

**25<sup>TH</sup> ANNUAL**



**25<sup>TH</sup> LCI CONGRESS**  
**OCTOBER 24-27, 2023**

# **15 Years of Supercharging: Akron Children's Hospital's Newest Emergency Department**

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

OCTOBER 25, 2023



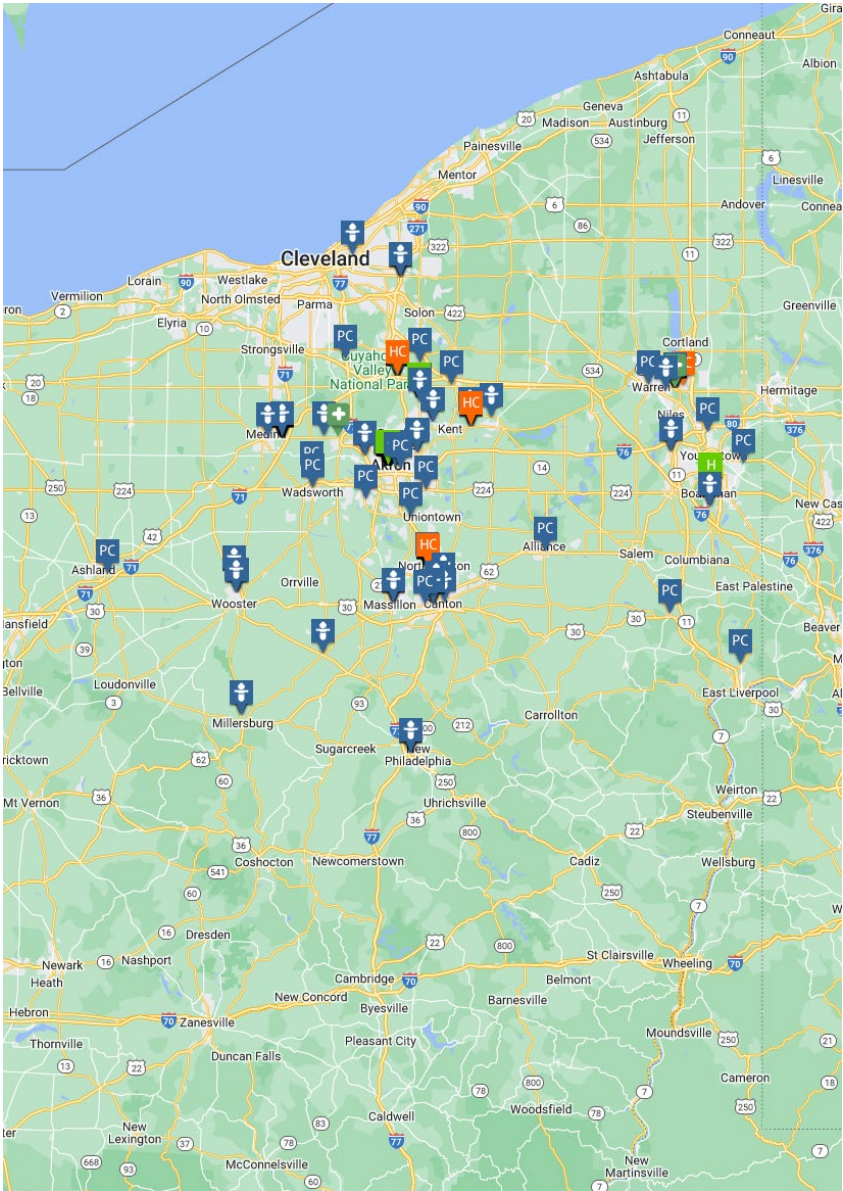
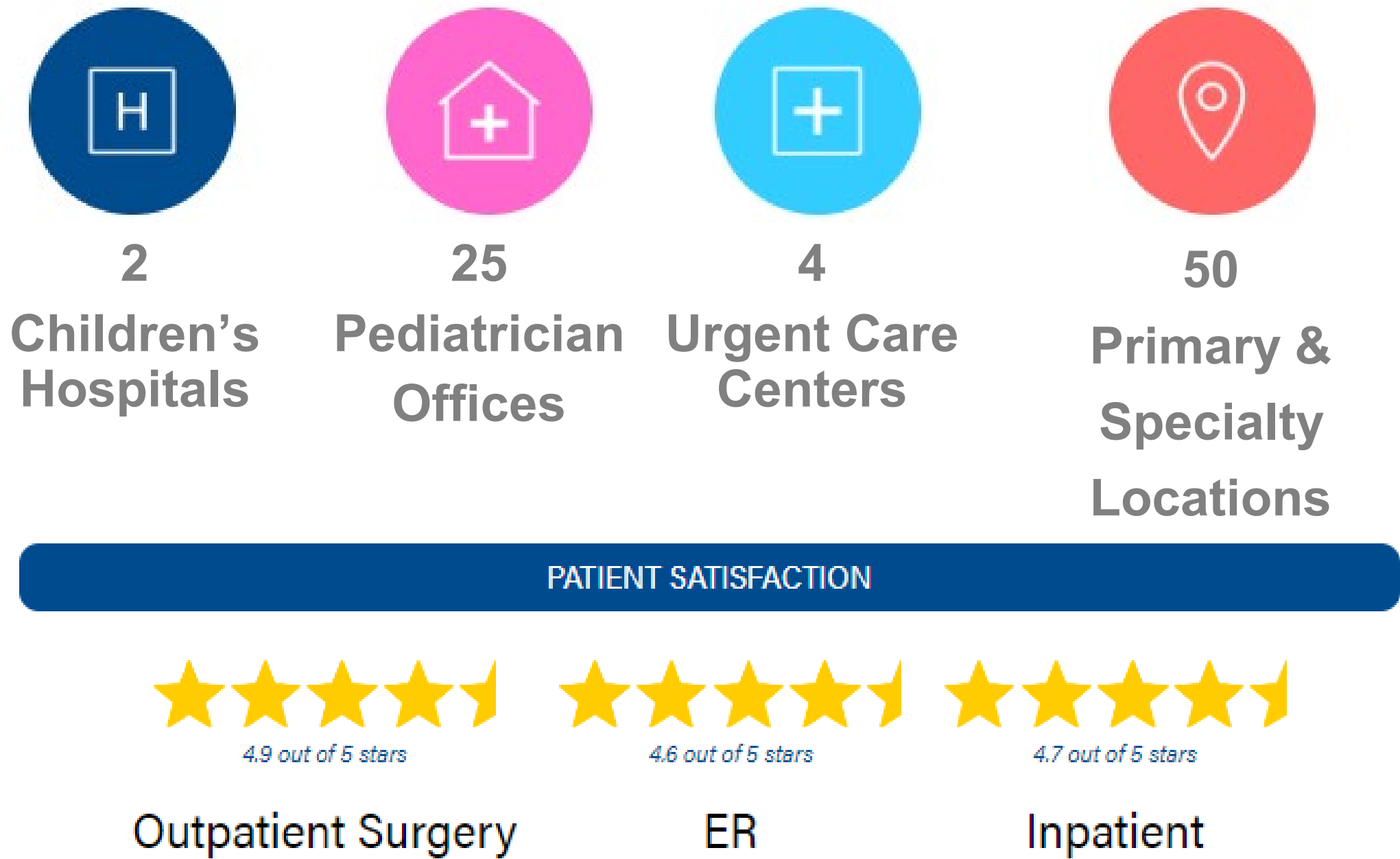
# Problem Statement – A Case Study in Lean

- Akron Children's Hospital required a replacement **emergency department** to serve Mahoning County and the surrounding regions
- Market growth is significantly outpacing anticipated population projections and creating **additional demand** on the emergency department
- The existing emergency department was small, **undersized** and overcrowded
- Interim stop-gap facility solutions to address the space issues created operational **bottlenecks**, impacting patient **throughput**, staff productivity, and **wait times**





# Akron Children’s Hospital: By the Numbers





# Akron Children's Hospital's Lean Six Sigma Journey

## Established Center for Operations

Mark A. Watson  
2008

**Tools**  
A3 Projects,  
Belt Projects  
2008 - onward

**Principles**  
A3 Projects,  
Belt Projects  
Kaizens  
Blue Belt  
2010 - onward

**Systems**  
Strategy Deployment  
Belt Projects,  
A3 Projects,  
Kaizens  
2011 - onward





# Integrated Lean Project Delivery

- Kay Jewelers Pavilion 330,000 sf
- 2012 – 2015
- Lean Operations, Design & Construction
- First Integrated Project Delivery Project in Ohio (Integrated Form of Agreement, IFOA)
- Target Value Design
- Book – “L3” Lean Operations, Lean Design and Lean Construction



Project	Market Estimate	Achieved Cost	
Kay Jeweler's Pavilion	\$ 221,888,439	\$ 177,544,721	20% Below Market Estimate



# Akron Children's Lean Facility Design

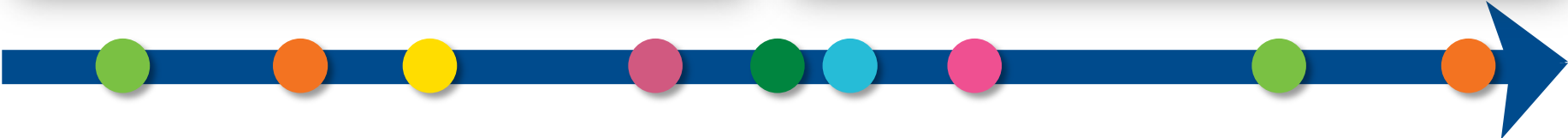
2015



2018



2023



2017



2018



2018



2019



2020



# Lean Planning: Form the Right Team & Define Success





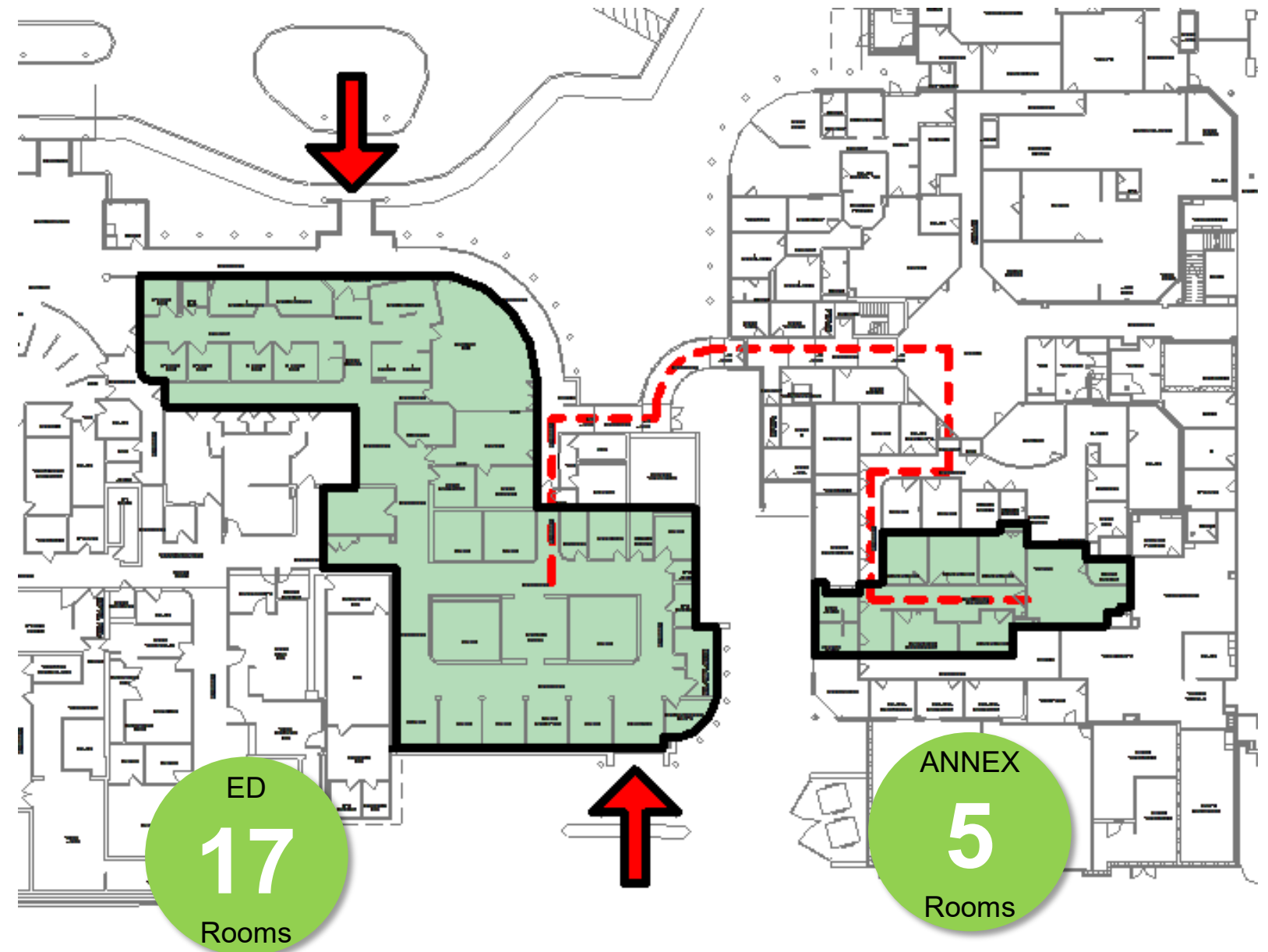
# The Beeghly Campus – Current State

- Campus acquired in 2007 – Minor Upgrades
- 2015 Master Plan
- 2017 - Consolidation of Primary Care and Specialty Practices



# A Look at the Current State Prior to Project

- Unprecedented growth
- Undersized, dates facility (450 sf / room vs 850 sf/ room)
- Standard of care different between new facility in Akron
- Multiple operational and space innovations ineffective (Annex)





# Build the Team

- Hasenstab – Experienced in Lean Project Delivery
- Engineers - Proposal
- Local Architect – Proposal
- Construction Manager – Proposal / Interviews
- Trade Partners – Proposal / Interviews
- Choosing by Advantages Selection Process
  - 25 Factors Evaluated
  - 2 Alternatives



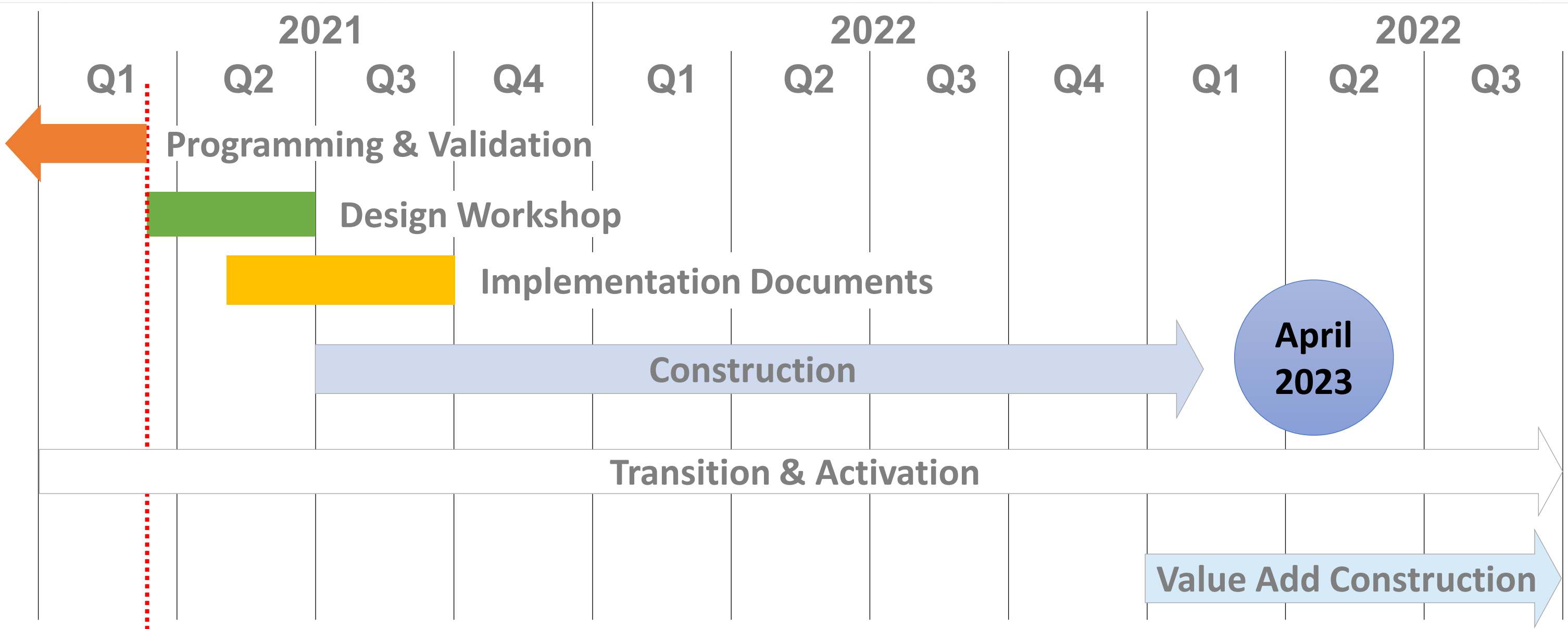


# Lean Design – Define the Project, Teaching and Facilitate Innovation





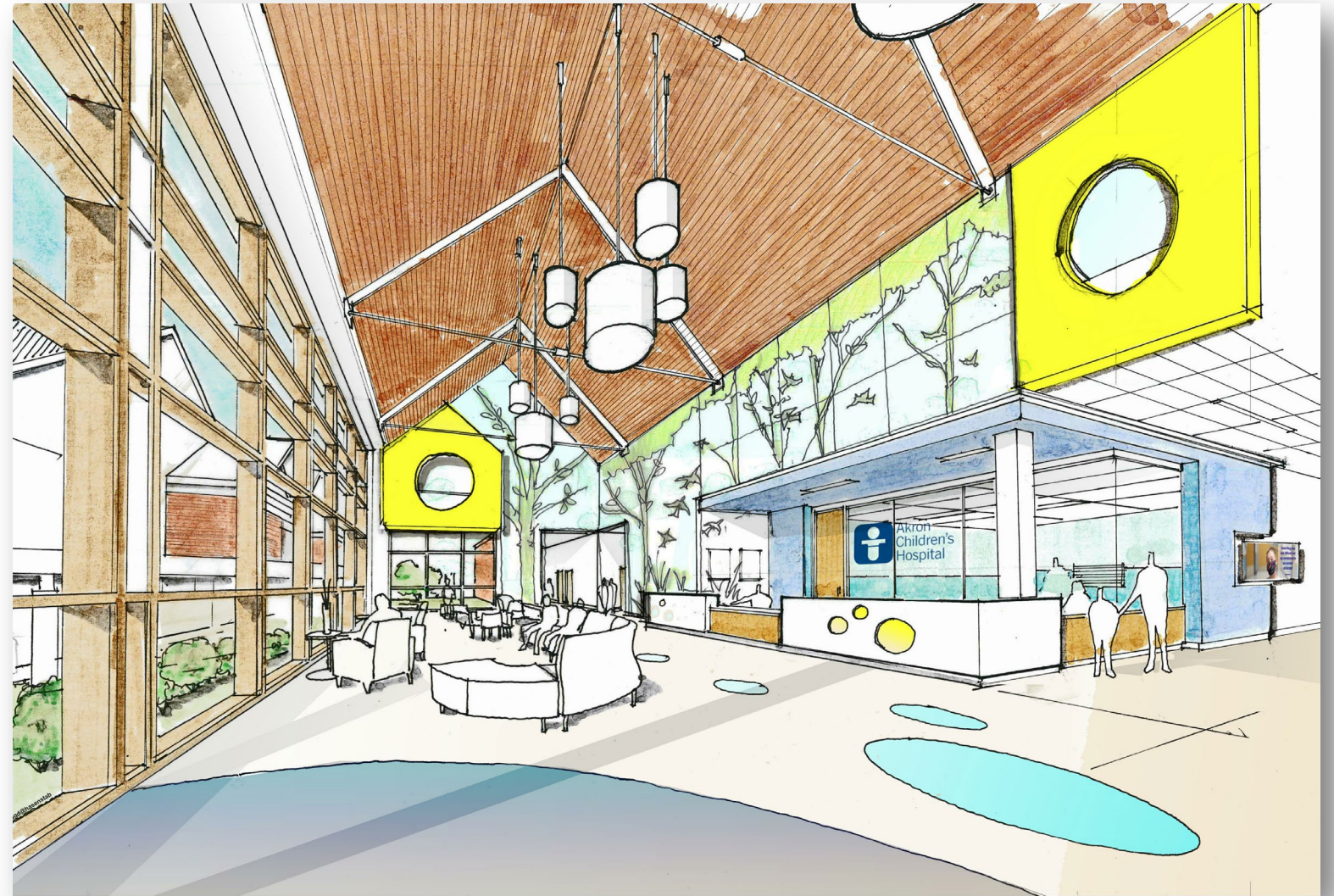
# Market Schedule





# Define the Project – Validation Report

- Space program
- Concept plans & renderings
- Detailed project narratives
- Reconcile three (3) estimates
- Develop “Market Cost” representing “Total - Tax, Title License”
- 30,000 SF New
- 16,000 SF Renovation
- \$35 Million





# Teaching Old Dogs New Tricks

- Validation report w/ DeSalvo
- Establish Market Cost
- Establish Big Room (Kmart)
- Lean Boot Camp (COVID Style)
- Team Days w/ Lean Primer for each day
- LCI reference materials were invaluable resource
- Developed success metrics as a team





# Lean Design – Key A3's AHA Moments

- 196 A3's presented
- Flip the campus - \$539,716 savings
- Remove infrastructure upgrades
- "We value our Air Enterprise Air Handlers"
- Eliminate BIM

[illegible]



# Design - Mock-Ups & Simulation

- 3 P (Production Preparation Process) event AKA Digital Dolls
- Functional Design Mock-up
  - Test room sizes and flows
  - Building block room – Mock-Ups
- Detail Design Mock-Up
  - Building block rooms defined
  - Deployed decontamination tent
- Multiple departments





# Lean Construction: Learning, Planning and Implementing the Work





# “Trust the Process”

- Target Value Design - process for DeSalvo
- Willing to learn
- Motivated trade partners
- Team decided only MEP trade partners
- Better results with arch trade partners?

**\$35.5  
Million**

**Target Value Design  
Target 15%**

**+/- \$30  
Million**





# The Power of Pull – Multiple Design Packages

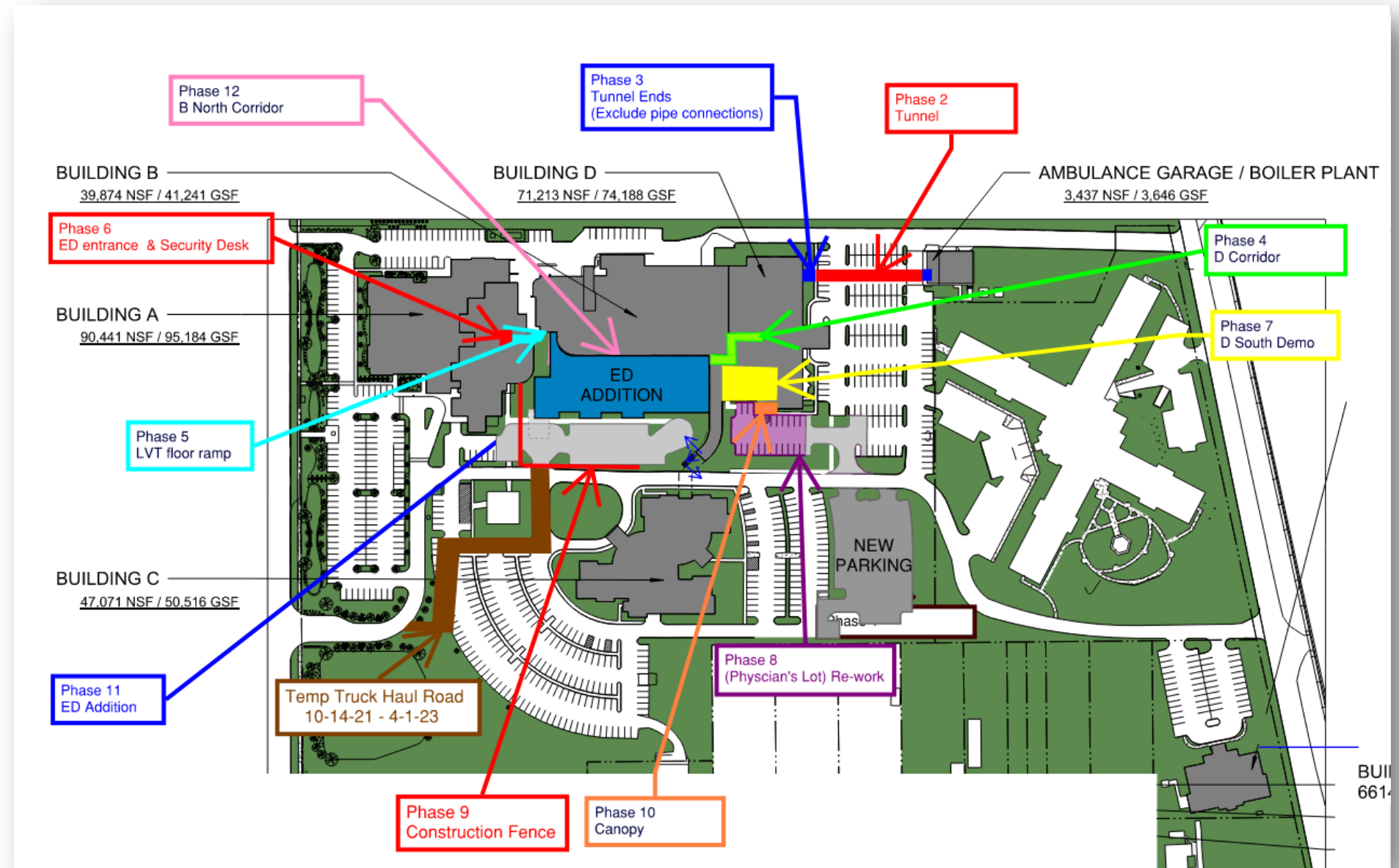
- “MV ED will have “One Design Package (DP)”
- Where we ended:
  - Early Steel Package to reserve steel and fabrication time
  - DP-1 Tunnel Work
  - DP-2 Site & Renovation Work
  - DP-3 Building Addition and Modification “BAM”
  - 10 Proposal Requests - Addressing minor changes, value adds and coordination issues





# Logistics

- 1 addition / 12 phases of work
- Touch a significant part of the campus
- Utilize A Building for temp ED entrance
- Secure everything... including the port-o-john
- Multiple signage packages / phases





# Takt Planning / Mission Control









# Overcoming Supply Chain Issues

- Daily huddle / coordination with subs
- Weekly reporting updates on long lead items
- Early order of long lead items
- The air handler & garage door





# Lean Operations: Activating and Living in the Space





# Lean Operations

- Operations Improvement Team involved throughout
- Current & Future State – Process Mapping 9/2020
- Guiding Principles Developed
- Use Akron as a starting point,
- “Version 2.0”

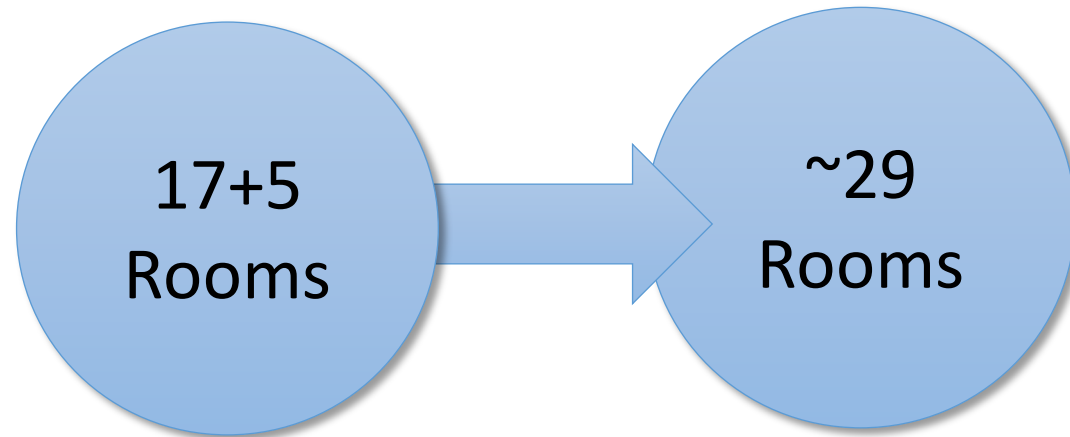
107

Current State  
operational issues out  
of 165 were resolved  
with the design of the  
facility



# Flexibility & Throughput

- All rooms the same size
  - ED & Fast Track
- Provider in Triage
- Behavioral Health Rooms - Flex





# Fit-Up Process

- Planning started after implementation documents were complete
- Designated a purchasing champion
- Monthly meetings with program steering team
  - Nurse Manager / Physician Lead
  - Various support departments
- Weekly huddles as approaching and during fit-up activities





# Project Changes

- Value Adds
  - Radiology
  - Social Work
  - Digital White Boards
- Staff Requests
  - Headwall changes
  - Storage for PPE
  - Acoustics in caregiver work area



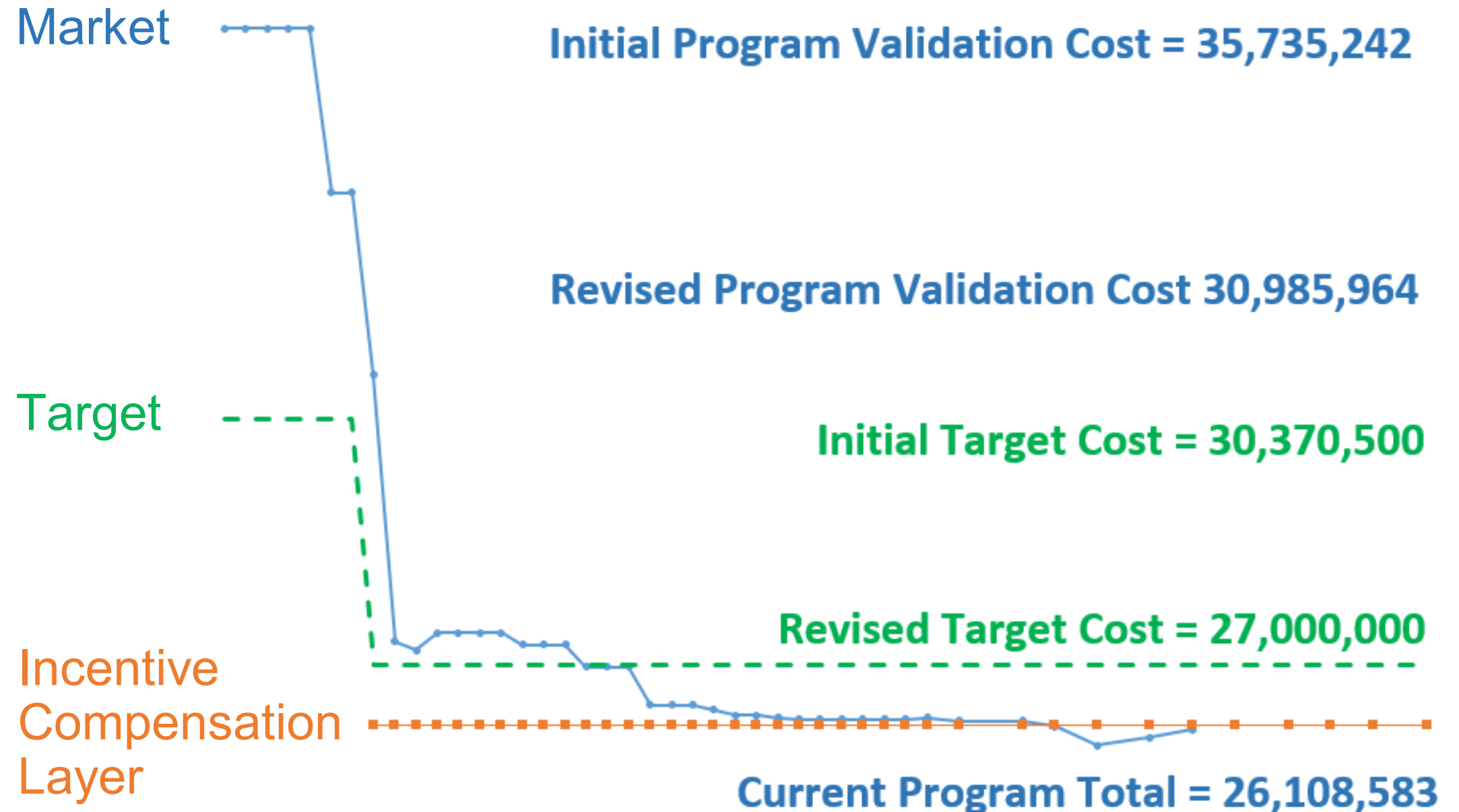


# Results



# Target Value Design – By the Numbers

- \$26.1M
- 36,366 sf
- \$718/sf
- Fully Funded Incentive Compensation Layer (ICL)





# Success Metrics

- 93% Success Metric Scorecard
- Safety
- Energy savings – modeled
- Surveys throughout
- Schedule: 87 Calendar Day Improvement
- Punch list / Built-in quality



# 6 Month Post Occupancy Metrics

MV ED Project- 6 Month Pre & Post Data		2022	2023	↑ ↓ =
METRIC	4/6/2022-10/3/2022	4/6/2023-10/3/2023	% Change	
Average Mins- Arrival to Triage	7	6	↓ 15%	
Average Mins- Triage	4	4	▬ 0%	
Average Mins- Arrival to Room	31	19	↓ 39%	
Average Mins- Room to Provider	4	2	↓ 50%	
Average Mins- Arrival to Provider	35	20	↓ 43%	
Average Mins- LOS	149	139	↓ 7%	
LWBS	480	116	↓ 76%	
Average Mins- Arrival to Room (Top 5 BH PD)	40	27	↓ 32%	
Total Encounters	17976	17166	↓ 5%	
Patient Experience Score	73.2	75.9	↑ 2.7%	





# Key Take-Aways

- Lean Project Planning: Form the right team & define success
- Lean Design: Facilitate learning and innovation
- Lean Construction: Plan your work and implement your work (implement takt planning!)
- Lean Operations: Living in the space (Not everything goes as planned)



# Contact Us

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# Questions and Answers





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**In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.**





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Thank you for attending this presentation. Enjoy the rest of the 25<sup>th</sup> Annual LCI Congress!

# Acronyms

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- ACH Akron Children's Hospital
- ICL Incentive Compensation Layer
- IFOA Integrated Form of Agreement
- ILPD Integrated Lean Project Delivery
- IPD Integrated Project Delivery
- PPE Personal Protection Equipment
- TVD Target Value Design
- TVM Target Value Management