

# Agriculture Science Auditorium University of Idaho Case Study #4: "A Lecture Space"

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## Project Description

Location: University of Idaho - Ag Sci 106

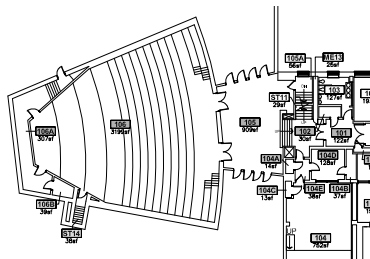
Architects: Team 8 Consortium (Coeur d'Alene)

Construction Date: 1982 construction began

Occupied fall 1983

Cost: \$1.8 million

Lecture Hall: 300 seats

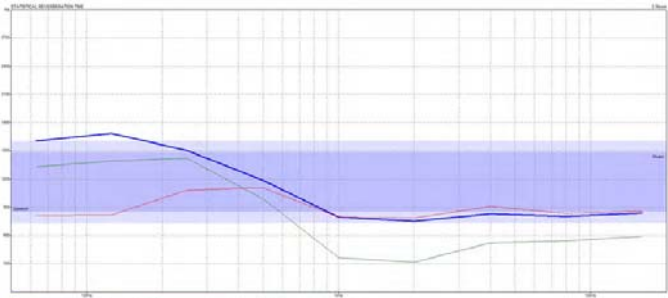
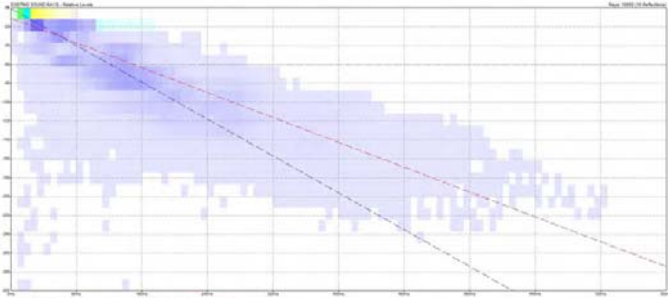




# Current - Materiality Absorbency List:

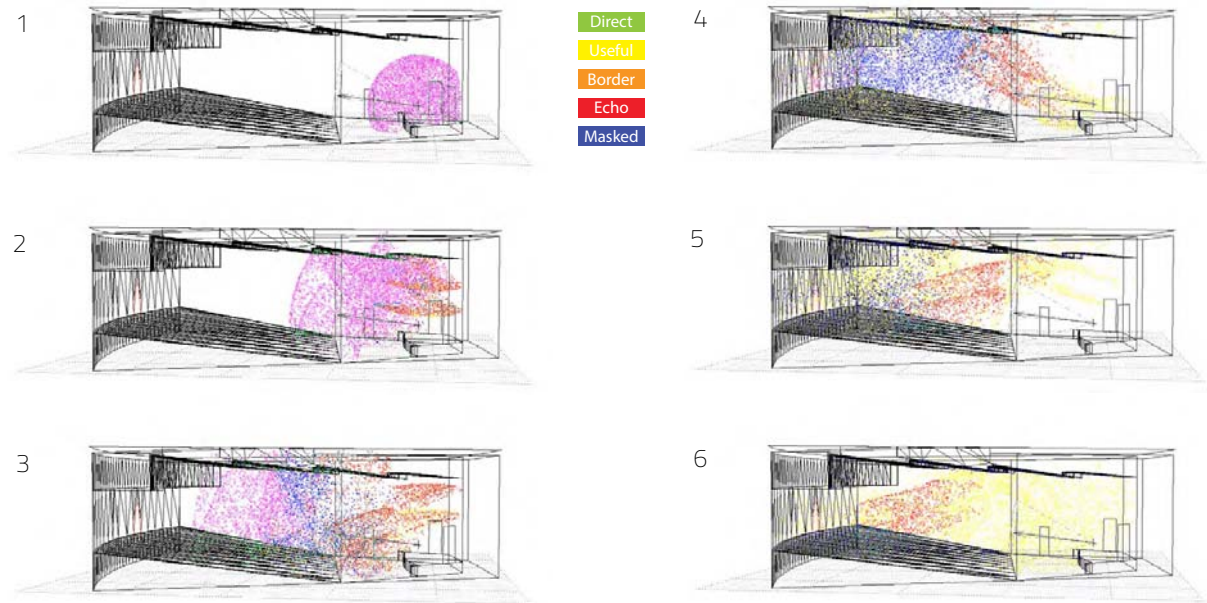
Surface	Material	Area (Sq-ft)	Absorption	Absorbency
Ceiling (Primary)	Gypsum Board	1800	0.05	90
Ceiling (Back)	Acoustic Tiles	1400	0.60	840
Walls (Primary)	Gypsum Board	2400	0.05	120
Walls (Stage)	Wood Paneling	330	0.05	16.5
Walls (Back)	Acoustic Tiles	850	0.60	510
Floor (Seating)	Concrete	1,200	0.00	0
Floor (Stage)	Wood	200	0.10	20
Audience	Students in tablet-arm chairs	1,800	0.50	900
				2496.5

Reverberation Time:  
 $(0.049)50,000/2496.5$   
 Total =.992ms



Ecotect: at 500Hz =.99ms

# Absorbency and Reverberation Performance Analysis: Original



# Proposed Redesign Elements

Issues:

Reduce HVAC Noise



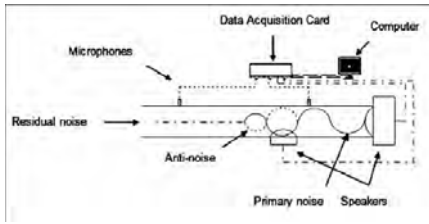
Reduce Adjacent space noise



Minimize hard surfaces



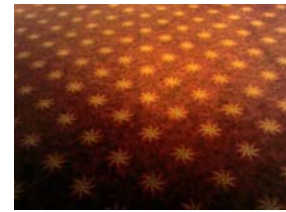
Solutions:



Active duct noise cancellation equipment



Acoustic absorbing doors

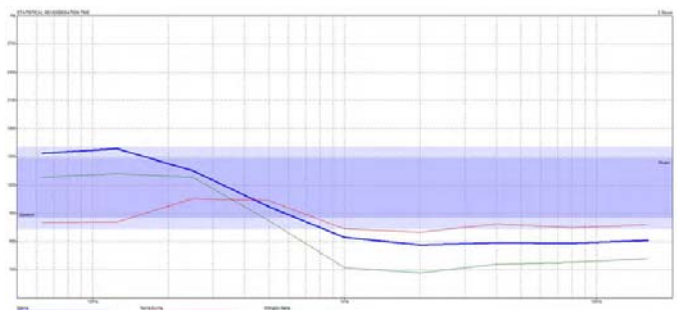
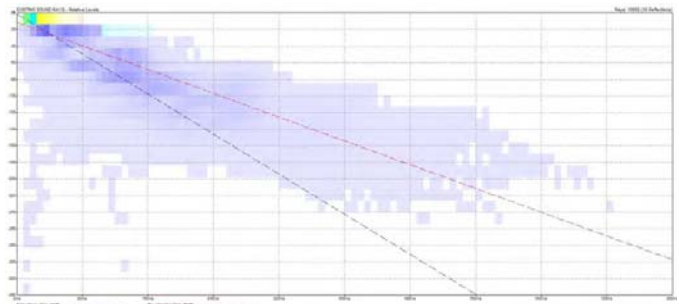


Red theater carpet

## Redesign - Materiality Absorbency List:

Surface	Material	Area (Sq. ft)	Absorption	Absorbency
Ceiling (Primary)	Gypsum Board	1800	0.05	90
Ceiling (Back)	Acoustic Tiles	1400	0.60	840
Walls (Primary)	Gypsum Board	2400	0.05	120
Walls (Stage)	Wood Paneling	330	0.05	16.5
Walls (Back)	Acoustic Tiles	850	0.60	510
Floor (Seating)	Carpet	1,200	0.29	348
Floor (Stage)	Wood	200	0.10	20
Audience	Students in tablet-arm chairs	1,800	0.50	900
				2844.5

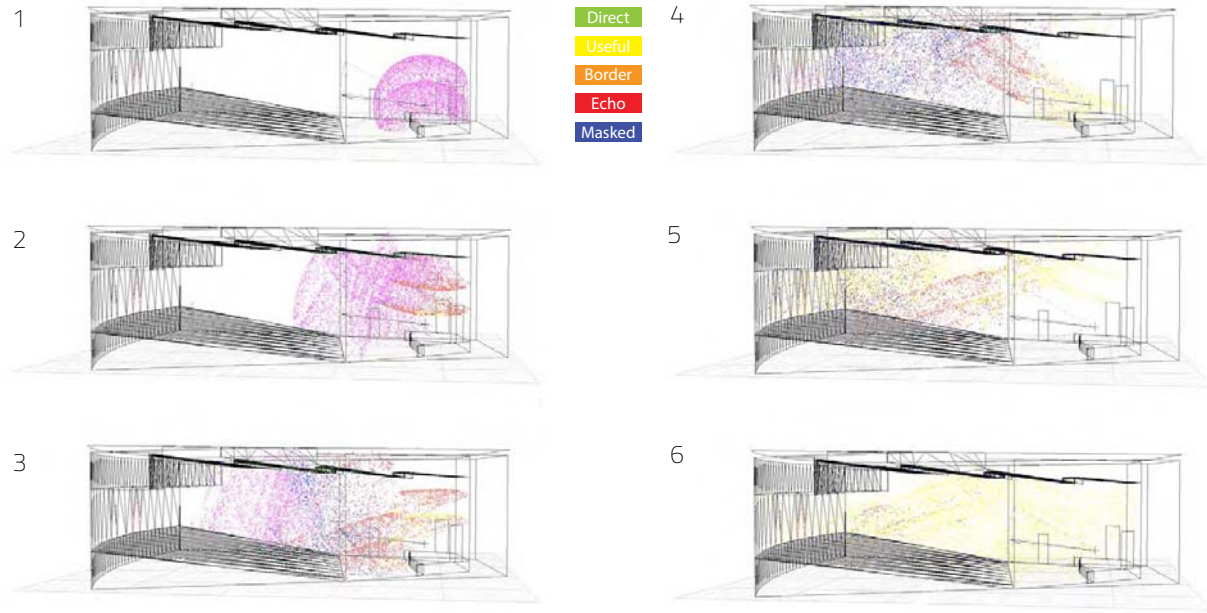
Reverberation Time:  
(0.049)50,000/2844.5  
Total =.8613ms



Ecotect: at 500Hz =.82ms



# Absorbency and Reverberation Performance Analysis: Redesign



## Conclusion

We found that the lecture hall already contained proficient acoustic properties, so minimal revision was required. By applying carpet to the exposed concrete floor we were able to reduced echoing within the space, providing a crisper sound quality, one that is preferred for projecting speech. Additionally we have been able to mitigate external noise from people in the adjacent lobby and HVAC systems inside the space.