Construction Tolerances and Recommendations for Interlocking Concrete Pavements

Note: This guide does not apply to permeable interlocking concrete pavements

These are the basic guidelines. Review related Tech Specs for specific details. These tolerance and recommendations are applicable to most products, but allowances may be required for tumbled, embossed or other unique products. Consult manufactures recommendations.

<table>
<thead>
<tr>
<th>Paver and bedding layer</th>
<th>Attribute</th>
<th>Tolerance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paver joint width</td>
<td>±1/16 in. (2 mm) to max. 3/16 in. (5 mm)</td>
<td></td>
</tr>
<tr>
<td>Paver surface flatness</td>
<td>±3/32 in. (10 mm) in 10 ft. (3 m) (non cum.)</td>
<td></td>
</tr>
<tr>
<td>Lippage at catch basins/drain</td>
<td>1/8 in. to 3/8 in. (3 to 10 mm) (non ADA)</td>
<td></td>
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<tr>
<td>Lippage between individual pavers maximum 1/8 in. (3 mm) for pedestrian access routes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base and subbase layer</th>
<th>Attribute</th>
<th>Tolerance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of base surface variation</td>
<td>±3/32 in. (10 mm) over 10 ft. (3 m) (non cumulative)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Thickness (in. (mm))</th>
<th>Base Extension (in. (mm))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 6 (150)</td>
<td>6 (150)</td>
</tr>
<tr>
<td>6 to 10 (150 to 250)</td>
<td>equals base thickness</td>
</tr>
<tr>
<td>10 to 20 (200 to 500)</td>
<td>10 (250)</td>
</tr>
<tr>
<td>20 (500) or greater</td>
<td>1/2 base thickness</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Edge restraint/curb edge</th>
<th>Attribute</th>
<th>ICPI recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No movement</td>
<td>firm in place</td>
<td>acceptable for application (see “Guide References” on reverse)</td>
</tr>
</tbody>
</table>

Notes:
- Bond lines: Unless it is deemed that the pavement is not adequately restrained at the edges the bond line tolerance is considered cosmetic.
- Paving layer pattern: ICPI recommends herringbone laying pattern for all vehicular applications.
- Base thickness variation: An example of an acceptable variation is 7 1/2 in. to 8 3/4 in. (190 to 220 mm) for an 8 in. (200 mm) required total base thickness. The excavated cut should have the same slope and contouring as the final surface profile.
- Minimum base thickness: These are for well drained soils. Increase thickness in colder climates or weak soils.
- The contractor should have the discretion on cuts less than 1/3 paver size. Sometimes it is not possible to adjust the cuts to less than 1/3 paver size without adjusting laying pattern, and sometimes it is not possible to adjust laying pattern with certain shapes.

*See reverse for tolerance measurement guidance
**Guide References**

**Specification and design references**
- ASCE 58-16 Structural Design of Interlocking Concrete Pavements for Municipal Streets and Roadways
- ICPI Tech Spec 4–Structural Design of Interlocking Concrete Pavement for Roads and Parking Lots
- ICPI Tech Spec 9–Guide Specification for the Construction of Interlocking Concrete Pavement

**Pavement system references**
- ASTM C936 Standard Specification for Solid Interlocking Concrete Paving Units
- CSA A231.2 Precast Concrete Pavers
- ICPI Tech Spec 1–Glossary of Terms for Segmental Concrete Pavement
- ICPI Tech Spec 2–Construction of Interlocking Concrete Pavements
- ICPI Tech Spec 4–Structural Design of Interlocking Concrete Pavement for Roads and Parking Lots
- ICPI Tech Spec 5–Cleaning, Sealing and Joint Sand Stabilization of Interlocking Concrete Pavement

**Bedding and joint sand references**
- ASTM C33 Standard Specification for Concrete Aggregates
- CSA A23.1 Concrete Materials and Methods of Construction
- ASTM C144 Standard Specification for Aggregate for Masonry Mortar
- CSA A179 Mortar and Grout for Unit Masonry
- ICPI Tech Spec 17–Bedding Sand Selection for Interlocking Concrete Pavements in Vehicular Applications

**Base, subbase and subgrade layer references**
- ASTM D 2940 Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports
- ICPI Tech Spec 2–Construction of Interlocking Concrete Pavements
- ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort

**Edge restraint references**
- ICPI Tech Spec 3–Edge Restraints for Interlocking Concrete Pavements

**Geosynthetics reference**
- Tech Spec 22—Geosynthetics for Segmental Concrete Pavements

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**Tolerance Measurement Guidance**

**Joint Width**
- Joint widths are measured with a ruler from inside edge of paver to inside edge paver between adjacent pavers.

**Lippage**
- Lippage is measured from the top of a paver to the top of the adjacent paver.

**Surface Flatness Tolerance**
- Paver surface flatness and top of base surface variation are measured with a straight edge for simple slopes and with a transit for complex contours.

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