

## Warm Mix Asphalt Demonstration Yellowstone National Park

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## What is Warm Mix Asphalt?

- Hot Mix Asphalt 275-325°F
- Cold Mix Asphalt 60°F
- Warm Mix Asphalt 250-275°F

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## Project Details

- 6.93 Miles
- Evaluated 2 technologies
  - Advera (formerly Aspha-Min)
  - Sasobit
- 31,000 tons of mix total
  - 1/3 of the tonnage per mixture

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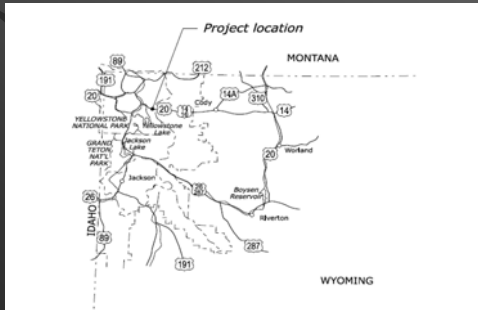
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## Project Location



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## Project Location



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## Paving Details

- Binder Type – PG 58-34
- Placed in two 2" lifts
- Conventional Mix Temperature  $\approx 325^{\circ}\text{F}$
- Placement Temperature  $\approx 315^{\circ}\text{F}$
- 90 minute one way haul
- 7 vib. passes Ingersoll Rand DD-130
- 3 finish passes Ingersoll Rand SD-77
- Paving started August 21, 2007

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## Advera Admixture

- Synthetic Zeolite product
- Added at a rate of 0.3% by weight of mix
- Blown in at the plant – Under binder
- Initial mix temp  $\approx$  275°F
- Eventual mix temp  $\approx$  250°F
- Same roller pattern
- Started paving August 26, 2007

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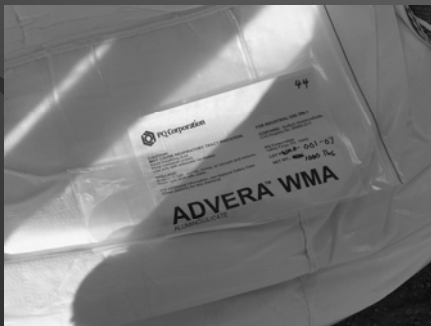
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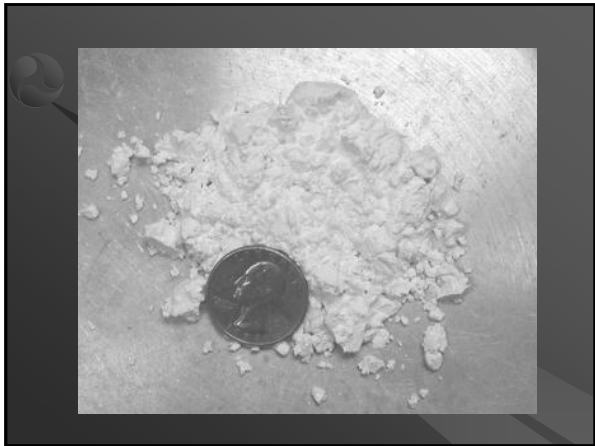
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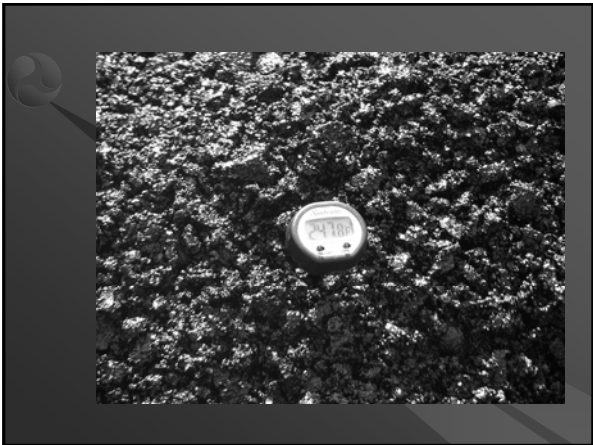
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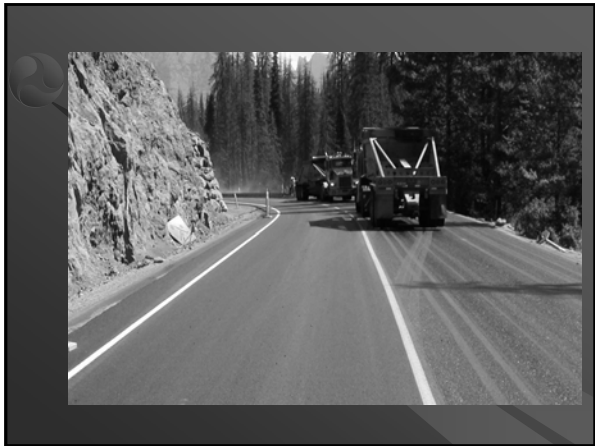
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## Sasobit Admixture

- Paraffin wax additive
- Added at a rate of 1.5% by weight of binder
- Blown in at the plant – Under binder
- Used same port as Advera
- Initial mix temp  $\approx$  275°F
- Eventual mix temp  $\approx$  245°F
- Same roller pattern
- Started paving August 30, 2007

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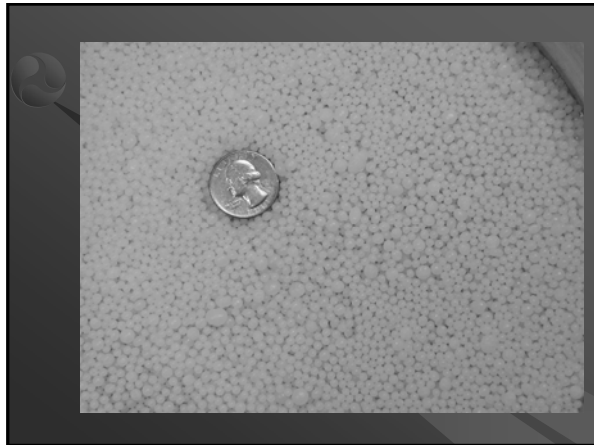
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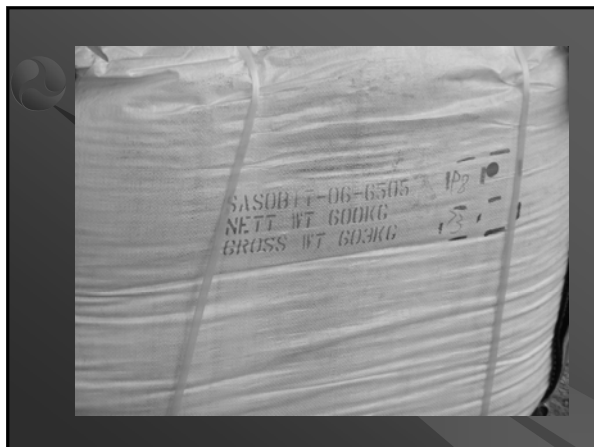
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**Data Tested for PG 58-34**

Property	No Additive	1.5% Sasobit
Rotational Vjs, Pa·s	0.535	0.480
Mass change, %	-0.387	-0.364
DSR Original, kPa	1.316	2.468
DSR RTFO, kPa	2.551	4.719
DSR PAV, kPa	1414	1917
BBR Stiffness	265	287
BBR m-Value	0.318	0.275

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## What Have We Learned

- Field density achieved in all cases
- Saved  $\approx$  20% in fuel at the plant
- Temperature at plant hard to regulate
- Mix handled similarly
- Workers noted no handling difficulties
- No smoke
- Additives don't seem to affect mix design
- Sasobit stiffens binder

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## What's Next

- More testing
  - Volumetrics
  - Recovered asphalt properties
  - TSR
  - Rut (Hamburg and APA)
  - Western Research Institute (WRI)
- Field monitor
- FHWA Field Lab data / report

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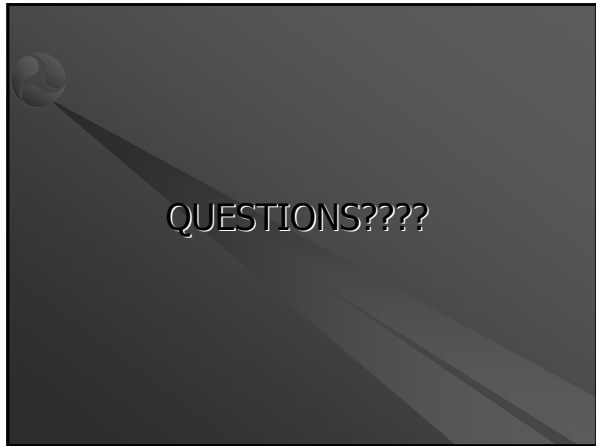
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