

# Rock Products Committee

## SCOPING DOCUMENT

### Evaluation of Concrete Pavement Represented by Low Flexural Strength Test Results

October 27, 2015

#### Task Group

Concrete Task Group

#### Title

Evaluation of Concrete Pavement Represented by Low Flexural Strength Test Results

#### Problem Process

- Annual  
 Expedited  
 Emerging Initiative

#### Issue/Problem Statement

Low flexural strength results may not always be indicative of low-strength in-situ concrete. Many external factors can affect the indicated beam strength. Statistically, low break strength results will occur, but no procedures are in-place to evaluate reported low strength results and determine whether they are representative of the in-situ concrete. Currently the only procedure relevant to low flexural strength test results is to reject the concrete pavement and the contractor is required to remove and replace the concrete pavement.

#### Background

When issues arise with regard to low flexural test results for concrete paving the only contractual option that Caltrans has is to reject the pavement and the Contractor is required to remove and replace the concrete pavement. This can lead to removal and replacement of concrete pavement that may be suitable for the intended use.

At times, contractors and the Department have agreed to further investigate and verify the quality of the in-place concrete quality when flexural strength test results were noncompliant. These additional investigations can lead to the concrete remaining in place or being removed and replaced.

With no standardized statewide procedures, there has been a wide variety of investigation plans, along with different criteria used to evaluate the quality of the in-place concrete. These inconsistencies have led to claims and project delays.

#### Purpose

Identify the best practices investigating and mitigating noncompliant flexural strength tests.

Develop a protocol for how to evaluate low flexural test results and consider modifying current acceptance criteria specifications to accommodate additional evaluation.

**Objectives/Deliverables**

The objective of this activity is to provide a statewide procedure (via specification revision) to evaluate concrete pavement where low flexural strength test results have been experienced and to recommend acceptance criteria based on the results of the evaluation procedure.

1. Perform literature search and analyze best practices used by Caltrans and nationally. Consider sources including the US Navy, FAA, AASHTO, and Southern CA Green Book.
2. Document analysis of potential options for evaluating low flexural strength test results and make recommendations for an evaluation protocol.
3. A decision document that analyzes possible options to evaluate concrete pavement represented by low flexural strength test results and recommends an evaluation procedure and acceptance protocol based upon the evaluation procedure for pavement concrete with low flexural strength test results.
4. Based on the decision document, prepare a proposed specification to evaluate concrete pavements represented by low flexural test results and provide a protocol for acceptance based upon the evaluation procedure.

**Timeline/Resources**

<b>Deliverable</b>	<b>Anticipated Completion</b>
1. Perform literature search and analyze best practices used by Caltrans and nationally	April 1, 2016
2. Document analysis of potential options to evaluate low flexural strength test results and make recommendations.	June 1, 2016
3. Prepare a decision document that analyzes possible options to evaluate concrete pavement represented by low flexural strength test results, including an option that has a recommended acceptance protocol following an evaluation procedure triggered by low flexural strength test results.	July 15, 2016
4. Pursuant to the recommended option within the decision document, prepare draft specifications to implement recommendation.	August 30, 2016

**Benefits**

- Has the potential to reduce disputes on projects with regard to flexural strength test results, therefore reducing change orders and litigation costs.
- Produces a specification that can be implemented throughout the state for uniform resolution of low-flexural strength results on concrete pavements.

**Possible Impacts**

- Fewer Change Orders
- Fewer Claims
- Fewer Delays
- Additional Expenses to Investigate Low Flexural Strength Results

**Resource Requirements**

	Perform literature search and current practices	Document analysis	Prepare decision document	Prepare a proposed specification to revise section 40	Total PYE's
<b>Caltrans</b>					
Pavement	0.05	0.05	0.05	0.05	0.20
DES METS	0.02	0.02	0.03	0.03	0.10
Construction	0.02	0.02	0.03	0.03	0.10
District	0.01			0.01	0.02
Office Engineer				0.02	0.02
Legal				0.05	0.05
Caltrans Total PYE's					0.49
<b>Others</b>					
Industry	0.02	0.01	0.01	0.01	0.05
FHWA				0.05	0.05
Other Total PYE's					0.10

### **Impediments to Completion of Deliverables**

- Lack of coordination and contribution of task sub group members.
- Lack of human and material resources.
- Lack of support by managers, functional units, and staff.
- Lack of staff to provide adequate training for implementation.
- New procedures may require more resources and time to complete. If this is the case, need to document conclusions in a report and propose a new Scoping Document with an updated resource estimate.

### **Recommendation and Approval**

This scoping document for evaluation of concrete pavement represented by low flexural strength test results was prepared by the 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:**

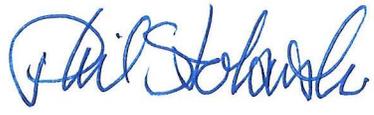
  
\_\_\_\_\_  
Robert Hogan  
Concrete Task Group Co-Chair

  
\_\_\_\_\_  
Chuck Suszko  
Concrete Task Group Co-Chair

  
\_\_\_\_\_  
Sue Hida  
Concrete Task Group Co-Chair

**Scoping Document Approved by:**

  
\_\_\_\_\_  
Jesse Bhullar  
Caltrans RPC Co-Chair

  
\_\_\_\_\_  
Phil Stolarski  
Caltrans RPC Co-Chair

  
\_\_\_\_\_  
John Stayton  
Caltrans RPC Co-Chair

  
\_\_\_\_\_  
Tom Ostrom  
Caltrans RPC Co-Chair

Approval Date: 01-26-2016