



ARAM Quarterly

Asphalt-Rubber Aggregate Membrane

Fall
2012

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ARAM's Past, Present and Future

Over 40 Years of Proven History Leads to

Top Quality and Cost Efficiency

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State Route 111



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Caltrans Corner

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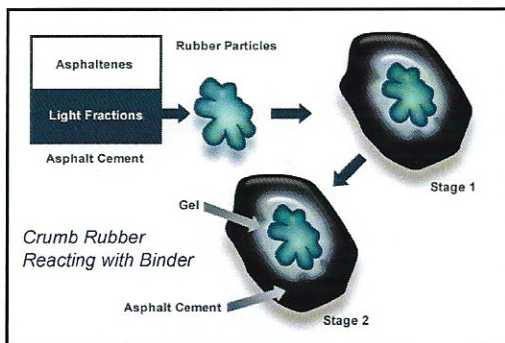
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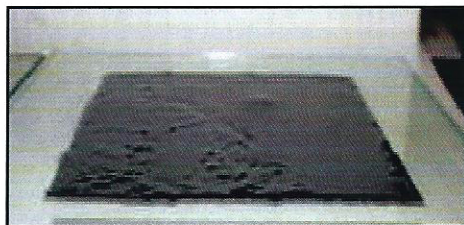
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Asphalt-Rubber Binder Components



Asphalt-Rubber Aggregate Membrane (ARAM) Binder

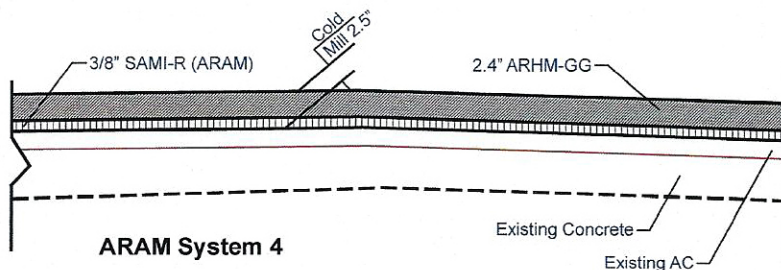


"Rubberized" Binders

ARAM has both a standard Greenbook and Caltrans specification, and Caltrans is the single largest ARAM user in California.

The agency recently completed over an 800,000 square yard (115 lane mile) ARAM

Composite Layering System on Interstate 5 near Valencia, and recently awarded a contract for almost a million square yards on Route 2 in District 7. In addition to ARAM's decades of proven performance, it also has a long composite layering history, also known as ARAM Interlayers. The recent Interstate 5 project was an ARAM System 4, which involved a full-width cold mill, application of ARAM and final Asphalt-Rubber Hot Mix (ARHM) overlay (see drawing below). No other rubberized product has a substantial interlayer history.



State Route 111

A comprehensive Caltrans ARAM Project



SR 111 Before
March 2012

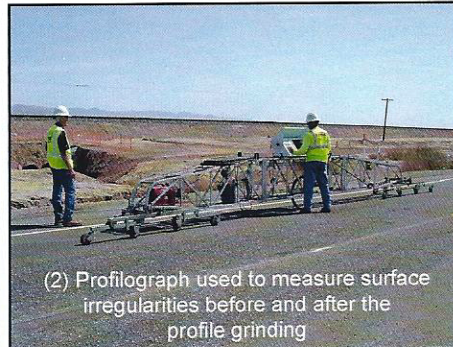


SR 111 Before
March 2012

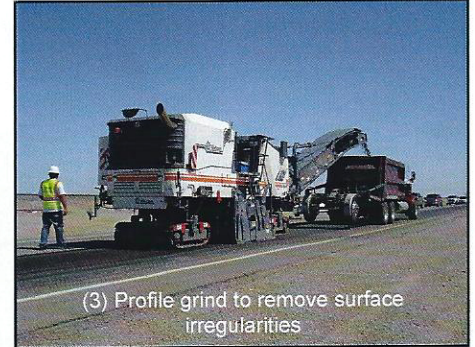
In March and April 2012, Caltrans completed an ARAM project of 63 lane miles (446,052 square yards) on State Route 111 in Imperial County. This differed from the usual ARAM seal coat project in that the surface was micro-milled before the application of ARAM to improve ride-ability. Throughout that process, a profilograph was used to measure the change in the pavement ride index (PRI) and showed an improvement of over 60%. Caltrans plans to cover the ARAM with an Asphalt-Rubber Hot Mix (ARHM) overlay in three to five years (as phased construction), allowing the ARAM to be used as an interlayer and extending the life of the roadway to 15 years or more.



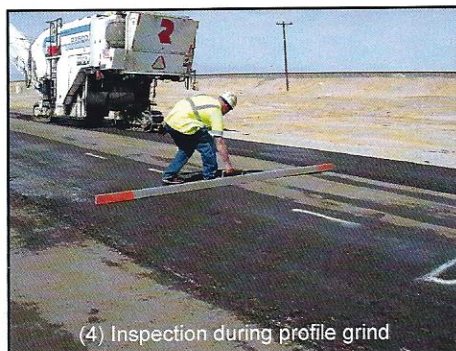
(1) Before condition



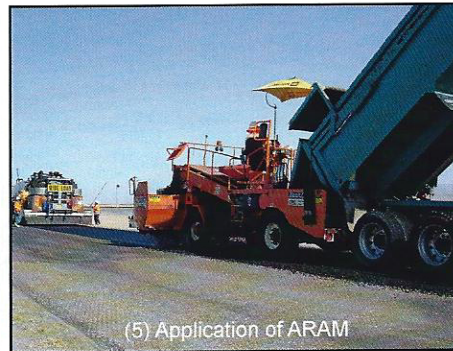
(2) Profilograph used to measure surface irregularities before and after the profile grinding



(3) Profile grind to remove surface irregularities



(4) Inspection during profile grind



(5) Application of ARAM



(6) Completed project

It should be noted that the ARAM surface was not covered with either conventional Hot Mix Asphalt (HMA) or ARHM. On more open, rural highways, ARAM with a flush coat (fog seal + sand) is often the final wearing surface and does not require an overlay or slurry. This helps to significantly reduce construction costs by eliminating the need for tons of expensive HMA, and by also reducing the time needed to complete the project. In addition, public inconvenience is minimized by the significant reduction in construction time. It's the merging of performance and fiscal responsibility.

Present and Future of ARAM

This last year has seen significant ARAM projects from both cities and counties, including **LA County** that has applied over 400,000 square yards (58 lane miles) since just last Summer 2011. WPMA even had a major ARAM seminar in November 2010 that included a comprehensive tour of an LA County project, from the ARAM mix site to a full application. In 2010 alone, LA County applied over two million square yards (284 lane miles) of ARAM.



LA County ARAM Project Tour



LA County - Summer 2010
Countrywood @ Flower Glen



After ARAM System 4

The **City of El Centro** just completed another large ARAM project in August 2012, applying over 370,000 square yards that utilized every ARAM System (Systems 1 - 4) on both residential and arterial streets. This was a follow-up to last year's project of over 290,000 square yards, which at the time was the largest single municipal ARAM composite layering system project in Southern California's history (a record they broke this year). Approximately 80 percent of El Centro's streets have now been rehabilitated with Asphalt-Rubber composite layering systems.

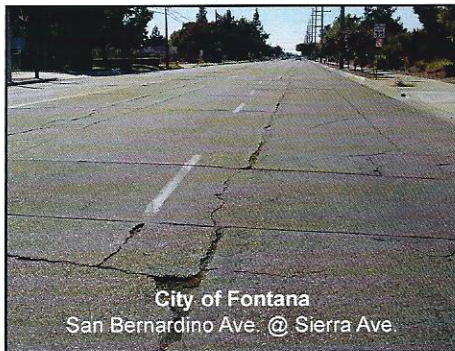


City of El Centro
8th St @ Centinela Ave



After ARAM System 3

The **City of Fontana** also had several significant ARAM projects in the last couple of years, starting with over 150,000 square yards in 2010 and following up with over 250,000 square yards in 2011. With decades of proven performance, ARAM will continue to provide cities like Fontana and other agencies with high quality, long lasting alternatives to reconstruction and other expensive conventional strategies. It's fiscally responsible. "Pavement rehabilitation projects utilizing ARAM provide cost savings, less construction time and similar performance as compared to typical removal and replacement methods," concluded Keith Kramer, Fontana Public Works Manager.



City of Fontana
San Bernardino Ave. @ Sierra Ave



After ARAM System 4



Caltrans Corner

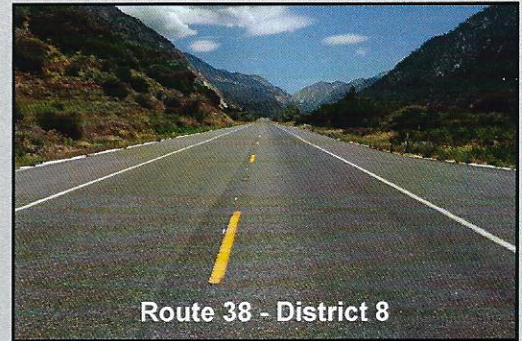


News Brief

Caltrans continuously tests new products as they arrive on the market, evaluating them for performance, environmental issues and cost. Asphalt-Rubber Aggregate Membrane (ARAM) applications are used by Caltrans for high performance seal coats and composite layering systems. Recent examples include Route 38 in District 8, Interstate 8 in District 11 and Interstate 5 in District 7. The advantages of ARAM include both cost effectiveness and performance.

Caltrans has many product options for seal coats, but continues to utilize ARAM because it extends the pavement life by 12 years or more, and has over 40 years of proven performance throughout California. Caltrans will soon begin work on an ARAM project in District 7 on Route 2, which is almost a million square yards (135 lane miles) and will recycle the equivalent of over 85,000 California scrap tires.

"Better roads, better environment."



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