

## ***Concrete Slabs Under Operable Partitions***

### **Know the Design Requirements**

Operable partitions are those that can be quickly put in place or removed and stored to provide flexibility in the spaces typically used for meetings or social functions. There are several types of operable partitions: hinged panel groups, individual panel and continuously hinged partition systems. Some are supported by overhead track with or without a floor guide or track. Some are floor supported with an overhead track to guide them. They may be manual or power-operated. One type consists of movable panels secured in place by vertical expansion to seal against the floor and ceiling.

When partitions are used to separate spaces, there are often questions about gaps between the partition and the floor covering on the concrete slab. Concrete contractors are often accused of not finishing the floor flat enough, thus causing the gaps. However, few architects and engineers understand the design requirements for moveable partitions and often set floor flatness requirements too low without considering deflections for suspended slabs.

Guidance on both these issues is provided in ASTM E 557-12 “Standard Guide for Architectural Design and Installation Practices for Sound Isolation between Spaces Separated by Operable Partitions.” This guide provides design details that should be considered in the design of buildings that include operable partitions. Two important provisions for floor flatness and deflection are shown below:

- “The floor immediately under the partition should not vary from a smooth level surface by more than  $\pm 1/8$  in. in 12 ft. non-accumulative. A steel member, such as a standard terrazzo strip, can be placed in a concrete floor to ensure this accuracy. Test Methods E1155 and E1155M are test methods for measuring floor flatness and levelness.”
- “The weight of the operable partition, in addition to all dead loads, should be taken into consideration when designing the supporting member. Deflection under maximum anticipated load should be no more than  $1/8$  in. per 12 ft. of opening width. If greater deflection is anticipated, either a structural member independent of the roof structure should be installed to support the operable partition, or an operable partition with bottom seals designed to accommodate the larger deflection should be specified.”

An  $1/8$  inch gap under a 12 ft. straightedge indicates a flatness number greater than an FF 50. And a deflection limitation of  $1/8$  inch per 12 feet is about an  $L/2400$  for a 36 ft. span. Typical design deflection limits range from  $L/480$  to  $L/240$ , where L is the span length. Thus, ASTM recommends some very specific and very high quality flatness and deflection limits for operable partitions.

If someone alleges that you caused the gap under that partition, show them what the design should have been to close that gap!

The ASTM standard can be purchased online at [www.astm.org](http://www.astm.org).