

GEISINGER GRAY'S WOODS AMBULATORY CARE CAMPUS - PHASE II



**Rendering of front view supplied by Alexander Building Construction with Owner Permission

**AE 481W:
Senior Thesis**

**Proposal
Presentation**

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BUILDING BACKGROUND

■ Function

■ Outpatient Surgery Center

- Houses 70 Exam Rooms, 4 Operating Rooms, 4 Endoscopy Suites & 2 Main Therapy Rooms
- Phase I (2007-2008): Ambulatory Services
- Phase II (2012-2014): Surgery Care

■ Project Overview

- Location: Port Matilda, PA
- 77,560 GSF
- \$20.1 Million GMP
- 18 Month Duration
- Design-Bid-Build with CM @ Risk
- LEED Certified

GEISINGER
REDEFINING BOUNDARIES*

ALEXANDER
A BUTZ FAMILY COMPANY 

ANALYSIS 1: VIRTUAL MOCKUPS FOR OPERATING ROOMS

■ Problem

- Field Mockup Process
- Design Input End Users
- Costly & Time Consuming
 - 8-week design review process
- Areas Left Until End
- Obstruct trades
- Risk of Delays

■ Research Opportunity

- Use of Virtual Mockups for Design Reviews
- Doctor & Nurse Input
- Design Prior to Construction
- Reduction of Waste
- Cost & Schedule Benefit



*Pictures taken from Sonali Kumar's Dissertation on EVPS

ANALYSIS 2: BUILDING FAÇADE PREFABRICATION

■ Existing Conditions

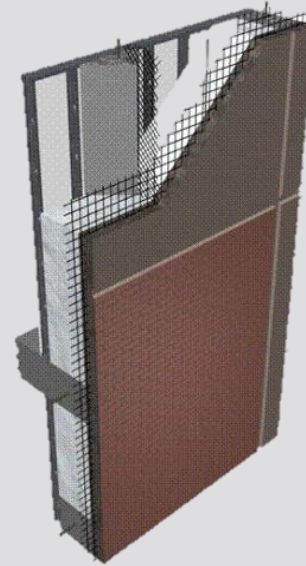
- Brick Masonry – 103 working days
- Curtain Wall – 25 working days
- Critical Path

■ Problem

- Extensive Manpower
- Detailed Connections
- Weather Delays
- Site Congestion

■ Research Opportunity

- Prefabricating Exterior Panels
- Cost and Schedule Analysis
- Alternate Systems
- Mechanical, Structural, and Architectural Breadths



*Picture taken from
www.altusprecast.com

Vs.



*Picture taken from
www.empireconstruction.com

Mechanical Breadth:

- Insulation Properties
- Thermal Characteristics
- Heating/Cooling Loads
- Façade Joints

Structural Breadth:

- Panel Loads
- Structural Analysis
- Panel Connections
- Foundation Analysis

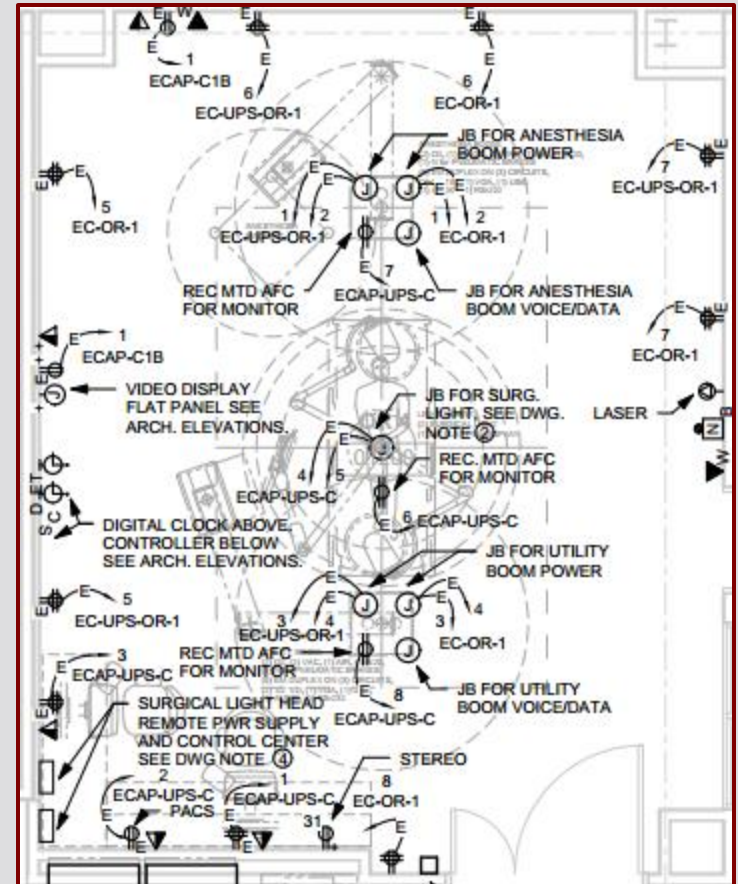
ANALYSIS 3: EQUIPMENT PROCUREMENT & INSTALLATION

■ Problem

- Medical Equipment managed by owner
- Usually Procured Late in Project
 - Most Up-to-Date
 - Push Payments Back
- Challenge for equipment Rough-ins

■ Research Opportunity

- Effective methods for information Exchange
- Implementing Strategy
- Least Impact on Cost & Schedule
 - Reducing Changes/Rework
- Use of Technology for Workforce



*Operating Room Electrical Plan taken from sheet E5.3.1 on the Project Drawings

ANALYSIS 4: STRUCTURAL COMPOSITE SLABS

- **MEP, Interior & Structural account for 80% of building costs**
 - Value Engineering
 - MEP & Interior vital to quality & performance
 - Focus on Structural System
 - Composite Metal Decking

- **Research Opportunity**
 - Re-evaluate current structural system
 - Lightweight to Normal Weight Concrete
 - Structural Analysis
 - Potential Impacts on Fire Resistance & Moisture Content
 - Cost/Benefit Analysis

Structural Breadth:

- Beam & Column Sizing
- Concrete Thickness
- Metal Decking Span
- Metal Decking Type
- Fireproofing

** LW vs. NW Concrete Slabs				
Concrete Type	Unit Weight (PCF)	Strength (psi)	Cost/CY	*Cost/SF
Normal Weight	150 +/- 3	5,000	\$108.0	\$1.97
Lightweight	110 +/- 3	3,000	\$133.0	\$2.30

*2½ " thick floor slab including finish, no reinforcing

**Data taken from RS Means 2013

QUESTIONS?

