

# Senior Thesis Presentation

## I. Introduction (2-3 Slides)

This is where I will introduce myself, my project and start to discuss my building.

### A. Building Overview

Here I will discuss my building statistics and the existing building.

## II. Existing Mechanical System (4-5 Slides)

### A. Advantages and Disadvantages of current system

### B. Cost of current system

### C. Energy Analysis

Where could the system be improved and where is it adequate

### D. Conclusion

## III. Depth Analysis – Geothermal System (6-10 Slides)

### A. Advantages and Disadvantages of system

### B. Cost of system

Cost of system vs Cost of initial system. 10-year life cycle cost.

### C. Energy Analysis

Energy usage of geothermal system compared to energy of existing system

### D. Plausibility

Is this system plausible? Installation, cost, energy savings.

### E. Conclusion

## IV. Acoustical Breadth Analysis (4-6 Slides)

### A. Energy

Is there any energy savings? How much are they?

### B. Economic

How much would these changes cost?

### C. Conclusion

## V. Electrical Breadth Analysis (4-6 Slides)

### A. Energy

Is there any energy savings? How much are they?

### B. Economic

How much would these changes cost?

### C. Conclusion

## VI. Conclusion (2-3 Slides)

### A. Final Conclusion and Acknowledgments

Also, allowing for final comments and judges questions.

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LOCATION: Penn State Behrend  
Knowledge Park Erie, PA

Architectural Engineering  
Mechanical Option

Advisor: Dr. [Freihaut](#)

April 10<sup>th</sup>, 2017

ADVANCED MANUFACTURING AND  
INNOVATION CENTER  
(AMIC)



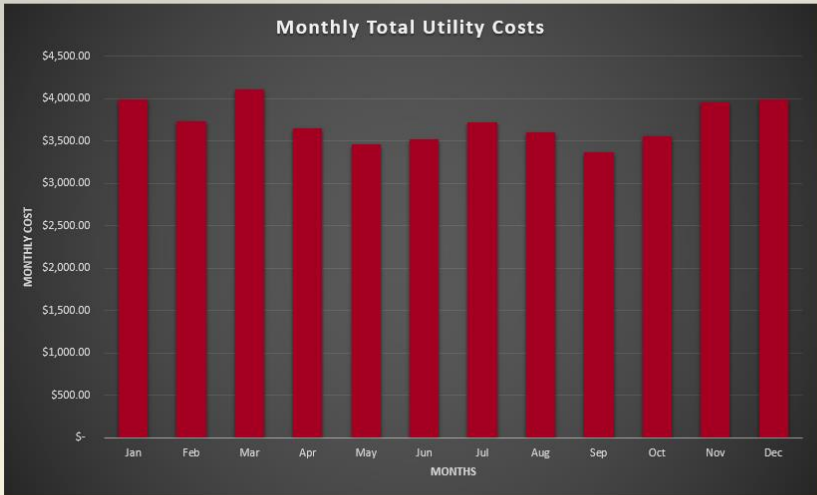
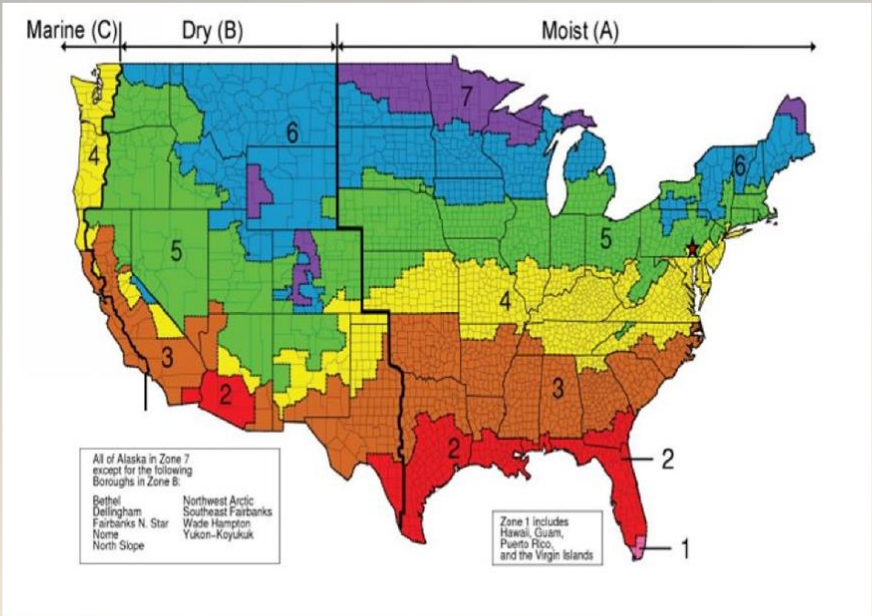
ADVANCED MANUFACTURING AND  
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Building Overview  
Information | Existing System  
**Mechanical Depth**  
Location | Energy | Plausibility  
Acoustical Breadth  
Effects | Cost  
Electrical Breadth  
Energy | Cost | Plausibility  
Conclusion

Climate Zone  
5-A

Cool and Humid

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Building Overview  
Information | Existing System

**Mechanical Depth**



Location | Energy | Plausibility

Acoustical Breadth  
Effects | Cost

Electrical Breadth  
Energy | Cost | Plausibility

Conclusion

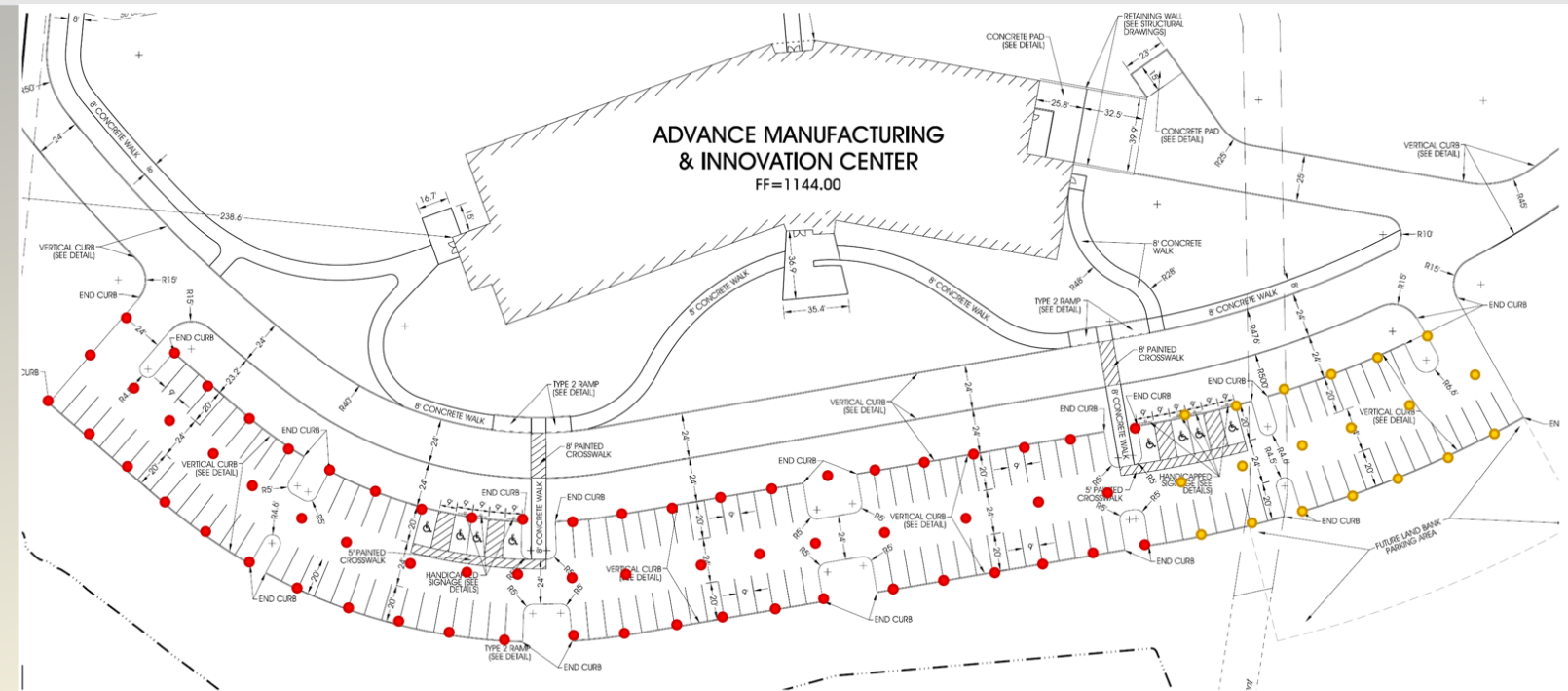
Bore Field:

64 Boreholes   
Potential of 19 more 

20' Spacing

Depth 250'  
Radius 2.25"  
Design Flow 153 GPM

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ADVANCED MANUFACTURING AND  
INNOVATION CENTER (AMIC)

Building Overview  
Information | Existing System

**Mechanical Depth**

Location | Energy | Plausibility

**Acoustical Breadth**

Effects | Cost

Electrical Breadth  
Energy | Cost | Plausibility

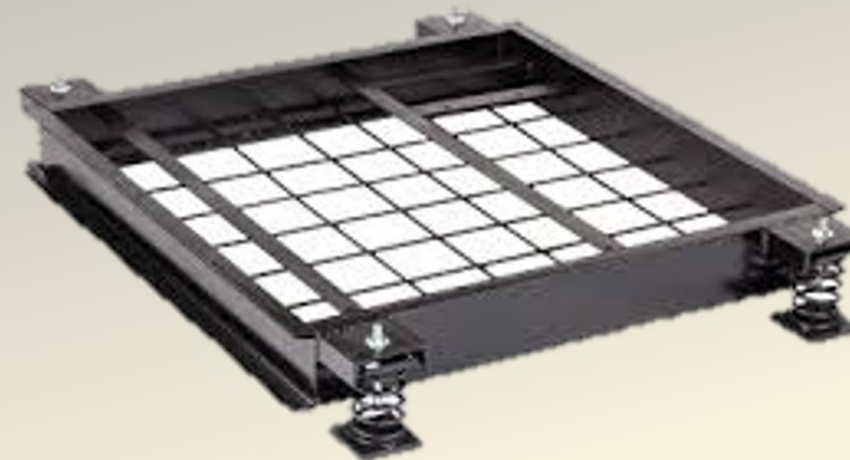
Conclusion

Will Reduce:

Total HVAC Noise  
Total Building Vibrations  
Occupant Noise Complaints

Will Cost More Money  
-Cheaper then other option

Inertial Base  
For RTU's



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