

## Standard Details for Natural Stone Tiles ◀ ▶ 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](mailto: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.** What is the minimum thickness for granite pavers that will be subjected to vehicular traffic? We're designing a driveway under the porte-cochère of a hotel and want to use granite pavers throughout the drive. Are there stronger varieties of granite available that could be used in lesser thicknesses?

**A.** It's not uncommon to require 3" (±75 mm) granite for these applications, but comprehensive analysis may indicate the need for lesser, and in some cases, greater thicknesses. The granite pavers are only one component of the drive surface. The bedding, sub-structure, the paver's unit size, and flexural strength of the stone must all be considered. The most comprehensive design method would be to analyze using FEA (Finite Element Analysis) software, which has proven to correlate quite well with the real world environment. Years ago this was an expensive procedure, but today FEA software and those who are capable of using it are much more plentiful, making it more affordable. Since the application is the drive under the porte-cochère, the traffic loads should be limited to passenger vehicles, with perhaps an occasional shuttle bus representing the heaviest axel. The canopy should prohibit large busses and fire trucks from traversing the area, although if the granite extends some distance away, there could be heavier loading in those areas.

**Q.** Where can I find standard details for stone tile installations?

I have the TCNA Handbook, but it clearly states that it is limited to ceramic products. Yet in the Marble Institute of America's *Dimension Stone Design Manual*, I don't see much for detailing of natural stone tiles.

**A.** Traditionally, the *Dimension Stone Design Manual* didn't offer many graphics of natural stone tile installation because they would be near duplicates of the details that already exist in the TCNA (Tile Council of North America) handbook. Yet not all of the TCNA details are appropriate to use for natural stone installation, because some details perform satisfactorily with ceramic products, but not with stone. Rather than duplicate the details, the *Dimension Stone Design Manual* merely references a list of which TCNA handbook details are endorsed for use with stone. This list is found on page 13-8 of the *Dimension Stone Design Manual VII*. A simpler solution will be available soon. The MIA is currently engaged in a collaborative effort with the TCNA and the NTCA (National Tile Contractors' Association) to develop a stand-alone series of details for natural stone tile installations. This new document will likely occur as an insert to the current detailing manuals of both organizations and is scheduled to be available as early as the 4<sup>th</sup> quarter of this year. And while many of the details will be near duplicates of existing TCNA details, they will differ somewhat to address those concerns unique to stone tiles. This approach will eliminate the requirement to cross-reference between

two organizations' documents to obtain the information that you are seeking.

**Q.** I've seen numerous instances of salt attacking limestone and travertine. Is there a particular mineral in these stones that is vulnerable to this chemical attack?

**A.** Salt attack in these stones is for the most part mechanical, and not chemical. Salt, being water soluble, penetrates the stone in solution. Once the water evaporates, however, the salt recrystallizes, thereby exerting pressure on the interior walls of the pores within the stone. This recrystallization pressure can be great enough to exfoliate the surface of the stone.

**Q.** Why does the MIA insist on 16 gauge minimum for steel studs in walls? It would be entirely possible to meet the MIA deflection specs with lighter gauges in some applications.

**A.** Yes, there are many ways to stiffen the wall, for instance deeper sections, closer spacing, shorter spans, etcetera. What the lighter gauge stud isn't capable of, however, is providing an adequate capacity for self-threaded fasteners, which are used almost universally to anchor into metal stud wall systems. It is the fastener performance that mandates the minimum 16 gauge stud.