

Innovative Approaches to Masonry Education

AIA Course:

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The Masonry Society

AIA Provider: 505119857



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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Course Description

This course provides examples and suggestions on how hands-on and/or technology based educational methods and modules can be incorporated into traditionally lecture-only courses.

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Learning Objectives

1. Understand how to enhance lecture courses containing masonry content
2. Understand how labs and design studios can contribute to masonry education
3. Understand how to create and deliver several innovative masonry educational modules
4. Understand how to collaborate with local industry to improve teaching effectiveness

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My Ideas (so far)...

- Visuals/demos/hands-on work
- Fun & Games
- Project-based
- Incorporate latest technology (stay current!)
- Involve industry
- Find an ‘incentive’
- Find/develop student competitions
- Avoid information “indigestion”
- Leverage *Discipline Based Educational Research (DBER)* funding to enhance technology use in the education
- Use masonry construction as an example for AEC collaboration or building science/envelope content whenever possible



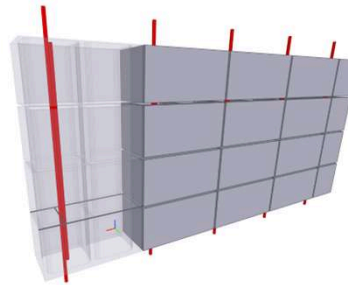
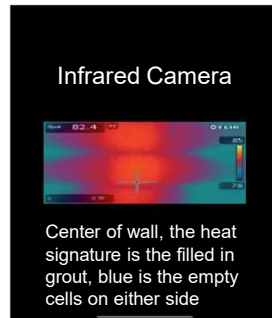
Demos/Visuals/Hands-on Work

A picture is worth a thousand words, and a demo or site experience is worth a thousand pictures.



Post construction

Deviations	Similarities
<ul style="list-style-type: none"> • Number of Rebar (3 vs 4) due to material shortage • Placement of rebar (due to altered number) • Wall was $\frac{1}{2}$ CMU too short horizontally 	<ul style="list-style-type: none"> • Same height (vertical) • Same CMU blocks • Running bond placement



AR application for QA/QC



Fun & Games

[ASTMs](#)
(10 points)

[Mortar](#)
(15 points)

[Units](#)
(15 points)

[Assemblies](#)
(20 points)

[History](#)
(20 points)

[Design](#)
(20 points)

Project Based

Project-based class

- Eureka moment during sabbatical: Make class content taught over a continuous project (same every year, but I keep improving it!)
- Major student evaluation is also over a continuous project



Term Project Ideas

- Dormitory
- Fire- station*
- Church* (incorporated masonry arch/vault option!)
- Residential
- Warehouse
- Day-care center

*Pilger Nebraska was affected by a series of tornadoes. They felt a connection to the project as they designed a for replacing the lost buildings

2018 Project

SPRING 2018- AE 8510- MASONRY AND TIMBER DESIGN

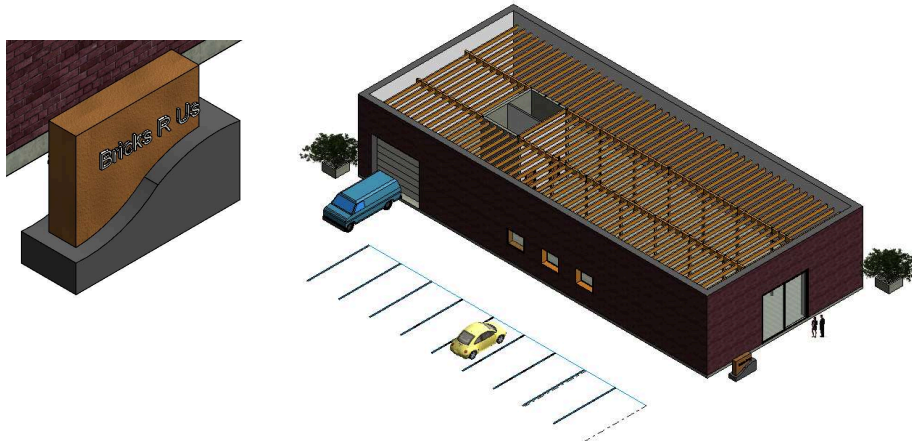
TERM PROJECT: Daphne Daycare Center

Your engineering firm is hired to design a new building for a local Daycare/Preschool complex located in **Omaha, Nebraska**. The name of the school will be “**Daphne Daycare Center**”. The owner is very interested in a low cost and sustainable building construction that is also durable, aesthetically pleasing, and comfortable for the occupants.

Project Requirements

- The building's structural system must be designed using only masonry and timber.
- Roof can be flat with tapered insulation, or sloped.
- Roof and floor framing are expected to be in structural timber.
- Openings need to be more than 50% of plan lengths of walls to utilize day lighting.
- Must include a sufficient tornado shelter with access to exterior

Incorporate New Technology



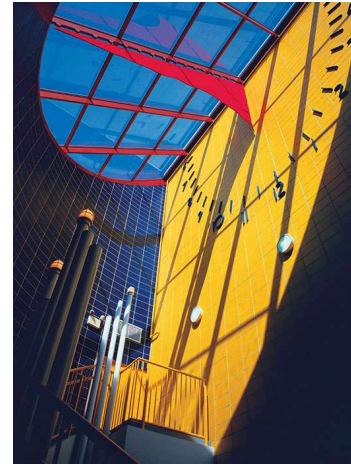
Stay current: New materials/methods



**Insultech
System™
(Echelon)**



Robotics



**Astra-glaze SW
Glazed Masonry
Units**

Involve Industry

- NMA buys codes
- TMS provides student membership
- Engineers, architects, contractors are invited to final jury
- We have guest speakers when possible/time permitting
- Sneak in additional “meetings”



Find an incentive

- For students:
 - Scholarship to “winners”
 - Prize for “game show” winners
 - Positive encouragement from industry on importance
- Volunteering as a reviewer, researcher, author, TMS committee member keeps me current

Find/develop student competitions



APT offers masonry-related student competition every other year

My dream: Create an annual student competition for TMS and make it a tradition. It starts with 14NAMC! Stay tuned.

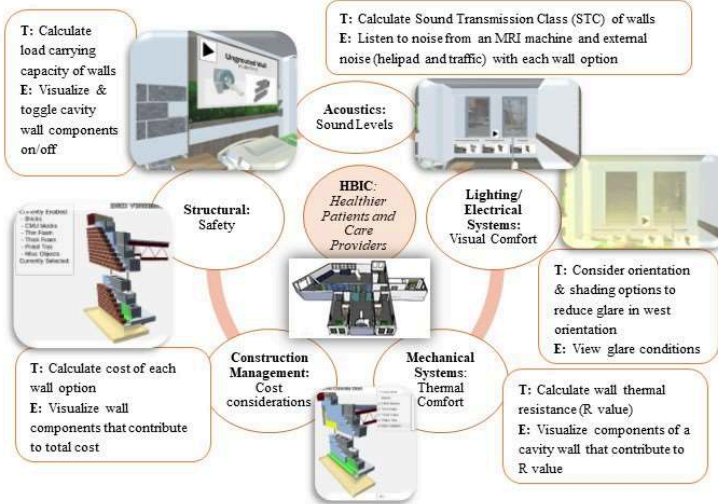
Avoid information indigestion

- Teaching basics well
- ASD vs Strength Design
- Review previous class at the beginning of each class
- “What have you learned so far?” game
- Keep it interesting/relevant to real life examples
- Minimize traditional exams/quizzes/homework (my opinion)
 - Get them to actually design, build, make mistakes, and learn from mistakes...
- Bring masonry contractors to class!

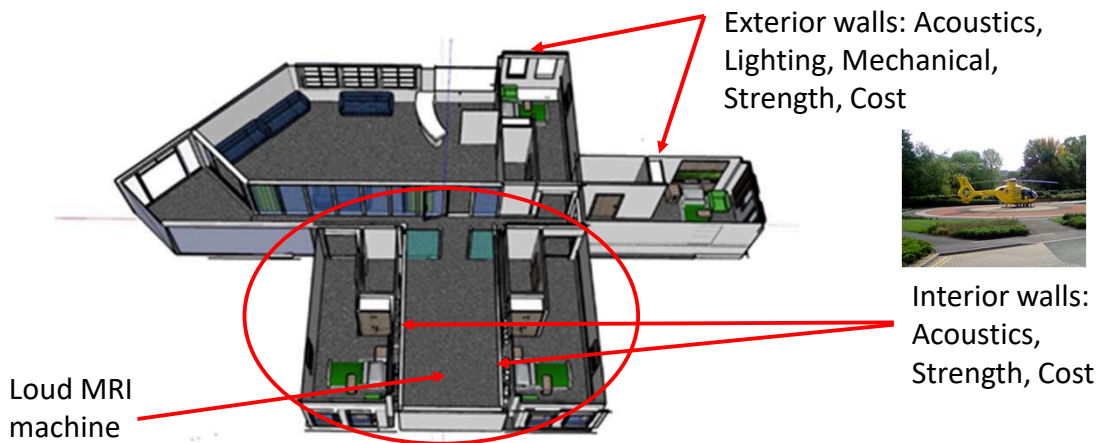
My latest/current work

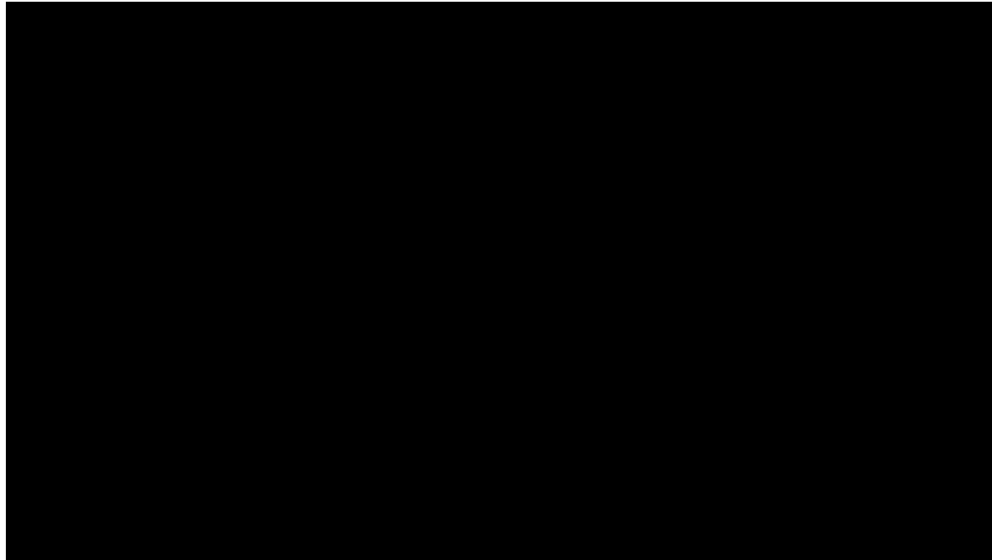
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Virtual/Augmented Reality-Based Discipline Explorations (VADER) Pilot in Fall 2020, Now a \$1.7M NSF Grant



VADER: Husker Brain Injury Clinic Experiential learning to understand AEC disciplines





Browser-based wall app

WebGL Wall Toggle

<https://jycxr.github.io/wall-toggle-061322a/>

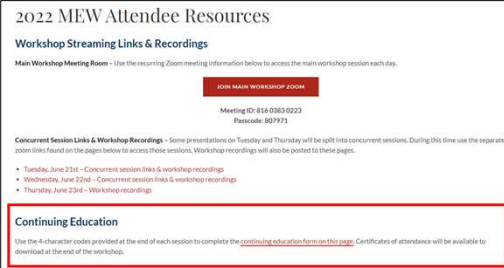
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Certificates of Attendance

Session: Innovative Approaches to Masonry Education

Code: EG3P

- Submit this code through the continuing education link on the workshop resources page
- Select this session from the menu and enter the code shown above (not case-sensitive)



2022 MEW Attendee Resources

Workshop Streaming Links & Recordings

Main Workshop Meeting Room - Use the recurring Zoom meeting information below to access the main workshop session each day.

JOIN MAIN WORKSHOP ZOOM

Meeting ID: 814 0383 0223
Passcode: 807971

Concurrent Session Links & Workshop Recordings - Some presentations on Tuesday and Thursday will be split into concurrent sessions. During this time use the separate zoom links found on the page below to access those sessions. Workshop recordings will also be posted to these pages.

- Tuesday, June 21st - Concurrent session links & workshop recordings
- Wednesday, June 22nd - Concurrent session links & workshop recordings
- Thursday, June 23rd - Workshop recordings

Continuing Education

Use the 4-character codes provided at the end of each session to complete the [continuing education form on this page](#). Certificates of attendance will be available to download at the end of the workshop.

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This concludes The American Institute of Architects Continuing Education
Systems Course

