



DENNIS & MAGNANI
STRUCTURAL CONSULTANTS, P.C.

September 14, 2009

Mr. Andrew Hobbs
Hobbs Vertical ICF Wall System

RE: Sound Transmission Class (STC) of Hobbs Vertical ICF Walls

Dear Andy;

You requested that I perform some research concerning sound transmission class at the aforementioned project. Outlined below is a report of my findings.

Sound Transmission Class (STC) provides an estimate of the acoustic performance of a wall in certain common airborne sound insulation applications. This is important where dwelling units are adjacent to other units, corridors, stairs or public areas.

The 2009 International Building Code addresses STC in Section 1207 – Sound Transmission. The code requires walls, partitions and floor/ceiling assemblies separating dwelling units from each other or from public or service areas to have an STC of not less than 50 (45 if field tested). Penetrations must be treated to maintain the required ratings.

I have performed an investigation that included reading reports on sound transmission and reviewing information on websites of similar building products. One factor that stands out is that weight per square foot (mass) of the wall has a major effect on the sound transmission loss.

The Masonry Society has developed a standard for determining STC. It is TMS 0302 – Standard Method for Determining the Sound Transmission Class Rating for Masonry Walls. They have developed an equation for determining the STC based solely on the weight of the masonry wall. The equation for concrete masonry is as follows:

$$STC = 21.5 W^{0.223}$$

W = Average Weight of Wall in Pounds Per Square Foot

Your modified flatwall system essentially has a continuous 4 1/4" thick concrete wall. If you assume normal weight concrete at 145 psf, your system nominally weighs 51 psf. Substituting this in the equation from The Masonry Society, the STC value is 51.7. Note that The Masonry Society's equation is for masonry, but I would judge that a concrete wall is essentially the same as a fully grouted masonry wall. Application of drywall both sides of the wall will also slightly increase the performance of the sound transmission class.

This report addresses my opinion on the STC rating of your wall. Overall performance of the wall in conjunction with floor and ceiling with respect to assembly STC's is beyond the scope of this report. It is my conclusion that your modified flatwall system meets the code criteria of a rating of 50 for walls of dwelling units.

Please call if you have any questions or if you require additional information.

Sincerely,



Randy J. Magnani, P.E.
President

RJM/lis

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