



GREENSTREAK GROUP, INC  
A Family of Construction Companies

The **Makers** of **SPEED DOWEL** bring you a  
**New Patented Doweling System**

**SPEED PLATE™**

U.S. Patent Numbers 4,733,513 and 6,145,262

## You now have a **CHOICE!**

**SPEED PLATE™** is the new and economically smart choice for Flat Plate Dowel Systems

- Ensure **proper dowel alignment**
- **Save labor**
  - > No form drilling required
  - > No greasing of dowels
  - > No spinning, removing or replacing of dowels
- A doweling method **in accordance with ACI 302.1R-04 Guide for Concrete Floor and Slab Construction**
- **One-Piece Design** with alignment marks and pre-installed nails makes installation quick and easy
- Integral, patented sleeve insert **eliminates lateral restraint** between concrete sections
- Engineered to provide **optimal use of steel**
- **Larger steel plates** (compared to competing plate dowels) 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



Greenstreak's **SPEED PLATE** 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 costs. The conversion charts below give a comparative analysis of equivalent size **SPEED PLATE** to conventional smooth round dowels:

	Dowel Size	Spacing	Spacing	Spacing
Size Equivalents	3/4" Smooth Round Dowel	12"	18"	24"
	1/4" X 4" width X 6" depth <b>SPEED PLATE</b>	18"	24"	30"

Size Equivalents	1" Smooth Round Dowel	12"	18"	24"
	3/8" X 4" width X 6" depth <b>SPEED PLATE</b>	18"	24"	24"

Spacing is variable and is determined by the individual requirements of each project.

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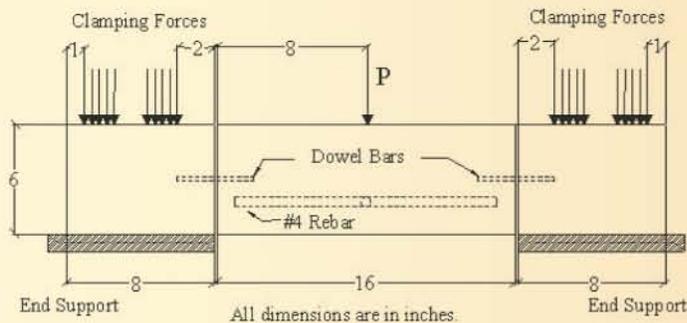
## Testing and Research

Greenstreak'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 diamond plate**. The tests were 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**

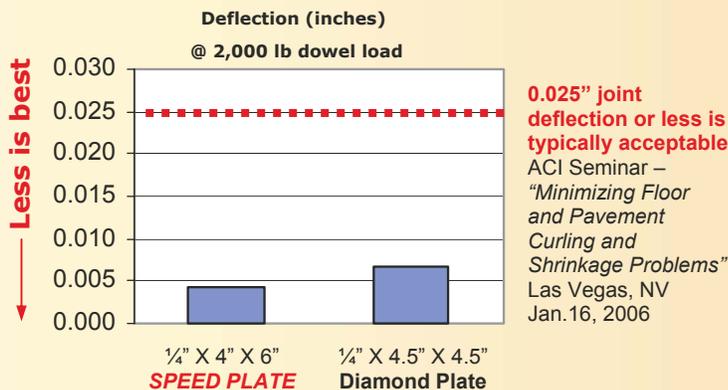
The test procedure utilized a modified version of the AASHTO T253 test for load transfer devices.

### Modified AASHTO T253 Test Diagram



Load Test Frame

## Test Results



Typical "pop-out" failure of tested dowel systems

## 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 0.025" when loaded to 2,000 lb per dowel (equivalent to a 10,000 lb axle load). Deflections greater than 0.025" 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 Greenstreak 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.

The following are U.S. Patents owned by Greenstreak for Dowel System Products:  
5,005,331 / 5,216,862 / 5,678,952 / 5,934,821 / 4,733,513 / 6,145,262 / DES. 419,700

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