

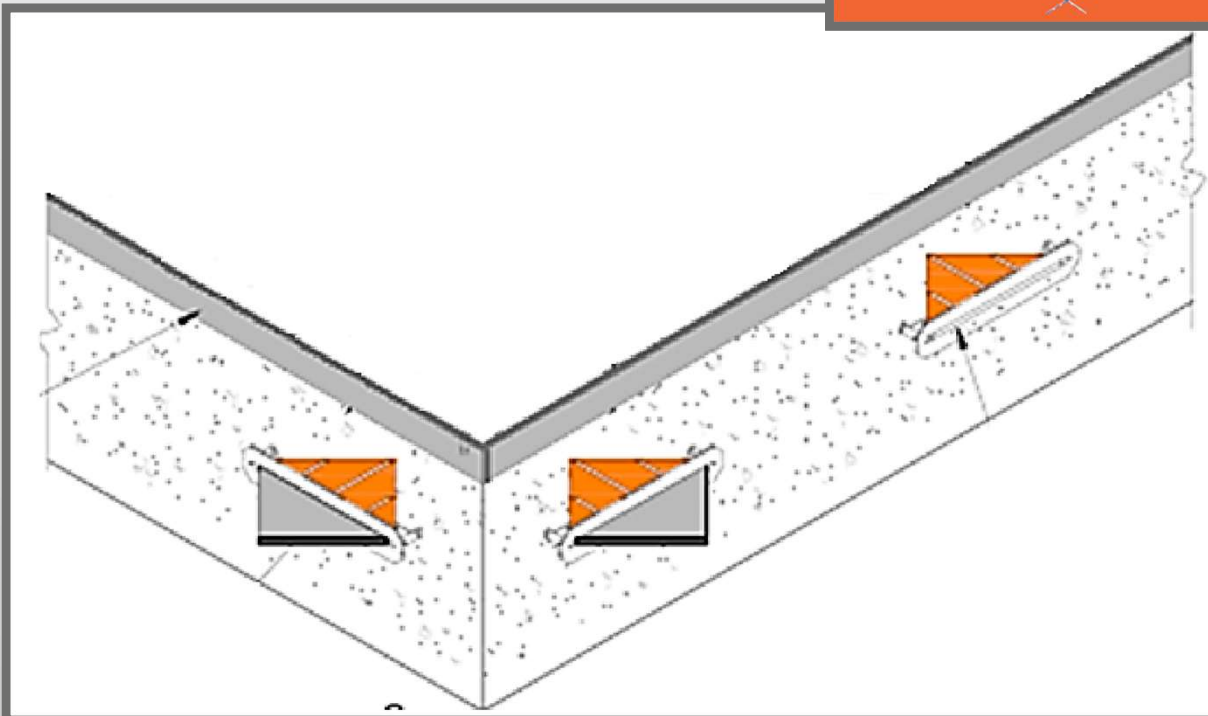
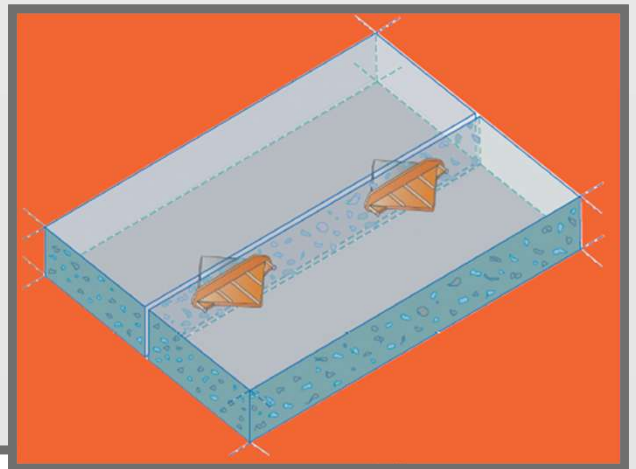


ALL STATES AFRICA CONCRETE EQUIPMENT

Diamond Dowels

How Diamond Dowel Works

Diamond Dowel uses tapered steel plate dowels and matched sleeves at formed construction joints. The plate geometry maximizes effective bearing area and enables lateral (in-plane) movement while preventing vertical differential movement. This produces high load transfer efficiency (LTE) across the joint and minimizes joint faulting and edge damage.

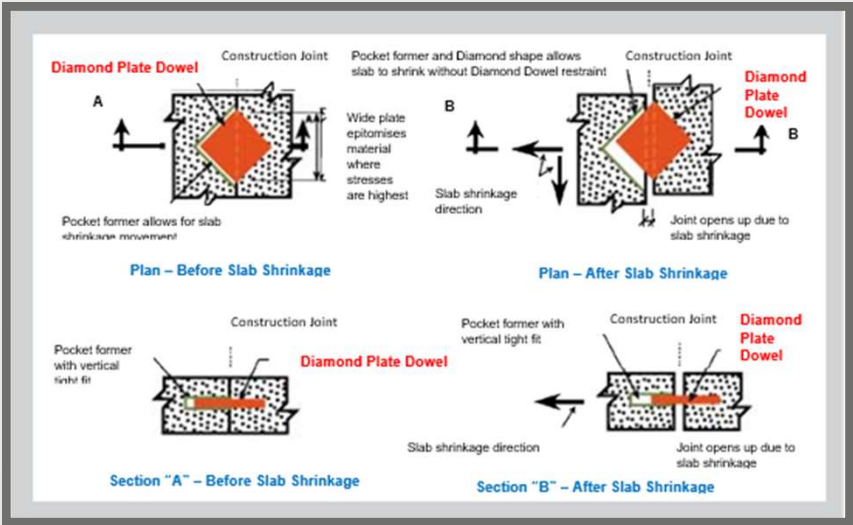
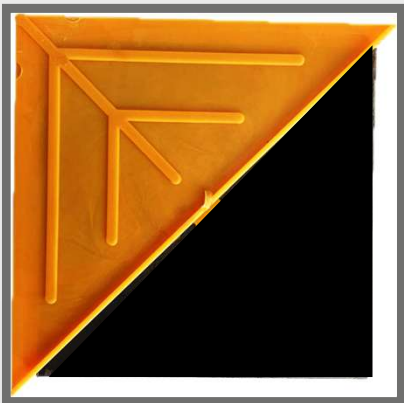


Why Plate Dowels vs Round Dowels?

Plate (Diamond Dowel)	Round Dowels
Large effective bearing area; better LTE	Smaller bearing area; higher bearing stress
Allows in-plane movement; reduces restraint	Often requires sleeves/caps; misalignment can restrain movement
Fast, drill-free formwork setup	Often requires drilling/form brackets
Improved performance at intersections	Less tolerant at complex joint nodes

Installation Snapshot

- Fix Diamond Dowel sleeves to the first-side formwork at the engineer’s specified spacing and elevation.
- Place and finish concrete on the first side; cure as required.
 - Strip formwork; insert Diamond Dowel plates fully into the sleeves.
 - Place and finish the second-side pour, ensuring the joint is straight and sleeves remain aligned.
 - Cut contraction joints as specified; protect arises (consider armoured joints in high-traffic zones).



Technical Options

Key Advantage	What it Means
Unrestricted joint movement	Prevents restraint-induced cracking while maintaining slab alignment.
Superior load transfer	Optimizes floor life under heavy wheel and point loads.
Fast installation	No drilling in formwork; sleeves fix to forms for rapid setup.

Plate thickness	6 mm
Typical plate material	Structural steel plate
Sleeve type	High-strength polymer, nail-on flange for formwork
Joint movement	Two-way horizontal movement; no vertical differential
Typical use	Slabs-on-ground, hardstands, high-bay warehouses, logistics hubs
Finish compatibility	Compatible with armoured joints; suitable under hard-wheeled traffic

Design & Performance References

- ACI 302.1R recommends doweled joints for hard-wheeled traffic and cautions against keyed joints where reliable load transfer is required.
- TR34 (4th ed.) guidance is widely adopted for industrial floors; modern diamond/plate dowels are used to meet joint opening and load transfer requirements.
- Load Transfer Efficiency (LTE) ≥ 70% is commonly cited for long-term serviceability; project-specific criteria apply.

Design Notes (Guide)

- Engineer of Record to set joint spacing, slab thickness, and dowel size/spacing based on load cases.
- Check dowel bearing stress and joint opening compatibility.
 - Target high LTE; verify criteria for the facility’s serviceability.
 - Coordinate with reinforcement strategy; avoid restraint that induces cracking.