

Diamond Dowel® System

Tapered Plate Dowels for Construction Joints



Proven, Reliable Load Transfer System

Achieve superior load transfer and continuity of floor surface profile with the original plate dowel system. Since 1996, contractors and engineers have used the Diamond Dowel® System in more than one billion square feet of concrete slabs-on-ground to deliver the durable, maintenance-free concrete flatwork customers expect.

The Diamond Dowel® System helps you:

- Collect your retainage
- Reduce your call backs and save labor
- Optimize the amount of steel in a project
- Limit your liability
- Deliver cost-effective slabs-on-ground

Fast and Easy Installation

- The Diamond Dowel® installation template and the tapered plate guarantee the fastest and most perfectly aligned plate dowel installation
- Eliminates drilling bulkheads, greasing/spinning dowels and removing/reinstalling dowels and allows for easy stripping
- Ensures positive load transfer and eliminates cracking from restraint with reliable dowel alignment
- Reduces job-site trip hazards

More Cost-Effective

- Reduces labor costs by at least 50 percent when compared to round dowel installation
- Use of locally available bulkheads reduces order lead times and freight costs

Optimizes Steel

Reduces steel usage up to 72 percent compared to conventional reinforcement when used with the PD³ Basket® assembly in the “strategic reinforcement” design. Diamond Dowel® plates can also be spaced farther apart than conventional dowels.

Performance-Based Engineering

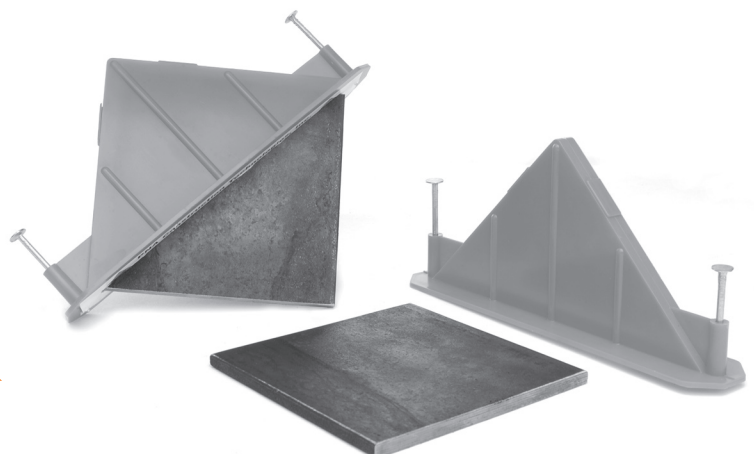
- The tapered shape:
 - › Minimizes random cracks by allowing the slab to move horizontally in all directions without restraint
 - › Reduces differential deflection and joint-edge spalling by strategically placing more steel (6.36 inches) at the joint to provide load transfer where the bearing, shear and flexural stresses are highest
 - › Allows for 3/8 inch of lateral movement at a joint that opens 1/8 inch
- Ensures dowel performance through the Diamond Dowel® pocket former's ABS molded plastic and internal vertical spacer
- Provides consistent modulus of dowel support with ASTM A36 certified steel plates; and, plates are sawn, de-burred and smooth to minimize restraint

ACI 302.1R-04 Table 3.2 and ACI 360R-06 Table 5.2

Dowel size and spacing for diamond-shaped load plates

Slab depth, in. (mm)	Diamond load plate dimensions, in. (mm)	Diamond load plate spacing center-to-center, in. (mm)
5 to 6 (125 to 150)	1/4 x 4-1/2 x 4-1/2 (6 x 115 x 115)	18 (450)
7 to 8 (175 to 200)	3/8 x 4-1/2 x 4-1/2 (10 x 115 x 115)	18 (450)
9 to 11 (225 to 275)	3/4 x 4-1/2 x 4-1/2 (19 x 115 x 115)	20 (500)

Note: Table values based on a maximum joint opening of 0.20 in. (5 mm).



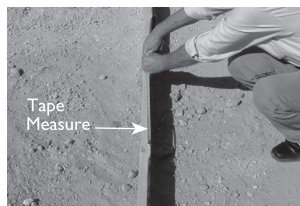
Instructions for Use

Install the Diamond Dowel® System per PNA's installation guide using a full-depth bulkhead. PNA does NOT endorse any other methods of installation for the Diamond Dowel® System, including the use of partial-depth EPS forms.

Step 1

Mark the center point for the spacing of each Diamond Dowel® pocket former on the top of the bulkhead along the entire length. Set the bulkheads along the construction joints. The Diamond Dowel® System can be placed up to within six inches of the joint intersection per industry guidelines.

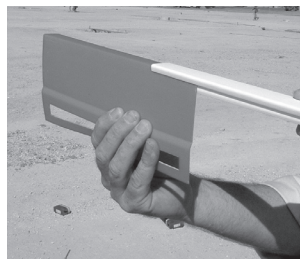
Installation template will ensure that the minimum requirement of 2 1/16 inches of coverage over the dowel is maintained.



Step 2

Insert the correct tube, if needed, in the installation template based on the slab depth.

SLAB DEPTH (in.)	ORANGE - 1/4"	YELLOW - 3/8"	GREEN - 3/4"	USE
7		9	11	REMOVE tube from template
6		8	10	Slide WHITE tube onto template
5		7	9	Slide BLACK tube onto template
4		N/A	N/A	Slide GREY tube onto template



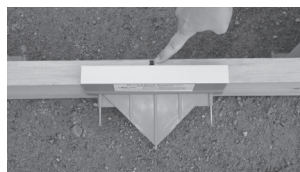
Step 3

Install the Diamond Dowel® pocket former into the installation template.



Step 4

Line up the mark on the top of the bulkhead with the center of the installation template.



Step 5

Nail the Diamond Dowel® pocket former to the bulkhead and remove the installation template. Repeat at specified spacing along the entire length of the bulkhead.



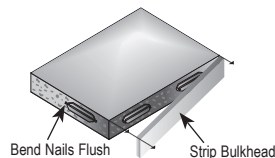
Step 6

Place and finish first slab. Use internal vibration to consolidate the concrete around the Diamond Dowel® pocket former per industry guidelines.



Step 7

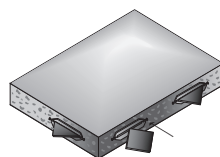
Strip the bulkheads and bend nails flush with the joint face.



Step 8

Insert Diamond Dowel® plate into the slot created by the Diamond Dowel® pocket former. Center the corner of the plate in the middle of the label and push straight through the label into the pocket former.

Do not hammer or use excessive pounding force to insert Diamond Dowel® plate. Diamond Dowel® plate should be inserted within two weeks of concrete placement.



Step 9

Place and finish the second slab. Use internal vibration to consolidate the concrete around the Diamond Dowel® plate per industry guidelines.

LOAD TRANSFER SYSTEMS

DIAMOND DOWEL® SYSTEM

PD³ BASKET® ASSEMBLY

LOAD PLATE BASKET® ASSEMBLY

JOINT PROTECTION PRODUCTS

ARMOR-EDGE® JOINT ASSEMBLY

ARMOR-EDGE® N2E JOINT ASSEMBLY

ARMOR-EDGE® ALL STEEL JOINT

CURING COVERS

HYDRACURE™ S16 — SINGLE-USE

HYDRACURE™ M5 — MULTI-USE

OTHER

1/2" SQUARE DOWEL BASKET

BOLLARD BASE



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