**Composite Bridge monitoring using Smart Fiber Optic sensing textile**

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**Abstract**

The Structural Health Monitoring (SHM) of large civil infrastructures has become a priority due to economic advantages and early detection of structures failure. Distributed sensors have played an important role in developing a reliable monitoring system. The purpose of this project aims to install a Smart Fiber optic sensing textile inside composite girders before bridge construction. Brillouin Optical Time Domain Reflectometry (BOTDR) interrogation system was used to monitor the strain changes before, after installation, and during loading test. The Smart fiber optic textile was installed on the Grist Mill bridge located in Hampden, Maine. This field test will serve as a long-term study of the effect of seasonal weather in the Brillouin frequency signal and to monitor the bridge during this time for any strain change. Additionally, it will allow us to develop a monitoring plan that can be implemented in futures bridge monitoring installations

  

1. (b)

Figure 1 (a) Grist Mill Bridge side view photo (b) Loading test on Grist Mill bridge side

**Acknowledgments:** Funding for this research is provided, partially or entirely, by the Transportation Infrastructure Durability Center at the University of Maine under grant 69A3551847101 from the U.S. Department of Transportation’s University Transportation Centers Program. We also thank the AFFOA (Advanced Functional Fabric of America agency) for partially supporting this research through Grant W15QKN-16-3-0001 and would like to recognize our industry partners Saint-Gobain and AIT bridges.