

# DRAFT PRESENTATION OUTLINE

The Community Hospital Addition



Wednesday, March 29, 2017

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THE PENNSYLVANIA STATE UNIVERSITY Senior Thesis - Spring 2017

1. Title Slide (1 slide)
2. Presentation Overview (5 slides)
3. Project Background (3 slides)
  - a. Project Information
  - b. Project Team
4. Analysis 1 – Prefabricated MEP Racks (5 slides)
  - a. Analysis Background
  - b. Existing Conditions
  - c. Site Logistics
  - d. Cost Comparison
  - e. Schedule Comparison
  - f. Results & Recommendation
5. Analysis 2 – Prefabricated Headwalls (5 slides)
  - a. Analysis Background
  - b. Existing Conditions
  - c. Site Logistics
  - d. Cost Comparison
  - e. Schedule Comparison
6. Results & Recommendation
7. Analysis 3 – Full Prefabricated Exterior Façade (12 slides)
  - a. Analysis Background
  - b. Existing Conditions
  - c. Alternative Systems
  - d. Mechanical Breadth (2 slides)
  - e. Choosing an Alternative System
  - f. Structural Breadth (2 slides)
  - g. Site Logistics
  - h. Cost Comparison
  - i. Schedule Comparison
  - j. Results & Recommendation
8. Analysis 4 – Integration of Virtual Mock-Ups (7 slides)
  - a. Analysis Background
  - b. Opportunity Areas
  - c. Comparing Physical vs Virtual Mock-Ups
  - d. Case Study & Summary
  - e. Industry Interviews & Summary
  - f. Implementation Guide
  - g. Results and Recommendation
9. Conclusion and Recommendations (1 slide)
10. Closing Remarks (2 slides)
  - a. Questions

Sample Slides





**Community Hospital  
Addition  
Healthcare  
Palmyra, PA**

Final Presentation  
AE Senior Thesis 2017

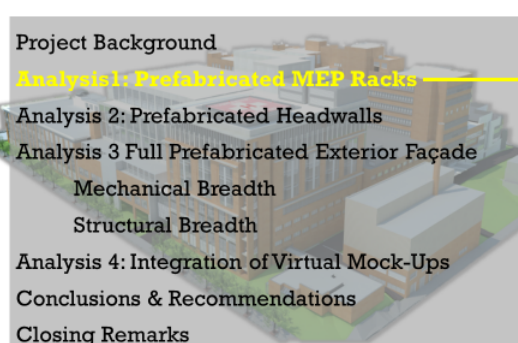




Nicholas A. Slobozien  
Construction Option  
Faculty Advisor | Dr. John Messner

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### Prefabricated MEP Racks



- Project Background
- Analysis 1: Prefabricated MEP Racks**
- Analysis 2: Prefabricated Headwalls
- Analysis 3 Full Prefabricated Exterior Façade
- Mechanical Breadth
- Structural Breadth
- Analysis 4: Integration of Virtual Mock-Ups
- Conclusions & Recommendations
- Closing Remarks


**Analysis Background**

*Problem* | Additional coordination needed due to stick-built construction for trades in the corridor

*Proposed Solution* | Prefabricated MEP Racks

*Research Goals* | More efficient method:  
Reduce Costs  
Shorten Schedule

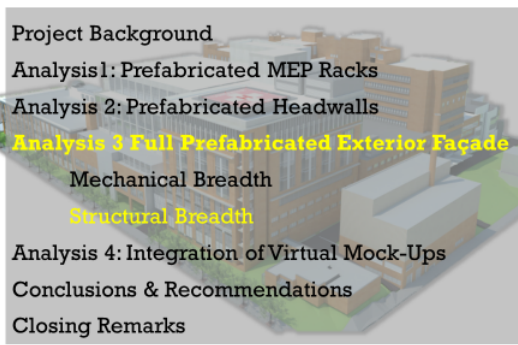
**Existing Conditions**



Proposed Areas

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### Full Prefabricated Exterior Façade



- Project Background
- Analysis 1: Prefabricated MEP Racks
- Analysis 2: Prefabricated Headwalls
- Analysis 3 Full Prefabricated Exterior Façade**
- Mechanical Breadth
- Structural Breadth**
- Analysis 4: Integration of Virtual Mock-Ups
- Conclusions & Recommendations
- Closing Remarks

**Structural Breadth**

*Goal* | To see if the ACM Panel system affects the structural system currently in place

*Reference* | Steel Manual  
Table 3-2

Material Weights by Thicknesses			
Material	Thickness (in)	PSF	PLF
Thin Brick	1-1/8"	5	60
Mortar Joint	N/A	1	12
Brick Support Tray	1"	1	12
Insulated Metal Panel	3-7/8"	8	96
<b>Total</b>		<b>15</b>	<b>180</b>

**Superimposed Dead Load**

*Dead Load = Slab Thickness \* Unit Weight of the Concrete*  
Dead Load = .4167' \* 150 PCF = 62.5 PSF

**Total Weight**

*w = 1.2(Dead Load) \* 1.6(Live Load)*  
w = 1.2(62.5 + 12 + 15)(8.667) + 1.6(60)(8.667)  
w = 930.8358 + 832.032 = 1762.8588 PLF

**Moment**

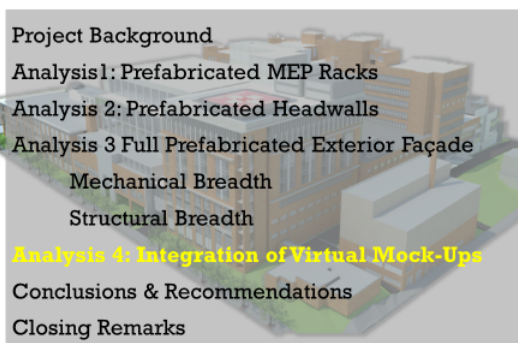
*M\_u = (wl^2)/8*  
M\_u = (1762.8588)(24.0833^2)/8  
= 127808.4395 lbs \* ft

**Check**

128 ft.\* kips < 294 ft.\* kips

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### Integration of Virtual Mock-Ups




- Project Background
- Analysis 1: Prefabricated MEP Racks
- Analysis 2: Prefabricated Headwalls
- Analysis 3 Full Prefabricated Exterior Façade
- Mechanical Breadth
- Structural Breadth
- Analysis 4: Integration of Virtual Mock-Ups**
- Conclusions & Recommendations
- Closing Remarks

**Case Study Review**

*Study* | An Evaluation of Immersive Virtual Reality Systems for Design Reviews

*Authors* | Padi Castronovo, Dragana Nikolic, Yifan Liu & John Messner

*Background* | Two Types Immersive Environments  
Semi & Fully



**Case Study Summary**

- | Semi-immersive better at showing changes in texture
- | Semi-immersive better for large groups
- | Fully immersive better in providing a sense of presence
- | Allows for identify errors early in the preconstruction phase