

## Presentation Outline

- I. Introduction (2 slides - 6 screens)
  - a. Personal (3)
  - b. Building, location, site (3)
- II. Existing Structural System (4 slides – 8 screens)
  - a. Current structural system overview (4)
    - i. Foundation, floor system, gravity system, lateral system
- III. Thesis Proposal (2 slides - 4 screens)
  - a. Explain structural depth (2)
  - b. Explain construction management breadth (1)
  - c. Explain mechanical breadth (1)
- IV. Structural Depth (9 slides - 18 screens)
  - a. Gravity system redesign (6)
    - i. Flat slab with drop panel design
      1. Hand calculations
      2. spColumn Design
    - ii. Column design
      1. RAM model
  - b. Lateral System Redesign (6)
    - i. Wind and Earthquake Design Loads
    - ii. Shear wall design
      1. ETABS model
      2. Hand calculations
  - c. Vibration Analysis (6)
    - i. Current vibration design
    - ii. SAP2000 model
    - iii. Calculations and results
    - iv. Comparison
- V. Construction Management Breadth (3 slides - 6 screens)
  - a. Existing cost and schedule (2)
  - b. Cost Analysis of two systems (2)
  - c. Schedule Analysis of two systems (2)
- VI. Mechanical Breadth (3 slides - 6 screens)
  - a. Existing glazing (2)
  - b. TRACE modeling (2)
  - c. Comparison (2)
- VII. Conclusion (2 slides - 3 screens)
  - a. Acknowledgements (2)
  - b. Questions and comments (1)

Total Number of Screens = 51 screens



# Global Heart and Vascular Institute

Kaleida Health and the University at Buffalo

William McDevitt  
Structural Option  
AE 482 – Senior Thesis



## Presentation Outline

Introduction  
Existing Structural System  
Thesis Proposal  
Structural Depth  
• **Gravity System Redesign**  
• Lateral System Redesign  
• Vibration Analysis  
Construction Management Breadth  
Mechanical Breadth  
Conclusion

## Gravity System Redesign

### Flat Slab with Drop Panels

- Keep existing bay dimensions
- Calculations done by hand
- Check performed with spSlab
- Drops 10.5' by 10.5'
- Initial design called for 5.5" drop panel depth
- Investigated changing concrete to 6 ksi
- Resulted in 3.5" drop panel depth

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- Introduction
- Existing Structural System
- Thesis Proposal
- Structural Depth
- Construction Management Breadth
  - Existing Cost and Schedule
  - **Redesign Cost Analysis**
  - Redesign Schedule Analysis
- Mechanical Breadth
- Conclusion

## Construction Management Breadth

- Redesign Cost Analysis
  - Insert specific pricing calculations

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