

Church / School Multi-Purpose Room Noise - Case Study

Unger Technologies was contacted by a church administrator in regards to noise issues they are having in their Multi-Purpose room. The administrator explained that they use this large room for basketball, athletic activities, musical performances, church breakfasts and occasionally church services. The noise issues they are experiencing in the space are distorted music, garbled speech, and high overall sound levels during athletic events or when many people are gathered in the room. The church's gym needed to reduce the sound levels with an aesthetically pleasing acoustic product.

Unger Technologies gathered the pertinent multi-purpose rooms dimensional and construction information and performed reverberation calculations. The reverberation calculations provided data on the room's current acoustical condition and acts as a base line for the addition of sound absorptive materials. Unger Technologies performed a calculation for determining the amount of acoustical material to be added to the space and bring the sound reverberation down to acceptable levels for the room's primary use. Several material styles and facings were offered based on the churches criteria – Sound Baffles, Acoustical Banners, and Fabric Wrapped Wall Panels. Unger Technologies calculations assisted in determining the quantity, size and layout of each acoustical material being considered by the church.



Reverb Analysis Program

Calculations in Feet

Gym - Treated

Sound Absorption Table				Frequency Hz.	125	250	500	1000	2000	4000	
Line	Area	Qty	Loc	Surface/Object	Absorption - Sabine Vs. Frequency						
1	12250.0			1 All Walls	Concrete, Painted	612.5	612.5	735.0	857.5	1102.5	980.0
2	7500.0			1 Floor	Wood Parquet on Concrete	300.0	300.0	525.0	450.0	450.0	525.0
3	7500.0			1 Ceiling	Gypsum Board	2175.0	750.0	375.0	300.0	525.0	675.0
4				135 All Walls	HS 4 ft. x 8 ft. x 2 in.	1687.5	4239.0	4968.0	4711.5	4320.0	4320.0
Total		27250				4775	5902	6603	6319	6398	6500
Room Volume = 262500				Length = 100	Width = 75		Height = 35				
				Frequency Hz.	125	250	500	1000	2000	4000	
Avg. Room Absorption Coefficient (Sabines per sq. foot)					0.18	0.22	0.24	0.23	0.23	0.24	
Calculated Reverb Time in Seconds					2.69	2.18	1.95	2.04	1.78	1.43	
Optimum Reverberation Time					2.00	2.00	2.00	2.00	2.00	2.00	
Reverb Time Difference					(0.69)	(0.18)	0.05	(0.04)	0.22	0.57	
dB Reduction					1.9	5.5	6.1	5.9	4.9	4.7	

This program uses the RT60 sabine equation as defined by Knudsen/Harris (1980). Unger Technologies believes the output data to be accurate based upon the above formula and the entered data. Unger Technologies cannot accept liability for accuracy of results for a specific application. No other warranty, expressed or implied, is made or intended or intended.

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