

1. Report No. MR 96-03	2. Report Date September 2001	3. Contract No. N/A	4. Project No. IM-8-029(007)022
5. Title and Subtitle Evaluation of the "FiberDowel" Corrosion Proof Dowel Bar System as a Load Transfer Device		6. Report Type Work Plan <input type="checkbox"/> Construction <input type="checkbox"/> Evaluation <input type="checkbox"/> Final <input checked="" type="checkbox"/>	7. Project No. 8. Project No. 9. Project No. 10. Project No.
11. Author(s)/Principle Investigator(s) Curtis Dunn, Rhaub Walker			
12. Performing Organization Name and Address NDDOT M+R <input checked="" type="checkbox"/> North Dakota DOT NDDOT OTHER* <input type="checkbox"/> Materials and Research Division NDSU <input type="checkbox"/> 300 Airport Road UND <input type="checkbox"/> Bismarck ND 58504-6005 UGPTI <input type="checkbox"/> OTHER* <input type="checkbox"/> *see supplementary notes		13. Sponsoring Agency Name and Address North Dakota DOT Materials and Research Division 300 Airport Road Bismarck ND 58504-6005	
14. Supplementary Notes			
15. Abstract <u>Purpose and Need</u> Corrosion of reinforcing causes distresses in concrete and can lead to premature failure in PCC pavement. An alternative to standard reinforcing steel needs to be looked at to prolong the life of PCC pavement. <u>Objective</u> The objective of this study will be to determine if a dowel bar composed of continuous fiberglass filaments and polyester resin will prevent faulting from recurring in jointed concrete pavement as well as serve as a corrosion free device. <u>Scope</u> In 1995, the North Dakota Department of Transportation incorporated a test section containing a corrosion proof dowel bar system called "FiberDowel" as a load Transfer Device. Test sections were incorporated into project IM-8-029(007)022. The "FiberDowel" bars will be evaluated similar to the steel dowel bars and the results of both test sections will be compared. Evaluating items such as monitoring of distresses around the dowel bars and non-destructive deflection testing of load transfer across the doweled joints will be evaluated annually for a period of five-years. The non-destructive deflection testing will be accomplished with the use of a falling weight deflectometer. <u>Summary</u> The retrofitting of "FiberDowel" bars as load transfer devices is similar to that of plain steel dowel bars except for the absence of epoxy coating or bond breaking material. Post construction FWD analysis showed the joints retrofitted with plain steel dowel bars initially exhibited approximately 20% greater load transfer than the corresponding joints retrofitted with "FiberDowel" bars. FWD analysis taken during the 1997/1998/2001 seasons indicate the joints retrofitted with plain steel dowel bars are performing well and are registering nearly twice the load transfer percentages than the corresponding joints retrofitted with "FiberDowel" bars. <u>Recommendation</u> The use of "FiberDowel" bars may prove to be less corrosive over time. However, the loss of load transfer experienced when compared to plain steel dowel bars coupled with significantly higher costs far outweigh any advantages. It is not recommended that "FiberDowel" bars be used as an option on dowel bar retrofit projects.			
16. Key Words Dowel Bars Load Transfer Concrete	17. Distribution Statement No restrictions. This document is available to the public from: North Dakota Department of Transportation Materials and Research Division: 300 Airport Road Bismarck ND 58504-6005 Office: (701) 328-6900 Fax: (701) 328-0310		18. No. of Pages 12 19. File type/Size Pdf / 0.3 MB