

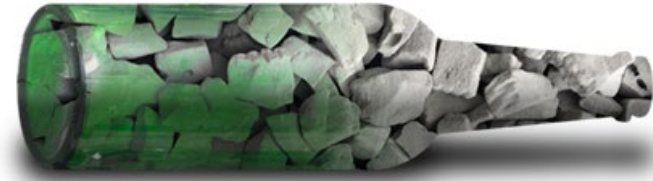
Feature Presentation

**NJDOT Sustainability
Initiatives**

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Foam Glass Aggregate (FGA)



made from **100% RECYCLED**
container glass



What Makes FGA Innovative

- ❖ Cost-effective engineering solution that is environmentally friendly
- ❖ Reduces landfill waste by repurposing glass into an innovative engineering material
- ❖ Alleviates the burden on waste management infrastructure and promotes a more sustainable approach to waste handling.
- ❖ Less energy to make and generates fewer carbon emissions compared to other materials.

Benefits of FGA

- ❖ Extremely Lightweight
 - ❖ 85-90% lighter than quarried aggregates
 - ❖ 55-60% lighter than lightweight aggregates
- ❖ Excellent Engineering Properties
 - ❖ Highly frictional
- ❖ Exceptional Insulating Properties
- ❖ Environmental Properties
 - ❖ Non-leaching, rot-resistant, non-flammable and durable
- ❖ Manufactured From 100% Recycled Glass

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Crushed glass from recycling plant and after washing



Manufacturing

- ❖ The manufacturing process takes recycled glass powder and mixes it with a foaming agent, where it is then sent through a kiln and softened.
- ❖ During this process, bubbles are created within the softened glass due to the foaming agent creating foamed glass aggregates.



Manufacturing

- ❖ After the Foam Glass Aggregate cools, it cracks and forms the aggregate pieces seen here coming off the conveyor belt.

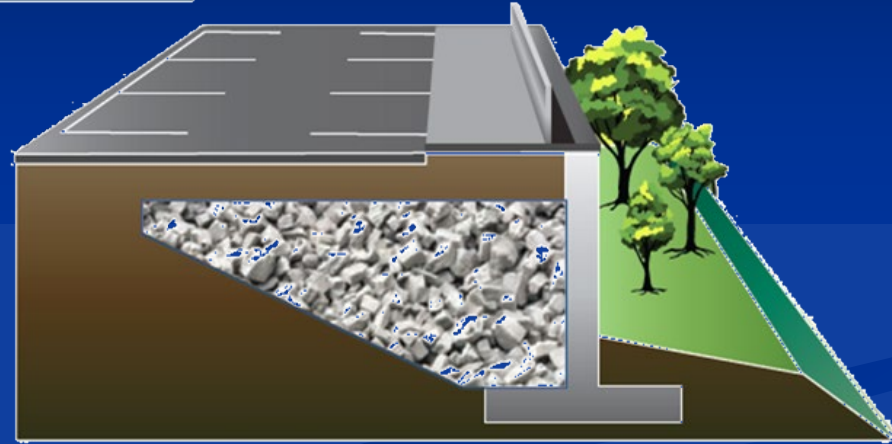


Transportation Applications

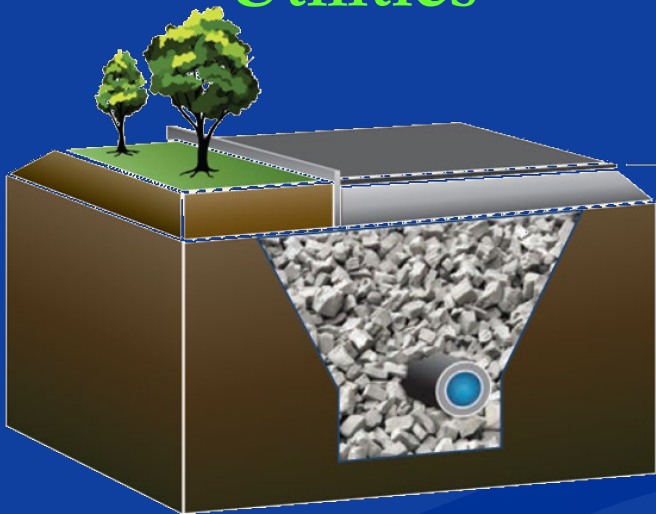
Embankments



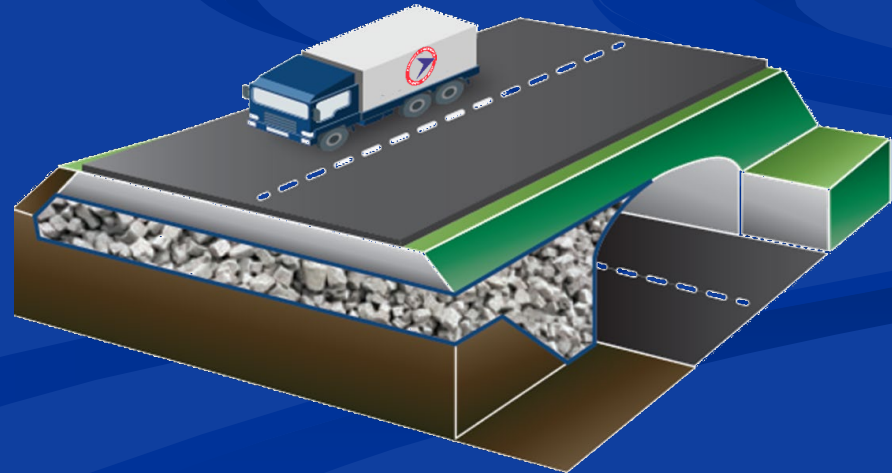
Retaining Walls & Abutments

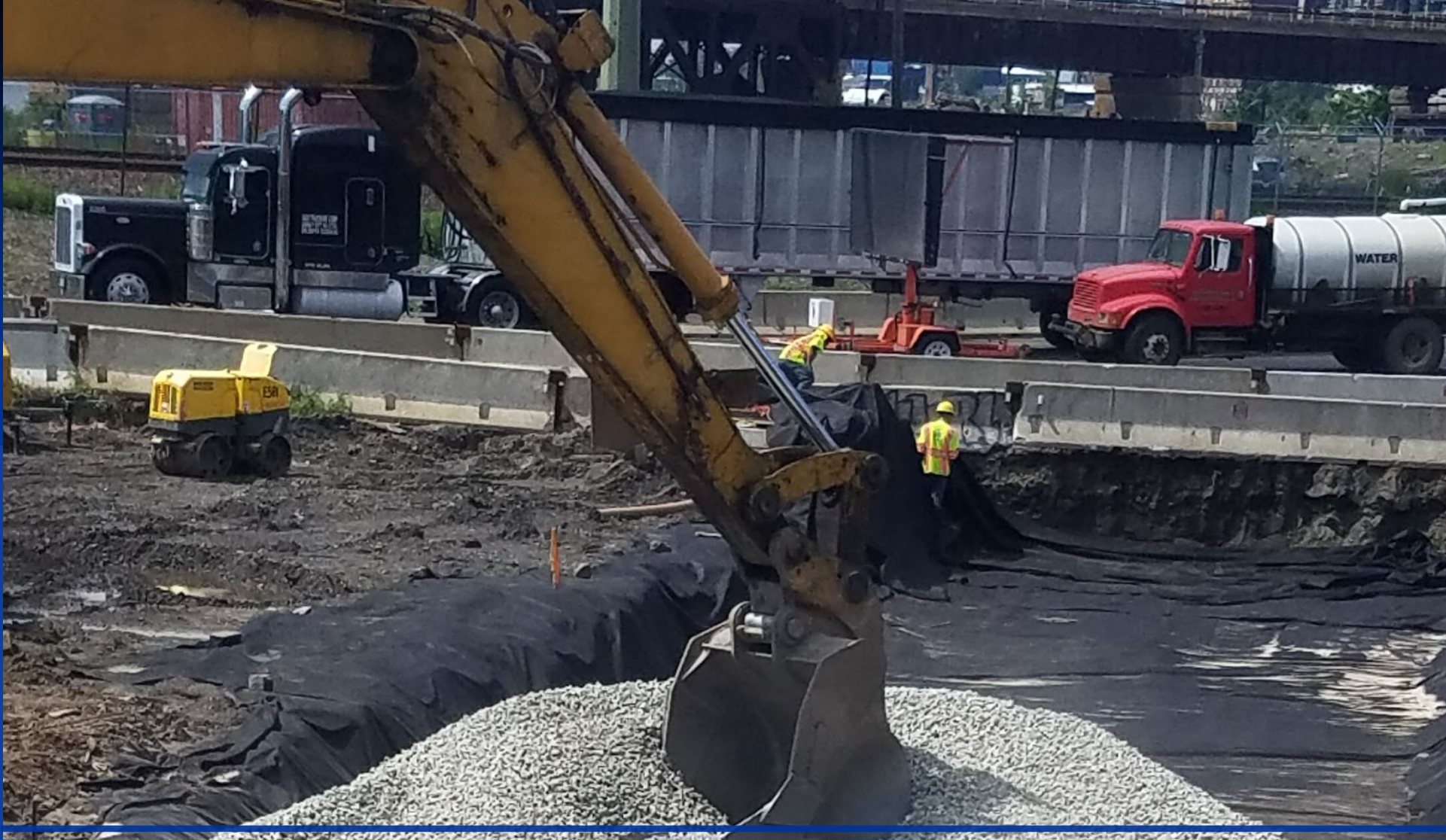


Utilities



Tunnels & Culverts



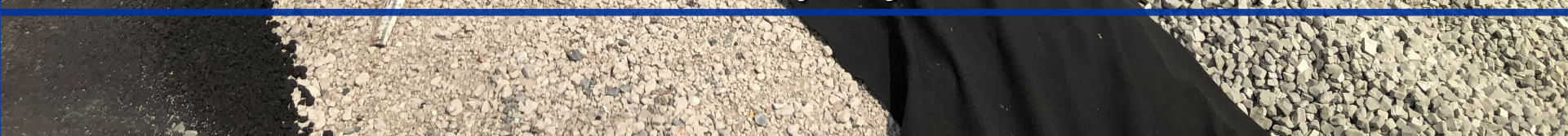


Route 7 Wittpenn Roadway Installation





Route 7 Wittpenn Bridge
Kearny, NJ





Behind Abutment on I-80 over Rockway River
Denville, NJ





Behind Wire Wall On Fish House Road Kearny



NJDOT Projects

- ❖ Route 7 Wittpenn Bridge
32,000 cy **27.6 Million Bottles**
- ❖ I-80 over Rockaway River
2,147 cy **1.9 Million Bottles**
- ❖ Route 1&9 New Road, Contract 1
873 cy **0.8 Million Bottles**
- ❖ Route 322 Mullica Hill
24 cy **21,000 Bottles**

NJDOT Projects

- ❖ Route 40 & 322 Atlantic City
35,000 cy **30 Million Bottles**
- ❖ Route 47 Widening
8,000 cy **7 Million Bottles**
- ❖ Route 29 Cass Street Drainage
6,375 cy **5.5 Million Bottles**
- ❖ Fish House Road Kearny
12,904 cy **11 Million Bottles**

Resiliency

- ❖ Production Emission and Energy



- ❖ 50% less CO₂ than other lightweight aggregates

- ❖ Transportation Emission and Congestion



- ❖ 1 Truck of FGA \approx 7 Trucks Of Regular Backfill Trucks Off the Road
 - ❖ Locally Recycled and Manufactured Material

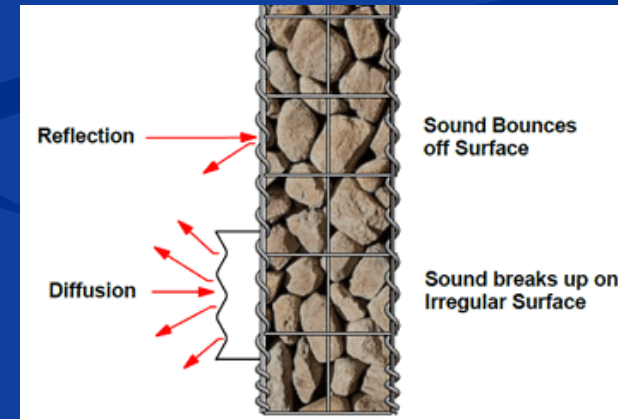
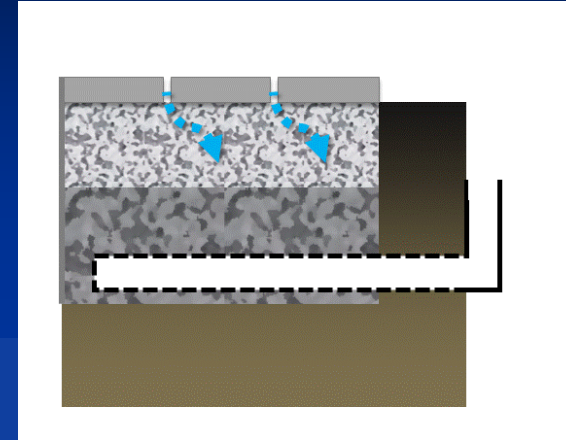
- ❖ Material Reduction



- ❖ Less Weight \rightarrow Smaller Walls \rightarrow Less Materials (i.e., Concrete, Steel) \rightarrow Less Emissions

Future Applications

- ❖ Flood Mitigation
 - ❖ Underground Reservoirs
- ❖ Noise Reduction
 - ❖ Noise Walls
- ❖ MSE Walls
 - ❖ FGA Backfill
- ❖ Rehabilitation Projects
 - ❖ Abutment and Wall Reconstruction



Questions?

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