PASS® SCRUB SEAL

GENERAL – The work shall consist of furnishing all necessary labor, materials and equipment for the transporting, application of the polymer modified asphaltic emulsion PASS®, ¼" by No. 10 aggregate to conform with the Provisions of Section 37-1, of the Standard Specifications, Plans and these Special Provisions. The work shall be done in the following order: preparing the pavement surface; applying the emulsion; scrubbing the applied emulsion with a emulsion broom; applying aggregate; rolling the ¼" by No. 10 aggregate; and sweeping up excess aggregate and more fully described below.

Prior to the PASS scrub seal operation, the Contractor shall remove all existing striping, legends and raised pavement markers within the scrub seal limits. When removing the raised pavement markers the Contractor shall remove any adhesive left on pavement caused from the removal of raised pavement markers. If any pavement damage (potholes) caused by removing raised pavement markers shall be filled.

Immediately prior to the scrub sealing operations, the Contractor shall sweep the entire surface with vacuum assisted power brooms. Flushing with water and/or fog seal may be required in some areas. Prior to scrub sealing application, pavement surfaces shall be cleaned of all oil, debris, grease spots and weeds.

Standard Specifications Section 37-1.04 shall apply . . . "other means necessary" shall include steam cleaning or heating and scraping before power brooming, then flushing with the water truck all those areas where grease spots are apparent. The curing of the scrub seal shall be as recommended by the manufacturer and/or the Engineer such that a street may be open to traffic without damage to the surfacing (Contractor shall provide delineators for traffic safety until paving at each respective location is complete).

Before PASS scrub seal is to be applied in an area all manhole covers, flushing inlet covers, monument covers, and all other utility covers to remain shall be protected from the Contractor's scrub seal operations by applying a sheet of plastic, cut to fit, or placing a plastic bag over the exposed facilities or other methods approved by the Engineer. All traces of plastic and scrub seal shall be removed from all covers of facilities and other utility covers as quickly as possible after the application of the scrub seal and definitely prior to final acceptance. Contractor shall replace all contaminated pavement markers at his/her expense.

All incidental work such as surfacing of driveway aprons and returns shall be done concurrently with the surfacing of the street proper. The joint between the edge of the pavement and the concrete gutter shall be sealed; scrub seals shall overlap the concrete gutter edge and concrete cross gutter approximately one (1) to two (2) inches. The edges of the limits of the scrub seal application on both sides of the street shall be maintained in a neat and uniform line. Scrub seal may be applied over concrete gutters upon the authorization of the Engineer. The Contractor shall furnish and maintain in good operating condition all tools and equipment necessary to do the work with a personnel to operate all equipment efficiently and skillfully.
The Contractor shall refrain from using diesel fuel, gasoline or solvents of any kind for cleaning tools and equipment in such a manner as to permit spillage of the diesel fuel or solvent on new or existing pavement, curbs and gutters, parkways or other improved areas.

Basis for rejection of improperly placing scrub seal includes, but is not limited to, striation of surface, "balling" of material due to quick-set and tracks of unauthorized vehicles, bicycles and pedestrians.

As per Section 8-1.04 of the Standard Specifications, the Contractor shall furnish a written schedule for the work, listing the dates on which individual streets or locations are to be closed to traffic for surfacing. The Contractor shall adhere diligently to said written schedule in the prosecution of the work. Traffic may travel on the scrub seal surface one (1) hour after rolling, at reduced speed. The Contractor must submit a traffic control plan for the project to the Engineer for approval.

At least four (4) days prior to the beginning of scrub seal operations, the Contractor shall notify all affected property owners, residents, businesses and agencies by an approved, written notice detailing streets and limits of work to be done and the hours of work. The Contractor shall, prior to the beginning of scrub seal operations, post all streets that are to be worked upon with approved "No Parking – Tow Away" signs at one hundred (100) feet intervals. These signs shall also state the day of the week and hours of no parking. The Contractor shall adhere diligently to said written schedule in the prosecution of the work.

The Contractor shall be responsible to notify the affected property owners and businesses on the day prior to the pre-scheduled work and to arrange for autos to be moved from the residences/businesses prior to start of the day's work.

The polymer modified asphaltic emulsion referred to in these Specifications shall be equal in characteristics and specifications to PASS®, manufactured by Western Emulsions, Inc. from RA-1 recycling agent, an asphalt and polymer must be Butonal® NX1120 manufactured by BASF Corporation. The Contractor shall provide a crew and equipment to manually apply the polymer modified asphaltic emulsion up to the edges of the gutters, turn pockets and curves at intersections. The Contractor and emulsion manufacturer shall have had a minimum of five (5) years experience in the application of the PASS polymer modified asphaltic emulsion. A representative from the emulsion manufacturer with at least 5 years experience in the application of PASS shall be on the project site during the construction of the scrub seal.

The PASS®, scrub seal shall be applied when ambient temperature is above forty (40) degrees Fahrenheit and the weather forecast should be for sun and highs in the near sixty (60) degrees Fahrenheit and no rain forecast for the next twenty four (24) hours after scrub seal has been applied. Scrub seal shall not be placed if the ambient temperature during the curing period twenty four (24) hours is expected to be below twenty-five (25) degrees Fahrenheit. Scrub seal shall not be placed on the surface of a street after 4:00 p.m. of the work day unless otherwise authorized by the Engineer.

The areas indicated on the Plans for scrub seal shall be applied with a distributor truck to the pavement surface at a rate of 0.30 to 0.38 gallons per square yard. The emulsion application rate shall be adjusted up or down, at the City Engineers discretion, depending on ability to fill cracks in the roadway. The emulsion shall be heated at a temperature above one hundred (100) degrees but not to exceed one hundred and fifty (150) degrees at application. For smaller areas the emulsion may be applied with a wand. (The emulsion shall be immediately broomed to fill cracks and voids. A drag broom squeegee shall be pulled by the distributor truck or a vehicle following immediately behind the distributor.

The Contractor shall submit certification that the emulsion meets the requirements of the following specification and is manufactured in accordance with United States Patent # 5,180,428. The recycling agent must be RA-1 manufactured by San Joaquin Refining or Tricor Refining or Hydrolene H100T manufactured by Sun Oil Co., Tulsa, OK. The polymer must be NX-1120 manufactured by BASF

Cooperation. The emulsion supplier shall supply certifications from the asphalt, recycling agent, and polymer manufactures with the contractors bid. The Engineer may request these certifications weekly during the project.

The asphalt emulsion shall be a polymer modified surface sealer (PASS®CR) or equal to meeting the following specifications.

PASSÒ Specifications

PASS MFG IN ACCORDANCE WITH UNITED STATES PATENT #5, 180, 428
AND MEETING THE FOLLOWING

Test on Emulsion	Method	
Viscosity @77 (SFS)	ASTM D244	30 - 250
Residue, w%, min.	ASTM D244	65
pH	ASTM E70	2.0-5.0
Sieve, w%, max.	ASTM D244	0.1
Oil distillate, w%, max.	ASTM D244	0.5
Test on Residue(1)		
Viscosity @ 140°F, P, max.	ASTM D2170	400-1200
Penetration @ 39.2°F min.	ASTM D5	90
Modified Torsional Recovery(1), %, min. or Elastic Recovery on residue by distillation(2,3) , %, min.	CA332 AASHTO T59, T301	50 70
Toughness @ 77°F, N-m	ASTM P243	2.0
Tenacity @ 77°F, N-m	ASTM P243	2.0
Asphaltenes, w%, min.	ASTM D2006	18.0
Saturates, w%, max.	ASTM D2006	16.0

(1)California test method CA331 for recovery of residue. Torsional recovery measurement shall include first 30 seconds.

(2)Exception to AASHTO T59: Bring the temperature on the lower thermometer slowly to 350° F plus or minus 10° F. Maintain at this temperature for 20 minutes. Complete total distillation in 60 plus or minus 5 minutes from first application of heat.

(3) Elastic Recovery @ 10° C (50° F): Hour glass sides, pull 20 cm, hold 5 minutes then cut, let sit 1 hour.

Immediately following the brooming of emulsion, an application of ¼" by No. 10 aggregate at a rate of eighteen (18) to twenty-five (25) pounds per square yard or shall be spread evenly by a mechanical spreader and also broomed to fill all cracks and voids. The rate shall be adjusted up or down so that no bleed through occurs during rolling. A drag broom squeegee shall be pulled by a tractor following the aggregate spreader.

Pneumatic tire rolling shall follow immediately after the aggregate is applied.

Power sweeping shall be done before the end of the day after scrub seal operation to pick up any loose rocks. During the sweeping process the Contractor shall use a backpack blower to clear driveways, gutters and sidewalks of excess aggregate at the end of each day until the street is fog sealed. The Contractor shall wait a minimum of twenty four (24) hours after the scrub seal application before applying the fog seal.

The Contractor shall exercise care to prevent oil from being deposited on concrete surfaces. Each day the Contractor shall remove oil from the surfaces not designated to be scrub sealed and/or fog sealed. No additional streets shall be scrub sealed until this clean up has been performed. The method of the oil removal shall be approved by the Engineer.

The sites for stockpiling shall be clean and free of objectionable materials and shall be located outside the street right-of-way. Arrangements for these sites shall be the responsibility of the Contractor. If on private property, a written agreement shall be approved by the Engineer prior to commencing operations.

A self-propelled pneumatic-tire roller shall be used for the required rolling of the cover material. The pneumatic-tire roller shall carry a minimum loading of three thousand (3000) pounds. On each wheel an air pressure of one hundred (100) plus or minus five (5) pounds per square inch in each tire.

The following equipment to be used for the scrub-seal shall be as follows

A. An asphalt distributor for application of the emulsion shall have a full circulation spray bar that is adjustable to at least sixteen (16) feet wide in two (2) feet increments and capable of heating and circulating the emulsion simultaneously. It must have computerized rate control for adjusting and controlling the application from the cab that is adjusting by .01 gallons per square yard increments . The distributor shall also be equipped with a volume measuring devise and a thermometer for measuring the emulsion temperature in the tank.

B. An emulsion scrub broom. The emulsion broom shall be pulled by the asphalt distributor unless otherwise approved by the engineer.

C. A secondary aggregate broom shall be used to scrub the aggregate after application of chips and shall be dragged by truck or tractor.

D. A self-propelled aggregate spreader with front discharge that can evenly distribute aggregate from ten (ten) to twenty (20) pounds per square yard. Equipped with computerized rate control.

E. One (1) pneumatic roller weighing at least five (5) tons.

F. One (1) mechanically powered kick-broom.

Contractor shall install temporary pavement markers once the scrub seal is cured until the roadway surface is ready for permanent raised pavement markers if applicable.

PAYMENT – Payment for the PASS® Scrub Seal shall include full compensation for furnishing labor, materials, equipment and incidentals, notifying property owners and for doing all the work involved in constructing the PASS® Scrub Seal, complete-in-place, including cleaning of the surface, mixing and applying asphaltic emulsion on the pavement and protecting the seal until it has set, as shown on the Plans, the Standard Specifications, these Special Provisions and as directed by the Engineer. Payment for the PASS® Scrub Seal shall be included in the Contract unit price per Square Yard for "PASS® Scrub Seal" as listed in the Proposal and no additional compensation will be made.