

**Consultant Richard Brett addresses the matter of loads on performance floors and their specification, timber specialist Peter Ross provides information on timber and basic design, while consultant Adam Huggard and floor supplier Bob Dagger review standards, floor construction and measurements of floor characteristics.**

40-50% inside a theatre and will also vary through the seasons. Because we have very dry seasons and very wet ones the floor will actually shrink and expand accordingly. You need to take account of that; and putting a vapour barrier in tempers that expansion and reduces the amount of moisture that will affect the floor.

It is important to get the subsurface as level as you can, but the criteria here vary wildly. A specification for concrete might typically ask for about 1/4" (6 mm) level over 10 ft (3 m) and 'wholly level', which is actually very difficult for most concrete contractors to achieve. In the States 'wholly level' means that the entire slab needs to be level within the specified tolerance. Contractors baulk at this all the time, but it is vital to get the subsurface as good as you can. If the floor slab is not level then parts of the finished floor construction will have to be shimmed up and sometimes it will not meet door elevations because of excess shimming to correct for the fall on one side of the floor.

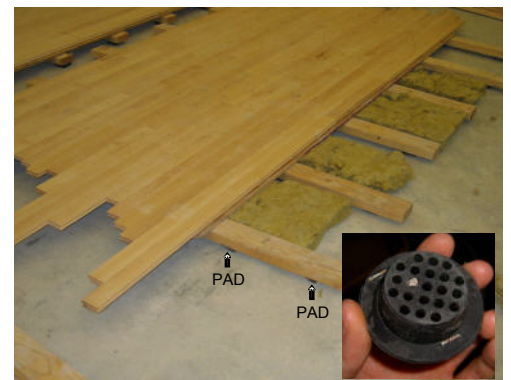
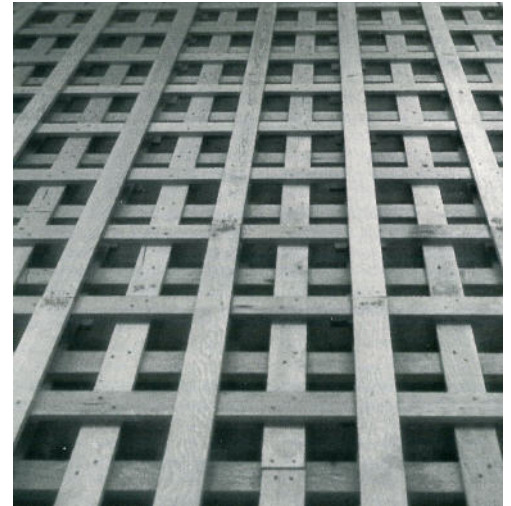
Having looked at these aspects of the floor, let us consider some ways to actually install the floor. One of the easiest is a modular system. Different modular systems that you might run into, at least in the States, include Centaur Boflex which is a system of long interlocking tongue and groove panels that include foam channels underneath. It's a very good system, typically used for multi-purpose rooms, black boxes or studio theatres – those smaller environments in which you want a cheap floor that is fairly easy to install. We typically use Harlequin Liberty in dance studios and the more permanent installations; it is also very easy to install because it comes in large modules that can be laid down fairly quickly. With that system you have a choice of different flooring surfaces; on the top you either put down Marley or some other specialist dance surface. The Rosco Subfloor is a more temporary installation but it follows the same techniques and has the same good interlocking qualities.

Then there are built-up assemblies which are what a many consider for most of our

selecting the various pieces and contractor assemble the required traditional basket-weave is made rotating the directions of the layers. There is some variation in the build-up layers and the width of that are used, but it is very when specifying a basket-weave specify the exact quality and grade of dried, because this can dramatically affect the resilient characteristics and the weight-bearing capacity of the floor.

The majority of floors that we see nowadays in the States are pad and sleepers. An example of a pad is shown in the inset. That is a conical pad; sometimes you see rectangular pads. These are typically stapled or fastened to sleepers, and then either the underlay or just the top layer of timber is laid right on top of that. Usually the spaces between the sleepers are filled with insulation just to dampen footfall; this makes a lot of acousticians happy and it also tends to buffer the effects of humidity again; the insulation soaks up some of the humidity and slowly releases it into the floor.

There are two types of these pad and sleeper systems. There is a floating system and a captured system. In the floating system, the pads are just attached to the sleepers which means that the entire floor can float around, which is important when the floor is expanding 2" (50 mm) because of relative humidity changes. We have found examples of floors where pads have actually crept out from under the sleeper and were not working. The floor was ruined and had to be pulled up. We now specify a captured system in which the pad is actually restrained in a channel secured to the floor and therefore cannot move left or right. The added advantage that this gives is that, as the floor is loaded, the pad is crushed and as it compresses, the underlay actually contacts the channel. This keeps the pad from crushing too far, preventing damage to the pad and also allows a greater weight-carrying capacity of the floor as there is direct structural contact after a certain point.



*Built-up flooring assemblies - top: basket-weave, below: a floor with pads and sleepers. Note the pads in this picture are beneath the sleepers*

*Photos: Fisher Dachs Associates*