

# Vermont- Transportation Research Collaborative 2015

## Guide for Reviewers

V-TRC is a new collaboration between the UVM Transportation Research Center (TRC) and the Vermont Agency of Transportation (VTrans). This replaces the process previously known as the RAC, and is testing a new annual process of prioritizing research efforts and funding that will most efficiently support VTrans' Mission. In June a series of focus groups based on VTrans' Five Strategic goals were held with VTrans personnel, UVM researchers and personnel from sister agencies. This process surfaced research themes and ideas and provided an opportunity for UVM researchers and state personnel to participate in joint engaged conversations to develop specific research tasks. The results of those conversations can be viewed at:

Goal 1	<a href="http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-1.docx">http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-1.docx</a>
Goal 2	<a href="http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-2.docx">http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-2.docx</a>
Goal 3	<a href="http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-3.docx">http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-3.docx</a>
Goal 4	<a href="http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-4.docx">http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-4.docx</a>
Goal 5	<a href="http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-5.docx">http://transctr.w3.uvm.edu/wp-content/uploads/2015/06/Vermont-Transportation-Research-Collaborative-Goal-5.docx</a>

All [participants](#) and other interested parties were invited to compose specific problem statements that will be subject to a prioritization process at VTrans to identify the key issues around which a call for research tasks will be developed. This resulted in the 22 research problem statements that are listed on the next page along with a link to those statements. Finally, a sample of the survey tool used to review each problem statement follows. The evaluation criteria are:

- Alignment: How well does the problem statement align with VTrans strategic goals?
- Appropriateness: How appropriate is the problem statement to the V-TRC program?
- Applicability: To what extent does the problem statement apply and contribute to VTrans objectives, including policy-making, cost savings, improved quality and implementation of research?
- Apparent Values: To what extent does the problem statement add value to VTrans goals?

The top scoring problem statements will be used to solicit specific research proposals due in September. These will be sent out for independent peer review and then submitted to this committee for final review and ranking in November.

## V-TRC 2015 Problem statement submissions

	Statement	Goals				
		1	2	3	4	5
1	Integration of Thermography and GPR for Bridge Deck Inspection		x			
2	Removing roadblocks to the electrification of personal transportation in Vermont	x	x	x		
3	Decision guide for selecting wildlife-friendly sediment and erosion control products		x			
4	Enhanced transportation consequence analysis in emergency situations	x			x	
5	Intelligent compaction for embankment, subgrade, and base materials construction in Vermont		x			
6	Quantifying Vermont's Vehicle Miles Traveled under Electric Power			x		
7	Assessing VTrans employee retention: who stays, who leaves and what to do about it.					x
8	Generalizing from STRAVA Data to Population Level Bicycling Patterns			x		
9	Filling the Safety Data Gaps for Vulnerable Transportation Users	x		x		
10	Real-Time Access to Traffic & Weather Data and Performance Measures, Phase I				x	
11	Spatial and Temporal Analysis of Highway Crashes in Vermont Involving Tractor Trailers	x				
12	Analyze the impacts for roadside trees on traffic speed and safety along diverse Vermont roadways	x				
13	Calculating the Economic Benefits of Transportation Investments		x			
14	Integration of Unmanned Aircraft Systems (UAS) into VTrans Operations		x			
15	Quantifying changes in high intensity precipitation events to better characterize the vulnerability of Vermont's transportation infrastructure	x				
16	Cost-Effective and Rapid Concrete Repair Techniques - Field Evaluation of Process	x	x			
17	Monitoring Condition of Structural Elements During Accelerated Bridge Construction	x	x			
18	Developing An Inventory and Assessment Methodology for Monitoring Vermont's Historic Rail Resources		x			
19	Low cost fusible links for preserving transportation structures in extreme events	x	x			
20	Study the Rutting Failure of Asphalt Pavements Using Innovative Micro-CT		x			
21	Quantify Adhesion between Aggregates and Recycled Engine Oil Modified Asphalt Binders Using Particle Probe Scanning Force Method		x			
22	Network level assessment of Vermont bridges for improving resiliency under extreme events	x	x			

All problem statements are available at:

<http://www.uvm.edu/trc/problem-statements-submitted-july-7th-2015/>

# VTrans Strategic Plan Mission, Vision, Goals and Objectives

## Mission

Provide for the safe and efficient movement of people and goods.

## Vision

A safe, reliable and multimodal transportation system that promotes Vermont's quality of life and economic wellbeing.

## Strategic Goals and Agency-wide Objectives

- **Goal 1:** Provide a safe and resilient transportation system that supports the Vermont economy.
  - Reduce the number of major crashes
  - No unplanned road closures or restrictions due to conditions within VTrans' control
  - Increase the resilience of the transportation network to floods and other extreme weather and events.
  
- **Goal 2:** Preserve, maintain and operate the transportation system in a cost effective and environmentally responsible manner.
  - Maintain pavement, structures and other transportation system assets in a state of good repair
  - Implement an Asset Management System and integrate it with Planning and Programming (budget decisions).
  - Minimize the environmental impacts of the transportation system.
  
- **Goal 3:** Provide Vermonters energy efficient, travel options.
  - Minimize traveler delay
  - Increase use of walking, biking, transit, rail, and Travel Demand Management options
  - Increase use of state and municipal Park & Ride system
  
- **Goal 4:** Cultivate and continually pursue innovation, excellence and quality customer service.
  - Information given to customers is accurate and comprehensive
  - Staff are competent, fair, polite and sympathetic to customers' needs
  - Staff deliver the outcome as promised and manage any problems
  
- **Goal 5:** Develop a workforce to meet the strategic needs of the Agency.
  - Recruit excellent, qualified and diverse employees.
  - Retain and develop excellent and diverse employees
  - Implement succession planning

## V-TRC Research Rating Tool

### V-TRC Problem Statement Rating Tool

**This rating tool was developed to help facilitate initial evaluation of the V-TRC problem statements. There are four criteria on which each problem statement should be rated. These criteria are:**

**Alignment:** How well does the problem statement align with VTrans strategic goals?

**Appropriateness:** How appropriate is the problem statement to the V-TRC program?

**Applicability:** To what extent does the problem statement apply and contribute to VTrans objectives including policy making, cost savings, improved quality and implementation of research?

**Apparent Values:** To what extent does the problem statement add value to VTrans goals?

**Each problem statement will be presented on a separate page of this rating survey. If you prefer not to rate any one problem statement, please check "no" and you will skip to the next problem statement.**

**Thank you for your time and attention to this effort.**

## V-TRC Research Rating Tool

### Monitoring Condition of Structural Elements During Accelerated Bridge Construction

**This project is to design and implement a reusable instrumentation system for evaluating the condition of structural elements during Accelerated Bridge Construction (ABC) in Vermont. ABC is a new set of practices that combine prefabrication of components with rapid demolition, delivery and assembly to build and replace bridge structures in remarkably short time frames. The potential for minimizing traffic disruptions, while possibly improving quality of construction and reducing overall costs is driving a nationwide effort towards ABC. VTrans has recently constructed and has underway several ABC projects. ABC being a relatively new set of engineering and construction techniques inevitably may run into unexpected problems, including damaged or underperforming structural elements. Quality control of the processes is an opportunity for improved final delivery of the product at reduced cost. This project focuses on developing reusable instrumentation for monitoring pre-stressed concrete girders during fabrication, transport, installation and initial traffic-bearing phases. The instrumentation should be reusable for multiple bridge projects. Possible instruments include acoustic emission to measure incipient cracking, strain gages, acceleration, tilt/orientation and 3-D imaging.**

1. Do you want to rate this problem statement?

- Yes
- No

# V-TRC Research Rating Tool

## Monitoring Condition of Structural Elements During Accelerated Bridge Construction

2. Please rate the extent to which you feel this problem statement satisfies each of the following criteria of the V-TRC.

	Fully satisfies	Substantially satisfies	Partly satisfies	Slightly satisfies	Does not satisfy
<b><u>Alignment:</u></b> How well does the problem statement align with VTrans strategic goals? This includes: <i>-number of goals addressed</i> <i>-direct or indirect linkage to goals</i> <i>-effectiveness in progressing towards the goals</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b><u>Appropriateness:</u></b> How appropriate is the problem statement to the V-TRC program? This includes factors of: <i>-uniqueness to Vermont</i> <i>-scale of the problem</i> <i>-duration of effort</i> <i>-depth of effort</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b><u>Applicability:</u></b> To what extent does the problem statement apply and contribute to VTrans objectives? This includes: <i>-policy making</i> <i>-cost savings</i> <i>-improved quality</i> <i>-implementation of research</i>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Fully satisfies      Substantially satisfies      Partly satisfies      Slightly satisfies      Does not satisfy

**Apparent Values:** To what extent does the problem statement add value to VTrans goals? These include:  
*-innovation*  
*-establish Vermont as a leader in the area*  
*-importance to decision making in Vermont*

                                                                                      

Other Comments: