

Taper Dowel

An engineered load transfer system for horizontal movement in concrete construction joints

The size and diamond-shape of the Taper Dowel provides concrete joint stability, load transfer and smooth slab-to-slab transition, without restraining floor movement.

The plastic sleeve is nailed to lumber edge forms before concrete placement and the steel plate slides into the sleeve after forms are removed in preparation for the adjoining slab.

The Taper Dowel simplifies dowel installation, eliminates slab edge drilling and reduces labor costs for all types of ground level concrete slabs, including floors, flatwork and pavement.

The plastic sleeve allows movement and the steel plate provides maximum bearing, bending and punching resistance, without the risk of slab interlock common with other methods.

A properly installed Taper Dowel is recommended for joints up to 0.20" wide and is suitable for all types of ground level concrete slabs, such as jointed floors, flatwork and pavement.

A Taper Dowel installation conforms to ACI 302.1R Guide for Concrete Floor and Slab Construction and ACI 360 Design of Slabs-on-Ground.



The dowel sleeve is quickly positioned and attached to edge forms, minimizing the related labor costs.



The steel dowel plate fits snugly into the sleeve, creating the load transfer between adjoining concrete slabs.

Taper Dowel Set (One Sleeve and One Plate)			
Part No.	Description	Slab	Spacing*
SBTD14SL	SB Taper Dowel 1/4" - Sleeve Only (Orange)	5" to 6-1/2"	18"
SBTD14PL	SB Taper Dowel 1/4" - Plate Only 1/4" x 4-1/2" x 4-1/2"		
SBTD38SL	SB Taper Dowel 3/8" - Sleeve Only (Yellow)	7" to 9"	18"
SBTD38PL	SB Taper Dowel 3/8" - Plate Only 3/8" x 4-1/2" x 4-1/2"		
SBTD34SL	SB Taper Dowel 3/4" - Sleeve Only (Green)	9" to 12"	18"
SBTD34PL	SB Taper Dowel 3/4" - Plate Only 3/4" x 4-1/2" x 4-1/2"		

* Spacing shown based on ACI 360 Design of Slabs-on-Ground.

Taper Dowel Specification

The Taper Dowel provides joint stability, load transfer and smooth transition, without restraining concrete floor movement. Material minimizes joint spalling and random cracking for long-lasting quality joints.

A doweling method in accordance with:

ACI 302 Guide for Concrete floor and slab construction

ACI 300 Guide for the design and construction of concrete parking lots

ACI 360 Design of slab on ground

ACI 360R 2017 Chapter 6.2

Taper Dowel materials:

Plastic void: High-density ABS plastic

Steel plate: ASTM 529, A572 and A36, multi-grade 50 ksi

Corrosion protection: Optional zinc plating (ASTM B633) or stainless steel (ASTM A420)

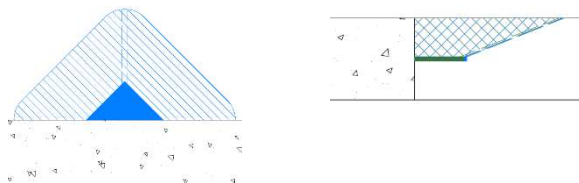
Void Color	Slab Thickness	Plate Dimensions	Dowel Spacing
Orange	5" to 6-1/2"	1/4"x4-1/2"x4-1/2"	18"
Yellow	7" to 9"	3/8"x4-1/2"x4-1/2"	18"
Green	9" to 12"	3/4"x4-1/2"x4-1/2"	18"

Values are based on maximum joint opening of 0.20", A360R table 6.1.

Performance characteristics:

The 4-1/2"x4-1/2" tapered dowel shape provides a large bearing area and creates a larger shear cone to transfer the load between adjoining slabs. The dowel has concrete-to-steel bearing area of 6.39" at the joint. (Significantly more bearing area than a similar square dowel, reducing bearing stresses in the concrete slab.)

Shear cone:



Design:

The high-density ABS plastic void with collapsible internal walls and grade 50 ksi steel with precise thickness tolerance provides a secure, yet free movement of the dowel plate in all directions.

The tapered dowel will deliver acceptable joint stability per industry guides of less than 0.01" (0.25mm). (Allowable deflection for truck wheel traffic per ACI 360R-28.) It is critical to use internal vibration to consolidate concrete around all plate dowels.

Packaging:

Plastic void: 100 pieces per box, 1,000 pieces per pallet

Steel plates: 500 pieces per crate



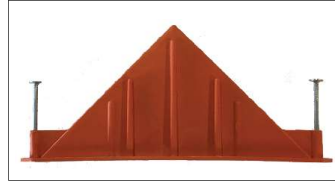
Taper Dowel Installation

1. Mark the horizontal line on formwork for the half slab thickness. Mark a vertical line for the center-to-center spacing of the sleeve. They should be carefully aligned so they remain parallel in a horizontal plane. Nail all sleeves securely at each marked location. Position and tie any remaining slab reinforcement. Sleeves should be no closer than 6" to the intersection of any joints.

2. Place concrete normally, completely surrounding each sleeve location. Vibration is required to properly consolidate concrete and eliminate air entrapment. Do not strike or damage sleeves with the vibrator.

3. When concrete reaches sufficient strength, the adjoining slab base can be leveled and compacted. Insert the steel plates into the sleeves by puncturing the cover strips. The plates should be completely inserted into the sleeves.

4. Position, support and tie any remaining slab reinforcement. The adjoining concrete can now be placed against the edge of the first and the exposed steel plates. Place concrete normally, completely surrounding the area around each plate.



Sleeves nail to lumber edge forms, simplifying installation.



Dowels are inserted into sleeves after edge forms have been removed.