Rubberized Asphalt Concrete (RAC)

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CalRecycle

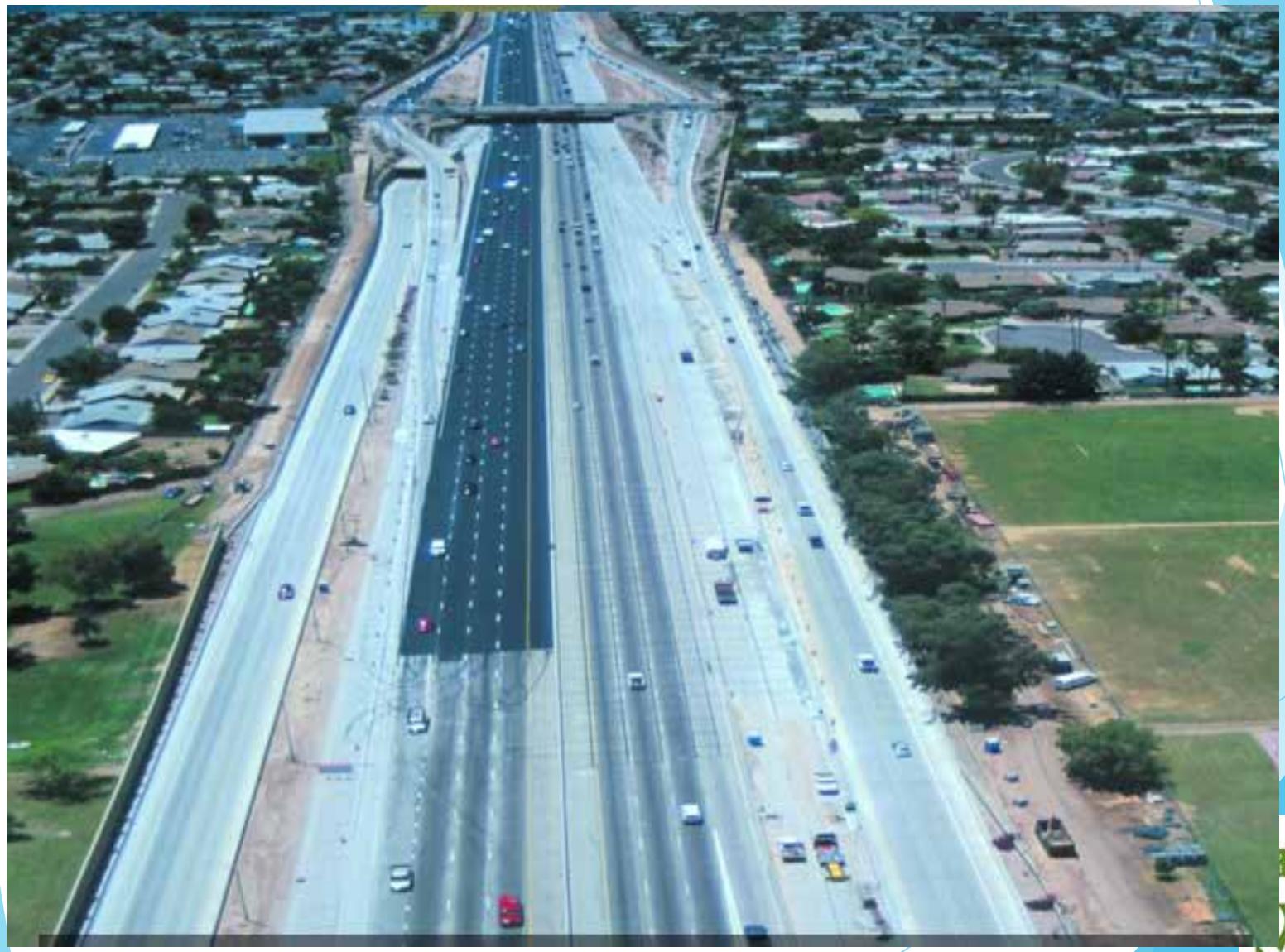
What is RAC?

For the purposes of this discussion, rubberized asphalt concrete (RAC) is any paving material that contains liquid paving asphalt, rubber and aggregates used in chip seal or overlay applications.

- RAC has been a tire diversion strategy promoted by CalRecycle since the very beginning of the Tire Program.

- The use of RAC by State and Local Government Agencies currently diverts about four million waste tires per year from landfill disposal

- Over the past 20+ years of the Tire program RAC has diverted over 75 million waste tires



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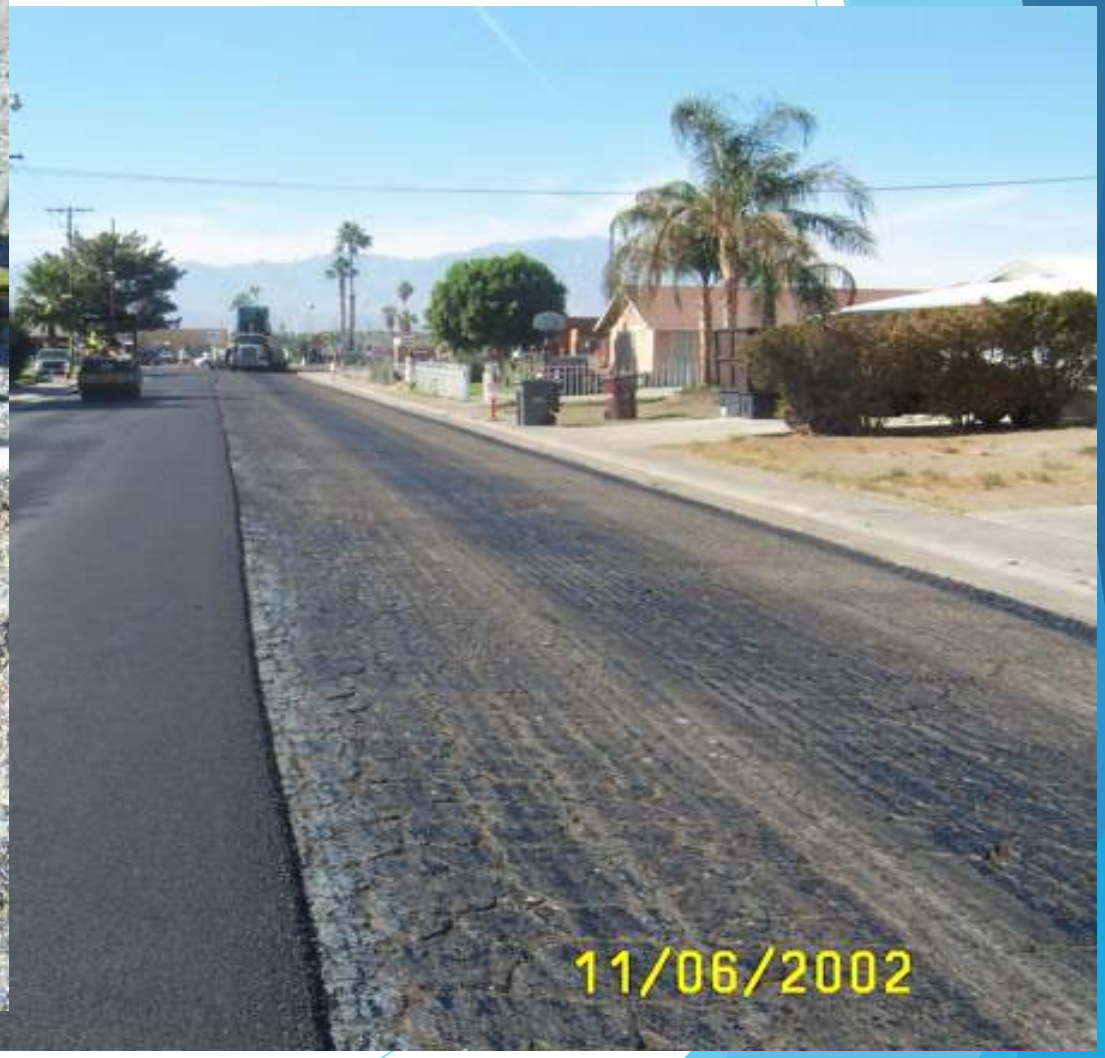
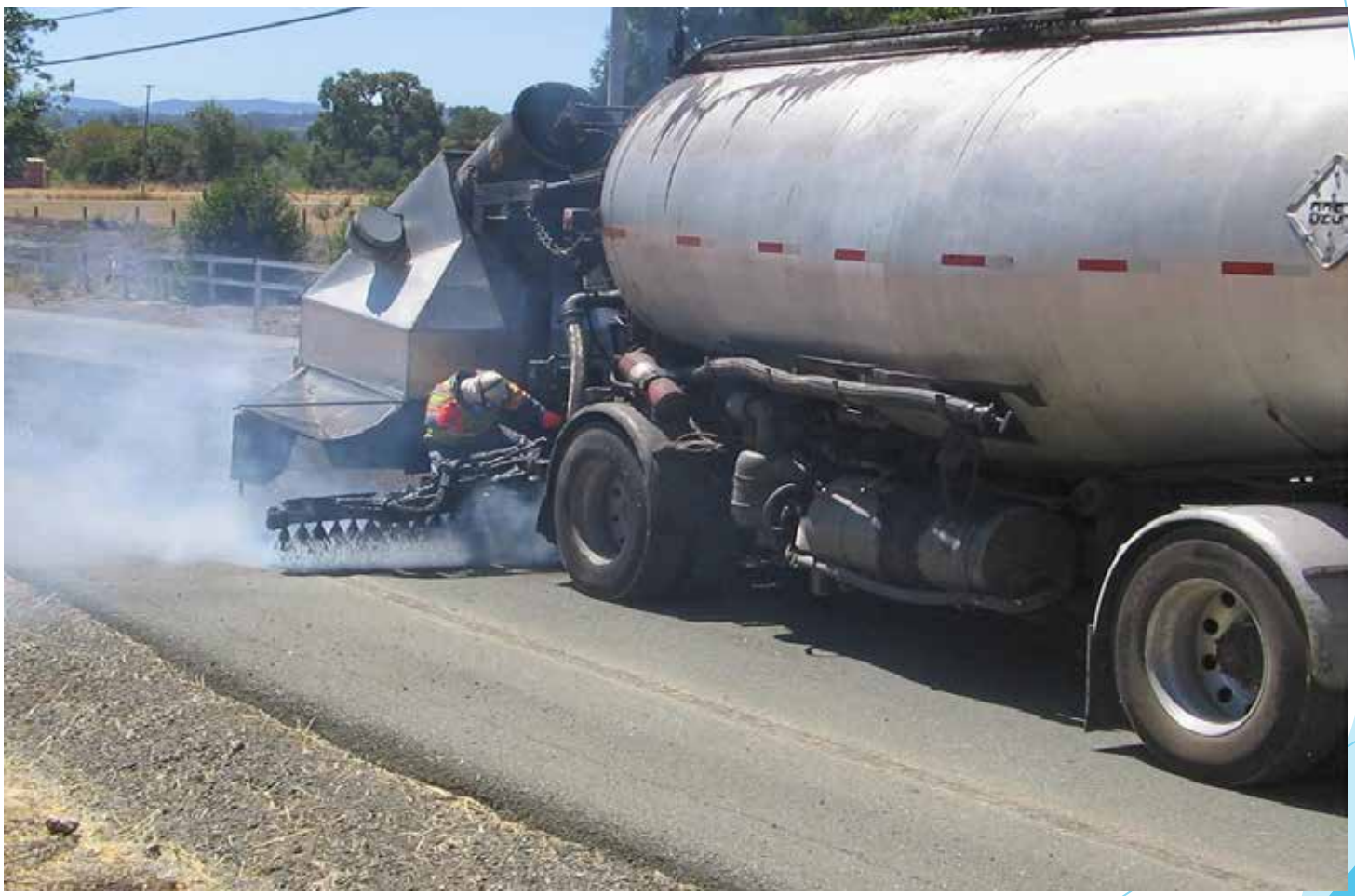
RAC Overlay



Chip Seals With RAC



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Chip Seals With RAC

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Two Types

Field Blend- Liquid asphalt, extender oil, high natural and reclaimed vulcanized rubber. Mixed at the project hot plant.

Terminal Blend – Liquid asphalt, polymers, and reclaimed vulcanized rubber digested into asphalt at the refinery and shipped to the project hot plant.

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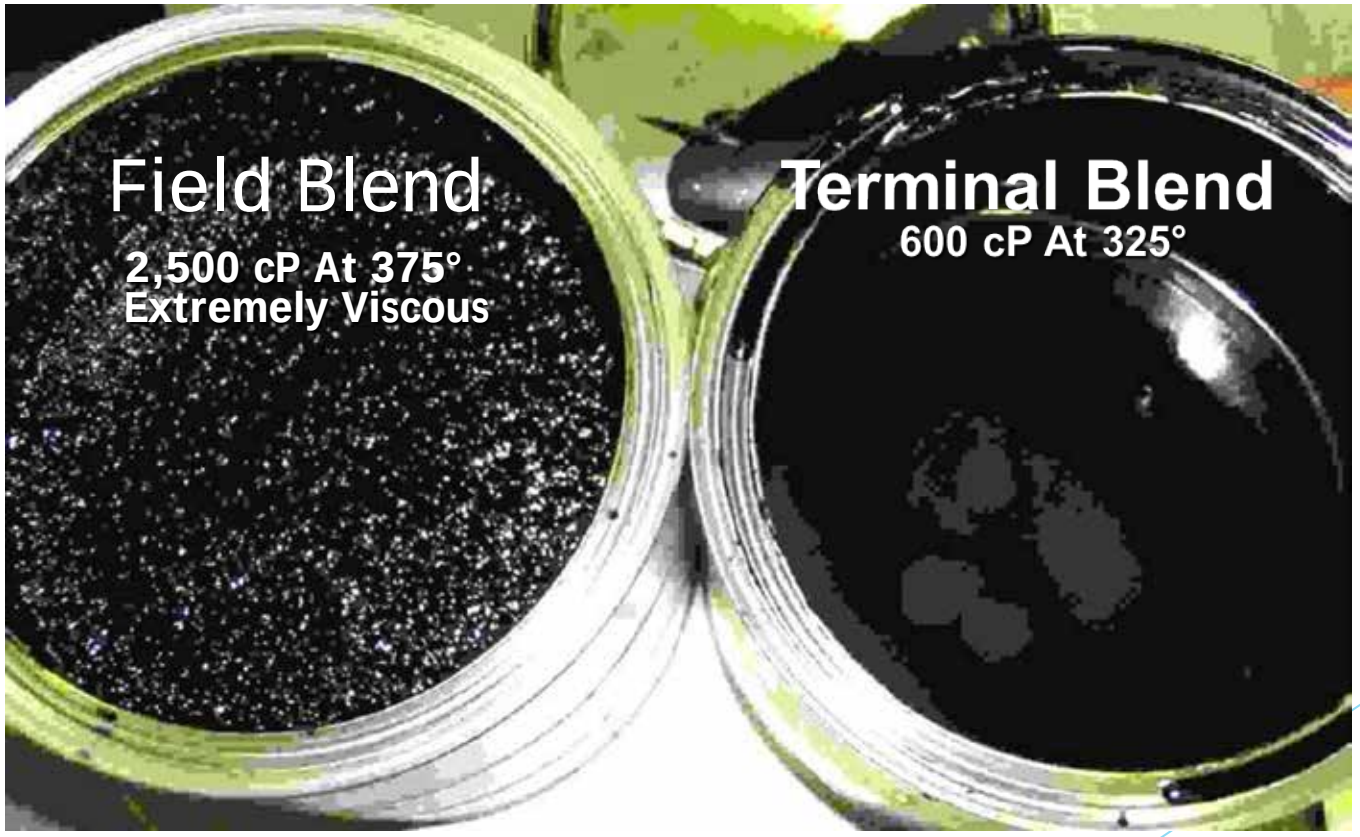
Two Types

Both meet CalRecycle Grant Requirements



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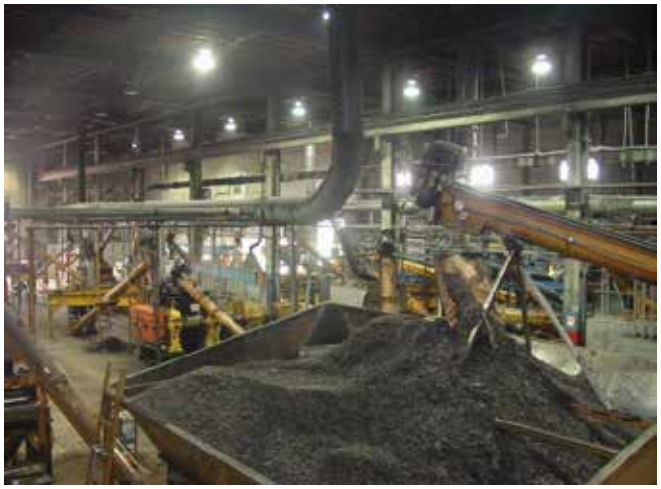
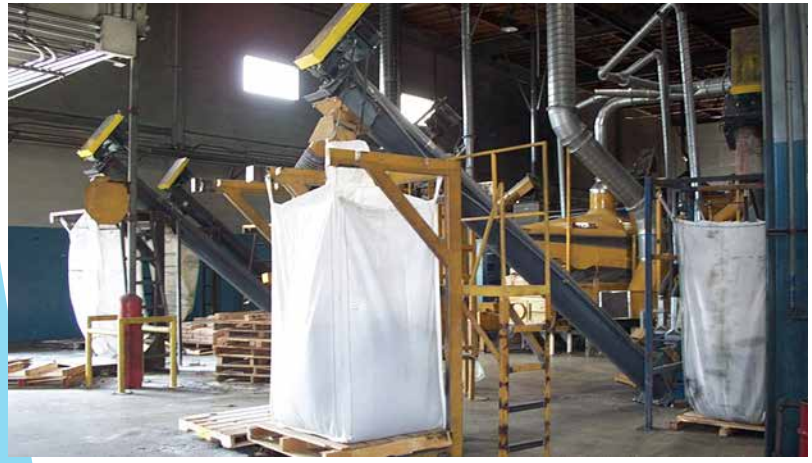
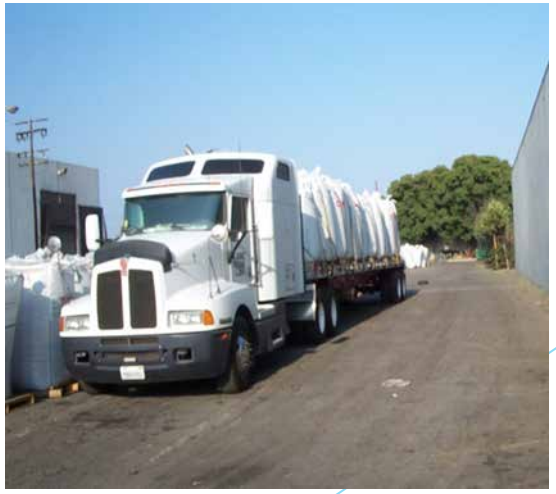
How is RAC Made?







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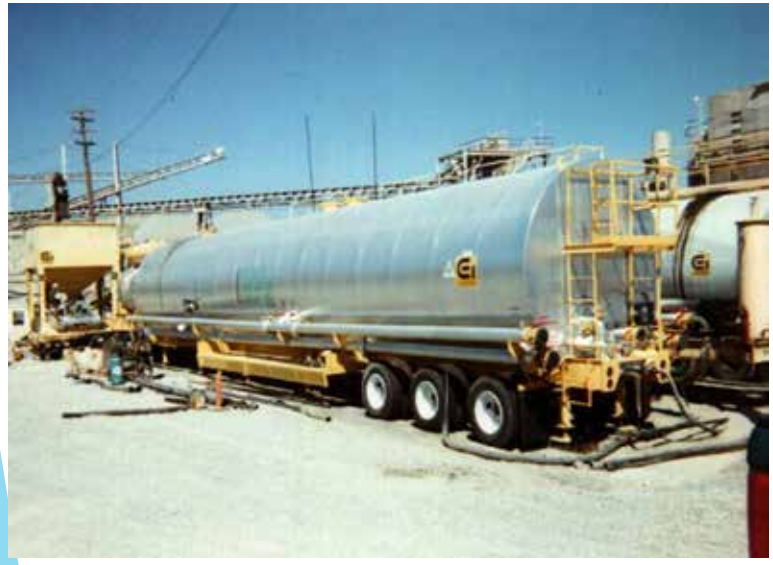
At the Hot Plant



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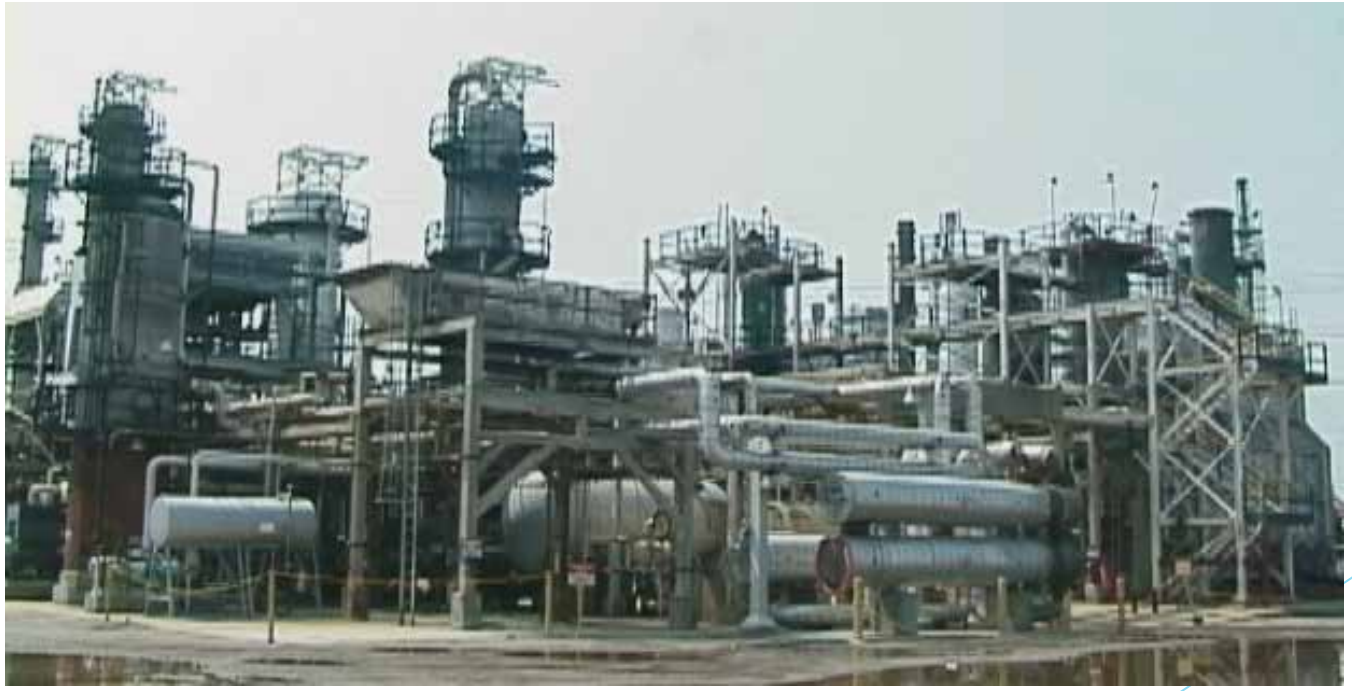
At the Terminal/Refinery

Terminal Blend crumb digested for ~16 hrs, under great pressure and temperature



Why Choose RAC?

- Less maintenance
- Resistance to reflective cracking
- Established life cycle cost-effectiveness
- Can be used in reduced thickness
- Proven alternative to costly reconstruction
- Quieter pavements
- Environmentally friendly
- Proven use for over 35 years

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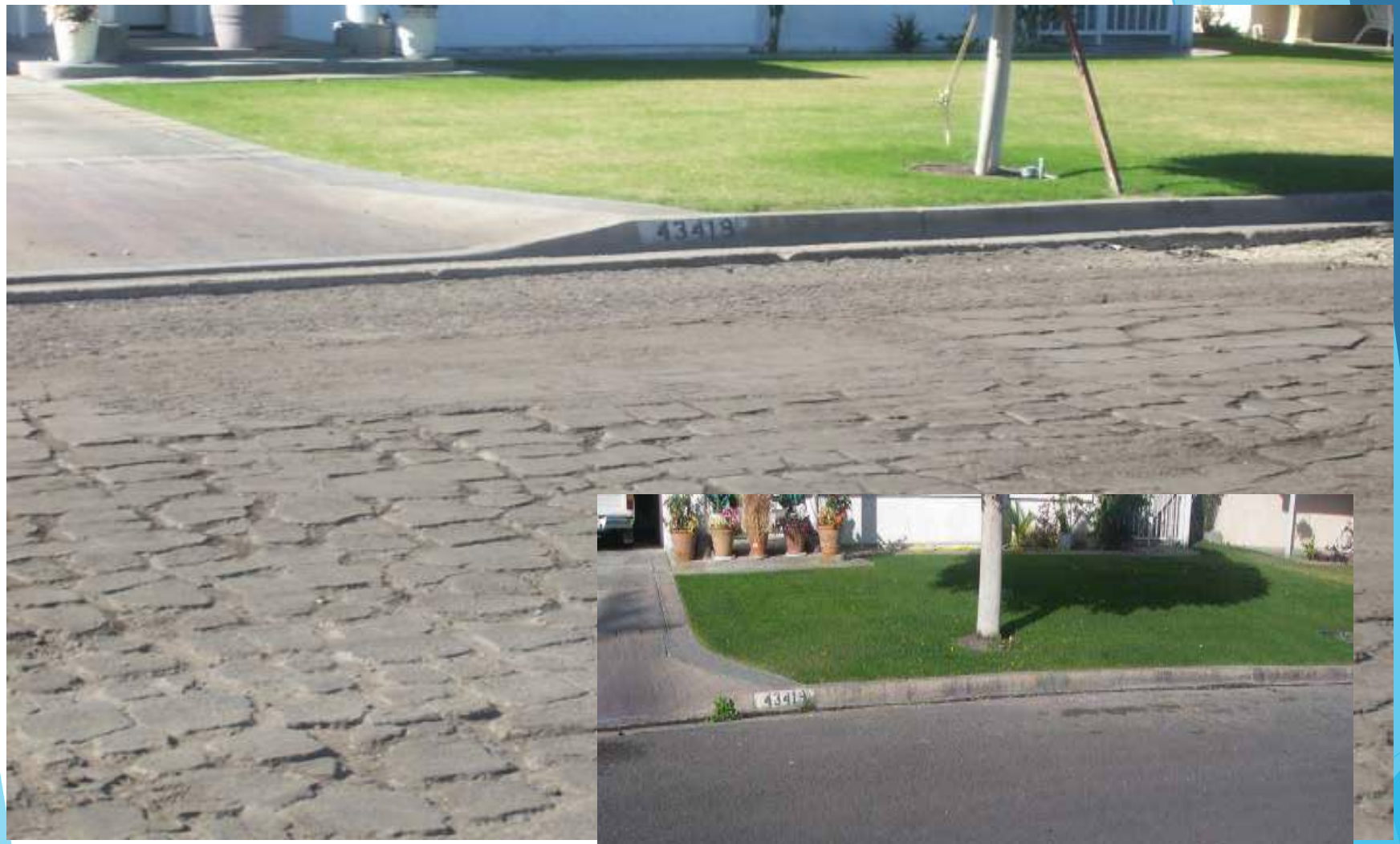
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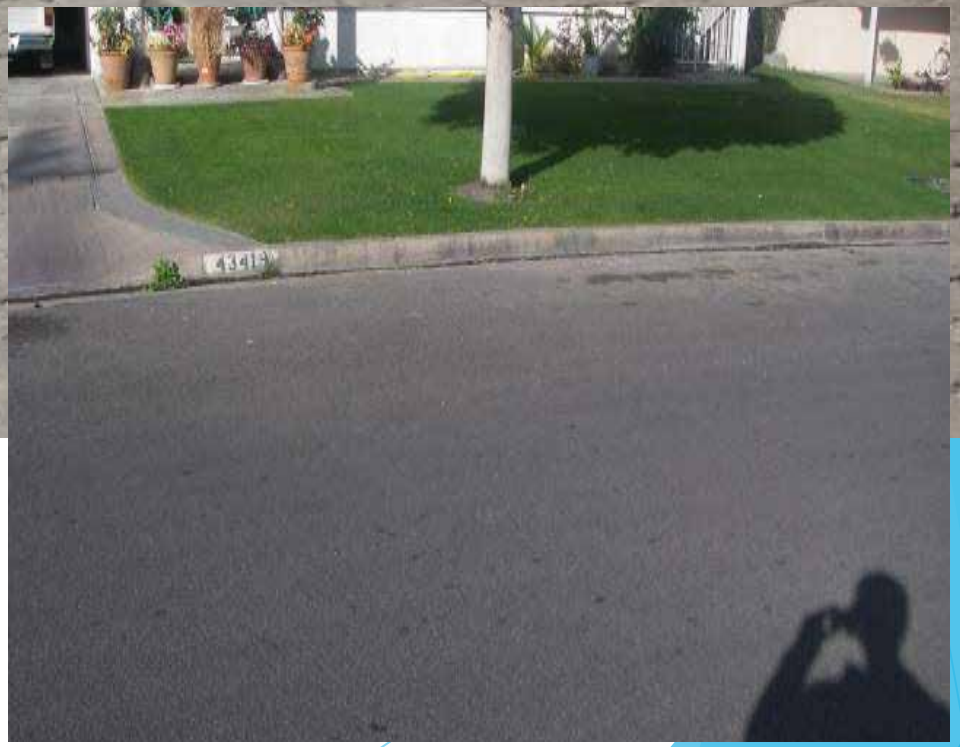
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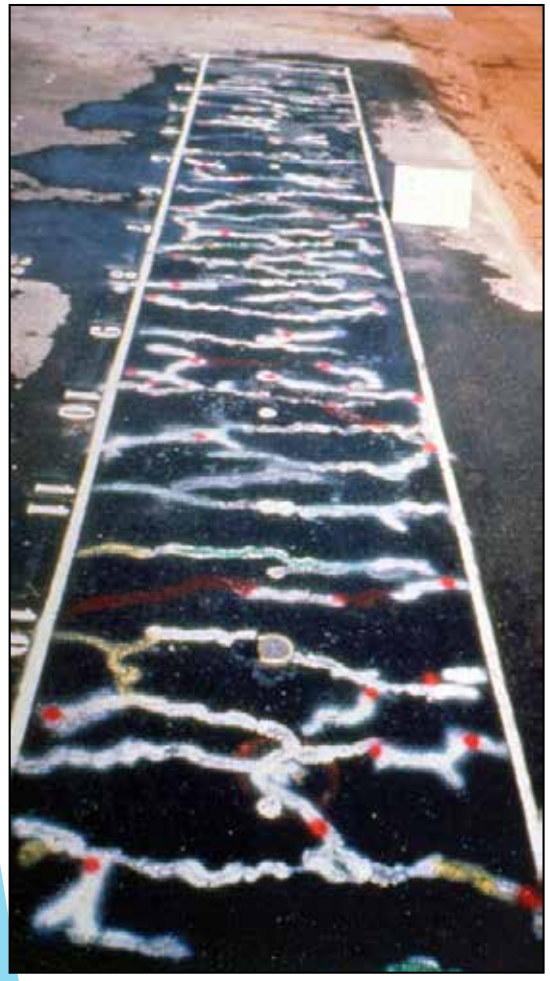
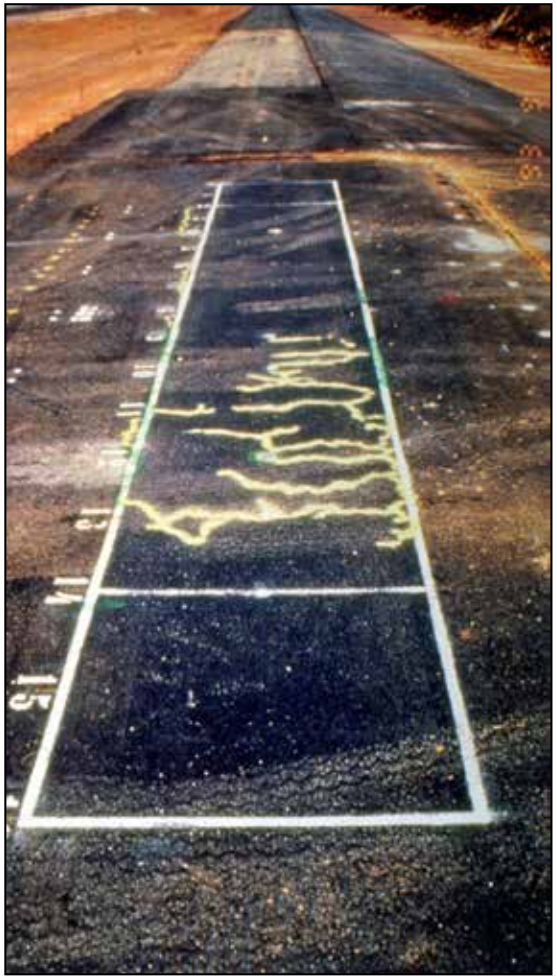
Heavy Vehicle Simulator – UC Davis



3” Conv. AC



1 1/2” RAC

1” RAC

RAC recycles about 2,000 tires per lane mile for a 2-inch overlay 2.5 PTE per ton

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Caltrans PG+X

- Caltrans is now working towards increasing crumb rubber usage in pavements by using “Green” asphalt which would require the use of 5 percent minimum crumb rubber in all asphalt binder that is currently classified as unmodified.
- This proposal is commonly referred to as PG+5 but maybe should be renamed to PG+X because between 5-10 percent crumb rubber may be allowed based on research findings

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Caltrans PG+X

There are four alternatives being evaluated for incorporating low volume of crumb rubber in hot mix asphalt:

1. PG+5 for unmodified binders that must meet current PG specification
2. PG+5 with changes to some requirements of the PG specification
3. Dry Process 0.25-0.50 percent CRM per ton of HMA (~ 5-10 lb/ton HMA)
4. Field blend 5-10 percent CRM (by weight of binder)

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Caltrans PG+X

- The alternatives will be evaluated in four phases:

Phase 1: Laboratory Testing

Phase 2: Pilot Projects

Phase 3: Environmental and Life Cycle Cost Analysis

Phase 4: Specification Development and Implementation

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Why Continue to Support RAC?

- Largest recycling use of waste tire rubber
- Demonstrated superior performance of RAC over conventional asphalt concrete (AC). Long-lasting durability; Resists reflective cracking
- Shown to be a cost effective resurfacing option over conventional AC

Questions?