MMFX$_2$® STEEL

TODAY'S STEEL STANDARD™

MMFX PROJECT APPLICATIONS AND AGENCY APPROVALS

OCTOBER 2013

MMFX$_2$ (ASTM A 1035/AASHTO MP18) Concrete Reinforcing Steel and Pavement Dowel Bars

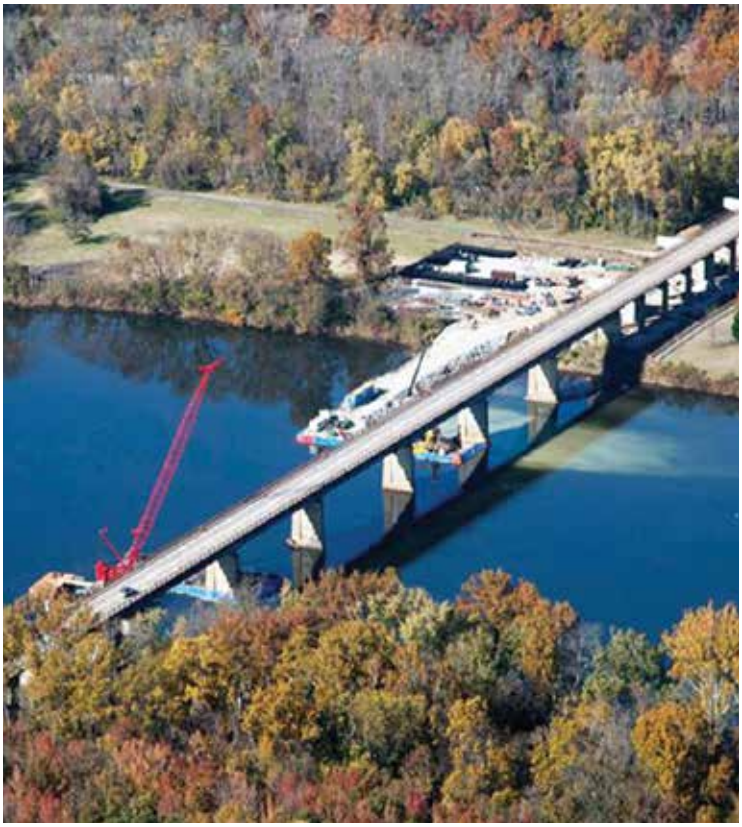


Table of Contents

1. Project Applications 3

A. Public Infrastructure Projects 3

B. Public and Private Building Development Projects 14

2. Agency Approvals 25

A. State Transportation Departments 26

B. Building Departments 27

MMFX Steel Corporation of America

2415 Campus Drive, Suite 100, Irvine, CA 92612

Phone (949) 476-7600 - Fax (949) 474-1130

E-mail info@mmfx.com

www.mmfx.com

The information and data in this document are accurate to the best of MMFX's knowledge and belief and are intended for general information only. MMFX cannot be held responsible for inaccuracies of any third party information contained herein.

The information herein may be changed or updated at anytime without notice. All information contained herein is subject to MMFX's standard terms and conditions.

© 2013 MMFX Technologies Corporation and its subsidiaries and affiliates (MMFX). All rights reserved.

1. PROJECT APPLICATIONS

Since 2001, $MMFX_2$ rebar has been used in various public infrastructure and public / private development projects in the United States, Canada, Mexico, Puerto Rico, Abu Dhabi – United Arab Emirates (UAE), and The Bahamas. Following is a representative list of some of those projects. These project applications illustrate the diverse geographical locations from Alaska to Florida and from New Jersey to California; and the Middle East where $MMFX_2$ rebar has been used. These examples of $MMFX_2$'s use also demonstrate how AASHTO MP 18 / ASTM A1035/ bars have been utilized for their corrosion-resistant and high-strength material properties.

A. Public Infrastructure Projects

Item	Location Project Description	Owner/Agency	Project Information
1.	Vian, OK - Sequoya Co. State Hwy 100 over Illinois River Lake Tenkiller Spillway Channel Bridge	Army Corps of Engineers Tulsa Dist.	Bridge - Abutments, columns and deck (75 ksi design except precast elements) Constructed 2006
2.	Edmonton, AB – CAN Anthony Henday Drive Ring Road	Alberta MOT	Girders and abutment for 47 bridges Under construction 2013
3.	Winnipeg, MB - CAN Disraeli Freeway Bridge over Red River	Manitoba MOT	75 Year design life Columns, abutments, caps and deck - Constructed 2012
4.	Stockton , CA Daggett Road Bridge over Burns Cut-off	Port of Stockton	Bridge girders (100ksi design) Constructed 2006
5.	Folsom, CA Light Rail Bridge over Alder Creek	Sacramento Regional Transit Authority	Bridge – Abutments, columns and girder (100 ksi design) Constructed 2004
6.	Saskatoon, SK - CAN Circle Drive over South Saskatchewan River	Saskatchewan MOT	Bridge deck and columns Constructed 2012
7.	San Diego, CA Modular Hybrid Pier	US Navy – NFSEC (Naval Facilities Engineering Command)	Floating US Navy Pier Corrosion resistance reinforcing steel throughout entire structure - Constructed 2004
8.	Bristol Co. VA Route 460 Connector Coal Fields Expressway	Virginia DOT	Pier Table (75 ksi design) and Bridge deck Under Construction 2013
9.	Richmond, VA - Huguenot Bridge (SR 147) over James River	Virginia DOT	Bridge Deck Completed 2013
10.	Spokane, WA US 395 North Spokane Corridor	Washington DOT Eastern Region	1.5" diameter by 18" pavement dowel bars - Constructed 2011

PROJECT 1 - State Hwy 100 - Vian, OK

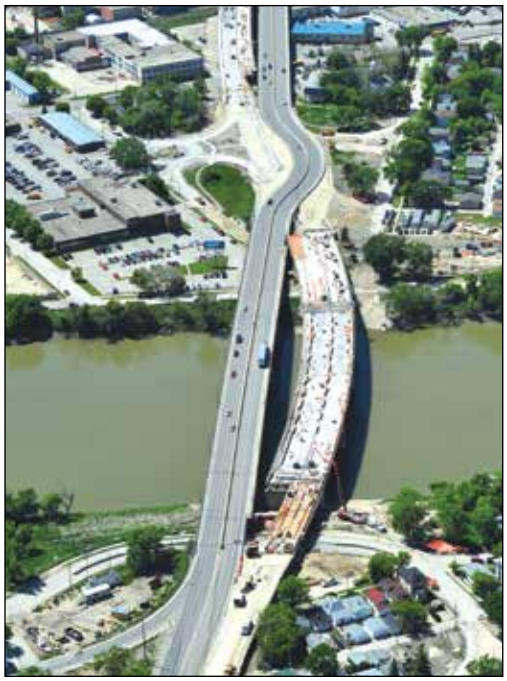
State Hwy 100 over Illinois River Lake Tenkiller Spillway - Vian, OK

Bridge - Abutments, columns and deck
(75 ksi design except precast elements)
Constructed 2006

PROJECT 2 - Anthony Henday Drive Ring Road - Edmonton, AB, CAN

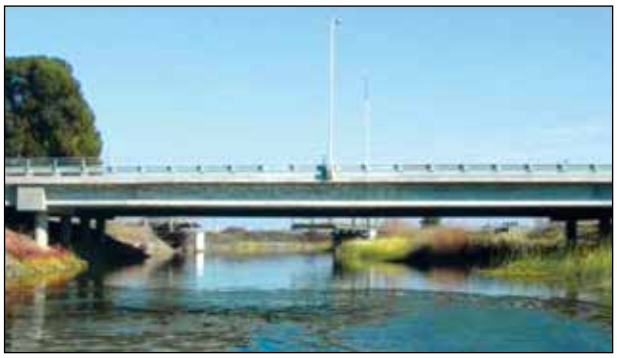
Anthony Henday Drive Ring Road - Edmonton, AB, CAN
Girders, abutment for 47 bridges. Under construction 2013

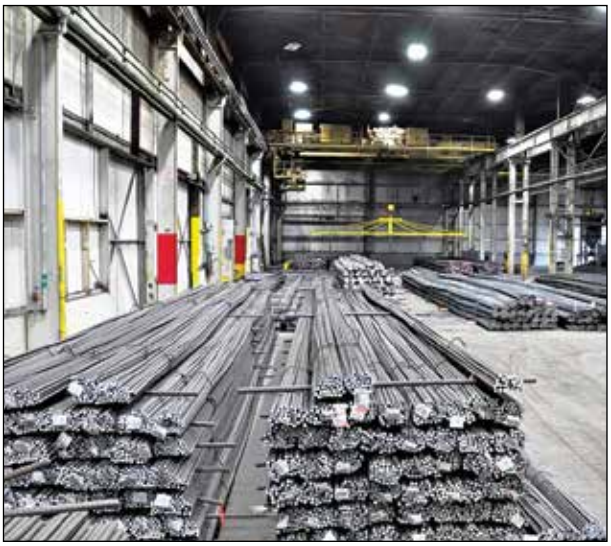
PROJECT 3 - Disraeli Freeway - Winnipeg, MB, CAN

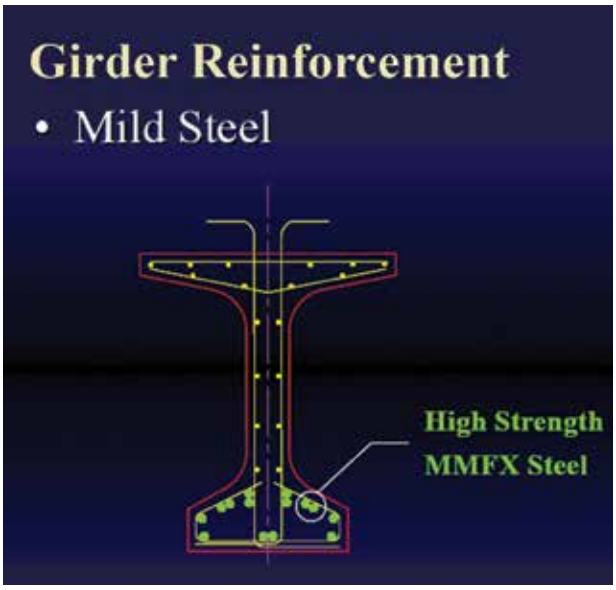


Disraeli Freeway Bridge over Red River - Winnipeg, MB, CAN
75 Years design life
Columns, abutments, caps
and deck - Constructed 2012

PROJECT 4 - Daggett Road Bridge - Stockton, CA

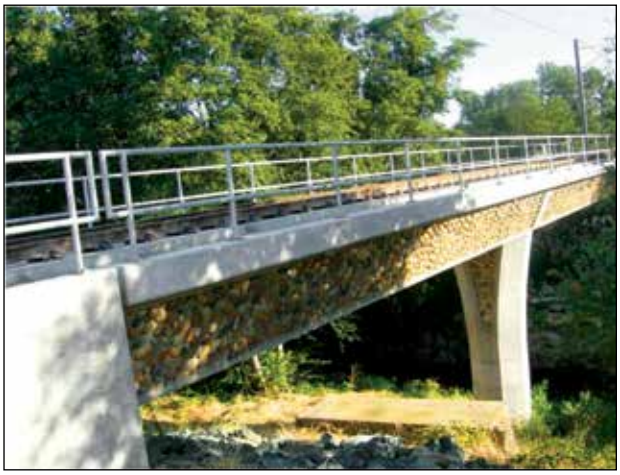


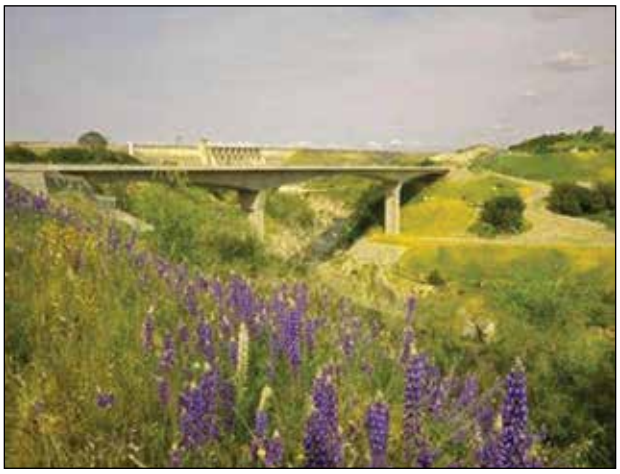




Daggett Road Bridge over Burns Cut-off, Stockton, CA
Bridge girders (100ksi design) . Constructed 2006

PROJECT 5 - Light Rail Bridge - Folsom, CA



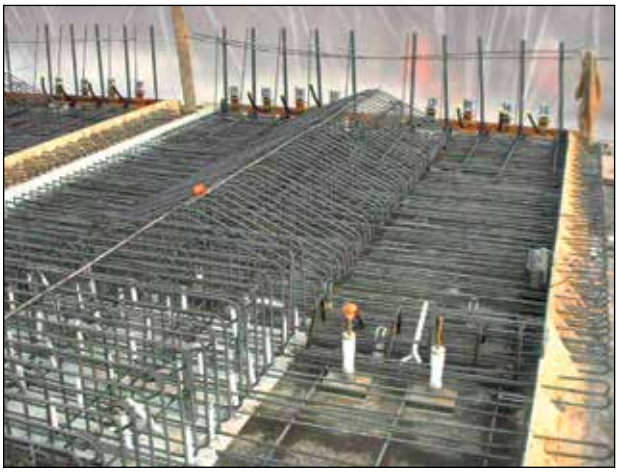


Light Rail Bridge over Alder Creek - Folsom, CA
Bridge – Abutments, columns and girder
(100 ksi design)
Constructed 2004

PROJECT 6 - Circle Drive - Saskatoon, SK, CAN

Circle Drive over South Saskatchewan River - Saskatoon, SK, CAN
6 - Lane bridge deck and columns. Constructed 2012

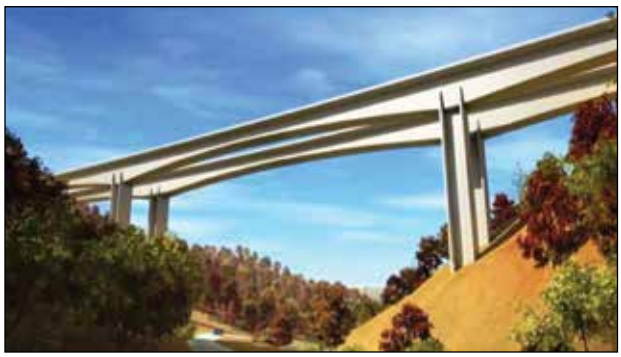
PROJECT 7 - United States Navy Modular Hybrid Pier - San Diego, CA



United States Navy Modular Hybrid Pier
San Diego, CA
Floating US Navy Pier
Corrosion resistance reinforcing steel throughout entire structure
Constructed 2004

PROJECT 8 - Route 460 Connector - Bristol Co., VA

Route 460 Connector, Coal Fields Expressway Bristol Co., VA
Pier Table (75 ksi design) and Bridge deck.
Tallest bridge in Virginia
Under Construction 2013



PROJECT 9 - Huguenot Bridge (SR 147) - Richmond, VA

Huguenot Bridge (SR 147) over James River - Richmond, VA
Bridge Deck. Completed 2013

PROJECT 10 - US 395 North Spokane Corridor - Spokane, WA

US 395 North Spokane Corridor – Spokane, WA

Corrosion-resistant 1.5" diameter by 18" pavement dowel bars. Constructed 2011

B. Public and Private Development Projects

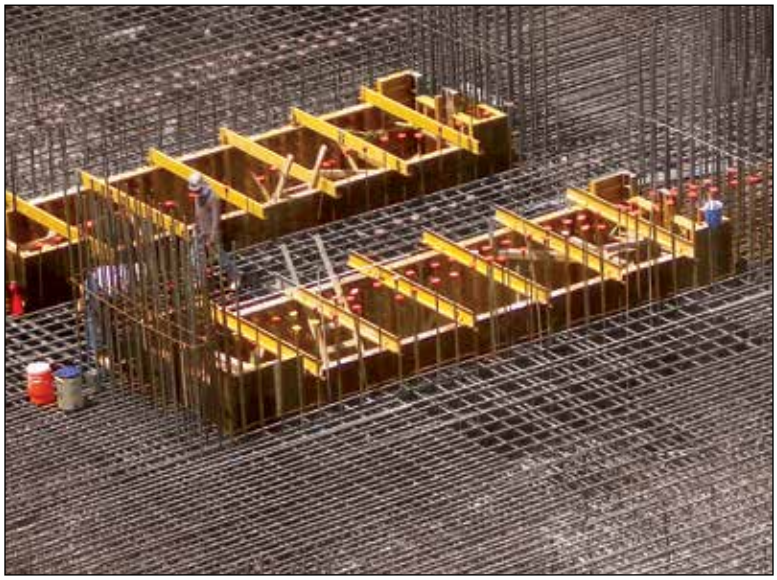
Project	Location Project Description	Owner/Agency	Project Information
1.	Gulf Shores, AL Gulf State Park Fishing Pier	Alabama State Parks	Precast piling and substructure Constructed 2008
2.	Miami, FL Everglades on the Bay Condominiums	CABI Developers	49 floor Condominium Foundation (80 ksi design) Constructed 2007
3.	San Francisco, CA California Academy Exhibition, Education and Research Center	California Academy of Sciences	Building foundation and aquarium tank reinforcement – project awarded platinum LEED Constructed 2008
4.	Hostotipaquillo, Jalisco, Mexico 750 Mw La Yesca Hydroelectric Dam	CFE (Comisión Federal de Electricidad) Mexico	Diversion Tunnel Plugs Grade 120 material certification 208 Meter high concrete-faced rock-fill dam Constructed 2012
5.	Grand Isle, LA North Expansion at Port Fourchon	Edison Chouest Offshore	Oil field service docks - drill shaft piles and caps (100 ksi design) Constructed 2009
6.	Seattle, WA Escala Condominiums	Lexas Development	31 floors above grade and 8 floors below grade - columns and shear walls (100 ksi design of seismic confinement ties) Constructed 2008
7.	Abu Dhabi, UAE Al Sowwah Island Diaphragm Wall	Mubadala Development	1.5 km long diaphragm wall (600 MPa design) Constructed 2011
8.	Juneau, AK Ted Stevens Research Center	NOAA –National Oceanic & Atmospheric Administration	Wet well pump station and filter house Constructed 2006
9.	Port Orchard, WA Floating Marina Breakwater	Port of Bremerton	Floating Breakwater 100 ksi corner reinforcement Constructed 2006
10.	Bay St. Louis, MS North Beach Blvd Seawall	US Army Corps of Engineers Mobile District	6000 ft long coastal seawall Constructed 2011

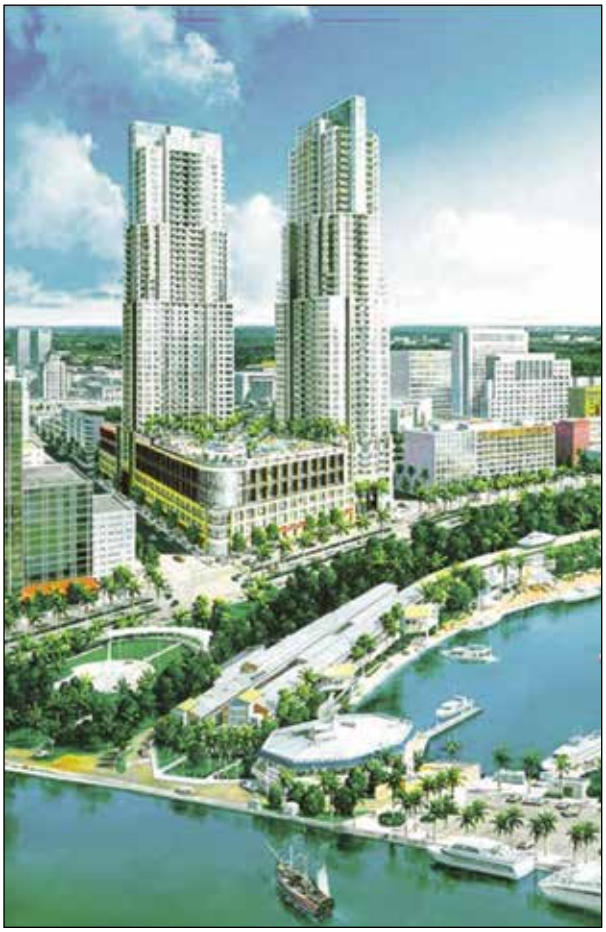
PROJECT 1 - Gulf State Park Fishing Pier - Gulf Shores, AL

Gulf State Park Fishing Pier - Gulf Shores, AL

1,540 ft long precast piling and substructure. Constructed 2008

PROJECT 2 - Everglades on the Bay Condominiums - Miami, FL





Everglades on the Bay Condominiums
Miami, FL
49 floor Condominium, Foundation (80 ksi design)
Constructed 2007

PROJECT 3 - California Academy of Sciences Exhibition and Research Center - San Francisco, CA

California Academy of Sciences Exhibition and Research Center, San Francisco, CA
Building foundation and aquarium tank reinforcement
Project awarded platinum LEED
Constructed 2008

PROJECT 4 - La Yesca Hydroelectric Dam - Hostotipaquillo, JAL, MEX

La Yesca Hydroelectric Dam Hostotipaquillo, JAL, MEX

Diversion Tunnel Plugs
Grade 120 material certification
208 Meter high concrete-faced rock-fill dam
Constructed 2012

PROJECT 5 - Northern Expansion at Port Fourchon - Grand Isle, LA

Northern Expansion at Port Fourchon, Grand Isle, LA
Oil field service docks - drill shaft piles and caps (100 ksi design)
Constructed 2009

PROJECT 6 - Escala Condominiums - Seattle, WA

Escala Condominiums
Seattle, WA
31 floors above grade and 8 floors below grade - columns and shear walls (100 ksi design of seismic confinement ties). Constructed 2008

PROJECT 7 - Al Sowwah Island Diaphragm Wall - Abu Dhabi, UAE

Al Sowwah Island Diaphragm Wall, Abu Dhabi, UAE
1.5 km long diaphragm wall (600 MPa design)
Constructed 2011

PROJECT 8 - NOAA Ted Stevens Research Center - Juneau, AK

NOAA Ted Stevens Research Center, Juneau, AK
Wet well pump station and filter house.
Constructed 2006

PROJECT 9 - Floating Marina Breakwater - Port Orchard, WA

Floating Marina Breakwater, Port Orchard, WA
Floating Breakwater 100 ksi corner reinforcement. Constructed 2006

PROJECT 10 - North Beach Blvd Seawall - Bay St. Louis, MS

North Beach Blvd Seawall
Bay St. Louis, MS
US Army Corps of Engineers,
6000 ft long coastal seawall
Constructed 2011

2. AGENCY APPROVALS

$MMFX_2$ (ASTM A1035/AASHTO MP 18) rebar has been designed and/or used in various private development projects in: Alabama, Bahamas, California, Florida, Georgia, Illinois, Kentucky, Louisiana, Minnesota, Missouri, Mississippi, Montana, Nevada, New Jersey, New York, North Carolina, Oregon, Tennessee, Texas, Virginia, and Washington. These project applications include: building slabs, piles, foundations, columns, shear walls and beams designed to either utilize the superior corrosion and or mechanical properties of the $MMFX_2$ steel bars.

Public Agency Infrastructure Usage: Since $MMFX_2$ rebar's introduction into the market place in 2001, it has been used in more than 100 bridge projects, located in: 27 states, 4 Canadian provinces, Puerto Rico and the Bahamas. The following state transportation agencies have been designed and/or constructed with MMFX in: bridge decks, other structural members, and/or using pavement dowel bars:

Alabama DOT
Arizona DOT CALTRANS
Colorado DOT
Connecticut DOT
Delaware DOT
Florida DOT
Idaho DOT
Indiana DOT
Iowa DOT
Kentucky Transportation Cabinet
Massachusetts DOT
Maine DOT
Michigan DOT
New Hampshire DOT
New Mexico DOH&T
North Carolina DOT
Ohio DOT
Oklahoma DOT
Pennsylvania DOT
South Carolina DOT
Texas DOT
Utah DOT
Vermont DOT
Virginia DOT
Washington DOT
Wisconsin DOT

In addition, the following government agencies also have used $MMFX_2$ rebar in their reinforced concrete structures:

- Ada County Highway Department, Idaho
- Alberta Ministry of Transportation
- British Columbia Ministry of Transportation
- Cities of: Boca Raton, Daytona, Jupiter, New Smyrna, St. Petersburg, Florida; Atlanta, Georgia; Chicago, Illinois; Winnipeg, Manitoba; St. Paul, Minnesota; Bayonne, New Jersey; Carlsbad, Raton, New Mexico
- CFE, Comisión Federal de Electricidad, Mexico
- Counties of: Los Angeles, California; Lee, Pinellas, Florida; Cuyahoga, Hamilton, Ohio; Kitsap, Washington
- Manitoba Highway Department
- NASA (National Aeronautics and Space Administration)
- National Oceanic and Atmospheric Administration (NOAA)
- New Brunswick Ministry of Transportation
- New York State Thruway Authority
- Pennsylvania Turnpike Authority
- Port of Bremerton - Washington
- Port of Stockton - California
- Puerto Rico Departamento de Transportacion y Obras Públicas
- Sacramento Regional Transit District, California
- States of Alabama, Hawaii, Nebraska and Oregon
- U.S. Air Force
- U.S. Army Corps of Engineers, Tulsa District
- U.S. Naval Facilities Command
- U.S. Veterans Administration
- Virginia Port Authority
- VANOC (Vancouver Olympic Committee)

A. Transportation Department Approvals

Name of Agency	Approval Date	Name & Phone Number of Contact
Alabama DOT	02-03-04	**Billy Bullard** **(334) 206-2209**
Alberta Transportation	Trial Products 11-24-09	**Roger Skirrow** **(780) 427-7761**
CALTRANS (A)	06-11-09	**L. Janie Spencer** **(916) 227-7073**
Colorado DOT	02-11-05	**David Kotzer** **(303) 757-9421**
Georgia DOT	12-11-03	**Reggie Fry** **(404) 363-7619**
Idaho DOT	07-30-04	**Steve Loop** **(208) 334-2867**
Manitoba Infrastructure and Transportation (MIT)	06-2010	**Tara Liske** **(204) 945-1941**
New Mexico Dept. of Highways and Transportation	10-23-02	**Ernest Archulata** **(505) 827–5100**
North Carolina DOT	Approved for Provisional Use 07-08-10	**Leigh M. Wing** **(919) 508-1860**
Texas DOT	(B) APEL 03-22-04	**Randy Cox, P.E.** **(512) 416-2189**
Utah DOT	(C) 04-25-05	**Barry Sharp** **(801) 965-4314**
Washington State DOT	(D) 06-24-05	**John Livingston** **(360) 709-5472**

Notes:
(A) CALTRANS SSP 40-010 "Jointed Plain Concrete Pavement" & SSP 40-025 "Continuous Reinforced Concrete Pavement
(B) APEL (AASHTO Product Evaluation List)
(C) Standard Special Provision 03211S - Reinforcing Steel and Welded Wire, March 2009
(D) Pavement Dowel Bars

B. Building Department Approvals

The following building departments have approved the use of $MMFX_2$ in various flexural elements (i.e. mat foundations, shear walls etc.) as noted in their approval documents. (Contact MMFX for copies of approval letters.) Also the International Code Council (ICC) Subsidiary ICC ES (Evaluation Service) during 2013 published **ICC ES Evaluation Report ESR 2107**. This report provides guidance to building departments and engineering firms how $MMFX_2$ (ASTM A1035 Gr. 100) high strength bars can be designed into structures thru its references to the 2012 IBC and ACI 318.

Name of Agency	Approval Date	Comment
City of Long Beach, California Planning and Building Department	03-17-06	Approved for 100 ksi foundation systems only
City of Miami, Florida Building Department	09-08-06	Approved for 100 ksi foundation systems and superstructures
City of North Bay Village, Florida Building & Zoning Department	06-28-06	Approved for 100 ksi foundation systems and superstructures
City of Orlando, Florida Division of Building Safety	09-18-06	Approved for 100 ksi foundation systems and superstructures
City of San Diego, California Department of Development Services	05-10-05	Project approval 100 ksi foundation systems only
Clark County (Las Vegas), Nevada Department of Development Services	03-13-06	Approved for 100 ksi foundation systems and superstructures
Miami – Dade County, Florida Building Code Compliance Office	08-15-06	Approved for 100 ksi foundation systems and superstructures
Sarasota County, Florida Permitting Services	10-21-05	Approved for 100 ksi foundation systems and superstructures
City of Irvine, California	12-12-06	Approved for 100 ksi foundation systems

MMFX STEEL CORPORATION OF AMERICA
2415 Campus Drive, Suite 100 • Irvine, CA 92612 • Phone: 949.476.7600 • Fax: 949.474.1130
www.mmfx.com