

PD³ BASKET[®] ASSEMBLY

ALTERNATING TAPERED PLATE DOWELS FOR SAW-CUT CONTRACTION JOINTS

Reliably deliver serviceable saw-cut contraction joints and deliver joint stability measurements of .01 inches (.25 mm) in concrete flatwork applications with the PD³ Basket[®] assembly. The specific size and tapered shape of the PD³ Basket[®] assembly reliably provides joint stability, positive load transfer and continuity of surface profile to minimize joint spalling, eliminate tripping hazards and improve joint filler performance without inducing restraint.

The PD³ Basket[®] Assembly Helps You:

- Collect your retainage
- Reduce your call backs and save labor
- Optimize the amount of steel in your project
- Limit your liability
- Deliver cost-effective concrete flatwork

When used with the Diamond Dowel[®] System in the “strategic reinforcement” design, it helps optimize the steel in your projects by locating the steel where it’s needed most, at the joints. The PD³ Basket[®] assembly has realized return on investment for owners, designers and contractors worldwide in more than one billion square feet of concrete placed.



Efficient Constructability

- Deliver a construction tolerance for saw-cut placement without inducing restraint of either ± 3 inches (75 mm) or ± 1 inch (25 mm) dependant upon length of dowel
- Reduce labor costs – can be carried and installed by one person during concrete placement
- Allow for accelerated construction schedules
- Eliminate obstacles for the laser screed
- Offer stable dowel support and reliable alignment with fully-welded basket assemblies
- Allow for subgrade leveling after installation to prevent rutting, restraint and cracking
- Improve job-site efficiency with easy-to-handle bundled and skid-packed assemblies delivered on wooden pallets
- Custom or stock baskets available through a national distribution network

Steel Options:

- All plates are manufactured from steel certified to meet ASTM A36

For corrosion resistance, plates can be manufactured from:

- Hot-dipped galvanized steel certified to meet ASTM A123/A 123M and ASTM A385; or
- Grade 304 stainless steel certified to meet ASTM A240

Basket Dimensions:

Cross-sectional area of steel at the outside edge of the saw-cut installation tolerance

- 2" x 3/8" (50 mm x 10 mm)
- 2-1/2" x 1/2" (64 mm x 12 mm)
- 2-1/2" x 3/4" (64 mm x 20 mm)

Dowel length (based on saw-cut installation tolerances)

- 12" (300 mm) plate for a 8 inch (200 mm) tolerance
- 8" (200 mm) plate for a 4 inch (100 mm) tolerance (staking the basket assembly is recommended to ensure it remains within the allowable 4 inch [100 mm] tolerance)

PERFORMANCE-BASED ENGINEERING

All published engineering on the spacing of plated dowels at the saw-cut contraction joints is based on the size and geometry of the PD³ Basket[®] assembly.

Reduce Joint-Edge Spalling

- Delivers acceptable joint stability per industry guides of less than .01 inch (.25 mm) and continuity of surface profile across the joint
- Provides immediate positive load transfer, minimizes initial dowel looseness to .002 inches (.05 mm) and eliminates on-site labor with a thin, even factory-applied debonding agent
- Minimizes additional dowel looseness from repetitive loading to .00257 inches (.065 mm) with an alternating, tapered plate configuration to provide a consistent bearing area of embedded steel within 2 inches (50 mm) of the joint placed at the outside of the saw-cut installation tolerance where the bearing, shear and flexural stresses are highest
- Minimizes elastic deflection due to loading to .00543 inches (.138 mm) with a minimum plate embedment of 3 inches (75 mm) into the slab on either side of the joint after allowing for installation tolerances at the expected joint opening
- Permits dowel placement where the curling stresses are highest, to within 6 inches (150 mm) of the joint intersection

Minimize Random Cracks and Ensure Joint Activation

- Allows for joint activation and free horizontal movement of the concrete without restraint with 4° trapezoidal plate geometry
- Ensures stable horizontal and vertical plate alignment with a fully-welded basket assembly fabricated to match the joint layout
- Reduces restraint with the thin, even factory-applied debonding agent (max thickness of .002 inches [.05 mm]) to release concrete and steel bond

Performance-Based Dowel Design

The PD³ Basket[®] assembly's engineered performance criteria are unique components of the rational design approach for dowel spacing outlined in "Performance-Based Dowel Design", Concrete Construction, January 2007. This design uses the slab depth and vehicle loadings to minimize total differential deflection between slab panels to .01 inches (.25 mm) for hard wheels and .02 inches (.50 mm) for air cushioned rubber tires to deliver serviceable concrete flatwork and rationalize the use of materials.

Product Performance Characteristics:

Processes

- All steel is sawn or plasma cut full-depth and deburred per industry guidelines ensuring smooth plate edges that will not induce restraint

Materials

- Extracted, harvested or recovered, as well as manufactured, in the USA from recycled steel and eligible for LEED[®] credits

PD³ BASKET ASSEMBLY IS PART OF

THE "STRATEGIC REINFORCEMENT" DESIGN

The "strategic reinforcement" design is a performance-based, cost-effective design for interior and exterior concrete flatwork exposed to wheeled traffic. Applicable to a broad variety of facility types, this design is used by owners worldwide. By removing steel from the mid-panel and placing PNA tapered plate dowels where steel is actually needed, at the joints, you optimize materials and minimize joint spalling and random cracking. PNA moisture curing covers deliver improved abrasion resistance.

THE NOMINAL JOINT DESIGN

If the facility usage and/or aesthetics dictates a reduction in the number of joints, the nominal joint design is a reliable and cost-effective option to reduce saw-cut contraction joints and deliver a reliable, high-performance floor. This design allows for extended joint spacing through a combination of PNA macro fibers for crack-width control and PNA tapered plate dowels for joint stability. PNA moisture curing covers provide improved abrasion resistance.