

COMMON QUESTIONS – INTERLOCKING CONCRETE PAVEMENTS

1. **What are the benefits of concrete pavers?**

Concrete pavers do not crack like asphalt or poured-in-place concrete - each unit has joints that allow for a small amount of movement without cracking.

Concrete pavers are easy to repair and/or replace, especially when repairs are being done to the base or underground utilities. Asphalt, concrete, and stamped concrete can't make this claim.

Resists deterioration from freeze-thaw cycles and deicing salts better than asphalt and better than ordinary poured-in-place concrete.

Snow removal is the same as with other pavements, just plow, shovel or use a snow blower.

Concrete pavers come in many shapes and colors.

Paving stones should last over 30 years, which is much longer than alternative pavements under normal residential use.

2. **Is it acceptable to use crusher dust as bedding under concrete pavers?**

No. Most crusher dust has too many fine particles (passing the No. 200 screen) that hold excessive amounts of water causing the bedding layer to become saturated. The liquefied layer then becomes unstable and can even pump out of the joints. There are also large stone flakes that break down under repeated loads from tires. These two factors result in settlement and ruts developing in driveways.

Concrete sand conforming to CSA A23.1 is recommended - it's the same sand mixed into concrete pavers and poured, cast-in-place concrete. The key is to ensure that the amount passing the No. 200 sieve does not exceed 1%.

3. **Do I have to seal my pavers?**

Sealing is not essential in many applications, with the exception of areas around swimming pools (sealer provides chemical resistance to pool chemicals).

However, sealing concrete pavers is recommended to enhance and maintain colours, and makes it easier to remove stains and spills. The sealer also helps keep the joint sand in place and in turn prevent weeds and ants.

4. **Can stained or broken stones be replaced?**

For lightly stained stones, one option is to clean them - Brown's Concrete carries several

different cleaning products that will remove everything from oil to gum.

Where replacement is preferred, simply scrape out the sand surrounding the stone, remove the dirty or broken stone using a couple of screwdrivers, insert the new stone, replace the jointing sand, and hammer the stone down with a rubber mallet to compact it.

5. Can I colour match old stones when I replace them?

Paving stones usually become faded over time, so it makes it difficult to match the colour over time. Two ways of dealing with this include:

1. When you first install your pavers, place a few extra pieces in a similar setting to your driveway (i.e. same amount of sunlight) so that they can be used when required.
2. Remove stones from the outside edges of your driveway or walkway to use as replacement pieces, and install new stones along the outside edge to act as a border. It is recommended that the new stones along the border be a different but complementary colour so that the colour fading is not as noticeable.

6. I recently removed old pavement, and there is already stone underneath. If properly compacted, can I lay pavers over it?

This is not usually recommended. If the existing pavement is rutted, deformed, uneven or severely damaged, the base or sub-grade underneath the original installation is likely inadequate. Remember that the subgrade and base are the most important part of an interlocking concrete pavement. ICP's are flexible pavements, and as such, rely on load distribution in the base and adequate support from the soil subgrade. Sometimes the stresses on the pavement are from below, especially in freeze thaw areas of the country, so even residential patios and sidewalks need to have a proper base.

ICPI recommends a minimum base thickness of 4 inches (100 mm) for residential patios and walkways and 6 inches (150 mm) for driveways in non freeze thaw areas. In colder climates these base thicknesses are increased and most contractors will use 6 and 10 inches (150 mm and 250 mm) respectively. Gradation is another factor. The ICPI only recommends the use of base material meeting gradation requirements of ASTM-D2940 with 6 to 12% passing the no. 200 (80 micron) sieve.

7. Can geotextile be used in lieu of base?

No. Geotextiles are designed to retain the intended load bearing capacity of a pavement and should not be used to decrease the thickness of the base. As a separation fabric, geotextiles prevent contamination of the base from the subgrade and are especially helpful over silt or clay soils.

8. Don't concrete pavers cost more than ready mix concrete or asphalt?

The initial costs of segmental pavements over concrete or asphalt may be more, but it has been shown that the life cycle cost of an interlocking concrete pavement system over a 40

year period is actually less. This is because pavers make up a maintenance free pavement.

Because of the system of sand filled joints, unlike concrete or asphalt pavements, an interlocking concrete pavement will not crack. If there is maintenance that needs to be performed underneath the pavement, pavers can be easily unzipped then reinstated when the work is done- as opposed to noisy and messy demolition, disposal and replacement of concrete or asphalt. Stains are easily treated as most pavers can either be cleaned with special cleaners or easily replaced.

Even in the short run, there are many advantages to using concrete pavers. Unlike asphalt or concrete, which need time to dry or cure once laid, pavers can be enjoyed as soon as they are installed. Finally, adding in the benefits of many more color and design choices available, it is easy to see why pavers offer the best value.

9. What is the maximum slope for concrete pavers?

For non-vehicular uses such as embankment stabilization, the maximum slope is determined by the angle of repose of the bedding sand, typically around 35 to 38 degrees. For vehicular traffic, the highest slope in use is 18% (about 10 degrees) in a street in Colma, California. Special consideration is given to the drainage of the bedding sand at the bottom of the slope.

10. How are crosswalks designed?

Concrete headers typically used in paver crosswalks perform like bridge abutments. The pavement on aggregate base located on both sides of the header (in and outside the crosswalk) will deform at the junction of flexible pavement and rigid concrete. Why? Because there's no interlock between the aggregate base and the adjacent concrete. For that reason, most crosswalks should be placed on a concrete base with concrete headers separating the pavers from the adjacent pavement (typically asphalt). The base on the immediate sides of the concrete base should be stabilized with cement to provide additional stiffness and reduce the likelihood of deformation at its junction with the concrete headers. The concrete base under the pavers should have drain holes, typically 25 to 50 mm diameter. They should be at the lowest elevations and covered with geotextile to prevent loss of bedding sand.

11. What is the AASHTO structural number of pavers?

Paver and bedding sand are considered as a single layer whose structural number is 0.44 per inch or 1.82 for 80 mm thick pavers and 25 mm of bedding sand. For more information on structural numbers, see the AASHTO guide for design of pavement structures on the ICPI website.

12. How is base thickness determined?

ICPI follows the design methods for flexible pavement in *AASHTO Guide for Design of Pavement Structures*. There is a structural equivalency between asphalt and concrete paver/sand layer. **ICPI Tech Spec 4** (available on the website) offers design guidance that follows this design procedure.

13. How well do interlocking concrete pavements perform over the long term?

One of the best performance examples for streets and sidewalks is found in North Bay, Ontario - 20 Years Later.