Seal Coat P²S² & E
(Plans, Packaging, Strategy Selection, Specifications, and Estimates)

Western Regional Association for Pavement Preservation

Workshop
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Erik Updyke, P.E.
Los Angeles County Department of Public Works
Construction Division
Strategy Selection Considerations:

- **Existing Pavement Condition:** Be realistic about performance expectations.

- **Weather:** Strategy selected must be compatible with weather to be encountered during delivery.

- **Community:** Urban vs. rural; residential vs. commercial vs. industrial.

- **Traffic:** Volume, traffic index, posted speed.
Micro-milling: Cold milling using a special drum with more (approx. 3X) and closer spaced (2/10” apart vs. 5/8” apart) teeth than a standard cold milling drum resulting in a finer pavement texture (lower rib height). Done prior to seal coat application to remove previous surface treatments and provide a smoother riding surface.
**RAP Aggregate:** RAP aggregate is aggregate produced from reclaimed asphalt pavement which has been crushed and processed into aggregate for slurry seal and micro-surfacing, or screenings for chip seals. Aggregate quality similar to that for hot mix.
Strategy Selection Considerations:

- **Expectations:** Residents, users, elected officials.

- **Slurry/Micro/Cape/Resurfacing:** Same neighborhood + adjacent streets + different strategy = Formula for Complaints.

- **Cost-Effectiveness/Economies of Scale:** Small quantities = high unit prices. Over-treatment/under-treatment of some segments may be necessary to so achieve.

- **Strategy Selection:** Is not an exact science (if... then ... else do). Attempt to make the “best fit.”
Scope Considerations:

- **Crack Sealing:** Needed?
- **Strategy (Project Level):** Different strategies (seal coat vs. overlay) in same neighborhood can generate questions and concerns from residents. Why doesn’t my street look like that one?
- **Concrete Work:** Must be constructed first. Associated tree work? ADA compliance?
- **Digouts?**
- **Other Work:** Resurfacing, traffic signal modifications, striping, pavement markings?
The identification and analysis of distinct elements of the overall scope of work, and determination of the delivery method for each element which will better result in a fair, level, and competitive basis of bidding, encourage and reward quality control, and provide for better owner control and timely, continuous progress towards completion.
Packaging:

- Tailor the scope of work to better fit the typical prime contractor/subcontractor business focus/model.
- Identify elements, if any, in which changed conditions, if encountered, may result in significant delays to the delivery of the remaining elements.
- Identify elements which can or should be delivered/completed in advance of the major element(s).
- Require appropriate prime contractor self-performance.
- Specify sufficient information to establish a basis of bidding. Don’t indirectly/inadvertently force a contractor to submit a bids on the basis of an assumption.
- Use appropriate bid itemization/units of measure to establish a uniform basis of bidding, manage risk, and encourage quality.
Seal Coat Contract Packaging:

- **Crack Sealing:** Avoid. Preferable to perform in advance. Force account or contract? Lump sum or unit price? May be performed by subcontractor.

- **Dig-Outs:** Manageable. Preferable to perform in advance. Force account or contract? Probably by subcontractor.

- **Seal Coat with Concrete Work:** Avoid. No “synergy.” Concrete work is typically performed by a subcontractor at the beginning of the contract.
Seal Coat Contract Packaging:

- **Seal Coat with Resurfacing/Reconstruction:** *Manageable, but not preferable.* Seal coat work typically by seal coat subcontractor. *Consider $ value of R/R vs. seal coat.* R/R contractor is typically the prime contractor. SSPWC: *Designate seal coat items as “Specialty Item(s)” if appropriate or specify appropriate percentage to be self-performed by prime contractor.*

- **Seal Coat Only:** *Preferable.* Limited subcontracting “synergy” (dig-outs, crack sealing, striping and pavement markings). Better fits contractor business model. May result in greater competition. Provides direct owner(agency) control.
Plans:

- **Interpretation:** Should be readily interpretable by someone unfamiliar. *Be consistent in format and structure.*

- **Locations/Limits/Segments:** Defined and delineated. Preferably drawn to scale. *Distances determinable or dimensioned, or listed in tabular format.*
Typical Sections: Show sections that are truly “typical.” Specify the limits of each section. Dimension the widths. Show improvements and shoulder features.

Bid Item Quantity “Transparency:” Show in tabular format the length, width, and area of each street/road segment to be sealed and the respective quantities of each Bid Item.
### Plans:

#### Typical Pavement Transition Details

#### Cross Street Join Detail

Coastline Drive / Pacific Coast Highway

#### Side Street Join Detail

Coastline Drive

### Quantity Table

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<thead>
<tr>
<th>SEGMENT</th>
<th>LIMITS</th>
<th>LENGTH (FT)</th>
<th>AREA (SF)</th>
<th>QUANTITIES</th>
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### Digout Table

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Specifications/Special Provisions:

- **First Rule of Contract Documents:** Specify in/on only one contract document.

- **Avoid Redundancy (First Rule):** Don’t repeat in the Special Provisions requirements that are in the Standard Specifications. Specify requirements in/on only one contract document.

- **Standard Specifications:** Use either Greenbook or Caltrans.
Special Provisions: Specify the changes to, deletions from, or additions to, the Standard Specifications. If using Caltrans, utilize applicable Caltrans SSPs as appropriate. Don’t use Caltrans SSPs when the Greenbook is the Standard Specification.


Sole Source/Proprietary/Patented Materials or Processes: Caution. Ensure compliance with Public Contract Code 3400 and Agency policy.
Specifications/Special Provisions:

- **Self-Performance:** Specify the appropriate percentage of prime contractor self-performance (Caltrans or Greenbook) or designate “specialty items” (Greenbook) if appropriate.

- **Time of Completion (Contract Time):** Specify a reasonable duration.

- **Sequence of Work/Scheduling/Traffic Control:** Specify the requirements/restrictions.
Specifications/Special Provisions:

- **Application Rates:** Specify the initial rate(s). Ensure the application rate(s) is/are appropriate for the pavement conditions.

- **Test Strip(s):** Require, as appropriate, to verify/adjust initial application rate and demonstrate acceptable workmanship.

- **Be Specific(ations)!”**
Estimates: General

- **Terminology.** Terms used on the Plans, in the Specifications/Special Provisions, and on the Bid Schedule should be consistent.

- **Itemization.** Breakdown should be consistent with construction operations/items to be constructed.

**Guidance:** One bid item per operation.

**Example:** Don’t have a Bid item for “Cape Seal.” Break into Bid items for the chip seal(s), slurry seal, and micro-surfacing.
Estimates: Bid Item Descriptions

- **Concise** and **descriptive** phrases.

- **Not** a substitute for measurement and payment clauses.

- Caltrans Standard Specifications: *Use* Caltrans Standard Bid Items *if appropriate*.

- Greenbook: *Use* subsection headings/content as the basis, *as appropriate*, e.g. “Screenings (Medium Fine):” “Polymers Modified Emulsified Asphalt (PMCRS-2h).”
Estimates: Measurement and Payment

- **Measurable Items:** Unit Price.

- **Final Pay Quantity Items:** Not appropriate for seal coat items.

- **Lump Sum Items:** Sufficient detail must be provided for an estimator to be able to independently develop a price without making assumptions. Not appropriate for seal coat items.

- **Quantity Verification.** Ensure sufficient detail is provided on the Plans and in the Specifications such that a Bidder can independently verify the quantity of unit price items.
Estimates: Itemization

- **Slurry/Micro Bid Items:**
  Extra Long Ton; Aggregate (each type, tons) and Emulsion (each type, tons); or “Wet Ton” (one item, combined tonnage of aggregate and emulsion), preferable. **Avoid** square foot or square yard.

- **Chip Seal Bid Items:**
  Screenings (each size, tons) and Emulsion/Modified Paving Asphalt (tons), preferable; or by square yard for each size of screenings/binder combination, **manageable.**
Bid Alternates: Avoid. Different spread rates for different materials don’t facilitate direct comparison. Compare “apples” to “apples.”

Additive Alternates: Must conform to Public Contract Code 20103.8.

Substitutions/Equals Determinations. Avoid if possible. If not, answer in an addendum.

Addenda: Answer appropriately, not “bid it as you see it.” Furnish answers affecting basis of bidding to all bidders.
Summary

**PS&E should be:**

- Complementary and cooperative. All documents work together without conflicts.
- Complementary in scope. Scope is consistent with appropriate prime/sub contractor “synergy.”
- Clear and thorough, but concise.
- Appropriately detailed. Too much is better than too little.
- Itemized to ensure a uniform, level basis of bidding and encourage quality during construction.

“Expect what you spec(ify)!”