Pedestal Supported Paver Systems ◄ ► My Opinion

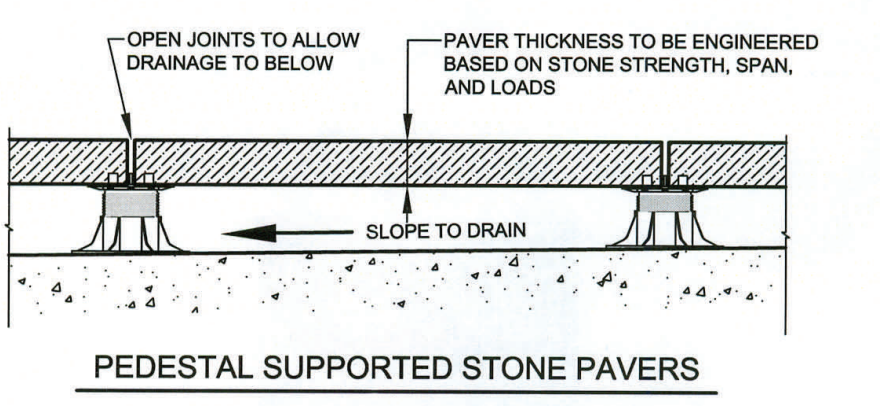
Have a technical question? Check MIA's Dimension Stone Design Manual VII first. If you can't find the answer there, contact MIA's Technical Director, Chuck Muehlbauer, at technical@marble-institute.com. This FREE service is for MIA members only! (Non-member charge: $85/hour) As a courtesy to other members, please limit phone conversations to ten minutes per call. *All opinions and advice provided by Chuck Muehlbauer or anyone else from MIA are provided as general information only. MIA assumes no responsibility and shall not be liable for any damages resulting from your use of this information. Any information provided by the MIA is the exclusive property of MIA and shall not be disseminated, republished, or reproduced in any manner without the prior written consent of MIA.*

Q: I'm working with an architect on a project where he wants to use pedestal supported stone pavers. I can't find much information in the Design Manual about this system, specifically, how thick do the stone pavers have to be for pedestrian traffic?

A: Pedestal supported paver systems, despite their higher original cost, are perhaps one of my favorite methods of installing exterior stone pavement. They offer the advantage of allowing a perfectly level pavement surface, because the drainage slope occurs below the stone and out of sight. They eliminate moisture staining issues between setting beds, joint fillers, and the stone, because the stone is elevated and ventilated via the open joints. And they allow very simple access to the drains and waterproofing below for maintenance and/or repair.

The one requirement of the system however, is that the stone be considered a self-spanning structural member in the design. The recently revised Version 7.1 Chapter 14 of the Marble Institute of America's *Dimension Stone Design Manual* does have additional discussion about the system, and there is an updated graphic on page 14-D-2, but you won't find any indication of how thick the pavers need to be. The stone thickness requirement must be engineered based on its flexural strength, the span between pedestals, and the anticipated loads. The best way to do this is via FEA, or Finite Element Analysis, which by means of a computer program, divides the loaded member into a 3 dimensional grid, then calculates stresses, strains, and displacements at the intersections of that grid. Most engineering firms will have this software available.

As in many engineering issues, the most difficult part is determining the loads. I was involved in a pedestal set granite plaza years ago that had to be designed to carry the 30 kip axle of a fire truck! While your plaza may be for pedestrian traffic only, one must anticipate what might happen in the case of an emergency. Will an ambulance, police car, or fire truck potentially drive on the plaza in those instances? What maintenance equipment might be on the pavers? These questions will need to be answered before the minimum stone thickness can be determined.



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Q: We're installing a residential countertop over existing cabinets that aren't very level. In about 12 feet, they slope about ½". I checked the Design Manual for this allowance, and it only allows 1/8" slope in 10 feet. The customer doesn't want us to shim it level; she would rather have it out of level than to have ½" of shims under one end and none in the other, but then it doesn't comply with industry standards.

A: This would be one of those cases where the customer is always right. In that same section of the *Dimension Stone Design Manual*, paragraph 10.1 on page 17-5 reads "The tolerances listed in this section are achieved using skilled tradesmen following standard industry workmanship practices. Due to variations in fabrication equipment and stock availability, these tolerances may not be achievable, or in some cases, closer tolerances may be achievable.

Therefore, for any particular project, the supplier and customer may agree to hold tolerances that are more or less stringent than those listed herein. Such agreements should be documented in writing. Unless otherwise agreed, the tolerances listed in this document shall govern." It is perfectly acceptable to allow the ½" out of level installation as long as the customer agrees to it. I would probably opt for the same myself, as ½" in 12 feet isn't really that much slope, and is probably less noticeable than a ½" variation in the dimension between the countertop and the drawer fronts over the same distance.