

report no. CDOT-DTP-R-86-3

CRUMB RUBBER CHIP SEAL East of Punkin Center

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Final Report
March 1986

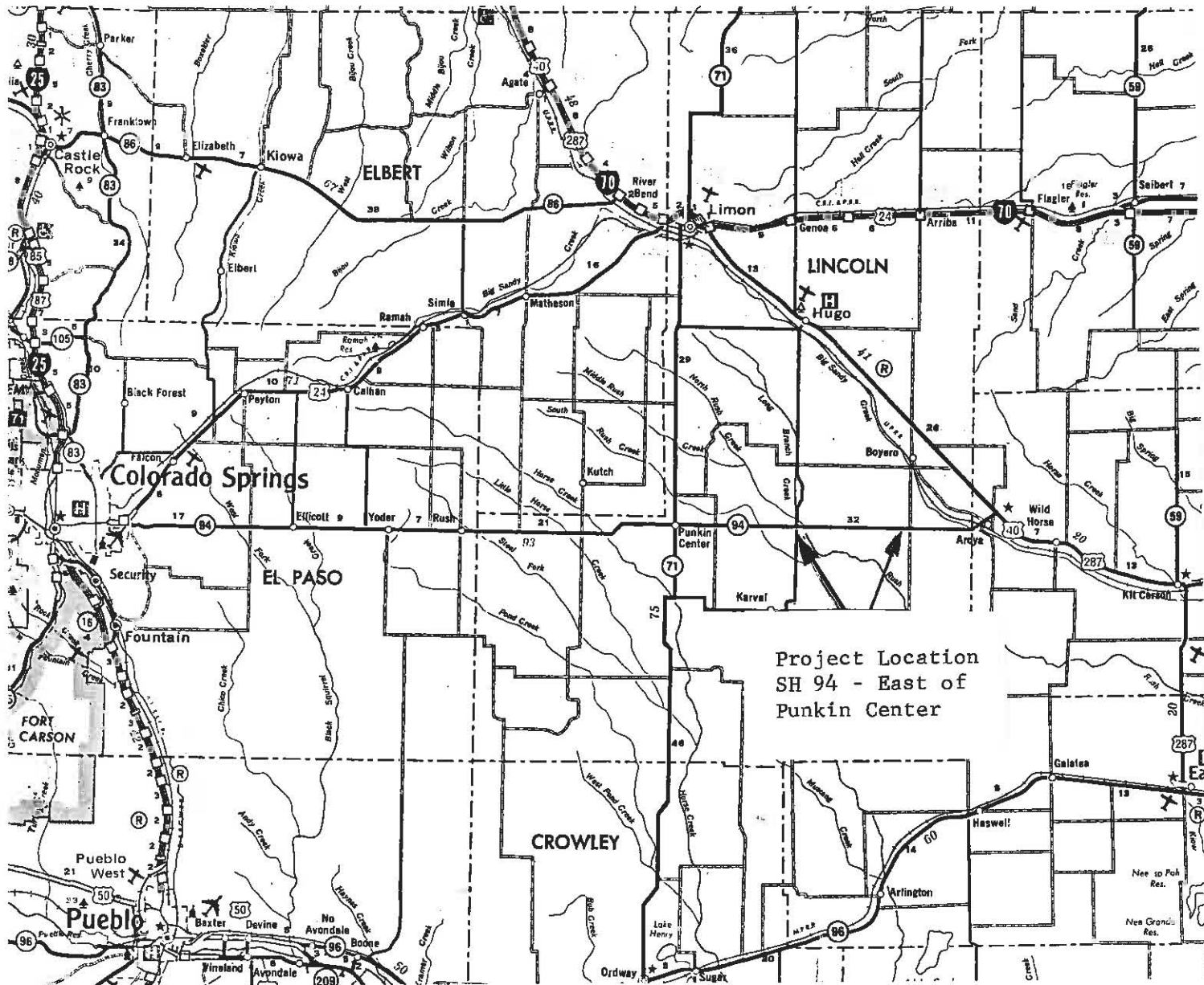
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16. Abstract This report documents the performance of rubber asphalt binders as chip seal materials. The test sections consisted of two rubber-asphalt binders, a rubberized cutback (RC-800, the standard chip seal at the time of construction), and a plain AC-10 chip seal. At the end of the evaluation period, the rubber asphalt binders had performed as well as the rubberized RC-800; however, from an economic standpoint the rubberized RC-800 is recommended for use as a chip seal binder on low-volume highway. Implementation Since construction of this project, other CDOH studies have shown emulsified polymerized asphalt binders performed as well or better than the RC-800 rubberized material at an additional savings.					
17. Key Words Chip seal material, rubber asphalt binder, rubberized cutback, crumb rubber			18. Distribution Statement No restrictions: This document is available to the public through the National Information Service Springfield, Virginia 22161		
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FIGURE 1

CRUMB RUBBER CHIP SEAL

Project RS 0094(7)
East of Punkin Center



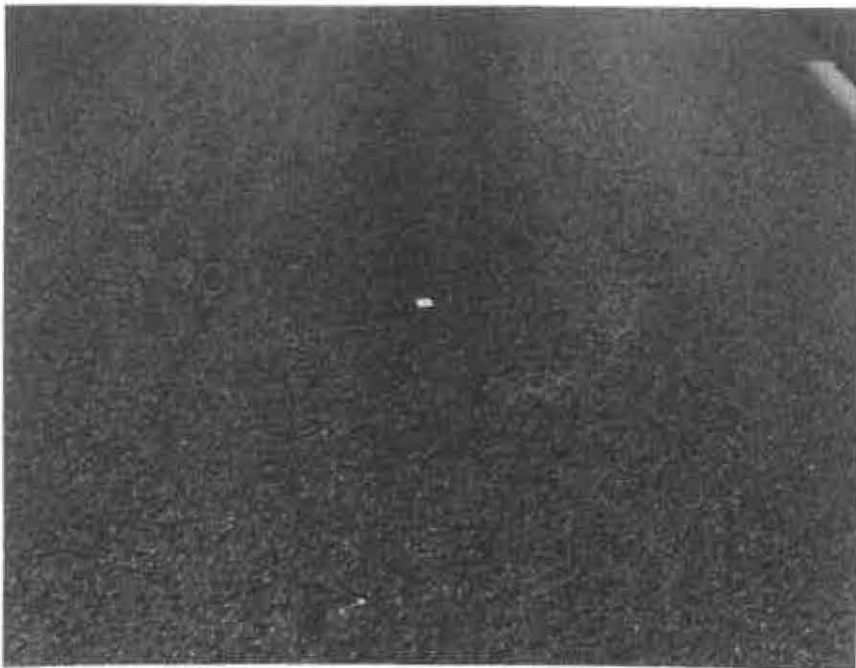
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Photograph No. 1

4/6/78

Typical pavement condition prior to crumb rubber chip seal. Pavement is in good condition except for minor cracking and surface raveling.



Photograph No. 2

4/6/78

This close-up shows that raveling was quite pronounced in the wheel paths at some locations.

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Photograph No. 3

7/5/78

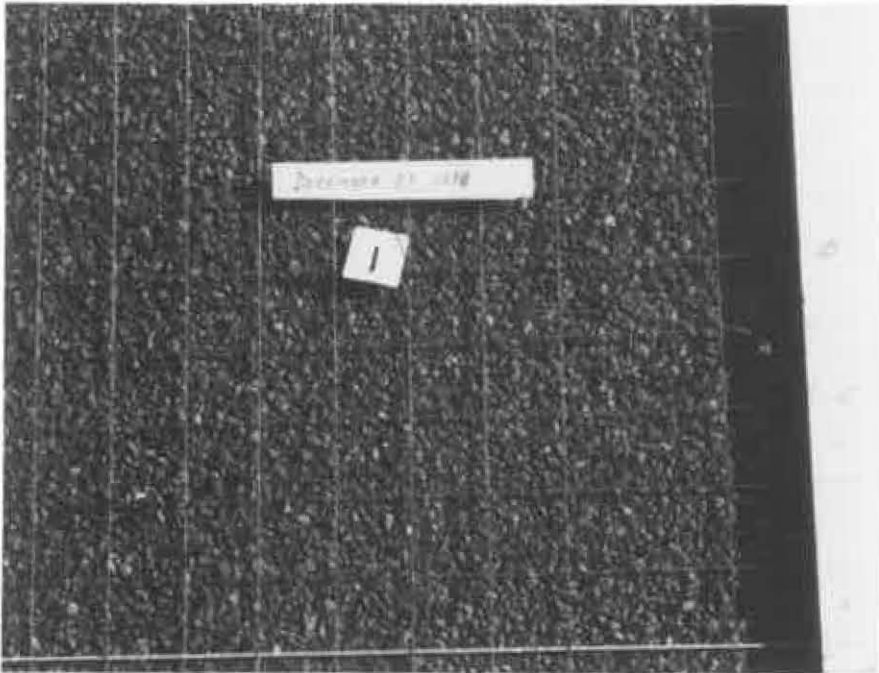
Placement of the chip seal went smoothly with the large distributor truck, chip spreader, and staggered haul trucks.



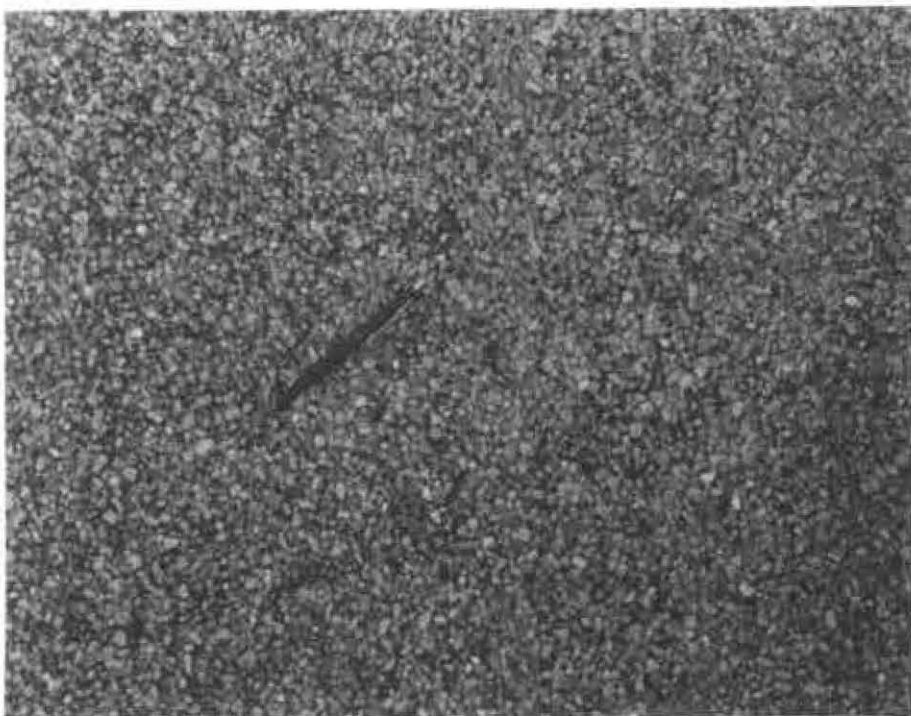
Photograph No. 4

Pneumatic rollers were used immediately behind the haul trucks. At least three roller passes were required over the entire sealed area.

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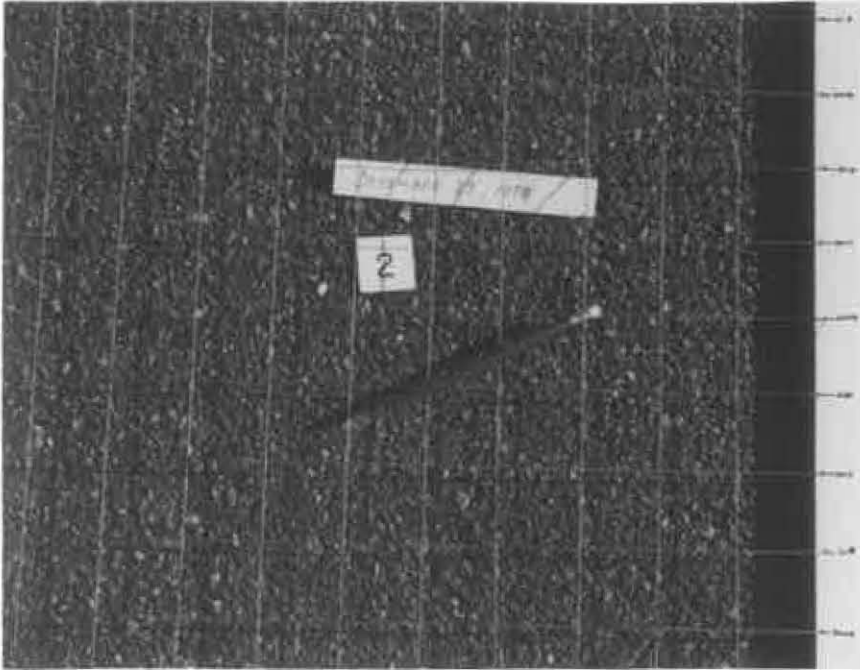


Photograph No. 5
12/27/78
Sections 1 & 5 — Sahuaro
Crumb Rubber binder.
Typical surface appearance 5
months after construction.
Sections 1 & 5 contained the
same binder material (the
string grid was used to
measure chip loss).



Photograph No. 6
4/28/82
Sections 1 & 5 — Sahuaro
Crumb Rubber binder.
Typical surface appearance 4
years after construction of
Sections 1 & 5. Note that
the 1% AC-10 coating has
weathered off the chips, but
they are firmly attached to
the pavement surface.

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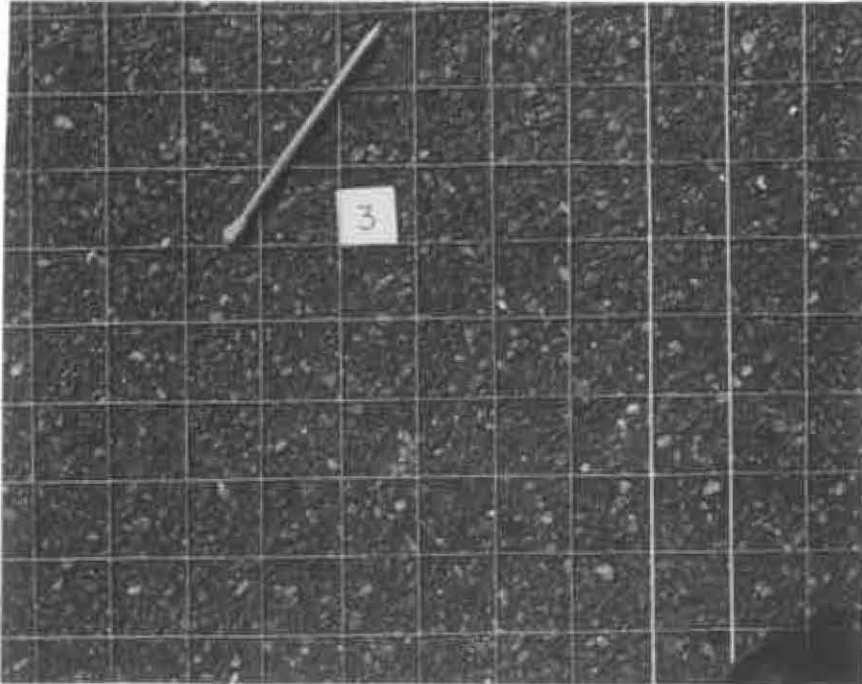


Photograph No. 7
12/27/78
Sections 2 & 6 -- RC-800
Rubberized binder.
Typical appearance after 5
months.



Photograph No. 8
4/28/82
Sections 2 & 6 -- RC-800
Rubberized binder.
Typical appearance after 4
years.

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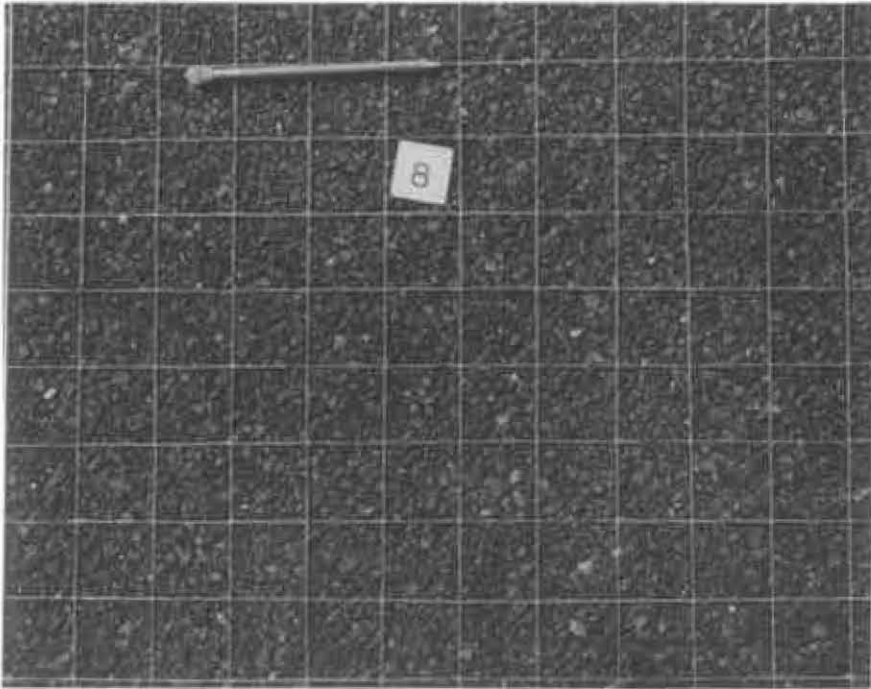


Photograph No. 9
7/21/78
Sections 3 & 7 — AC-10
binder.
Typical appearance two weeks
after construction.



Photograph No. 10
4/28/82
Sections 3 & 7 — AC-10
binder.
Typical appearance after 4
years.

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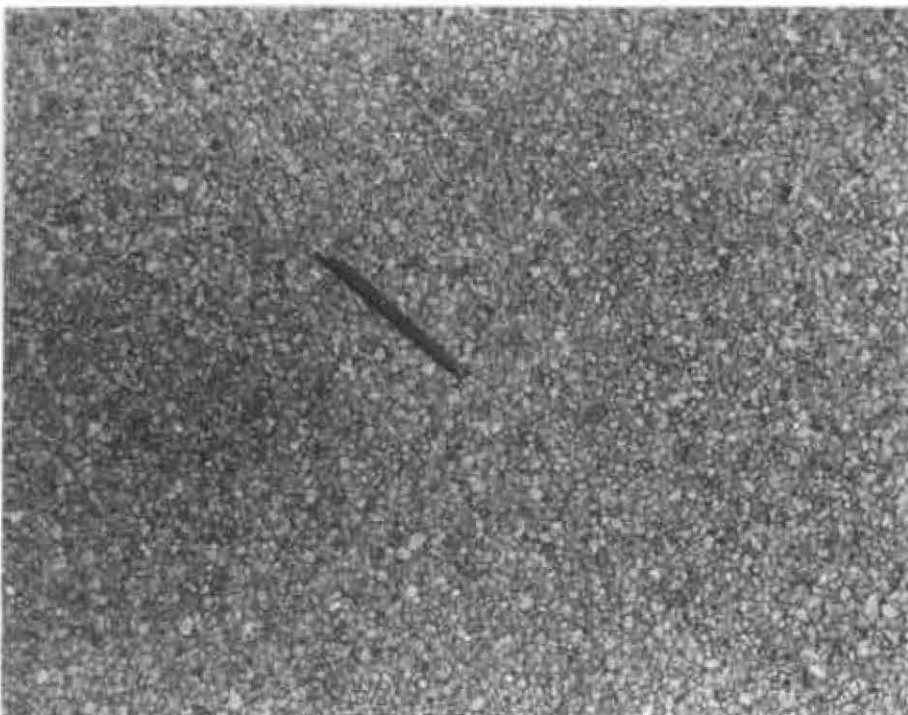


Photograph No. 11

7/21/78

Sections 4 & 8 -- Arizona
Refineries Crumb Rubber
binder.

Typical appearance two weeks
after construction.



Photograph No. 12

4/28/82

Sections 4 & 8 -- Arizona
Refineries Crumb Rubber
binder.

Typical appearance after 4
years.

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Photograph No. 13
4/28/82
Looking east at Test
Sections 1-4 after 4 years.
The performance of the
different binders is
difficult to distinguish
without close inspection.



Photograph No. 14
4/28/82
Looking east at Test
Sections 5-8 after 4 years.
All of the binder materials
performed well on this
project.

APPENDIX A

**TABLE-GRADATION
SPECIFICATIONS FOR COVER
COAT AGGREGATE**

Sieve Size or Designation	Percentage by weight passing square mesh sieves of the indicated sizes			
	Type I	Type II	Type III	Type IV
3/4 inch	100	----	----	----
1/2 inch	95-100	100	100	100
3/8 inch	40-70	90-100	-----	70-100
1/4 inch	----	45-70	----	25-50
No. 4	0-10	----	0-40	-----
No. 8	0-3	0-4	0-10	0-4
No. 16	----	----	----	----
No. 30	----	----	----	----
No. 100	----	----	----	----
No. 200	0-2	0-2	0-2	0-2

March 21, 1978

REVISION OF SECTION 703
COVER COAT MATERIAL
COLORADO PROJECT NO. RS 0094(7)

Subsection 703.05 of the Standard Specifications shall include the following:

The aggregate shall have a percentage of wear of not more than 30 when tested in accordance with AASHTO T 96.

Limestone or sandstone shall not be used for Cover Coat Material.