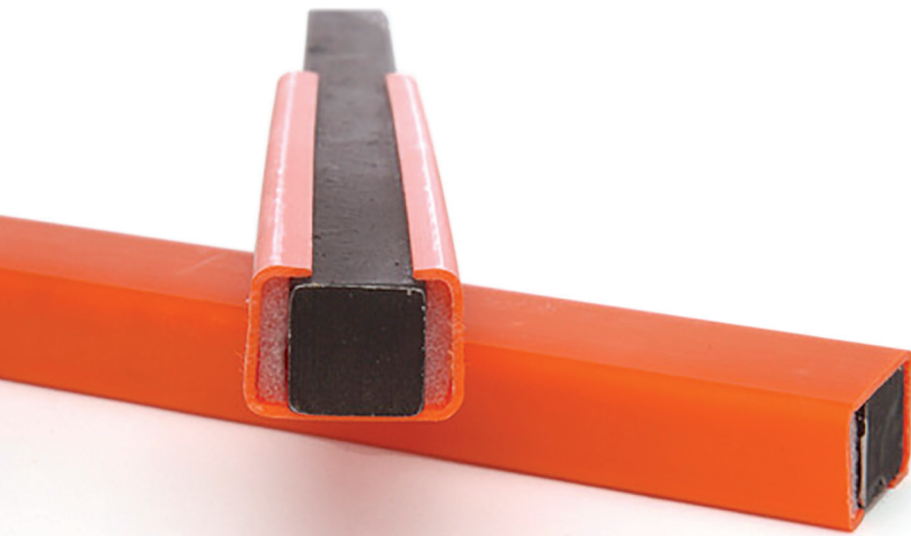


# SQUARE DOWEL AND SQUARE DOWEL CLIP™

## JOINT STABILITY FOR NEW AND NEW-TO-EXISTING CONCRETE FLATWORK

PNA's Square Dowel and Square Dowel Clip™ improve joint stability for reliable construction joints in new and new-to-existing concrete flatwork applications. When paired with the square dowel, the compressible foam inside of the Square Dowel Clip™ allows for joint activation and free horizontal movement of the concrete without restraint. When using this system in new concrete, our Square Dowel Aligners can be used to secure the dowels to wood formwork.



### Engineered to stabilize construction joints and lengthen the service life of slabs and pavements

- ▶ When compared to round dowels, the geometry of our square dowels provides 27% more cross sectional area of steel at the joints where stresses are highest, resulting in a 70% higher resistance to bending.
- ▶ The Square Dowel Clip™ features compressible foam that keeps the Square Dowel in place during construction while also allowing for free movement of the concrete after placement without creating restraint.
- ▶ Dowels are sawn full-depth and deburred per industry guidelines ensuring square, true and smooth edges that will not induce restraint.

### Square Dowel System Material Details

- ▶ Ensure reliable quality and performance from consistent modulus of dowel support with dowels manufactured from steel certified to meet ASTM A36.
- ▶ For corrosion resistance, hot-dipped galvanized steel certified to meet ASTM A123/A 123M and ASTM A385 can be made-to-order.
- ▶ Reduces dowel looseness with the Square Dowel Clip™ piece, molded from high density ABS plastic possessing outstanding impact and mechanical strength ensuring its ability to maintain structural integrity under repetitive and/or heavy loads.
- ▶ Manufactured in the USA.

### PNA SQUARE DOWEL AND SQUARE DOWEL CLIPS™ HELP YOU:

- ▶ COLLECT YOUR RETAINAGE
- ▶ REDUCE YOUR CALLBACKS AND SAVE LABOR
- ▶ LIMIT YOUR LIABILITY
- ▶ DELIVER COST-EFFECTIVE CONCRETE FLATWORK

# SQUARE DOWEL AND SQUARE DOWEL CLIP™

## DOWEL SIZE AND SPACING FOR CONSTRUCTION JOINTS

DESIGN INFORMATION						ORDERING INFORMATION		
TYPICAL SLAB THICKNESS RANGE (IN.)	SQUARE DOWEL SIZE (IN.)	DOWEL LENGTH (IN.)	SQUARE DOWEL CLIP™ LENGTH (IN.)	EMBEDMENT MULTIPLIER	EMBEDMENT (IN.)	SQUARE DOWEL PART NO.	SQUARE DOWEL CLIP™ PART NO.	SQUARE DOWEL ALIGNER PART NO.
≤6	½	9	5.0	8.0	4.0	SD500X9	SDC500X05	DA500, DA750
5 to 6	¾	10	5.5	6.0	4.5	SD750X10	SDC750X055	DA750
6 to 8	1	13	7.0	6.0	6.0	SD1000X13	SDC1000X07	DA1000
≥8	1¼	15	8.0	5.6	7.0	SD1250X15	SDC1250X08	Custom Order – Call for info

### DESIGN RECOMMENDATIONS:

**Dowel Size (Thickness):** Dowel size (thickness) recommendations are equivalent for round and square dowels; for example, if a 1" round dowel bar was specified for a project, then a 1" square dowel is recommended. The table [wherever the length/ordering chart is located], based on ACI 2010 and ACI 2017 provides recommendations for square dowel size, length, and Square Dowel Clip™ length. The Square Dowel Clip™ length is sized such that any dowel that is installed within the specified tolerance will always have a clip length greater than the exposed half of an installed dowel.

**Dowel Spacing:** Square dowels can be spaced 2 inches further apart than round dowels if the round dowel is specified at 12-15 inch spacing, and 3 inches further apart for 16-18" spacing.

#### The clear choice over round dowels.

- ▶ Ensures a consistent amount of steel at the joint where the bearing, shear and flexural stresses are highest.
- ▶ Delivers load transfer using an increased bearing area of steel at the joints.
- ▶ Permits dowel placement to within 6 inches (150 mm) of the joint intersection, where curling stresses are highest.
- ▶ Eliminate greasing/spinning dowels and removing and reinstalling dowels.

For more information on our square dowel design recommendations, please read our "Square Dowel Design Requirements" whitepaper.