

<b>UTC Project Information</b>	
Project Title	Condition/Health Monitoring of Railroad Bridges for Structural Safety, Integrity, and Durability
University	University of Connecticut (UConn), Storrs, CT
Principal Investigator	Ramesh B. Malla, Ph.D., F. ASCE, F. EMI, A.F. AIAA, M. CASE ( <i>Institutional Lead</i> )
PI Contact Information	E-mail: <a href="mailto:Ramesh.Malla@uconn.edu">Ramesh.Malla@uconn.edu</a> ; Phone: (860)486-3683 Address: Department of Civil & Environmental Engineering, 261 Glenbrook Road, Storrs, CT 06269-3037
Funding Source(s) and Amounts Provided (by each agency or organization)	Fast-Act (Federal-U.S. DOT): \$249,000 (estimate) for 3 years; UConn (1:1 match): \$249,000 (estimate) for 3 years
Total Project Cost	\$498,000 (estimate) (Federal plus 1:1 Match) for 3 years
Agency ID or Contract Number	ORCID.org ID Number: <a href="https://orcid.org/0000-0002-8035-8402">https://orcid.org/0000-0002-8035-8402</a>
Start and End Dates	October 01, 2018 - June 30, 2022
Brief Description of Research Project	<p>The primary goal of this research project is to develop and implement efficient and effective methodology for short- and long-term continuous condition monitoring and detection of railroad bridges. This is proposed to be achieved utilizing analytical and computational (finite element) modeling/analysis and field testing of bridges under moving train loads. Primary specific objectives include:</p> <ul style="list-style-type: none"> <li>• Evaluating the current stress-strain condition of the material from the old existing New England railroad bridges.</li> <li>• Validating finite element models (FEM) from field-obtained data for effective monitoring and condition assessing of the railroad bridge structures. Determining the number and locations of sensors needed to obtain accurate responses of entire bridges from the limited number of field test sensor data</li> <li>• Understanding the effects of vehicle-bridge interaction and train speeds on the bridge structural response and safety, especially the effects of higher speeds on the response of older bridges.</li> </ul>
Describe Implementation of Research Outcomes (or why not implemented)	Currently, the research project is ongoing. The research outcomes will be implemented as they are fully developed. The results have been shared with state DOTs and industry, and disseminated through presentations at the conference and seminars.
Place Any Photos Here	
Impacts/Benefits of Implementation (actual, not anticipated)	The research project is ongoing. The benefits will be determined towards the end of the research project.
Web Links	<p><b>PI Website:</b> <a href="https://cee.engr.uconn.edu/people/malla-ramesh-b">https://cee.engr.uconn.edu/people/malla-ramesh-b</a></p> <p><b>Recent project related publications of interest:</b></p> <ul style="list-style-type: none"> <li>• Jacobs, W., Dhakal, S., and Malla, R.B. “Live-Load Response of Eyebars on a 110-Year-Old Steel Truss Railroad Bridge.” <i>ASCE Practice Periodical on Structural Design and Construction</i>, Sept. 2020, pages 04020045-1 to 15 (published online <a href="https://ascelibrary.org/doi/10.1061/%28ASCE%29SC.1943-5576.0000523">https://ascelibrary.org/doi/10.1061/%28ASCE%29SC.1943-5576.0000523</a>)</li> </ul>
<ul style="list-style-type: none"> <li>• Reports</li> <li>• Project website</li> <li>• Publications</li> </ul>	



- Jacobs, W. and Malla, R. B. “ On live load impact factors for railroad bridges,” *International Journal of Rail Transportation*, Vol. 7, Issue 4; April 2019; pp 262-278; (online - <https://doi.org/10.1080/23248378.2019.1604182>)
- Jacobs, D. W. and Malla, R. B., “ Eye Strain,” RT&S- Railway Track and Structures, Vol. 115. No. 9, New York, NY, Sept. 03, 2019, pp 12-19 (online: [https://issuu.com/railwaytrackstructures/docs/rts\\_september\\_2019/1?e=5257055/72218900](https://issuu.com/railwaytrackstructures/docs/rts_september_2019/1?e=5257055/72218900))

**TIDC Report website:** <https://www.tidc-utc.org/research/tidc-funded-projects-and-reports/project-1-2-condition-health-monitoring-of-railroad-bridges-for-structural-safety-integrity-and-durability/>