

GENERAL INFORMATION

The following specifications shall be considered special provisions to *Section 37-2 "Seal Coats" of the Caltrans Specifications*, found in the "STANDARD SPECIFICATIONS for Construction of Local Streets and Roads", 2015 edition, issued by the CALIFORNIA DEPARTMENT OF TRANSPORTATION.

Should a conflict arise between the Caltrans specification, and these special provisions, these special provisions shall take precedence. Caltrans specifications will hereafter be referred to as Standard Specifications.

Cape Seal shall mean a Chip Seal, overlaid with a Type II Slurry Seal. The Chip Seal shall consist of an application of an emulsion (PMCRS2h) and aggregate.

EQUIPMENT

The equipment used by the Contractor for the Conventional Cape Seal operation shall conform to the following:

- A. Two (2) Self-propelled power brooms. *Gutter brooms or steel-tined brooms shall NOT be used.*
- B. A minimum of two (2) operational pneumatic-tired rollers. The rollers shall carry a minimum loading of 2,000 lbs, (907 kg) on each wheel and an air pressure of 100 ± 5 PSI (690 ± 35 kPa) in each tire.
- C. The Chip Spreader shall be self-propelled, computerized rate controlled, and equipped with an aggregate hopper in the rear, belt conveyors to carry the aggregate to the front, and a spreading hopper to spread the aggregate.
- D. The distributor truck for applying the Conventional Emulsion shall be self-propelled, computerized rate controlled. The distributor truck shall be equipped with a heating unit, a pump or pumps that spray the binder within ± 0.025 gallons per Square Yard of the specified rate and a fully circulating spray bar that applies the binder without a streaked or otherwise irregular pattern. The distributor truck shall be equipped with a tachometer, pressure gages, volume measuring devices, thermometer, and computerized rate control.
- E. Trucks for hauling aggregate shall be equipped so that the aggregate can be discharged from the tailgate. Trucks shall be equipped with a device to lock onto the hitch at the rear of the aggregate spreader. Haul trucks shall be compatible with the aggregate spreader so that the dump bed will not push down on the spreader when fully raised. Haul trucks dump bed shall be designed so that, while dumping into the receiving hopper, the aggregate shall be prevented from spilling onto the roadway.

POLYMER MODIFIED EMULSION REQUIREMENTS

TABLE 3: Requirements for Polymer Modified Asphaltic Emulsion, or Conventional Emulsion.

PROPERTIES	TYPE	CATIONIC			
	GRADE	PMCRS2		PMCRS2h	
	RANGE	MIN	MAX	MIN	MAX
TEST ON EMULSIONS:					
Viscosity, SSF @ 50°C, sec		75	300	75	300
Settlement, 5 days, %		N/A	5	N/A	5
Storage Stability, 1 day, %		N/A	1	N/A	1
Sieve Test, %		N/A	0.30	N/A	0.30
Demulsibility, %		40	N/A	40	N/A
Particle Charge		POSITIVE		POSITIVE	
Ash Content, %^a		N/A	0.2	N/A	0.2
Residue by Evaporation, %^d		65	N/A	65	N/A
TEST ON RESIDUE FROM EVAPORATION TEST:					
Penetration, 25°C^b		100	200	40	90
Ductility, 25°C, mm^c		400	N/A	400	N/A
and either:					
Torsional Recovery, %^e		18	N/A	18	N/A
or					
Polymer Content, %^f (by weight)		2.5	N/A	2.5	N/A

a. ASTM Designation: D 3723

b. AASHTO Designation T 49

- c. AASHTO Designation T 51
- d. California Test 331
- e. California Test 332
- f. California Test 401

(The rest of this page is intentionally left blank)

AGGREGATE REQUIREMENTS

The aggregate shall consist of broken stone, crushed gravel or both. At least ninety percent (90%) by mass of the aggregate shall consist of crushed particles as determined by California Test 205. Screenings shall be free from dirt, oil, and other deleterious substance.

The aggregate shall be damp at the time of application to ensure a superior bond to the Emulsion and eliminate free dust. Stockpiling the aggregate shall be permitted.

The percentage composition by mass of screenings shall conform to one of the following gradings (5/16):

Sieve Sizes	Percentage Passing			
	Coarse 12.5-mm x 4.75-mm {1/2 x No. 4}	Medium 9.5-mm x 3.35 {3/8 x No. 6}	Medium Fine 8.0-mm x 2.36-mm {5/16 x No. 8}	Fine 6.3-mm x 2.00-mm {1/4 x No. 10}
19.0- <i>mm</i> (3/4")	100	N/A	N/A	N/A
12.5- <i>mm</i> (1/2")	95-100	100	N/A	N/A
9.5- <i>mm</i> (3/8")	50-80	90-100	100	100
4.75- <i>mm</i> (No. 4)	0-15	5-30	30-60	60-85
2.36- <i>mm</i> (No. 8)	0-5	0-10	0-15	0-25
1.18- <i>mm</i> (No. 16)	N/A	0-5	0-5	0-5
600- μ <i>m</i> (No. 30)	N/A	N/A	0-3	0-3
75- μ <i>m</i> (No. 200)	0-2	0-2	0-2	0-2

The aggregate shall also conform to the following quality requirements:

Test Parameters	California Tests	Requirements
Los Angeles Rattler Loss (100 Revolutions)	211	10%
Los Angeles Rattler Loss (500 Revolutions)	211	40%
Film Stripping	302	25%
Cleanness Value (min)	227	80

(The rest of this page is intentionally left blank)

ORDER OF WORK

The work shall be accomplished in the following order:

1. Prepare the pavement surface as specified below.
2. Install temporary pavement markers.
3. Cover all manholes and valves with sand.
4. Apply the Emulsion as specified below.
5. Spread aggregate using a computerized spreader as specified below.
6. Continually roll aggregate as specified below.
7. Power sweeping as specified below.
8. All other such items and details specified shall be furnished, installed and / or constructed.

SURFACE PREPARATION

Surfaces to receive the Conventional Emulsion shall be prepared in conformance with the provision specified for preparing surfaces to receive asphalt emulsion as specified in *Section 37-2.01C(3), "Surface Preparation,"* of the Standard Specifications.

APPLYING THE EMULSION

The emulsion shall be applied in conformance with these special provisions.

Unless otherwise directed by the Engineer, the Contractor shall make the determination as to the suitability of the weather for applying the binder. The parameters for suitability of weather shall be described in these special provisions.

The Conventional Emulsion shall NOT be applied when the weather conditions are unsuitable. Excessive wind is considered an unsuitable weather condition. No additional payment will be made for the costs associated with unsuitable workdays because of weather.

The emulsion shall be applied when the ambient temperature is 52°F or above. The weather forecast calls for sun and highs 60°F or above, and no rain for 24 hours after the Chip Seal has been applied.

The Conventional Emulsion shall NOT be applied until sufficient aggregate is available to immediately cover the emulsion being applied. The rate of emulsion application shall be between .24 and .34 gallons per Square Yard as approved by the Engineer. The temperature of the emulsion at the time of application shall be between 120°F and 160°F. The distributor truck shall be controlled in such a matter to avoid getting emulsion in the gutters and on surrounding areas. The Contractor shall remove all emulsion that runs into the gutters each day and, or before continuing to the next street.

SPREADING AGGREGATE

The aggregate for the Conventional Emulsion shall be spread in conformance with the provisions specified for spreading aggregate on asphaltic emulsion in *Section 37-2.01C(5)*, “*Spreading Screenings*,” of the Standard Specifications.

The aggregate for the Conventional Emulsion, shall be applied at a rate of 18 to 25 pounds per Square Yard, unless approved by the Engineer and shall be spread evenly by a computerized spreader. The rate shall be adjusted up or down so that no bleed through occurs during rolling.

The curing of the Chip Seal shall be as recommended by the manufacture and, or the Engineer such that the street may be open to traffic one hour after rolling without damage to the Chip Seal.

FINISHING

The binder shall be finished in conformance with the provisions for finishing aggregate spread on asphaltic emulsion in *Section 37-2.01C(6)*, “*Finishing*,” of the Standard Specifications. In addition, the following shall apply:

- A. **Initial Rolling:** Initial rolling of the aggregate shall consist of a minimum, of one (1) complete coverage with two (2) pneumatic-tired rollers and shall begin immediately behind the aggregate spreader. The distance between the rollers and the aggregate spreader shall not exceed 200 feet at any time during the rolling operation.
- B. **Initial Brooming:** An initial brooming shall be performed after completion of the initial rolling and prior to routing uncontrolled traffic on the Chip Seal.
- C. **Final Rolling:** After the initial coverage, a minimum of three (3) complete coverages shall be made on the aggregate.
- D. **Final Brooming:** Sweeping shall be a multi-step operation following the final rolling of the aggregate. Loose aggregate shall be removed from the roadway surface and abutting adjacent areas. Sweeping will be required once daily following the Chip Seal application until the street is Slurry Sealed. Loose aggregate shall be disposed of at least 150 feet from the nearest waterway.

(The rest of this page is intentionally left blank)

SLURRY SEAL

The Slurry Seal for the Cape Seal shall be Type II with a minimum of 2% latex, as described in the project specifications. The spread rate shall be One Thousand (1000) Sq. Ft. to 1100 Sq. Ft. per Extra Long Ton (ELT). The Contractor shall apply the Slurry Seal within four (4) days, maximum after completing the Chip Seal.

MEASUREMENT AND PAYMENT

The price paid for the Cape Seal shall include furnishing and applying the Slurry Seal over the Chip Seal. Quantities of the Cape Seal will be measured and paid for by the Square Foot. The contract price paid per Square Foot for the Cape Seal shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for doing all work involved in furnishing and applying the Cape Seal, complete in place, including removal of raised pavement markers, all traffic control including maintaining and removing C6 (Loose Gravel) and W6 (15 MPH) signs and temporary supports or barricades for the signs as explained above, as specified in the Standard Specification and these special provisions, and as directed by the Engineer.