

**Rock Products Committee**  
**Scoping Document**  
**Roller Compacted Concrete**  
**June 28, 2012**

**Task Group**

Concrete Task Group

**Title**

Roller Compacted Concrete

**Issue/Problem Statement**

Caltrans has no adopted specifications for roller compacted concrete (RCC). The Department desires to have RCC as an option for constructing pavements in shoulders and temporary detours because of its potential lower construction and maintenance costs.

**Background**

Roller compacted concrete (RCC) is conventional concrete with so little water that it must be rolled to compact it in place, similar to asphalt concrete. The finished product looks the same as conventional concrete in color but varies in the texture, as there are many factors that go into the texture. The cement content of roller compacted concrete is much lower than in similar strength conventional concrete, 15 to 30 percent less.

First used in the United States to construct an airport runway in 1942 and later used in Canadian log sorting yards in the late 1970s, roller compacted concrete has come of age 50 years later. Most modern use of roller compacted concrete is for industrial parking a loading zones (e.g. prt facilities) with the first highway related use in Georgia as concrete shoulder. General roadway use has become isolated to shoulders, low speed roads, or used as a "base" for a thin asphalt wearing course. The main impediment to using it for high speed highways is the smoothness.

**Purpose**

As a good steward of the California environment Caltrans must continue to seek new and innovative ways of constructing the transportation infrastructure. With RCC as a standard pavement option for designers a more economical low maintenance paving material will be available.

**Objectives/Deliverables**

Construct roller compacted pavements and bases. Modify specifications as needed. Related work that is outside the scope of this task is to create inspection guidance, design procedures and Highway Design Manual updates to enable districts to comfortably select and use this option.

### **Timeline**

Draft specification has been prepared and pilot projects must be built to evaluate constructability. Goal is to have a Standard Special Provision (SSP) developed and piloted by July 2013 for publication by October 2013.

### **Benefits**

The principal benefits of using roller compacted concrete as an alternate pavement type include rapid constructability, high strengths, high stability, low cost, low maintenance, environmentally friendly, and light colored material.

### **Impacts**

Design procedures, QC/QA and inspection guidelines will need to be developed. Training for inspection personnel will have to be developed. Construction time will be reduced resulting in earlier opening to traffic. Where RCC replaces HMA maintenance costs will be reduced.

### **Resource Requirements**

Approximate resource requirement is 0.80 PY to help Districts develop pilot projects and to review construction of pilot projects along with revising and publishing new standard special provision for RCC. Travel will be required to support and evaluate construction of pilot projects using draft RCC specification.

Deliverables	Description	Resource PYs
1. Pilot Projects	Project support for pilot specification for concrete, pavement and base specifications.	Pavement 0.15
2. Design Guidance	HDM Guidance for Designers to design pavement structure with RCC.	Pavement 0.15

Deliverables	Description	Resources PYs
3. Specifications	Revise specifications according to experiences from pilot projects. Submit for final reviews and concurrences.	Pavement 0.15
		METS 0.10
		Construction 0.10
		Office Engineer 0.05
5. Construction Guidance	Guidance for field administration procedures.	Construction 0.10
		Pavement 0.45
		METS 0.10
		Construction 0.20
Total Resource Requirements		Office Engineer 0.05

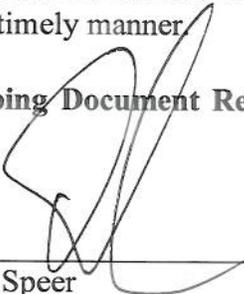
**Impediments to Completion of Deliverables**

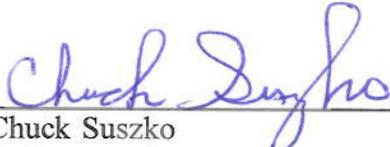
RCC is an established technology that is being used in other states but the material has never been used for pavement of any sort by Caltrans. In California few contractors have worked with the material and construction methods.

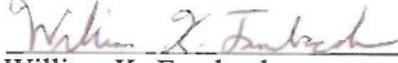
**Recommendation and Approval**

This scoping document for Roller Compacted Concrete was prepared by Concrete Task Group to address a priority issue that has Statewide significance and is within the Rock Products Committee mission. The Task Group Co-Chairs have determined the scope, resources required and timeline for delivery of this project to ensure that the deliverables are achievable in a timely manner.

**Scoping Document Recommended for Approval by:**

  
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Approval Date: 7-23-12