

*Pleasants*

**EARTHWORK • UTILITIES • PAVING**

**CRUMB  
RUBBER IN  
MARYLAND**



SCAN ME



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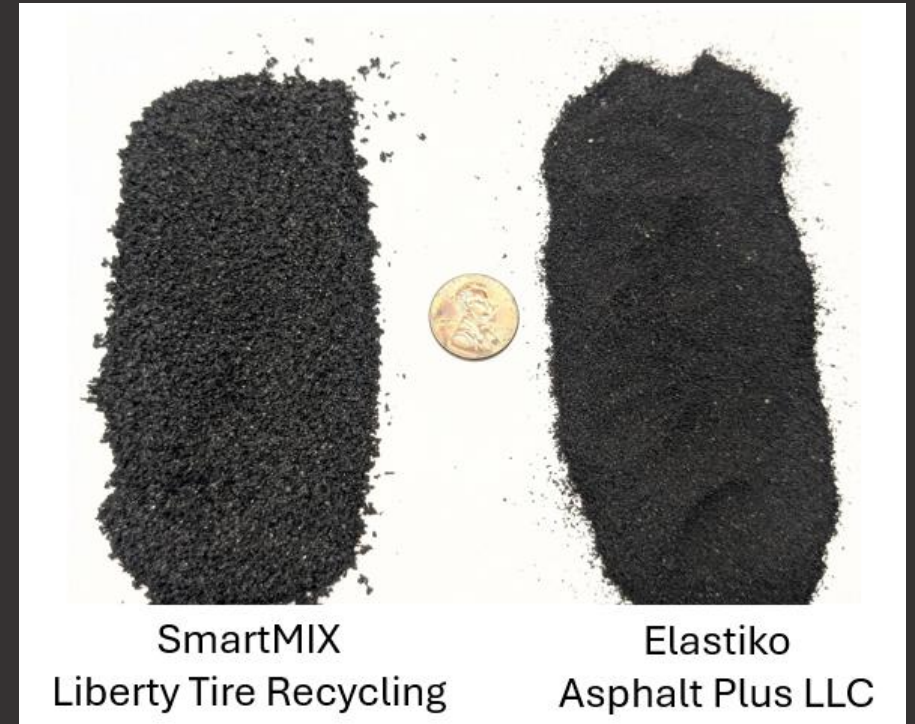
# WHAT IS BMD

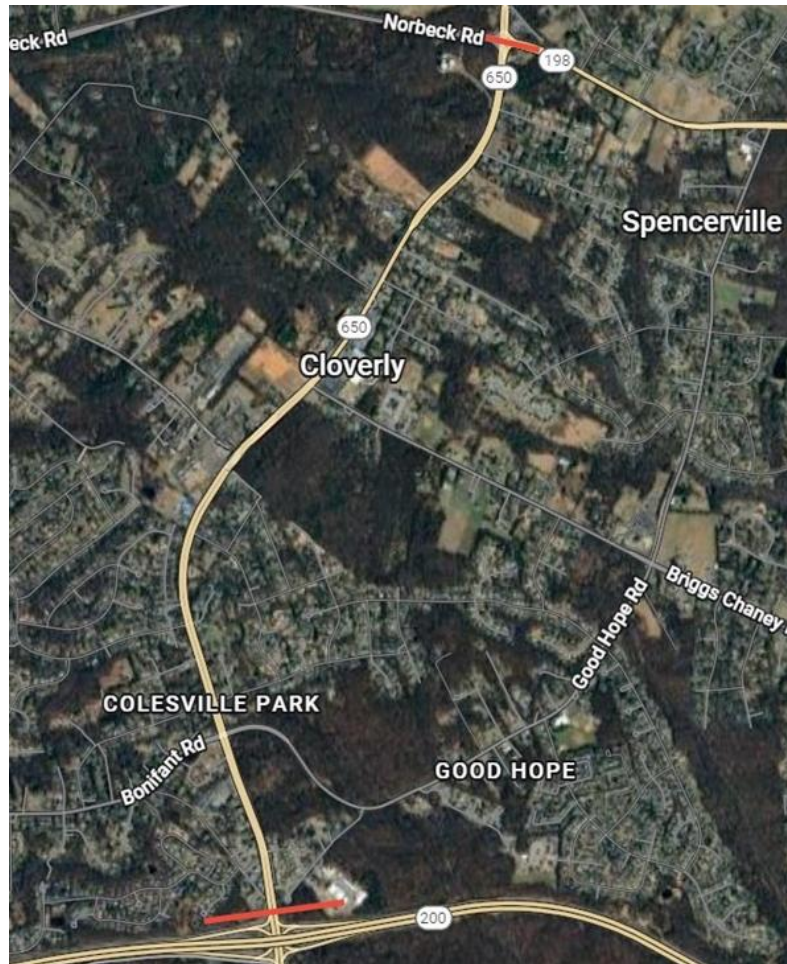
- Balanced Mix Design (BMD)
- Is way to design asphalt for performance rather than volumetrics balancing cracking resistance and rutting resistance.
- The goal is to optimize asphalt content, RAP, aggregates and additives so the mix performs better in the field.



# WHERE IT BEGAN

- Fall of 2024 we were approached by the MD DOT to see if we would be interested in exploring crumb rubber.
- We had a MD contract for the paving on MD 650 which was our first BMD contract.
- Decided to do the entire job using crumb rubber, roughly 11 lane miles.
- We chose to explore two technologies.

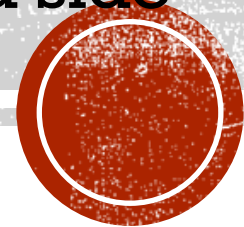




# LOCATION

MD 650 between Norbeck Rd. and MD 200.

SMARTMIX was used on the entire Southbound side and ELASTIKO was used on the entire Northbound side

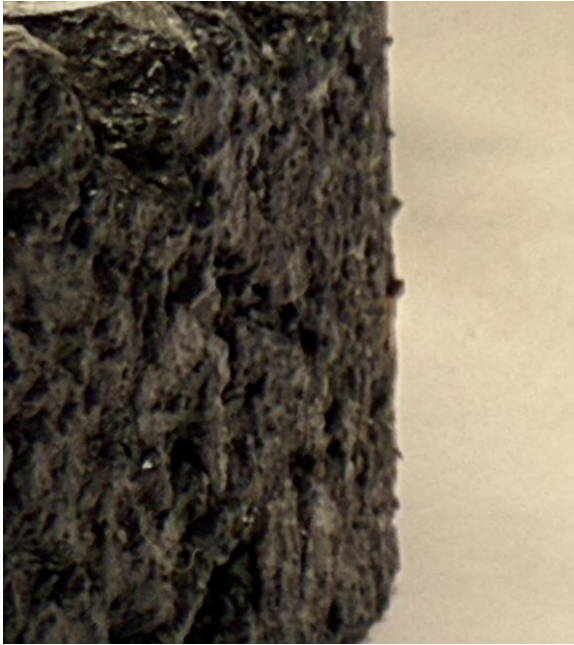




## HANDLING THE RUBBER AT THE PLANT

- Both products were delivered in super sacks.
- Weight ranged from 1500-2100 lbs per sack.
- Loaded into fiber feeder using a forklift
- Blown into the plant through the fiber port in the rear of the drum.
- You can also incorporate this into your mix using the RAP collar.





# MIX DESIGNS

- Incorporated the rubber into a state approved BMD surface mix.
- Each product had a different rubber content by weight.
- I had to adjust the design based on the product so I ended up with two crumb rubber BMD designs.
- The first two state approved BMD crumb rubber mixes in the state of MD.
- Modification to the original gradation and asphalt content were required.



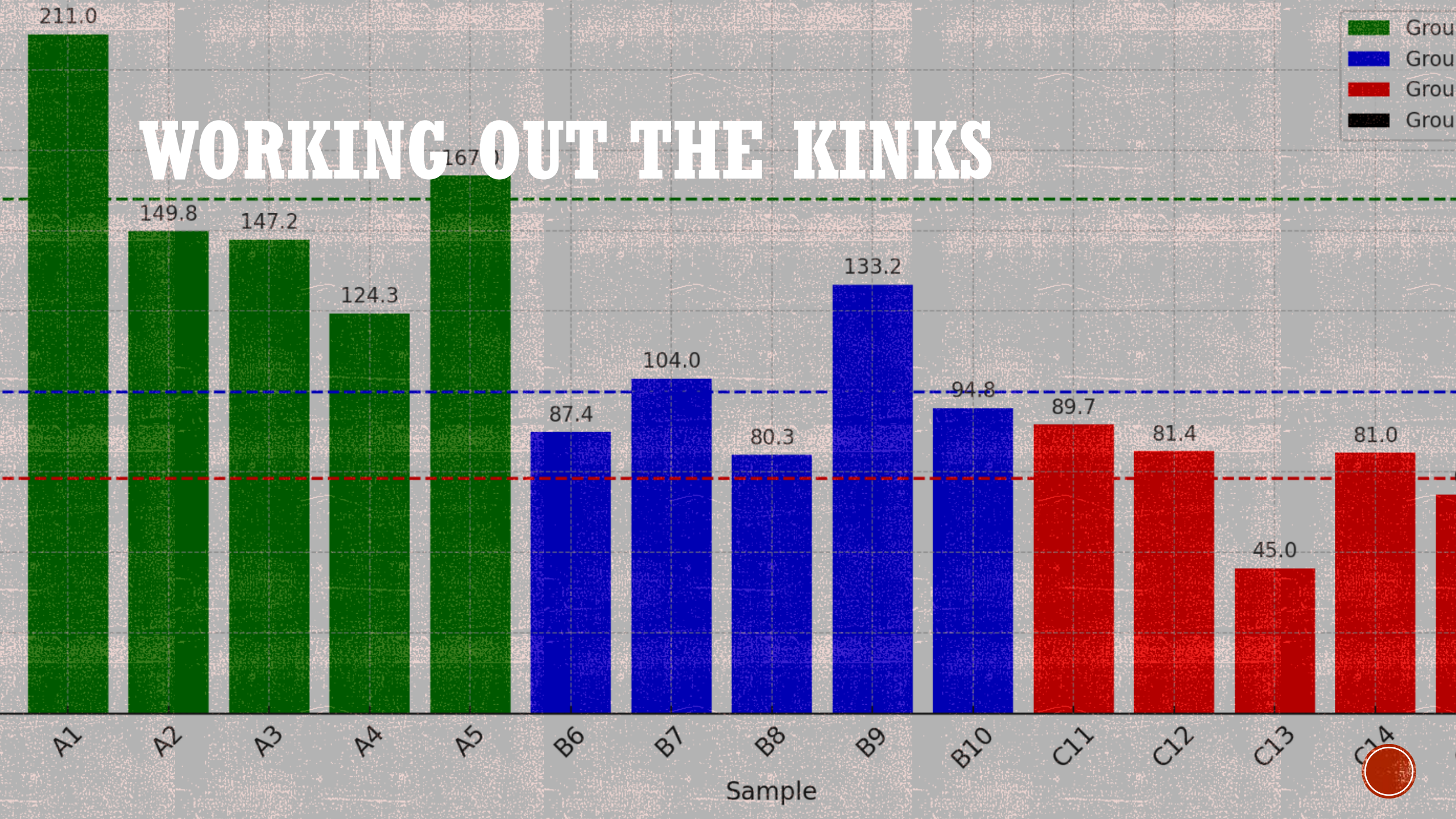


# TRIALS

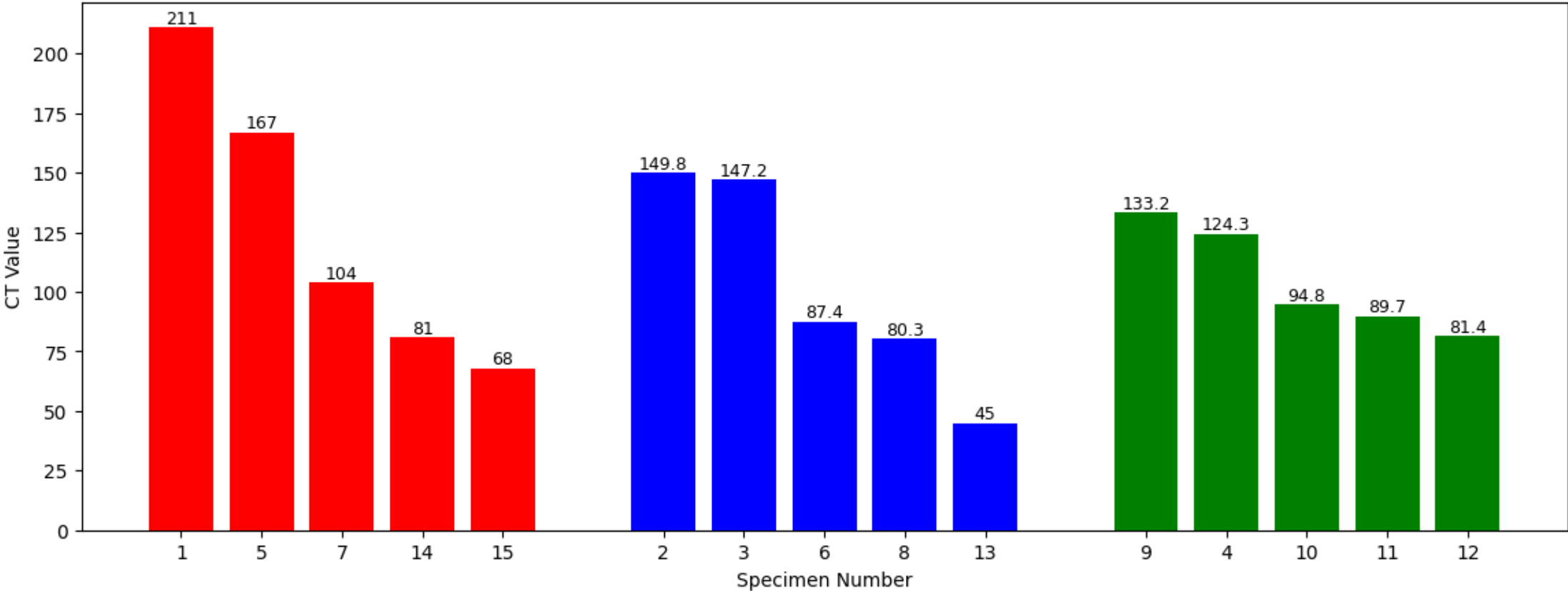
- Ran 60-100 ton test shots of the 2 rubber mixes out of the plant to a private location .
- Verified the JMF and performance data.
- Assessed the plant, the fiber feeder and drum after we ran the mixes.
- Observed how it performed in the field and.



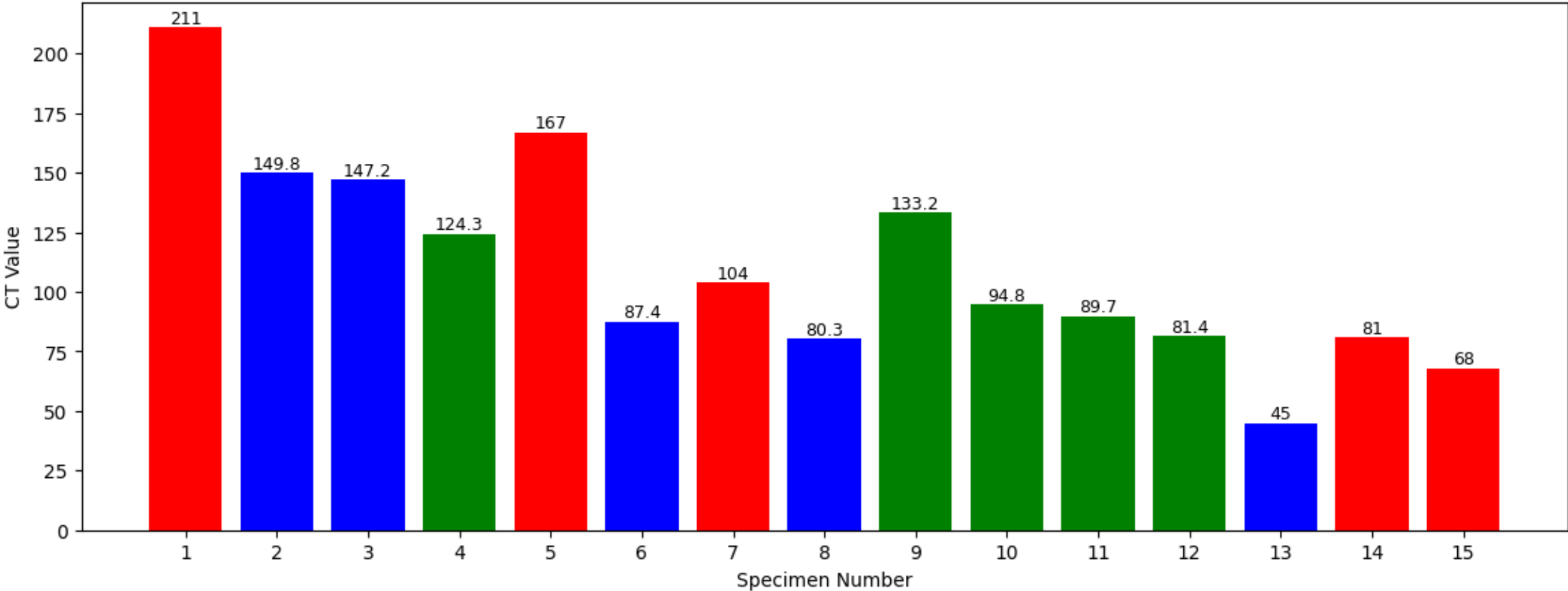
# WORKING OUT THE KINKS



CT Results Grouped by Mix (P, S, AM)



CT Results by Specimen Number (P = Red, S = Blue, AM = Green)





Continued Implementation

- Void Reducing Asphalt Membrane (VRAM)
- Engineered Crumb Rubber (ECR)
  - District 4
    - XQ3265277 – Baltimore County
    - XQ3265377 – Harford County



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# OUTCOME

Larry Riggleman Jr. and Mike Little presenting at the Maryland Asphalt Association Conference this past March.

Maryland is moving forward with 2 more contracts that require dry process crumb rubber.



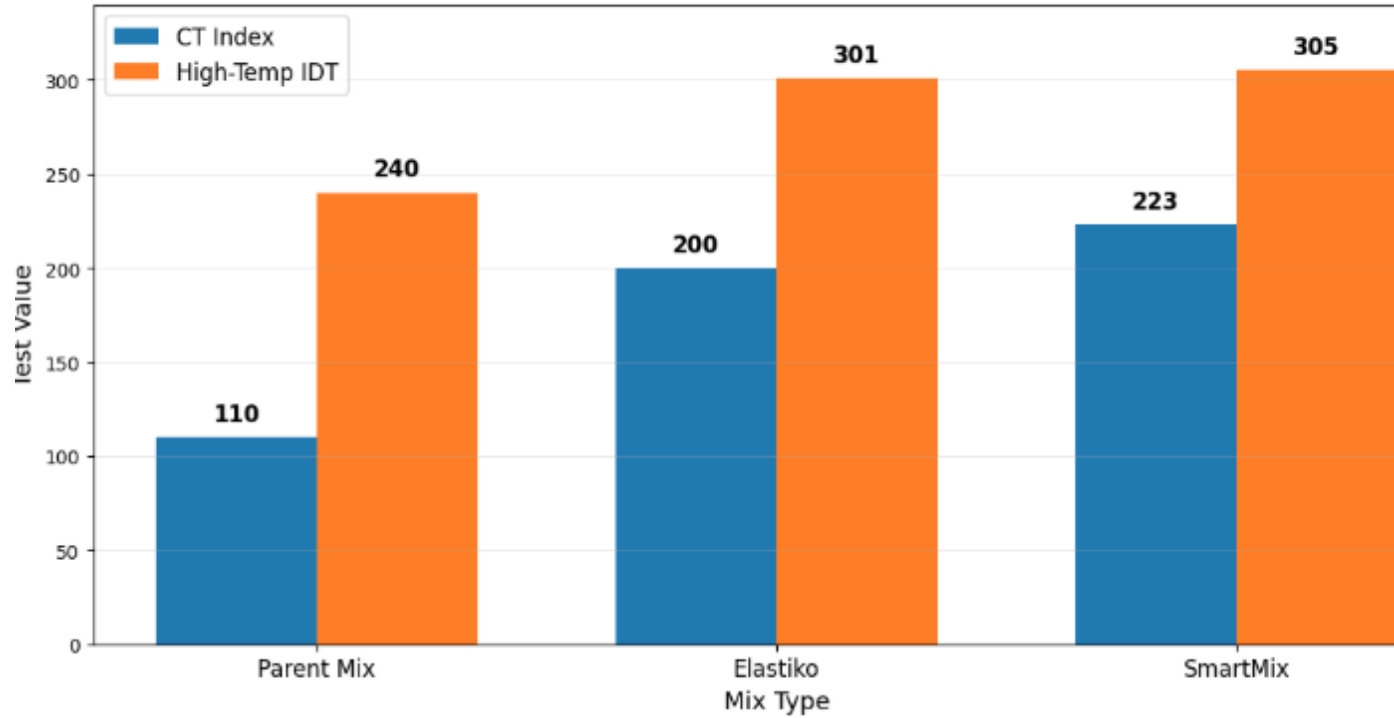


# SHOTS OF THE ROAD

The rubber mixture in place.

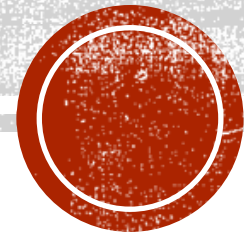


## Performance Improvement with Crumb Rubber Modification



# PERFORMANCE RESULTS

Significant improvement in crack and rut resistance over the parent mix.



# FIELD DENSITY

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In place density readings  
were great.



Cores verified this.





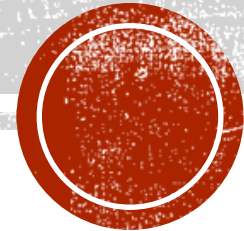
# LINK TO ASPHALTPRO ARTICLE

Scan this link for more details on the  
MD 650 project

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**THANK YOU**

