questions, please email knowledgecommunities@aia.org



The American
Institute
of Architects

Academy of
Architecture for Health
an **AIA** Knowledge Community

Join the Academy of Architecture for Health

www.aia.org/aah

AIA KnowledgeNet

[AAH Home](#) • [Discussion](#) • [Library](#) • [Blogs](#) • [Events](#) • [Directory](#) • [Participate](#) • [Communities](#) •

SEARCH

Academy of Architecture for Health

an **AIA** Knowledge Community

[AAH Board/Committees](#) | [Components](#) | [Webinar Resources & Archives](#) | [Healthcare Design Awards](#) | [Pillars of Health Care Architecture](#) | [Member List](#) [Twitter](#) [LinkedIn](#)

Edit Carousel



INTERNATIONAL SUMMIT & EXHIBITION ON
HEALTH FACILITY PLANNING, DESIGN & CONSTRUCTION

MARCH 17-20, 2019 | PHOENIX, AZ

Join this knowledge community >

About the Academy

Announcements

U40 List: Healthcare Design's Best Under 40 [Add](#) [Checkmark](#) [Share](#)

The U40 List is nomination oriented recognition to celebrate individuals making a significant contribution to the advancement of health facilities design. Each year up to two individuals will be selected to have their names added to the distinguished U40 List. The individuals will receive a travel stipend to attend the Summer Conference.



**The American
Institute
of Architects**

Academy of
Architecture for Health
an AIA Knowledge Community

Upcoming Webinars

Date	Series	Topic
4/13	Outside the Box	Community –Based Health Center
5/11	Healthcare Essentials	Driving Diagnostic and Therapeutic Decisions: The Modern Clinical Laboratory
6/8	Healthcare Essentials	Healthcare Parking: The First and Last Impression

Dates & topics are subject to change



**The American
Institute
of Architects**

Academy of
Architecture for Health

an **AIA** Knowledge Community

Michael C. Zambo, AIA, ACHA, EDAC
Principal
Bostwick Design Partnership
zambom@bostwickdesign.com
216-870-6195



Nate Price, PE, CHFM
Senior Director, Construction and Engineering
Cleveland Clinic
pricen2@ccf.org

