

Fig. 9.11 Optimum reverberation time at 512 cycles for different types of rooms as a function of room volume.

The process and workflow that has resulted in this acoustical findings report is based on a complete review of the architectural drawings of the targeted space. A 3D SketchUp model specifically created for acoustical studies was created. That SU model becomes the anchor of the acoustical analysis engine where each surface is assigned an acoustical value. Studies were then performed placing sound sources and listeners at various representative locations. The findings are to be reviewed and considered to be proper for setting expectations of the acoustical performance of the space and how the electro-acoustic system will respond within the space.

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- A-1 Decay time findings (Global) & Materials
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C-1
Historical chart: decay at 500Hz vs. room volume and function
Scale: NTS

Overview and Notes: Room Volume is ~61,500 cubic feet

RT60 is the time it takes sound to decay 60dB. This is always the first acoustical qualifier for type space. We target the decay time at 500Hz and cross-reference charts that have been developed over the past 100 years.

- Detail 1 shows a *historical* chart of decay time versus volume and function. By historical, the functions are relative to ~50yrs ago (meaning the upper range of music would be ideal for liturgical church/choir/organ).

- **Note 1:* The ~.85 second targeted decay time at 500Hz for this gathering space is the proper decay time range for speech function. This would be with 2/3 capacity with people in the space. Please make note of this as it will be a major topic on the next page.

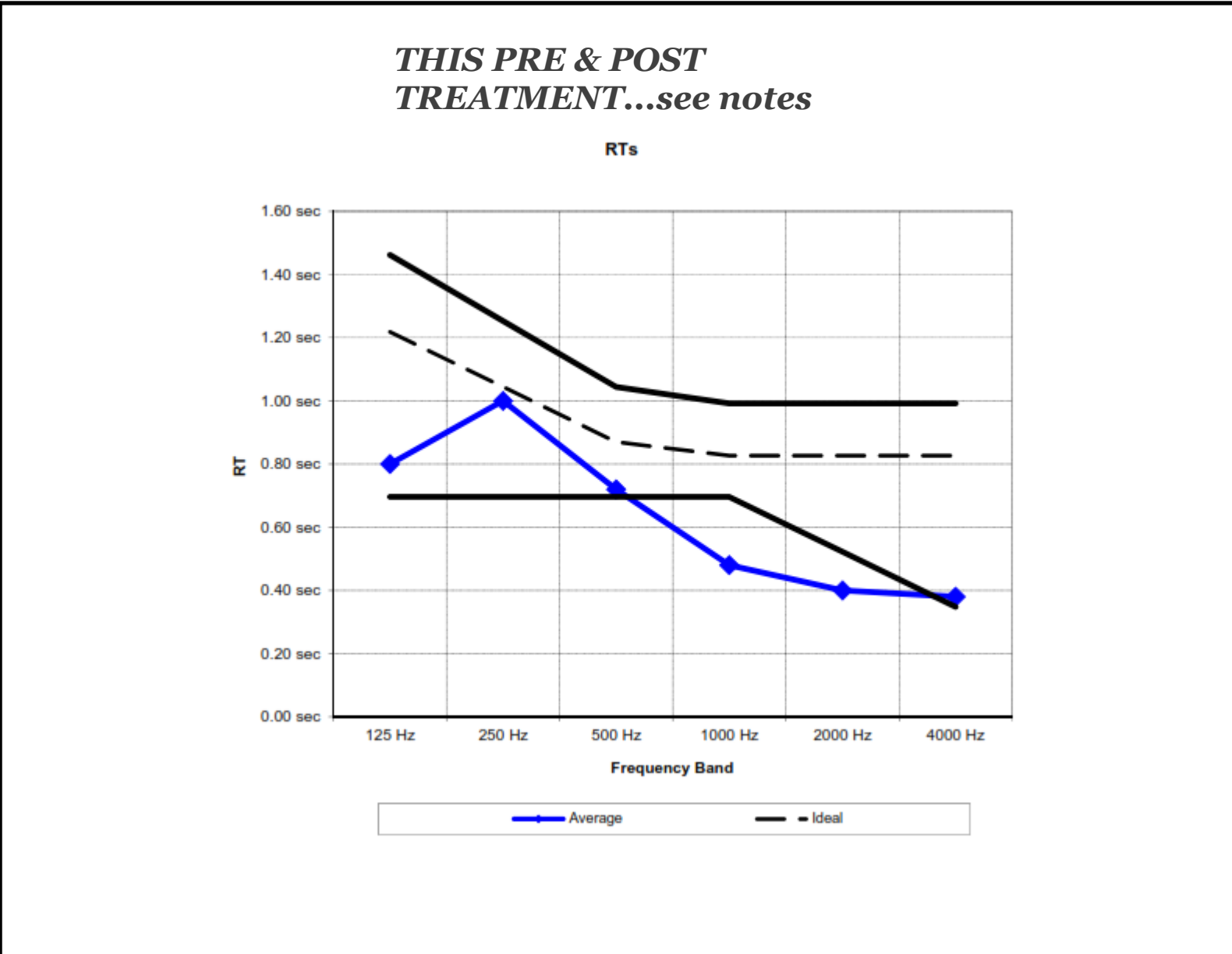
Notes on GLOBAL Decay Time Study:

As detailed on the Cover Sheet of this report, there are historically established targets for the decay time of sound (for a given space with a given function). The acoustical modeling used in this report is via CATT-Acoustics (a top tier acoustical software platform). This application allows for a high degree of acoustical resolution and accuracy in regard to how sound reflects off a surface.

SIMPLY- THE DECAY TIME OF THE ROOM BEFORE TREATMENTS IS ON TARGET AS THE MODELING IS DONE WITH FULL CAPACITY AND THE TARGETS ARE ESTABLISHED FOR 2/3 CAPACITY.

AFTER TREATMENTS, THE DECAY TIME REMAINS ESSENTIALLY THE EXACT SAME.

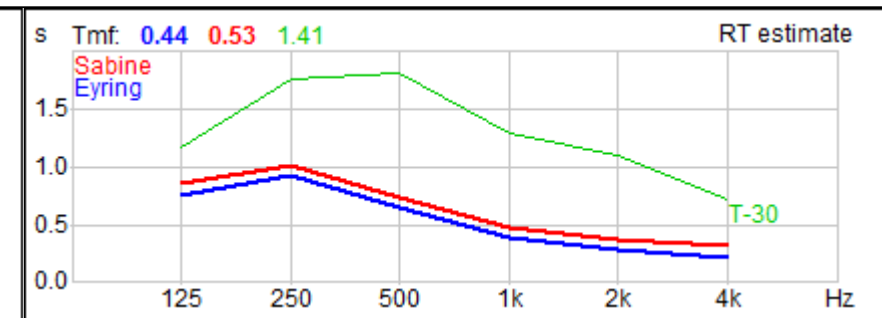
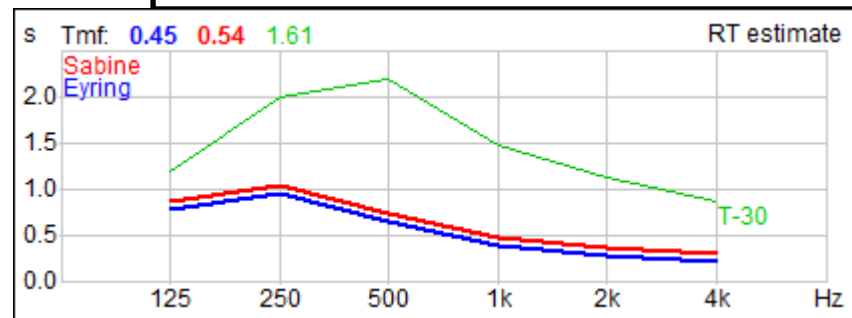
What the treatments are doing to spreading out the sound energy to counteract the concave surfaces and they do clean up the lower midrange. These two benefits are going to greatly improve clarity, intelligibility and spatial consistency.



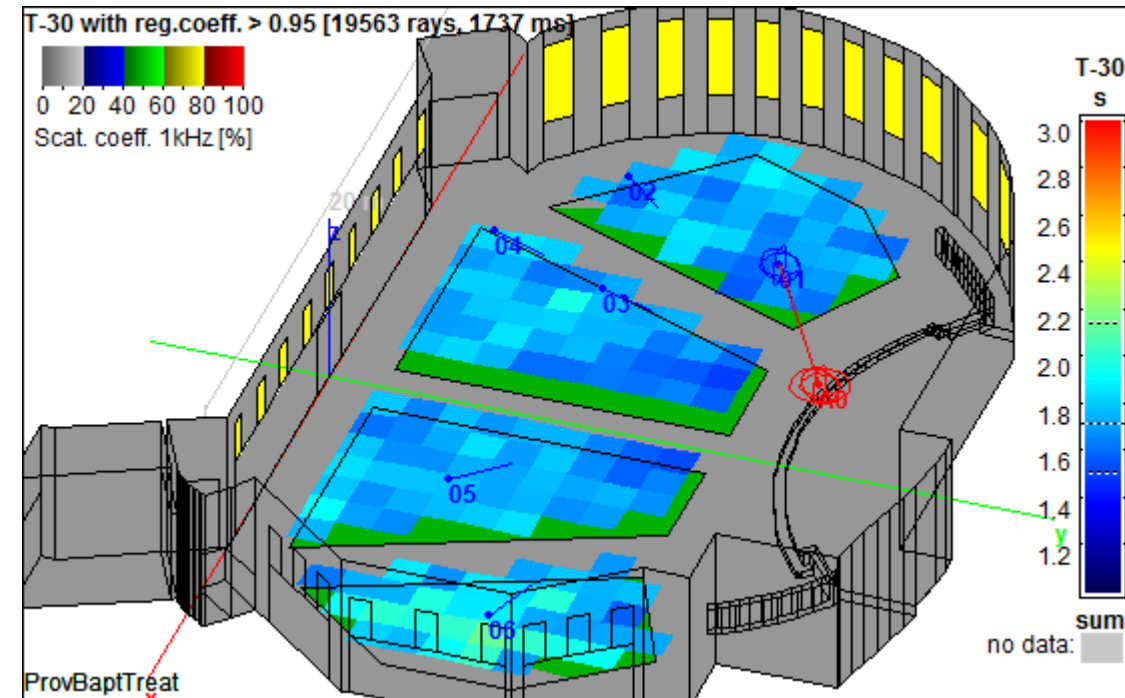
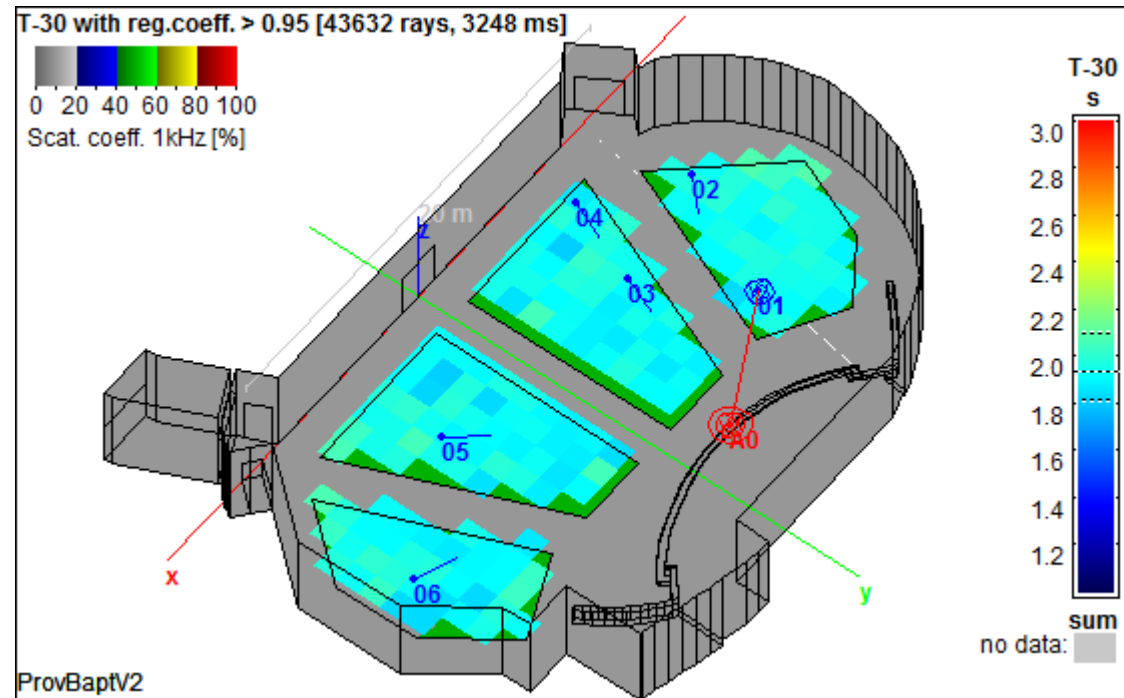
Acoustical Materials:

(40) 24" x 48" GIK Acoustics EVOLUTION PolyFusor.

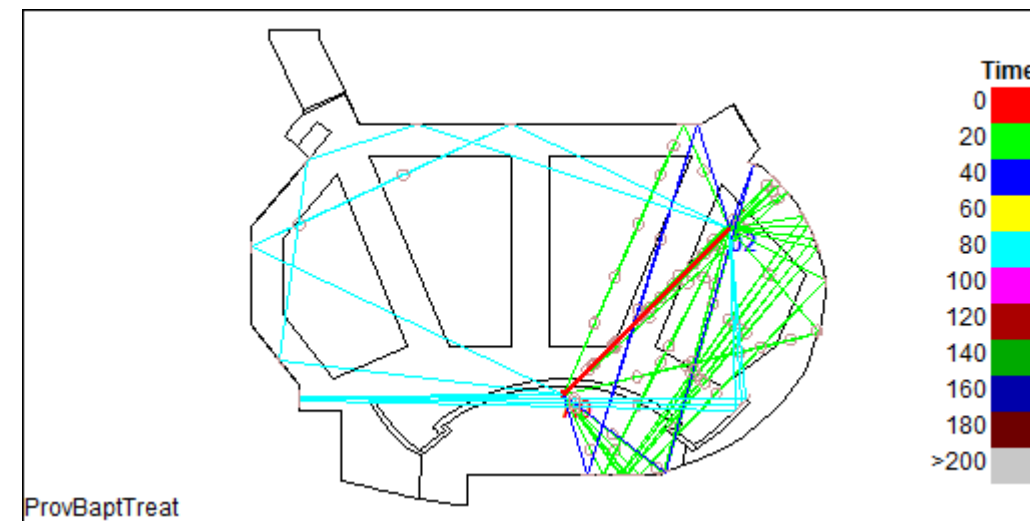
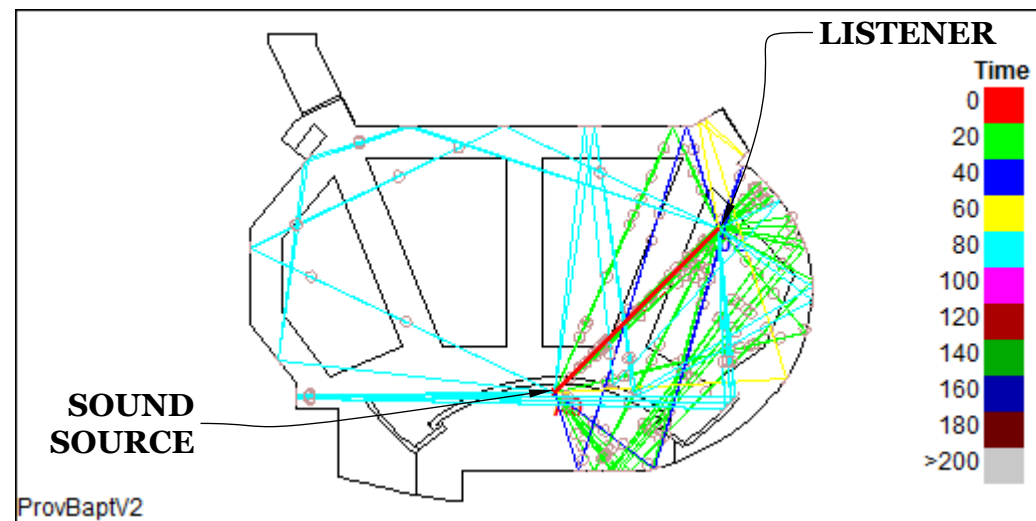
Class A fire rated rigid fiberglass with acoustical fabric covering.



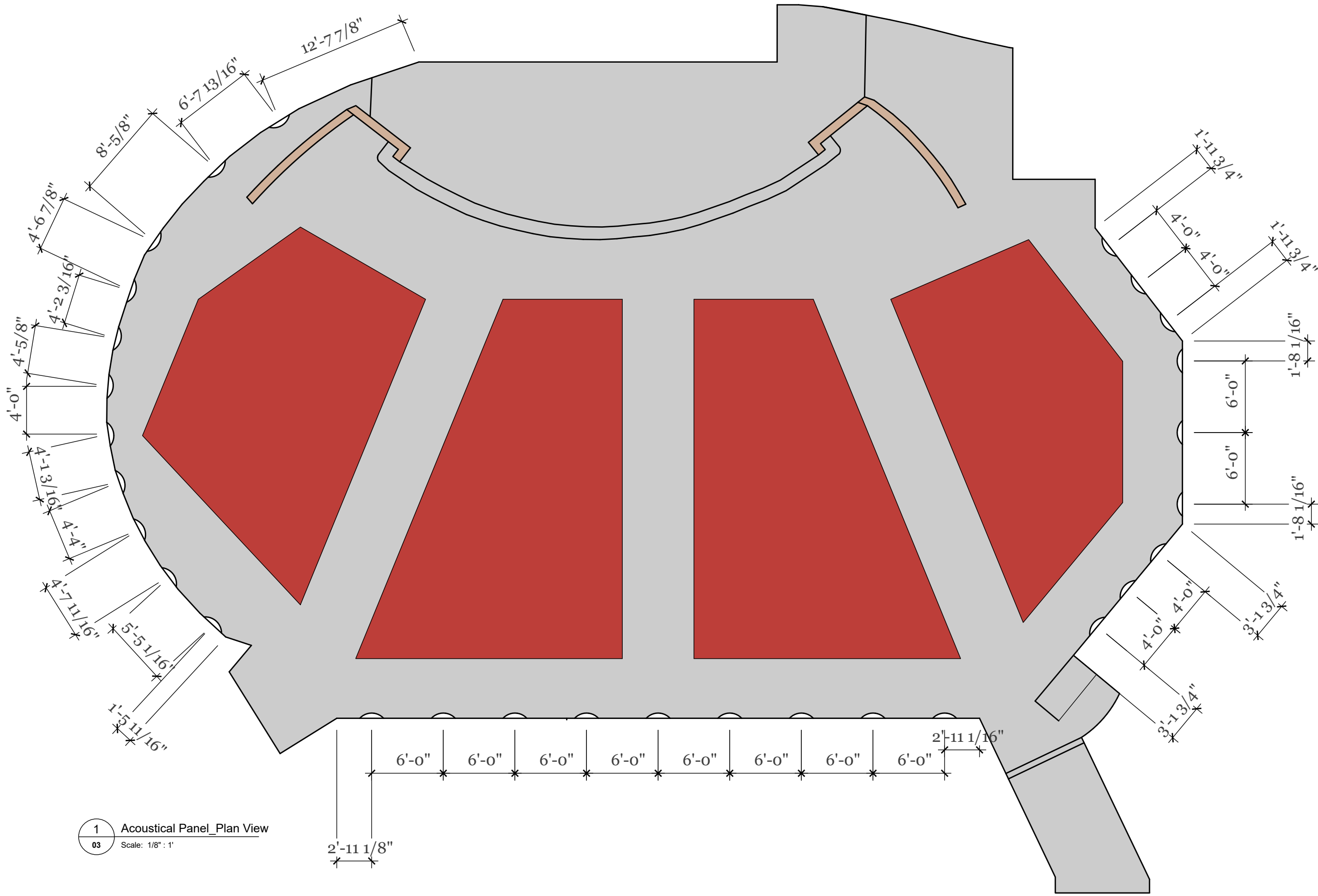
these are output graphs from modeling program. Pre is left and Post is right. The red/blue curves are RT60, the green is a simulation from a typical speaker exciting the room...the treatments reduce the midrange by ~.5 sec min



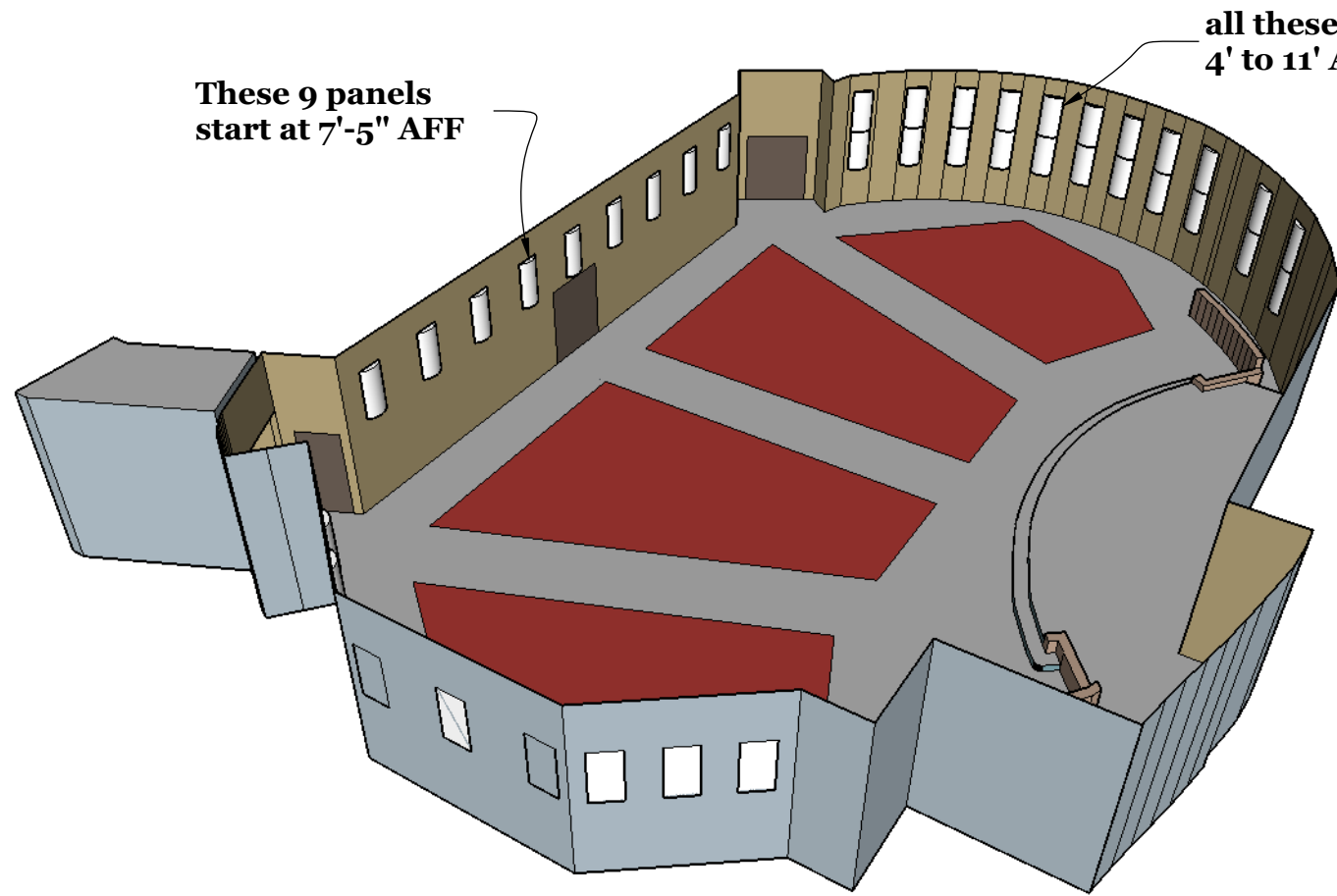
ABOVE ARE T-30 DECAY TIME STUDIES. An Omnidirectional speaker is placed at front of stage. Pre is left and Post is Right. All seats show an improvement which will equate to a cleaner less muddy acoustical response. This is step 1 of the treatment plan.



These studies above are Image Source Mapping where individual sound reflections are mapped from the sound source to the listener. The listener location is noted. The reduction of both lined and the small red circles (these are specific reflection nodes), shows that the sound energy is being spread out. Thus affirming the treatment plan.

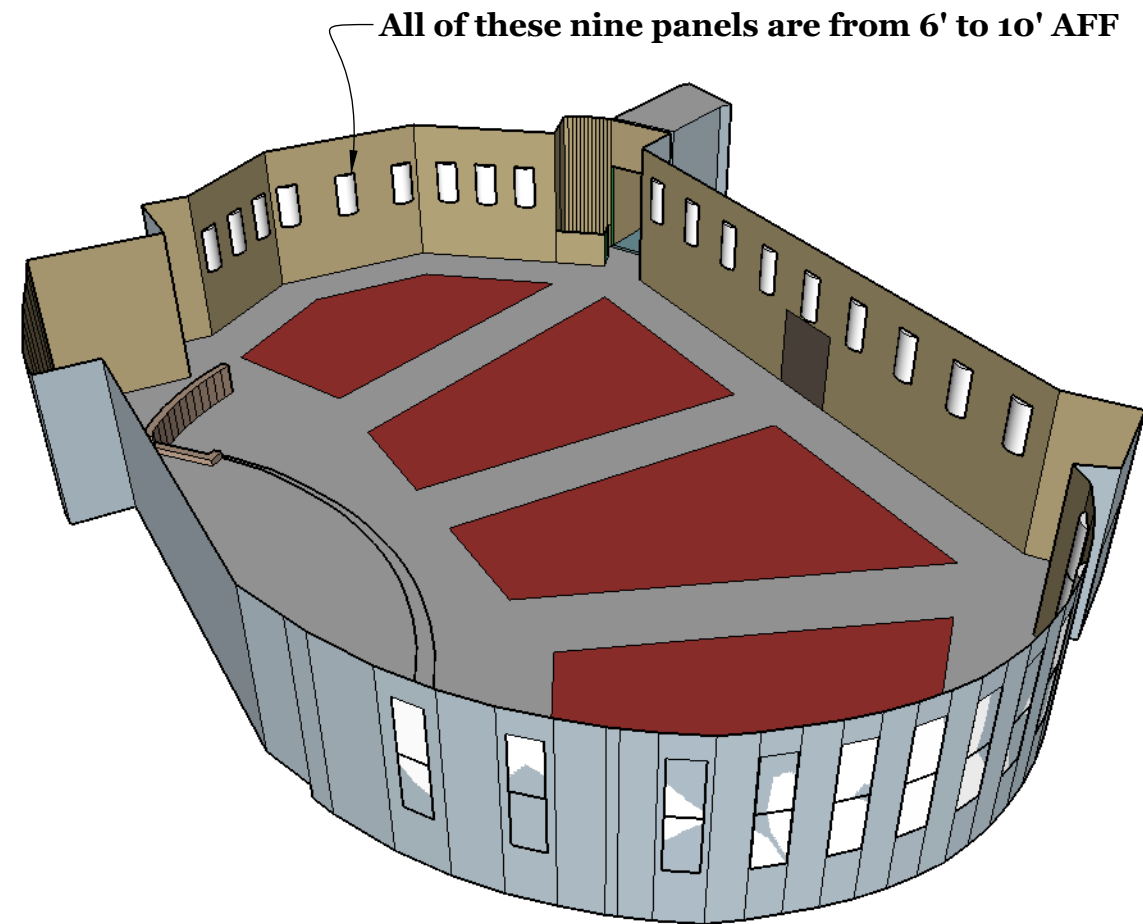


1 Acoustical Panel_Plan View
 03 Scale: 1/8" : 1'



**These 9 panels
start at 7'-5" AFF**

**all these 22 panels are from
4' to 11' AFF**



All of these nine panels are from 6' to 10' AFF