



# CONCRETE ACCESSORIES JOINT DOWELING SYSTEMS

BUILDING TRUST



# Sika® Speed Dowel®

## Concrete Doweling System for Slabs-On-Ground



Sika® Speed Dowel® is the pioneering slip dowel installation system that ensures proper dowel alignment for positive load transfer in slab-on-ground concrete joints.

Sika® Speed Dowel® has revolutionized how the concrete industry designs and constructs joints for superior performance, while slashing the time and cost required for conventional slip dowel installations.

Field-tested for over 20 years, Speed Dowel® is the choice for round and square dowel installations, such as:

- Warehouse / Distribution Centers
- Big Box Stores
- Manufacturing Facilities
- Commercial / Industrial Complexes
- Entertainment Centers
- Recreational Complexes
- Parking Facilities
- Airports

# Sika® Speed Dowel® FOR CONSTRUCTION JOINTS

Sika® Speed Dowel® provides a practical dowel alignment method for transferring loads across, and managing stresses within, concrete slab-on-ground joints, while facilitating the following recommendations of the American Concrete Institute.



“In areas subjected to wheeled traffic, heavy loads, or both, joints with load transfer devices are recommended. When positive load transfer is required, provisions should be made along the bulkhead to ensure proper alignment of the load-transfer device during construction and finishing operations.”

**ACI 360R-10 6.1.2**

“For dowels to be effective, they should be smooth, aligned, and supported so they will remain parallel in both the horizontal and the vertical planes during the placing and finishing operation. All dowels should be sawn and not sheared. Properly aligned, smooth dowels allow the joint to open as concrete shrinks.”

**ACI 302.1R-04 3.2.7**

“Dowels across pavement joints can provide load transfer while permitting the joints to move. When dowels are used, their correct alignment and lubrication is essential for proper joint function.”

**ACI 330R-08 3.8.2**

“The dowels should be centered on the joint. To permit horizontal movement, the dowels must not bond to the concrete on at least one side of the joint.”

**ACI 224.3R095 (Reapproved 2008) 5.2.4.3**



American Concrete Institute®  
Advancing concrete knowledge

## TIME-SAVING 3 STEP INSTALLATION

**Easy as 1-2-3** Dowel Bar Installation  
Method with Sika® Speed Dowel®

- 1 Attach Speed Dowel base to form and tap sleeve onto the base
- 2 Place first concrete pour
- 3 Strip form and insert ungreased dowel into the Speed Dowel sleeve

vs.

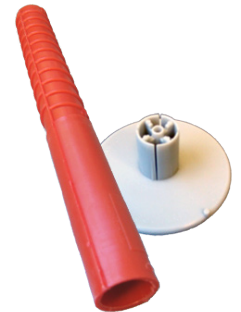
Dowel Bar Installation Using  
Traditional Method

- 1 Drill dowel holes in lumber (edge form)
- 2 Insert dowel into edge form
- 3 Grease half of the dowel
- 4 Make first concrete placement
- 5 Hand align every dowel
- 6 Rotate dowel to loosen bond
- 7 Remove dowel
- 8 Strip edge form
- 9 Reinsert dowel into oversized cavity
- 10 Realign dowels as needed

# Sika® Speed Dowel® FOR ROUND AND SQUARE DOWELS

SLEEVE DESCRIPTION	ROUND DOWEL SIZE	SLEEVE LENGTH	CORRESPONDING BASE
PSD09/#4TX	5/8" Smooth or #4 Rebar X 18"	9"	PSD/#4BX
PSD12/#4TX	5/8" Smooth or #4 Rebar X 24"	12"	
PSD09/#5TX	3/4" Smooth or #5 Rebar X 18"	9"	PSD/#5BX
PSD12/#5TX	3/4" Smooth or #5 Rebar X 24"	12"	
PSD09/#6TX	7/8" Smooth or #6 Rebar X 18"	9"	PSD/#6BX
PSD12/#6TX	7/8" Smooth or #6 Rebar X 24"	12"	
PSD09/#7TX	1" Smooth or #7 Rebar X 18"	9"	PSD/#7BX
PSD12/#7TX	1" Smooth or #7 Rebar X 24"	12"	
PSD09/#9TX	1 1/4" Smooth or #9 Rebar X 18"	9"	PSD/#9BX
PSD12/#9TX	1 1/4" Smooth or #9 Rebar X 24"	12"	
PSDEPX09/#9TX*	1 1/4" Smooth or #9 Rebar X 18"	9"	PSDEPX/#9BX
PSDEPX12/#9TX*	1 1/4" Smooth or #9 Rebar X 24"	12"	
PSD10/#11TX	1 1/2" Smooth or #11 Rebar X 20"	10"	PSD/#11BX
PSD230X20TL*	20 mm X 460 mm Round Dowel	230 mm	PSD20BL
PSD305X20TL*	20 mm X 610 mm Round Dowel	305 mm	

\*Sika offers Speed Dowel® sleeves sized to suit epoxy coated dowels. Consult a Sika Technical Sales Representative for your specific project needs or if using with epoxy coated dowels.



SLEEVE DESCRIPTION	SQUARE DOWEL SIZE	SLEEVE LENGTH	CORRESPONDING BASE
PSDQ09X3/4TX	3/4" X 18" Square Dowel	9"	PSDQ3/4BX
PSDQ12X3/4TX	3/4" X 24" Square Dowel	12"	
PSDQ230X20TL	20 mm X 460 mm Square Dowel	230 mm	PSDQ20BL
PSDQ305X20TL	20 mm X 610 mm Square Dowel	305 mm	



Sleeves and bases are sold separately. Bases are reusable, which should be considered when determining requirements.

# Sika® Speed Load™ FOR EXPANSION JOINTS



Sika Speed Load™ is a single component dowel sleeve for use in expansion joints. Sika Speed Load™ passes through pre-drilled expansion boards and has a self-locking design to securely position and align round dowels for positive load transfer. Sika Speed Load™ is featured above with our Polypropylene Expansion Board.

DESCRIPTION	ROUND DOWEL SIZE	SLEEVE LENGTH
PSD1/2X5LT	1/2" X 10" Smooth Dowel	5"
PSD1/2X9LT	1/2" X 18" Smooth Dowel	9"
PSD3/4X5LT	3/4" X 10" Smooth Dowel	5"
PSD3/4X9LT	3/4" X 18" Smooth Dowel	9"
PSD3/4X12LT	3/4" X 24" Smooth Dowel	12"
PSD1X9LT	1" X 18" Smooth Dowel	9"
PSD125X9LT	1 1/4" X 18" Smooth Dowel	9"

## PHYSICAL PROPERTIES, CHARACTERISTICS, & SPECIFICATIONS

Suggested Proprietary Short Form Guide  
Specification Section 03252

Provide Speed Dowel® System to accept  
\_\_\_ diameter x \_\_\_ long slip dowels (fill in appropriate slip dowel  
dimensions) by Sika St. Louis:

3400 Tree Court Industrial Blvd.  
St. Louis, MO 63122  
Phone: 1-800-325-9504

CSI Format, Three Part Specifications, and technical information is  
available at the number above.

Material Composition	100% polypropylene
Compressibility ASTM D695	5500-8000 psi
Thickness (Nominal)	
Speed Dowel Sleeve	0.125"
Speed Load Sleeve†	0.075"
Density	0.88-0.92 g/cc
Fatigue Resistance	Excellent
Impact/Stiffness Balance	Excellent

# Sika® Speed Plate® PLATE DOWEL SYSTEM

## SUPERIOR PERFORMANCE, LOWER COST

- Larger steel plates provide greater overall surface area to reduce bearing stresses on concrete
- Non-Tapered plate profile ensures consistent bearing stresses at joint face and full depth of dowel
- Engineered to provide optimal use of steel
- Integral, patented sleeve insert eliminates lateral restraint between concrete sections
- A doweling method in accordance with
  - ACI 302 Guide for Concrete Floor and Slab Construction
  - ACI 330 Guide for the Design & Construction of Concrete Parking Lots
  - ACI 360 Design of Slabs-on-Ground
- One-Piece Design with alignment marks and preinstalled nails makes installation quick and easy
- Ensures proper dowel alignment at a construction joint
- Save labor
  - No form drilling required
  - No greasing, spinning, removing, or replacing of dowels
- Patent #7967527



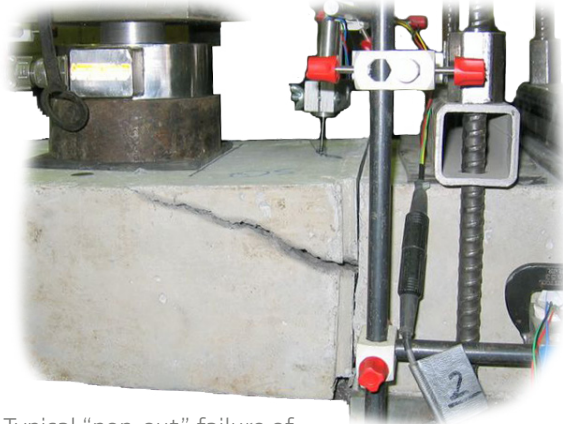
\*Steel Plates included.

Sika's Speed Plate® system reduces the number of dowels required when compared with conventional doweling systems. Speed Plate® allows the installer to increase the center distance between dowels, further reducing labor and material costs. The spacing chart below is conservative and is based on spacing recommendations in accordance with ACI 360R-10.

SLEEVE COLOR	SLAB DEPTH	Speed Plate® DOWEL DIMENSIONS	PLATE DOWEL ON CENTER SPACING
Red	5" - 6"	1/4" thick X 4" wide X 6" long	18"
Yellow	7" - 8"	3/8" thick X 4" wide X 6" long	18"
Green	9" - 11"	3/4" thick X 4" wide X 6" long	18"

Note: Values are based on a maximum joint opening of 0.20"

# TESTING & RESEARCH



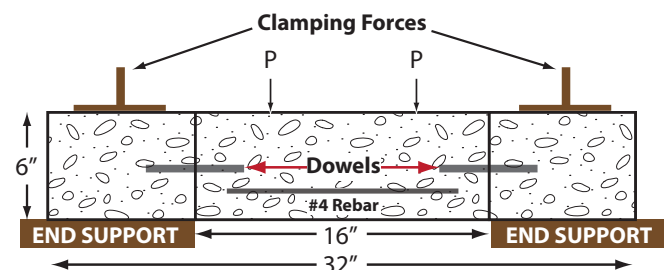
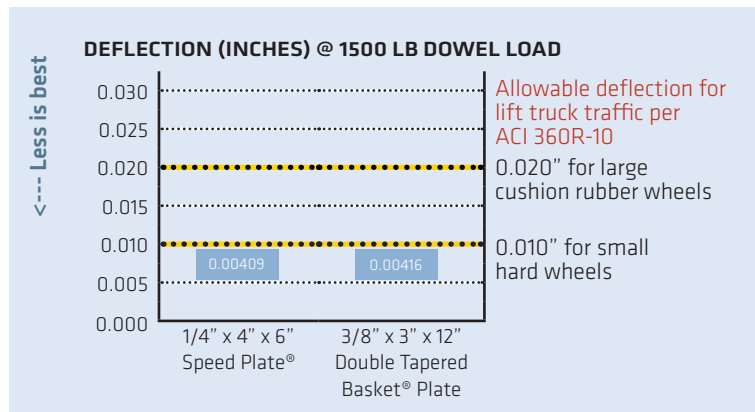
Typical “pop-out” failure of tested dowel system.

Sika's Technical Engineering Department has dedicated countless laboratory hours and research funds to investigate load transfer systems. Independent tests were conducted to provide an unbiased evaluation of the current doweling methods available, including round, flat plate, square, and tapered plate. The test procedure utilized a modified version of the AASHTO T253 test for load transfer devices and was designed to determine the following:

- Total joint deflection under load
- Bearing stresses imparted to the concrete at the joint face
- Failure mode of each doweling system

## CONCLUSIONS

- Tests of ALL DOWEL SYSTEMS resulted in a tensile “pop-out” failure of the concrete.
- All dowel types provided deflections well less than the typically accepted value of 0.010” when loaded to 1500 lb per dowel (typical load for 10 000 lb axle load on a 6” slab with dowel spacing at 24” on center). Deflections greater than 0.010” can lead to joint failure due to impacts from wheeled traffic. MINIMIZING DEFLECTIONS is key to insuring the durability of the joint.
- Dowels with rectangular cross sections and larger widths are effective in reducing bearing stresses on concrete. Adding sleeves to dowels of all types also reduces the bearing stress on the surrounding concrete. Speed Plate® provides the lowest stress on the surrounding concrete of all Sika® Dowel Systems. Bearing stress alone, however, does not predict ultimate dowel loads. All dowel systems tested failed at a wide range of bearing stress but at similar applied loads.
- Flat plates, or square dowels with sleeves that allow movement in the direction of the joint, are effective in eliminating lateral restraint between concrete sections. The Speed Plate® sleeve incorporates an integral, custom insert that provides lateral movement capability between concrete sections.
- It is critical to use internal vibration to consolidate the concrete around ALL plate dowel systems.



Modified AASHTO T253 Test Diagram

# SIKA FULL RANGE SOLUTIONS FOR CONSTRUCTION:



**WATERPROOFING**



**CONCRETE**



**REFURBISHMENT**



**SEALING AND BONDING**



**FLOORING**



**ROOFING**

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The sale of all Sika products are subject to the following Limited Warranty:

#### **LIMITED MATERIAL WARRANTY**

SIKA warrants this product for one year from date of installation to be free from manufacturing defects and to meet the technical properties on the current Product Data Sheet if used as directed within shelf life. User determines suitability of product for intended use and assumes all risks. Buyer's sole remedy shall be limited to the purchase price or replacement of product exclusive of labor or cost of labor.

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Contact Sika:

Phone: 1-800-325-9504

Website: [usa.sika.com](http://usa.sika.com)

Our most current General Sales Conditions shall apply.  
Please consult the Product Data Sheets prior to any use and processing.

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