


SSM Cardinal Glennon Children's Medical Center

This Changes Everything


Integrated Project Delivery



Cardinal Glennon Case Study


Project

- \$46M 117,000 SF expansion on a congested urban campus with ongoing operations
- 60 Bed neo-natal intensive care unit (NICU)
- 10 new surgical suites
- 10 bay pediatric acute care unit (PACU)
- Radiology
- Clinical Lab
- Central Sterile




Traditional Construction Contract

- Implies two separate relationships which are transactional in nature
- High potential for adversarial relationships
- Presumes that the most the Owner will receive is the minimum the contractor and designers can get by with.




Symptoms of a Broken System

- And ... we end up with...
- Poorly functioning, un-maintainable designs
- Re-design
- Delays
- Cost surprises, spiraling project cost
- Numerous RFIs and change orders
- Loss of scope to "stay in budget"
- Claims and disputes
- Unmet expectations
- Productivity losses in the field
- No fun
- Worst case: lawsuits





Traditional Contracts don't anticipate this:



Why the Collaborative/Lean Approach

- Frustrated with conventional delivery
- Owner wanted to save money
- The Team thought we could do better
- Sought permission to "try some things out"

We Realized We Needed Help

- Now what?
- How do we do this?
- How do we plan?
- How do we schedule?
- What does the contract look like?
- Interviewed consultants



Got Help

- Contacted the Lean Construction Institute
- Got a copy of Sutter Health Contract
- Team started to learn what we didn't know
- Decided to go for it
- Negotiated Collaborative Agreement



Key Elements

- Core Group
- Production Control System
- Financial/Incentive Agreement
- Model Behaviors
 - Collaborate intensely
 - Optimize the whole
 - Improve continuously
 - Innovate
 - Build Trust



Core Group Function

- Core Group = Owner, Designers, CM day-to-day leadership who govern the project
- Define project criteria
- Establish communication protocol
- Manage budget and design process
- Implement production control (Last Planner System)
- Select team
- Resolve problems
- Optimize the whole



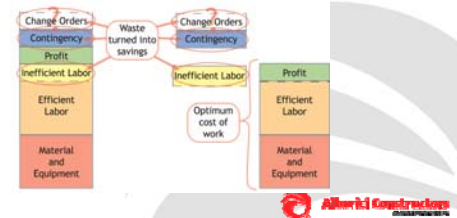
Last Planner System

- Using LPS as Production Control System
- Changing how the work is planned and who plans it
- Driven by Tradespeople
- Changing the dialogue
- Changing the commitments
- Measuring the Office and Field
- Lowering the "noise level" by focusing on real priorities



Incentive Program

- Elimination of waste creates bonus pool
- Incentive is to generate savings on a project level
- Alignment of interest of stakeholders
- Thrives on cooperation
- Rewards collaboration



Select Subcontractors

- Team selection is paramount
- Criteria for selecting Contractors and Designers
 - Willingness to embrace innovation
 - Open book
 - Early enough to participate in design
 - Selected on value, not necessarily low price
 - Confidence-inspiring expertise
 - Willing to collaborate
- Interviewed contractors including field personnel (The List)



What makes your work unproductive?

- The answers we received (The List)
 - ✓ Access to the work area
 - ✓ Schedule bottlenecks
 - ✓ Out of sequence work
 - ✓ Loading and hoisting
 - ✓ Material deliveries
 - ✓ Needing information and decisions
 - ✓ Working around material, floor congestion
 - ✓ No clean up
 - ✓ Changes
 - ✓ Not being able to finish what is started
 - ✓ Changing priorities
 - ✓ Too often people walk out of meetings and do their own thing
 - ✓ Selection by price = less quality people and less commitment



What makes your work unproductive?

- The answers we received (The List) continued
 - ✓ No consequence for failure to meet commitments
 - ✓ Sequence, wall studs too early
 - ✓ Redoing and undoing work
 - ✓ Moving material
 - ✓ Uncoordinated design drawings
 - ✓ Compressed time and spiking manpower
 - ✓ Real issues not addressed in coordination meetings
 - ✓ Lack of schedule commitment
 - ✓ Lack of accountability by other team members
 - ✓ "Show" work, show pipe
 - ✓ Jumping around
 - ✓ Late drawing approvals
 - ✓ Other trades in the way
 - ✓ Not having answers to questions
 - ✓ Conflicting motivations
 - ✓ Waiting



Recognized Counter-Incentives

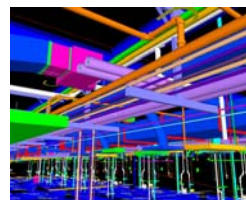
- GMP contracts and management styles drive counterproductive behavior
- GMP contracts drive territorial behavior
- Parties are often afraid to make decisions
- Cooperation can reduce profit, due to the way conventional contracts are written
- Every man for himself - no incentive for trades to work collaboratively in the execution of the project



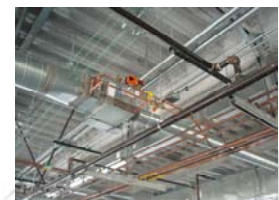
Lessons Learned - Big Room



Lessons Learned - BIM



3D model



Field installation

Think it through and build it right the first time



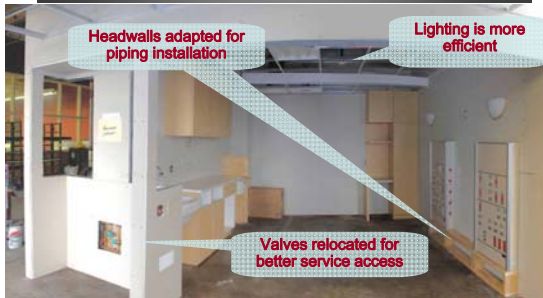
Lessons Learned - Prefabrication



Lessons Learned - Prefabrication



Lessons Learned - Mock Ups



Improvements X 70 rooms
Think it through and build it right the first time



What Happened?

- Planning and scheduling improved
- Coordination and communication improved
- Team functioned as a unit
- Trust level increased, project became more fun
- The Core Group worked



The Results

- Only 63 RFIs
- 2.1% savings from original construction budget
- Owner re-invested its portion of savings in added scope
- No change orders that added cost
- No disputes or claims
- Project completed 45 days ahead of schedule even with additional scope of work
- High morale - a preferred site
- High quality
- 8 minor first aid cases and no Lost Time Injuries

