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12. SPONSORING AGENCY NAME AND ADDRESS Oklahoma Department of Transportation 200 NE 21 st Street Oklahoma City, Oklahoma 73105		14. SPONSORING AGENCY CODE Oklahoma Department of Transportation	
		15. SUPPLEMENTARY NOTES Silica fume concrete is important in limiting the amount of chloride ion penetrating the overlay.	
16. ABSTRACT In September 1999, Bridges "A" and "B" of contract TBOI-0035-1(110)044 were overlaid with a silica fume concrete surface. The bridges are located on Interstate 35 in Carter County, 1.6 km north of State Highway 53. The deteriorated bridge decks were prepared by coldmilling the surface and removing the delaminated areas with jackhammers. Reinforcement bars were cleaned and exposed areas patched. The mix design was changed several times before a workable mix was developed. Every load was tested at the plant and the job site. Several slump and air content problems were experienced before a consistent mix was finalized. Silica fume concrete was mixed at a batch plant and transported on the job site with ready mix trucks. After each lane was completed, the curing process took another 78 hours. Post construction testing included skid resistance, compressive strength, bond strength, and chloride permeability testing. All these requirements were met. Recommendations were made to establish the slump and use a high range water reducer for construction ease. Other recommendations were, continue to use ready mix trucks, but fill them to a maximum volume of 60 percent. Establish seasonal limitations to minimize changes of extreme temperatures. Finally, temperature parameters should be developed.			
17. KEY WORDS Silica fume, permeability, overlay, patching, slump, compressive strength		18. DISTRIBUTION STATEMENT No restrictions. This publication is available from the Research & Development Division, Oklahoma Department of Transportation.	
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