

## Evaluation of processed glass aggregate for utilization in transportation projects as sand borrow

### PROJECT TITLE

Evaluation of processed glass aggregate for utilization in transportation projects as sand borrow

### STUDY TIMELINE

September 2020 – September 2023

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### KEYWORDS

Crushed recycled glass or  
processed glass aggregate (PGA)  
Sand borrow

### Introduction or Problem Statement

Crushed recycled glass or processed glass aggregate (PGA) is a sand borrow-like material that has a high potential to replace sand borrow and other high-quality fill in applications where free-draining behavior is desired (e.g. retaining wall backfill, drains). The current specifications in the northeast region prevent widespread use of PGA mostly due to the unclear guidance on the deleterious material content. The overarching goal of this project is to catalyze widespread use of processed glass aggregate (PGA) as a substitute for increasingly scarce and expensive sand borrow in Vermont, New England, and beyond.

#### PROCESSED GLASS AGGREGATE (PGA)



### Methodology or Action Taken

Primary objectives of Phase 1 for this project include developing a quick, inexpensive and reliable method to determine deleterious content in PGA; assessing the engineering properties of regionally-available PGA and sand borrow materials; revising or developing new specifications to facilitate the use of PGA; and performing economic analysis to determine the economic feasibility and environmental impacts of replacing sand borrow with PGA and to inform incentives for the production and use of PGA. A literature review was conducted on available information on PGA. Preliminary tests have been performed on the PGA and sand borrow to determine engineering properties and deleterious material content. Dependent upon Phase 1 results, Phase 2 of this project may include verifying that PGA performs as well as a typical sand borrow in the field by constructing and monitoring test sections with conventional sand borrow and with PGA, in collaboration with VTrans, VTANR and CSWD.

More information about the VTrans Research Program, including additional Fact Sheets, can be found at: <http://vtrans.vermont.gov/planning/research>

## Conclusions or Next Steps

Next steps include continued testing of sand borrow and industrially-produced PGA. A lab-produced PGA with known quantities of deleterious materials will also be generated and tested to develop reliable protocols for determination of deleterious content. If Phase 1 of this project demonstrates that PGA can act as a substitute for sand borrow, then field testing in Phase 2 is expected to commence.

## Potential Impacts and VTrans Benefits

The potential impacts for VTrans if PGA is a suitable replacement for sand borrow are positive. PGA will alleviate the scarcity of sand borrow material faced by transportation projects and promote sustainability by reducing glass waste going to landfills, a win-win for the transportation sector and solid waste facilities. Furthermore, there will be clear guidance on how to determine deleterious content in PGA in order to revise and meet specifications.