IDENTIFICATION OF PERFORMANCE CHARACTERISTICS OF CONCRETE RAILINGS WITH PULTRUDED FRP REINFORCEMENT

BACKGROUND
Corrosion of steel reinforcement leads to degradation of concrete bridge decks and safety appurtenances.
FRP reinforcement for deck and rails would eliminate the problem.
First GFRP RC rail/deck system successfully crash tested in Texas (2002)

OBJECTIVES
• Geometry compliant with AASHTO LRFD recommendations
• Crash Test Level 2 equivalent static transverse strength (AASHTO LRFD, 1998)
• Simple reinforcement layout compatible with GFRP SIP deck panels

APPLICATION
Bridge 14802301 in Greene County, MO
New open-post Modified Kansas Corral Rail reinforced with GFRP rebars developed to complement innovative pultruded GFRP stay-in-place (SIP) reinforcement panels used in concrete deck construction

RESULTS
• Systematic geometry and structural design approach developed
• Final design successfully validated on the basis of experimental static response of two full-scale post/deck overhang connection subassemblies

RESULTS
Assessment of selected design (M2) by comparison of test results and demand functions (AASHTO 1998, 2002), and new bridge rail after construction

APPLICATION
Bridge 14802301 in Greene County, MO
New open-post Modified Kansas Corral Rail reinforced with GFRP rebars developed to complement innovative pultruded GFRP stay-in-place (SIP) reinforcement panels used in concrete deck construction

BACKGROUND
Old Bridge 14802301, Greene County, MO: degradation of deck and safety appurtenances

OBJECTIVES
• Geometry compliant with AASHTO LRFD recommendations
• Crash Test Level 2 equivalent static transverse strength (AASHTO LRFD, 1998)
• Simple reinforcement layout compatible with GFRP SIP deck panels

APPLICATION
Bridge 14802301 in Greene County, MO
New open-post Modified Kansas Corral Rail reinforced with GFRP rebars developed to complement innovative pultruded GFRP stay-in-place (SIP) reinforcement panels used in concrete deck construction

RESULTS
Assessment of selected design (M2) by comparison of test results and demand functions (AASHTO 1998, 2002), and new bridge rail after construction

BACKGROUND
Old Bridge 14802301, Greene County, MO: degradation of deck and safety appurtenances

OBJECTIVES
• Geometry compliant with AASHTO LRFD recommendations
• Crash Test Level 2 equivalent static transverse strength (AASHTO LRFD, 1998)
• Simple reinforcement layout compatible with GFRP SIP deck panels

APPLICATION
Bridge 14802301 in Greene County, MO
New open-post Modified Kansas Corral Rail reinforced with GFRP rebars developed to complement innovative pultruded GFRP stay-in-place (SIP) reinforcement panels used in concrete deck construction

RESULTS
Assessment of selected design (M2) by comparison of test results and demand functions (AASHTO 1998, 2002), and new bridge rail after construction