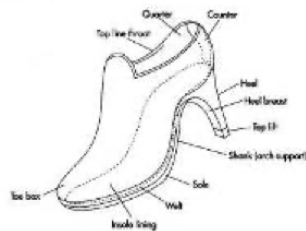




HIGH HEEL SHOES & BELGARD® PERMEABLE PAVERS

Belgard permeable interlocking concrete pavers provide surface openings to allow stormwater to drain through the pavement surface. These void spaces are created by specially designed pavers with spacer bars that can create surface openings, typically ranging between 5 to 15% open area. The joint spaces created accommodate highly permeable open graded aggregate (typically ASTM # 8 or #89 gravel size aggregate) using spacer bar widths between 7 and 13 mm (¼ to ½”). Some specifiers raise concern about high heels and the potential for heels to become stuck in permeable paver surface openings. This Technical Note addresses high heel shoes related to Belgard permeable pavers.



High Heels & Walking Surfaces

Concrete pavement, including concrete pavers, slabs and permeable units, are highly slip resistant. High heels in general can be worn while crossing these firm and stable surfaces. Concrete pavers, including permeable units with enlarged surface openings, are also suitable for high heel traffic. High heel lengths vary but typically begin at 3 inches in length, and can be as long as 10 inches. The critical dimension to assess permeable walking surfaces is the heel tip size. The narrow diameter of the heel varies based on shoe type. The most common heel tip diameter is about ½ inch, +/- ⅛ inch (13 mm +/- 3 mm). The most common high heels tips on the US market today range between 9 to 15 mm. The most common tip replacement parts for high heels on the market is shown below.

High Heel Shoe Repair Tips - Taps Pins Dowel Lifts Replacement, Wal-Mart Online shopping website



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High Heels in Action

In October 2018 Belgard Architectural Products Group tested three of the most common high heel tip sizes on the market across a permeable paver parking lot, as shown below.



15 mm heel tip



11 mm heel tip



9 mm heel tip

Each shoe type was worn across Belgard's Aqualine 9L permeable paver installed at the Elkridge Library parking lot, in Elkridge, Maryland. The surface openings were filled with ASTM No. 89 chip gravel per the project design. The permeable paver area surface opening installed was about 7%, with measured surface joint widths that were nominally 10 mm +/- 1 mm.



Aqualine™ Pavers



Aqualine™ Pavers



Concrete Pavement

During the study, the pedestrian wearing high heels did not indicate any difficulties walking on the paver surface or joint openings. The heel tip widths were wider than the joint openings in most cases, and the front width of the shoe provided added stability.

Designers recognize that surface openings exist in traditional poured concrete pavements too. Occurring at a frequency that is based on slab thickness, expansion joints and contraction (control) joints are common in concrete pavement design. Saw cuts or insert forms produce linear expansion joint openings in the concrete in the range of ¼-¾” width. Ideal surface openings for any application should be ≤ ½” for public safety, high heels and ADA requirements.

Belgard permeable pavers are an excellent choice when selecting pavement material that may occasionally experience pedestrian high heel traffic. All Belgard permeable pavers have spacer bar joint widths less than ½” (12.5 mm). To further enhance the safety of pedestrian traffic over any permeable interlocking concrete pavement Oldcastle recommends: 1.) paver surfaces should be smooth and include a micro chamfer; 2.) installed joint widths should be less than ½ inch; and 3.) surface joint openings should be filled with chip gravel to within ½” below the top of the paver. Belgard's Aqualine Series of permeable pavers provide optimal surface openings with a smooth surface and micro chamfer. For more information, consult a Belgard Sales Representative.