Appendix J
Sound Control

When installing wood floors (hard surface flooring) in multi-family dwellings, it is necessary to take into consideration both the UBC and NBC requirements. The UBC Uniform Building Code and the BOCA National Building Code both have requirements regarding sound control for multi-family dwellings. Areas of the country that do not follow either of these code standards may have local building code regulations with their own sound control requirements. The BOCA National Building Code, 1996, has the following section for sound control:

"1214.2 Air-borne noise: Walls, partitions and floor/ceiling assemblies separating dwelling units from each other or from public service areas shall have a sound transmission class (STC) of not less than 45 for air-borne noise when tested in accordance with ASTM E90 listed in Chapter 35. This requirement shall not apply to dwelling unit entrance doors; however, such doors shall be tight fitting to the frame and sill. 1214.3 Structure borne sound: Floor/ceiling assemblies between dwelling units or between a dwelling unit and a public service area within the structure shall have an impact insulation class (IIC) rating of not less than 45 when tested in accordance with ASTM E492 listed in Chapter 35."

Condominium associations may have a set of protective covenants with even more stringent regulations than the Uniform or National Building Code. The STC Sound Transmission Class is a laboratory measurement of the ability of a specific construction assembly (such as partition, window, door, etc.) to reduce airborne sounds including voice, television and alarm clocks.

The IIC Impact Insulation Class is a laboratory measurement of the ability of a floor/ceiling assembly to reduce impact sound such as footfalls, movement of furniture, etc. The F-IIC rating is a field measurement done in situ after a floor installation is completed. The higher the value of any of the quantities above, the greater the airborne or impact isolation provided by the assembly.

In any building, a sound rated flooring system, when properly installed, will significantly improve the IIC/FIIC when compared with a non-rated hard surface floor system. The sound rated flooring products do not have a significant effect on the STC measurement.

Sound Control Product Types
There are a wide variety of materials that are marketed for noise control properties. Some are systems, and others are specific materials. Noise transfer from floor to ceiling is dependent upon the entire floor/ceiling assembly.

When comparing the performances in sound control products, only products with testing from a certified laboratory should be considered. Copies of the test should be requested so that variables can be closely compared. Variables, such as type of floor (i.e., wood or ceramic, laminate, marble), concrete thickness, with or without suspended ceiling, wood frame structure can greatly affect the performance or lack thereof, of the product. Comparing products with similar variables make it easier to see which product performs better.

Sound control materials sold with F-IIC ratings (field tests) may not be accurate if all floor and ceiling construction is not included in the test.

Installation
Product installation varies by product and manufacturer. One basic key to peak performance is to avoid hard surface transference points. This would mean that the floor should not come in direct contact with the wall or the molding. A small gap should be left between the molding and the floor as well as the floor and the wall. Leaving a gap would prevent sound from traveling across the floor to the wall or molding and down behind the wall where there is no sound control.

Nails are also considered a hard surface transference point. When installing a nail down wood floor, nails should not penetrate through the floor and into the sound control material and subfloor below. Doing so would greatly diminish the performance of the sound control material.