



Virginia Transportation Construction Alliance

#10 Screenings as Embankment Fill

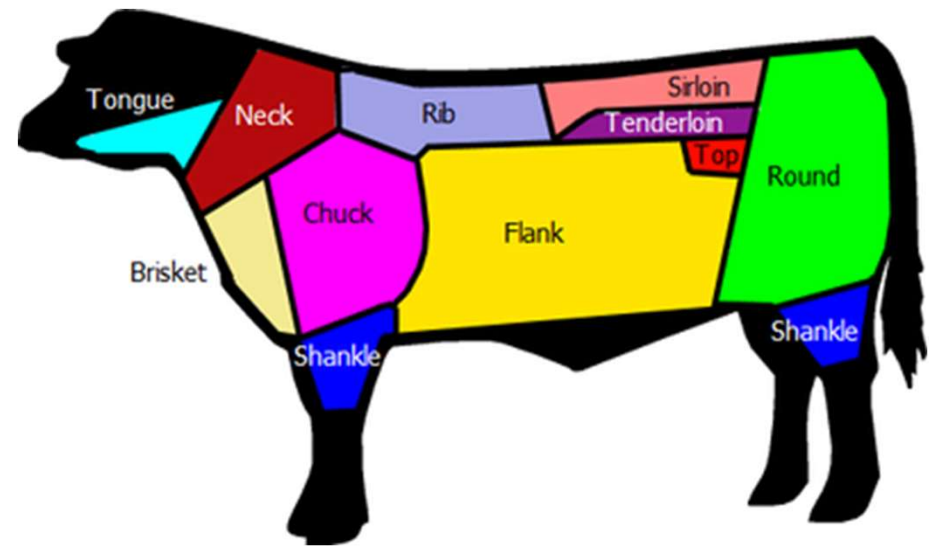
Whitney Butler- Vulcan Materials

Ben Steele- Martin Marietta

David Abernathy- Abernathy Construction

Construction Aggregates

- Our product is like the beef industry
- Multiple cuts of beef are made
- Can't make only tenderloin
- Someone has to buy the other cuts
- Otherwise, the tenderloin would be un-affordable



#10's Typical Gradation

<u>Sieve Size</u>	<u>Tot. % Passing</u>
-------------------	-----------------------

- | | |
|--------|-----|
| ● 3/8" | 100 |
| ● #4 | 99 |
| ● #8 | 80 |
| ● #16 | 59 |
| ● #30 | 54 |
| ● #50 | 34 |
| ● #100 | 24 |
| ● #200 | 14 |

Construction Aggregates

- Construction aggregates are the same way
- When we crush stone, we make approximately the following:
 - 45% clean stone
 - 20% fine aggregate
 - 35% aggregate base

Factors Impacting Fines and Base Sales

- Coarser asphalt mixes and increased use of RAP
- Less new pavement construction in recent years
- Increased use of in place recycling
- Lack of acceptance of manufactured sand in concrete
- Use of drainable pavements and bases

Construction Aggregates

- Fines and base production have decreased by 10 to 15% of total production through improved production methods
 - Total elimination is impossible
- Sales over the last decade or so have leaned heavily towards clean stone and less on fines and base

The Result....





Base & Fines in Virginia - 2016

- In Virginia alone, the industry has the following:
 - 6,184,000 tons of aggregate base
 - 910,000 tons of manufactured sand
 - 5,942,000 tons of screenings
- These quantities grow every year as coarse aggregate sales accelerate
- This is not a *sustainable* way to do business
 - Bad for the environment
 - Bad for future aggregate costs

What Can Be Done?

- Several initiatives that could help lead to a more sustainable use of fines and base
- The industry needs help from VDOT to implement these



VTCA Technical Committee and VDOT Materials collaborated to develop any easy mechanism that permitted additional use for #10 Screenings.

In 2018 VDOT Published the Special Provision for #10 Screenings

Updated: JUN 2018 — 2016 ROAD and BRIDGE SPECIFICATIONS (Division III) — Saved: 05/23/2018 8:55 PM

GUIDELINES: Use this spec where the Contractor has recommended Number 10 Screenings for use on certain items as a Value Engineering Proposal, or where Number 10 Screenings are specified as an alternate bid item. If the Plans specifically require Number 10 Screenings, contact the State Specifications Engineer for clarification before use.

SP303-020100-00

VIRGINIA DEPARTMENT OF TRANSPORTATION
SPECIAL PROVISION FOR
USE OF NUMBER 10 SCREENINGS

April 28, 2017

I. DESCRIPTION

This Special Provision cover the use of No. 10 Screenings in various applications on the Project. No. 10 Screenings shall be used in locations designated in the Contract.

II. MATERIALS

- No. 10 Screenings** (also known as quarry dust, rock dust, quarry screenings, rock screenings and quarry byproduct) may be used as an acceptable source of borrow material for the applications described herein. No. 10 Screenings shall conform to the requirements herein and elsewhere in the Contract. For the purpose of this Special Provision, No. 10 Screenings shall be defined as any material that is a byproduct of rock crushing processes, and either has a gradation of 100% passing the 3/8" Sieve and less than 20% passing the No. 200 Sieve, or meets the No. 10 coarse aggregate gradation. No. 10 Screenings shall also have a minimum CBR value of 15 and be either non-plastic or have liquid limit less than 25 and a plasticity index less than 9.

This Special Provision
Permits #10 Screenings
to be used for:

- Embankment
- Structural Backfill
- Pipe Backfill
- MSE Wall Backfill
- Soft Ground Stabilization

Atlee Road Extension

- General Contractor

**ABERNATHY
CONSTRUCTION CORP.**

- Materials Supplier



- Locally Administered Project



Approved Uses for Quarry Fines

Special Provision for #10 Screenings:

- Embankment Fill
- Structural Backfill – (CBR 30)
- Pipe Backfill
- Reinforced Fill for MSE Walls
- Soft Ground Stabilization

Embankment Fill



#10's- Structural Fill



Atlee Road Extension



#10's used for MSE wall backfill



Structural Fill



Channels to divert water



Project Tools for Managing #10 Screenings

Utilizing Screenings in These Applications Requires Special Considerations that need to be Included as Contract Bid Items:

- Topsoil
- Seed, Lime, Fertilizer
- Soil Retention Coverings
- Slope Drains
- Silt Traps & Silt Fence
- Rock Check Dams

Atlee Road Extension

Advantages of Utilizing of Screenings



- Keeping job on schedule
- Increased project productivity
- Minimal Tracking
- Solids falling out quickly — do not stay suspended
- Adding an additional tool to the department/ contractor toolbox
- Utilizing an available resource responsibly

VTCA

Virginia Transportation Construction Alliance

Aggregate Producers

