

# IPD on Small Projects Is it possible? Is it worth it?

November 30, 2016 Integrated Project Delivery 2016 James Pease – Sutter Health

#### **Presentation Summary**



# **Chilled Water Replacement**



# **Electrical System Replacement**



# ED to Urgent Care



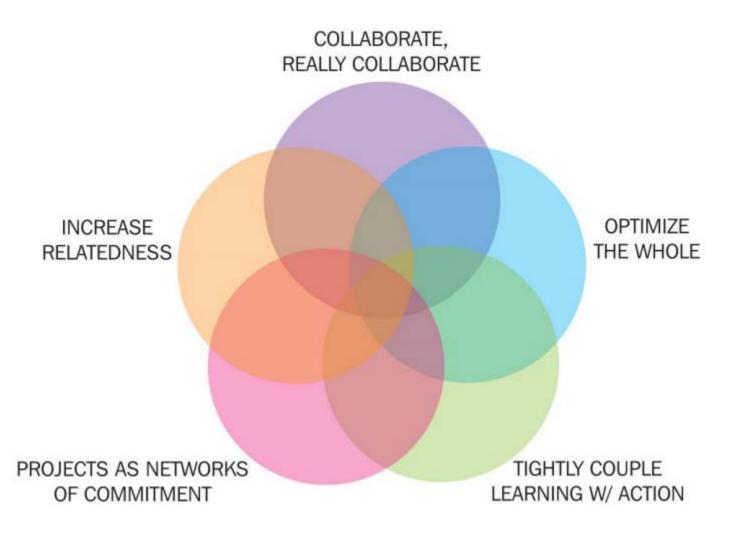
#### Lessons Learned



## **Going Forward**

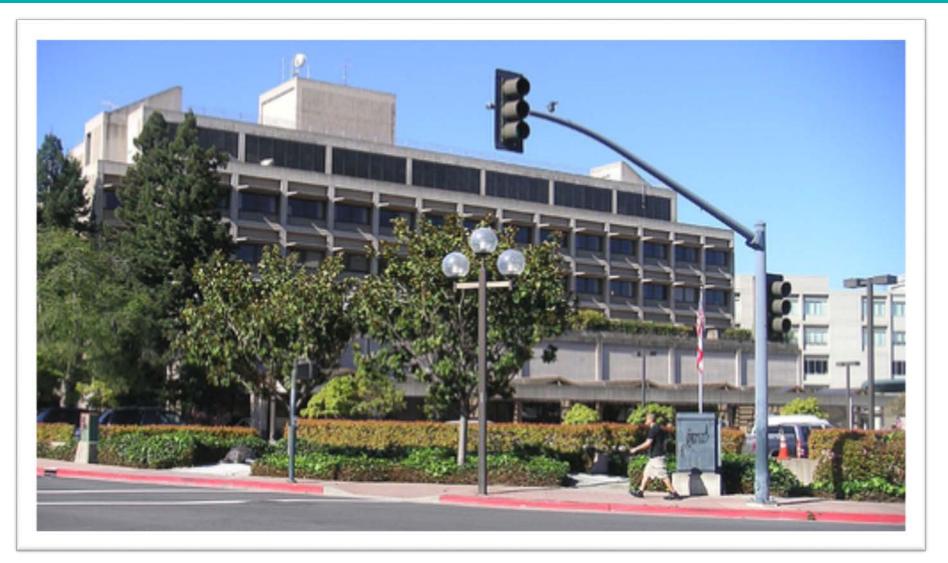


## 5 Big Ideas





## Mills Campus – San Mateo





## **Chilled Water System Replacement**





- \$3 Million Construction OSHPD
- Part time project commitment for team
- Short construction duration
- Limited economies of scale
- Limited "Production" work



## **Project Kick Off**

- 1. "We are already Collaborative"
- 2. Tools would make us "LEAN"
- 3. 1<sup>st</sup> IPD Project for Every Team Member (including me)

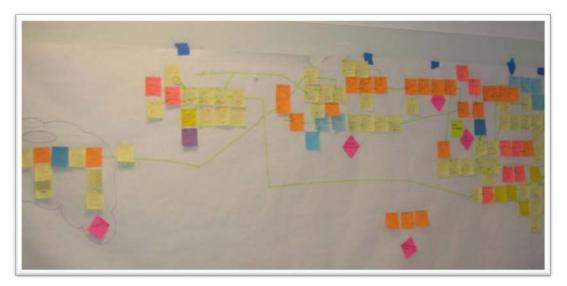




#### Tools – What did we use?

- "Big Room"
- Pull Scheduling
- Weekly Work Plan
- No BIM

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## **Project Outcomes**

- 1. Project completed late
- 2. Project finished well under budget
- 3. No issues with hospital operations



## PDCA – Lessons Learned



- 1. Last Planner was not the Last Planner
- 2. Project Below Budget
- 3. ....but not for "right" reasons
- 4. We didn't create a culture
- 5. Didn't do Weekly Work Plan in person (or weekly)
- 6. Planning was Effective for Hospital Operations



## **Electrical System Replacement**

- \$6 Million Construction OSHPD
- Major Electrical Shutdowns
- Many phases of work
- Longer Construction Duration
- Majority of Work was One Trade





## **Electrical Project Kick Off**

#### Start by creating a culture!

- IFOA Informational Sessions
- Intro to Lean Training (Including the Last Planners)
- Study Action Teams
- Internal Pankow help
- External help a different perspective
- Field Info Sessions 5S, Explanation of the IFOA to the Foremen (Real Last Planners)





#### **Estimate Speed Dating**

Mills - Emergency Power Generator Project EMP - Estimate Review Meeting

8:00 a.m. to 8:30 a.m.	Introduction
	Schedule meeting to set (2) short term team
	goals and (1) long term team goal for Lean
	improvement
8:30 a.m to 9:00 a.m.	Cluster 1
9:00 a.m. to 9:15 a.m.	Out brief 1
9:15 a.m. to 9:45 a.m.	Cluster 2
9:45 a.m. to 10:00 a.m.	Out brief 2
10:00 a.m. to 10:30 a.m.	Cluster 3
10:30 a.m. to 10:45 a.m.	Out brief 3
10:45 a.m. to 11:15 a.m.	Cluster 4
11:15 a.m. to 11:30 a.m.	Out brief 4
11:30 a.m. to 12:00 p.m.	Plus/Delta

Ask Questions	BFHL	PANKOW	E STRUCTURE	YOUNG	MCGUIRE & HESTER	CAMISSA & WIPF	ROMAK	TEC ACCUTITE
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## **Detailed Budgeting**

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		Young Electric Precon - Jim verify	hours		0	0							0	0	N/A	0	0	0
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		Site Lighting	257		0	257	75						257	97	62%	160	91	251
		Roof Conduits	163	-	0	163	48	48	12				163	107	34%	56	108	164
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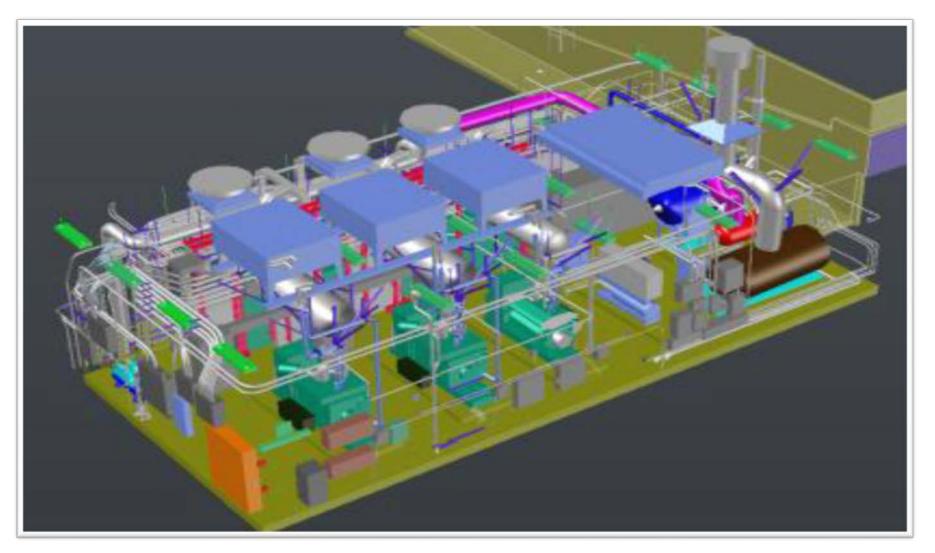


## **BIM - Laser Scanning**



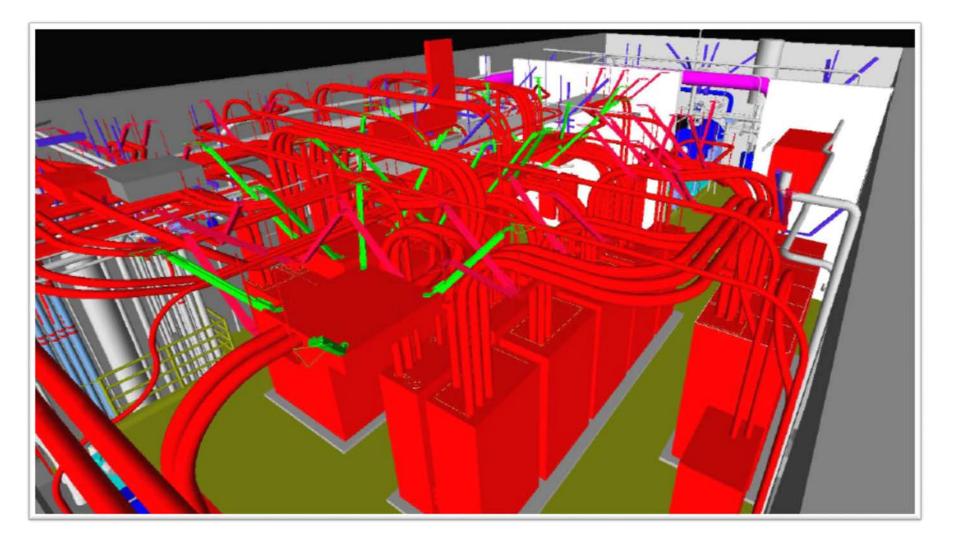


#### **BIM - Existing Conditions Model**



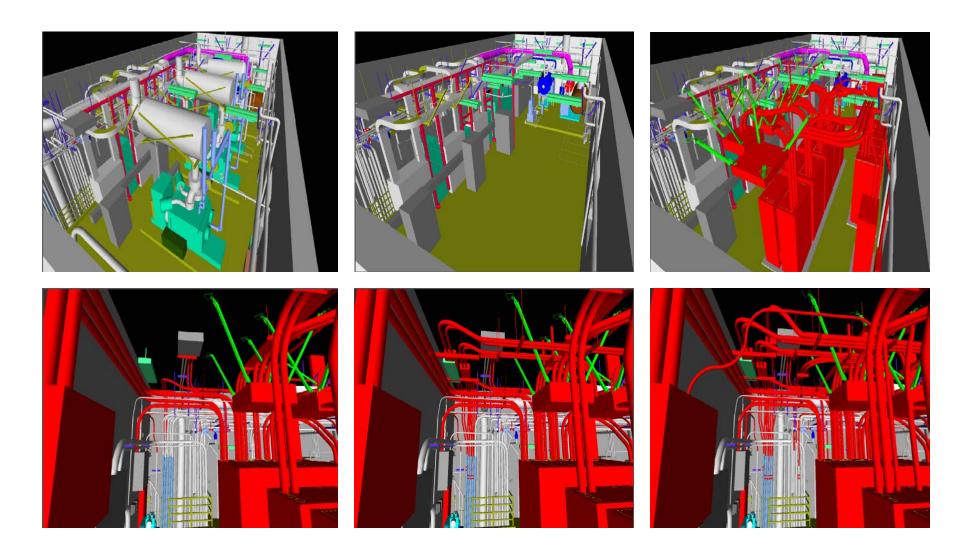


## **BIM - Final Condition Model**



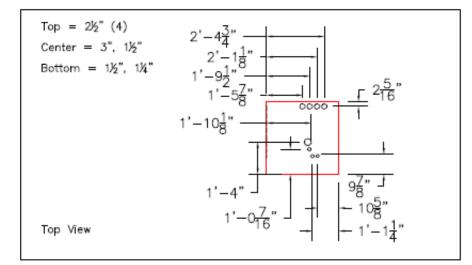


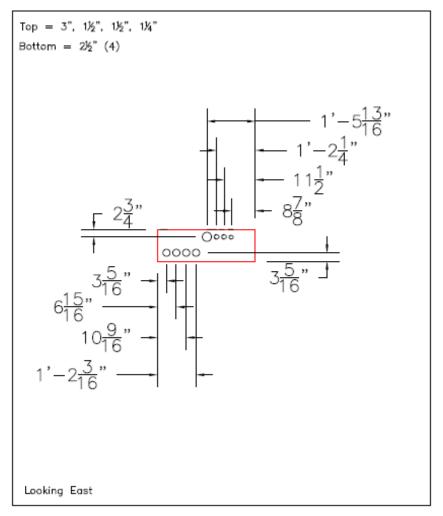
### BIM - Experimenting with 4D





#### **BIM - Spool Sheets**







#### **Project Outcomes**

- Project Completed on Schedule
- Project Completed under Budget
- Major Resequence completed without a hitch
- 16 shutdowns completed as scheduled with no unplanned effect on operations



#### Lessons Learned

- Evaluate Cost vs. Benefit of BIM
  - \$140,205 invested up front
  - 300+ hrs of electrical foreman prior to permit
- Focus on Commitments
- Solve Problems Face to Face
- Go to Mtgs for Downtime and SATs
- Train 2<sup>nd</sup> tier subs and journeymen
- Impressed OSHPD



## Converting the ED to an Urgent Care

- \$2.5 Million Construction OSHPD
- Full gut remodel of Emergency Department
- Design/Permit submittal while occupied
- Tight schedule in occupied areas
- Significant work for all trades



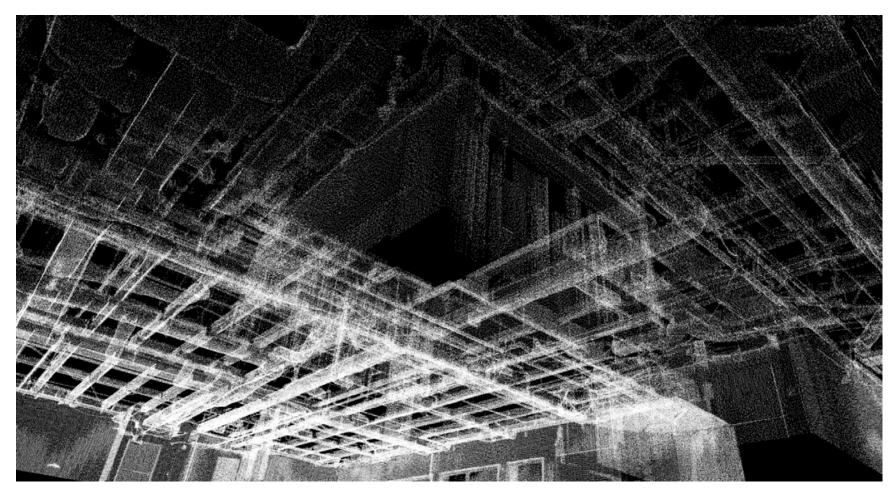


# **Existing Conditions**





## Laser Scanning



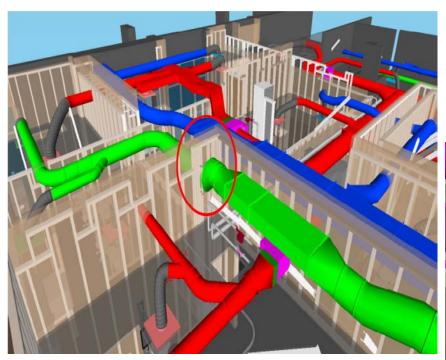


## Model of Existing Conditions





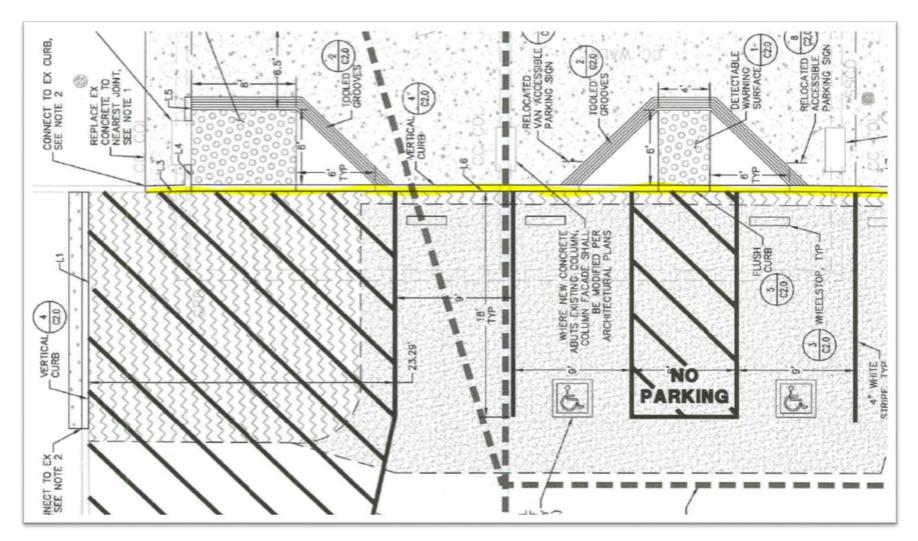
#### **Clash Detection of New Model**





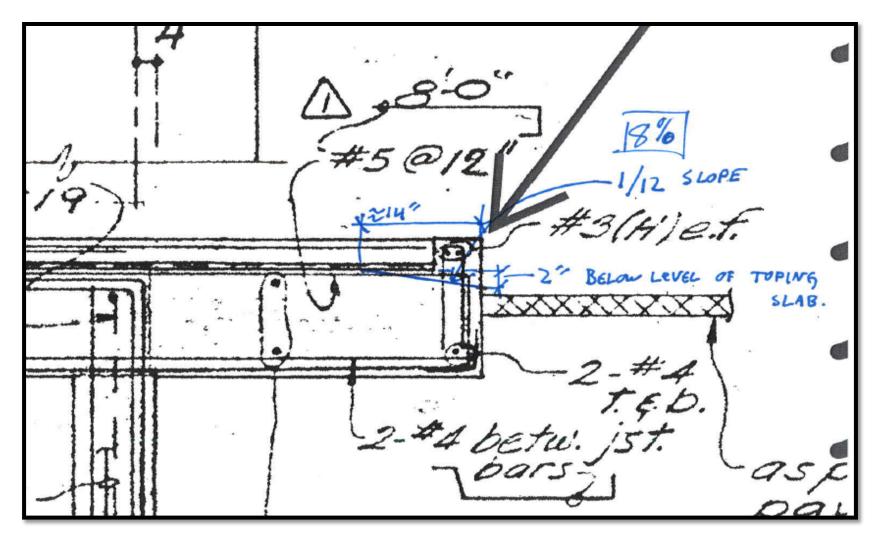


#### Two phased entry work





#### Mind the details





#### The easy part turned out to be difficult. .





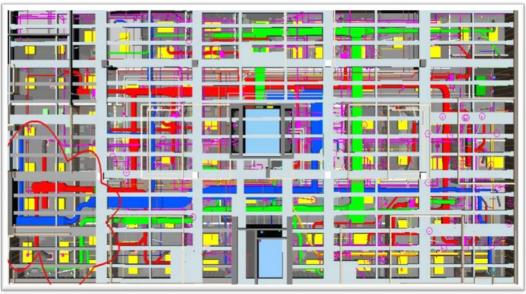
## **Project Outcomes**

- 1. Project completed late
- 2. Project finished slightly over budget
- 3. Construction went **very well**
- 4. No issues with hospital operations
- 5. Innovations:
  - Prefab walls installed in 4 days
  - 95% of roto hammering done in 1 day
  - Takt time reduced TI schedule 7 weeks



#### Lessons Learned

- 1. Install according to the model
- 2. Pay attention to the details small stuff can hurt you
- 3. You can spend too much on Precon
- 4. Watch scope creep carefully





# Challenges with IPD on Small Projects

Large Project	Small Project
Dedicated Staff	Part-time Staff
"Big Room"	Can't Find a Room
Long-term Involvement	Short-term Involvement
Large Economies of Scale	Limited Economies of Scale
Extended Schedule	Compressed Schedule
Opportunities for Target Value Production	Limited Opportunities for Target Value Production
Availability of Tools	Choose tools wisely



## **Overall Lessons Learned**

#### 1. Works great

- small complex projects
- when schedule is important
- when working with OSHPD
- 2. May not be cheapest option
- 3. Be prepared for the early cost
- 4. Learning takes time, allow the team to develop





# Going Forward (Recommendations)

- 1. Start with medium size project then move to smaller projects
- Deliberately create and foster a culture
   Invest in your partners
- 3. Be careful when starting the engine
- 4. Start tracking costs / risks early
- 5. Analyze risks then determine if BIM will help





#### When is IPD worth it?

#### VALUE OF IPD ON PROJECTS

	Large	Small
Complex	HIGH	MODERATE TO HIGH
Simple	MODERATE	LOW



#### **Questions?**

# Thank you



James Pease Regional Manager – Project Delivery Sutter Health <u>peasejd@sutterhealth.org</u> (Cell) 650-833-8773

#### http://leanipd.com

