



Metropolitan Washington Council of Governments

Recycling Committee Meeting

December 7, 2017

AeroAggregates is the first vertically-integrated company in North America to produce ultra-lightweight aggregates from 100% recycled glass.

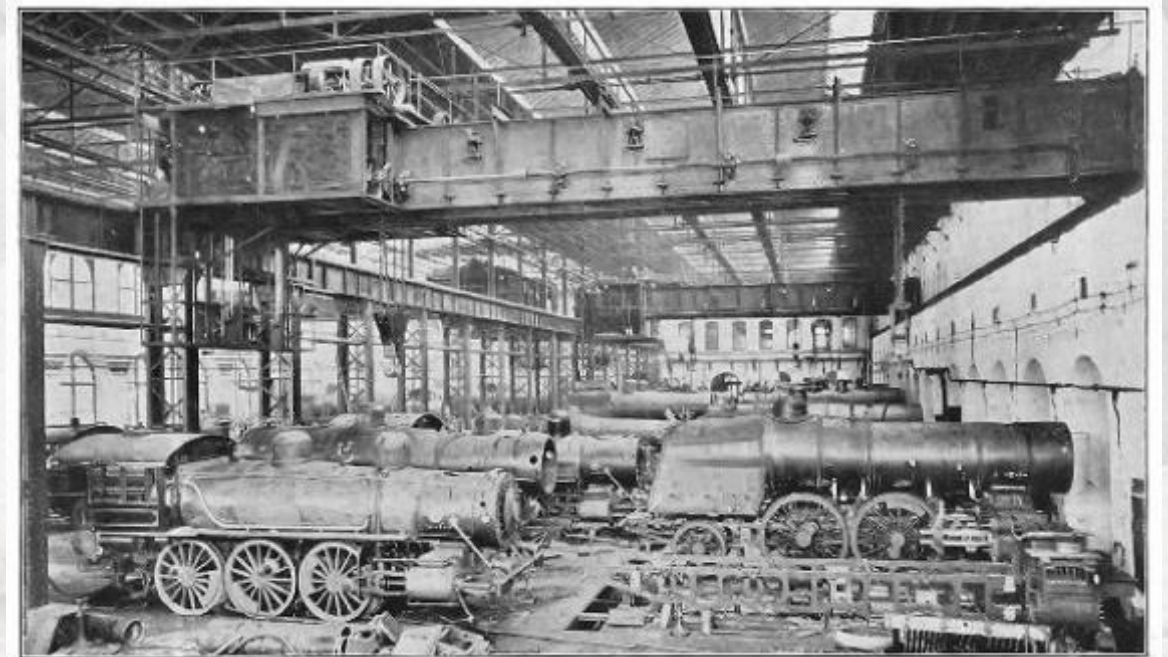
Manufacturing capabilities include both open and closed cell foamed glass aggregates in a range of densities.

5 miles from Philadelphia International Airport
I-95 and Route 476



1500 Chester Pike, Eddystone, PA

Baldwin Locomotive Plant



97,000 sq.ft. building



Baldwin Facility

What are Ultra-Lightweight Foamed Glass Aggregates (UL-FGA)?

- Ultra Lightweight Aggregate (8-15 pcf dry bulk density)
- 0.4 – 2.4 inch average size
- High Friction Angle
- Totally inert
- 100% Post Consumer Glass
- Good insulator



Foamed Glass Aggregate (FGA) Benefits



Recycling

- 100% curbside recycled glass
- Mixed color cullet diverted from landfill
- Each kiln diverts the equivalent of over 55 million bottles per year





Foamed Glass Kiln



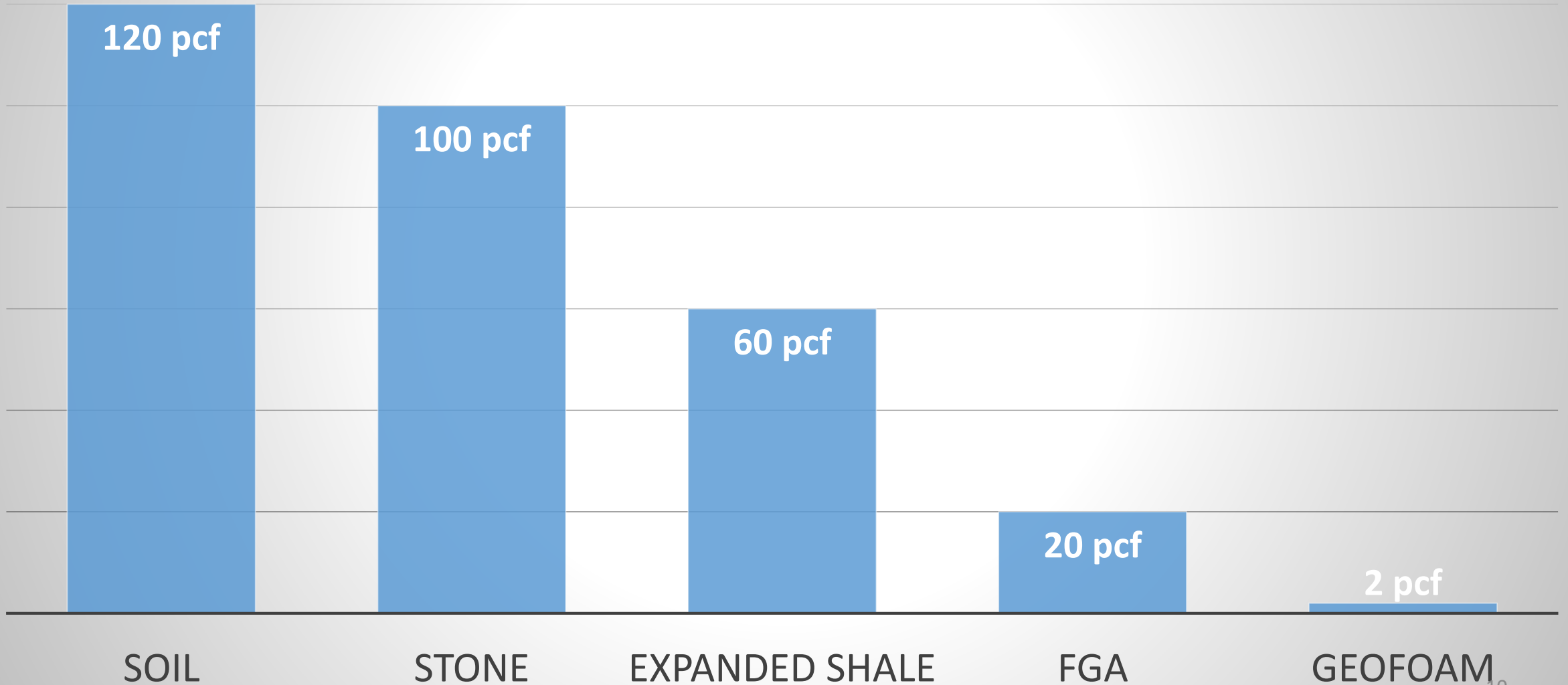
Aggregate Creation and Stockpiling

Technical

- Lowest unit weight of any aggregate
- High shear and compressive strength
- Approved by multiple State DOTs
- 25+ years of experience in Europe
- Infrastructure, commercial and environmental construction applications

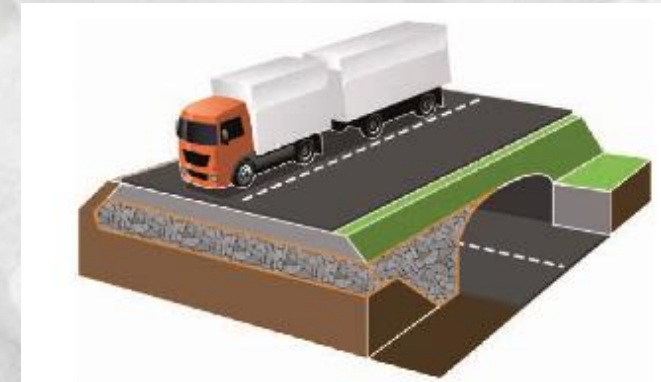
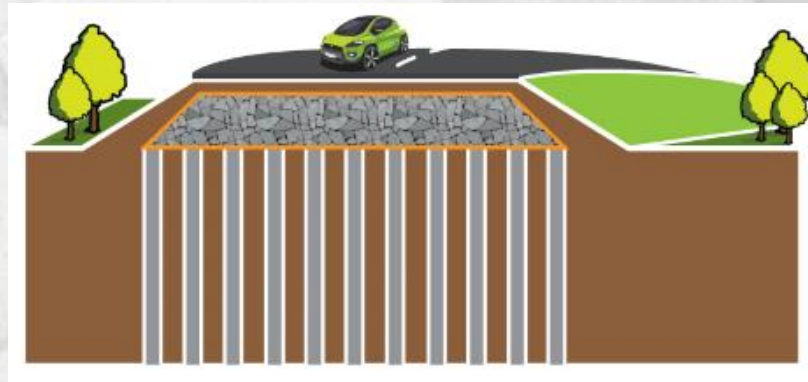
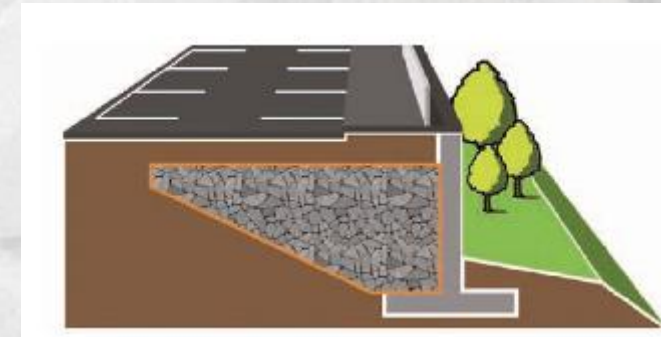


Compacted Unit Weight Comparison



Applications

- Many uses for lightweight aggregates
 - Embankment fill over soft soils
 - Retaining walls
 - Bridge abutments
 - Reduced lateral load of backfill
 - Lightweight fill over culverts and utilities
- Under foundation slab insulation and drainage
 - Insulation layer
 - Horizontal or vertical
- Greenroofs



Transportation

Highway Embankments and Landslide Repairs



Norwegian Public Road Authority

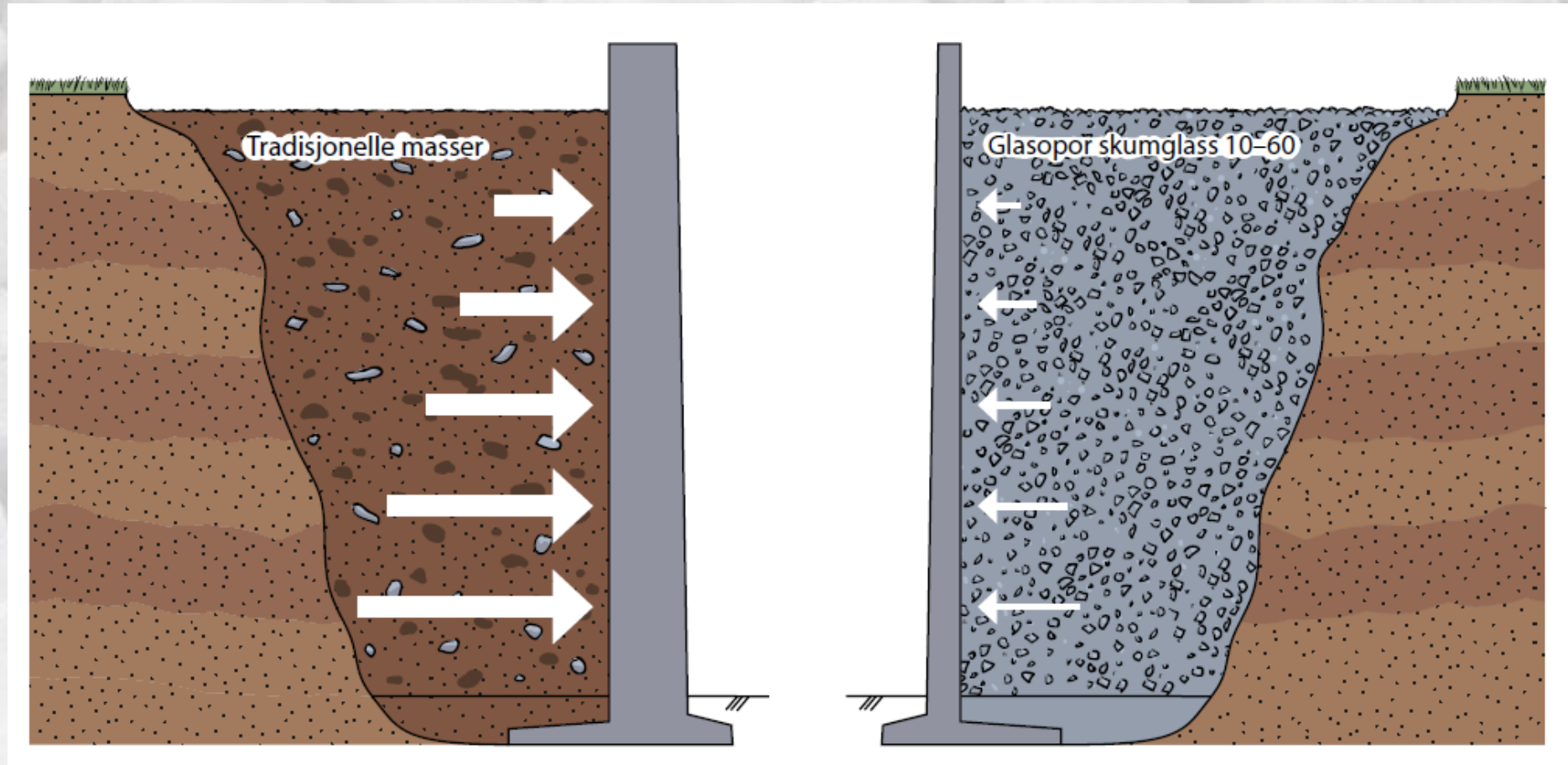
Approach Fill for Bridge Abutments



Hasopor, Sweden

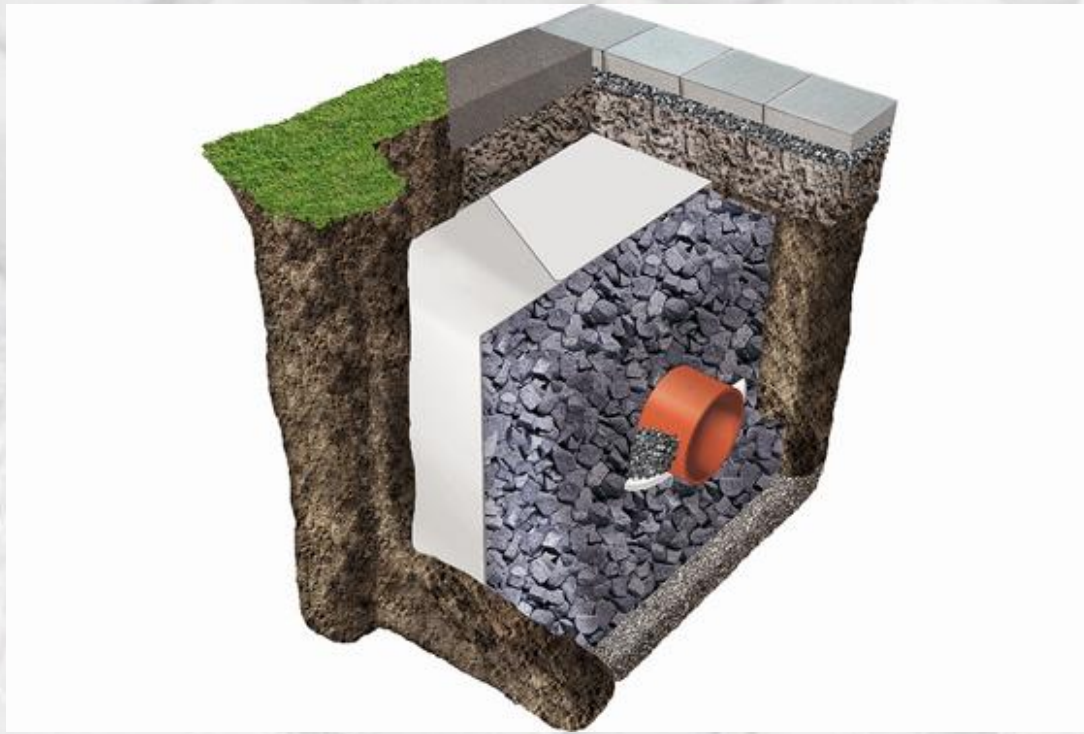
- Reduces lateral earth pressure
- Reduces settlement at interface

Lightweight Backfill for Retaining Walls



Glasopor, Norway

Insulation and Lightweight Backfill - Utilities





Under Slab

- Insulation
- Bearing capacity
- Drainage
- Capillary Break

Green Roofs



Current DOT and Agency status

- Statewide approval by MD SHA
- Statewide approval by VDOT – SPEL Listed
- 2 PADOT Projects designed with UL-FGA
- 1 NJDOT Project – V.E.; 2 others in design
- NYSDOT – Completing final testing
- Amtrak and SEPTA – Specified on several projects

Economical



NJDOT – Route 7, Kearny, NJ

- Less expensive than other lightweight alternatives
- Contractors/Owners converting projects to FGA for cost savings
- Less material required in many applications
- Accelerated construction schedule compared to other lightweight options
- No weather restrictions for installation

Shipping

- Up to 100 CY/trailer
- Reduced carbon footprint
 - 1 trailer of Foamed Glass
 - 7 tri-axial loads of stone



Delivery in Super Sacks
3CY 1,200 lbs. vs. 8,000 lbs.

Installation

- Maximum lift thicknesses of 24 inches (0.6 m)
- Compaction is performed with a tracked excavator or dozer 600 - 1,000 psf (30 - 50 kPa)
- 2 to 4 passes over the UL-FGA layer



Environmental



- 50% less CO₂ than other lightweight materials*
- 50% less energy consumed than other lightweight options*
- Material 100% inert
- Exempt from environmental oversight
- Aero delivers 8 times more material per truck than traditional aggregates
 - Reduces traffic and CO₂

* EPD® (Environmental Product Declaration)
http://www.epd-norge.no/?lang=en_GB

Policy



PADOT – Philadelphia Navy Yard

- Beneficial re-use of recycled glass
- Lower CO₂ footprint
- Diverts 13,000 tons of glass from landfill per kiln
- Resiliency projects often require lightweight fill
- Container glass collected and returned to same community as new construction material
- State DOT Approvals from PA, NJ, MD and VA

South Capitol Street – Washington DC





- Provides a circular economy for recycled glass
- Supports municipal recycling programs
- Provides cost-effective construction material
- Supported by local engineers and DOTs
- Sustainable and environmentally responsible





Thank You!