Task Group
Pavement Preservation Task Group (PPTG)
DES Bridge Preservation Committee

Problem Process
☒ Annual
☐ Expedited
☐ Emerging Initiative

Title
Concrete Spall Repair

Problem Statement
Standard specifications for spall repair are limited to fast-setting cementitious or polyester grout materials even though alternative pozzolanic and polymeric materials have performed successfully in other states and in district maintenance applications on pavements and bridge decks.

Background
In 2011, Rock Products Committee Pavement Preservation Task Group Project 10 “Spall Repair” was initiated because Caltrans did not have specific guidelines, materials selection criteria, or standard plans for constructing spall repairs. The lack of guidance and a standard plan resulted in a variety of construction methods. Various performance levels for spall repairs were noted by district maintenance personnel and it is unknown if the premature failures were related to the materials or installation practice. In July 2013, revised specifications and a new standard plan for spall repairs were published for concrete pavement spall repair.

To continue to make improvements in spall repairs, a joint working group between the Pavement Preservation Task Group (PPTG) and Division of Engineering Services (DES) Bridge Preservation Committee will be formed to identify the best practices and materials for spall repairs for both concrete pavement and bridge repair.

Based on the engineering analysis of the work group, material performance criteria will be established to create an Authorized Materials List for concrete repair materials.

Purpose
To improve concrete spall repair performance and reduce future highway maintenance costs and worker exposure to traffic because of failed spall repairs. Longer lasting spall repairs reduce Caltrans liability for public claims of vehicle damage due to failing spall repair pot holes, traffic delays, and road user costs from lane closures necessary to patch or replace failed spall repairs. Spall repair is labor intensive and longer lasting materials will result in much more cost effective repairs.
Objectives/Deliverables
The objective is to identify best practices, materials, and critical performance factors for partial depth repairs and implement these practices through updated specifications, standard plans, authorized material list and guidance documents.

The deliverables necessary to accomplish these objectives are:

- Develop materials criteria for an Authorized Material List:
  - Identify materials currently favored by maintenance based on usage.
  - Research appropriate material parameters/thresholds to develop specifications and criteria for a product being placed on Authorized Material List. Analyze manufacturer product data sheets and national practices. (work group)
  - Survey manufacturers and request submittal of actual test data. (METS/ Structural Materials and Pavement) Products without property test data will be excluded from the Authorized Material List.
  - Establish ranges and thresholds for desired materials properties (work group).
  - Develop criteria and procedures for concrete patching material Authorized Material List. (work group)
  - Populate and maintain database
  - Conduct regular Performance Evaluation of Materials

- Incorporate updates into revised standard specification combining pavement and structures concrete repair materials. (work group)

Timeline

- Authorized Materials List established by February 2014
- Revised specifications in time for 2015 Standards publication in July 2014
- Updated Guidance September 2014
- Training December 2014

Benefits

- Improved design and construction practices will increase repair durability and cost effectiveness.
- Reduce highway worker exposure to traffic while fixing failed spall repairs.
- Increase use of an effective preservation strategy
- Reduce demand for more expensive repairs such as slab replacements
Impacts

- Additional standardized spall repair materials
- New standards for concrete spall repair.
- Guidance and training to support statewide usage.

Initial Resource Requirements

<table>
<thead>
<tr>
<th>Deliverable</th>
<th>Target Date</th>
<th>Notes</th>
<th>Notes</th>
<th>PY</th>
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</thead>
<tbody>
<tr>
<td>1. Conduct Survey with Bridge and Highway and Maintenance Personnel</td>
<td>12/31/13</td>
<td>Collect Feedback on current repair products to be used</td>
<td>Construction</td>
<td>0.05</td>
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<td></td>
<td></td>
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<td>METS</td>
<td>0.1</td>
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<td>Pavement Program</td>
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<td>0.25</td>
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<tr>
<td>2. Authorized Material List</td>
<td>3/1/14</td>
<td>Develop based on producer data and material properties</td>
<td>Identify materials/ properties/ thresholds</td>
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<td></td>
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<td>Compare product data and develop Authorized Material List</td>
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<td>Populate/ maintain database (6QAT function)</td>
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<td></td>
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<tr>
<td>3. Revised Standard Specifications</td>
<td>7/1/14</td>
<td>Develop updated material properties or a pre-qualified products list that may include some additional alternative materials or eliminate poor performing products. Combine bridge and pavement concrete repair material specifications to avoid unnecessary duplication in standards.</td>
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<td>4. Updated guidelines</td>
<td>9/1/14</td>
<td>For the design and construction of concrete pavement spall repairs</td>
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<tr>
<td>5. Training</td>
<td>12/1/14</td>
<td>Scope could include slides, training presentation, online resources, interactive online class</td>
<td>Pavement (project coord)</td>
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<td></td>
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<td>Construction</td>
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<td>DES-OE</td>
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<td>Structures</td>
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Annual Resource Requirements

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<tbody>
<tr>
<td>Maintenance of Authorized Material List</td>
<td>Ongoing</td>
<td>Develop based on producer data and material properties</td>
<td>Periodic Evaluation of Materials on AML</td>
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<td>Investigation of New Materials</td>
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<td>Evaluation of Field Performance</td>
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Impediments to Completion of Deliverables

None
Recommendation and Approval

This scoping document for Concrete Spall Repair was prepared by the Pavement Preservation 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.

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Approval Date: 8/5/13