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From Landfill to Infrastructure Fill

How NJDOT Uses Non-Recyclable Materials for a Sustainable Future



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This Earth Day, while we celebrate all the wonderful things our planet provides for us—clean air, food, energy, protection, beauty—I can’t help but look towards the future. I firmly believe that we are called to be stewards of what is given to us, and with that responsibility, we must work to preserve the precious assets Mother Earth provides and not take them for granted. At the New Jersey Department of Transportation, we view our natural

environment as a major stakeholder, influencing the decisions we make and how we choose to invest in the future of our planet.

One way we do this is by selecting sustainable materials whenever possible. Over the past couple of years, NJDOT has been using a product called “foamed glass aggregate”. Foamed glass aggregate provides solutions to issues like waste, sustainability, and pollution. But before I speak about its benefits, let me briefly explain what an aggregate is to those who may not be familiar with the term.

An aggregate is a material that is formed by loosely compacted particles such as sand, gravel or crushed stone. It is used on many NJDOT projects in embankments, retaining walls, bridge abutments, roadway widenings, culverts and other various construction work. Typical aggregates, such as concrete, do a great job of supporting the surrounding structure but aren’t particularly friendly to the environment due to their weight and composition material.

In 2019, NJDOT was introduced to a new product called foamed glass aggregate. Using a technique created in



Pictured: The manufacturing process takes 100% curbside recycled glass powder and mixes it with a foaming agent.

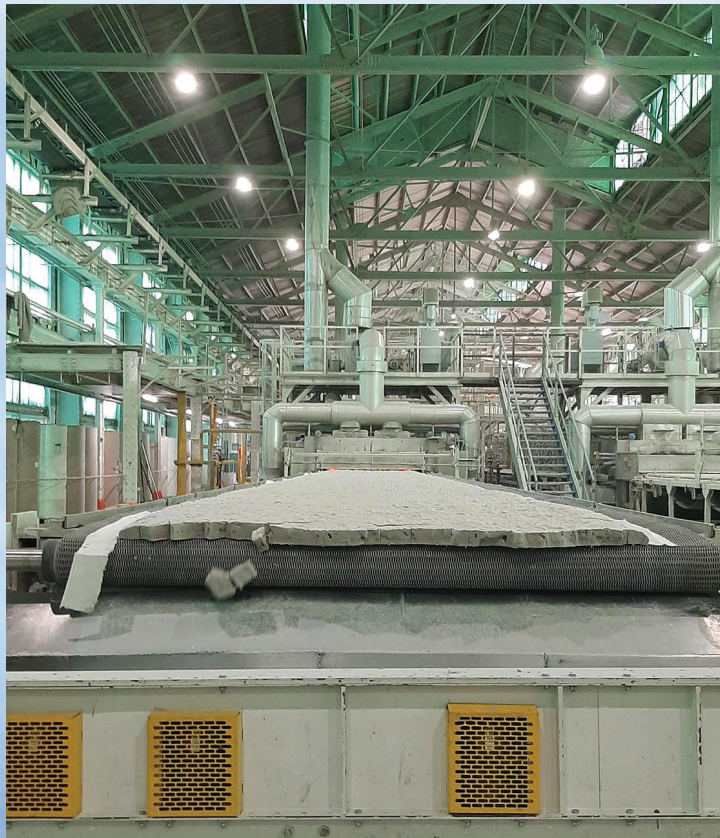
Europe utilizing foamed glass waste, manufacturers were able to create a more environmentally friendly substitute for traditional aggregate. To make foamed glass waste, nonrecyclable consumer bottles (such as juice bottles, soda bottles, kombucha bottles, etc.) are collected from recycling companies, finely ground into powder, put through an intense heating process, and then baked into a lightweight, coarse, but foam-like material.



Continued on page 2

Continued from page 1

Foamed glass aggregate is 85 percent lighter than traditional aggregates, which results in fewer truckloads needed to ship it to project sites. Some of our larger projects require upwards of 35,000 cubic yards of



Pictured: Through a heating process, the foamed glass expands then breaks apart into roughly 1.5" aggregate.

aggregate to support the surrounding structure, so having fewer trucks shipping the product means less carbon pollution, less traffic, and less wear and tear on our highways.

After testing the product internally and concluding it was a suitable alternative to traditional aggregate, we began using it in select projects. To date, exchanging traditional aggregates for foamed glass has saved more than 30 million bottles from ending up in landfills, and another 42 million bottles are anticipated to be used on projects currently in the works.

While foamed glass aggregate cannot be used on all projects, we will continue to choose this product for its many benefits to the environment whenever possible. Innovative products, forward thinking, and making daily choices both big and small to invest in our environment will make a profound difference.

If you would like to learn more about foamed glass aggregate, please [watch this video](#).

As always, thank you for taking the time to read this newsletter. Please feel free to share it with your colleagues. If you have any questions about any of the information please feel free to contact NJDOT's Office of Community Relations at 609-963-1982.

Happy Earth Day!
Diane Gutierrez-Scaccetti
Commissioner



Pictured: Foamed glass aggregate used on the Wittpenn Bridge project.