

Defy Corrosion with ChromX Dowels and Tie Bars

MMFX Technologies, a Commercial Metals Company, applies nanotechnology to offer ChromX concrete reinforcing steel products with varying levels of corrosion resistance. This is especially advantageous for pavement projects, which necessitate ongoing costs associated with maintenance, repair and disruption in traffic flow.

High-Performance Concrete Pavement with Uncoated and Coated Corrosion Resistant ChromX Dowels and Tie Bars

Utilizing ChromX (ASTM A1035) dowels and tie bars extends pavement life – between 30, 50 and 100+ years – delivering reduced life cycle costs for both new and rehabilitated pavement projects. ChromX dowel and tie bars are available in grades 9100 and 4100, with both available for high-performance pavement, and 2100 available for non high-performance pavement. All ChromX product grades can be epoxy coated (ASTM M284) or zinc coated (ASTM A1094) for added protection.



Comparison showing epoxy coated rebar, epoxy-tipped ChromX, uncoated ChromX and galvanized rebar. ChromX dowel bars are also available in epoxy coated and galvanized.

ChromX dowel and tie bars in ChromX 9000, 4000 and 2000 series deliver higher chloride threshold levels than other rebar products, depending on the lifecycle preference.

For basic tie bar design in jointed or continuously reinforced pavements, or for internal reinforcement in jointed reinforced concrete pavements, where typical ASTM A615 #5 Grade 60 bar or similar is specified, a simple substitution can be identified using the below table. For specialized substitutions, where the desire exists to change spacing and/or bar size more than a single size, further analysis and design calculations are required.

ChromX (ASTM A1035) Substitutions for Grade 60 Bar or Similar

ORIGINAL DESIGN BAR SIZE (Grade 60)	TIE BAR SPACING					
	12"	15"	24"	30"	36"	48"
#8	#7 x 24"	#7 x 24"	#7 x 24"	#7 x 24"	#7 x 24"	#7 x 24"
#7	#6 x 24"	#6 x 24"	#6 x 24"	#6 x 24"	#6 x 24"	#6 x 24"
#6	#5 x 24"	#5 x 24"	#5 x 24"	#5 x 24"	#5 x 24"	#5 x 24"
#5	#4 x 24"	#4 x 24"	#4 x 24"	#4 x 27"	#4 x 32"	#4 x 42"

From the study: Rigid Pavement 100 KSI Steel Lane Tie Bar Substitution Analysis and Design, June 2009, by CME Transportation Group.



Create Efficiencies, Save Costs and Extend a Project's Life Cycle with ChromX

DOWELS: Smooth round dowel bars, generally 18" long by 1", 1 ¼" or 1 ½" in diameter at 12" spacing across transverse joints, serve as load transfer devices in plain jointed concrete pavement to bridge vehicle loads across adjacent slabs. New concrete pavement projects are being designed to meet a 50- and a 100-year minimum service life, and must absorb ongoing loadings from traffic. ChromX's corrosion resistance delivers favorable results for both.

TIE BARS: Tie bars are deformed steel bars that connect adjacent lanes together. ChromX steel tie bars offer the combination of corrosion resistance AND high strength (100 ksi yield), which affords efficiencies both in design and the potential of reducing materials required. ChromX tie bars reduce upfront cost savings in addition to extending service life longevity.

In the field, ChromX dowel and tie bars can be handled just like standard uncoated bars. No special equipment is needed for placement.

ChromX Dowel and Tie Bars Leveraged in Key Markets

Sold under AASHTO M 334M/M 334 and ASTM A1035-CS, CM and CL specifications, ChromX pavement dowels and tie bars have been used in plain jointed concrete pavement since 2002 by Washington State Department of Transportation and in major markets by the following transportation entities:

CALTRANS New York State FOT Washington State
Wisconsin DOT Kentucky Transportation Cabinet

Ohio DOT

Idaho DOT

Virginia DOT

Available Sizes and Steel Grades

Available in typical dowel bar sizes:

Diameters.....1", 1¼" & 1½"

Full length smooth bar.....40' or 60'

Cut length.....18"

Custom lengths available upon inquiry.

Tie bars are available in all standard rebar sizes.



Suggested Steel Grades for ChromX Dowels

Why choose one rebar level of performance over another? Consider your cost, performance preference, concrete mix, environmental factors and state approval status. The following are general guidelines to help determine which ChromX service life will align accurately with the requirements of your project:

1. 50 to 100 years of pavement service life – high-performance dowels for heavily trafficked pavement:

- ChromX 9000 ASTM A1035 CS/AASHTO M334
- ChromX 4000 ASTM A1035 CM coated with ASTM A775 epoxy
- ChromX 2000 ASTM 1035 CL coated with ASTM A1094 galvanized

2. 30 to 50 years of pavement service life or rehab projects – non high-performance dowels:

- ChromX 4000 ASTM A1035 CM
- ChromX 2000 ASTM A1035 CM coated with ASTM A775 epoxy

To learn more about ChromX or to place an order, contact your Regional Sales Manager or call us toll free at 866.466.7878
www.cmc.com/chromx