

Title: Evaluation of Concrete Bridge Rail Cracking; Phase I

SPR No: RSCH011-701

Project Description: The focus of this project is to examine the potential causations for cracking in aesthetic bridge rails. This will be accomplished by documenting current practices with respect to mix designs, casting, and curing methods. Photographs and written documentation of the current state of recently cast rails will be collected. Particular attention will be focused on the phenomena of cracking including the attributes of size, pattern, placement, and occurrence (temporal appearance). In addition, surrounding New England states will be surveyed and methods summarized. Corollary statistics will be utilized to determine if certain variables, such as aggregate size, water/cement ratio, strength gain, contractor operations, and pour conditions have an effect on the onset and rate of shrinkage cracking. Analysis of this data will lead to the pinpointing and detailing of the factors that contribute to increased shrinkage cracking in the structures. Excessive cracking due to other factors (other than shrinkage), if found, shall also be examined for causations and contributing elements, such as excessive 28 day concrete strengths that lead to high moduli of elasticity and very stiff bridge rails.



Cracking in bridge rail in Randolph, VT

Future research could include considering alternate mix designs if positive correlations are identified that may improve upon the current state of the rails. The alternatives should also take into consideration cost, long term durability, quality assurance, construction feasibility, and probability of success.

The final report is currently in review and has a projected completion and publication date of July 2009.

Start date: 2007

End date: July 2009

Status: Active Inactive Completed

Total Dollars: \$35,000

Index Terms: Administration Bridges Construction Environment

Geotechnical Maintenance Materials Pavements Safety Traffic Transit

Sponsor Organization

Name: Vermont Agency of Transportation

Address: Materials & Research Section
1 National Life Drive
Montpelier, VT 05633-5001

Website: <http://www.aot.state.vt.us/MatRes/default.htm>

Phone: (802) 828-2561

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Fax: (802) 828-2792

Subjects: Bridges, bridge rails, cracking, concrete, casting.

Project Manager

Name: Jennifer Fitch

Email: Jennifer.Fitch@state.vt.us

Phone: (802) 828-2553

Principal Investigator(s)

Name: Jason Tremblay

Email: Jason.Tremblay@state.vt.us

Phone: (802) 828-6945