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Using Nondestructive evaluation thermoelasticity testing to detect stress in post tensioned bridges that contain flexible filler.

The purpose of this research is to analyze the change in thermal conductivity experienced in the presence of stress in post-tensioned bridges that contain flexible fillers. The Florida Department of Transportation effectively executed a policy to implement flexible filler as tendon corrosion protection for post-tensioned and segmental bridges in January 2016 . A nondestructive evaluation is sought in order to prevent invasive investigation methods of corrosion in steel reinforcement bars. As thermal conductivity increases the presence of stress also increases. This is contrary to micro-cracking which induces an inverse relationship. Therefore, this research will be utilized to find if results can be distinguished with active infrared thermography by diurnal thermal loading or micro-cracking/tensile stresses. Currently, a stand to hold a camera and light are being constructed by myself to analyze the heat propagation in beams. A light and thermographic camera are being utilized to determine how the heat propagates from the steel reinforcement bar and concrete beam that it is contained in. This research is being conducted so a larger scale means of detecting corrosion in post-tensioned bridge members can be characterized non-destructively by the Florida Department of Transportation.