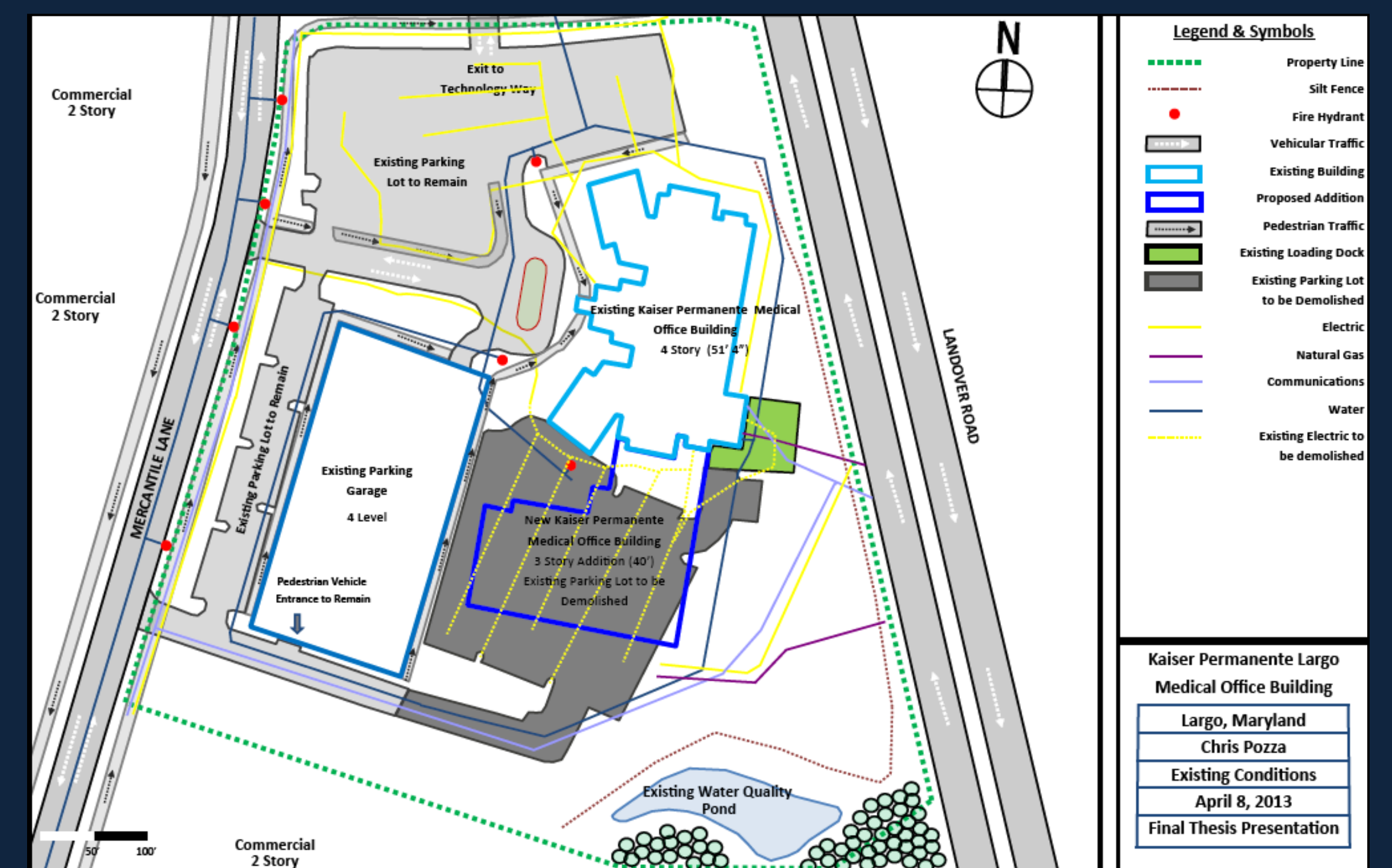
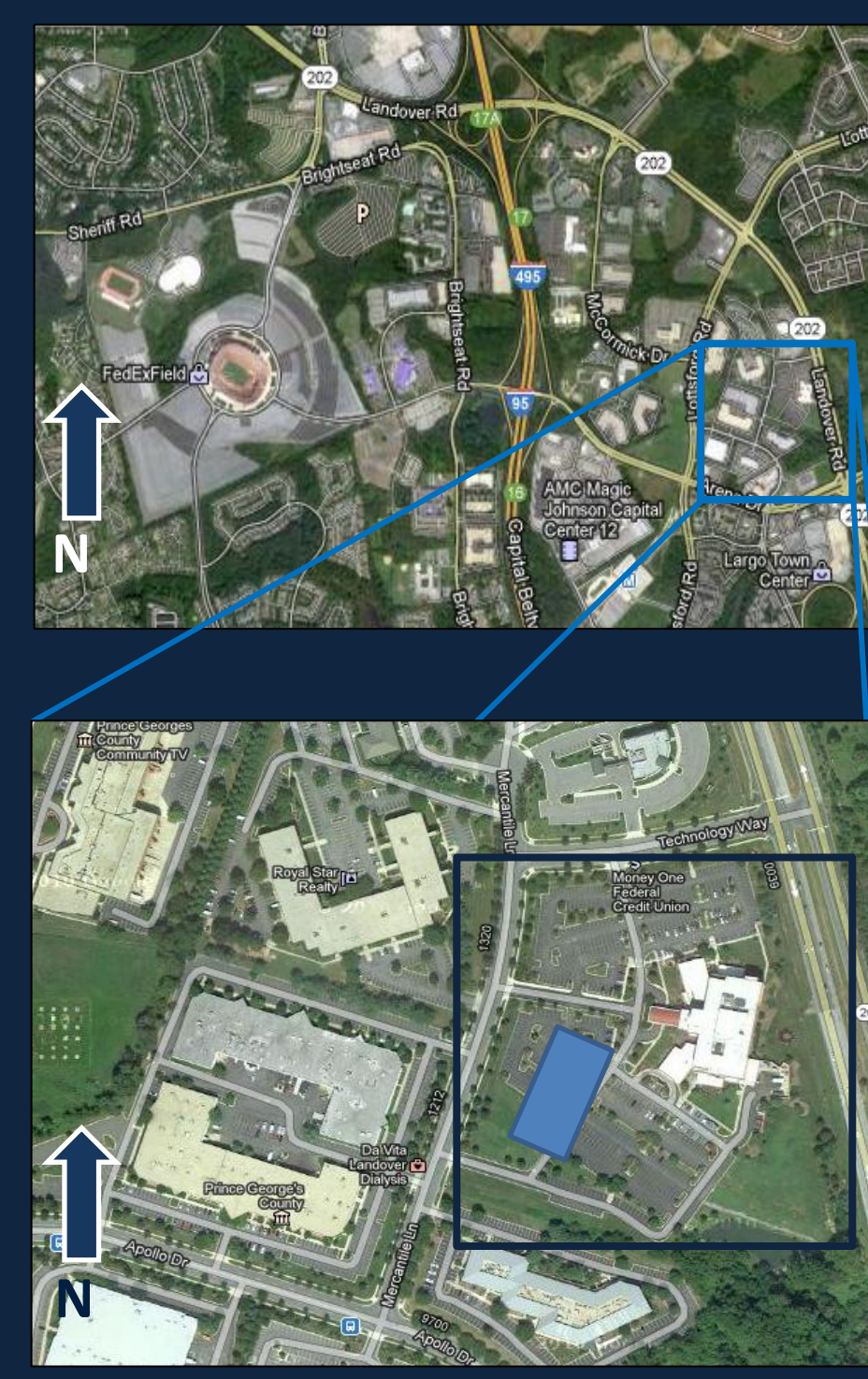
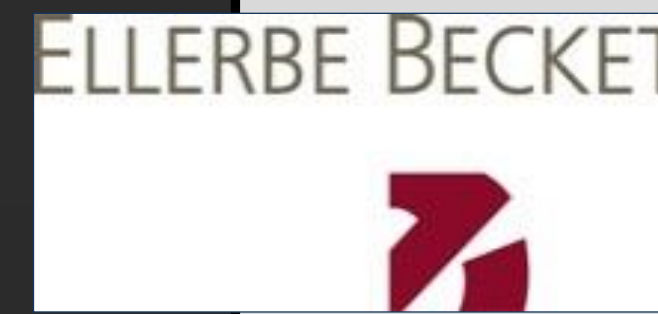
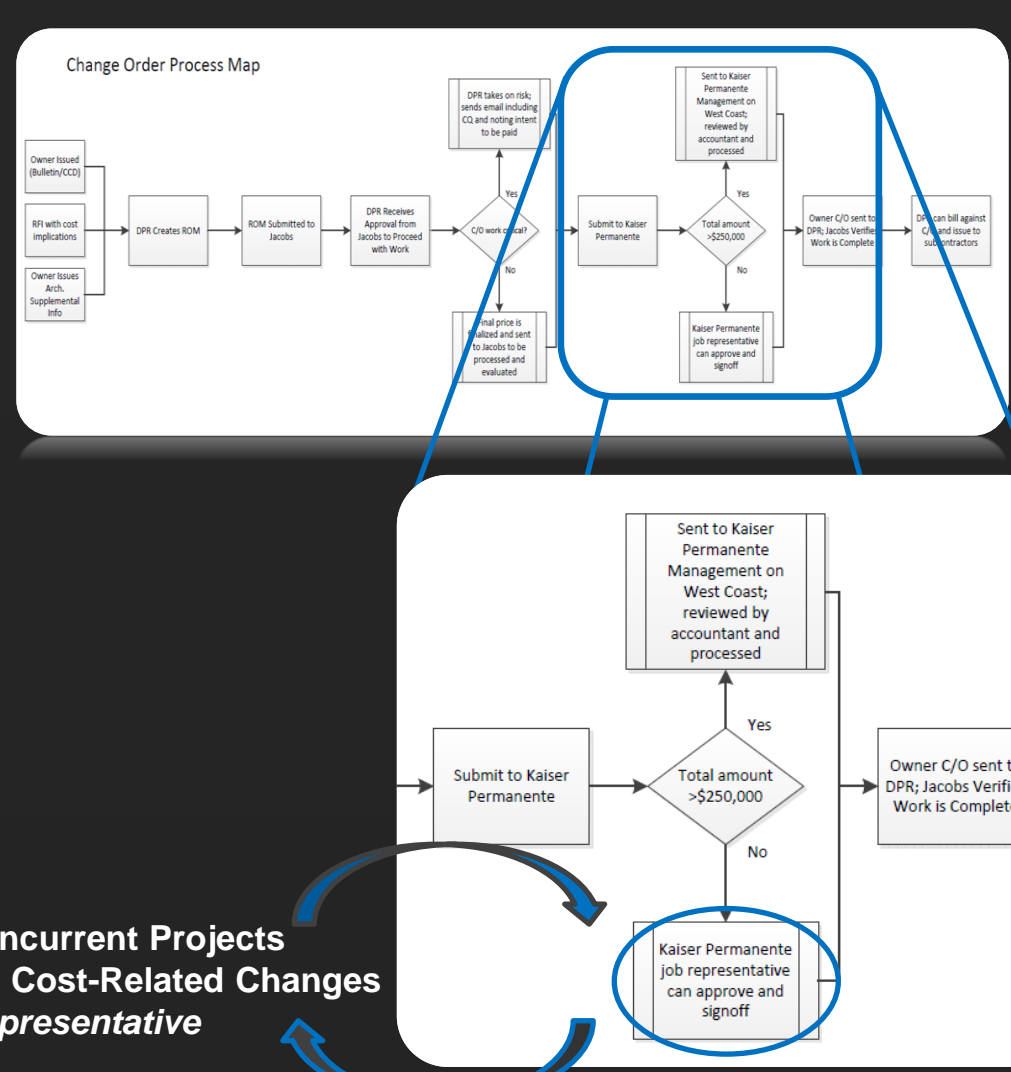


# Kaiser Permanente Largo Medical Office Building

Largo, MD



## Analysis 1 – Change Order Management



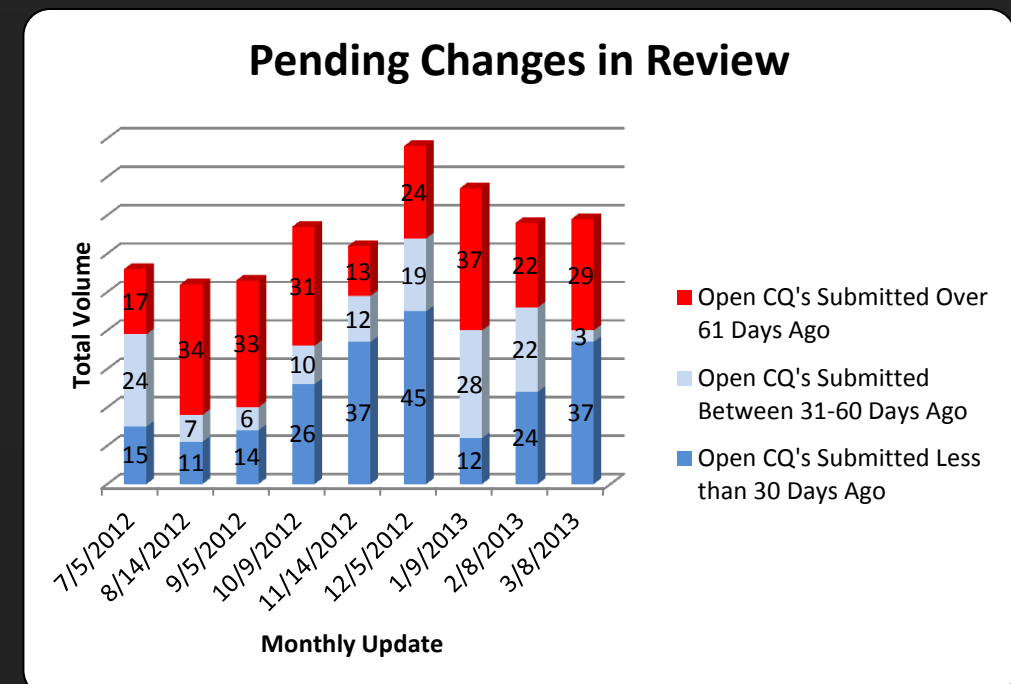
Description	Sum of Amount	Total	Average
Approved	\$6,249,917.07	148	\$42,229.17
Pending Do Not Proceed	\$498,568.82	8	\$62,321.10
Pending Proceeding	\$176,653.59	24	\$7,360.57
Pending Proceeding with Authorization	\$1,616,746.32	49	\$32,994.82
ROM Do Not Proceed - Non-Proceeding	\$593,500.00	5	\$118,700.00
ROM Proceeding	\$224,522.85	30	\$7,484.10
ROM Proceeding with Authorization	\$2,864,823.18	58	\$49,405.23
ROM Do Not Proceed	\$671,558.91	22	\$30,525.41
In Dispute - Proceeding	\$286,834.72	28	\$10,244.10
<b>Total</b>	<b>\$12,983,125.46</b>	<b>372</b>	

Trade Stacking

Schedule Compression

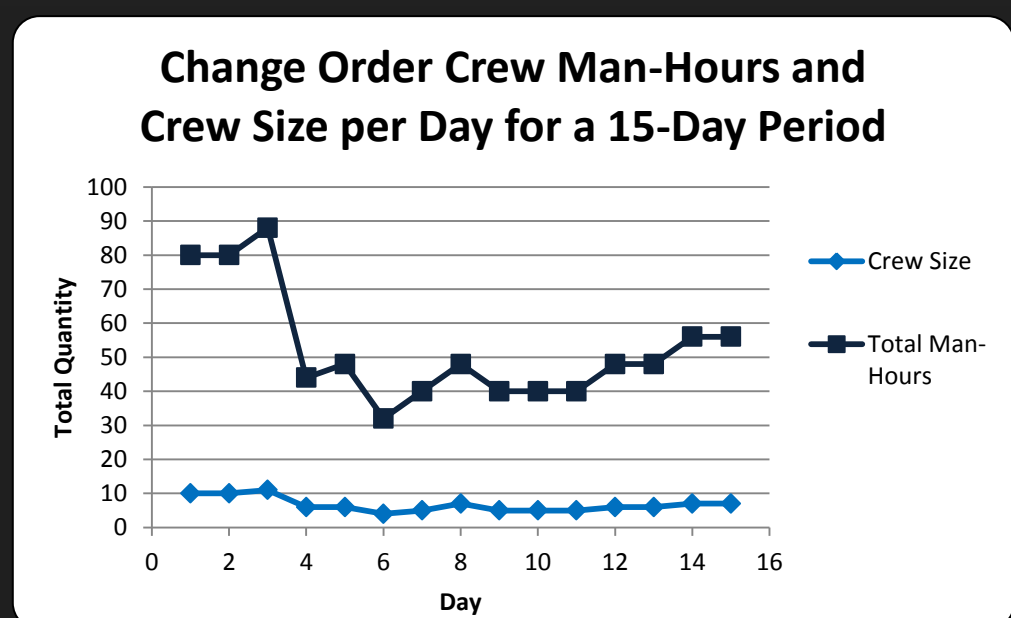
Multiple-Shift Work

Morale Issues



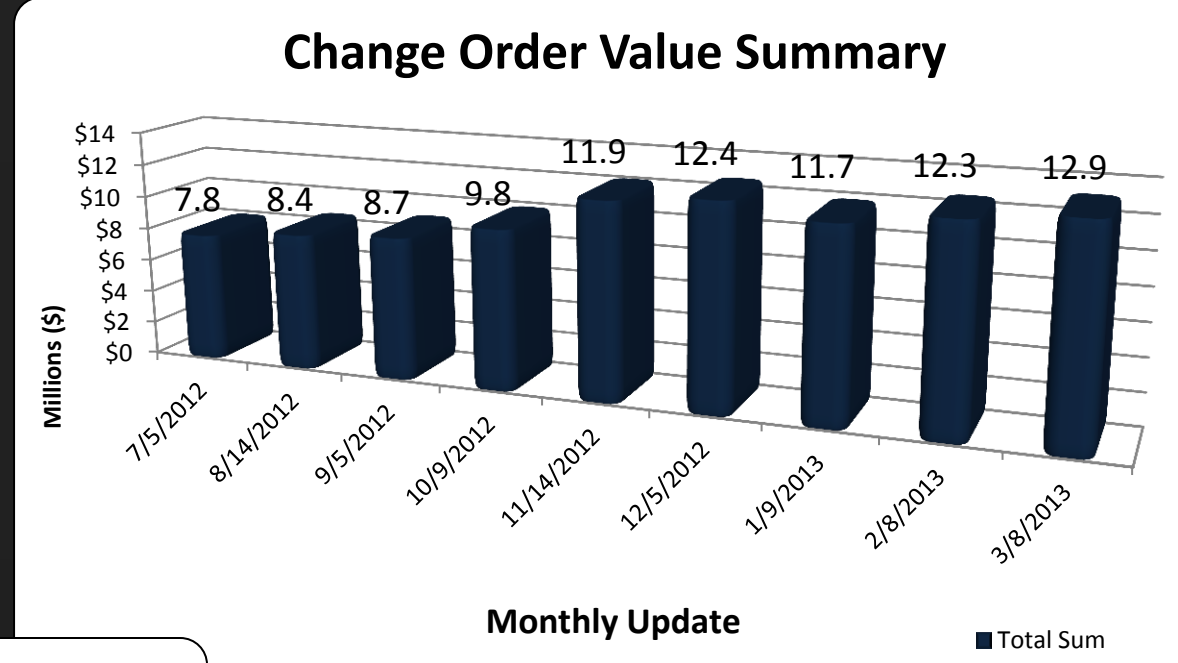
Factors Impacting Labor Productivity:

- Timing
- Intensity
- Type of Work
- Impact Type

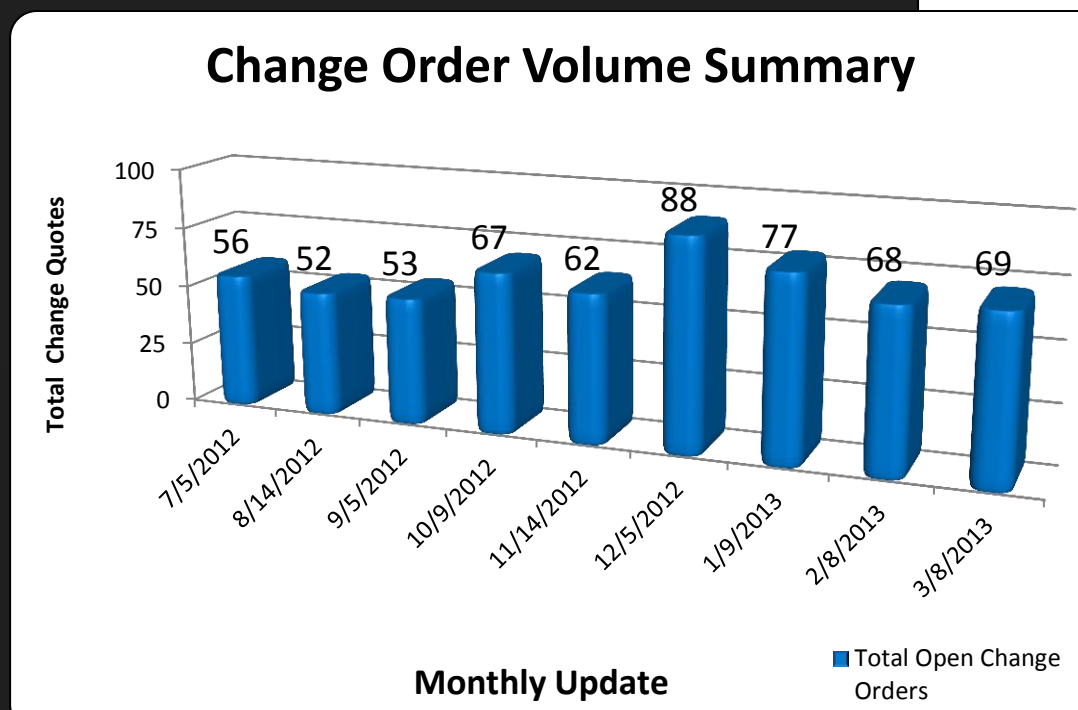


**788 Man-Hours**  
**\$58,000+ Purely Labor Cost**

**Original Contract Value: \$32,504,687**



**Final Completion: March 29, 2013**



Give Authority to the CM to Approve Changes



- + Significantly reduce management time
- + Reduce turnaround time for large changes
- + Better cash flow for subcontractors

Proposed Schedule Savings			
Activity Savings	Days	Weeks	Months
Activity Savings	61	8.7	2.0
Schedule Savings	45	6.5	1.5

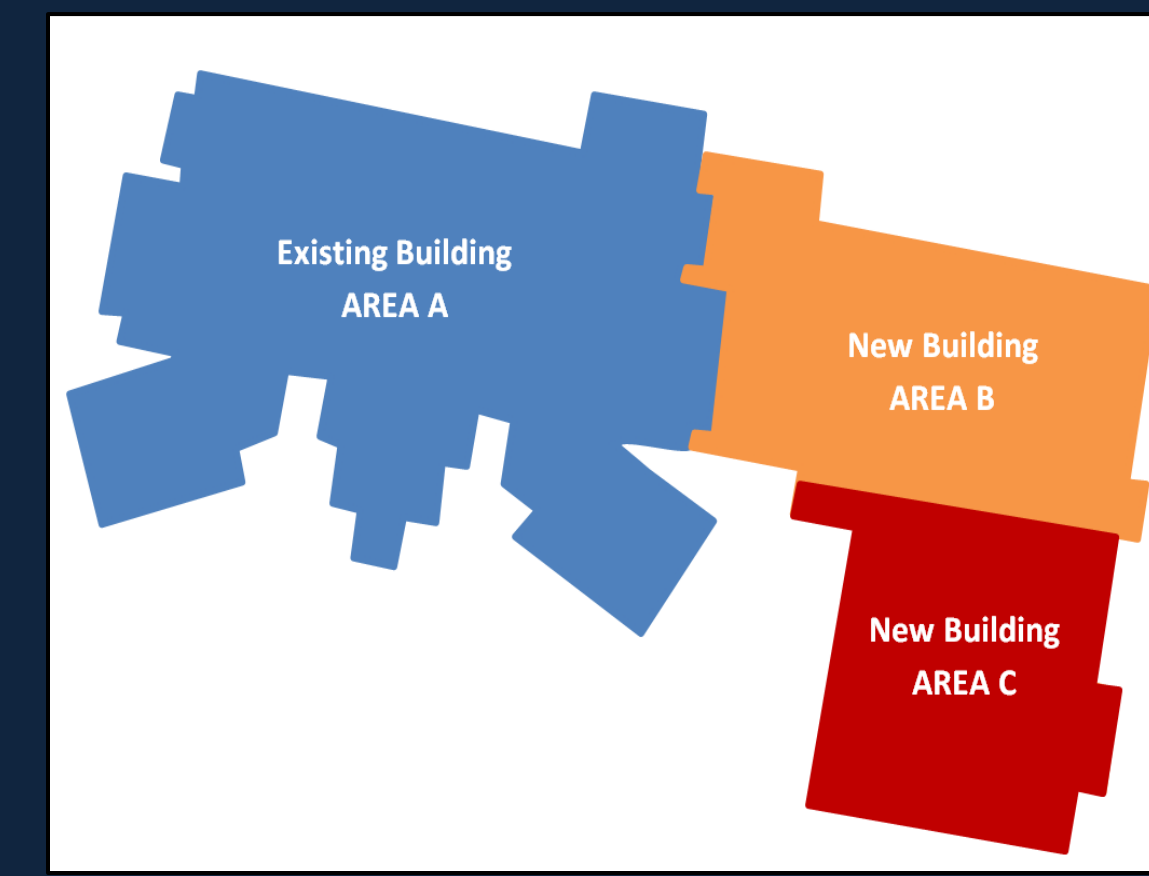
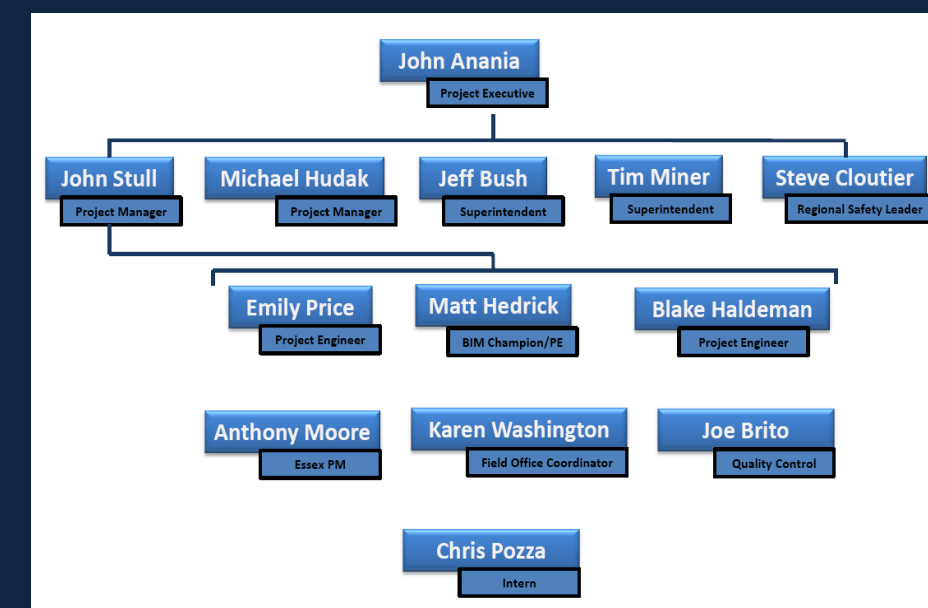
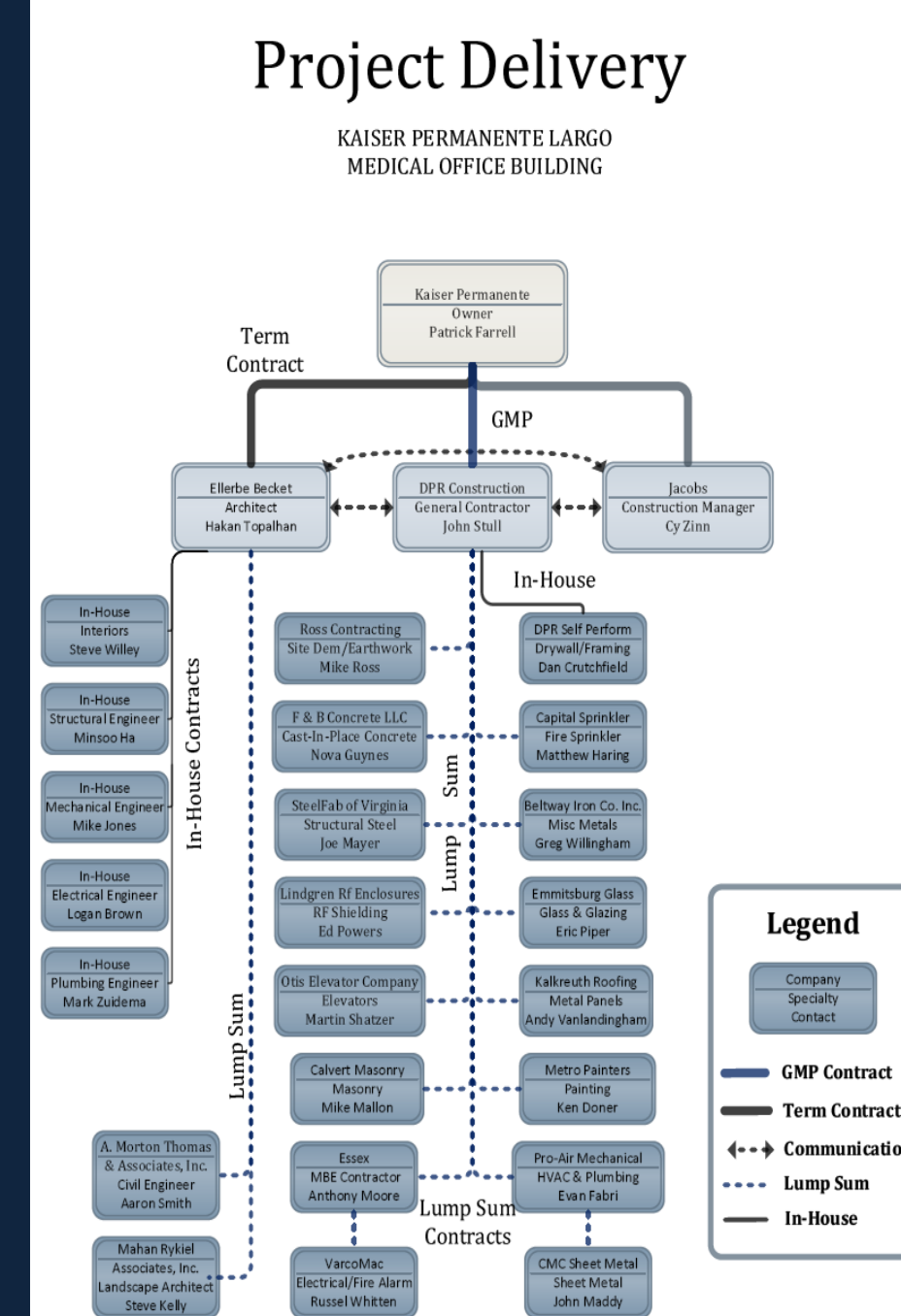
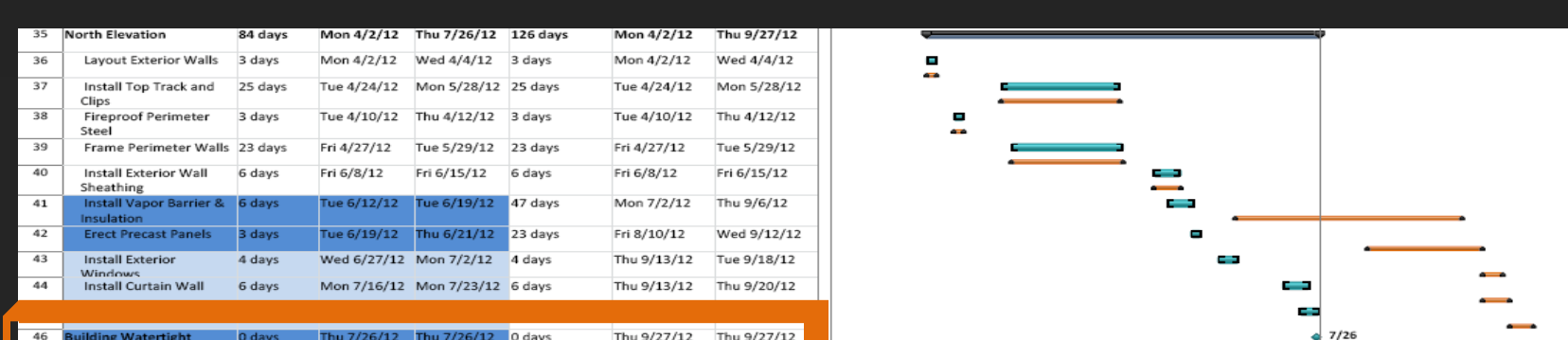
Final Recommendation

Implement precast panels  
Current systems won't be affected

Final Cost Comparison Summary	
Proposed System Cost	\$1,257,190.37
Additional Crane Cost	\$44,078.22
Actual System Cost	\$1,131,376
General Conditions Savings	\$295,264.35
<b>Total Cost Savings</b>	<b>\$125,371.76</b>



**Schedule savings are greatest benefit!**



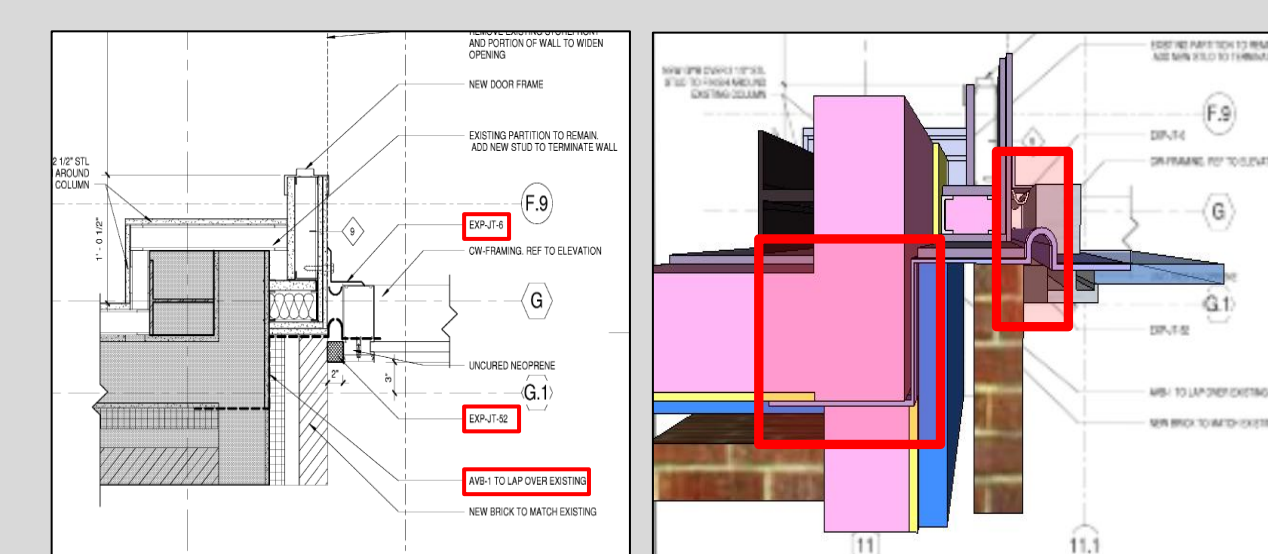
Academic Acknowledgements  
Architectural Engineering Faculty  
Dr. Robert Leicht (Advisor)



Special Thanks to:  
My Family & Friends

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Patrick Farrell of Kaiser Permanente  
Steve Willey & Mark Zuidema of Ellerbe Beckett, now practicing as AECOM  
Cy Zinn of Jacobs  
Mark Taylor of Nitterhouse  
Chuck Wynings & John Varga of Tindall Corporation  
Andy Rhodes & Nate Patrick of Southland Industries  
Cory Trent of Modular Services  
Alex White & Dennis Gallant of Hill-Rom  
PACE Industry Members

## Analysis 3 – Use of Virtual Mock-Ups for SIPS



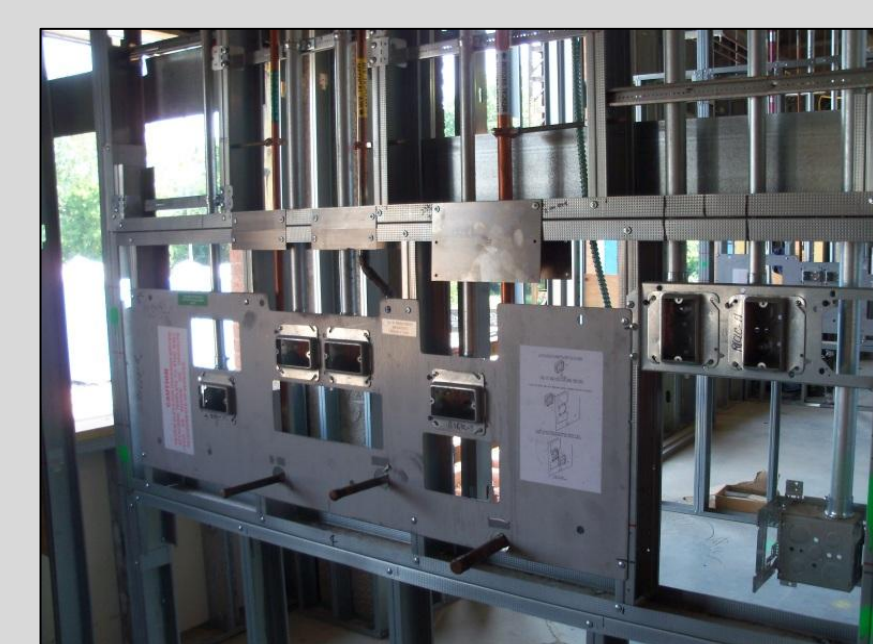
**2.5 Hrs. BIM Champ**  
**1 Hr. Superintendent**  
**20 Man-Hrs. Saved**  
**\$1,700 - Potential savings**

Potential Value Added:

- ❖ Strong visualization and communication tool for all parties
- ❖ Subcontractor feedback and proper preparation
- ❖ Eliminate coordination issues
- ❖ Show end users how existing building will be impacted
- ❖ Perform premium-rate work the most efficient way possible
- ❖ Cause as little disturbance for building occupants



## Analysis 4 – Modularization Comparison

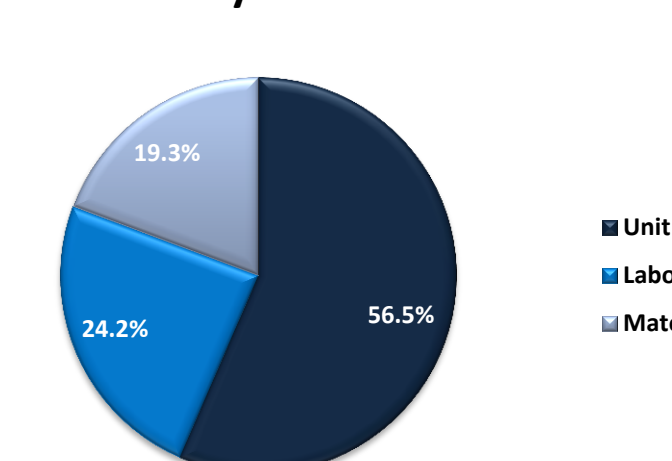


Final Recommendation

With chosen design, modules can only benefit project

- Recommend for future projects
- ❖ Reduces labor
- ❖ Improving quality
- ❖ Streamlines MEP rough-ins

Current System Cost Breakdown



Schedule Savings (Days)

Activity	Average Unit Durations (hrs.)	L1 - Area A	L1 - Area B	L1 - Area C	L1 - Area D	Total
Frame Walls	2	4	2	6.3	12.3	
In-Wall Electric Rough-Ins	3	6	3	9.4	18.4	
In-Wall Med Gas Rough-Ins	5	10	5	15.6	30.6	
In-Wall Tele/Data Rough-Ins	1.5	3	1.5	4.7	9.2	
<b>Total</b>					<b>70.4</b>	