Construction Tolerances for ICP
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.

### Paver and bedding layer

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

### Base and subbase layer

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Tolerance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top of base surface variation</td>
<td>$\pm \frac{3}{8}$ in. (10 mm) over 10 ft. (3 m) (non cumulative)</td>
</tr>
</tbody>
</table>

### Edge restraint/curb edge

<table>
<thead>
<tr>
<th>Attribute</th>
<th>ICPI recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No movement</td>
<td>firmly in place</td>
</tr>
</tbody>
</table>

**Notes:**

1. Bond lines: Unless it is deemed that the pavement is not adequately restrained at the edges the bond line tolerance is considered cosmetic.
2. Paving layer pattern: ICPI recommends herringbone laying pattern for all vehicular applications.
3. Base thickness variation: An example of an acceptable variation is $\frac{7}{16}$ in. to $\frac{8}{16}$ 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.
4. Minimum base thickness: These are for well drained soils. Increase thickness in colder climates or weak soils.
5. The contractor should have the discretion on cuts less than $\frac{1}{3}$ paver size. Sometimes it is not possible to adjust the cuts to less than $\frac{1}{3}$ 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

Tolerance Measurement Guidance

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

Lippage is measured from the top of a paver to the top of the adjacent paver

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