

Dan Saxton

Mechanical Option



# STEM Center



Delaware County Community College – Media, PA

## Thesis Final Presentation



## Presentation Outline

- Introduction
- Radiant Floor Heating and Cooling
- Natural Ventilation
- Acoustical Analysis
- Construction Management Analysis
- Conclusion
- Acknowledgements
- Questions

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Delaware County Community College – Media, PA



### *Building Information:*

- Part of new STEM Complex for D.C.C.C.
- Building area: 105,000 SF
- Building height: 4 stories
- Project Cost: \$28.7 Million
- Construction Start:
- Construction End:
- Architects: Burt Hill
- Engineers:



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## Radiant Floor Analysis

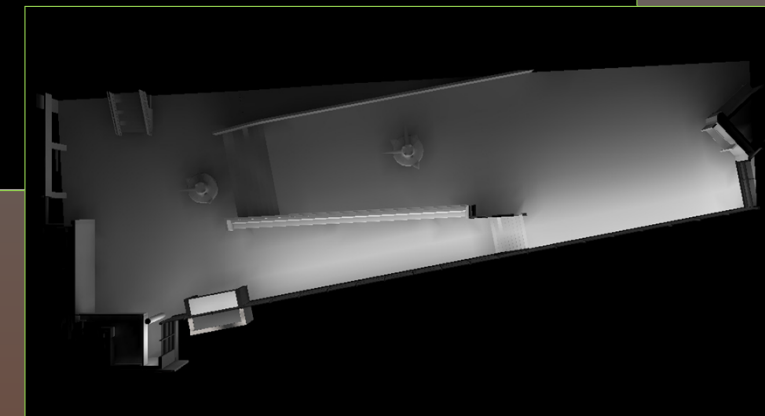
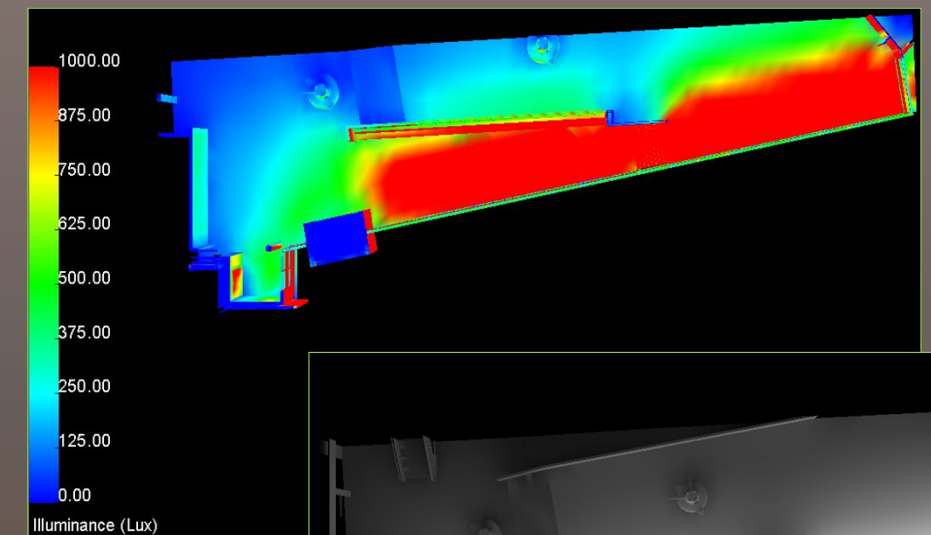
- Benefits from Direct Sunlight
- Up to 2.89 times higher cooling capacity
- South side curtain wall facades

### AGI32 Daylight Study

- Sun Factors:
  - Lower Lounge: **2.51**
  - Computer Lounge: **1.59**



Lower Lounge Glass Façade



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## Acoustical Analysis

- Floor finish material change in Lounge spaces
  - Old flooring: **Carpet** ( $\alpha = 0.3425$ )
  - New flooring: **Porcelain Tile** ( $\alpha = 0.01625$ )
- Upper Lounge: **3,615.08 SF**
- Lower Lounge: **1,213.38 SF**

Upper Lounge	T60 (sec)
Old (Carpet)	<b>0.23</b>
New (Tile)	<b>0.31</b>

Lower Lounge	T60 (sec)
Old (Carpet)	<b>0.60</b>
New (Tile)	<b>0.80</b>

*Picture of current carpeting*

*Rendering of switch to tile*

