

RUBBERIZED ASPHALT CONCRETE IN MENDOCINO COUNTY

Dated April 2, 2012

Summary

In light of the fact that the Mendocino County Air Quality Management District (District) has not been reviewed for over 10 years, the Grand Jury (GJ) chose to conduct a review this year.

This review revealed four central conclusions concerning the use of rubberized asphalt concrete (RAC) in Mendocino County:

1. The GJ became aware that the District is adding requirements and restrictions to the manufacture and use of RAC that results in additional costs to Mendocino County taxpayers.
2. The GJ wanted to inform all of Mendocino County Public Works agencies of the important benefits of RAC over conventional asphalt concrete (AC).
3. The GJ found that RAC has many benefits over conventional AC. This “green construction” uses scrap tires in the manufacture of RAC. Caltrans now uses RAC for their pavement overlays.
4. The GJ also found that the District is the only Air Management District in Northern California that requires an “odor control plan” and “neighborhood odor patrols” in order to manufacture and use RAC.

Methods

The GJ reviewed the following documents:

- Mendocino County Department of Transportation, October 2010, “Final Report for Grant TR127-08-10, FY 2008/09”
- Caltrans Report, November 2005, “Rubberized Asphalt Concrete, District 1 Project”, Mendocino County
- Caltrans Report, September 2008 “Evaluation of RAC Full Scale Projects: Mendocino County Highway 20”
- California Environmental Protection Agency FY 2008/2009 “Rubberized Asphalt Concrete Grant Programs”, application
- Cal Recycle, July 2011, “Rubberized Asphalt Concrete (RAC) Grants”
- Asphalt Rubber Technology Service, July 2011, “Benefits of Rubberized Asphalt”
- Rubber Pavement Association, July 2011, “Air Quality Issues and Best Management Practices with the Production of Asphalt-Rubber Asphalt Concrete”
- California Pavement Preservation Center, May 2010, “Evaluation of Terminal Blend Rubberized Asphalt in Paving Applications”
- District, February 2011, “Regulation 1, Air Pollution Control Rules”
- District, July 2011, permit #1080-2-01-11-33, “Authority to Construct” for rubberized asphalt concrete

- District, 2011, “Enforcement Policy and Procedure #7- Public Nuisance”
- February 2012, report by “Employers Council of Mendocino County”
- Caltrans, 2006, “Materials Testing Manual”

The GJ interviewed management and staff of the following agencies:

- Mendocino County Air Quality Management District
- Mendocino County Department of Transportation
- North Coast Air Quality Management District
- Mendocino County Board of Supervisors
- Caltrans, Maintenance Department
- Caltrans, Construction Department

The GJ interviewed management and staff of three different paving contractors:

- Air Quality Permit Engineer for Northern California
- Project Managers
- Senior Estimator
- Construction Engineers

Background

The benefits of RAC over conventional AC:

- State Scrap Tire Recycling Grant funds are available to public works agencies
- 1500 to 2000 scrap tires per lane mile are used in lieu of dumping scrap tires in a landfill
- Considered “Green Construction”
- There are cost savings and environmental benefits because the design thickness of RAC is 1/3 to 1/2 less than AC
- Reduces road noise
- Better skid resistance
- Reduces cracking in overlays
- RAC reduces maintenance costs
- RAC improves resistance to rutting from traffic use
- Improved drainage run-off due to open-graded surface

RAC has been tested for use for street and highway construction for nearly 30 years. Today, due to the State Scrap Tire Recycling Grant monies available, better manufacture and placement technology, and other benefits of RAC, Public Works Agencies now use RAC almost exclusively for street and highway overlay projects.

Approximately 33 million scrap tires are generated per year in California. Mendocino County Department of Transportation (DOT) used approximately 17,000 waste tires on their RAC project in 2010 in lieu of dumping them in the landfill.

RAC is manufactured by blending 15% to 20% ground scrap tires into AC and requires a lower manufacture temperature than AC.

Two states and the Northern California Rubberized Asphalt Concrete Technology Center conducted RAC studies, between 1994 and 2000. These studies compared emission factors between RAC and AC.

Some of the conclusion statements from these three studies include:

- “Rubber does not contribute significantly to any increase in undesirable compounds”
- “...air quality does not seem to be any more severe a problem than it is with conventional asphalt”
- Regarding RAC odor, “Fortunately, there are asphalt additives introduced at the plant that can significantly mediate this problem”.

It is noted that possible odors during placement of RAC are reduced when RAC is placed directly into a mixer and then placed in the paving machine.

One of the ways that a RAC odor may occur is to over-heat the RAC mix. There is a public agency inspector at the plant to ensure that this does not happen.

Once a year Caltrans inspects and certifies asphalt plants that produce RAC and AC products. Caltrans ensures that the plants are operating properly and produce the designed mix as specified, as well as check for any environmental issues.

The GJ interviewed staff and management personnel from a number of construction contractors, Caltrans Engineers, and other Air Management Districts in Northern California. In addition, the GJ reviewed RAC construction reports, RAC technical reports and studies, and District regulations.

The GJ interviewed a construction contractor’s Environmental Specialist (ES) whose job is to secure air quality permits for RAC projects from all the Air Management Districts from Fresno to the Oregon border. The ES stated that Mendocino County was the only County in Northern California that issued temporary permits and required contractors to conduct “odor surveys” when using RAC. The ES also stated that RAC is no different from conventional AC regarding odor and other air quality issues.

The Grand Jury interviewed other Northern California Air Districts and contractors, who also indicated that Mendocino County was the only Air District that was concerned enough about RAC odor that they felt the need to require “odor patrols”.

Caltrans reported in their 2005 construction study of RAC in Mendocino County, that RAC projects in Mendocino County were "...halted by the District because of concerns related to potential pollution of air quality."

In 2008, Caltrans paved a five-mile RAC "test project" on Highway 20, "... to try to relieve the concerns of Air Quality Districts and revitalize the use of RAC in Mendocino County". Extensive sampling and testing were performed on this 5.1-mile test strip to try to convince the District that RAC emissions and odor are no different from conventional AC. Also this report stated, "...there was no noticeable odor or irritation from any of the products placed".

In 2010, DOT took advantage of the State Tire Recycling Grant and received \$59,300 toward the use of RAC on their North State Street project. The District required the contractor to prepare an "odor control plan" and conduct "odor patrols". The District issued a temporary permit for this project only. Daily RAC production rates were limited. Also, DOT stated in their Grant Report for RAC, "The local AC plant was not suitable for producing RAC due to air quality issues".

As a result of this and other District restrictions, the contractor chose to manufacture and truck the RAC from Sonoma County instead of using the North State Street plant. The **additional** cost to Mendocino County taxpayers to truck RAC from Sonoma County was approximately \$80,000.

Findings

1. The County Board of Supervisors is the District Board of Directors.
2. RAC projects divert waste tires from the landfill.
3. RAC street and highway surfaces provide a quiet ride for the traveling public.
4. The design thickness of RAC is less than AC.
5. RAC is not a new, untested product.
6. There are State Tire Recycling Grant Funds available to Public Works agencies that use RAC on their projects.
7. Extensive studies and testing of RAC by numerous government agencies and industry associations indicate that there are no significant differences between AC and RAC air emissions.
8. Extensive studies and testing of RAC by numerous government agencies and industry associations indicate that there is not an issue with RAC regarding odor.
9. Methods to mitigate any possible RAC odor at the manufacturing plant are to use "warm-mix" RAC, maintaining low temperatures, or inclusion of an "asphalt additive" to the RAC mix.
10. The District uses California Health and Safety Code, which defines odor as a public nuisance.
11. The District has determined that odor is considered a "public nuisance violation" when there are three or more complaints to the District in a 24 hour period.

12. There have never been three RAC odor complaints to the District in any 24-hour period.
13. The District requires construction contractors to prepare an “odor control plan” and to conduct “neighborhood odor patrols” as conditions on their RAC permits.
14. The District is the only Air Quality Management District in Northern California to require contractors to provide RAC odor mitigation plans and conduct RAC odor patrols.
15. Mendocino County taxpayers continue to pay the additional costs associated with manufacture and hauling of RAC from outside Mendocino County.

Recommendations

The Grand Jury recommends that:

1. Mendocino County Public Works agencies (Cities of Willits, Fort Bragg, and Ukiah and the DOT) use RAC for their projects for pavement top lift and overlays. (Findings 2-6)
2. Mendocino County Public Works agencies take advantage of the State Tire Recycling Grant funds. (Findings 2-6)
3. To increase transparency, Mendocino County Public Works agencies clearly state in their bid documents for RAC projects those District permit requirements that could increase the bid prices. (Findings 13–15)
4. The District work cooperatively with the owner-operators of all asphalt plants to help each other achieve their desired goals. (Findings 2-9)
5. The District conduct self-funded odor monitoring. (Findings 5, 7-14)
6. The District reconsiders the need and value to the taxpayers for RAC odor plans and neighborhood patrols. (Findings 5, 7-15)
7. The District be aware of what other Air Management Districts in the State are doing. (Findings 5, 7, 12, 15)

Discussion

District stated that they had not received three complaints regarding odor of RAC in any 24-hour period. In spite of this, and the results of the numerous RAC studies and test projects, the District still requires “odor control plan” and “odor monitoring” on RAC projects in Mendocino County.

The GJ found that the District discourages the use and increases the cost of this twentieth century, “green” product with all of its benefits, by making it easier for contractors to manufacture and haul RAC from outside Mendocino County.

In the 2012 Employers Council of Mendocino survey, businesses stated that one of the biggest obstacles to getting economy back on track was “getting local government to reduce regulation”.

When well-intentioned regulations and restrictions are required of the paving contractors, it increases the bid prices and costs the taxpayers more. The RAC odor plan and neighborhood patrols were arbitrary. No other Air District in the Northern California requires them, and the cost impacts to taxpayers were not considered.

The District seems to be overly concerned about possible RAC issues and treats RAC as a new, untested product.

The District RAC odor plan and monitoring requirements are superfluous regulations, especially in lieu of the fact that multiple testing and studies over the years have shown no significant odor issues. Also, it is important to note that no other Air Districts in the Northern California require these special regulations. The GJ states “Northern California” only because Southern California Air Districts were not contacted.

The cost to taxpayers for RAC odor monitoring is about \$2,100 per project. However, when combined with all the other restrictions and requirements, it encourages contractors to truck RAC from outside Mendocino County. This results in Mendocino County taxpayers paying a higher price for RAC.

Required Responses

Mendocino County Board of Supervisors (All Findings) (All Recommendations)

Mendocino County Air Quality Management District (All Findings) (All Recommendations)

Mendocino County Department of Transportation (Findings 2-9, 15)
(Recommendations 1-3)

City of Ukiah Department of Public Works/Engineering; (Findings 2-9, 15)
(Recommendations 1-3)

City of Fort Bragg Department of Public Works/Engineering (Findings 2-9, 15)
(Recommendations 1-3)

City of Willits Department of Public Works/Engineering (Findings 2-9, 15)

(Recommendations 1-3)