



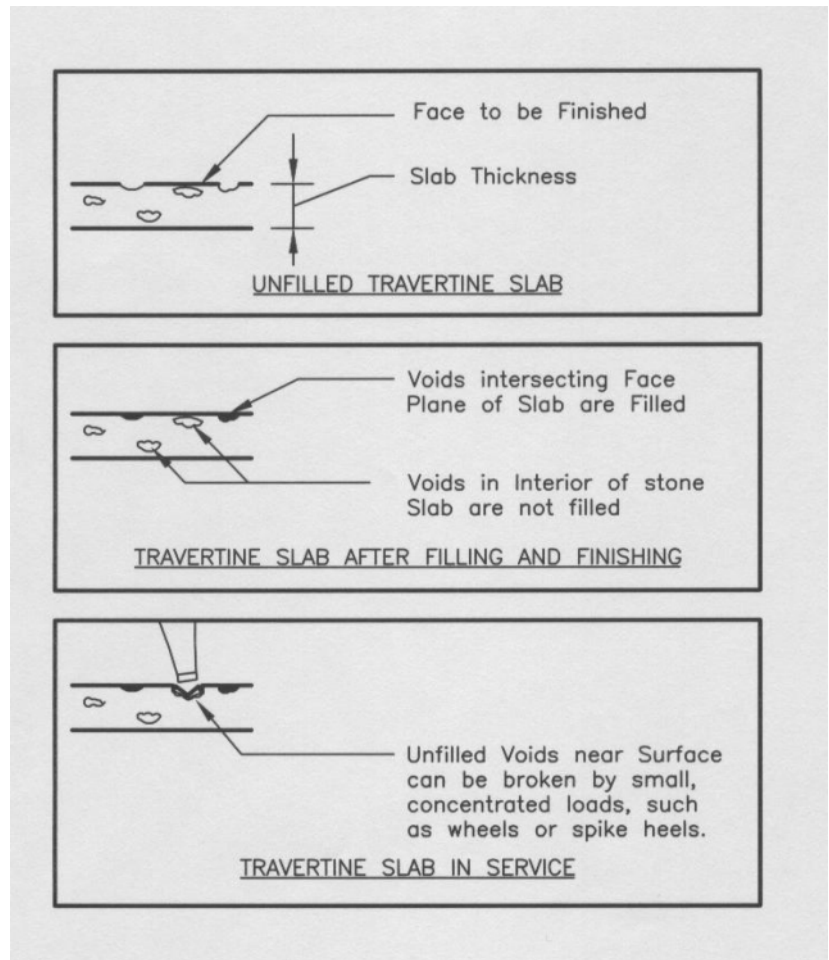
# Travertine Voids

**Q. We recently replaced the floor in our hotel lobby with travertine. It's been in service for about 3 months, and we've noticed all kinds of little holes showing up in the flooring. Did we get a poor grade of travertine?**

**A.** This is one of the more commonly fielded questions in the MIA technical office. No, you did not get a poor grade of travertine. You simply got travertine.

There are many varieties of travertine on the market, sourced from a variety of continents. One thing they will have in common is voids within the stone fabric as a result of trapped gasses during their formation. This is a classic characteristic of all true travertines.

During fabrication of the material, these voids can either be filled or left unfilled. In today's marketplace, it is much more common to fill them, and the filler material will be either cementitious or resinous. During the filling process, all voids that "window" through the face of the stone slab are filled, and the filler material is then ground to an even plane with the stone slab face in the finishing process (Reference adjacent graphic). Voids occurring within the stone slab do not get filled in this process, since there is no way for the fabricator to access them. What you are seeing are voids that occur very close to the stone face, yet were not exposed and therefore not filled. A very thin shell of stone provides a roof over this void, and when a small concentrated load is applied at this point, the fragile shell of stone



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yields to the load and fractures into the void space. Rolling loads from hard (nonpneumatic) wheels and spike heels are two of the more common causes of these fractures.

Fleuri cut travertine will have a higher incidence of these than would vein cut, and today's market seems to be dominated by fleuri. The high frequency of rolling loads in the form of luggage carts found in hotel lobbies will expose these voids in a relatively short time.

One could argue that this material selection wasn't perhaps the most appropriate for this application, although there are certainly a great number of travertine floors in hotels. The MIA Dimension Stone Design Manual documents this behavior of travertine, and also clarifies that it is both acceptable and common practice to fill these voids in place as they become visible. Once the floor has been in service longer, most of the barely subsurface voids will have been exposed, and the discovery of newly formed holes will be reduced. It is akin to a "break-in" period for a travertine floor.

A second possibility for what you are seeing is that surface voids in the material were filled in the fabrication process, but overly aggressive maintenance practices are dislodging or eroding the filler. I would suggest reviewing the maintenance with your staff to ensure that spray nozzle pressures and stiff brushes are not removing filler or grout materials.

