



WISCONSIN
**CONCRETE
PAVEMENT**
ASSOCIATION

Moving forward with concrete results

RECOMMENDATION ON AASHTO M254 ON DOWEL BAR COATINGS



Heart of the Issue

- New dowel bars in the market
 - Coatings
 - Materials
- High Performance Concrete Specifications
- Old standard specifications



In Wisconsin

- The following manufacturers have brought new dowel products for consideration:
 - Jarden Zinc
 - Composite Rebar Technologies
 - JC Supply
 - MMFX
 - FRP
- None of them meet standard specifications



Wisconsin - HPC Dowel Bars

- 316L Stainless Steel Cladding
- 316L Stainless Steel Tubes
- Solid Stainless Steel
- UNS Z41121 Zinc Alloy Cladding
- CRT Bar – Conventional steel with fiber composite outer coating



HPC Dowel Bars



Jarden Zinc Life Jacket Dowel



Composite Rebar Technologies
Long Life Dowel

**THESE BARS HAVE BEEN USED ON THE NORTH-SOUTH FREEWAY
INTERSTATE 94 CONSTRUCTION**

Epoxy Coatings

- Non-Bendable Epoxies for Dowel Bars
- Green epoxy bar has been the standard for 30+ years.



J C Supply Epoxy Dowels



Wisconsin DOT Specification

- Steel
 - Furnish coated bars conforming to AASHTO M31 grade 40 or 60. Alternatively the contractor may furnish dowel bars conforming to AASHTO M227 grade 70-80.
- Coating
 - Coat dowel bars with a thermosetting epoxy conforming to AASHTO M254, type B.



Indiana DOT Specification

- Dowel bars shall be plain billet steel in accordance with ASTM A 615, grade 40 or higher
- Dowel bars shall be coated with an epoxy coating material selected from the list of approved Epoxy Coating for Steel.
- AASHTO M254 coatings



Minnesota

- Provide Grade 40 or Grade 60 steel dowel bars meeting the requirements of AASHTO M 31.
- Provide an epoxy coating meeting the requirements of AASHTO M 254



Missouri DOT

- Dowels for transverse joints shall be in accordance with the requirements for plain rounds of AASHTO M 31. The dowels shall be epoxy coated in accordance with Sec 1036
- **1036.4.1** Epoxy coated reinforcing steel shall be in accordance with ASTM A 775/A 775M



Kansas DOT

d. Dowel Bars and Straight Tie Bars* for Pavement.

(1) Use steel bars that comply with SECTION 1601.

(2) Apply an epoxy coating that complies with ASTM A 775.



AASHTO Guide Specification

711.01, Section C

Furnish plain, round dowel bars meeting AASHTO M31M/M31 or M322M/M322, for mechanical properties only, or AASHTO M227M/M227. Ensure dowel bars are free from burs or other distortions that might limit slippage in the concrete. Meet AASHTO M254 for pre-applied protective and bond breaking coatings.



CONCLUSION

- Many of these new dowel bar products are being used by special provisions on high performance concrete paving projects or other special circumstances.
- They do not meet standard specifications for most highway agencies.
- They are good products and meet our standards for performance



Dowel Bars – The Future is Coming

- Need a performance standard
 - Fatigue
 - Corrosion
- Cost and competition
- What one WisDOT Engineer said –
“We don’t need to adjust our specifications for dowel bars because these new products will never be able to compete from a cost standpoint”
- REALLY!!!!, is that where we want to be?



Turn it over to Steve Tritsch

