

Evaluation of Processed Glass Aggregate (PGA) for utilization in transportation projects as sand borrow

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Abstract

Glass waste poses a significant environmental challenge, with only a small percentage currently being recycled globally. One sustainable solution is to transform waste glass into Processed Glass Aggregate (PGA). PGA can potentially replace sand, a rapidly depleting resource, as a construction material. However, the widespread use of PGA in practice is hindered by the inevitable presence of deleterious materials, and more importantly, there are no acceptable methods to determine their composition and quantity. This research aims to develop and validate an easy and reliable method for identifying, separating, and quantifying these deleterious materials from PGA to assess its use as a viable construction material, specifically as a sand borrow. Additionally, the research aims to determine the geotechnical properties of PGA to ensure that it offers similar engineering properties to those of typical sand borrows. Finally, the study also includes economic and environmental analyses to assess the long-term impact of PGA. Through these findings, PGA is hoped to emerge not just as an answer to conserve natural resources but also to divert glass from waste streams. As a result of this research, it is hoped that PGA will firmly position itself as a sustainable construction material.



Figure: Chittenden Solid Waste District (CSWD)-PGA

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