



FACT SHEET

In-Service Performance Evaluation (ISPE) of New England Transportation Consortium (NETC) Steel Bridge Railings

RESEARCH PROJECT TITLE

ISPE of NETC Steel Bridge Railings

STUDY TIMELINE

January 2021– June 2022

PRINCIPAL INVESTIGATOR

C.E. Carrigan,
C.A. Plaxico,
E.M. Ray,
A.M. Ray, and
M.H. Ray
RoadSafe LLC
12 Main Street
Canton, ME 04221

NETC CONTACT

Kirsten Seeber
NETC Coordinator
CTC & Associates LLC
608-620-5820
netc@ctcandassociates.com

MORE INFORMATION

For more information, please see the project page at:
<https://www.newenglandtransportationconsortium.org/projects/netc-20-1/>

The New England Transportation Consortium, a cooperative effort of the transportation agencies of the six New England States, funded this research. Through the Consortium, the states pool professional, academic and financial resources for transportation research leading to the development of improved methods for dealing with common problems associated with the administration, planning, design, construction, rehabilitation, reconstruction, operation and maintenance of the region's transportation system.

Introduction or What was the Problem?

The predominate bridge railing used in the New England States are two-, three-, and four-bar steel post-and-beam designs developed and crash tested under the auspices of the New England Transportation Consortium (NETC). These bridge rail systems have been used in the New England states for more than 20 years. Establishing that these long-standing bridge railing designs are performing well in the field provides further confidence that the current, as well as the improved, NETC bridge railing designs adequately meet the performance criteria of the Manual for Assessing Safety Hardware (MASH) without the need to perform additional full-scale testing.

Methodology or What was done?

NCHRP Project 22-33 developed a four-step ISPE methodology which was applied to this research. The assembled data were assessed using the standard evaluation measures.

The research team coordinated with the NETC member states to obtain available bridge inventory data and worked with the individual member states to mine the data to identify and isolate the locations of NETC steel bridge railings and transitions. The result was an inventory of NETC bridge railing and associated approach guardrail transition (AGT) locations in the six New England states.

A minimum of five years of crash data was collected from each state and linked to the bridge inventory data to identify all crashes that occurred within close proximity to a bridge with a NETC bridge rail or AGT system. The state partners provided the available crash data and, when requested, the available police reports. Crashes with the NETC rails and AGTs were then identified by the research team and compiled in the standard in-service performance evaluation (ISPE) Dataset and the system's field performance was evaluated as outlined in the NCHRP 22-33 ISPE Guidance Document.

Conclusion or What are the next steps?

The ISPEs conducted under this research project found the containment of vehicles impacting the studied NETC rails and AGTs is similar or better than other studied bridge rails. This study also found the risk of post impact secondary collisions on the roadway with NETC bridge rails and AGTs is considerably lower than other rigid barriers. This study also found the risk of a serious or fatal injuries when the studied hardware was impacted is lower than the risk found previously for rigid barriers. This studied hardware has demonstrated a reduced occupant risk when compared to other rigid longitudinal barriers.

What are potential impacts?

This ISPE has shown that the studied systems demonstrate similar or better field performance than other similar systems across all three performance outcomes. This exemplary field performance demonstrates the crashworthiness of the studied systems and supports the continued use.