SECTION 32 01 13.62

ASPHALT PAVEMENT SEALCOATING FOR PARKING LOTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Asphalt Pavement Sealcoating

1.02 REFERENCE STANDARDS

A. American Society for Testing Materials (ASTM)

1. D 2939-03 Standard Test Methods for Emulsified Bitumens Used as Protective Coatings
2. The following ASTM test methods: D140, D466, D529, D244, C88, C131, C117, C127, C123, D1310, D2170, D95, D402, D2171, D5, D113, D2042, D711, D969, D1475, D3960, D2486, E70, D562, D3583, D3236, D5249, D6690, B117, D977
3. Polymer Modified MasterSeal meets ASTM D8099/D8099M-17 Standard Specification for Asphalt Emulsion Pavement Sealer and FAA Item P-623 Specification for Emulsified Asphalt Spray Sealcoat.

B. Federal Specifications for Waterborne Traffic and Airfield Marking Paints

1. TT-P-1952E Types I, II, and III
2. TT-P-1952D
3. TT-P-1952B

1.03 SUBMITTALS

A. Product Data

1. Submit manufacturer's Product Data Sheet.

1.04 PROJECT/SITE CONDITIONS

A. Ambient Conditions

1. Both surface and ambient temperature must be a minimum of 50°F and rising before applying cold applied crack fillers, oil spot primers, pavement sealers or traffic paints (materials). Ambient and surface temperature shall not drop below 50°F for a 24 hour period following application of materials.
2. Apply materials during dry conditions when rain is not imminent or forecast for at least 24 hours after application.

B. Pavement/Surface Conditions

1. Newly placed (paved) asphalt pavement surfaces should be allowed to cure a minimum of four (4) weeks under ideal weather conditions (70°F) before applying coatings.
2. New pavement surfaces shall be free of residual oils or chemicals associated with the placement of new asphalt pavement.
3. Aged pavement surfaces shall be cleaned and prepared as recommended in this specification under PART 3 Sections 3.1 thru 3.7 of this specification.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. SealMaster Pavement Products and Equipment or equal.

2.02 MATERIALS

A. SealMaster Petro Seal Oil Spot Primer (Concentrate).

1. Acrylic co-polymer latex emulsion
2. Seals oil spots prior sealcoating
3. Helps prevent oil spots from "bleeding through" freshly applied sealer
4. Mix on-site with water prior to application
5. Apply by brush or spray to properly cleaned oil spot
6. Non-volatiles (%): 27% Min.
7. Specific Gravity: 1.04
8. Color: Dries translucent to clear

B. SealMaster CrackMaster Parking Lot Grade (Hot Pour Rubberized Crack Sealant)

1. Premium Rubberized Asphalt hot pour crack sealant
2. Designed for filling and sealing cracks up to 1" wide in asphalt or concrete pavement
3. Provides a protective barrier against moisture intrusion into cracks
4. Designed to be melted in oil-jacketed kettles or direct-fire kettles with agitation
5. Recommended pour temperature: 370-390°F
6. Penetration (150 gr/5 sec.): 35 Max.
7. Resiliency: 60%
8. Flow at 140°F: 0 mm
9. Softening Point: 200°F Min
10. Viscosity @ 375°F: 25 ± 10 poise
11. Specific gravity: 1.15 Min.

C. SealMaster Polymer Modified MasterSeal

1. Polymer modified, clay-stabilized, mineral filled asphalt emulsion sealcoat
2. Designed for protecting, renewing and beautifying asphalt pavement surfaces
3. Protects pavement against weather, UV rays, and environmental distress
4. Designed to mixed on-site with silica sand or other approved aggregate
5. Applied to properly cleaned asphalt surface by spray, brush or squeegee
6. Non-volatiles (%): 43% Min.
7. Ash content of non-volatiles (%): 42% Min.
8. Specific Gravity @ 25°F: 1.12 Min.
9. Drying Time: 8 hours Max.
10. Adhesion & resistance to water: No penetration or loss of adhesion
11. Resistance to heat: No blistering or sagging
12. Flexibility: No cracking or flaking
13. Resistance to impact: No chipping, Flaking or Cracking

D. SealMaster TTP-1952B Traffic Paint (White and Yellow)

1. 100 % Acrylic Water-based Traffic Paint
2. Meets Federal Specification TT-P- 1952B
3. Apply with standard cold-applied traffic marking spray equipment
4. Do not dilute.

5. Volatile Organic Content (VOC): <50g/l
6. Viscosity (KU): 70-110 KU
7. Solids by Weight (%): 60% Min.
8. Scrub Resistance: 1,000 cycles Min.
9. Dry Opacity: .965
10. Directional Reflectance (%): White 86%; Yellow 50%
11. Drying Time for no Pick-up, minutes: <30 minutes

E. SealMaster Handicap Blue Traffic Paint

1. 100 % Acrylic Water-based Traffic Paint for Handicap markings on pavement
2. Apply with standard cold-applied traffic marking spray equipment, brush or roller
3. Do not dilute
4. Volatile Organic Content (VOC): <50g/l
5. Viscosity (KU): 70-110 KU
6. Solids by Weight (%): 50% Min.
7. Scrub Resistance: 1,000 Cycles Min.
8. Drying Time for no Pick-up, minutes: <30 minutes

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine pavement surface prior to performing work

B. Notify project engineer of any adverse or unacceptable conditions that would affect successful repair efforts or application of materials

C. Do not commence work until unacceptable conditions are corrected

3.02 SURFACE PREPARATION

A. Surface must be clean and free from all loose material and dirt. Remove grass along edge of pavement to find true edge of pavement.

3.03 CRACK REPAIR

A. Hot Applied Crack Sealant/Filling Materials and Methods

1. Cracks must be free from dust, dirt, vegetation and moisture. Clean cracks with mechanical wire brush followed by a compressed air heat lance to remove loose debris and moisture.
2. For all cracks up to 1" wide apply either SealMaster CrackMaster Parking Lot Grade crack sealant or SealMaster Crackmaster Supreme crack sealant.
3. SealMaster CrackMaster Parking Lot Grade crack sealant shall be melted in a conventional oil-jacketed unit equipped with an agitator.
4. Apply heated CrackMaster Parking Lot Grade crack sealant using a pump and wand system, a crack banding unit or a pour pot.
5. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for CrackMaster Parking Lot Grade Crack Sealant.

3.04 OIL SPOT PRIMING

A. Prime Oil Spots with SealMaster Prep Seal or SealMaster Petro Seal

1. Wipe or scrape excessive build-up of oil, grease, and gasoline spots. A torch may be used to burn away any residual.
2. Apply oil spot primer with brush, roller or sprayer.
3. Allow to dry before sealcoating.
4. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for SealMaster Prep Seal or SealMaster Petro Seal.

3.05 POLYMER-MODIFIED MASTERSEAL (PMM) APPLICATION

A. Applying SealMaster Polymer-Modified MasterSeal

1. Remove all loose material and dirt from pavement surface. Remove grass along edge of pavement to find true edge of pavement. Power blowers, mechanical sweeping devices and push brooms are acceptable cleaning methods.
2. Equipment used to apply Polymer-Modified MasterSeal shall have continuous agitation or mixing capabilities to maintain homogeneous consistency of pavement sealer mixture throughout the application process. Spray equipment shall be capable of mixing and spraying pavement sealer with sand added. Self-propelled squeegee equipment with mixing capability shall have at least 2 squeegee or brush devices (one behind the other) to assure adequate distribution and penetration of sealer into pavement surface. Hand squeegees and brushes shall be acceptable in areas where practicality prohibits the use of mechanized equipment.
3. Polymer-Modified MasterSeal (PMM) shall be mixed in accordance with the following mix design (based on 100 gallons of PMM for ease of calculation):
   - Polymer-Modified MasterSeal (PMM).....100 gallons
   - Sand (40 to 70 mesh AFS fineness gradation).....200-400 lbs.

   Note: If required, a small amount of water may be added to facilitate application of mixed material.
4. Apply two coats of mixed PMM and Sand at a rate of .11 to .13 gallon per square yard per coat to entire pavement area. Allow first coat to dry thoroughly before applying second coat.
5. Apply a third coat of mixed PMM and Sand at a rate of .11 to .13 gallon per square yard to high traffic areas including parking area entrances, exits and drive lanes (or as specified in additional diagrams or drawings). Allow second coat to dry thoroughly before applying a third coat to these areas.
6. Allow final coat of pavement sealer to dry 24 hours prior to applying SealMaster 100 % Acrylic Water based Traffic Paint.

3.06 TRAFFIC MARKINGS/LINE STRIPING

A. Applying SealMaster Traffic Paint

1. Remove all loose material and dirt from existing pavement. Freshly applied pavement sealer shall be allowed to cure for a minimum of 24 hours prior to applying Traffic paint.
2. Apply SealMaster Traffic Paint with pressurized line striping spray equipment at wet thickness of 15 to 20 mils.
3. Apply SealMaster Handicap Blue to all handicap parking spots.
4. Allow paint to dry thoroughly prior to opening to traffic.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE COURSE

PART 1 - GENERAL PROVISIONS

1.01 DESCRIPTION

A. This work shall include the installation of aggregate base course.

PART 2 - MATERIALS

2.01 BASE COURSE

A. Crushed Stone Base. This material shall consist of crushed run stone or a mixture of crushed stone and natural fines uniformly mixed and so proportioned as to meet all the requirements hereinafter specified, with the further provision that a mixture of crushed stone and natural fines shall contain not less than 90 percent crusher produced material. The stone shall be hard and durable with a percent of wear of 45 by Los Angeles Test (AASHTO T 96). For the purpose of this specification, shale and slate are not considered to be stone. The material furnished shall not contain more than 5 percent by weight of shale, slate and other deleterious matter.

The class or classes of crushed stone base course material that may be used on any particular job will be those called for on the proposed schedule.

GRADING REQUIREMENTS

Size of Sieve	Percent by Weight	
Total Retained	Class SB-2	Class SB-3
1-1/2"	0	---
1"	---	0
3/4"	10-50	0-35
No. 4	50-75	50-75
Total Passing		
No. 40	10-30	10-30
No. 200	3-10	3-10

The fraction passing the No. 200 sieve shall not be greater than two-thirds the fraction passing the No. 40 sieve. The fraction passing the No. 40 sieve shall have a liquid limit not greater than 25 and a plasticity index of not greater than 6.

When it is necessary to blend two or more materials, each material shall be proportioned separately through mechanical feeders to insure uniform production. Premixing or blending in the pit to avoid separate feeding will not be permitted. Blending materials on the roadway in order to obtain a mixture that will comply with the above requirements will not be permitted.

PART 3 - APPLICATION

3.01 APPLICATION

A. Crushed Stone Base Construction. The base course material shall be placed on a completed and approved subgrade or existing base that has been bladed to conform to the grade and cross section shown on the plans.

The subgrade shall be prepared as specified and shall be free from an excess or deficiency of moisture at the time of placing the base course. The subgrade shall also comply, where applicable, with the requirements of other items that may be contained in the contract that provide for construction, reconstruction or shaping of the subgrade or the reconstruction of the existing base course.

Base course material shall not be placed on a frozen subgrade or subbase.

The crushed stone gravel shall be placed on the subgrade or other base course material and spread uniformly to such depth and lines that when compacted it will have the thickness, width and cross-section shown on the plans.

If required, the compacted depth of the base course exceeds six inches (6"), the base shall be constructed in two or more layers of approximate equal thickness. The maximum compacted thickness of any one layer shall not exceed six (6) inches. When vibrating or other approved type of special compacting equipment is used, the compacted depth of a single layer of the base course may be increased to 8 inches upon approval.

The spreading shall be done the same day that the material is hauled and it shall be performed in such manner that no segregation of coarse particles or nests or hard areas caused by dumping the gravel on the subgrade will exist. To insure proper mixing, the gravel shall be bladed entirely across the roadbed before being spread. Care must be taken to prevent mixing of subgrade or shoulder material with base course material in the blading and spreading operation.

Each course shall be compacted by any satisfactory method that will produce the density hereinafter specified. The gravel shall be substantially maintained at optimum moisture during the mixing, spreading, and compacting operations. The density of the compacted material in each course, as determined by AASHTO T-191, shall not be less than 95 percent of the density obtained in the laboratory by AASHTO T-180. The crushed stone shall be compacted across the entire width of application.

The laboratory density shall be obtained as follows. The sample is prepared by removing the aggregate retained at the 3/4 inch sieve and adding aggregate passing the 3/4 inch sieve and retained on the No. 4 sieve in an amount equal to that removed. The sample so prepared is compacted at various water contents in five equal layers in a mold 6 inches in diameter and 7 inches in height. Each layer is compacted by 55 blows of a 10 pound hammer 2 inches in diameter dropped from a height of 18 inches. The density used is the dry weight obtained at the optimum water content.

The compacted base course shall be tested for depth and any deficiencies corrected by scarifying, placing additional material, mixing, reshaping, and recompacting to specified density, as directed.

The Contractor shall maintain the base course in a satisfactory condition until accepted.

END SECTION

SECTION 32 13 13

PORTLAND CEMENT CONCRETE PAVING

PART 1 - GENERAL

1.01 DESCRIPTION

A. This shall consist of portland cement concrete constructed in one course on the prepared subgrade or on a completed and accepted base course in accordance with these specifications and in conformity with the lines, grades, thickness, and typical cross section shown on the plans.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Concrete. Concrete shall meet the requirements of Section 501 for Portland Cement Concrete Pavement, or Section 802 for Class A or S Concrete of the AHTD Standard Specifications for Highway Construction. When the Contractor elects to use concrete meeting the requirements of Section 501, the maximum allowable slump shall be 4 inches. The specified maximum water-cement ratio shall not be exceeded. Class S (3500 psi) concrete shall be used for all miscellaneous structures.

B. Joint Filler. Materials for joint filler shall meet requirements of AASHTO M 213.

C. Curing Materials. Curing materials shall meet the requirements of subsection 501.03(i).

PART 3 - EXECUTION

3.01 DURABILITY REQUIREMENTS

A. The concrete slab shall meet the requirements of Table 1603 A and 1603 C for moderate exposure as required by the AFPC volume 2.

B. Curing. Curing shall be in conformance with Section 501(1), of AHTD standard specifications.

C. Construction Requirements, The methods employed in performing the work shall conform to the requirements as specified in subsection 501.04. Transverse expansion joints shall be placed at 15' intervals or as directed by the Engineer.

END OF SECTION

SECTION 32 13 14

CONCRETE CURB & GUTTER

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section shall consist of the construction of Concrete Curb and Gutter at the locations shown on the Plans or as directed by the Engineer.

1.02 STANDARD SPECIFICATIONS

A. Materials and work for Concrete Curb and Gutter shall be in accordance with SECTION 634 - CURBING of the AHTD Standard Specifications.

PART 2 - PRODUCTS

2.01 FORMS

A. Article 634.03(b) of AHTD Standard Specifications shall be augmented as follows:

1. The work shall be performed with a mechanical slip-form paver.

PART 3 - EXECUTION

3.01 PLACING AND FINISHING

A. That part of Article 634.03(c)(1) of AHTD Standard Specifications which relates to placing and finishing shall be replaced by the following requirements:

1. Concrete shall be dry enough to permit use of slip-form paver; it shall not be so dry but what adequate tamping and spading will ensure adequate compaction and surfaces free from honeycomb. The subgrade shall be wetted before placing the concrete.
2. The surface shall be shaped to the required section, finished with a steel trowel, and lightly brushed to produce a uniform surface of slightly roughened texture. The exposed edge of the gutter at the front form, and the exposed edge of the curb at the back form, shall be edged with an edging tool having a radius of approximately 1/8 inch.
3. If templates are used to control shape, they shall be of metal.

3.02 JOINTS

A. Article 634.03(d), Joints, AHTD Standard Specifications, for Concrete Curb and Concrete Curb and Gutter shall be deleted in its entirety, and substituted therefore shall be the following:

1. Premolded expansion joint material shall be placed between the curb and gutter and any concrete construction that otherwise would abut against it. Joint material shall be 1/2 inch thick. Premolded joint material shall be of the non-extruding type, and shall conform to AASHTO designation M 213.
2. Expansion joints shall be constructed at the ends of curb and gutter, at the points of curvature of returns to streets and driveways. Intermediate expansion joints shall be constructed so that the maximum distance between joints is forty (40) feet. The joint material shall extend entirely

through the curb and gutter section and, before the joint can be considered completed, must be trimmed to curb and gutter section.

3. Contraction joints shall be 1/8" to 3/8" x 1-1/2" and shall be placed at ten (10) foot intervals between expansion joints. Contraction joints shall be formed by sawing, unless otherwise specified, and sealed.

4. Joints shall be normal to the grade for gutter and the centerline of the roadway. Where curb and gutter is constructed adjacent to rigid pavement, the location and width of joints shall coincide with those in the pavement, where practicable. All joints shall be sealed with material meeting the requirements of SECTION 501 - PORTLAND CEMENT CONCRETE PAVEMENT, Article 501.03(h) of the AHTD Standard Specifications.

3.03 PLACEMENT

A. Concrete Curb and Concrete Curb and Gutter shall be one-course, monolithic, between expansion joints.

END OF SECTION

SECTION 32 02 13

SEEDING & MULCHING

PART 1 - GENERAL

1.01 This item shall consist of furnishing and applying lime, fertilizer, seed, mulch cover, asphalt and water in accordance with these specifications at locations shown on the plans or as needed. The work under this item shall be accomplished as soon as practicable after the grading in an area has been completed in order to deter erosion.

PART 2 - MATERIALS

2.01 MATERIALS:

A. Lime shall be agricultural grade ground limestone or equivalent,

B. Fertilizer shall be a commercial grade, uniform in composition, free flowing, and suitable for application with mechanical equipment. It shall be delivered to the site in labeled containers conforming to current Arkansas fertilizer laws and bearing the name, trademark, and warranty of the producer.

C. Except as modified herein, the seed shall comply with the current rules and regulations of the Arkansas State Plant Board and the germination test shall be valid on the date the seed is used. It shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds. A combined total of 50 noxious weed seeds shall be the maximum amount allowed per pound of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, or nut grass seed will not be allowed in any amount. Seed shall be furnished in sealed, standard containers. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.

Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding. Fescue seed shall be certified endophyte free.

Seed shall be composed of the varieties and amounts by weight as shown below.

Seed planted between June 16 and August 31 may require more water than that specified in subsection 620.03 (f) in order to survive. Therefore, watering will continue after germination until growth is established.

D. Mulch cover shall consist of straw from threshed rice, oats, wheat, barley, or rye; of wood excelsior; or of hay obtained from various legumes or grasses, such as lespedeza, clover, vetch, soybeans, bermuda, carpet sedge, bahia, fescue, or other legumes or grasses; or a combination thereof. Mulch shall be dry and reasonably free Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.

Seed Variety:	Lbs./Acre
March 15 - June 15	
Bermuda Grass (common) unhulled	10
Bermuda Grass (common) hulled	5
Lespedeza (Korean)	30
June 16 - August 31	
Bermuda Grass (common) unhulled	10
Bermuda Grass (common) hulled	5
Weeping Love Grass (Eragrostis Curvula)	10
September 1 - October 31	
Rye Grass (Annual)	50
Crimson Clover (Dixie)	20
Bermuda Grass (common) unhulled	15

A. Asphalt in mulch cover shall be such quality that the mulch cover will be bound together to form a cover mat that will stay intact under normal climatic conditions. The quality and performance of the asphalt will be determined and certified by the Engineer.

Other materials that will function equivalent to asphalt as a tackifier for mulch cover will be permitted as a substitute for asphalt subject to the approval of the Engineer.

B. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

PART 3 - CONSTRUCTION REQUIREMENTS

3.01 CONSTRUCTION REQUIREMENTS:

A. Seedbed Preparation. Areas to be seeded shall be dressed to the shape and section shown on the plans. If the plans call for replacing topsoil, this shall be done prior to any preparations for seeding. Before beginning the seedbed preparation, soil samples shall be obtained from each major soil area for lime and fertilizer requirements analysis.

Lime, at the rate determined by the lime requirements test, shall be uniformly spread on areas to be seeded prior to their being roughened or scarified. The seedbed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing lime and soil to a depth of not less than 4" (2" for slopes 4:1 or steeper) below finish slope elevation. Regardless of pulverizing method used, the soil shall be broken with the contour of the slope. Objectionable foreign matter shall be removed and the soil left in a suitable horticultural condition to receive the fertilizer and seed. Water may be applied before, during, and after seedbed preparation, as directed by the Engineer, in order to maintain the desired moisture content in the soil.

When no lime is required, seedbed preparation shall be accomplished as specified above regardless of the method used in the distribution of fertilizer, seed, and mulch cover.

B. Fertilization. If soil test show fertilizer is needed, fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10, or the equivalent amount of plant food. Fertilizer shall be uniformly incorporated into the soil alone or in conjunction with the required lime. If the contractor so elects, the fertilizer may be drilled into the soil or combined with the seed in the hydro-seeding operation.

C. Seeding.

1. Broadcasting. Broadcast sowing may be accomplished by hand seeders or by approved power equipment. Either method shall result in uniform distribution and no work shall be performed during high winds. The area seeded shall be lightly firmed with a cultipacker immediately after broadcasting.
2. Drilled in Rows. When seed is drilled in rows, the rows shall be horizontal (parallel to contour lines). Fertilizer and seed shall not be drilled together and shall not be mixed.
3. Hydro-seeding. If a hydro-seeder is used for seeding, fertilizer and seed may be incorporated into one operation but a maximum of 800 pounds of fertilizer shall be permitted for each 1500 gallons of water. If the owner so elects, the fertilizer may be applied during preparations of the seedbed. The area shall be lightly firmed with a cultipacker immediately prior to hydro-seeding.

D, Mulch Cover. Mulch cover shall be applied at the rate of 4000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area. If this method is used, no change in application rates will be allowed. In its final position, the asphalt tacked mulch shall loose enough to allow air to circulate, but compact enough to partially shade the ground and reduce the impact of rainfall on the surface of the soil. Care shall be taken to prevent asphalt materials from discoloring or marking structures, pavements, utilities, or other plant growth.

E. Asphalt. Immediately following or during the application of the mulch cover on seeded areas, asphalt shall be applied at the rate of approximately 0.05 gallon per square yard. Application shall be made from a pressure distributor, so equipped to insure constant and uniform distribution. The use of asphalt may be reduced or eliminated at selected locations when directed by the Engineer.

F. Water. After application of the mulch cover, water shall be applied in sufficient quality, to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed.

The owner shall apply water in an amount such that, in conjunction with any rainfall, the seeded and mulched areas will receive an amount equivalent to a minimum of 1" of water each week beginning the week after seeding and continuing for a minimum of three (3) weeks. One inch of water is equivalent to 26,136 gallons per acre.

END OF SECTION