

Recycled Materials in Roadway Projects: SFY 2018 Status Report



VTRANS SFY 2017-2018 ACTIVITIES

- Established **Recycled Materials Working Group** in Fall 2016 to coordinate use of RAS, tires and glass
- Received FHWA approval to evaluate RAS in gravel shoulders and gravel surface; shredded tires in underdrains
- **Developed Specification Recycled Asphalt Materials for Bituminous Pavement** allowing up to 3% of RAS in mix design aggregate. RAS may be used in shim, base, and binder courses (not wearing course).
- **Aggregate Shoulders, RAP with RAS Specification** allows 15-45% of RAS by weight in shoulder material.
- **Recycled Asphalt Materials for Bituminous Concrete Pavements Specification** for 100% State Fund Paving Projects includes processed RAS specifications and that RAS may be used in any paving course.
- Recycled Materials presentation during [Research Symposium \(Sept. 2017\)](#) [Fact Sheet](#) [Poster](#) <http://vtrans.vermont.gov/planning/research/2017symposium>
- VTrans and ANR working with Vermont Local Roads to promote the use of RAS in Town Gravel Roads (see next page)
- Shredded tires for underdrains research work plan approved by FHWA; two 2018 construction projects expected:
 - Brandon-Goshen, ER STP 0162(22)
 - Jamaica-Winhall, STP 2904(1)

2016-2017 RAS Projects. 2,400 Tons used.				
Project	FHWA Work Program	Unbound Shoulder Mix	Unbound Surface	Status
VT64 Northfield-Williamstown	YES	X		Constructed 2016
VT65 Brookfield	YES	X	X	
VT14 Randolph-Williamstown	NO	X		
VT74 Shoreham-Cornwall	NO	X		
VT63 Berlin-Barre Town	YES	X		Constructed 2017
VT36 St. Albans	YES	X		
VT38 St. Albans	YES	X		

OBSERVATIONS FROM 2017-2018 ACTIVITIES

- RAS/Gravel shoulders are positive.
- Additional project costs using RAS
- No guarantee that project recycled materials come from Vermont
- Lack of NH and ME (“Tri-State”) use of Recycled Materials
- Northeast/cold weather concern that RAS may cause premature cracking
- Concerns about Brookfield road surface (related and unrelated to RAS) led to new aggregate (non-RAS) installation in November 2017. Adjusted process for using RAS/gravel mix in future.

RAS IN TOWN GRAVEL ROADS

- VTrans Research and ANR Solid Waste working with Vermont Local Roads (VLR) to communicate with towns about RAS in Gravel Roads
 - Summer 2017 Newsletter article
 - **Planning Spring 2018 demo in three towns with 20% RAS/80% ShurPac mix from FWW in Colchester.** Mix costs are subsidized with ANR/VTrans funding.
 - By using the same preferred mix in the three towns in a four inch lift and with town practices for compaction and surface treatment, we hope to have positive results to share with additional towns
 - RPC TAC meetings in White River Junction, Springfield, Rutland
 - Town Foreman meetings in Franklin, Addison*, Chittenden*, and South Windsor* Counties (*, scheduled)
 - Towns are interested but wary of picking up in Colchester
 - Gathering ideas for additional RAS in Gravel uses
 - VLR is helping us to recruit towns for 2018 demo and identify next steps to make RAS available as supplement to poor quality gravel material available to towns
 - Planning Fall 2018 workshop to highlight RAS results
- Research results in IA and MN found positive reductions in gravel road dust



VLR Newsletter article about using RAS in Town Gravel Roads

OTHER RECYCLED MATERIALS UNDER CONSIDERATION BY VTRANS

- Recycled Glass
 - In 2016, CSWD purchased glass processing equipment
 - CSWD met with VTrans Recycled Materials Working Group and ANR Solid Waste Management in April 2017 about what ASTM standards are used for aggregates
 - Possible applications: aggregate in HMA, additive in reclaimed base or subbase, drainage material
 - 14,000 tons of processed glass aggregate available at CSWD and Rutland
- Wood chips from roadway projects can be shipped to nearby organics facilities for use in the composting process. Discussing use of compost in roadway applications.

Recycled Asphalt Shingles (RAS) in Gravel Roads

By Emily Parkany, P.E. VTrans Research Manager

The VTrans Recycled Materials Working Group was established to determine appropriate uses of Recycled Materials including shredded tires and recycled asphalt shingles (RAS) in our facilities. We have worked to include shredded tires in roadway underdrains (to be installed next construction season), RAS in gravel shoulders (several projects this year), RAS in Hot Mix Asphalt mixes (FHWA mobile lab testing this fall), and RAS in gravel roads (Brookfield installation, 2016). A promising amount of recycled materials can be used in gravel roads—10-20% RAS if mixed properly with good quality gravel for a three inch lift.

What are the benefits of using RAS? Previous studies suggest that the asphalt in the RAS leads to easy application, good compaction, resistance to rutting and erosion (less need for grading) and less dust. The legislature is motivated by wanting to reduce asphalt shingles in Vermont landfills. We want to show that the “green” application of using RAS is a win for towns with better performance and reasonable economics. Mike Anthony of Hinesburg or Pete Gosselin of Richmond are happy with their trial mixes placed in 2015.

Sources for more information (see below for the URLs):

“Performance of Recycled Asphalt Shingles for Road Applications” (ANR, Chittenden Waste)

“Gravel Roads Made Smoother, Less Dusty with Addition of Scrap Asphalt Shingles” (MN, 2014)

“Roads in Small Town are Paved with Recycled Shingles” (CAD Digest, 2016)

Are you interested in learning more about using RAS in your roads? The VTrans Recycled Materials Working Group is partnering with Vermont Local Roads on getting more information to you and learning about your interest in using RAS in your roads. We plan to attend Road Foreman meetings in Addison, Chittenden, and Franklin Counties this fall (largely because these areas are close to the processed RAS stored at Whitcomb Construction in Colchester). And we plan a workshop and installation demo in a to-be-named town in late May 2018. We’re also looking for towns that want to use RAS this fall. There will potentially be a RAS/gravel mix at the Whitcomb facility in Colchester that may be available at a very competitive price in order to get 2-4 towns to demonstrate this year. Please use this Survey Monkey link to tell us of your interests (and if you have concerns about using RAS): <https://www.surveymonkey.com/r/YLJGXQN>

Please share any questions or concerns about using RAS in

your gravel roads with Emily Parkany, VTrans Research Manager and Chair of the Recycled Materials Working Group, emily.parkany@vermont.gov. We look forward to hearing from you!

URLs of Sources for More Information:

Brookfield RAS installation:

<http://tinyurl.com/BrookfieldRASUpdate>

ANR Report:

<http://infohouse.p2ric.org/ref/23/22746.pdf>

MN DOT Fact Sheet on RAS in Gravel:

<http://www.dot.state.mn.us/research/TS/2014/201406TS.pdf>

CAD Digest article:

<http://www.caddigest.com/roads-in-small-town-are-paved-with-recycled-shingles/>



September 2016 installation in Brookfield