



# ACOUSTIC DIMENSIONS



# ACOUSTICS

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- Room Acoustics
- Sound Isolation
- Noise and Vibration Control



# ROOM ACOUSTICS

- No Echoes
- Maximize Speech Intelligibility
- Neutral Acoustical Environment
- Flexibility



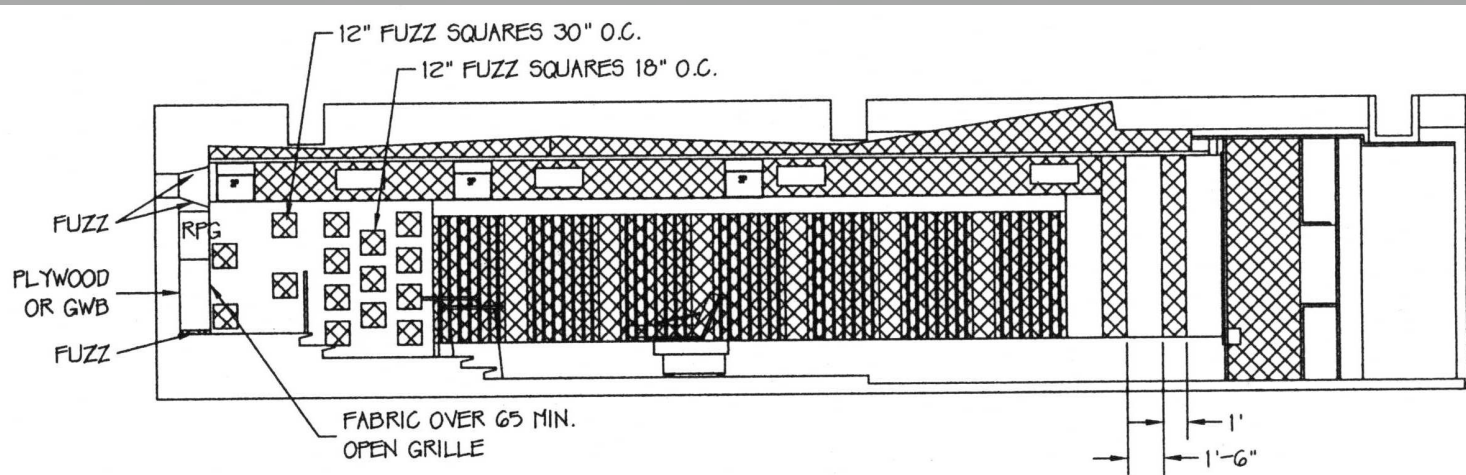
# ROOM ACOUSTICS



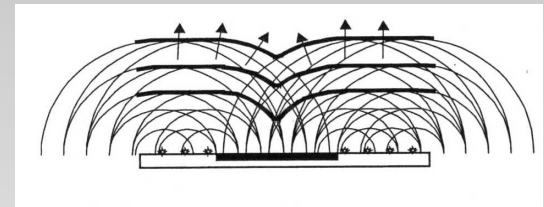
DOLBY SCREENING ROOM  
New York City, NY



# ROOM ACOUSTICS



SIDE WALL ELEVATION - OPTION 1



# ROOM ACOUSTICS

## FLEXIBILITY: Multipurpose Theaters

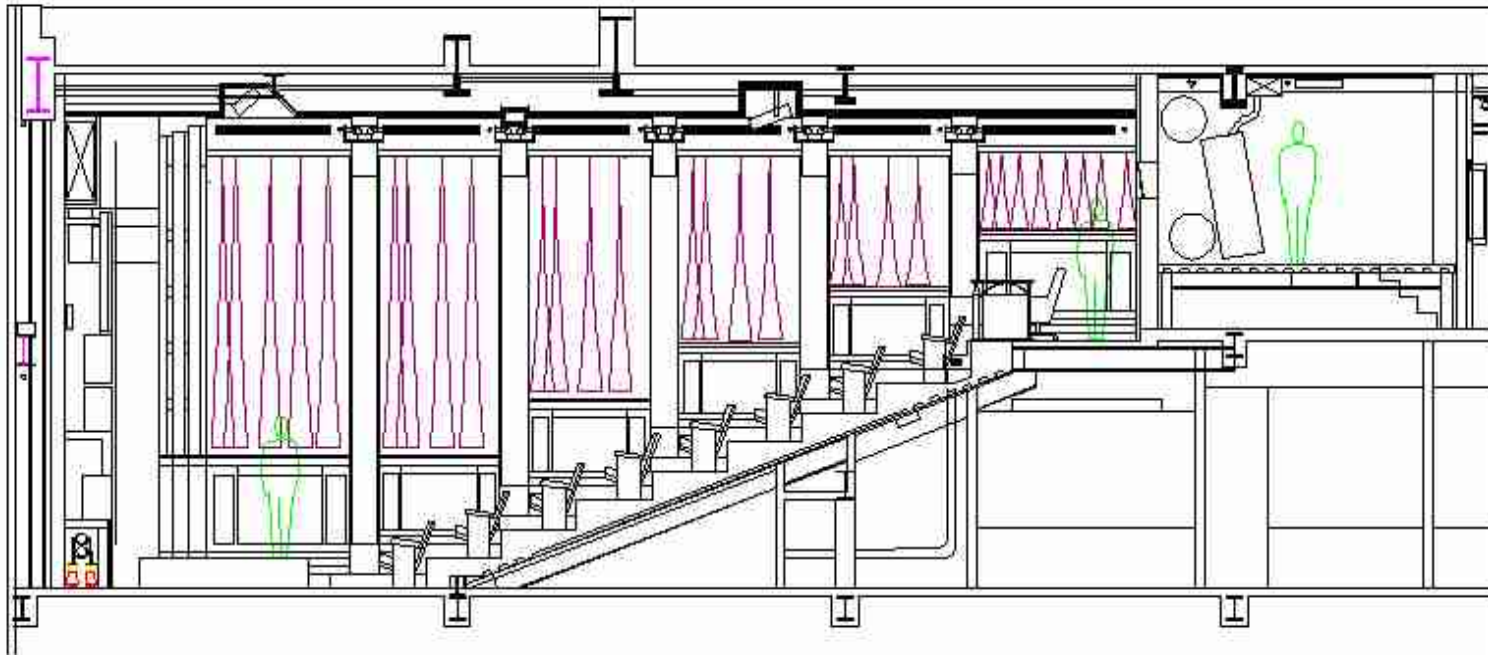


HBO SCREENING  
ROOM  
New York City, NY



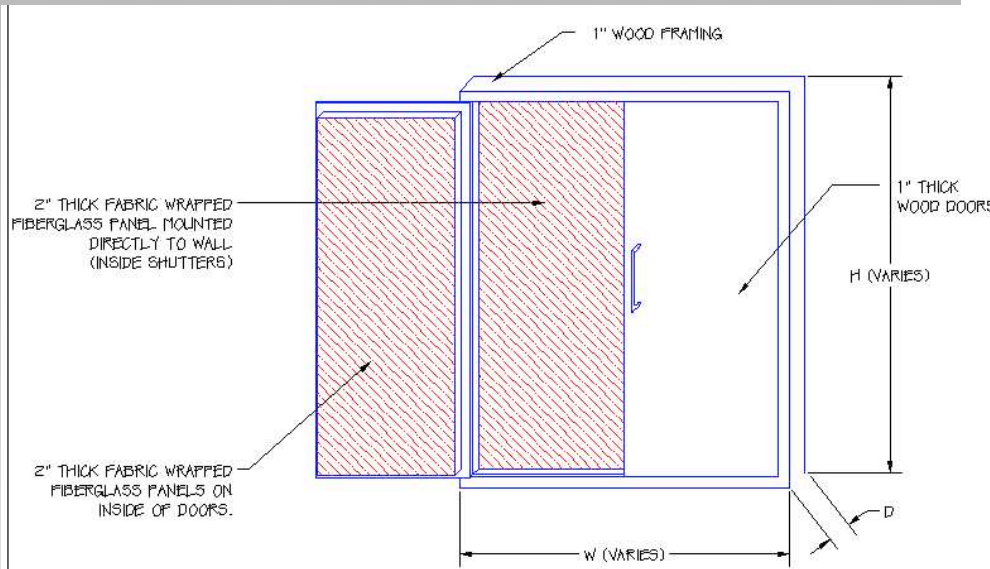
# ROOM ACOUSTICS

## FLEXIBILITY: Multipurpose Theaters



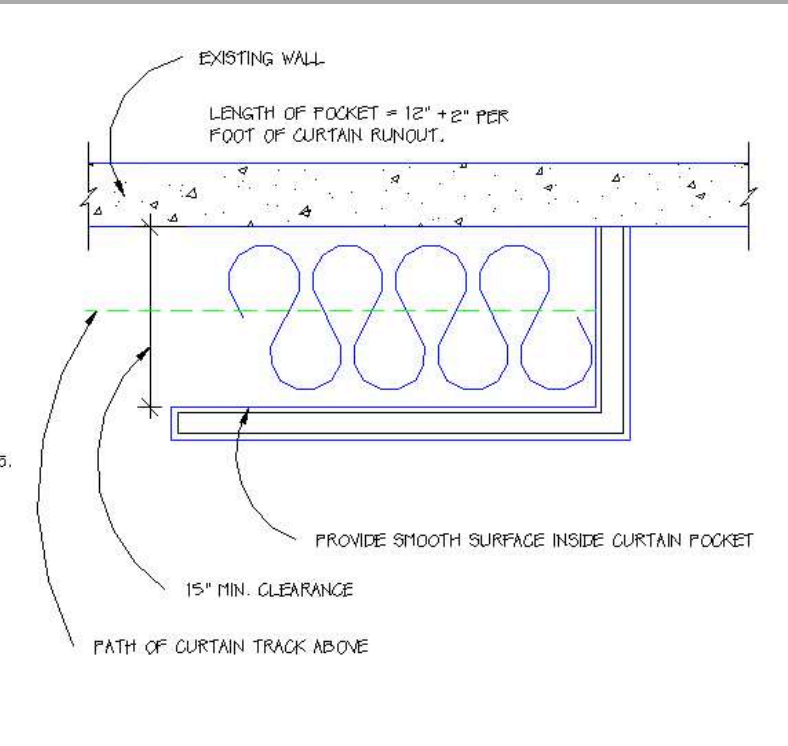
# ROOM ACOUSTICS

## Adjustable Acoustics



SCHEMATIC DRAWING OF ACOUSTICAL SHUTTERS

NT5



# ROOM ACOUSTICS

## Adjustable Acoustics



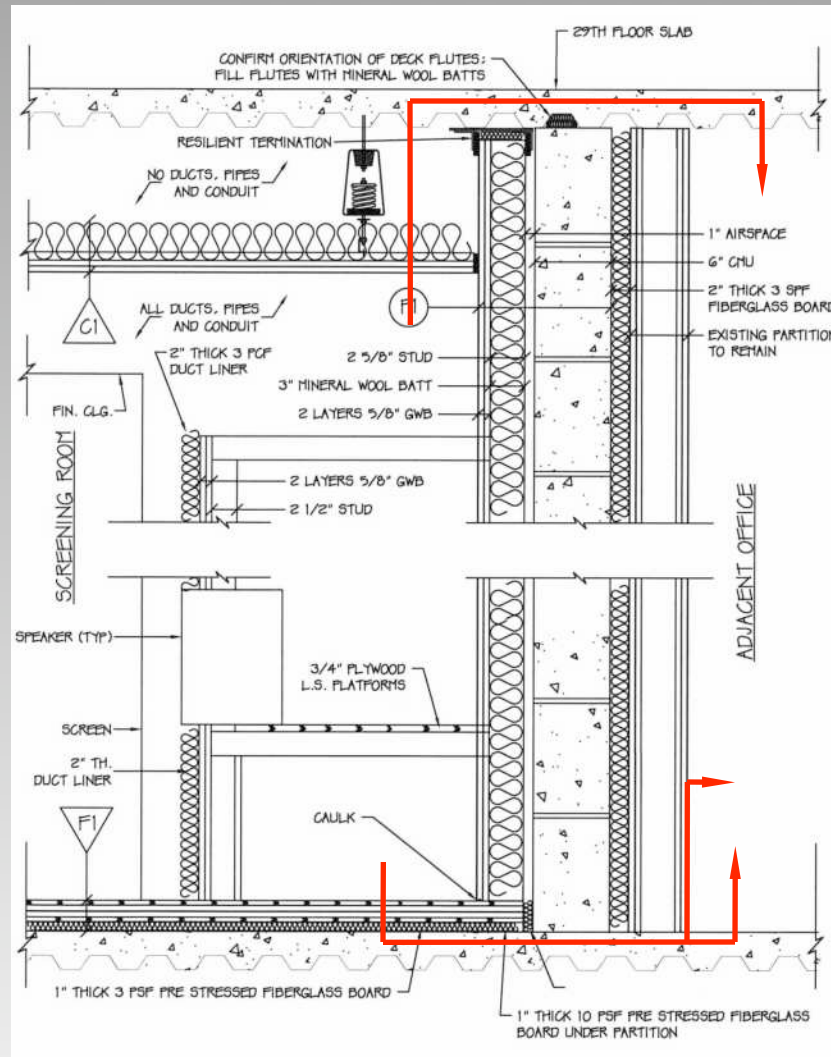
# SOUND ISOLATION

- Maximize Isolation between Theaters
- Maximize Isolation between Theaters and Noisy Lobbies
- Maximize Isolation between Theaters and Outdoors' Sound Sources



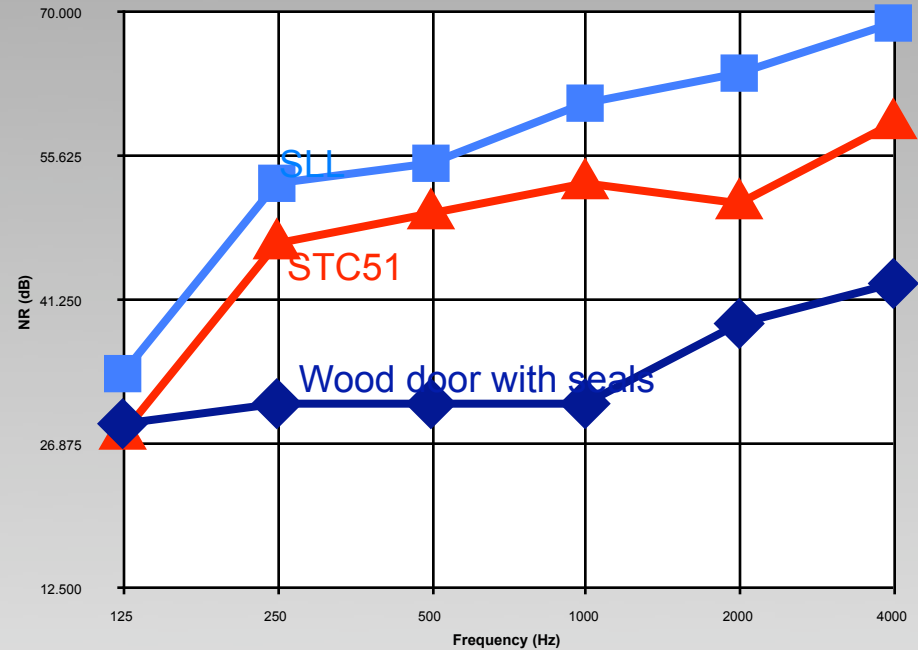
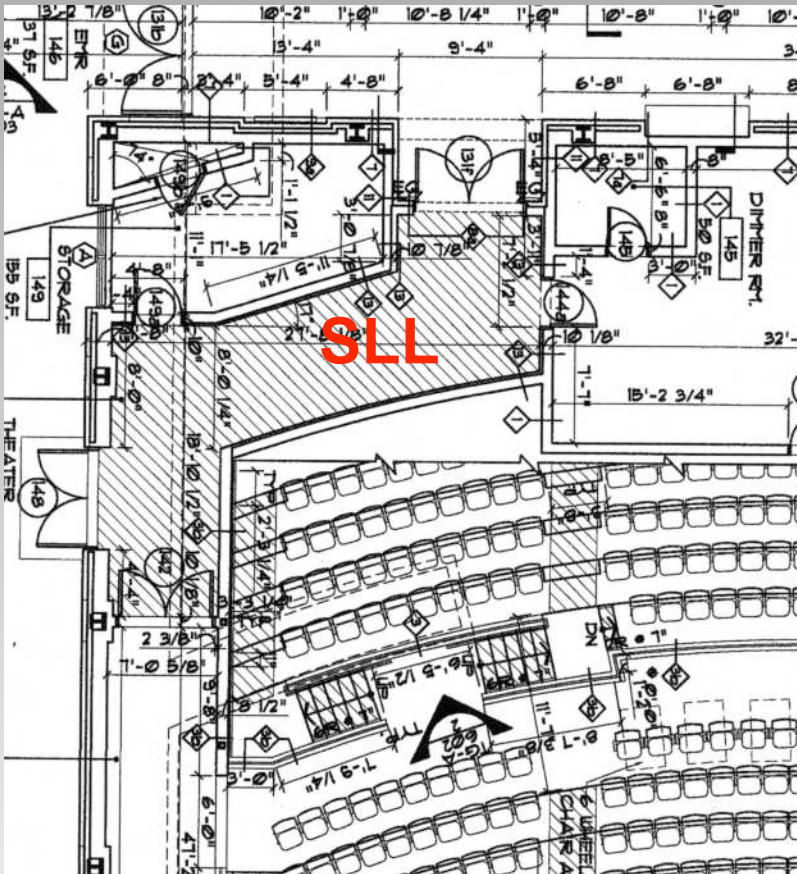
# SOUND ISOLATION

- Improvement of Sound Isolation at Low Frequencies: Heavy construction
- Avoid flanking: slab cuts, iso floors, iso ceilings
- Schedule “compatible” films in adjacent Theaters



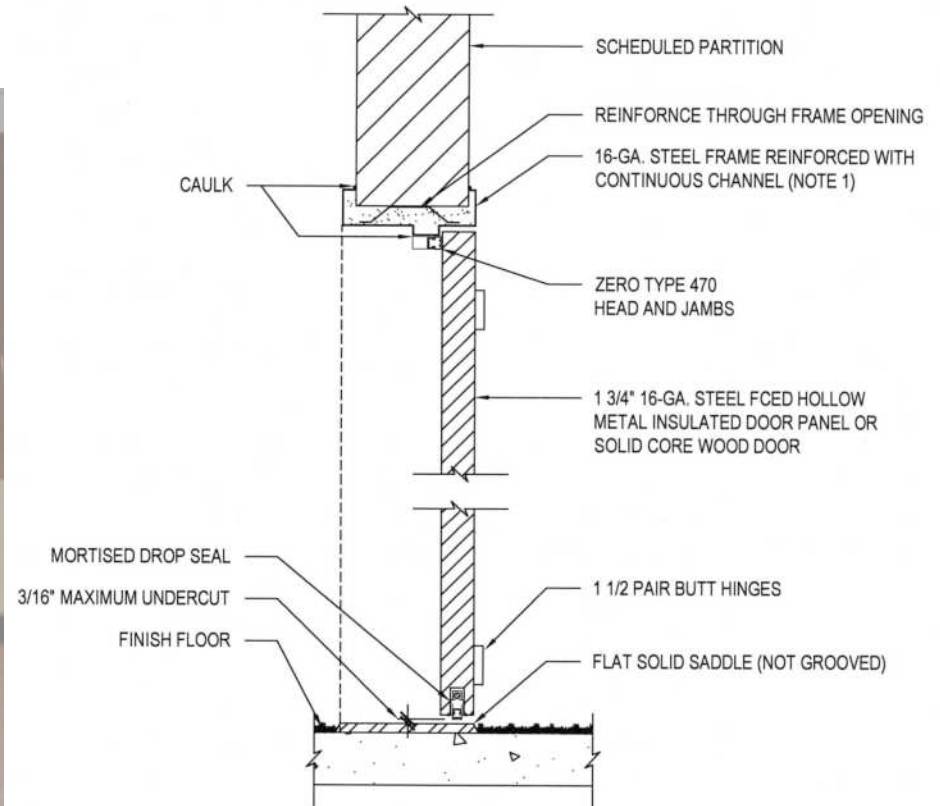
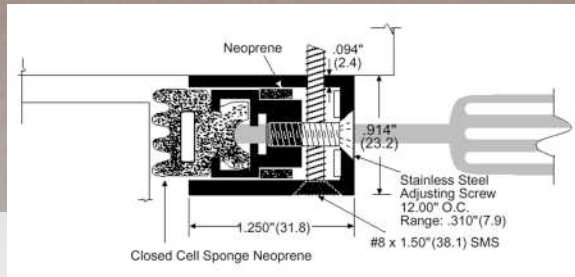
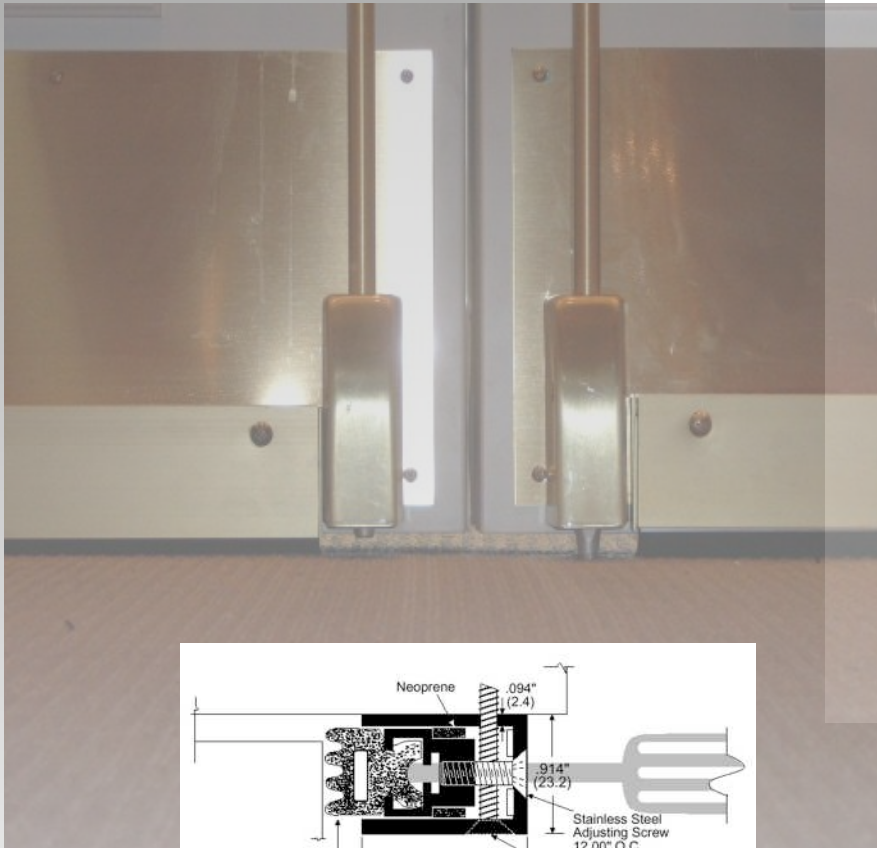
# SOUND ISOLATION

## NOISY LOBBIES



# SOUND ISOLATION

## SOUND SEALS

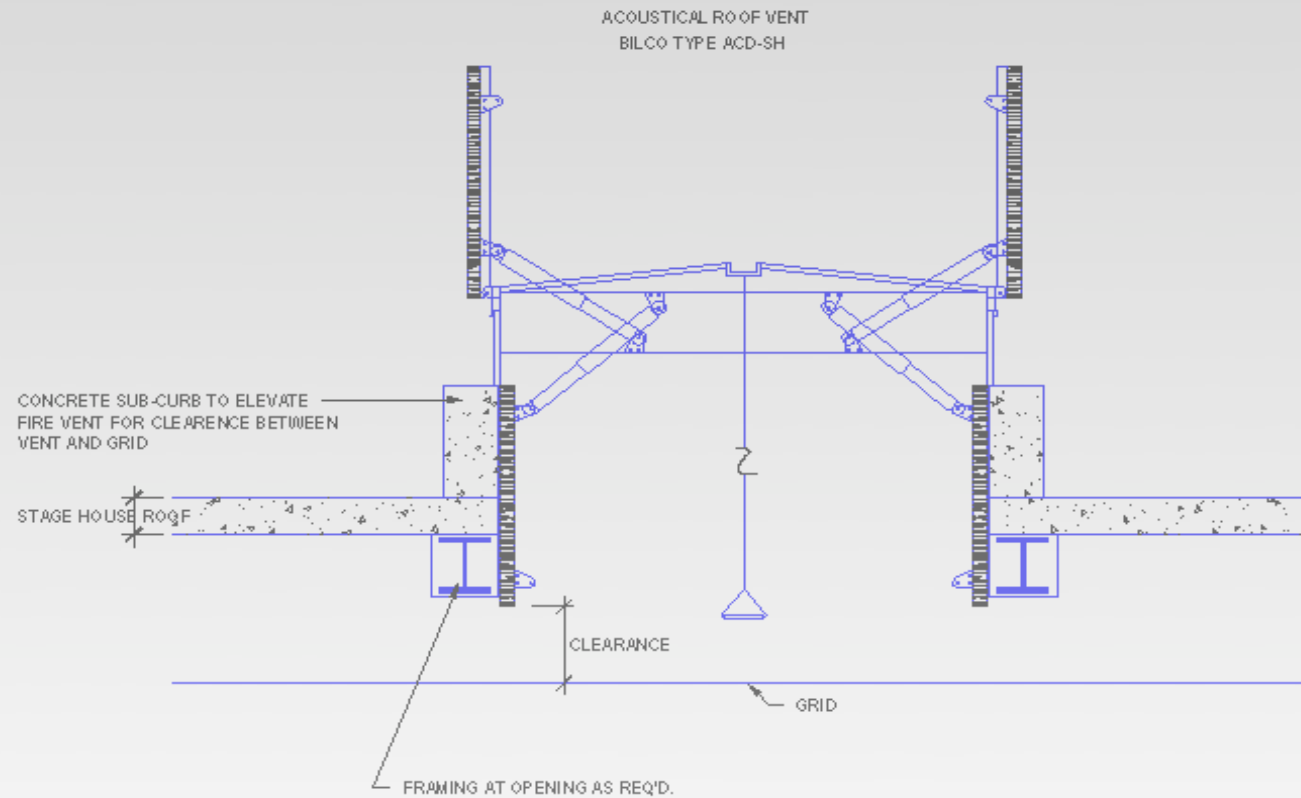


# SOUND ISOLATION

## OUTSIDE NOISE

NOTES:

1. TOTAL AREA OF VENTS SHALL BE MINIMUM REQUIRED BY CODE.



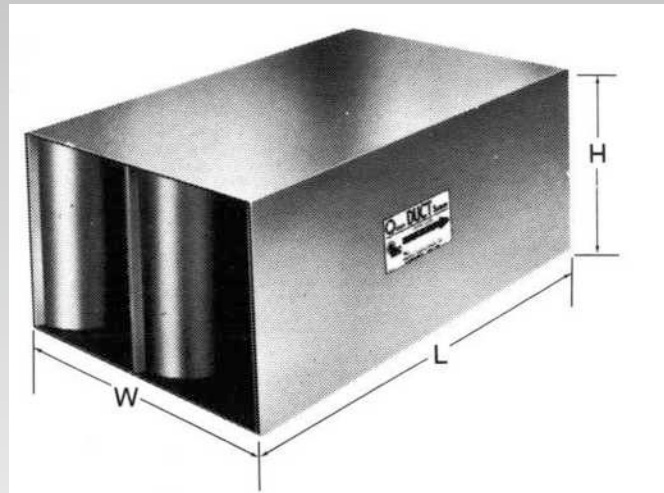
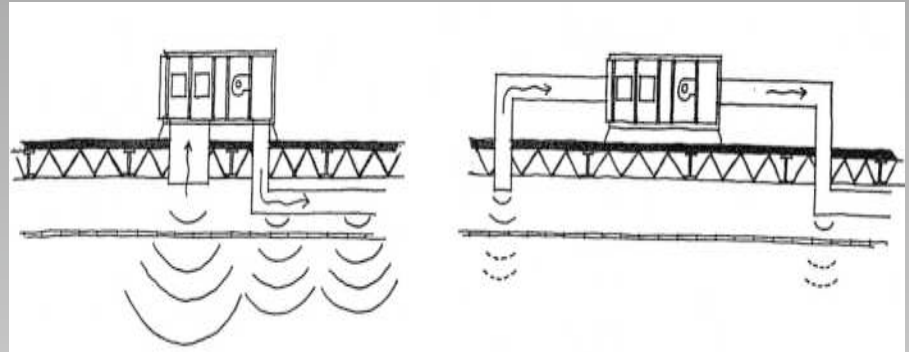
# NOISE CONTROL

- Maximum HVAC noise:
  - Movie Theaters:
    - NC-25 preferred
    - NC-30 maximum
  - Multipurpose spaces:
    - NC-15/NC-25
  - Screening Rooms
    - NC-15/NC-20
    - or lower?

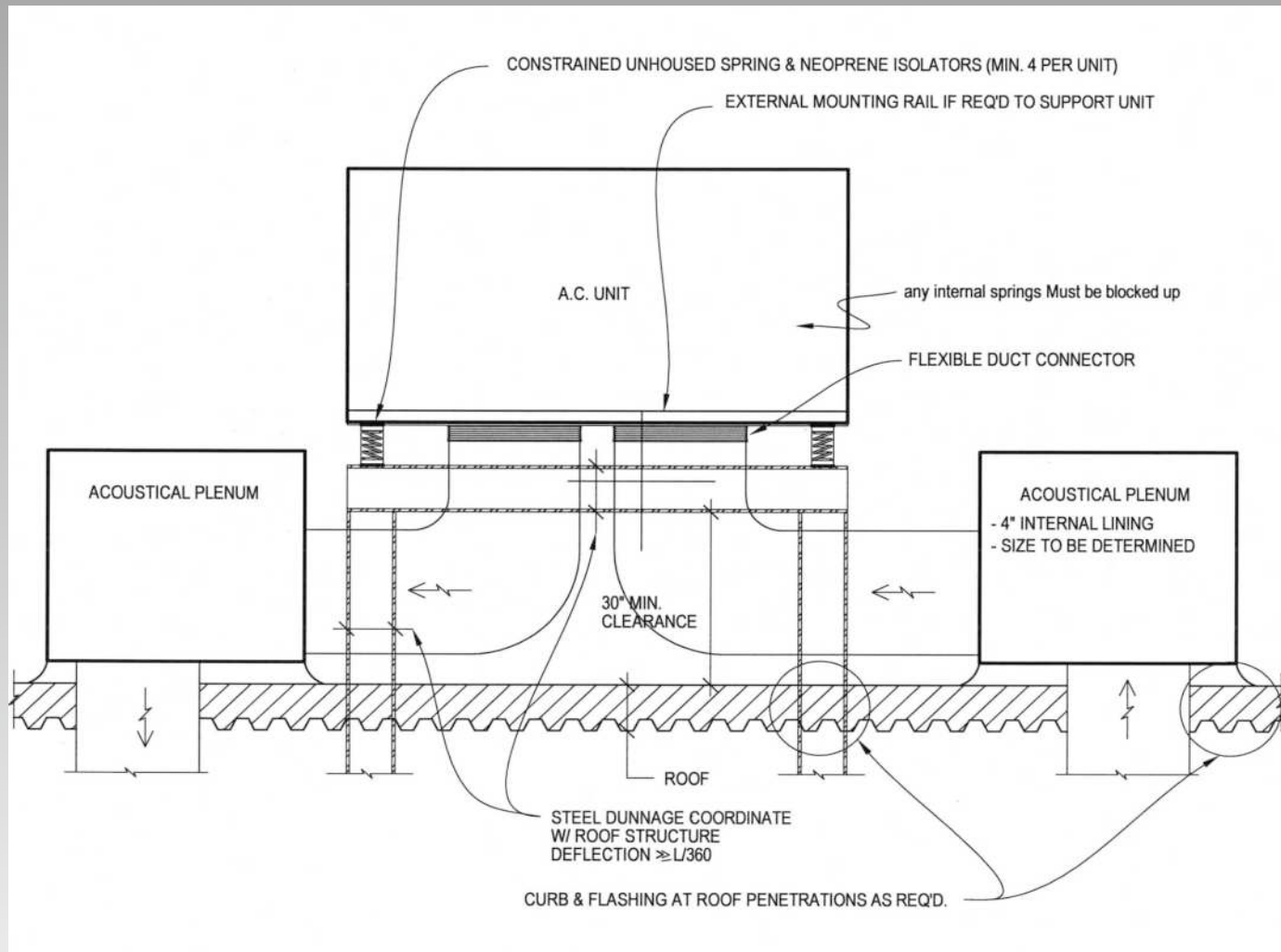


# NOISE CONTROL

- No equipment above theaters
- Maximize distance unit - theater
- Use of duct lining - challenges of not using it
- Silencers/Plenums
- Vibration Isolation
- Air velocity



# NOISE CONTROL



# NOISE CONTROL

Maximum allowable ductwork air velocities:

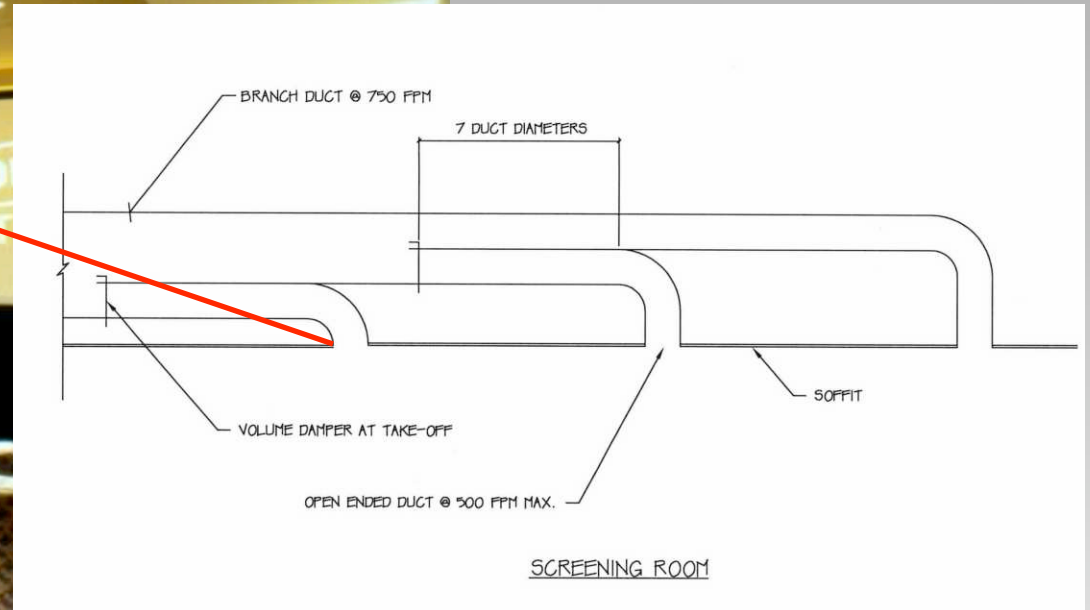
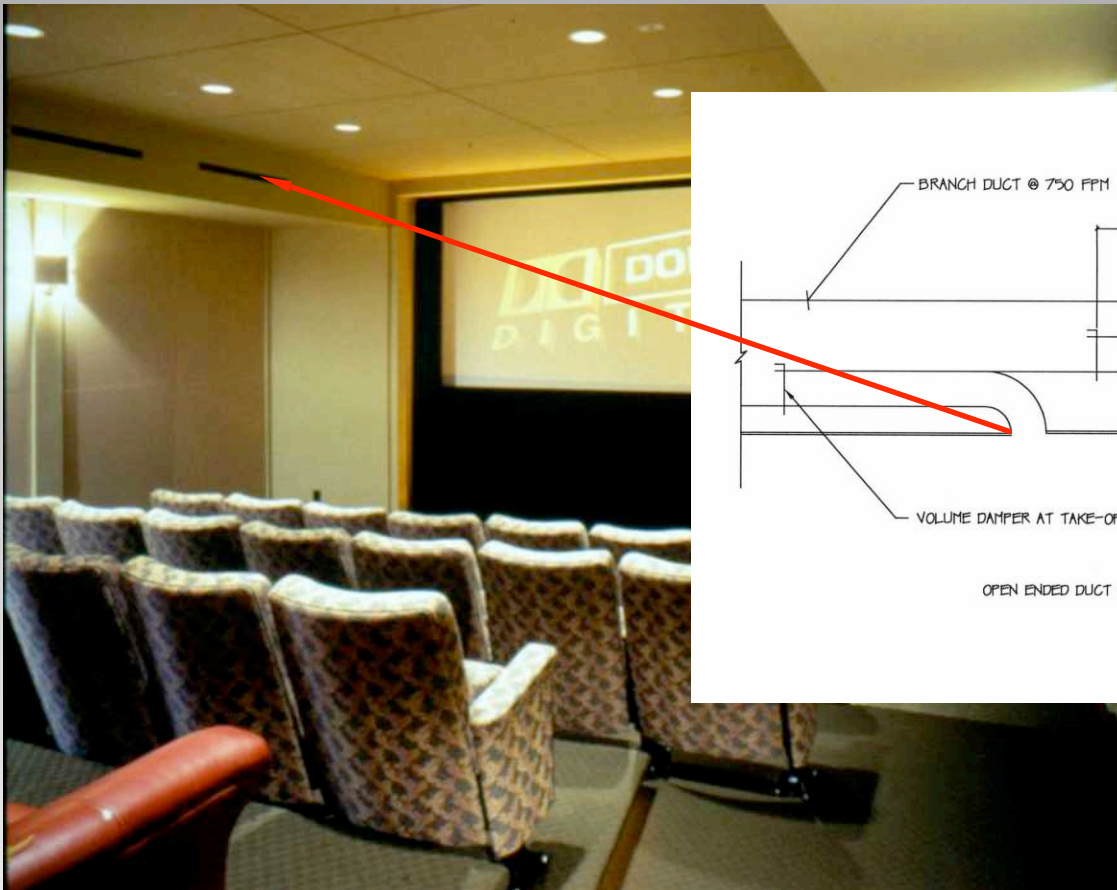
- Maximize attenuation close to the units

<b>Maximum Allowable Ductwork Air Velocities, fpm (assuming bare duct openings or plaque diffusers)</b>				
<b>Location:</b>	<b>RC 15</b>	<b>RC 20</b>	<b>RC 25</b>	<b>RC 30</b>
Supply/return main ducts outside of space	1200	1300	1400	1500
Main supply/return ducts within space (including above ceilings) over 25' from air openings	900	950	1000	1100
Branch supply/return ducts, within 25' of air openings	700	750	800	850
Terminal ducts within 7 duct diameters of air openings	600	650	700	750

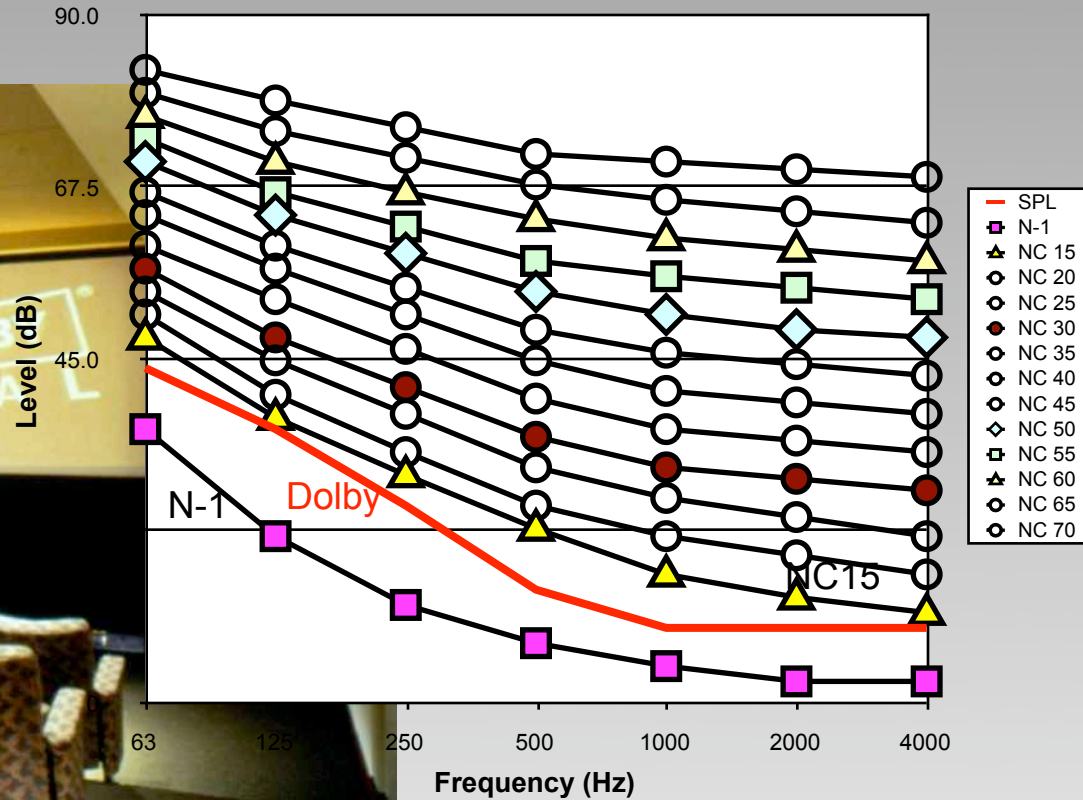
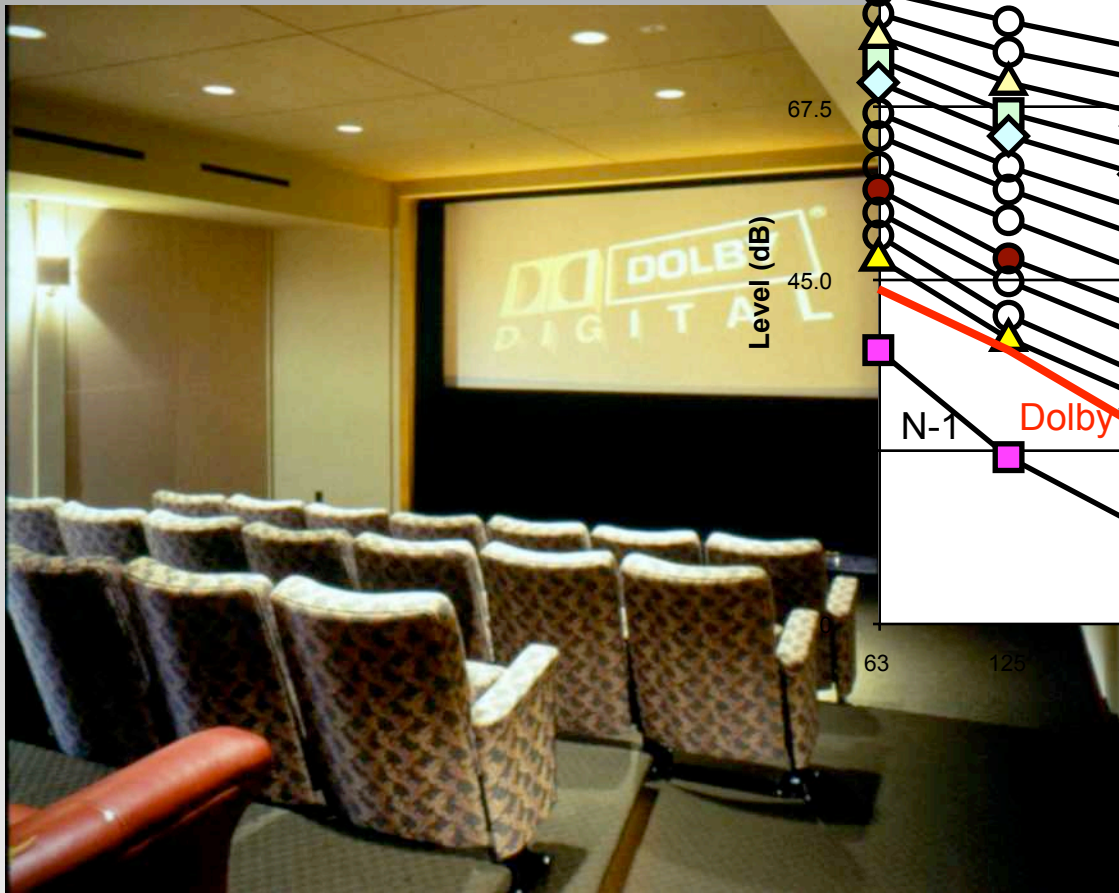


# NOISE CONTROL

## Quiet HVAC System



# NOISE CONTROL





# ACOUSTIC DIMENSIONS

