

Special Provision
Steel Fiber Reinforced Concrete
Wearing Surface - S94(S3109000)
ALL DISTRICT ENGINEERS/
DISTRICT ADMINISTRATOR

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Gary L. Hoffman, P.E., Chief Engineer /s/
Highway Administration

Attached is an approved statewide special provision for the use of Steel Fiber Reinforced Concrete (SFRC) as a thin overlay for in-service bridge decks. This special provision is available for lettings after March 12, 1997. The following information should be considered in the design of SFRC bridge deck overlays:

SFRC does not eliminate cracking, but it does significantly reduce the growth and width of cracks.

SFRC provides post-crack integrity, which enables the concrete to still carry loads even after cracking. This property increases the spall resistance and reduces spalls and/or pop-outs at the surface.

SFRC overlays with a maximum water cement ratio of 0.43 for Class AAA concrete mixes are not impermeable, nor are they considered a water proof membrane or overlay. SFRC overlays with a maximum water/cement ratio of 0.43 should not be construed as an alternate to Latex Modified Mortar or Concrete Overlays.

The impermeability of SFRC overlays can be improved by reducing the water/cement ratio to 0.40 or less. Reduction of the water/cement ratio is encouraged, and the special provision allows the use of high range water reducers to accomplish this.

SFRC is recommended for overlays of structures where the existing conventionally-reinforced concrete bridge deck cannot be removed, such as in slab bridges and deck arches. These types of structures, where the allowable dead load capacity has permitted, have typically received minimally-reinforced Class AAA concrete overlays in thicknesses up to five inches. Steel fiber reinforcement should provide beneficial properties in these types of overlays.

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If the water/cement ratio for SFRC is not decreased to improve impermeability, SFRC overlays are recommended to be used on bridge decks that are conventionally-reinforced with epoxy-coated reinforcement.

A minimum thickness of two inches is recommended for all SFRC overlays to provide adequate coverage.

This special provision will ultimately result in a Publication 408 Supplement based on continued good field performance. If there are any questions, please contact Mr. Gerald J. Malasheskie, P.E., Chief, Engineering Technology Section in the Bureau of Construction and Materials.

Attachment

4200/TLR/tlr

cc: M. A. Marks

G. R. Fritz
M. M. Ryan, P.E.
J. A. Filippino, P.E.
W. W. Kober
T. E. Bryer, P.E.
G. J. Malasheskie, P.E.
P. M. Ingram, P.E.
D. Reidenouer, P.E.
M. Adams
A. Smith

L. M. King
L. C. Schultz, P.E.
G. L. Hoffman, P.E.
M. G. Patel, P.E.
A. C. Bhajandas, P.E.
C. A. Kline, P.E.
R. L. Apple, P.E.
T. L. Ramirez, P.E.
N. V. Ved, P.E.
G. Spittle
K. Keefe

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Consulting Eng. Council of PA, Attn: John Van Natta
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Regarding the Attachment:

The attachment is the Special Provision titled “ Steel Fiber Reinforced Concrete Wearing Surface” with document number S94(S3109000). This can be obtained in CMS or by calling the Engineering, Technology, and Information Division of the Bureau of Construction and Materials at (717) 783-3392.