

# Sutter's Lean Journey

**James Pease**  
**July 21st, 2015**

# Outline

- Sutter Health Summary

Design - Bid - Build



Design - Assist



Integrated Lean Project Delivery



Components of Delivery Model



Management and Tracking

- 1 Story, Some Results, Future Focus

# Sutter Health – Who We Are



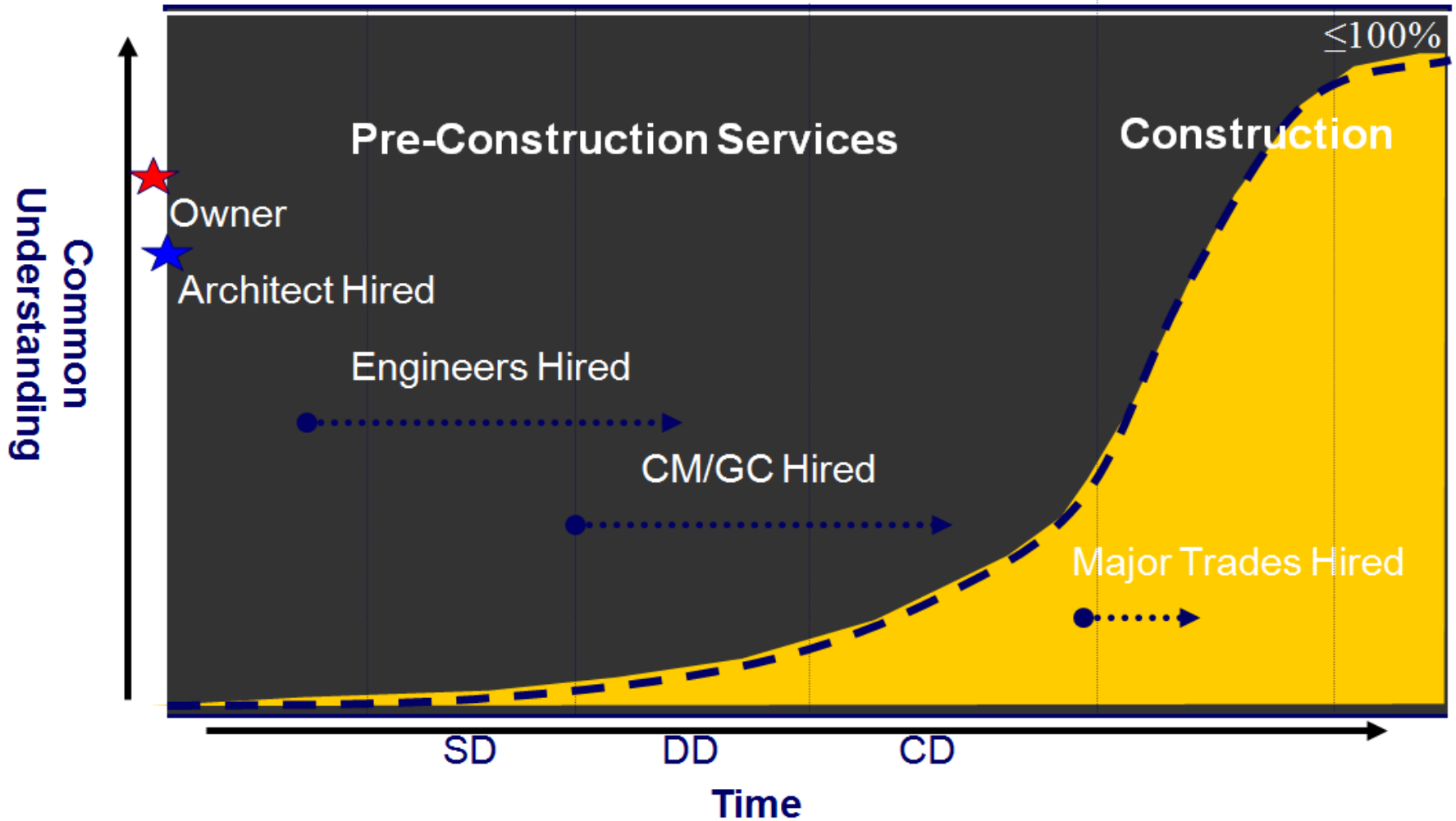
- Not for Profit Healthcare System
- Northern California
- 24 Acute Care Hospitals
- 300+ Outpatient Care Clinics
- 255 Active Capital Projects
- \$7 Billion Capital Plan
- SB 1953 and OSHPD
- Expanding Outpatient Services



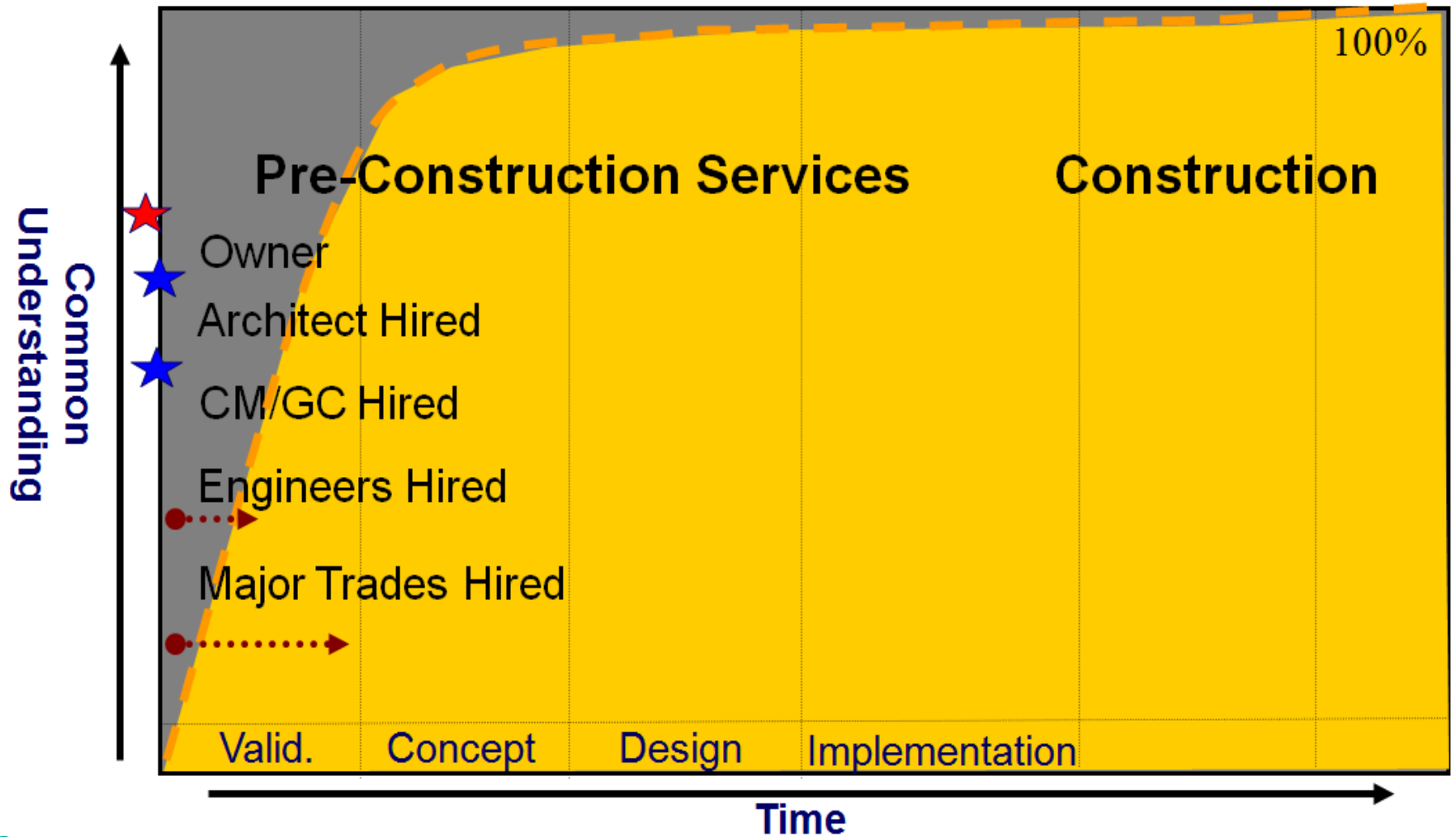
# Sutter Health - Traditional Results

- Unreliable Schedules
- Unreliable Project Budgets
- Value Engineering Reduces Approved Scope
- Potential for Claims

# Traditional: Design - Bid - Build



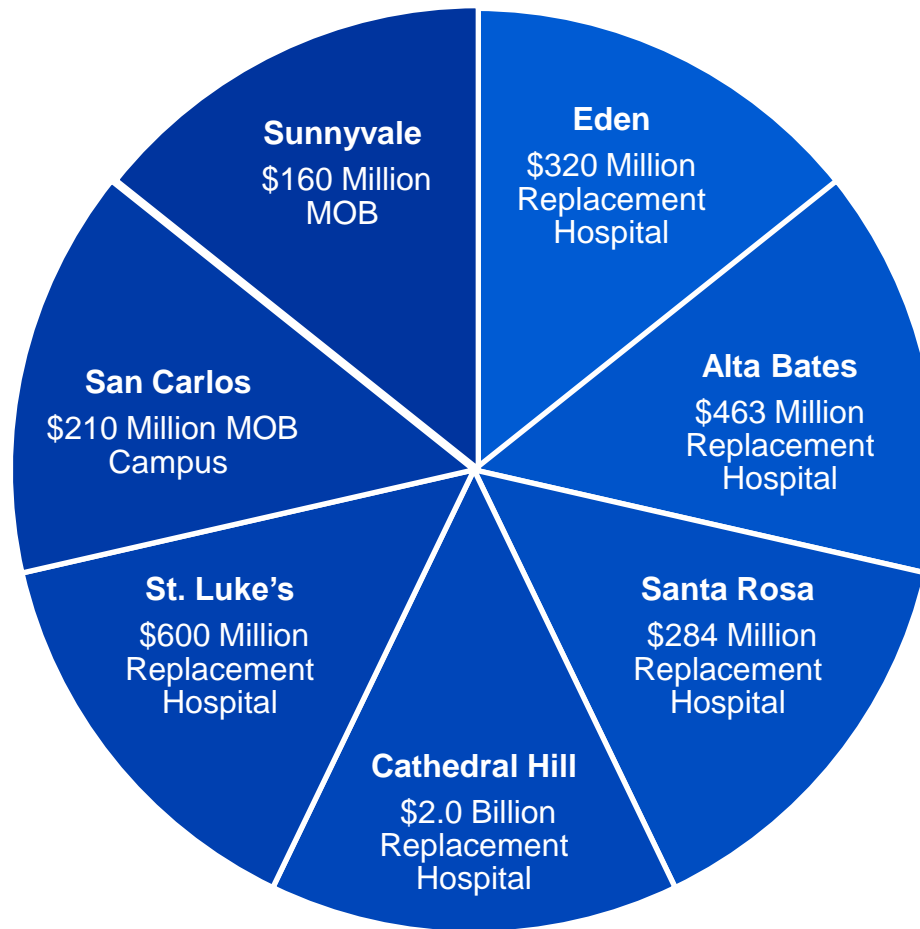
# Newer: Design - Assist



# Outcomes: Design - Assist

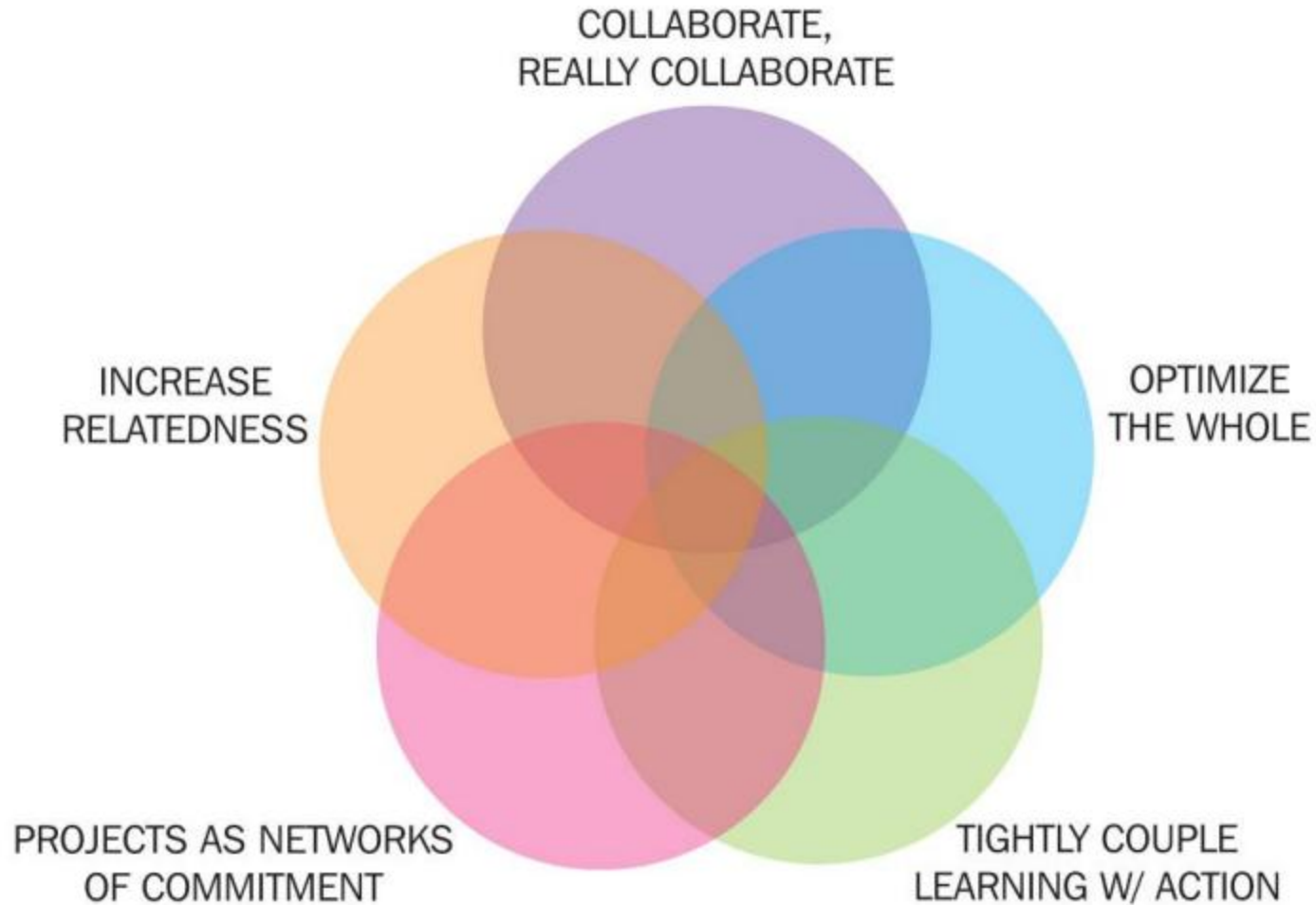
- 2 Large OSHPD Projects
- Collectively \$100M+ Over Budget
- Delivered Late
- Cost Overruns Surfaced Near End of Projects

# Sutter Health – Sample of Larger Projects





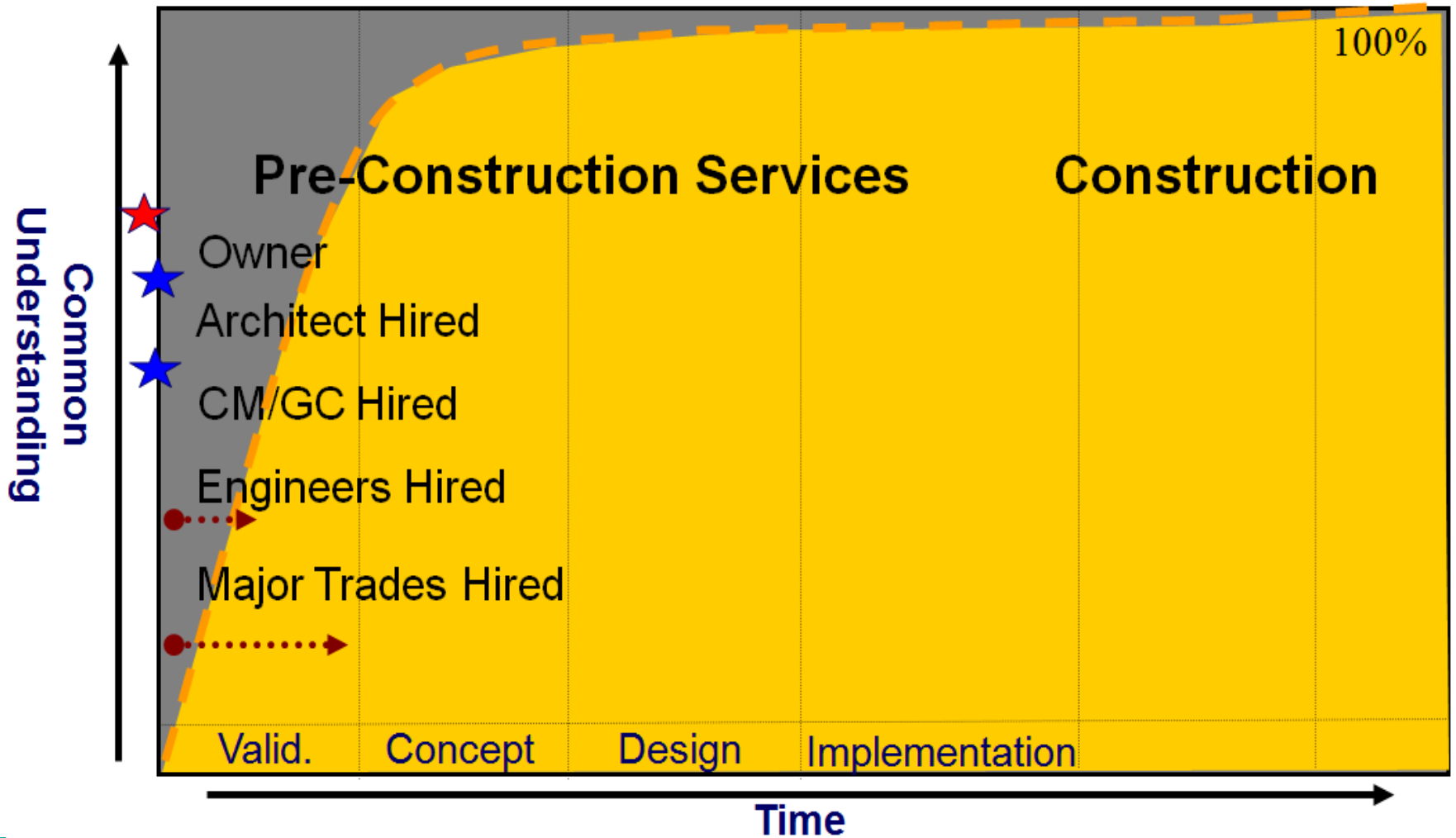
# Sutter Health – 5 Big Ideas



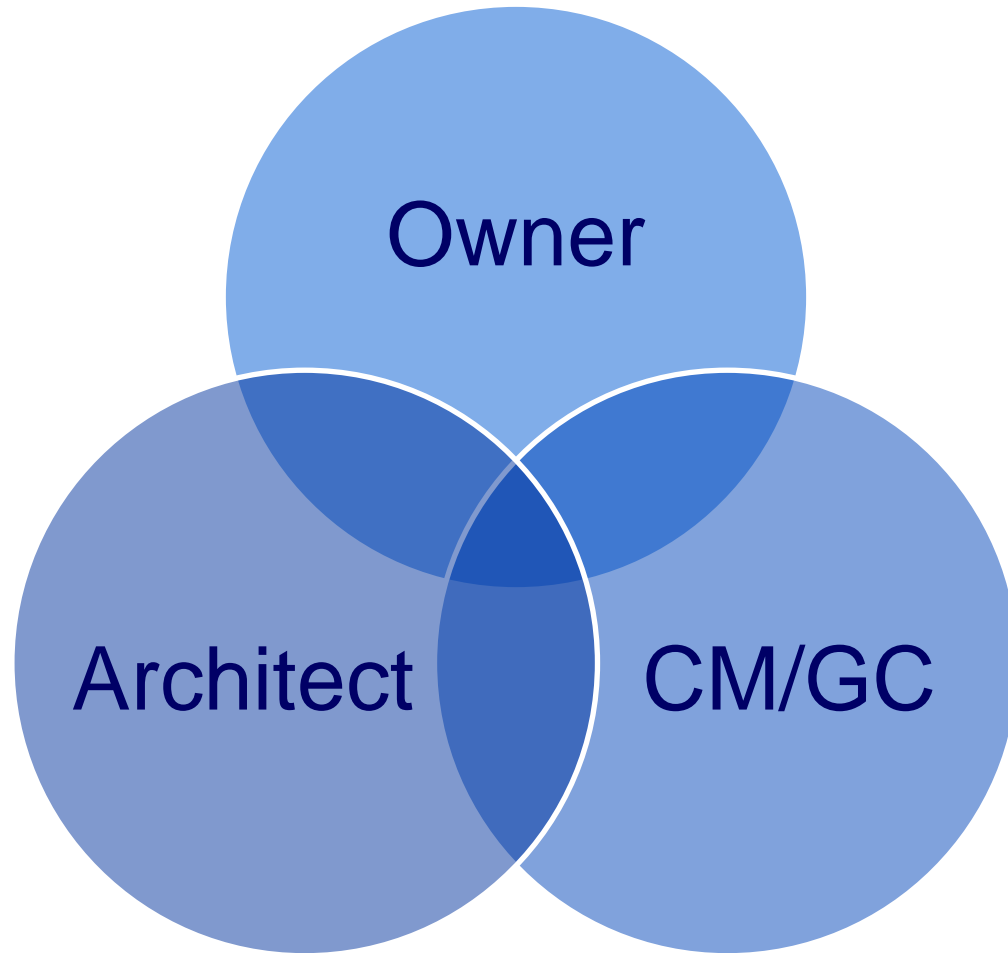
# Integrated Lean Project Delivery – What is it?

- **Lean Design and Construction** – a production management-based approach to project delivery (LCI website)
- **Integrated Project Delivery** – an approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste, and maximize efficiency through all phases of design, fabrication, and construction. (AIA 2007)

# Integrated Project Delivery Approach



# Contracting – Integrated Form of Agreement



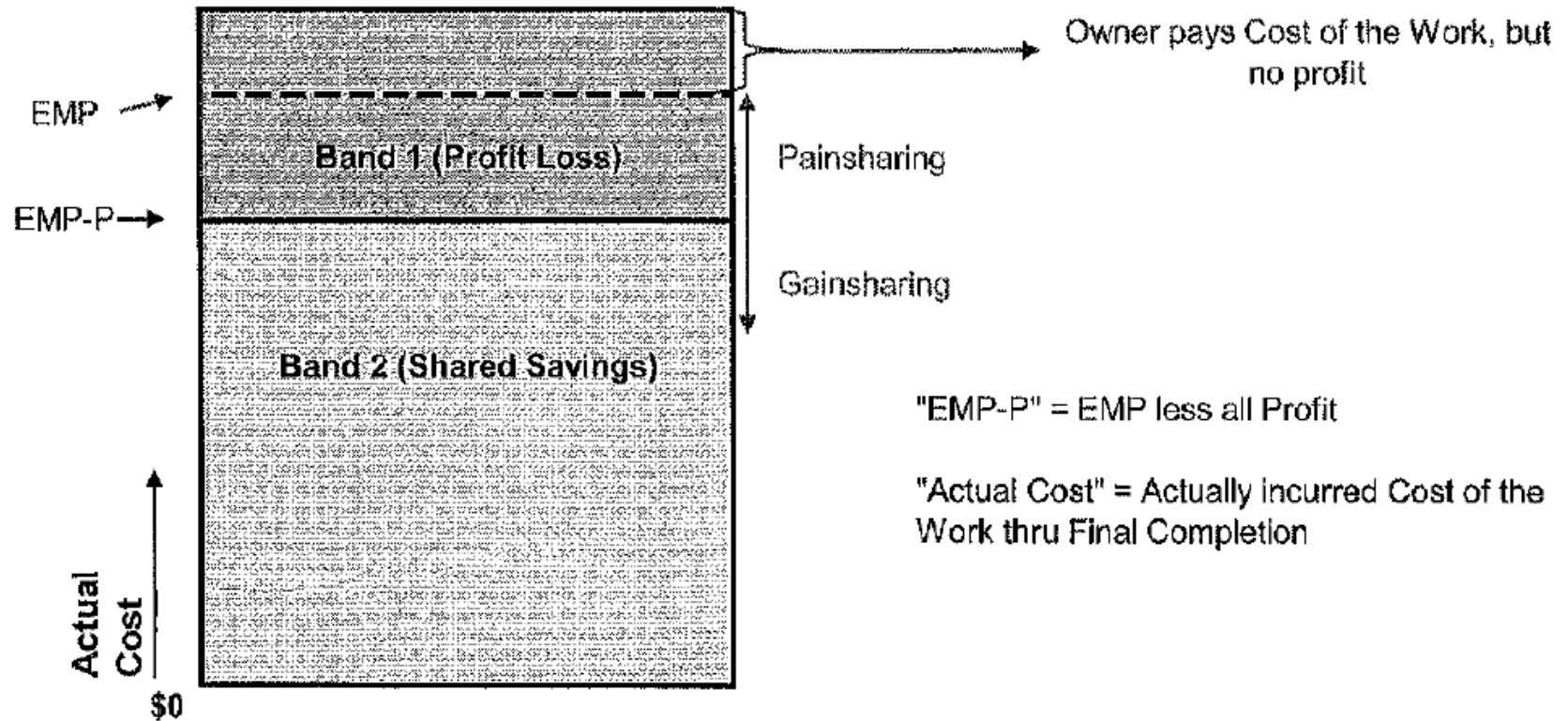
# Contracting – Integrated Form of Agreement

- Ties the Team to the Validation Study
- Includes Estimated Maximum Price (EMP)
- Risk / Reward Plan

# Alignment of Interests - Risks & Rewards

## Risk/Reward Outcome at Final Completion:

The Actual Cost of the Project at Final Completion determines the Band into which the Risk Pool IPD Team Members fall.

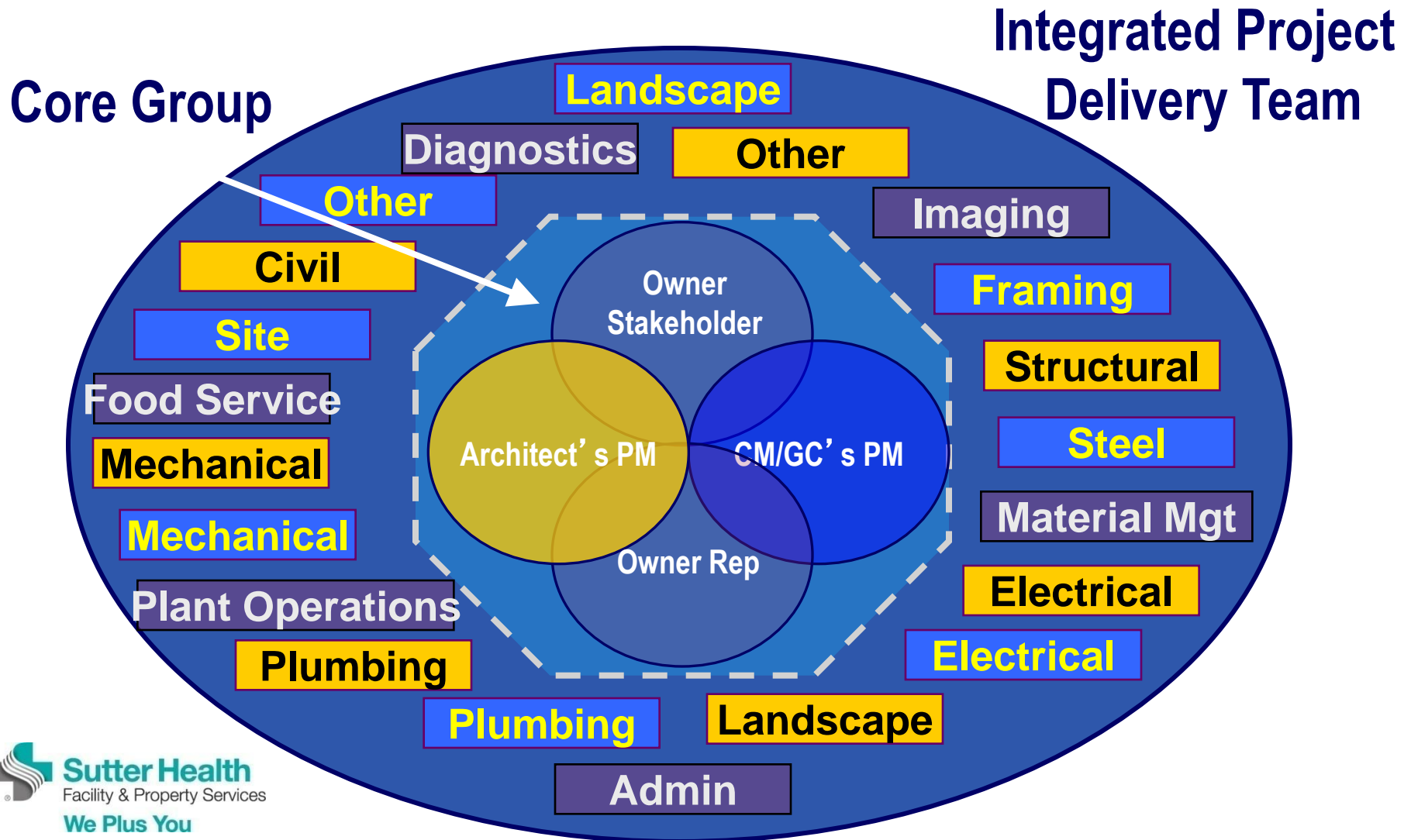


# Contracting – Big Difference

## Only Changes Allowed to EMP

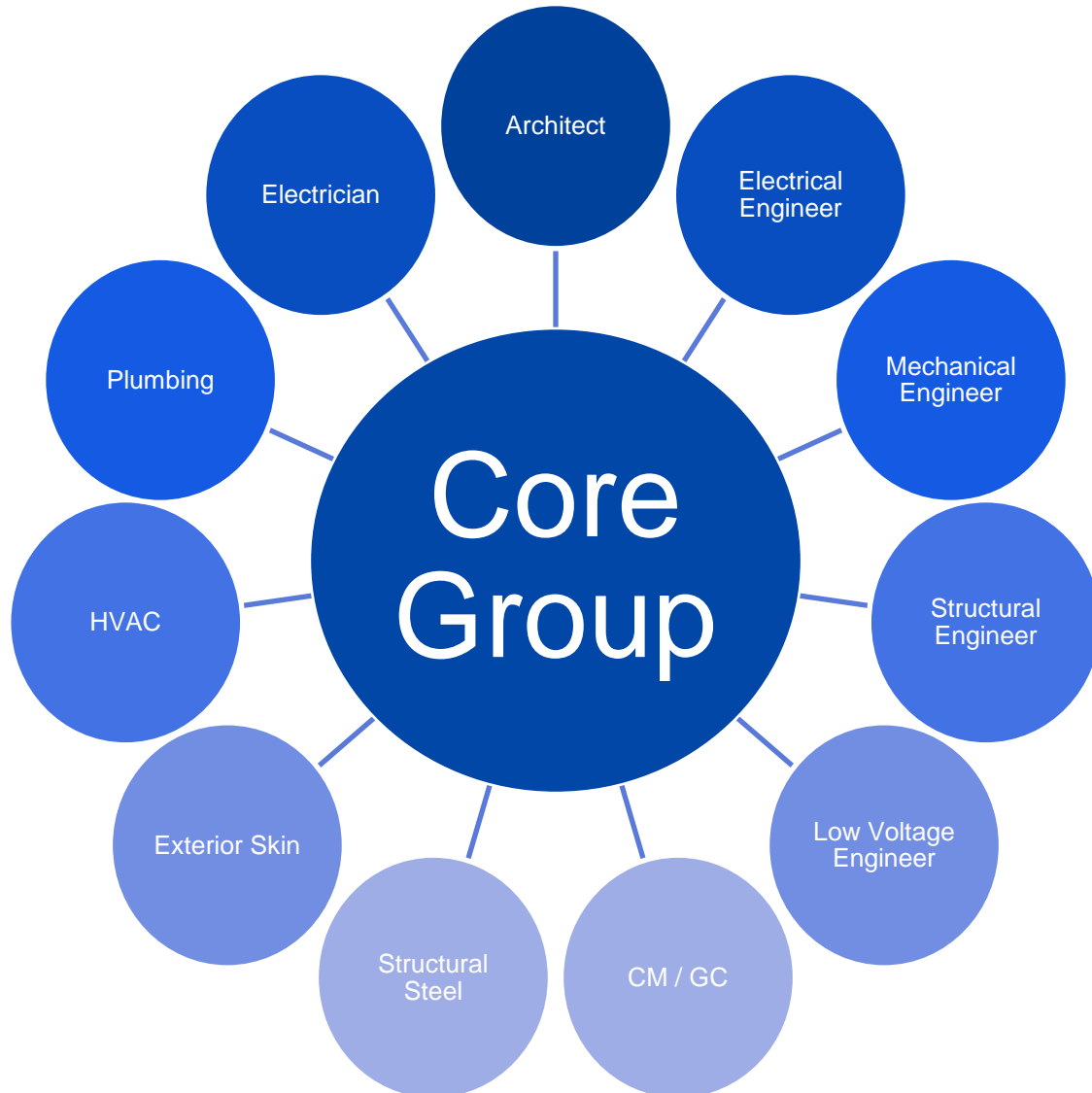
- Differing Site Conditions
- Force Majeure
- Adverse Weather
- Owner Directed Changes to Scope

# Contracting – ILPD Team Structure

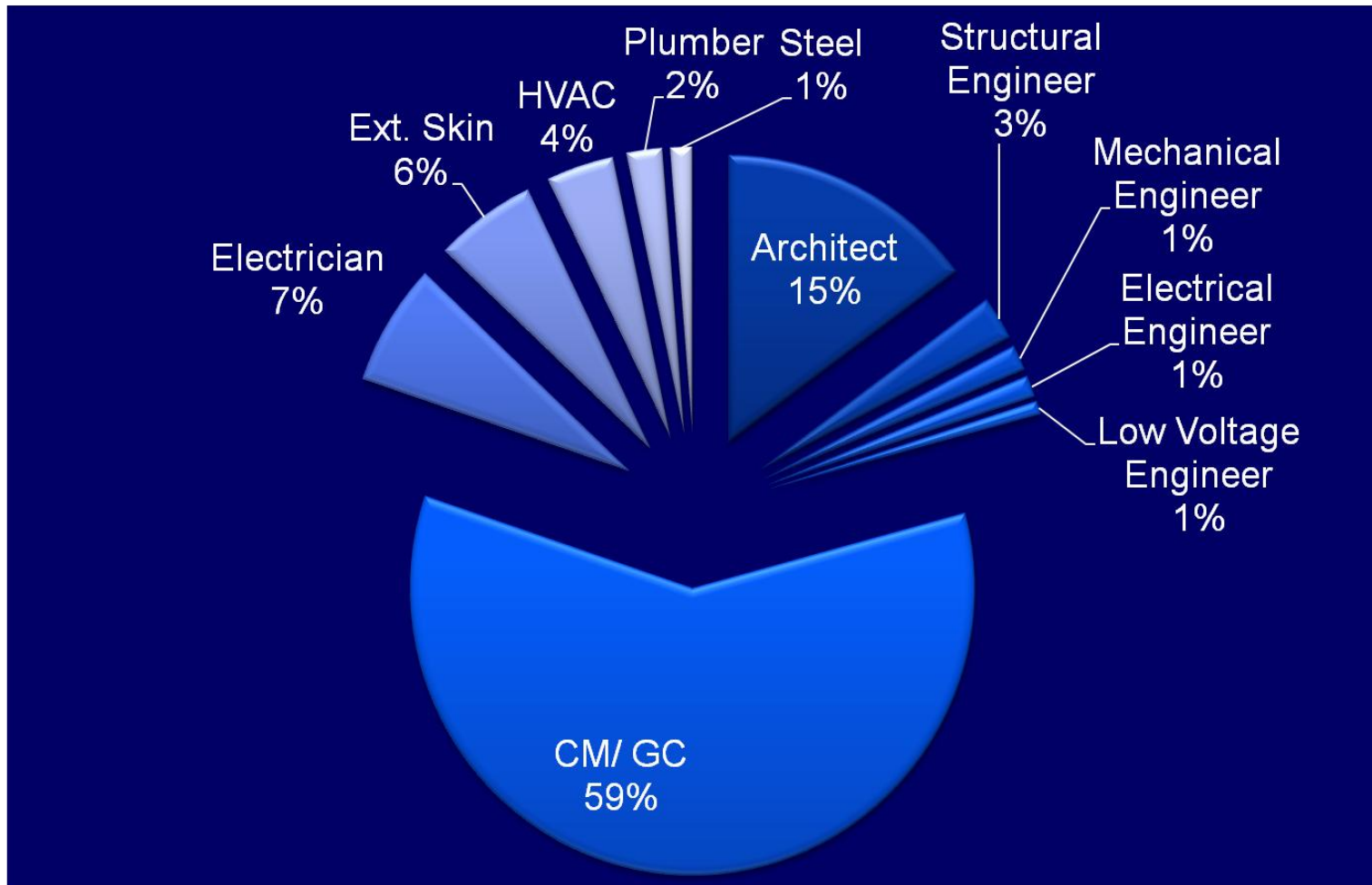




# Contracting – Sample Risk/Reward Partners



# Alignment of Interests - Pro-Rated Profit Pool



# Contracting - Alignment of Interests

- Create a Collaborative Environment Where Team Members Benefit from Driving the Cost Down and Maintaining the Agreed Quality, Program and Schedule

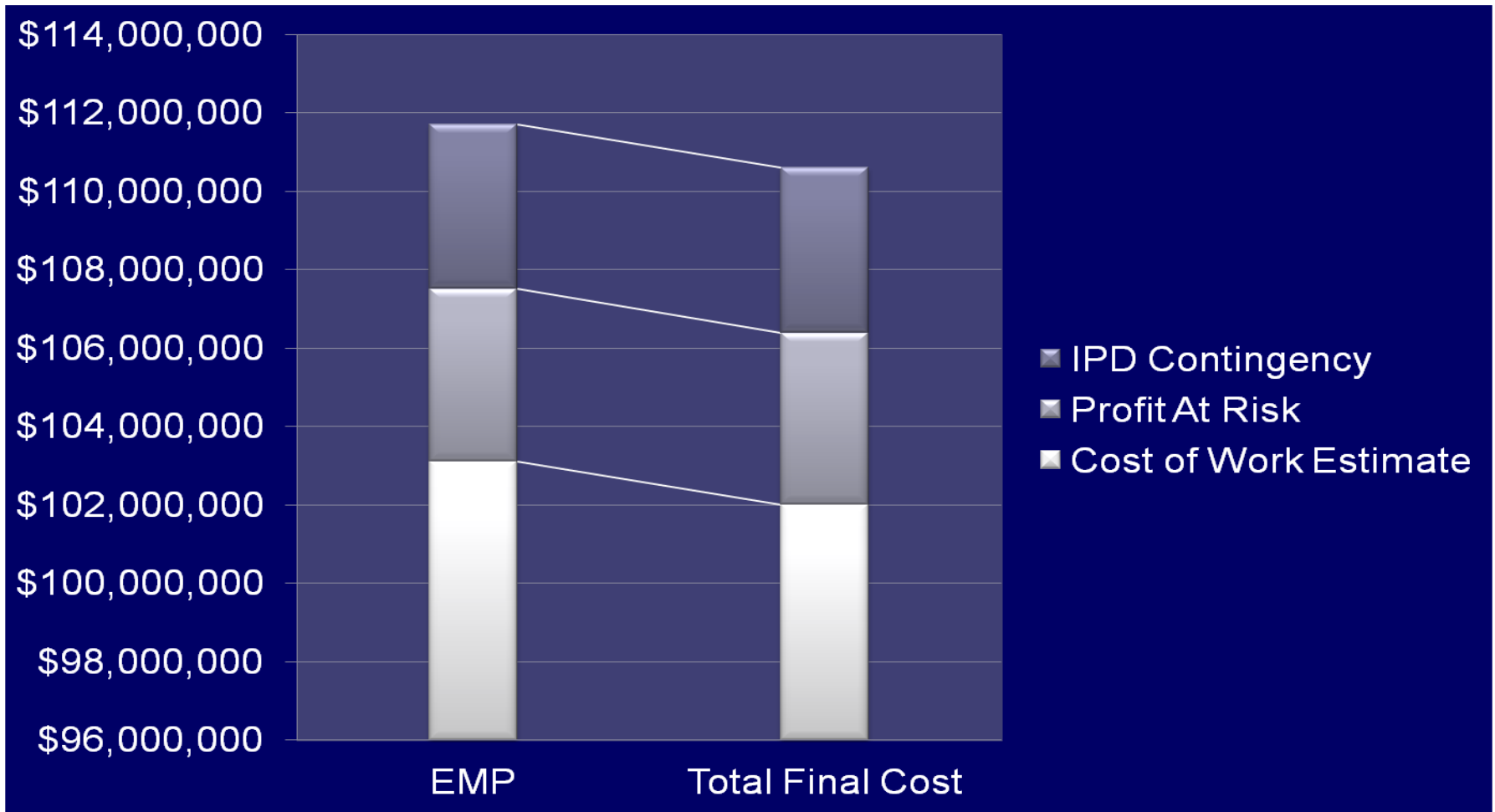
# Alignment of Interests – Benefits

- Team Behaviors Incentivized to Drive Down Cost
- Team Motivated to Identify Potential Risks
- Team Quickly and Efficiently Addresses Issues
- Increased Production and Installation Efficiency

# Target Value Design - Goal

- Design to the Budget, Not Budgeting the Design

# Target Value Design - Driving Cost Down



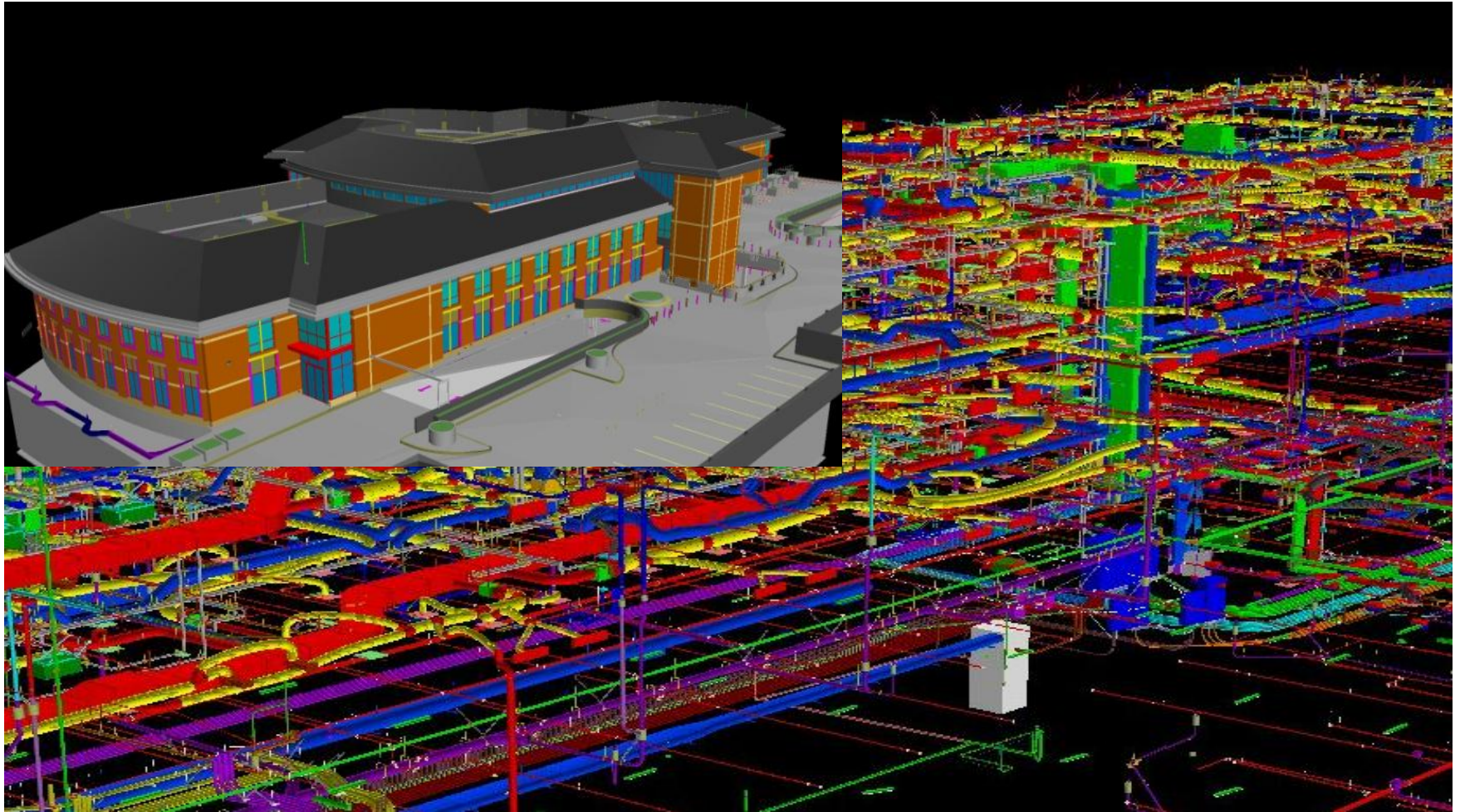
# Building Information Modeling (BIM)

## Goals:

- Buildable and Coordinated Set of Plans
- Automated and Accurate Layout
- Inserting of Hangers Before Deck Pours
- Prefabrication of MEP and Walls
- Drive Productivity Gains

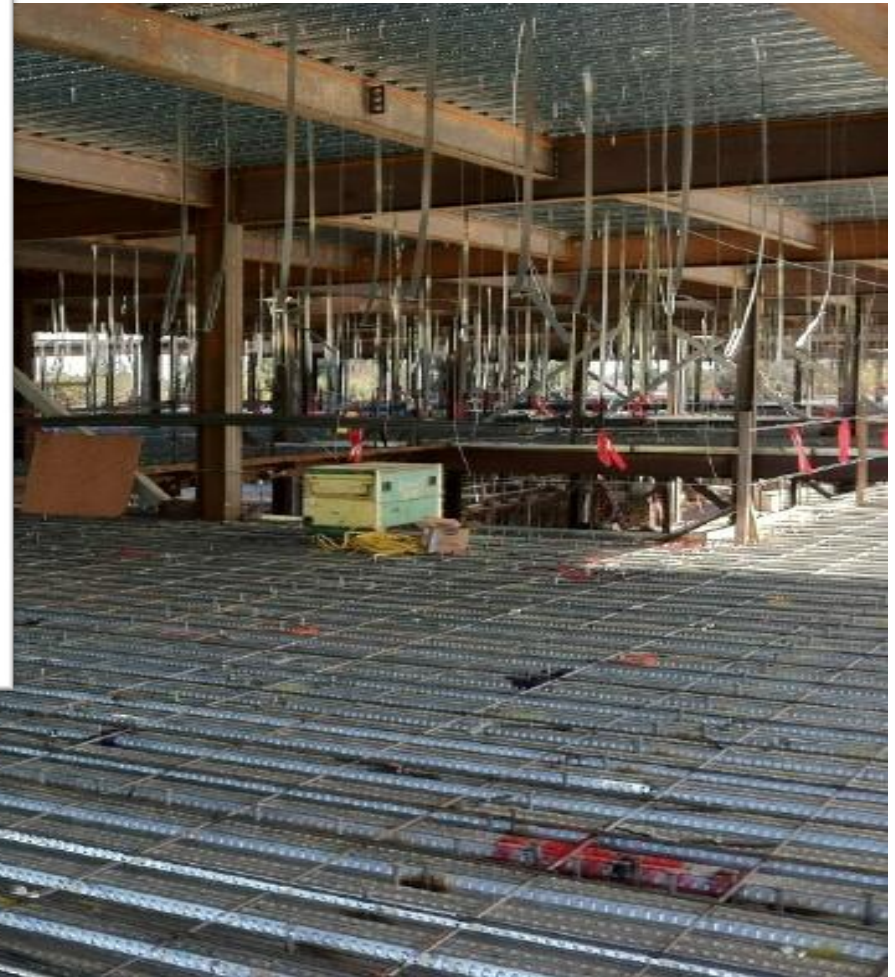


# BIM for Coordination - Skin and MEP Systems



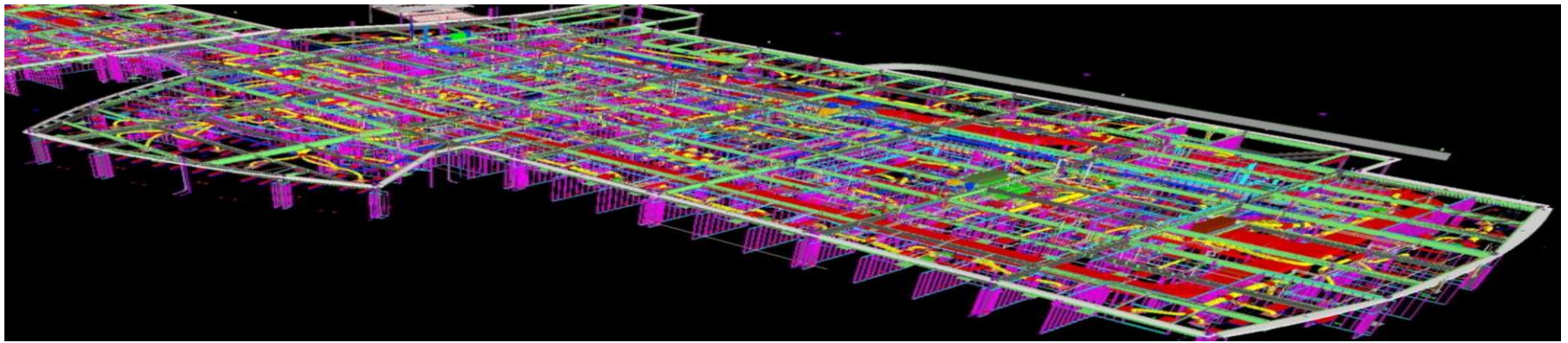


# BIM for Layout - Mechanical Fasteners



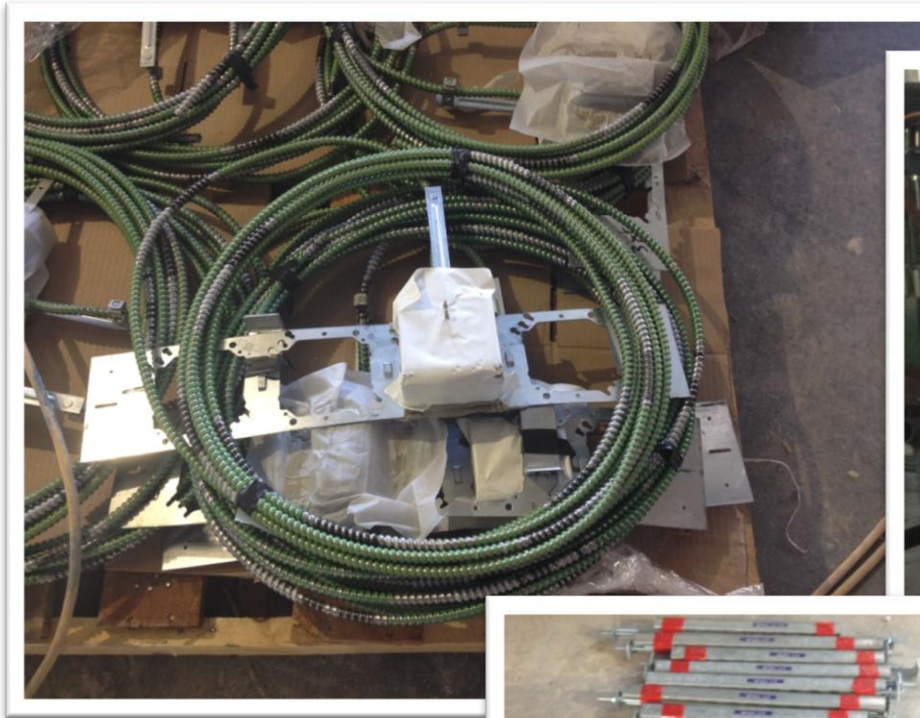


# BIM for Prefabrication – MEP and Walls





# BIM for Prefabrication - Hangers and Inwall



# Schedule Management – Pull Planning





# Schedule Management – LA and WWP's

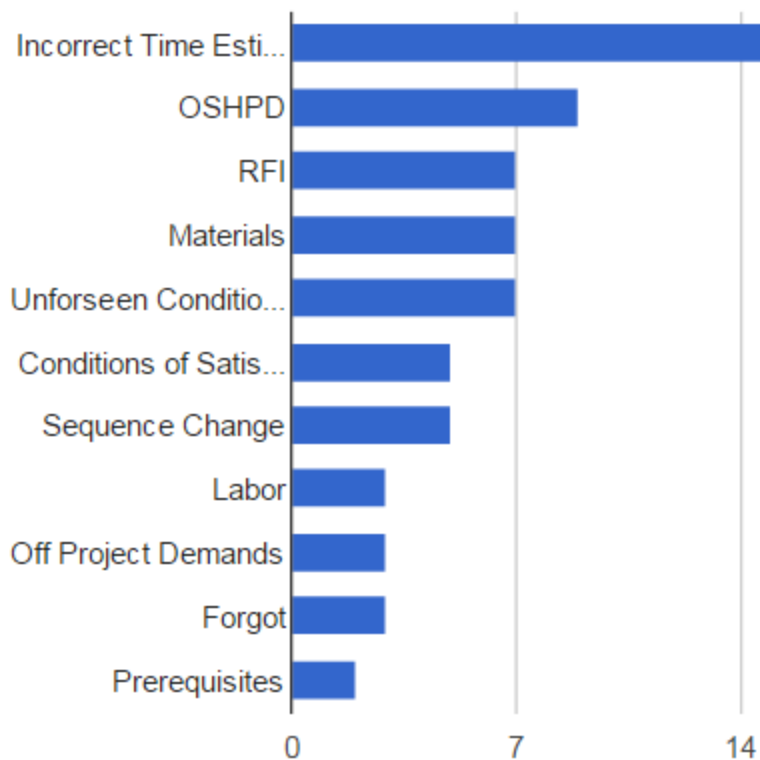
Tasks	Location	Start Date	Delivery Date	Project Team	2/13 Mon	2/14 Tue	2/15 Wed	2/16 Thu	2/17 Fri	2/18 Sat	2/19 Sun	2/20 Mon	2/21 Tue	2/22 Wed	2/23 Thu	2/24 Fri	2/25 Sat
2nd Floor - Drywall Layout (6-8 Line)	West	2/9/2012	2/13/2012	DPR Drywall													
2nd Floor - Building Control	West	2/13/2012	2/13/2012	DPR Construction													
2nd Floor - Supplemental Steel 0-2.5 Line	West	2/13/2012	2/15/2012	Westco													
3rd Floor - Scrape Steel	West	2/13/2012	2/14/2012	DPR Construction													
2nd Floor - 6-8 Line Cores	West	2/14/2012	2/14/2012	J.W. McClenahan													
2nd Floor West - Fireproofing	West	2/14/2012	2/23/2012	LVI													
1st Floor - Layout 2-6 Line	West	2/15/2012	2/24/2012	DPR Drywall													
3rd Floor - Curb Layout/Form	West	2/16/2012	2/21/2012	DPR Concrete													
2nd Floor - MEP Start	West	2/22/2012	3/2/2012	J.W. McClenahan													
2nd Floor - MEP Start	West	2/22/2012	3/2/2012	Southland													
2nd Floor - MEP Start	West	2/22/2012	3/2/2012	Redwood City Electric													
2nd Floor - MEP Start	West	2/22/2012	3/2/2012	Walschon													
3rd Floor - Housekeeping Pads and Curb Concrete	West	2/22/2012	2/22/2012	DPR Concrete													
3rd Floor - Strip Housekeeping Pads	West	2/23/2012	2/23/2012	DPR Concrete													
3rd Floor - Duct Shaft Through Roof	West	2/24/2012	2/24/2012	Southland													
Podium 1 - Rebar	Podium	2/10/2012	2/16/2012	CMC Rebar													
Podium 2A - Concrete	Podium	2/13/2012	2/13/2012	DPR Concrete													
Slab On Grade Rakers - Rebar	Podium	2/13/2012	2/14/2012	CMC Rebar													
West Ramp - Radius Wall One Side Form	Podium	2/14/2012	2/14/2012	DPR Concrete													
Trench for Temp Power	Podium	2/14/2012	2/16/2012	Redwood City Electric													
10A Walls - Rebar	Podium	2/14/2012	2/15/2012	CMC Rebar													
Podium 2 - Form	Podium	2/14/2012	2/15/2012	DPR Concrete													

# Schedule Management – PPC

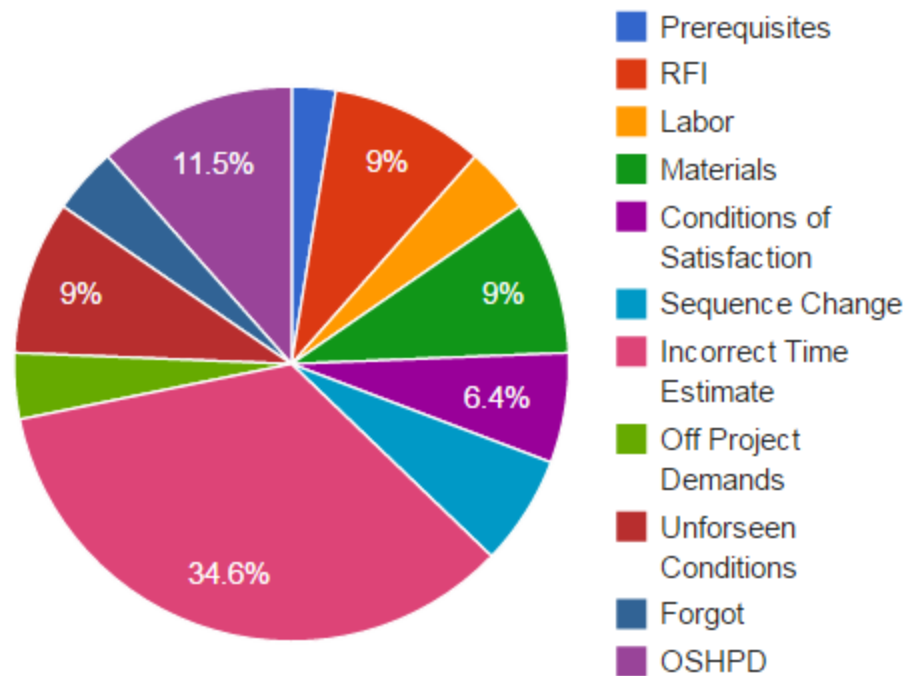
Company	Prior Periods			This Week			Project to Date		
	Activities	Complete	PPC	Activities	Complete	PPC	Activities	Complete	PPC
Alcal Specialty Contracting, Inc.	2	1	50.00%	1	0	0.00%	3	1	33.33%
Alliance Roofing Company, Inc.	79	61	77.22%	0	0	0.00%	79	61	77.22%
Brady Company/Central California, Inc.	18	14	77.78%	9	9	100.00%	27	23	85.19%
CMC Rebar	181	140	77.35%	1	1	100.00%	182	141	77.47%
DPR Construction - CS	540	432	80.00%	10	7	70.00%	550	438	79.64%
DeSilva Gates Construction, L.P.	114	91	79.82%	0	0	0.00%	114	91	79.82%
Dees-Hennessey, Inc.	7	6	85.71%	0	0	0.00%	7	6	85.71%
J.W. McClenahan Co.	84	71	84.52%	4	3	75.00%	88	74	84.09%
LVI Services	4	4	100.00%	1	1	100.00%	5	5	100.00%
Malcolm Drilling Company, Inc	52	42	80.77%	0	0	0.00%	52	42	80.77%
Redwood City Electric, Inc.	90	76	84.44%	3	2	66.67%	93	78	83.87%
Schuff Steel Company	12	10	83.33%	0	0	0.00%	12	10	83.33%
Southland Industries	61	55	90.16%	5	5	100.00%	66	60	90.91%
United Mechanical Incorporated	2	1	50.00%	0	0	0.00%	2	1	50.00%
Walschon Fire Protection, Inc.	37	34	91.89%	0	0	0.00%	37	34	91.89%
Westco Iron Works	6	6	100.00%	0	0	0.00%	6	6	100.00%
<b>Project Total</b>	<b>1289</b>	<b>1044</b>	<b>80.99%</b>	<b>34</b>	<b>28</b>	<b>82.35%</b>	<b>1323</b>	<b>1071</b>	<b>80.95%</b>

# Schedule Management – Variances

Variance Distribution (Count)



Variance Distribution (%)



# Cost Management – Drywall Productivity

## PAMF Sunnyvale: IFOA Cost Reporting Meeting

Production Conditions	Estimated Hours	Committed Hours	Forecasted Hours	Saved Hours	Cost Savings
Layout	915	806	0	109	\$10,838
Full Height Framing	4,247	3,033	165	1,014	\$91,909
Ceiling Height Framing	1,690	1,390	90	210	\$19,034
Shaftwall Framing	597	526	150	-79	-\$7,161
Soffit Framing	1,581	1,166	458	-43	-\$3,898
Ceiling Framing	562	502	116	-56	-\$5,076
End Caps	151	133	18	0	\$0
Wall Insulation	699	876	0	-177	-\$16,043
Acoustic Caulking	1,501	1,234	100	167	\$15,137
Wall Backing	1,492	1,839	0	-347	-\$31,452
Drywall Installation	7,670	7,226	571	-127	-\$11,511

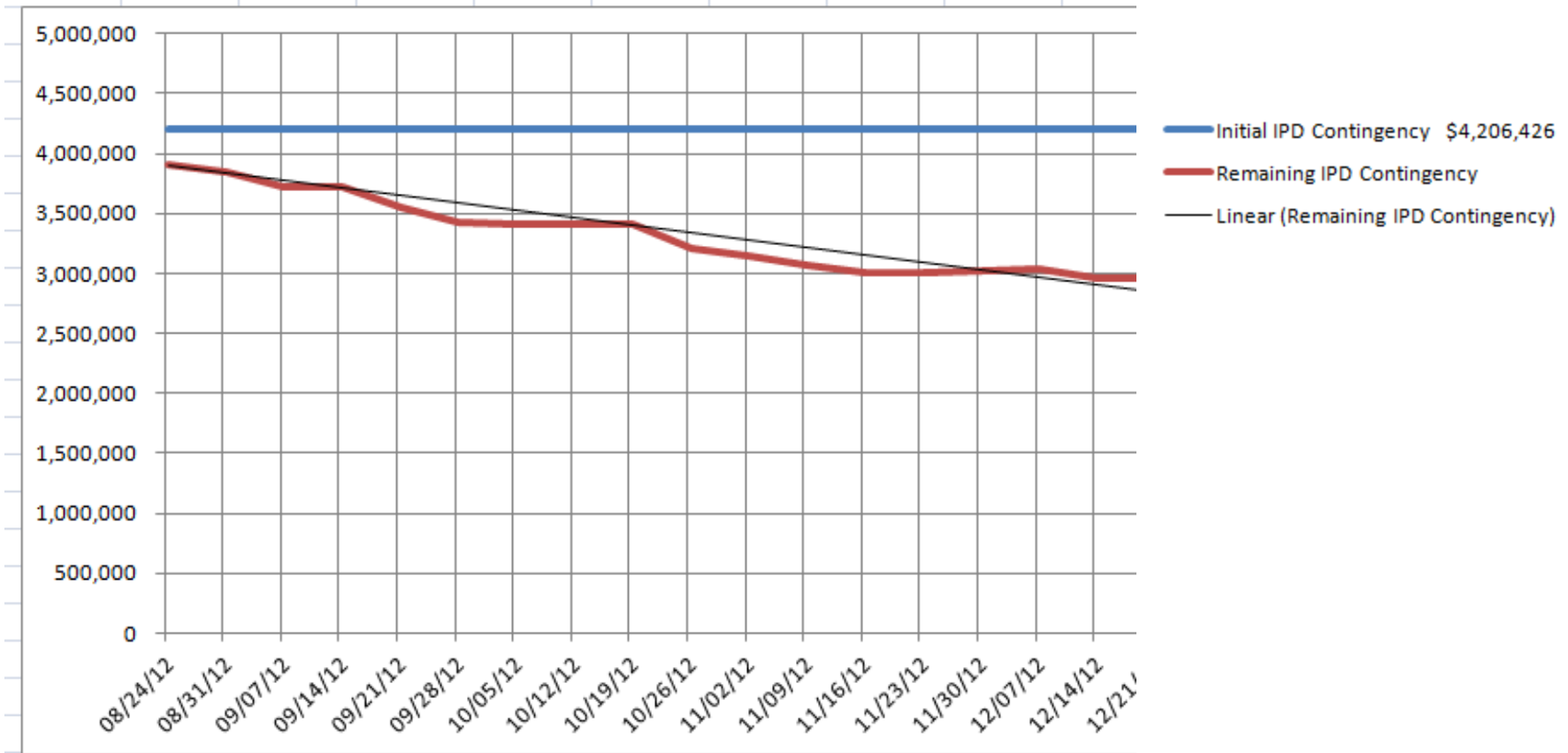


# Cost Management – Design Productivity

Aug		Sept		Oct	Nov	Dec
Projected	Actual	Projected	Actual	Projected	Projected	Projected
\$ 100,104	\$ 115,771	\$ 93,236	\$ 107,537	\$ 100,784	\$ 97,730	\$ 85,954
\$ 4,058	\$ 13,329	\$ 3,563	\$ 6,842	\$ 4,058	\$ 3,563	\$ 3,728
\$ 3,896	\$ 9,450	\$ 3,896	\$ 5,018	\$ 3,300	\$ 3,960	\$ 2,640
\$ 4,120	\$ 9,446	\$ 2,472	\$ 4,674	\$ 2,472	\$ 1,648	\$ 1,648
\$ 5,243	\$ 5,415	\$ 5,855	\$ 6,245	\$ 6,555	\$ 7,135	\$ 7,135
\$ 117,421	\$ 153,411	\$ 109,022	\$ 130,316	\$ 117,169	\$ 114,036	\$ 101,105
	31%		20%			

# Cost Management – Contingency Burn Rate

## IPD Contingency Trend



# Nothing is Perfect - Roof Truss Example

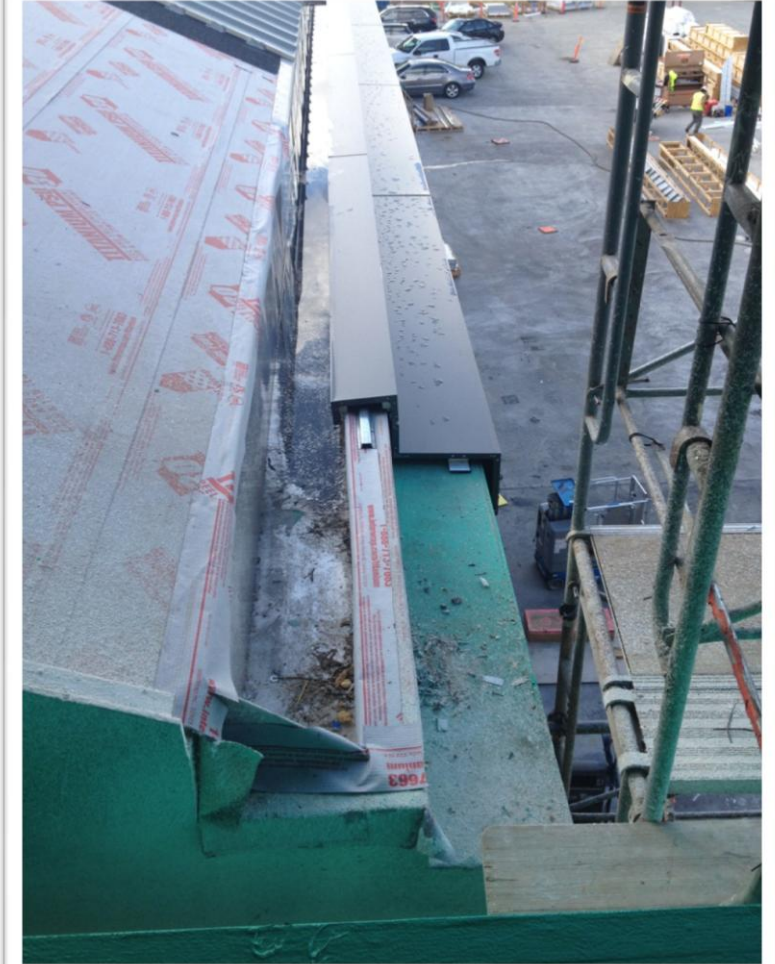




# Prefab Truss Installation



# Truss Deflection

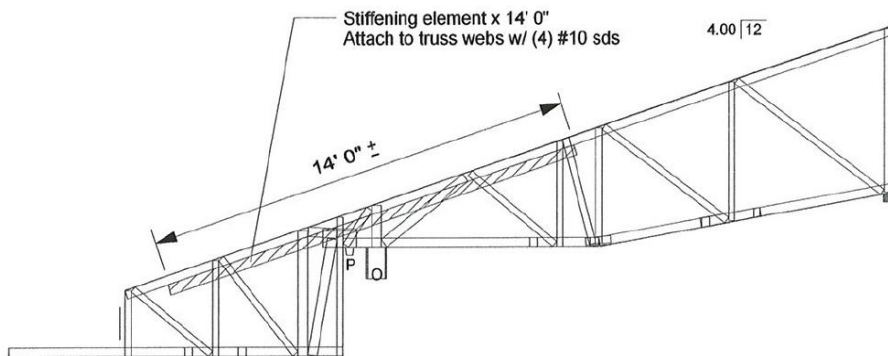




# Truss Supplier Response

At this point, we cannot explain the truss deflections reportedly observed in the field at the Sunnyvale Clinic, which are reportedly about three times the magnitude of the deflections calculated for full design loading. It is possible such field deflections could have resulted from truss damage, improper installation and/or overloading, but we have no evidence of any of these events having occurred.

# Truss Fix



# Truss Fix Outcome

- **\$250,000 Cost (design/construction)**
- \$40,000 recovered from withheld retention
- \$210,000 cost to IPD Team
  - Loss of \$70,000 in shared savings
  - Owner paid \$140,000 in cost

**No Lost Time!**



# Recent Lean IPD Delivery Experience

## Completed Projects - \$238.4 Million

- Sunnyvale Medical Office Building - \$160.3M
- OSHPD Chiller & Electrical Replacement - \$13.8M
- OSHPD Behavioral Health - \$20.7M
- OSHPD Acute Psych Conversion - \$2.9M
- OSHPD Urgent Care - \$5.6M
- Dermatology and Sports Medicine - \$14.4M
- Los Gatos Primary Care Clinic - \$20.7M

## In Process - \$67.2 Million

- Integrated Vision Center - \$21.1M
- Blossom Hill Primary Care Clinic- \$11.3M
- IR/ GI Renovations - \$9.8M
- Mid Peninsula Primary and Specialty Care - \$25M

# Completed Project Stats

- All Projects Completed within Contract Schedules and Budgets
- Net \$25 Million in Unused Owner Contingency
- All Projects Paid Profit to the Teams Plus Incentive Payments
- No Change Orders for Additional Days
- No Claims

# Going Forward

- Drive Down the Cost
- Improve Benchmarking of Project Costs
- Focus on Building Culture
- Improve Transition to Operations
- Change to Total Cost of Ownership Model
- Speed Up Delivery Times

Thank you!

# Questions?

## Contact Information:

James Pease

Sutter Health – Facility and Property Services

[peasejd@sutterhealth.org](mailto:peasejd@sutterhealth.org)

650-833-8773