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Optimizing Steel Railway Truss Bridge Health Monitoring

Ahmed Rageh

University of Nebraska-Lincoln, a.eissa.rageh@huskers.unl.edu

Daniel Linzell

University of Nebraska-Lincoln, dlinzell@unl.edu

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Problems - Steel Railway Trusses

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Problems – Condition Evaluation

- ## Objectives



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- The image displays three structural diagrams of a roof truss system, illustrating the Truss, Flooring system, and Bracing system.
- Truss:** The top diagram shows the main truss structure. Members are labeled U1 through U5 (top chord), L1 through L5 (bottom chord), and L6 through L10 (vertical/horizontal members). A yellow box highlights the word "Truss".
- Flooring system:** The middle diagram shows the flooring system, including joists (FB1 through FB6) and various dimensions (e.g., 13'-3", 11'-3", 1'-6", 6'-5", 8'-10"). A yellow box highlights the words "Flooring system".
- Bracing system:** The bottom diagram shows the bracing system, including "Right Truss" and "Left Truss" bracing members. A yellow box highlights the words "Bracing system".

Model Calibration

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- A 3D perspective view of a truss bridge structure. The bridge is supported by two large, angled, purple-colored piers. The truss members are colored in various shades of blue, green, and red. The bridge deck is shown with multiple tracks. Labels with red arrows point to specific components and dimensions:
- Str. lat. 24.00"**: Points to the top chord of the truss.
 - Truss bot. 0.00"**: Points to the bottom chord of the truss.
 - FB 18.75"**: Points to a vertical member (floor beam) connecting the top and bottom chords.
 - Str. 18.75"**: Points to a vertical member (stringer) supporting the deck.
 - Bot. lat. - 11.25"**: Points to the bottom chord of the bridge deck.
 - Rails**: Points to the top of the bridge deck.
 - Ties**: Points to the horizontal members connecting the rails.



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- **Validated model - published test results**
- **Field tests/model calibration – SHM planning**
- **Proposed SHM plans**
- **Validated SHM plans - field monitoring**