**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

A picture containing outdoor, sky, rock, rocky

Description automatically generated A picture containing text, road, sky, outdoor

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1. (b)

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

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