REQUEST FOR APPROVAL

To: **Howard Levenson**
Deputy Director, Materials Management and Local Assistance Division

From: **Brenda Smyth**
Branch Chief, Statewide Technical and Analytical Resources Branch

Request Date: May 1, 2012

Decision Subject: Approval of Scope of Work and the California University of San Diego (UCSD) as the Contractor for the Large-Scale Measurement of Internal and Interface Shear Strength of Tire Derived Aggregate Contract (Tire Recycling Management Fund, FY 2011/12)

Action By: May 10, 2012

Summary of Request:

Staff requests the approval of the Scope of Work (SOW) and California University of San Diego (UCSD) as the contractor for the Large-Scale Measurement of Internal and Interface Shear Strength of Tire Derived Aggregate Contract.

Recommendation:

Staff recommends that CalRecycle enter into the contract with UCSD using FY 2011/12 funds allocated in the Research section of the Five Year Tire Plan (6th Edition). This contract will be funded in an amount not to exceed $149,000 for the tasks outlined in the attached Scope of Work.

Deputy Director Action:

On the basis of the information and analysis in this Request for Approval and the findings set out below, I hereby approve the Scope of Work and UCSD as Contractor to perform the Large-Scale Measurement of Internal and Interface Shear Strength of tire Derived Aggregated Contract in an amount not to exceed one hundred forty nine thousand dollars ($149,000) as summarized in the table below.

Contract	Fund Source	Amount Available	Amount to Fund Item	Amount Remaining	Line Item
Large-Scale Measurement of Internal and Interface Shear Strength of Tire Derived Aggregate	Research –CE Applications for Waste Tires, FY 2011/12 Funds	$500,000	$100,000	$400,000	TDA CE Tech & Construction Mgmt support
	Research on Highway Construction Applications using Waste tires, FY 2011/12 Funds	$500,000	$49,000	$451,000	TDA CE Tech & Construction Mgmt support

Dated: 5/1/12

Howard Levenson

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Deputy Director

Attachment: Scope of Work

Background Information, Analysis, and Findings

CalRecycle has been working for more than 13 years to develop Tire-Derived Aggregate (TDA) technology and promote the use of TDA in civil engineering applications in California. During that time, CalRecycle has designed and constructed numerous successful TDA projects. To complete the designs for these projects, it was important to determine the material properties for TDA. One of the most important TDA material properties is shear strength, as it is critical in the design of the light-weight fill applications (i.e., landslide repair and retaining walls).

CalRecycle is currently working with Caltrans and the University of California, Davis to conduct a shake table test using a Type 1 wall with a TDA backfill. Once the shake table test is complete, the data will be analyzed using numerical models to predict the actual effect on a retaining wall with a TDA backfill material. To obtain the best results from the numerical modeling analysis, accurate shear strength measurements for TDA are needed.

Shear strength is typically determined through standard soil testing procedures. However, due to the large particle size of TDA (3 to 12 inches) standard soil testing apparatus cannot accommodate TDA. As a result, current TDA light-weight fill projects are designed using very conservative estimates of shear strength (essentially zero), which has still resulted in significant performance benefits and cost savings over using conventional light-weight materials in projects completed to date. The purpose of this study is to fabricate a testing apparatus that can accommodate the larger particle size of TDA samples. This will utilize test methods that more accurately replicate conditions where TDA is placed in actual field projects, which will provide more accurate shear strength data and ultimately better definition of performance benefits and cost savings to local and state government projects using TDA.

CalRecycle will enter into an interagency agreement with UCSD to complete this research. Proposed funding for this contract will utilize $100,000 from FY 2011/12 funds allocated to the Civil Engineering Applications for Waste Tires and $49,000 from FY 2011/12 funds allocated to the Research on Highway Construction Applications using Waste Tires from the Research Section of the 6th Edition of the Five Year Plan.