RUBBERIZED ASPHALT CONCRETE TECHNOLOGY CENTER

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COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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September 23, 2004

IN REPLY PLEASE
REFER TO FILE: GME-5

Ms. Cheryl Peace
California Integrated Waste Management Board
Cal-EPA Building
1001 "I" Street
Sacramento, CA 95812-4025

Dear Ms. Peace:

COUNTY OF LOS ANGELES
RUBBERIZED ASPHALT CONCRETE TECHNOLOGY CENTER
PROPOSAL FOR 5-YEAR PLAN

Enclosed for your initial review and comments are our County of Los Angeles, Southern California Rubberized Asphalt Concrete Technology Center proposed projects totaling $6,818,000 for fiscal years 2005-06 through 2007-08 to be incorporated in the Five-Year Plan for the Waste Tire Recycling Management Program (Five-Year Plan) as summarized in Table 1. We are interested in all of the five program elements in the Five-Year Plan. However, at this time we are submitting our proposal under two program elements (1) Research Directed at Promoting and Developing Alternatives to Landfill Disposal of Tires and (2) Market Development and New Technology Activities for Waste and Used Tires.

We are proposing a total of 12 research and development projects, 10 projects under *Research Directed at Promoting and Developing Alternatives to Landfill Disposal of Tires* as described further in Enclosure A, and two projects under *Market Development and New Technology Activities for Waste and Used Tires* as described further in Enclosure B. All of the proposed projects were based on the information we received from public agencies, trade, and general public during our marketing and outreach campaigns of RAC.

Following the receipt and address of your comments, we will submit our proposal to the Special Waste Work Committee Public Workshop by October 27, 2004. We intend to attend the workshop on September 29, 2004, to introduce and discuss our proposal.

Should you need additional information, please contact me at (626) 458-4911 or Ms. Babauta, Assistant Program Director, at (626) 458-4989.

Very truly yours,

REZA IZADI
Program Director
Southern California Rubberized Asphalt Concrete Technology Center

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cc: California Integrated Waste Management Board and Board Staff (Rosario Marin, Linda Moulton-Patterson, Carl Washington, Michael Paparian, Rosalie Mule, Mark Leary, Jim Lee, Nate Gauff)

DRAFT

ENCLOSURE A
Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires

SCOPE OF WORK

Recycling Programs

Project 1: Feasibility Study on Engineered Compacted Fill
Research and evaluate the performance of constructing engineered compacted fill utilizing crumb rubber from recycled waste tires. This activity will consist of (1) determining the strength characteristics, design parameters, durability, and environmental effects of crumb rubber in engineered fill, (2) identifying civil engineering applications on Public Works projects and other commercial uses, and (3) preparing a Feasibility Study Report.

Proposed Funding FY 05-06: $73,000

Project 2: Feasibility Study on Pre-cast Concrete
Research and evaluate the use of crumb rubber in pre-cast concrete. The activity will consist of (1) determining the strength characteristics, design parameters, durability, and environmental effects of crumb rubber in pre-cast concrete, (2) Identifying structural applications and commercial applicability, and (3) Preparing a Feasibility Study Report.

Proposed Funding FY 05-06: $ 96,000

Recycle Rubberized Asphalt Concrete (RAC)

Project 3: Recycled RAC
Recycle three RAC roadways made with each of the three processes (wet, dry, and terminal blend). Determine the technical parameters, operational capabilities, and economic viability of recycling RAC including identifying any environmental effects. The activity will consist of (1) selecting roads approximately one mile long one from each of the three process, (2) developing the mix-designs utilizing recycle RAC and determining the optimal percentage of RAC to be added to a virgin mix, (3) developing field and plant inspection, (4) constructing the roads, (5) monitoring the performance of recycle RAC by deflection testing, (5) developing project specifications regarding the design, manufacturing, and construction of RAC, and (6) developing training program to transfer the technology to local agencies.

Proposed Funding FY 05-06: $102,000
Proposed Funding FY 06-07: $342,000
Proposed Funding FY 06-07: $ 80,000

Rubberized Asphalt Concrete (RAC) Study

Project 4: RAC Service Life
Quantify the service life of RAC and develop an empirical model of the performance of RAC for each of the three processes (wet, dry, and terminal blend). The study on

existing RAC pavement will consist of (1) field evaluation at 2 years, 5 years, and 10 years; (2) deflection testing with engineering analysis and calculations; (3) coring and subgrade testing (CBR testing); and (4) development of an empirical performance model of each of three processes that can be used in a pavement management applications to forecast performance condition levels and determine future rehabilitation needs and cost.

Proposed Funding FY 05-06: $ 90,000
Proposed Funding FY 06-07: $120,000
Proposed Funding FY 07-08: $ 60,000

Project 5: RAC Utility Cut Patching
Determine the effects of utility cut patch with conventional asphalt concrete on the RAC pavement's life span and rehabilitation costs of RAC. The activity consist of (1) selecting and developing empirical performance measures on major (freeways) and local (arterial) RAC roads with utility cut patched with 0-2 years, 3-5 years, and 6-10 years; (2) performing condition surveys, deflection testing, coring, and subgrade testing; and 3) preparing a report.

Proposed Funding FY 05-06: $ 75,000
Proposed Funding FY 06-07: $120,000
Proposed Funding FY 07-08: $ 65,000

Project 6: Feasibility Study of RAC on Racetracks
Research and evaluate the feasibility of using of RAC on racetracks. The activity will consist of (1) determining the effectiveness and durability of RAC in racetracks, (2) evaluating different mix-designs and RAC processes that would produce optimal results, and 3) preparing a Feasibility Study Report.

Proposed Funding FY 05-06: $ 78,000
Proposed Funding FY 06-07: $ 60,000

Project 7: Feasibility Study of RAC on Airport Pavement
Research and evaluate the feasibility of using of RAC on airport runways or taxiways. The activity in airport runways and taxiways will consist of (1) researching the strength design parameters of RAC, (2) determining the effectiveness and durability of RAC, (3) evaluating different mix-designs and RAC processes which would produce optimal results, and (4) preparing a Feasibility Study Report.

Proposed Funding FY 05-06: $104,000
Proposed Funding FY 06-07: $ 68,000

ENCLOSURE A
Research Directed at Promoting and Developing
Alternatives to the Landfill Disposal of Tires

Project 8: Improving the Cost and Availability of RAC
Research and evaluate on means to improve the cost and availability of RAC in California. The activity will consist of (1) identifying outstanding issues (2) collaborating with the industry, and (3) providing the recommendations and findings in the report for the CIWMB Board.

Proposed Funding FY 06-07: $45,000

Rubberized Asphalt Concrete Construction Projects (Proposed New Line Item)

Project 9: RAC Pilot Program for the City of Los Angeles
Construct one RAC roadway segment for the City of Los Angeles to market the benefits of RAC. The activity will consist of (1) selecting the road suitable for RAC, (2) designing RAC structural sections, (3) selecting appropriate mix design (4) constructing RAC including administering quality assurance/control (inspection), and (5) monitoring RAC performance.

Proposed Funding FY 05-06: $65,000

Project 10: RAC Pavements in Extreme Climates
Construct two RAC pavements, one in an extreme mountain-snow region and the other in a desert heat region. The activity will consist of (1) selecting roads located in regions with extreme climates suitable for RAC, (2) designing RAC structural sections, (3) selecting appropriate mix design (4) constructing RAC including administering quality assurance/control (inspection), and (5) monitoring RAC performance.

Proposed Funding FY 05-06: $110,000
Proposed Funding FY 06-07: $590,000
Proposed Funding FY 07-08: $175,000

ENCLOSURE B
Market Development and New Technology Activities for Waste and Used Tires

SCOPE OF WORK

Project 1: Market, Design, and Construct Play Ground Cover, Track, and Other Recreational Surfaces to Local Government Agencies

Market, design, and construct playground cover, track, and other recreational surfaces to local governments throughout the state. The activity will consist of (1) promote and provide statewide outreach, (2) develop and disseminate educational and informational materials (i.e. brochures, flyers, and market materials, (3) provide consultation services and technology transfer to local governments, (4) develop and maintain an Internet website to be incorporated with the Center's existing website, (5) Manage and administer a grant program for the IWM Board, and (6) develop design plans for the school selected by the IWM Board, and secure concurrence with all stakeholders. This activity will be in partnership with the Center's activities under project 2.

Proposed Funding FY 05-06:	$ 800,000
Proposed Funding FY 06-07:	$1,000,000
Proposed Funding FY 07-08:	$1,000,000

Project 2: Southern California Rubberized Asphalt Concrete Technology Center

Continue Center operations on a full-time basis with enhanced services of promoting RAC statewide by providing technology transfer to local governments through direct consultation, conducting local and regional workshops, and providing information materials. The activity will consist of (1) promote and provide statewide outreach (2) develop and disseminate educational and informational materials (i.e. brochures, flyers, and market materials), (3) provide consultation services and technology transfer to local governments, and (4) maintain Internet website and toll-free phone. The activity will fund the Southern Center only but will be in partnership with the Northern Center.

Proposed Funding FY 05-06:	$500,000
Proposed Funding FY 06-07:	$500,000
Proposed Funding FY 07-08:	$500,000

TABLE 1
BUDGET FOR PROPOSED PROJECTS FOR FIVE-YEAR PLAN

Project No.	Program Area	FY 2005/06	FY 2006/07	FY 2007/08	Total
Budget for Research Directed at Promoting and Developing Alternatives to the Landfill Disposal of Tires					
1	Feasibility Study of Engineered Compact Fill	$73,000			$73,000
2	Feasibility Study on Pre-cast Concrete	$96,000			$96,000
3	Recycle RAC	$102,000	$342,000	$80,000	$524,000
4	RAC Service Life	$90,000	$120,000	$60,000	$270,000
5	RAC Utility Cut Patching	$75,000	$120,000	$65,000	$260,000
6	Feasibility Study of RAC on Racetrack	$78,000	$60,000		$138,000
7	Feasibility Study of RAC on Airport Pavement	$104,000	$68,000		$172,000
8	Improve Cost and Availability of RAC	$45,000			$2,518,000
9	RAC-City of LA Construction Project	$65,000			$65,000
10	Feasibility Study of Engineered Compact Fill	$73,000			$875,000
Budget for Market Development and New Technology Activities for Waste and Used Tires					
11	Promote Market Playground Covers, Track, and Other Recreational Surfaces	$800,000	$1,000,000	$1,000,000	$2,800,000
12	SCRACTC	$500,000	$500,000	$500,000	$1,500,000
	Totals	**$2,338,000**	**$2,800,000**	**$1,880,000**	**$6,818,000**