I. Introduction
   A. Introduce Myself and What I will be Talking about today (1)
   B. Building – location, design team, function (1)
   C. Existing Mechanical Overview (1)

II. Proposal/Objective (2)
   A. Increase sustainable footprint – include green technologies/lower emissions/Schools Guide
   B. Use energy recovery (non on current system)
   C. Supply necessary ventilation – VAV’s are problematic when turned down

III. Depth – Mechanical
   A. DOAS/Total Energy Wheel (2)
      o Reduction in CFM and Savings of Wheel
   B. FPIU (3)
      o How it works/Provide Constant Ventilation Air Needed
      o Show Psychometric Chart for Chilled Water Temperature
   C. New Chillers and Secondary Chilled Water Loop (2)
      o Purpose
      o Schematic/How it Works
   D. MAE – CFD (4)
   E. Results (2)
      o Cost Savings
      o Energy Savings

IV. Breadth – Electrical
   A. Roof Layout – before and after (1)
   B. Solar Panels/Mounting System used – why and background (1)
   C. Schematic of Back Feed (1)
   D. Payback Analysis and Added Structural Costs (1)

V. Conclusions
   A. LCC Analysis & Recommendations (1)
   B. Acknowledgments: (1)
      o Contacts: Patrick Murphy, Chris Bratz, Carter Tse, and Sharvil Patel
      o Manufacturers: Tim Dorman, David Cunningham, and Justin Anderson
      o Advisor and Faculty
      o Fellow Students
      o Family/friends
   C. Questions (1)

Total Slides: 25
Senior Thesis Presentation

Hunter’s Point South School
Queens, New York

Britt Kern
Mechanical Option
Advisor: Dr. Treado
### Outline

- **Introduction**
  - i. Building Summary
  - ii. Existing Mechanical
  - Proposed Redesign
  - Mechanical Depth
  - Breadth – Electrical
  - Conclusion

### Introduction

<table>
<thead>
<tr>
<th>Size:</th>
<th>153,769 sf</th>
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<tbody>
<tr>
<td>Occupancy:</td>
<td>MHS Schoolhouse</td>
</tr>
<tr>
<td>Levels:</td>
<td>3 Stories/No Cellar/Penthouse</td>
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<tr>
<td>Cost:</td>
<td>$61,099,000</td>
</tr>
<tr>
<td>Construction Dates:</td>
<td>Jan 10, 2011 to Oct 7, 2013</td>
</tr>
</tbody>
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**Project Team**

- **Architect:** FXFOWLE Architects
- **Structural:** Yared A. Selimuk
- **MEP:** Kalten & Lameneau
- **CM:** Skanska

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<th>Britt Kern</th>
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<th>Mechanical Option</th>
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March 25, 2012

Thesis Outline – Hunter’s Point South School

Britt Kern  |  Advisor: Dr. Treado
# Thesis Outline

**Introduction**

**Proposed Redesign**

- **Mechanical Depth**
  - DOAS/Wheel
  - FPIU
  - Chillers/Loops
  - CFD
  - Results
  - Breadth - Electrical
  - Conclusion

- **Current System:**
  - (2) 276 ton chillers
  - LWT 44°F
  - 1 Loop

- **New System:**
  - **Primary Loop**
    - (2) 225 ton chillers
    - LWT 44°F
  - **Secondary Loop**
    - 33.5 ton chiller
    - LWT 58°F

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</table>
### Outline

- Introduction
- Proposed Redesign
- Mechanical Depth
- **Breadth – Electrical**
  1. Roof Layout
  2. Equipment
  3. Schematic
  4. Payback Analysis
- Conclusion

### Electrical Breadth

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