



Road Recyclers

Roads Rethought™

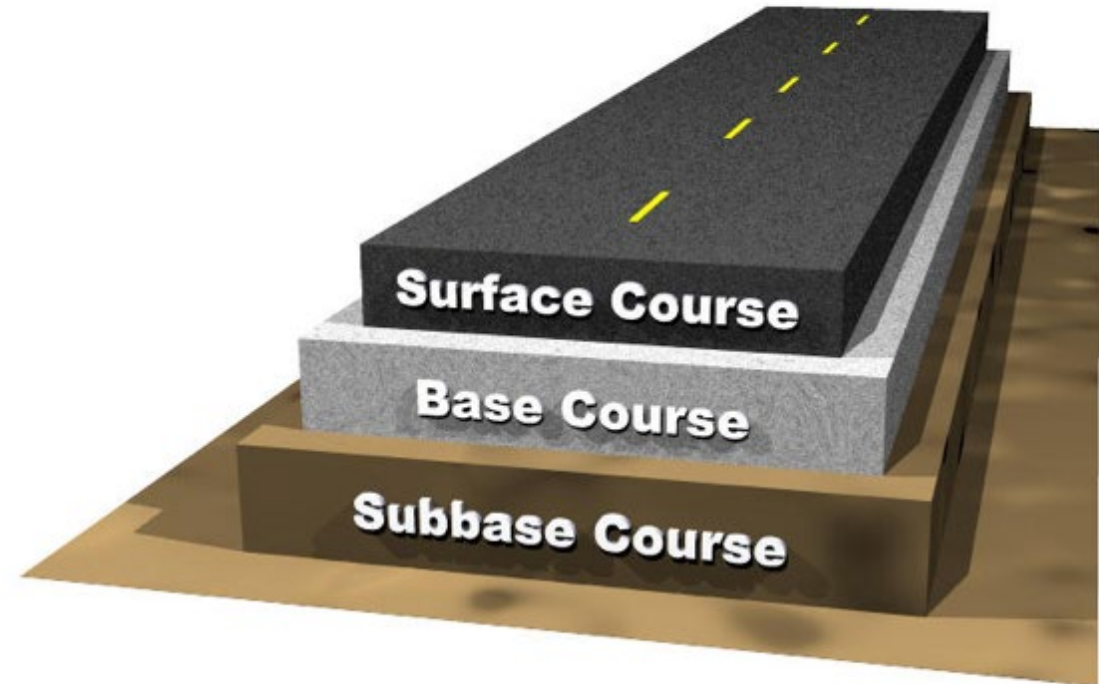
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Why Can't We Build a Better Road?

Developments and Challenges in Environmentally Sound and Cost-Effective Highway Construction

What is a Road (Well, a Highway)?

- More tightly bound rocks
 - Typically called asphalt
 - The thing you see when you are driving
- Bound rocks
 - Typically called base course
 - Typically crushed stone
- Dirt
 - Typically called sub grade or sub base
 - The existing material the road is built on



Recycling/Reuse/Reduction/Re-appropriation

Recycling

- RAP (Reclaimed Asphalt Pavement—asphalt millings)
- In-place Recycling

Reuse

- Full-depth Reclamation (FDR)

Reduction

- Binder types (Foamed asphalt, Standard CSS-1H Emulsion, High Yield Emulsion)

Carbon-capture

- Road Patch



NM Has Used Recycling/Reuse For Decades...

In-place Recycling

- Recycled RAP
- Hot In-place (HIR)
- Cold In-place (CIR)

FDR

- But with foamed asphalt only



...But Not Reduction Or Re-appropriation

High Yield Emulsion

- Reduces the binder requirement versus both foamed asphalt and standard emulsion
- Results in vastly reduced construction costs and carbon emissions
- Also improves safety, logistics, etc.

Carbon capture road patch

- Removes carbon directly from natural gas and sequesters (traps) it in patch material
- Still uses cutback binder so performance not affected
- Not an example of “greenwashing”



<https://www.forbes.com/sites/kensilverstein/2023/10/02/how-utilities-might-decarbonize-and-avoid-a-climate-breakdown/?sh=13c8fd732433>

And It Really Does Make A Difference

- US 84 De Baca County
 - Similar sized sections
 - Used 1,530.57 tons HYE
 - Used roughly 3,000 tons Standard Emulsion

- Example of Eddy Co. VEP
 - Went from 12" base and 5" HMA to 7" base and 3" HMA
 - SN from 3.52 to 3.56 +
 - Cost savings 6%
 - Time savings at least 25%

- Carbon footprint
 - Improved binders and carbon capture make a big difference
 - Have some data
 - Need more data



CONSTRUCTORS, INC.

General, Asphalt, Concrete, Dirt and Utility Construction

5/19/2023

Mr. Jason Burns, Eddy Public Works Director
 Eddy County
 101 W. Greene Street
 Carlsbad, NM 88220

Project: Eddy County SE Loop Phase IIIA

Reference: Value Engineering Proposal

Mr. Burns,

We have put together this proposal that we feel not only will save the taxpayers money but will reduce the time frame for construction. This proposal will also provide a higher structural number and a better product with less maintenance in the future. As the County is aware Phase II of the SE Loop was constructed using this same method. Attached is Exhibit 1 which shows the estimated savings to the taxpayers on this project in the amount of \$87,210.00 which is a 6% reduction in cost associated with the base course and hot mix bid items.

The current pavement section has 12" Base Course and 5" of Hot Mix asphalt. We are proposing to use 7" of High Yield Emulsion Base and 3" of Hot Mix Asphalt. We intend to use 1.8 to 2% high yield emulsion and run the base through a pug mill the base where the emulsion and water will be added.

Attached in Exhibit 2 is the engineering analysis of the two structural numbers of the paving sections discussed above. The paving section in the plans structural number calculates to 3.52. Our proposed pavement section calculates out a new structural

Barriers To Product Improvements/Progress

Unclear New Product Approval Process

- Clunky, inconsistent and unclear product evaluation process
- Unclear approval timeline

No way to differentiate volumes in specs

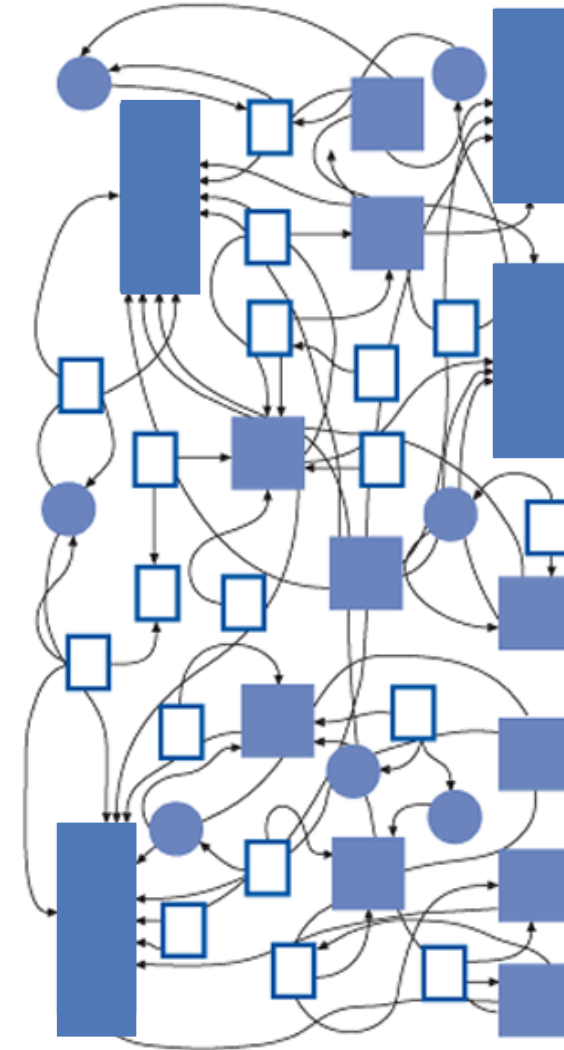
- Lowest per unit cost wins, regardless of quantity used

Need To Add or expand specs

- Cold Patch, RAP, etc.

This should be hard, but not impossible

- More data=better decisions
- Study?



Possible Outcomes

- Better, less expensive roads
- Practical, measurable carbon reduction
- Greater access to federal funding
- A response to increased weight of electric cars on roadways