25TH ANNUAL

25TH LCI CONGRESS
OCTOBER 24-27, 2023

Supercharging Speed to Market with Prefabricated Interior Walls


Russell Maass, HCA Healthcare


Brady Myers, JE Dunn Construction


Sara Curry, JE Dunn Construction


Tyler Johnson, BLOX

October 26, 2023

25 YEARS OF LEARNING: SUPERCHARGE YOUR LEAN JOURNEY IN THE MOTOR CITY

© LEAN CONSTRUCTION INSTITUTE

Problem Statement

Remove 60% of the on-site labor hours by leveraging prefabricated components

Key Drivers:

Skilled labor shortage	Speed to market	Develop prefabricated portfolio	Reduce material waste

Overland Park Regional Medical Center



Shell Infill
Existing 3rd Floor

32
Bed Orthopedic
Expansion

23,000
Square Feet
Renovation

5 Month
Design Schedule

9 Week
Acceleration

© LEAN CONSTRUCTION INSTITUTE

Prefabricated Components

Typical:

- Patient Room Electrical Racks (25)
- Patient Room Mechanical Racks (28)
- Corridor Multi-Trade MEP Racks (19)
- Bathroom Pods (32)
- Head Walls (23)



New:

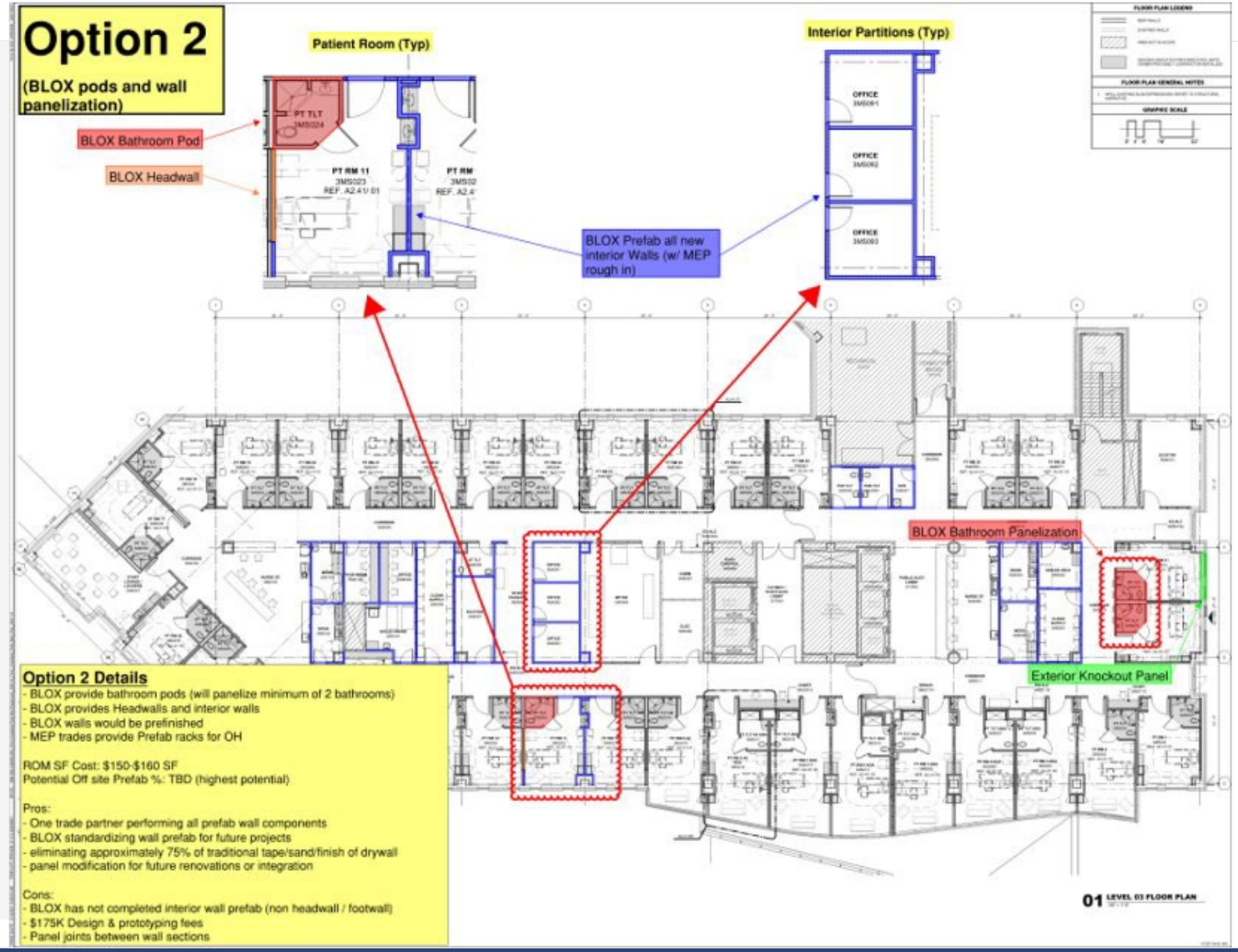
- Core Walls (172)
- Door Walls (52)
- Foot Walls (183)
- Head Walls (23)
- Sink Walls (85)
- Preinstalled Door Hardware (66)
- Mechanical Equipment Roof Screen (1)



© LEAN CONSTRUCTION INSTITUTE

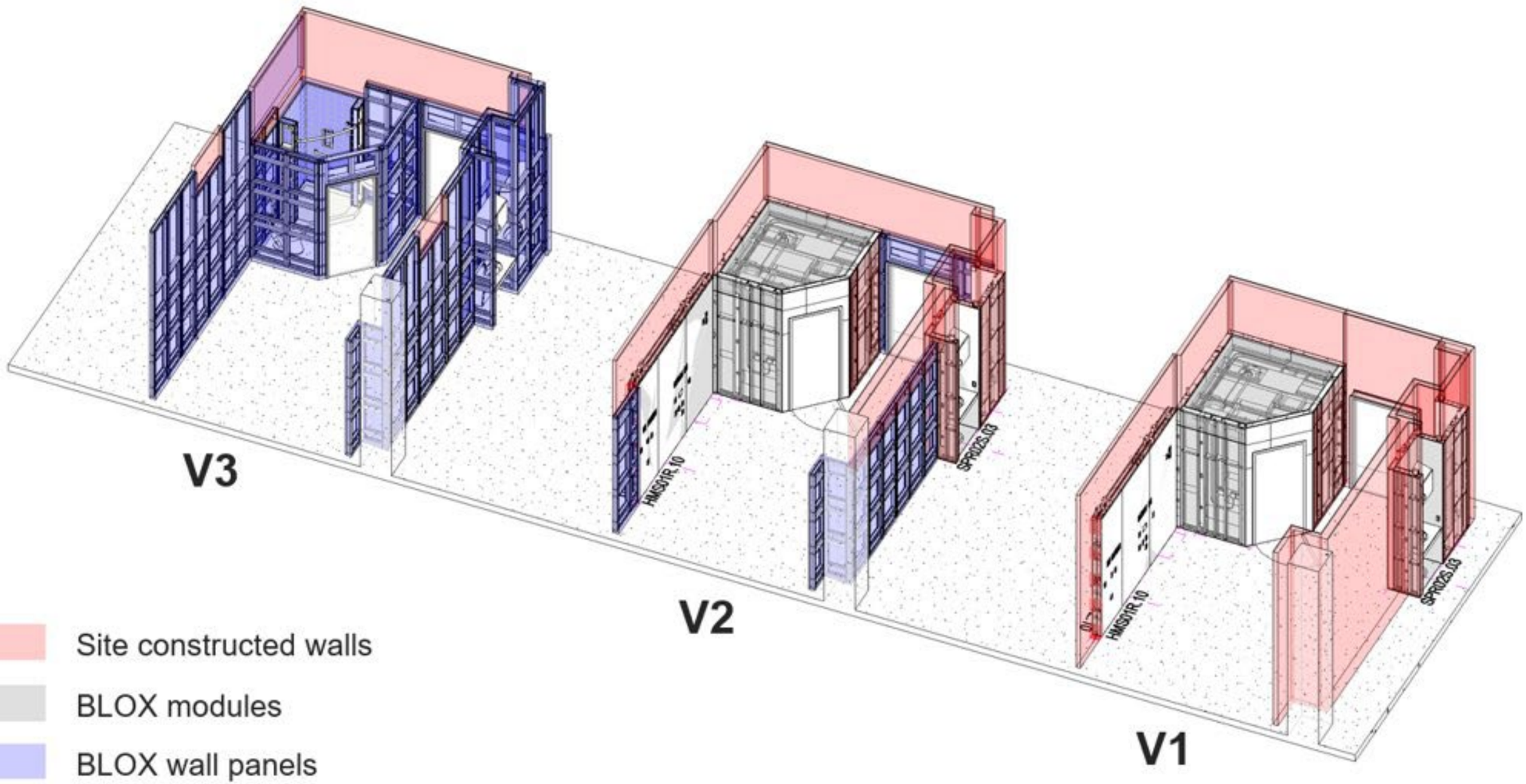
Selection of Approach

- Evaluated 5 options
- Final selection – Why BLOX?
  - One trade partner
  - Standardized for future projects
  - Aesthetics = finished wall

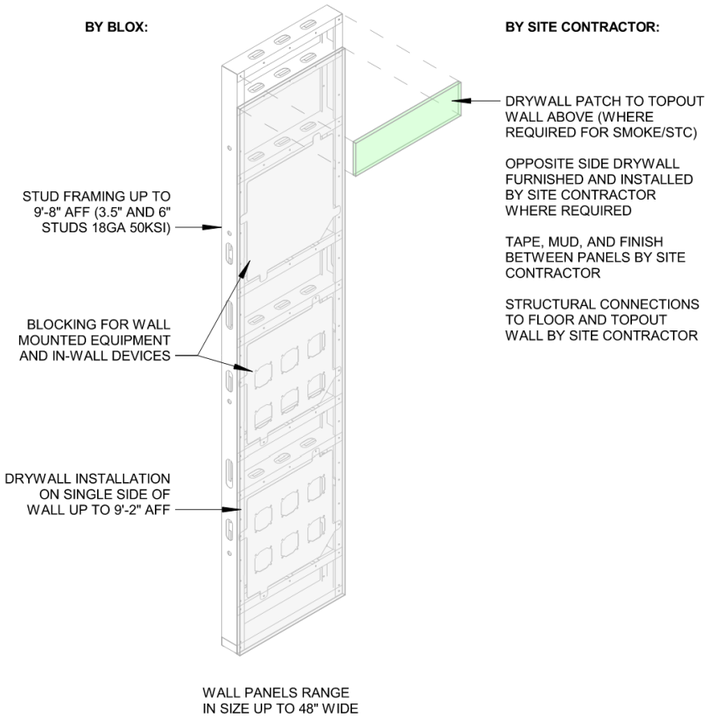


© LEAN CONSTRUCTION INSTITUTE

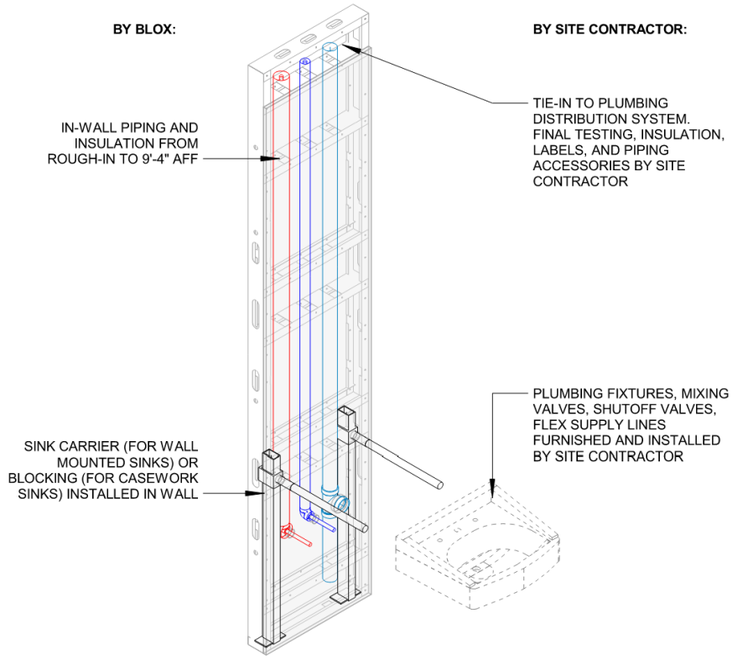
Patient Room Delivery Strategies



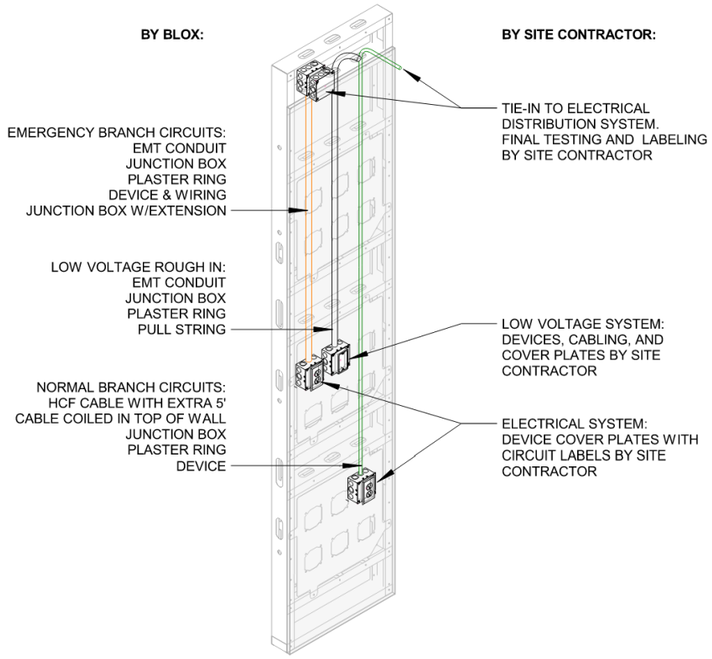
BLOXwall Scope



framing + drywall



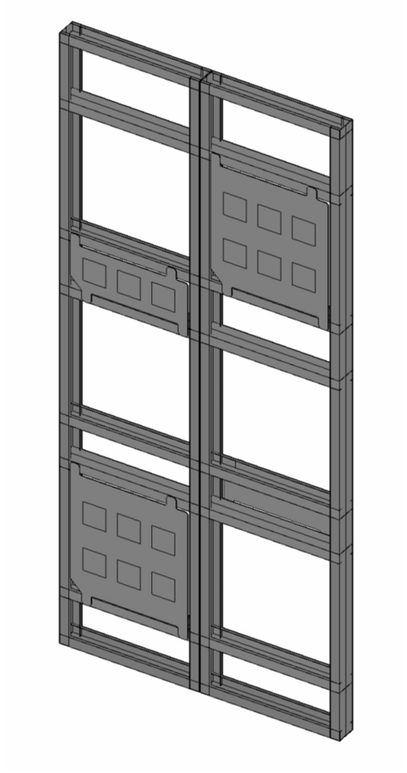
plumbing



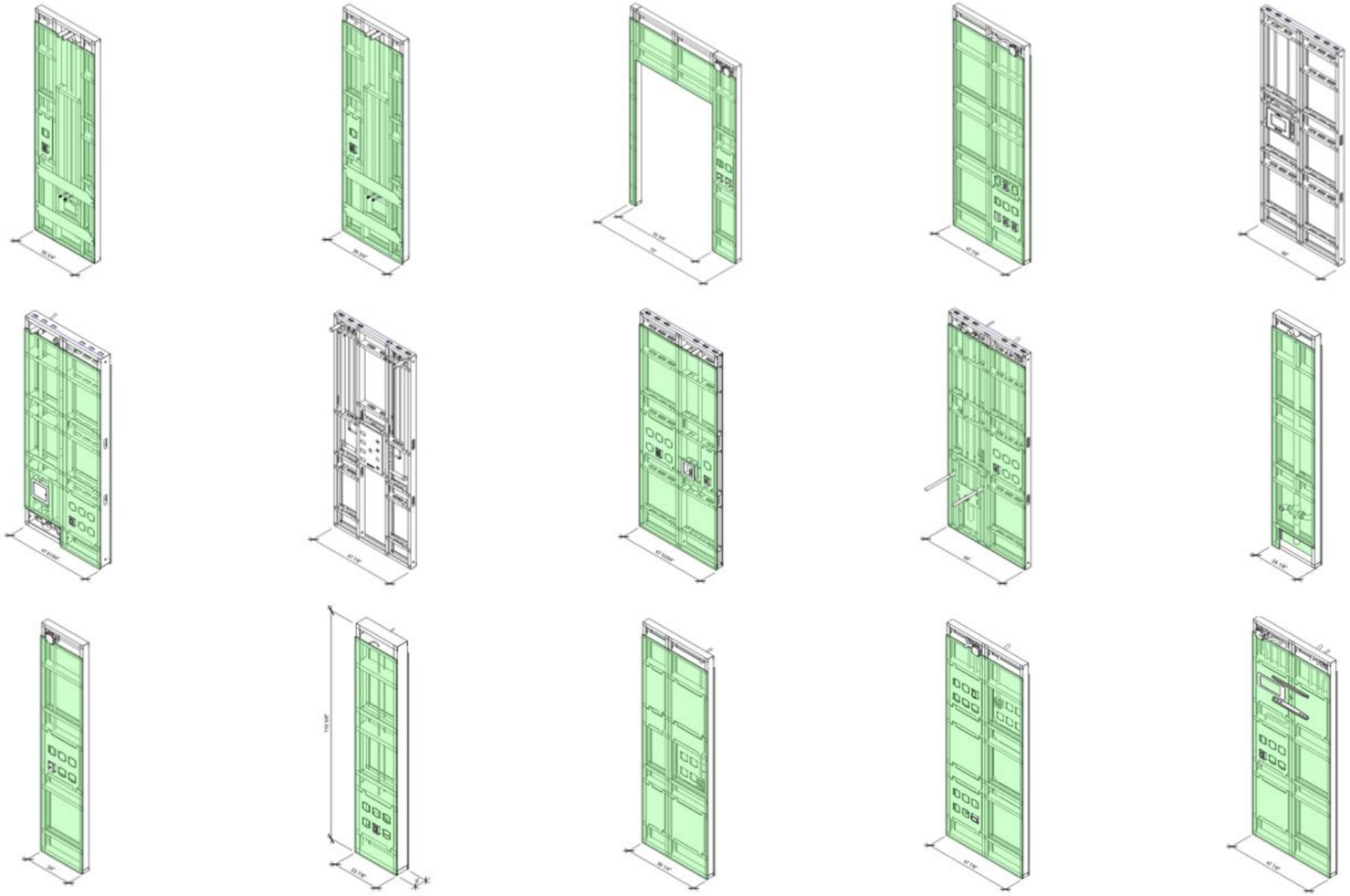
electrical

© LEAN CONSTRUCTION INSTITUTE

BLOXwall configurations provided flexibility to suit project needs

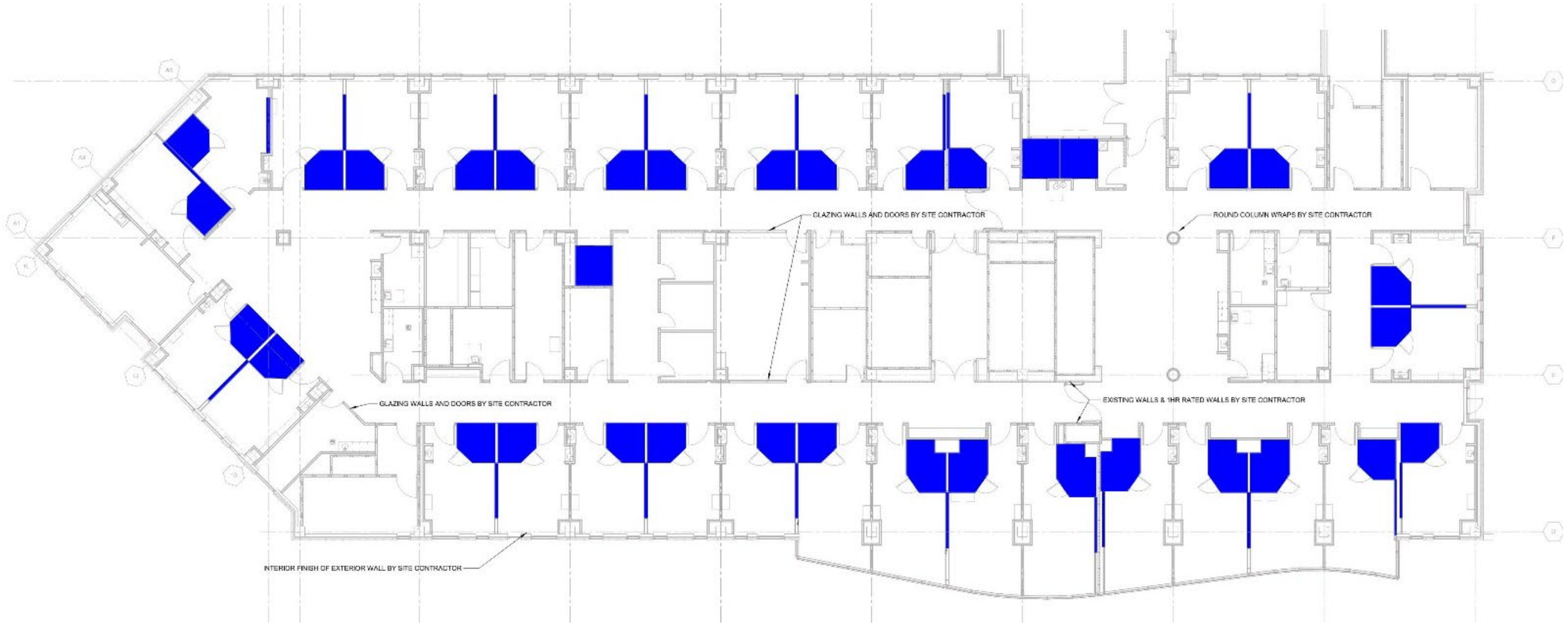


configured outputs



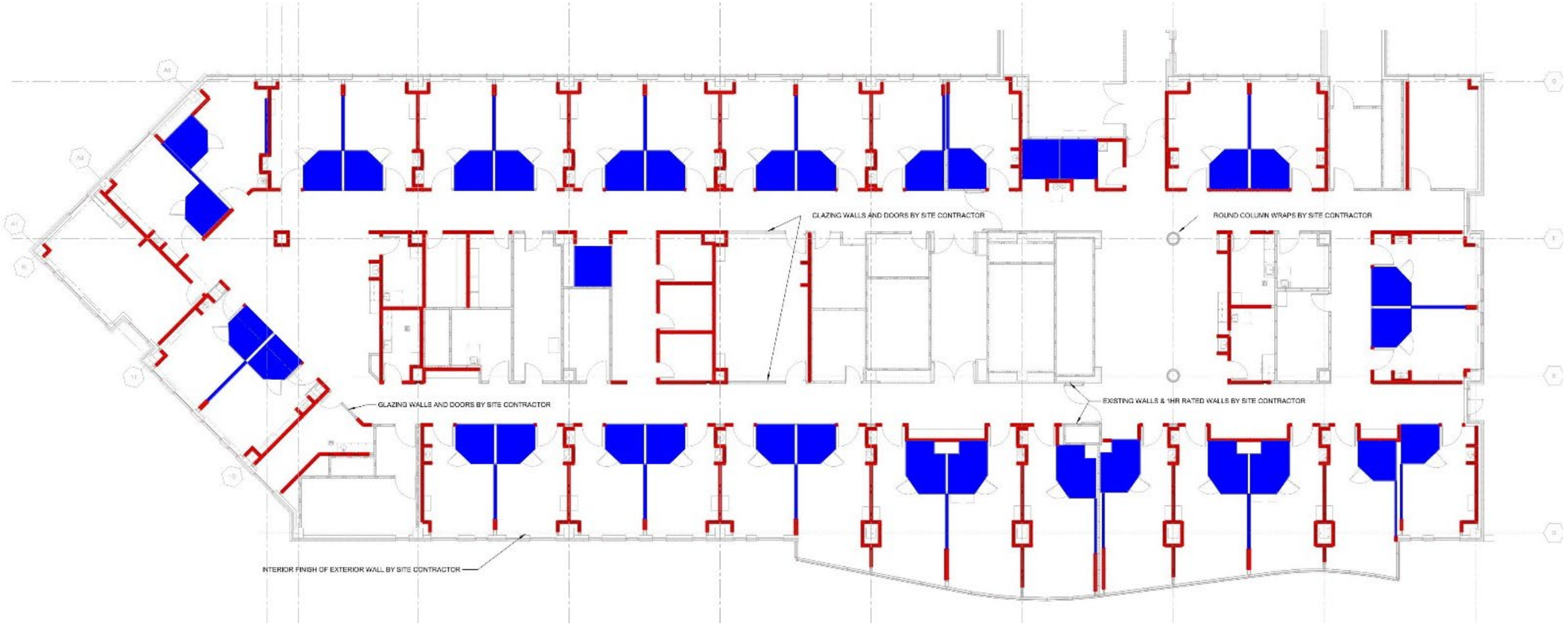
© LEAN CONSTRUCTION INSTITUTE

Typical BLOX Modules



© LEAN CONSTRUCTION INSTITUTE

BLOX Modules + Wall Panels



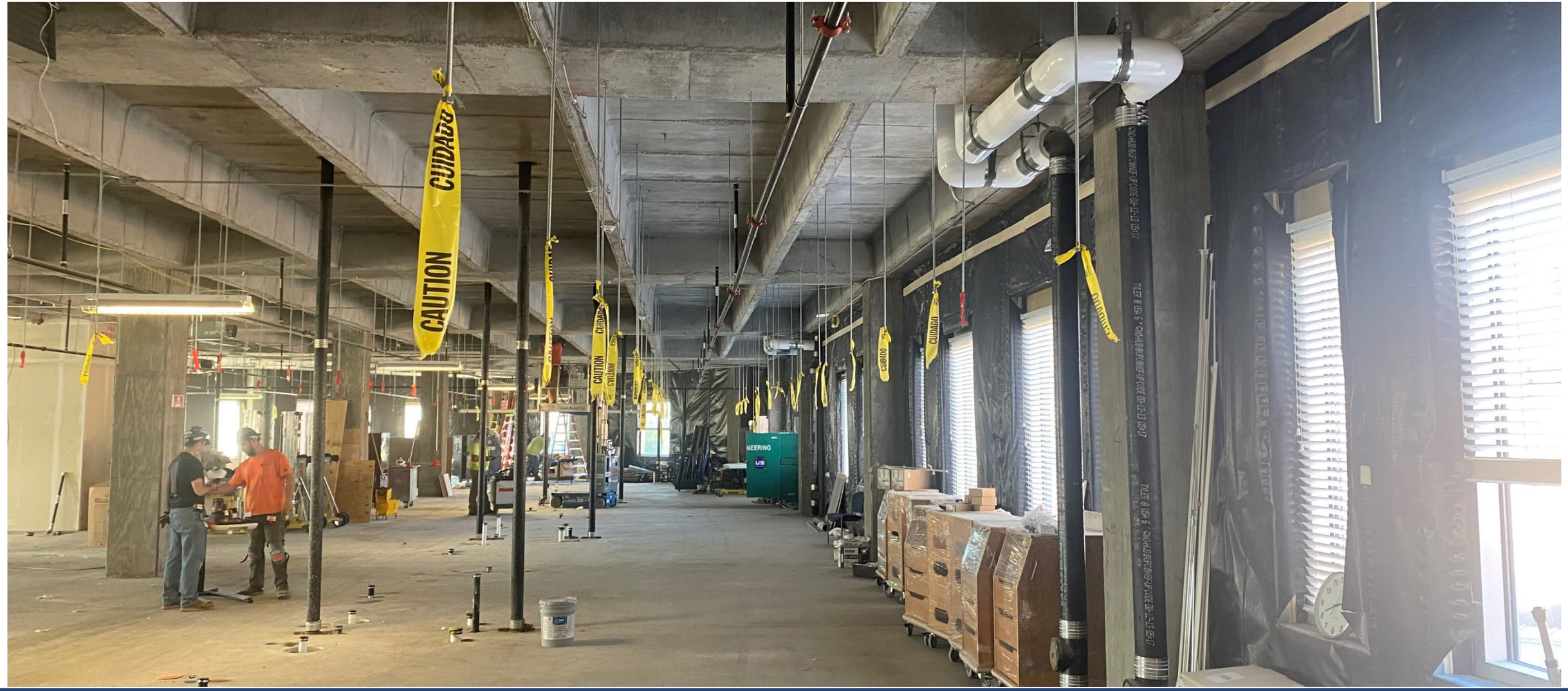
© LEAN CONSTRUCTION INSTITUTE

Interior Wall Metrics

New Interior Wall Partitions	Linear Feet	% of total walls
Modular wall panels	1528	47%
Bathrooms	949	29%
Headwalls	200	6%
Site constructed	561	17%
Total Interior Walls	**3238**	**100%**
Total Prefab	**2677**	**83%**

© LEAN CONSTRUCTION INSTITUTE

Site Preparation



© LEAN CONSTRUCTION INSTITUTE

Day 0

Interior Wall Installation



© LEAN CONSTRUCTION INSTITUTE

Day 2

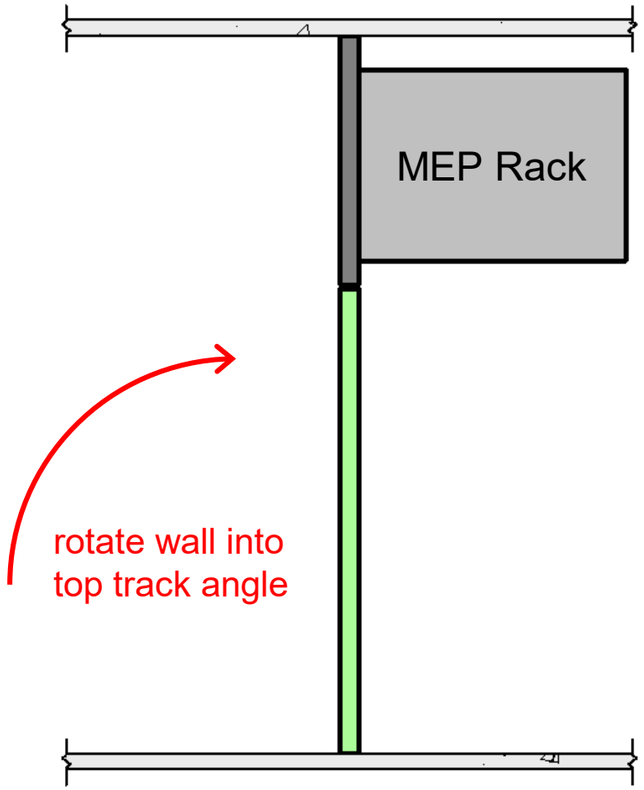
Interior Wall Installation

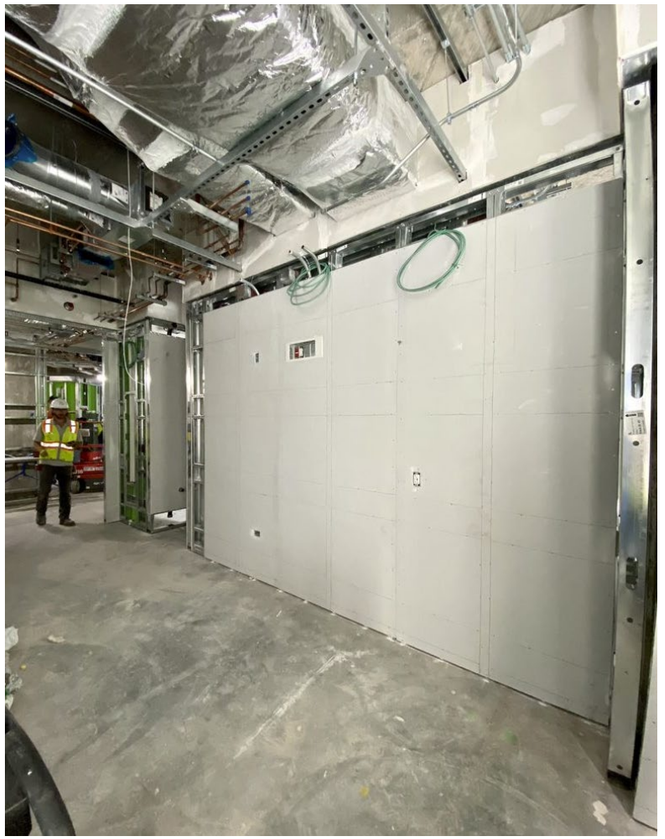


© LEAN CONSTRUCTION INSTITUTE

BLOXwall Installation Process







Time-Lapse Wall Installation



© LEAN CONSTRUCTION INSTITUTE

Installation Progress



2 workers
10 minutes

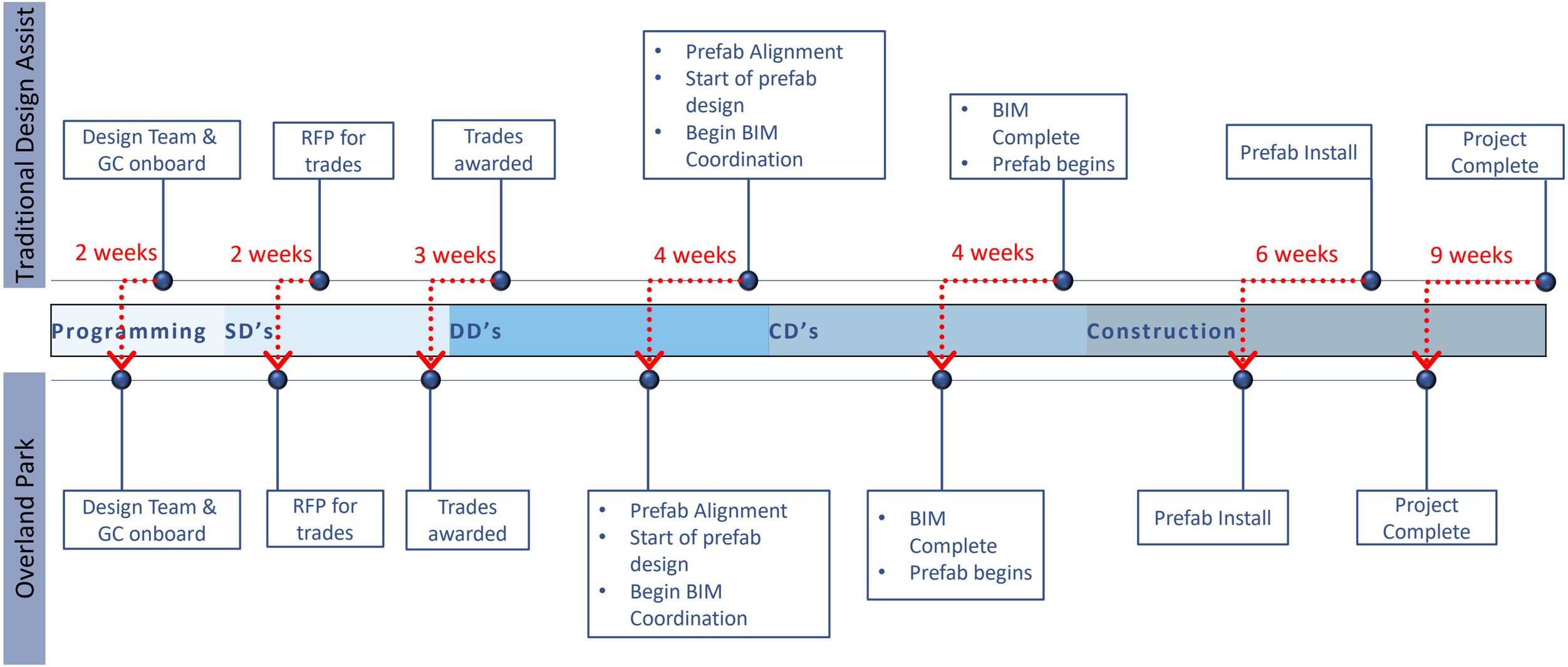


Complete Install



© LEAN CONSTRUCTION INSTITUTE

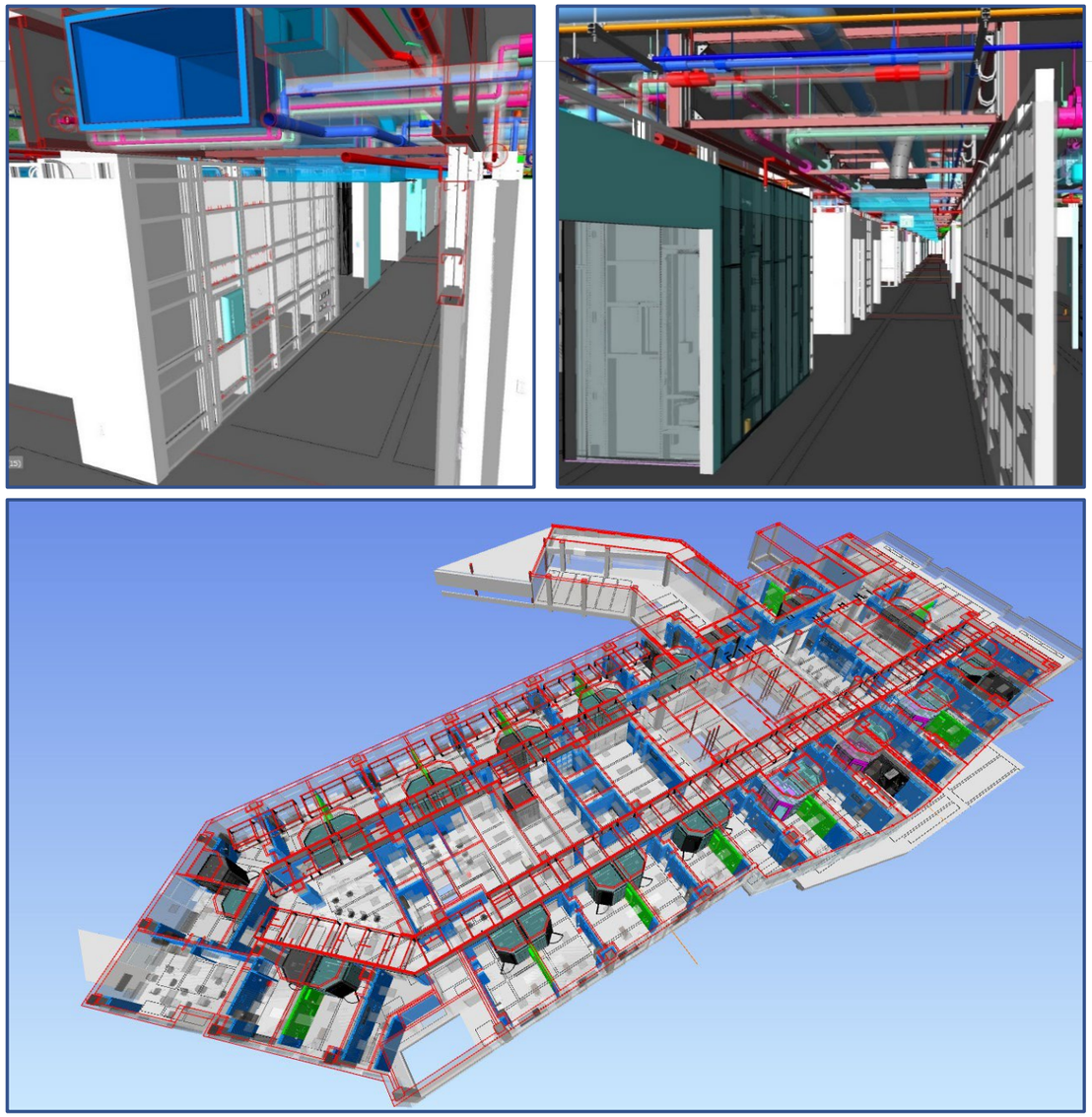
Ideal Prefab Project Timeline



© LEAN CONSTRUCTION INSTITUTE

Leveraging BIM & VDC

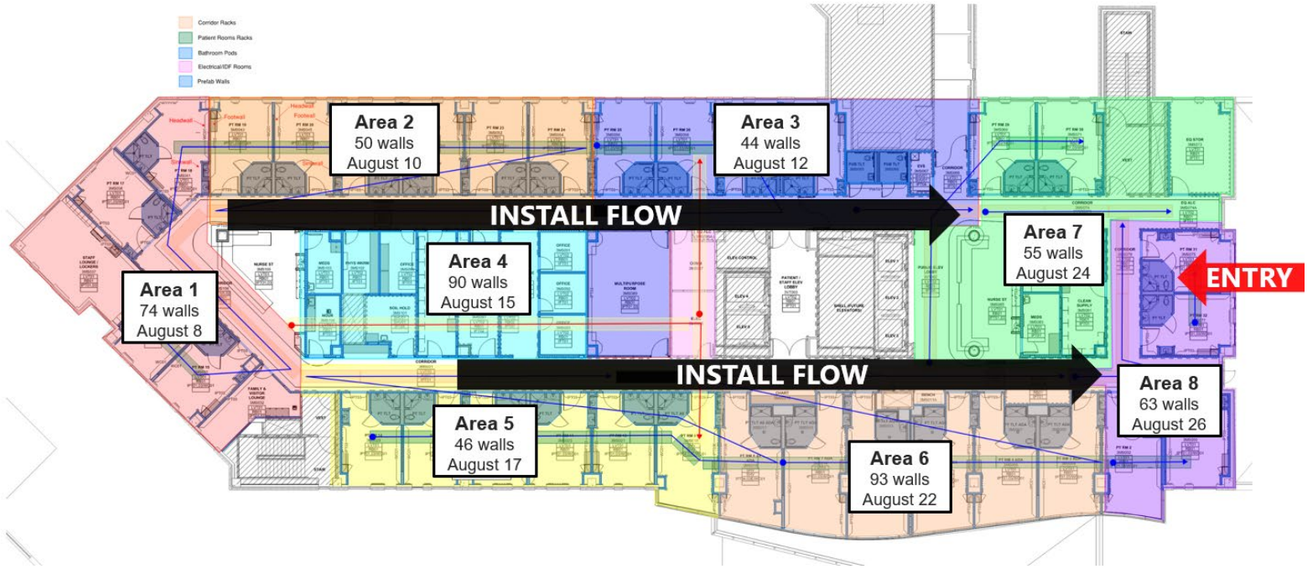
- Decision at Design Development
- BLOX Revit families
- Design alterations vs. design tweaks
- Laser scanning considerations
- Models for constructability and design reviews



© LEAN CONSTRUCTION INSTITUTE

Speed to Market Strategies

- Impact of takt planning pilot
- Installation planning and phasing
- Rebalancing labor



OPRMC TAKT TIME ANALSIS BASIS									2776.625
TASKS(Process Steps)	Takt Time by TASK in Days Per Area								
	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	% Achieved
Square Footage	2763	2669	3427	2785	2699	3323	2554	1993	
Patient Room Racks Faith	3_1								100%
Patient Room Racks US Eng	3_0	3_1							100%
Multi Trade Corridor Racks	2_1	3_1	3_2						100%
Bulkhead walls	5_4	2_1	3_1	3_1					100%
Set Bathroom PODS	2_2	5_5	2_1	3_0	3_1				100%
Patient Room Walls	4_3	2_1	5_5	2_0	3_1	3_1			100%
In-Wall Inspection & Correction	2_1	4_1	2_2	5_4	2_2	3_1	3_1		100%
OH MEP Connections	5_5	2_1	4_3	2_1	5_2	2_2	3_1	3_1	100%
Hang Drywall	3_4	5_5	2_1	4_1	2_1	5_2	2_1	3_1	100%
Drywall TSF	5_2	3_4	5_5	2_1	4_3	2_1	5_2	2_1	100%
Prime & First Coat of Paint	4_2	5_2	3_2	5_5	2_1	4_3	2_1	5_1	100%
ACT Grid	3_2	4_2	5_2	3_3	5_5	2_1	4_2	2_1	100%
Light Fixtures, Grilles & Diffusers	10_5	3_2	4_2	5_2	3_2	5_5	2_1	4_2	100%
Casework & Solid Surface	6_6	10_5	3_2	4_2	5_2	3_3	5_5	2_1	100%
Fire Sprinkler Heads	4_3	6_6	10_5	3_2	4_2	5_2	3_3	5_5	100%
Overhead Inspection & Corrections	2_1	4_3	6_6	10_5	3_2	4_2	5_2	3_2	100%
ACT Ceiling Tile	2_2	2_1	4_3	6_6	10_5	3_2	4_2	5_2	100%
Wall Protections & Corner Guards	5_5	2_2	2_1	4_3	6_6	10_5	3_2	4_2	100%
Flooring & Base	5_3	5_5	2_2	2_1	4_3	6_6	10_5	3_2	100%
Final Coat of Paint	2_2	5_3	5_5	2_2	2_1	4_3	6_6	10_5	100%
OFCI & CFCI Install	3_3	2_2	5_3	5_5	2_2	2_1	4_3	6_6	100%
MEP Device Trim Out	3_3	3_3	2_2	5_3	5_5	2_2	2_1	4_3	100%
Install Doors & Hardware	3_2	3_3	3_3	2_2	5_3	5_5	2_2	2_1	100%
Total Days per Area	8	3_2	3_3	3_3	2_2	5_3	5_5	2_2	
	0		3_2	3_3	3_3	2_2	5_3	5_5	
				3_2	3_3	3_3	2_2	5_3	
Average	#DIV/0!				3_2	3_3	3_3	2_2	
Buffer Neede	#DIV/0!					3_2	3_3	3_3	
							3_2	3_3	
								3_2	
								144	Total Duration for all 8 A

Inspection & Certification Processes

Key Drivers

- AHJ’s prior experience
- Introductory presentation / Q&A
- 3rd party inspector at the factory

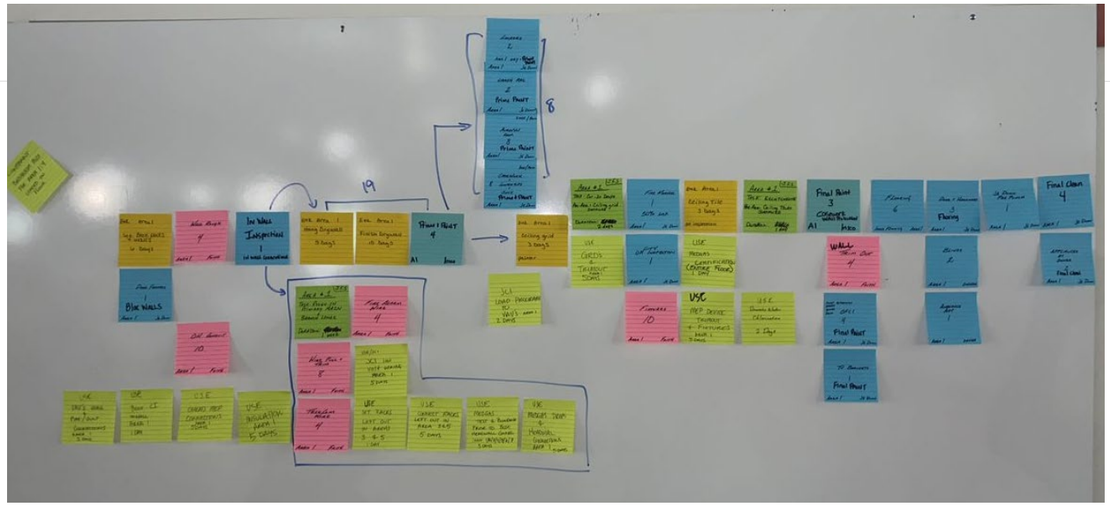




Procurement Strategy

Key Drivers

- Early involvement
- Work backwards from lead times
- Early release packages
- BIM and fabrication timing
- Door frames





© LEAN CONSTRUCTION INSTITUTE

Key Challenges

- Early Team Onboarding
- Interior partition design pros/cons
- Procurement Strategy
- Logistics
- VDC Coordination



© LEAN CONSTRUCTION INSTITUTE

Success Factors



Aggressive prefab goal as a rallying point



Owner support (okay to fail)



Right team, right mindset



Collaboration across the team



Limiting changes late in design

© LEAN CONSTRUCTION INSTITUTE

Key Wins



Wall panel innovation



Prefab application – shell & renovations



43% total offsite hours



9-week schedule acceleration

© LEAN CONSTRUCTION INSTITUTE

Thank You

Q&A

Contact Us

Russell Maass

Senior Construction Manager
HCA Healthcare

russell.maass@hcahealthcare.com

Brady Myers

Senior Project Manager
JE Dunn Construction

brady.myers@jedunn.com

Sara Curry

Prefabrication Integration Director
JE Dunn Construction

sara.curry@jedunn.com

Tyler Johnson

Director of R&D
BLOX

tjohnson@bloxbuilt.com

© LEAN CONSTRUCTION INSTITUTE