SECTION 905 -- PROPOSAL (CONTINUED)

I (We) hereby certify by digital signature and electronic submission via Bid Express of the Section 905 proposal below, that all certifications, disclosures and affidavits incorporated herein are deemed to be duly executed in the aggregate, fully enforceable and binding upon delivery of the bid proposal. I (We) further acknowledge that this certification shall not extend to the bid bond or alternate security which must be separately executed for the benefit of the Commission. This signature does not cure deficiencies in any required certifications, disclosures and/or affidavits. I (We) also acknowledge the right of the Commission to require full and final execution on any certification, disclosure or affidavit contained in the proposal at the Commission's election upon award. Failure to so execute at the Commission's request within the time allowed in the Standard Specifications for execution of all contract documents will result in forfeiture of the bid bond or alternate security.

Bidder acknowledges receipt of and has added to and made a part of the proposal and contract documents the following addendum (addenda):

ADDENDUM NO.	**1**	DATED	**4/19/2016**	ADDENDUM NO.		DATED	
ADDENDUM NO		DATED		ADDENDUM NO.		DATED	

Number	Description
1	Table of Contents; Revised NTB Nos. 6187 & 6188; Add NTB No. 6190; SP 907-405-9, replaces SP 907-405-8; Add SP 907-702-6; BidItems; Amendment EBS Download Required.

TOTAL ADDENDA: **1**
(Must agree with total addenda issued prior to opening of bids)

Respectfully Submitted,

DATE _____

_____
Contractor

BY _____
Signature

TITLE _____

ADDRESS _____

CITY, STATE, ZIP _____

PHONE _____

FAX _____

E-MAIL _____

(To be filled in if a corporation)

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

_____
President Address

_____
Secretary Address

_____
Treasurer Address

The following is my (our) itemized proposal.

MP-7000-65(185) / 305732301

Smith County(ies)

Revised 01/26/2016

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
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PROJECT: MP-7000-65(185)/305732301 - Smith

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State Board of Contractors Requirement
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Section 902 - Contract Form
Section 903 - Contract Bond Forms

(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET OF SECTION 905 AS ADDENDA)

04/19/2016 10:49 AM

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6187 **CODE: (SP)**

DATE: **04/19/2016**

SUBJECT: **Contract Time**

PROJECT: **MP-7000-65(185) / 305732301 – Smith County**

The calendar date for completion of work to be performed by the Contractor for this project shall be ***September 30, 2016*** which date or extended date as provided in Subsection 907-108.06 shall be the end of contract time. It is anticipated that the Notice of Award will be issued no later than be ***May 10, 2016*** and the effective date of the Notice to Proceed / Beginning of Contract Time will be simultaneous with the execution of the contract.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904-NOTICE TO BIDDERS NO. 6188 **CODE: (SP)**

DATE: **04/14/2016**

SUBJECT: **Scope of Work**

PROJECT: **MP-7000-65(185) / 305732301 – Smith County**

The contract documents do not include an official set of construction plans, but may, by reference, include some Standard Drawings when so specified in a Notice to Bidders entitled, "Standard Drawings". All other references to plans in the contract documents and Standard Specifications for Road and Bridge Construction are to be disregarded.

The work to be accomplished using the pay items and corresponding specifications set forth in the contract is to place a single bituminous surface treatment scrub seal as described below on approximately 34 miles of roadway in Smith County of District Seven, as described below:

The routes included are:

1. Approximately 10.9 miles of SR 531 in Smith County beginning at the JCT SR 28 and proceed North for 10.9 miles to the JCT of SR 18 .
2. Approximately 11.1 miles of SR 481 in Smith County beginning at the JCT SR 35 and proceed North 11.1 miles to the Scott County Line.
3. Approximately 8.1 miles of SR 540 in Smith County beginning at the Simpson County Line and proceed East 8.1 miles to the End of Maintenance near Raleigh.
4. Approximately 4.3 miles of SR 902 in Smith County beginning at the JCT of SR 481 and proceed East 4.3 miles to the JCT SR 35.

In order to expedite the safe movement of traffic and to protect each phase of the work as it is performed, a firm sequence of operations is essential. The following appropriate items of work shall be begun and **continually prosecuted** in the order listed:

1. The bituminous surface treatment scrub seal shall be 24' in width on roads with rumble strips and the width of the roadway on roads without rumble strips. Any patching required will be performed by MDOT prior to the contract being let. The seal material and seal aggregate shall not be placed on the existing rumble strips.
2. Brooming or other approved method of cleaning the existing asphalt pavement is required prior to placing seal material (Asphalt Emulsion).
3. The existing raised pavement markers and thermoplastic striping shall be removed before the seal is placed in accordance with Subsection 907-405.03.1. Any damage occurring to the existing pavement during the removal of these items shall be repaired before the seal is placed. There will be no direct payment for this work, but the cost of this work will be absorbed in other bid items.
4. The Contractor shall place all signs called for in Special Provision 907-405-9.

5. Payment for the bituminous surface treatment scrub seal will be made under Pay Item No. 907-405-D, Scrub Seal per Square Yard. The final course will be paid based on twelve (12) foot width or the roadway width and will be field measured to verify the width.
6. Existing bridges that have been overlaid with Asphalt will be sealed. If necessary, bridge approaches will be repaired by MDOT forces and will not be the responsibility of the Contractor, unless damaged by the Contractors operations. Coordination with MDOT Maintenance forces may be required.
7. The Contractor shall provide all signs and traffic control devices necessary to safely maintain traffic around or through the work zone areas, with a **MAXIMUM** permissible construction zone length equal to a single asphalt emulsion distributor truck, but not to exceed five thousand (5,000) feet of a single lane width. The Project Engineer may reduce the length of the construction zone and require the use of a "pilot vehicle". Signing for lane closures, in accordance with the Standard Drawings, shall be the responsibility of the Contractor.
8. Advanced construction signs, NO PASSING, DO NOT PASS, AND PASS WITH CARE signs will be installed and maintained by the Contractor.
9. Final brooming of excess seal aggregate material shall be per Special Provision 907-405-9.
10. Before placing seal, the temperature shall meet the minimum requirements of Special Provision 907-405-9 and rising, and no threat of rain in the forecast for that day and night as directed by the Project Engineer.
11. Placement of Temporary Traffic Stripe will be in accordance with Subsection 907-618.03.3, Safe Movement of Traffic, provided by Contractor. This temporary stripe shall not be placed until the roadway has been swept. Chip Seal markers shall be provided and placed on each roadway by the Contractor at a spacing of 40' along the centerline in curves and 80' along the centerline in tangents.
12. Place permanent pavement markings (Painted Traffic Stripe and Reflective High Performance Raised Pavement Markers) as required.
13. County roads and aprons will not be sealed, but the county roads shall be swept, cleaned, and permanent pavement markings placed on this project.
14. The length of construction zone established by the Engineer will not be the basis for any claim against MDOT.
15. A Fog Seal (CHPF-1) shall be placed on all routes at a rate of 0.11 gallons per square yard, or as directed by the Project Engineer. The fog seal shall be placed within 72 hours after the completion of chip/scrub seal placement on each route.

Other incidental work that is necessary to complete the work will not be measured for separate payment and the cost shall be included in the unit prices of other bid items.

DUE TO PUBLIC SAFETY CONCERNS:

1. The work zone may not be established prior to 8:30 AM, nor can any non-emergency work be accomplished in the travel way prior to 8:30 AM. Work zone quitting time is defined in the Standard Specification.
2. The Contractor shall coordinate with school officials to make certain the operations do not interfere with the school bus schedules and car pickup schedules.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6190 **CODE: (SP)**

DATE: 04/14/2016

SUBJECT: Material Adjustment for CHPF-1

Bidders are advised that any material adjustment for fog seal (CHPF-1) will be made using the base and current prices for CSS-1.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-405-9 **CODE: (SP)**

DATE: 04/13/2016

SUBJECT: Polymer Modified Asphalt Rejuvenating Scrub Seal

PROJECT: MP-7000-65(185) / 305732301 -- Smith County

Section 907-405, Scrub Seal, is hereby added to and made a part of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction as follows.

SECTION 907-405 -- POLYMER MODIFIED ASPHALT REJUVENATING SCRUB SEAL

907-405.01--Description. This work shall consist of, but not be limited to, furnishing all labor, materials, equipment and transportation for the application of a polymer modified asphalt rejuvenating scrub seal. All ingredients shall be properly proportioned, mixed, and spread on the paved surface in accordance with this Specification and as directed by the Engineer.

907-405.02--Materials.

907-405.02.1--Aggregate. Unless otherwise noted, the aggregate material shall be one of the seal aggregate cover materials listed in and meeting the requirements of Subsection 703.14 of the Standard Specifications.

907-405.02.2--Asphalt Emulsion for Scrub Seal. The asphalt emulsion for scrub seal shall be Grade CMS-1PC meeting the requirements of the following table and shall be composed of a polymer modifier, a petroleum based rejuvenating agent, and asphalt.

Grade CMS-1PC

Property	Test Procedure (AASHTO)	Specification (min)	Specification (max)
Emulsion Properties			
Viscosity, Saybolt-Furol, @ 77°F, SFS	T59	50	350
Storage, 24 hour, %	T59		1
Oil Distillate, %	T59		0.5
Sieve Test, %	T59		0.1
Residue by Distillation(1) @ 350°F, %	T59	60	
Residue Properties From Distillation	T59		
Penetration @ 4°C , 200g weight, 60 sec	T49	30	
Residue Properties From Low Temp Evaporation	PP72		
MSCR @ 52°C, Jnr(3.2)	ASTM D7405		4.0
Polymer Properties(2)			
Swelling in rejuvenating agent, % max weight increase: 48 hrs	ASTM D471		40%
Tensile Strength (psi)	ASTM D412a	800	
Glass Transition Temperature (T_g) – Midpoint by DSC (°C)	ASTM D7426	0	
Latex Density at 23°C (g/cm^3)	ASTM D6937	1.00	1.05
Latex pH	ASTM E70	6.0	8.0
Test on Rejuvenating Agent			
Flash Point, COC, °F	T48	380	
Viscosity, 140°F, CST	201	50	175
Saturate, % by wt	ASTM D2007		30
Asphaltenes	ASTM D2007		1.0
Test on Residue from RTFO			
Weight change, %			6.5
Viscosity Ratio			3

1. Exception to AASHTO T59: Bring the temperature on the lower thermometer slowly to 350°F plus or minus 10°F. Maintain this temperature for 20 minutes. Complete the total distillation in 60 plus or minus 5 minutes.
2. For modifications for Polymer Properties testing, refer to Appendix A Test Modifications.
3. The emulsion supplier shall receive quarterly certificates of analysis from both the polymer and rejuvenating agency manufacturers. The COAs will be provided to the agency upon request.

Appendix A Test Modifications

ASTM D471 Standard Test Method for Rubber Property-Effect of Liquids: Modifications for Polymer Testing, Resistance to Swelling:

1. Using a syringe, place 0.8 gm of latex into an 18-mm diameter DSR mold.
2. Allow the sample to dry at ambient lab conditions (air conditioned) on the bench for 72 hours.
3. Sample should be easily removable from the mold.
4. Take the "button" out of the mold and place the sample into a forced air oven at 40°C (104°F) for

48 hours (on release paper). If at the end of the ambient dry, the sample sticks to the mold, place it into the oven and check it after 1-2 hours.

5. After 48 hours cool and weigh the sample to the nearest 0.0001 gram and record the weight.
6. Put ½-inch of Rejuvenating Agent into a 3-oz penetration tin.
7. Place the "button" on the Rejuvenating Agent, and add another ½ inch Of Rejuvenating Agent, so that the "button" is covered.
8. Put the cap on the penetration tin and place it into the 40°C oven for 48 hours. .
9. Remove the "button from the Rejuvenating Agent, blot surface of the "button" to remove excess Rejuvenating Agent, cool the "button" to room temperature and weigh it.
10. Calculate weight gain of the "button", express as %.

ASTM D412A Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension: Modifications

4. To prepare the polymer film, dilute the waterborne polymer to 40% Total Solids Content and pour 57 g into a Teflon or silicone release mold of dimensions 7'' X 7'' X ¼''.
5. Allow to dry at 23°C (73°F) and 50% RH (controlled conditions) for 7 – 10 days total time, during which time the film should be flipped around once, preferably after 3 or 4 days. The film should be transparent in the end.
6. To drive out any residual water, place the film in an oven at 50°C for 30 min. Dried film thickness should be 25 mil ±5 mils. Discard films <20 mil.
7. Cut out dumbbell-shaped test specimens of dimension 75 mm total length, 25 mm mid-section (L) and 4 mm width of mid-section.
8. Grip in Instron machine with gap size 1 inch, use 8 inch/min cross-head speed.

ASTM D7426 Standard Test Method for Assignment of the DSC Procedure for Determining Tg of a Polymer or an Elastomeric Compound Modifications

Use between 3 – 30 mg dry polymer. Instrument used is TA Q2000 Differential Scanning Calorimeter (DSC). Heating rate is 20°C/min.

ASTM D6937 Standard Test Method for Determining Density of Emulsified Asphalt: Modifications

Replace "Emulsified Asphalt" with "Latex" in text of test method. The testing temperature used should be 25 ±3°C. The calculation in Section 7 should be as follows:

Calculation:
D = (Wf - Wt) * 0.1
S.G. = D / 8.337
Where: Wf = Weight of filled cup (g)
Wt = Weight of empty cup (g)

ASTM E70 Standard Test Method for pH of Aqueous Solutions with the Glass Electrode: Modifications

1. A pH meter with automatic temperature measurement should be used in the evaluation with a calomel cell assembly or combination electrode. Calibration should be made using the procedure with the pH meter, according to ASTM method, prior to testing the pH of the latex. In Section 9, the procedure for measuring pH of the latex should be as follows:

(a) Place the electrode and probe into the dispersion that is to be measured and swirl the sample cup or beaker gently. (You may also use the probe in a stirring motion.)
(b) Wait for the reading to stabilize (usually less than a minute) and read/record this value. Note the temperature if not utilizing an ATC probe.
(c) Take the Electrode and ATC probes from the sample and rinse thoroughly with de-ionized water. Pat dry and place back into appropriate solution recommended by electrode manufacturer for storage.

When a fog seal is required, the asphalt emulsion shall meet the requirements of Subsection 907-702.07.2.

907-405.02.2.1--Certification and Acceptance. The Emulsion supplier shall submit a certification that the polymer modified rejuvenating emulsion meets the requirements of the specification. The certification shall be submitted to the Engineer prior to starting the work. The Engineer will sample the polymer modified rejuvenating emulsion according to Department procedures. Final acceptance of the emulsion for scrub seal will be based on the Manufacturer's Certification and testing conducted by the Department.

907-405.03--Construction Requirements. The attached sign drawings shall be used during scrub seal operations. Prior to any sealing operation, the rectangular "Loose Rock" signs shall be installed and remain in place until all sealing operations are complete. Prior to any daily sealing operation, the portable "Loose Rock" signs shall be installed in accordance with the attached drawings. Portable signs shall be installed and remain in place on a daily basis in the active sealing area. Payment for signs shown on the sign detail drawings shall be made under pay item no. 907-618-A, Maintenance of Traffic.

907-405.03.1--Preparation. The work shall be done in the following order: Prepare the pavement surface; apply the asphalt emulsion for scrub seal and scrub the applied emulsion with a scrub broom as specified herein; apply the aggregate, roll the aggregate, broom the aggregate with a secondary broom when specified; and sweep up and dispose of excess aggregate. Excess aggregate shall be removed from the project unless otherwise approved by the Engineer.

Prior to the scrub seal operation, the Contractor shall remove any and all vegetation within the limits of the scrub seal installation. The use of herbicides will be allowed at the discretion of the Engineer.

If used, the herbicide shall be applied at least 10 days prior to the scrub seal operation, or as directed by the manufacturer of the approved herbicide. The application of the herbicide shall be performed in accordance with all applicable regulations. Any and all fines or clean-up costs for unlawful misuse or discarding of herbicides shall be the sole responsibility of the Contractor. Mixtures and spread rates for the herbicides shall be determined by the manufacturer's specifications. Wash down of equipment or discarding of herbicides shall not enter catch basins or positive drainage facilities.

Prior to the scrub seal operation, the Contractor shall remove all existing thermoplastic striping, thermoplastic legends and raised pavement markers within the scrub seal limits. Removal shall be performed to the satisfaction of the Engineer.

Prior to the scrub seal operation, all drain inlet covers, monument covers, and all other utility covers shall be protected from the Contractor's scrub seal operations by applying a sheet of plastic over the exposed facilities, or other methods approved by the Engineer. All traces of plastic, residual emulsion and aggregate shall be removed from covered objects after the application of the scrub seal and/or prior to final inspection of the project.

Immediately prior to the scrub sealing operations, the Contractor shall sweep the entire pavement surface.

907-405.03.2--Application. The scrub seal shall be applied from edge of pavement to edge of pavement. The edges of the scrub seal application shall be maintained in a neat and uniform line. Scrub seal shall not be applied on concrete gutters or pads unless directed by the Engineer.

The application of the asphalt emulsion for scrub seal shall be applied only when the ambient and pavement temperatures are above 70ºF.

The asphalt emulsion for scrub seal shall be applied with a distributor truck at the following target rates. The actual emulsion application rate shall be determined from the surface demands and aggregate used. Any adjustments of the application rate shall be approved by the Engineer, and manufacturer's representative if necessary.

The optimum application rate of bituminous material is dependent on the chosen seal aggregate gradation as well as the condition of the pavement in which the bituminous surface treatment is to be applied. The application rate of the bituminous material may be adjusted by the Engineer based on field conditions at the time of construction. Following are target application rates for bituminous material.

Seal Aggregate Gradation	Bituminous Material	Target Application Rate (gal/yd^2)	Tolerance
Size No. 7	Emulsified Asphalt	0.33	±0.03
Size No. 8 or 89	Emulsified Asphalt	0.30	±0.03

Note: Emulsified Asphalt shall not be diluted. A sample of emulsified asphalt should be obtained from the Contractor's distributor on the first day of production and thereafter at a frequency not to exceed 1 sample per 50,000 gallons. Because the time between sampling of the emulsified asphalt and the testing of the material can affect the test results, samples should be sent to the MDOT Central Lab for testing as soon as possible.

The asphalt emulsion for scrub seal temperature when applied shall be a minimum of 140º to 180ºF. For smaller areas, the emulsion may be applied with a wand. The emulsion shall be immediately broomed to fill cracks and voids. The emulsion scrub broom shall be as described below.

Immediately following the application of the emulsion to the road surface, the material shall be scrubbed with a scrub broom for the purpose of forcing the emulsion into the existing surface and distributing the emulsion evenly over variable road surface contours.

The application of the asphalt emulsion for scrub seal and scrub broom operation shall cease 40 feet prior to the end of the application. The remaining asphalt emulsion for scrub seal shall be dragged out by the scrub broom, and the remaining emulsified material required to complete the pass shall be applied only by the distributor truck, at the specified rate.

Immediately following the scrubbing of emulsion, aggregate shall be applied at the following application rates.

Size 7 Slag, Stone, Gravel or Expanded Clay	=	0.30 ±0.02 ft^3 / yd^2
Size 8 Expanded Clay	=	0.25 ±0.02 ft^3 / yd^2
Size 89 Slag, Stone, or Gravel	=	0.25 ±0.02 ft^3 / yd^2

The actual aggregate application rate shall be as required by the surface demands and the emulsion used. The rate shall be adjusted, within the specified limit, up or down so that no "bleed through" occurs during rolling.

During the first day of production and at least once a week thereafter, the application rate of the aggregate shall be verified by the Department to assure that the appropriate application rate of the aggregate is applied. The rate can be verified by placing a tarp of at least 1.0 yd^2 area on the roadway surface. After allowing the aggregate spreader to pass over the tarp, the aggregate on the tarp should be collected and weighed to determine the weight of aggregate. The measured weight should then be compared to the target weight calculated using the following formula.

$$W = 0.85(G_{sb})(U_w)(R)(A)(e)$$

Where:
W = target weight of aggregate in lbs.
G_{sb} = bulk specific gravity of aggregate
U_w = Unit weight of water at 70°F = 62.3 lbs./ft^3
R = target application rate in ft^3/yd^2
A = area of tarp in yd^2
e = air voids in loose aggregate = 0.4

G_{sb} for gravel = 2.650
G_{sb} for limestone = 2.700

Note: Bulk specific gravities of expanded clay and steel slag should be obtained from the seal aggregate supplier.

Upon determining the target weight, it should be compared to the actual measured weight. If the difference in the target weight and the actual measured weight is over 2.5 pounds, the aggregate distributor should be adjusted such that the spread rate is within the above tolerance. The above procedure shall be repeated until the spread rate is within the allowable tolerance.

If at any point during production, excessive aggregate is noted, the aggregate application rate should be verified and the spread rate adjusted. The intent is to minimize the amount of excess

aggregate. Excess aggregate removed from the roadway surface after brooming shall be removed from the job site and should not be reused in the aggregate operation.

The dry aggregate shall be spread uniformly to cover the bituminous material with the quantity of mineral aggregate specified by the Engineer. All deficient areas shall be covered by additional material. All excess cover material shall be removed from the surface and stockpiled or used as directed.

A minimum of two self-propelled pneumatic-tired rollers shall be used for the required rolling of the aggregate. The pneumatic-tired rollers shall be in good working condition and actively rolling at all times during the scrub seal operation. The pneumatic-tired rollers shall be minimum 5-ton rollers. The pneumatic-tired rollers shall be operated in such a manner to prevent the dislodging of newly applied aggregate.

907-405.03.3--Stockpile Sites. Sites for stockpiles of materials shall be grubbed and cleaned prior to storing the aggregates, and the ground shall be firm, smooth, and well drained.

907-405.03.4--Equipment. The following equipment shall be used for the scrub-seal operations.

A. Asphalt Distributor. The asphalt distributor for application of the emulsion shall have a full circulation spray bar that is adjustable to at least sixteen feet (16') 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 within 0.01 gallons per square yard increments. The distributor shall also be equipped with a volume measuring device and a thermometer for measuring the emulsion temperature in the tank.

B. Scrub Broom. A scrub broom as described herein shall be used to scrub the emulsion after application. The scrub broom frame shall be constructed of metal. The scrub broom shall be attached to and pulled by the distributor truck. The scrub broom must be equipped with a means of raising and lowering the scrub broom at desired points. It shall be towable in the elevated position to the next area of construction. The weight of the broom assembly shall be such that it does not squeegee the emulsion off the roadway surface.

   The main body of the scrub broom shall have a frame size as shown in the drawing at the end of this special provision. The nearest and furthest members, paralleling the back of the distributor truck, and diagonal members shall be equipped with street brooms. The leading member and the trailing member shall have broom heads angled at 10 to 15 degrees off the centerline of the supporting member. The diagonal members shall have broom heads attached in line with the centerline of the supporting member. Each individual street broom attached to the scrub broom assembly shall be 3.5 inches wide x 6.5 inches high x 16 inches long and have stiff nylon bristles. Bristle height is to be maintained at a minimum of five inches (5"). The scrub broom shall be equipped with hinged wing assemblies attached to the main body not to exceed 4.5 feet per side, with diagonals and equipped with street brooms. The purpose of the maximum rigid frame width and the hinged wing extensions is not only for maximum width of 16 feet but to maintain the scrubbing process evenly as contours and cross-sections change across the existing road surface.

C. Aggregate Spreader. A self-propelled aggregate spreader with front discharge that can evenly distribute aggregate.

D. Roller. A minimum of two (2) pneumatic rollers weighing at least five (5) tons each.

E. Power Broom. Two (2) mechanically powered kick-brooms or vacuum type brooms.

907-405.03.5--Opening to Traffic. Unless otherwise advised, the Contractor's operations shall be schedule such that all lanes of traffic are open to the traveling public at the end of each day. Considering time needed for curing and preparation prior to opening traffic, the Contractor should not apply bituminous material two (2) hours before dusk, or longer, to allow sufficient time for bonding of the aggregates.

After the scrub seal has been rolled and the bituminous material has cured a minimum of one (1) hour, or longer if necessary to sufficiently hold the aggregate in place, the Contractor shall perform an initial brooming operation consisting of lightly sweeping excess aggregate material from the surface.

Immediately the next morning, a final brooming shall be performed to remove any remaining excess aggregate material from the previous day's seal operation. If specified, a fog seal will be placed on all sealed routes at a rate of 0.11 gallons per square yard, or as directed by the Project Engineer. The fog seal shall not be placed until after final brooming.

907-405.04--Method of Measurement. Scrub seal shall be measured by the square yard.

Accepted quantities for fog seal will be measured by the gallon as prescribed in Subsection 109.01. Unless otherwise specified, distributor tank measurement will be used. The volume of material over five percent (5%) above the quantity ordered for each shot will be deducted from measured quantities, except that 15 percent will be allowed for irregular areas where hand spraying is necessary.

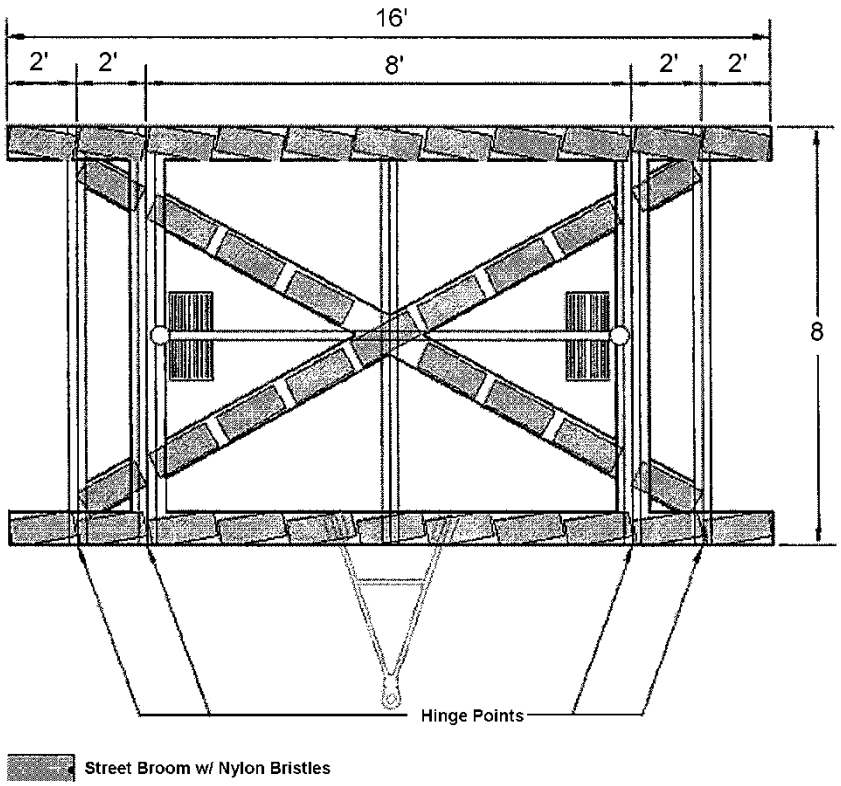
907-405.05--Basis of Payment. Scrub seal, measured as prescribed above, will be paid for at the contract bid price per square yard, which shall be full compensation for furnishing all labor, materials, equipment, temporary markers, vegetation removal, cleaning of the surface, pre-sweeping, post-sweeping, doing all the work involved in mixing, applying and protecting the polymer modified asphaltic rejuvenating scrub seal, and all incidentals necessary to complete the work.

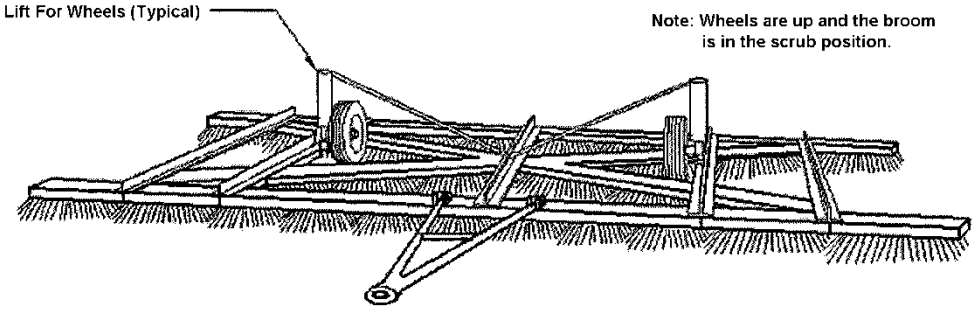
Asphalt for surface treatment will be paid for at the contract unit price per gallon, which shall be full compensation for furnishing all labor, materials, equipment, applying and protecting the fog seal, and all incidentals necessary to complete the work.

Payment will be made under:

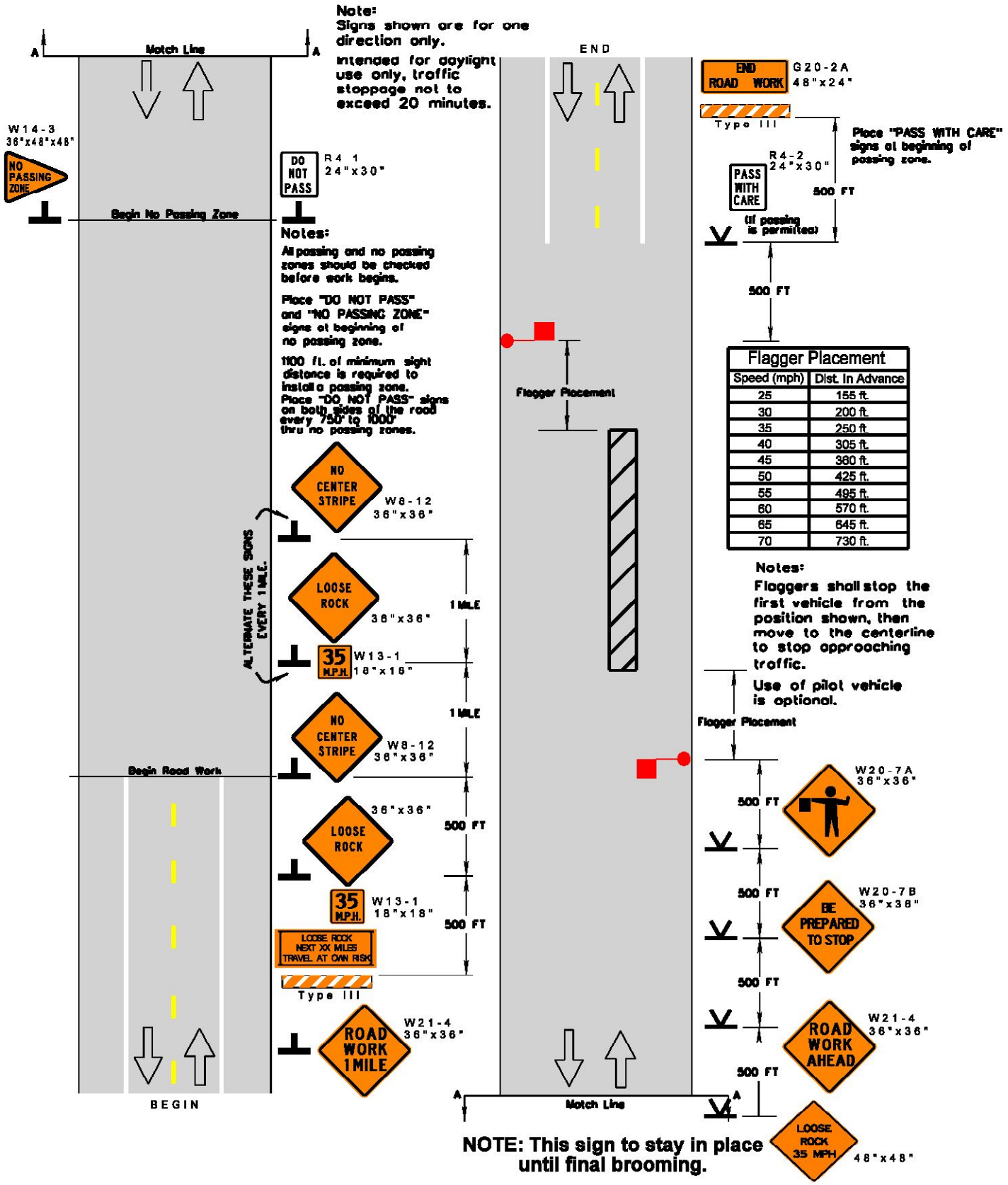
907-405-D: Scrub Seal - per square yard

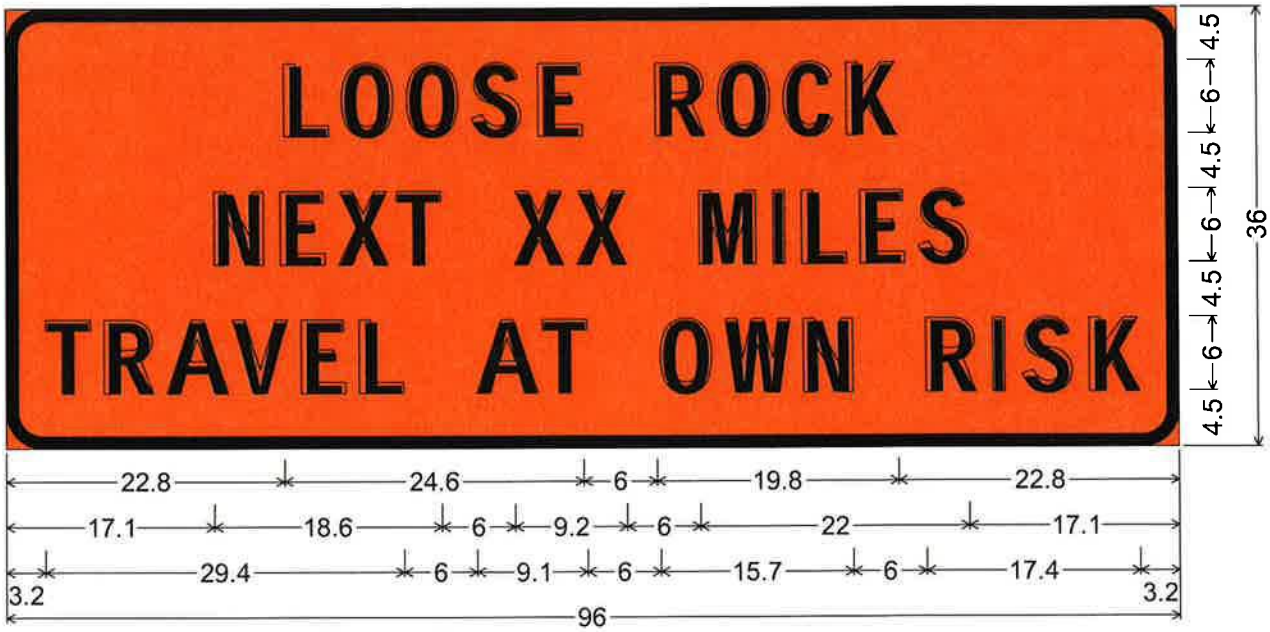
907-405-E: Fog Seal for Scrub Seal - per gallon


16'
2'
2'
8'
2'
2'
8
Hinge Points
Street Broom w/ Nylon Bristles


Lift For Wheels (Typical)
Note: Wheels are up and the broom is in the scrub position.

Scrub Broom


Note:
Signs shown are for one direction only.
Intended for daylight use only, traffic stoppage not to exceed 20 minutes.
Match Line
A
A
W14-3
36"x48"x48"
NO PASSING ZONE
Begin No Passing Zone
DO NOT PASS
R4-1
24"x30"
Notes:
All passing and no passing zones should be checked before work begins.
Place "DO NOT PASS" and "NO PASSING ZONE" signs at beginning of no passing zone.
1100 ft. of minimum sight distance is required to install a passing zone.
Place "DO NOT PASS" signs on both sides of the road every 750' to 1000' thru no passing zones.
NO CENTER STRIPE
W8-12
36"x36"
LOOSE ROCK
36"x36"
1 MILE
35 M.P.H.
W13-1
18"x18"
ALTERNATE THESE SIGNS EVERY 1 MILE.
NO CENTER STRIPE
W8-12
36"x36"
1 MILE
Begin Road Work
LOOSE ROCK
36"x36"
500 FT
35 M.P.H.
W13-1
18"x18"
500 FT
LOOSE ROCK NEXT XX MILES TRAVEL AT OWN RISK
Type III
ROAD WORK 1 MILE
W21-4
36"x36"
BEGIN
END
Flagger Placement
END ROAD WORK
G20-2A
48"x24"
Type III
Place "PASS WITH CARE" signs at beginning of passing zone.
R4-2
24"x30"
PASS WITH CARE
500 FT
(if passing is permitted)
500 FT
Flagger Placement
Speed (mph) | Dist. In Advance
25 | 155 ft.
30 | 200 ft.
35 | 250 ft.
40 | 305 ft.
45 | 380 ft.
50 | 425 ft.
55 | 495 ft.
60 | 570 ft.
65 | 645 ft.
70 | 730 ft.
Notes:
Flaggers shall stop the first vehicle from the position shown, then move to the centerline to stop approaching traffic.
Use of pilot vehicle is optional.
Flagger Placement
500 FT
W20-7A
36"x36"
500 FT
BE PREPARED TO STOP
W20-7B
36"x36"
500 FT
ROAD WORK AHEAD
W21-4
36"x36"
500 FT
Match Line
A
A
LOOSE ROCK 35 MPH
48"x48"
NOTE: This sign to stay in place until final brooming.

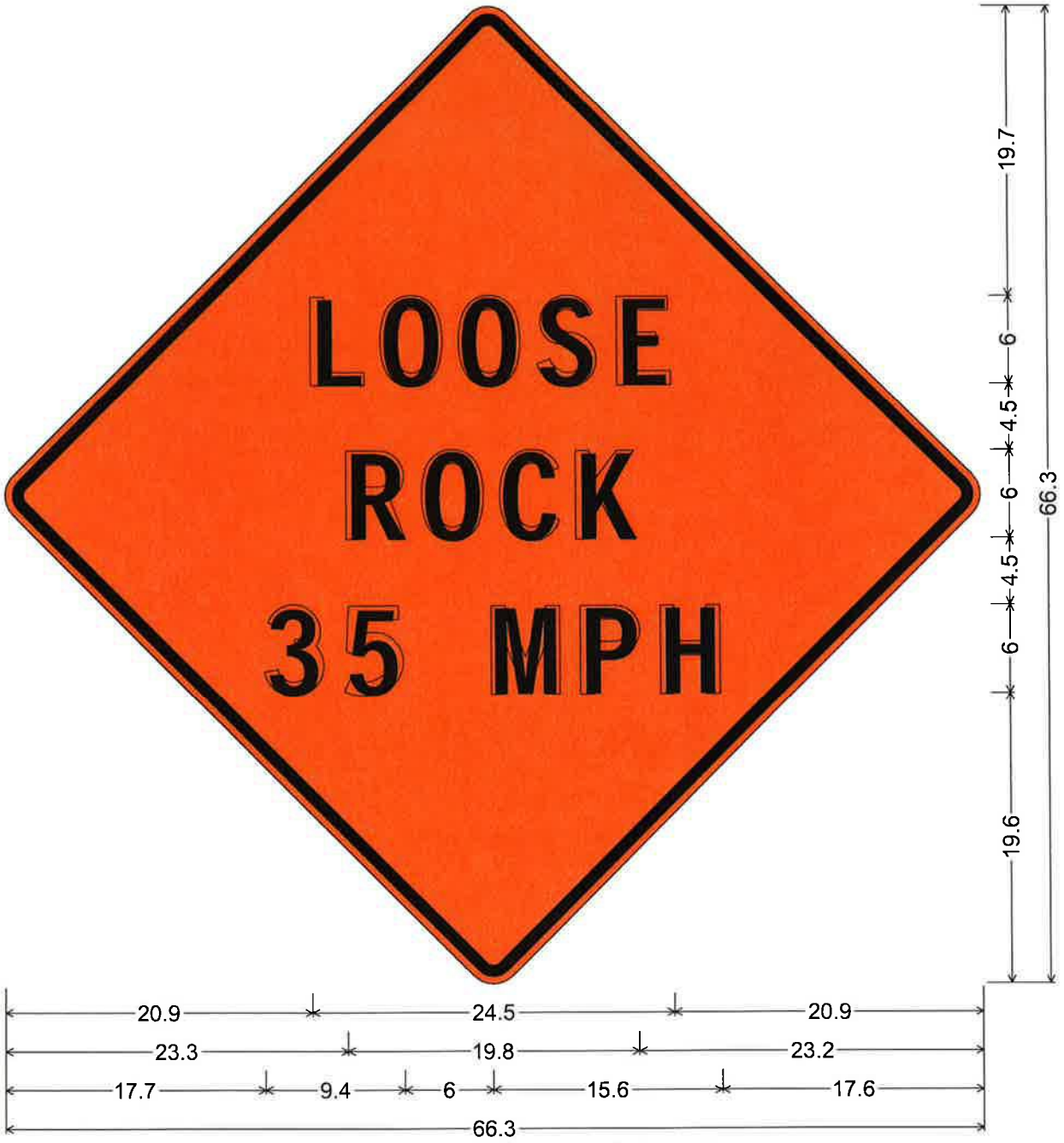


3.0" Radius, 1.0" Border, Black on Orange;
"LOOSE ROCK" D; "NEXT XX MILES" D; "TRAVEL AT OWN RISK" D;
Table of letter and object lefts.

L 22.8	O 27.6	O 33.0	S 38.3	E 43.7	R 53.4	O 58.5	C 63.9	K 69.0

N 17.1	E 22.5	X 27.3	T 32.1	X 41.7	X 46.9	M 56.9	I 63.0	L 65.3	E 70.1	S 74.9

T 3.2	R 8.0	A 13.2	V 18.6	E 24.2	L 29.0	A 38.6	T 44.0	O 53.7	W 59.0	N 65.4	R 75.4	I 80.9	S 83.2	K 88.6



48.0" across sides 1.9" Radius, 0.8" Border, 0.5" Indent, Black on Orange;
"LOOSE" D; "ROCK" D; "35 MPH" D;
Table of letter and object lefts.

L 20.9	**O** 25.7	**O** 31.0	**S** 36.4	**E** 41.8
R 23.3	**O** 28.4	**C** 33.8	**K** 38.9	
3 17.7	**5** 23.1	**M** 33.1	**P** 39.2	**H** 44.6

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION NO. 907-702-6 **CODE: (SP)**

DATE: 04/13/2016

SUBJECT: Specifications for Bituminous Materials

PROJECT: MP-7000-65(185) / 305732301 -- Smith County

Section 702, Bituminous Materials, of the 2004 Edition of the Mississippi Standard Specifications for Road and Bridge Construction is hereby amended as follows.

907-702.05--Petroleum Asphalt Cement. Delete the third paragraph of Subsection 702.05 on page 598, and substitute the following.

The bituminous material used in all types of asphalt mixtures shall conform to AASHTO Designation: M 320, Performance Grade PG 67-22, as modified in the table below, except that Polyphosphoric Acid (PPA) may be used at low dosage rates as a modifier to enhance the physical properties of a base binder to meet the requirements for Performance Grade PG 67-22. In addition, PPA may be used as a catalyst or mixing agent at low dosage rates in the production of Polymer Modified, Performance Grade PG 76-22.

When PPA is used as a modifier, in no case shall the PPA modifier be used to adjust the physical properties of the binder a full binder grade. For example: the base binder (unmodified) is graded as a PG 64-22 and should only be modified by the addition of PPA to a modified binder grade of PG 67-22.

When petroleum asphalt cement is modified by PPA, the following dosage limits shall be applied.

Grade	Dosage Limit
PG 67-22	0.75% by weight of binder
PG 76-22	0.50% by weight of binder

907-702.07--Emulsified Asphalt.

907-702.07.2--Anionic and Cationic. After the last paragraph of Subsection 702.07.2 on page 600, add the following.

LockDown (LD-7) and CHPF-1 shall conform to the requirements of Table V.

907-702.07.3--Polymer Modified Cationic Emulsified Asphalt (CRS-2P). Delete the paragraph in Subsection 702.07.3 on page 600, and substitute the following.

Polymer Modified Cationic Emulsified Asphalt shall conform to the requirements of AASHTO Designation: M 316, with the following exception:

In Table 1, the Ductility, 25˚C, 5 cm/min, shall be a minimum of 100 cm.

907-702.12--Tables. After the last Table of Subsection 702.12 on page 606, add the following.

TABLE V
SPECIFICATION FOR FOG SEAL

	LD-7		CHPF-1		
Test Requirements	**Min.**	**Max.**	**Min.**	**Max.**	**Test Method**
Viscosity, Saybolt Furol, @ 25°C, Sec.	15	100	-	100	AASHTO T 72
Storage Stability Test, 24 hr, %	-	1	-	1	AASHTO T 59
Settlement, 5 day, %	-	5	-	-	AASHTO T 59
Oil Distillate, %	-	1	-	-	AASHTO T 59
Sieve Test, % *	-	0.3	-	0.1	AASHTO T 59
Residue by Distillation, %	40	-	40	-	AASHTO T 59
Test on Residue from Distillation					
Penetration @ 25°C, 100g, 5s	-	20	40	90	AASHTO T 49
Softening Point, °C	65	-	-	-	ASTM 36
Solubility in trichloroethylene, %	97.5	-	-	-	AASHTO T 44
Ductility @ 25°C, cm	-	-	-	-	AASHTO T 51
Elastic Recovery @ 25°C, %	-	-	40	-	AASHTO T 301
Original DSR @ 82° (G*/Sinδ, 10 rad/sec)	1	-	-	-	AASHTO T 111

* The Sieve result is tested for reporting purpose only, and it may be waived if no application problems are present in the field.

Scrub Seal on approximately 34 miles in various locations, known as State Project No. MP-7000-65(185) / 305732301 in Smith County.

Line No.	Item Code	Adj Code	Quantity	Units	Description [Fixed Unit Price]
			Roadway Items		
0010	202-B076		3,897	Linear Feet	Removal of Traffic Stripe
0020	619-A2004		49	Mile	Temporary Traffic Stripe, Continuous Yellow, Paint
0030	619-A4007		21	Mile	Temporary Traffic Stripe, Skip Yellow, Paint
0040	620-A001		1	Lump Sum	Mobilization
0050	625-B002		21	Mile	Traffic Stripe, Skip Yellow
0060	625-C002		68	Mile	Traffic Stripe, Continuous White
0070	625-D002		49	Mile	Traffic Stripe, Continuous Yellow
0080	625-E001		7,381	Linear Feet	Detail Traffic Stripe
0090	625-F002		10,144	Linear Feet	Legend
0100	627-H001		3,610	Each	Chip Seal Reflective Raised Markers. Two-Way Yellow
0110	627-J001		1,177	Each	Two-Way Clear Reflective High Performance Raised Markers
0120	627-L001		3,767	Each	Two-Way Yellow Reflective High Performance Raised Markers
0130	907-405-D001		509,354	Square Yard	Scrub Seal
0135	907-405-E002	(A2)	56,030	Gallon	Fog Seal for Scrub Seal
0140	907-618-A001		1	Lump Sum	Maintenance of Traffic
0150	907-618-B001		1	Square Feet	Additional Construction Signs [$10.00]
			ALTERNATE GROUP AA NUMBER 1		
0160	907-626-J003		2,712	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous White
0170	907-626-K003		1,117	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Skip Yellow
0180	907-626-L001		885	Linear Feet	6" Inverted Profile Thermoplastic Traffic Stripe, Continuous Yellow
			ALTERNATE GROUP AA NUMBER 2		
0190	628-J002		2,712	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Continuous White
0200	628-L002		1,117	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Skip Yellow
0210	628-M002		885	Linear Feet	6" High Performance Cold Plastic Traffic Stripe, Continuous Yellow