$MMFX_2$ (ASTM A1035) CONCRETE REINFORCING STEELS

PROVEN CORROSION-RESISTANT TECHNOLOGY

The world's best engineered bridges, roads and building structures start with $MMFX_2$ - independently tested and proven to be 5 times more corrosion-resistant than conventional steel.

The answer to corrosion problems caused by:

- Deicing salts and chemicals
- Marine environments
- Aggressive soils composition
- High humidity
- Severe daily temperature swings

Specifying $MMFX_2$ concrete reinforcing steels resolves concerns about declining service life and spiraling life-cycle costs for bridges, highways and other commercial-grade structures due to harmful corrosion.

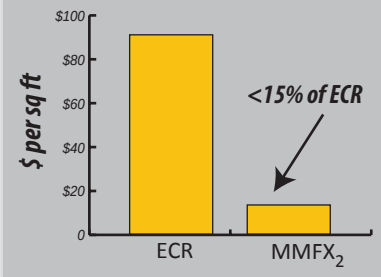
Structures built with $MMFX_2$ rebar deliver:

- 100-year+ service life
- Lower life-cycle costs
- Superior corrosion protection compared to black steel
- Lower material costs compared to stainless steels

Approved for use in the United States, Canada, Mexico and Gulf Corporation Council (GCC) countries – after rigorous testing conducted by the industry's leading authorities, including:

- Federal Highway Administration
- Virginia Transportation Research Council
- Florida Department of Transportation
- Louisiana Department of Transportation
- Michigan Department of Transportation
- New Jersey Department of Transportation
- South Dakota Department of Transportation
- Iowa State University
- University of Kansas
- University of South Carolina
- Concrete Innovations Appraisal Service (CIAS)

Lower Life-Cycle Costs



<15% the life-cycle costs of epoxy coated rebar per VTRC LCCA based on 75-year SL

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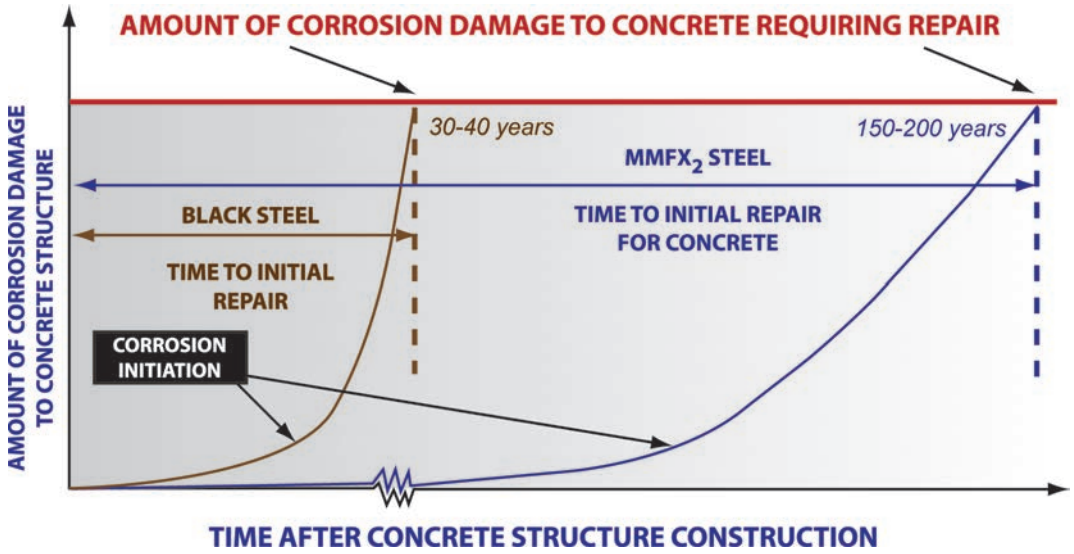
Reinforced concrete corrosion begins when the chloride concentration at the reinforcing steel surface reaches a critical chloride threshold value (CT).

Once corrosion is initiated, progressive cracking and spalling of the concrete follow, based on the corrosion rate (CR) of the reinforcing steel. Deterioration of the structure continues until the structure's service life is ended.

Damage Accumulation Projection for Black Steel vs. MMFX$_2$ Steel Reinforcements



Comparison of corrosion resistance performance of MMFX$_2$ (ASTM A1035) to black steel:
CT – MMFX$_2$ steel ~ 3-6 times > black bar
CR – MMFX$_2$ steel ~ 1/2 the CR of black bar

Competing corrosion products such as epoxy-coated rebar offer little corrosion protection based on actual field studies. Stainless steel rebar provides favorable corrosion-resistance properties, but the high upfront cost typically makes it a non-feasible option, as shown below.

	MMFX$_2$ Rebar	Con. Black Rebar	Epoxy Coated	Stainless Steel
Strength Grade	100 – 120	40 – 75	40 – 75	40 – 75
Life Cycle Costs ($/ft^2)	$13.30	$83.90	$92.50	$22.00

**Total expenditures over 75-year life of decks at Virginia bridge deck percentile corrosion tolerance of 10%*
Source: VTRC Report 06-R29

When it comes to steel, the problem is always corrosion.
Fortunately, the best engineering and scientific minds in the business have discovered the answer:

MMFX$_2$ Steel. Today's Steel Standard against corrosion.