

# Acoustics, Noise & Vibration Control

*As it Relates to Green Building*

Introduced by Sarah Talkington, P.E., LEED AP

## Guest Speakers:

Ken Dickensheets    Jack B. Evans, P.E.

Chad Himmel, P.E.    David Nelson, P.E.



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# Acoustics, Noise & Vibration Control

- Physics
- Applied Acoustics
- Electronic Acoustics
- Acoustical Engineering
- Natural Acoustics
- Bioacoustics



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# Acoustics & the Work Place

- Ability to focus on a task: 48%
- Distractions decreased: 51%
- Error-rates improved: 10%
- The physical symptoms of stress: 27%

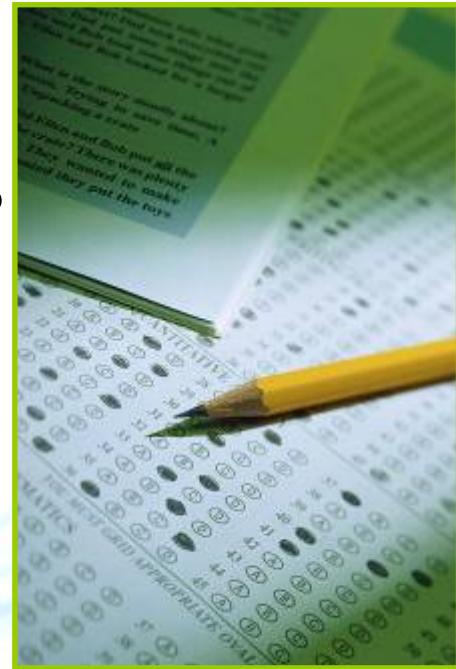


# Acoustics & Schools

If you have to strain to hear something, the natural instinct is to tune out



- Reading proficiencies
- ESL classrooms
- Hearing Impaired Students
- SAT scores
- Referral rates for special education



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# Acoustics & Hospitals

- Stress Response: trauma, pain, lack of control, inability to interpret experiences
- Sleep Disruption: depression, risk of injuries (falls), impaired task completion
- Impaired Communication and Errors: Similar sounding drug names (eg: Celebrex and Cerebyx)
- Loss of Privacy: (HIPAA)
- Burnout: Accidents & Turn-Over  
Happy Staff = Higher Patient Satisfaction



# Acoustics & Hospitals (Con't.)



- Poor acoustical environment = higher re-hospitalization rate
- The sickest patients have the strongest reactions to poor acoustics





# Acoustics & Retail

- Sales increased: 3-10% (and as much as 38%)
- Reasons for Sales Increases:  
Increased length of a visit, POS promotions, per capita expenditure, specific product sales
- Brand voices, brand music, sonic logos, telephone sounds, “soundscapes”, and product sounds are a new commodity



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# Acoustics & Mass Transit

- Noise, traffic, pollution & cost are primary concerns
- Noise levels in subways & at bus stops exceed limits set by EPA
- Subway operator noise exposure is found to exceed limits set by OSHA



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# Acoustics & Homes



- For 1 in 5, Noise is a problem
- Half of those who hear noise are disturbed
- Noise that disturbs sleep is the biggest complaint associated with noise



# Climate Protection & Green Building

- Noise is the biggest complaint of the urban environment
- Density is why the a resident of Tokyo uses as much energy in a week as the average resident of Houston in a day
- Condos can be 70% more efficient than single-family homes



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# Acoustics & Green Buildings

- Durable, Hard Materials = Reflective Surfaces & Reverberant Spaces
- Daylighting and Views, Materials Reduction compromise sound isolation
- Failure to address acoustics in design results in much waste
- Efficient Equipment is Quieter
- Green Buildings consider health well-being and productivity
- Lead the community to respond to Acoustics



*Please Welcome our Guest Speakers*

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