Manitoba Infrastructure **MATERIALS ENGINEERING BRANCH**	Standard No.: APL114 Effective Date Current: **March 2023** Previous: February 2021 Page 1 of 1
Materials Specification For: **Bar Reinforcements**	

Dowel bars for Cement Concrete Pavement shall meet the diameter specified in the special provisions and be 450 mm in length.

All bar ends shall be free of burrs and distortions

Epoxy-Coated Dowel Bars

Plain Round Bars: ASTM A615M, Grade 60 or higher.

Epoxy Coating: AASHTO M254, Type B. Minimum Coating Thickness of 0.15 mm after cure.

Corrosion Resistant Steel

Corrosion-resistant steel for **load transfer dowels** shall meet the requirements of one of the following:

1. Stainless Steel Solid dowels shall be ASTM A276, Type 316L.

2. Zinc Clad dowel bars shall have a minimum 1.02 mm A710 Zinc alloy clad in to a plain steel inner bar meeting the chemical and physical properties of ASTM A615M, Grade 60. A710 Zinc shall be composed of: ZN-99.5 percent, by weight, minimum; CU-0.1-0.25-percent, by weight; and Fe-0.0020-percent, by weight, maximum.

3. Glass Fiber Reinforced Polymer (GFRP) Coated Steel Bars shall be Carbon steel bars, ASTM A615M, Grade 60 or higher, with a fully bonded 3.175 mm thick GFRP coating meeting the Material Specifications of Section 4 of The AASHTO LRFD Bridge Design Guide Specifications for GFRP Reinforced Concrete Bridge Decks & Traffic Railings – 2009 Edition.

4. Commercial Metals Company ChromX 4120 (epoxy coated) meeting ASTM A1035/A1035 M, Grade 120[830] Type CM.

5. Commercial Metals Company ChromX 9100 meeting ASTM A1035/A1035 M, Grade 100[690] Type CS.

Corrosion-resistant steel for **tie bars** and deformed dowels shall be one of the following:

1. Stainless Steel Solid rebar meeting ASTM A955, Type XM-28

2. Commercial Metals Company ChromX 9100 rebar meeting ASTM A1035/A1035 M, Grade 100 [690] Type CS