



Sound Property Testing Conducted On AB Fence Panel System

Tech Sheet
#2004

The following tech sheet summarizes the acoustical testing conducted on the AB Fence Panel. This summary provides the information that is most commonly used, but Allan Block does not claim that all information in the referenced ASTM Test Methods are represented in this Tech Sheet.

Test Objective

The objective of the testing was to determine the Sound Transmission Class (STC) and the absorption properties for the AB Fence Panel. The results of the tests would allow for comparison of the Allan Block manufactured system to products used in the noise barrier market.

Test Method & Procedure

Stork – Twin City Testing, in their acoustical testing chambers, conducted the sound testing. The 8 ft high by 9 ft wide (2.4 by 2.7 m) AB Fence Panel specimen was constructed between the source and receiving chambers. The block fence was constructed with the seams staggered by a half block from the adjacent layers. The perimeter of the fence was sealed with Mortite and a Zip seal was used to fill the voids between the corners of the blocks and the chamber openings.

Sound Absorption Coefficients:

The sound absorption testing was conducted in accordance with ASTM: C423, "Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method." The AB Fence was tested by recording the diffused incident sound as the sound source was applied. The test specimen metal doors, which have a known absorption coefficient, were then closed and the diffused incident sound was then recorded again. The difference in the two recorded measurements is the amount of diffused incident sound absorbed by the AB Fence Panel.

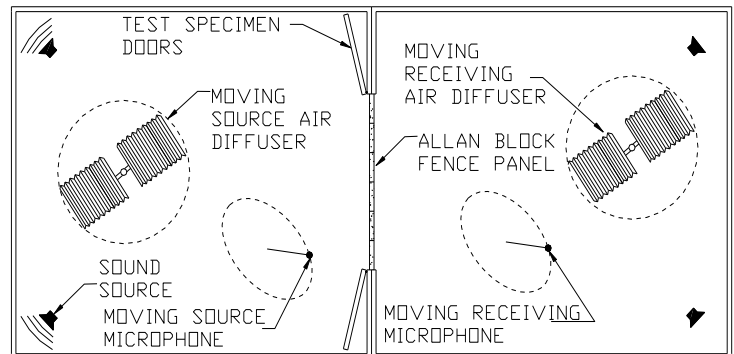


Figure 1: Acoustical Testing Chambers

Sound Transmission Coefficient:

STC testing was conducted according to ASTM: E90, "Laboratory Measurement of Airborne Sound Transmission of Building Partitions." The noise reduction across the test specimen is recorded by the source and receiving microphones. The actual transmission loss at each frequency is calculated by the following equation:

$$TL = NR + 10 \log S - 10 \log A_2$$

- Where:
- TL = Transmission Loss (dB)
 - NR = Noise Reduction (dB)
 - S = Surface area common to both chamber sides (ft²)
 - A₂ = Sound absorption of the receiving room with sample in place (sabins)



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Test Result Interpretation

Sound Absorption Coefficients:

The AB Fence Panel was tested as a freestanding wall with a surface area of 72 ft² and 16 ft of air space behind the fence panel. The Sound Absorption Average (SAA) for the given frequency range was then calculated. The Noise Reduction Coefficient (NRC) is the average of the absorption coefficients for 250, 500, 1000, and 2000 Hertz and is reported to the nearest integral of 0.05. The following are the results of the absorption testing:

NRC Rating **0.10**
SAA **0.11**

The results are typical for a standard solid faced masonry product.

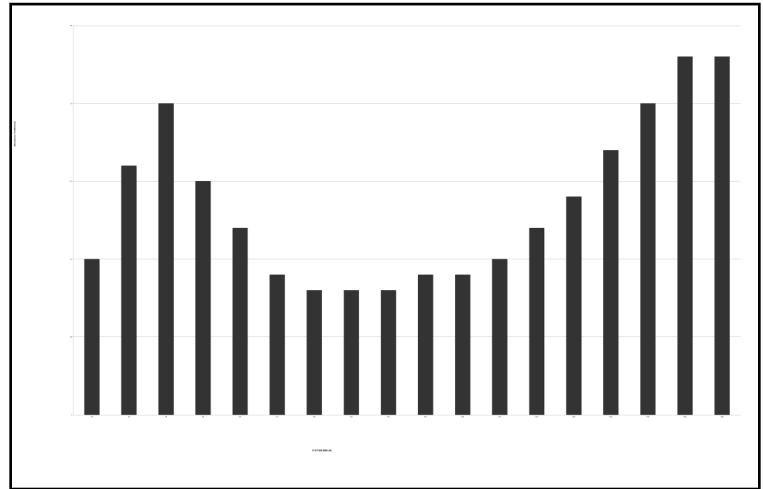


Figure 2: Sound Absorption Coefficient

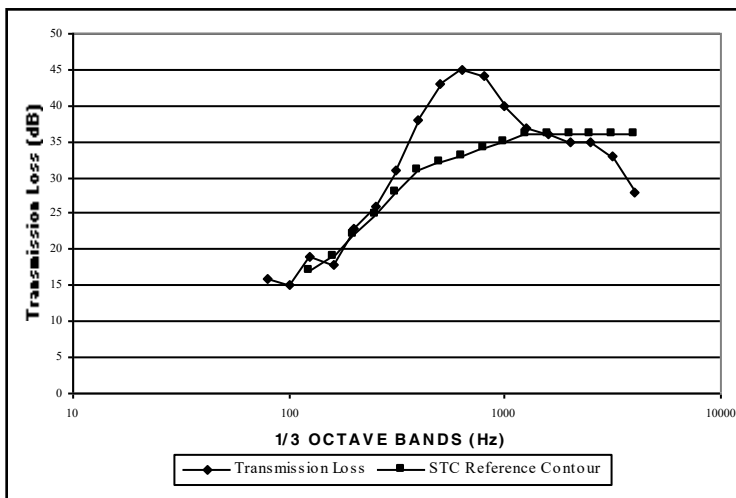


Figure 3: Sound Transmission Class (STC)

Sound Transmission Coefficient:

The STC value is obtained by applying the transmission loss values to the STC reference contour of ASTM: E413, "Determination of Sound Transmission Class." Most of the frequencies tested (200 Hz through 1250 Hz) had transmission loss values exceeding the standard STC contour, indicating the AB Fence Panel provides a superior noise barrier for the mid-range frequencies. Most traffic noises are represented by frequencies near 550 Hz, which is in the mid-range of audible frequencies. Test deficiencies indicate that higher frequencies (3150 Hz and 4000 Hz) are traveling through the wall. **The overall STC value is STC 32.**