DIVISION 49: ASPHALT CONCRETE RESURFACING COURSES

49.01 SCOPE: The Contractor shall furnish all materials, equipment and labor necessary to resurface existing pavement and shall consist of one or more layers in accordance with these specifications and good construction practice.

49.02 MATERIALS: Asphalt Concrete Resurfacing Course shall consist of a combination of mineral aggregate and Asphalt materials mixed mechanically in a plant. Asphalt concrete materials shall meet the following requirements:

A. The materials shall conform to the requirements of VDOT Special Provision for Sec. 212 Asphalt Concrete dated October 11, 1989.

Asphalt concrete mixtures used in surface and intermediate courses shall conform to the following requirements:

	MIX DESIGN CRITERIA						
MIX TYPE	VTM (%)	VFA (%)	MIN. VMA (%)	MIN. STABILITY (LBS.)	FLOW (0.01")	AC VISCOSITY GRADE	MARSHAL L BLOW
SM-1	4-8	65-80	17	1000	8-16	AC-20	50
SM-2A	3-6	65-80	15	1200	8-14	AC-20	50
SM-2B	3-6	65-80	15	1500	8-14	AC-20	75
SM-2C	4-6	60-75	15	1500	8-14	AC-30	75
SM-3A	3-6	65-80	14	1500	8-14	AC-20	50
SM-3B	3-6	65-80	14	1500	8-14	AC-20	75
SM-3C	3-6	60-75	14	1800	8-14	AC-30	75
1M-1A	3-6	65-80	14	1500	8-14	AC-20	50
1M-1B	3-6	65-80	14	1500	8-14	AC-20	75
BM-1				400		AC-20	50
BM-2						AC-20	
BM-3						AC-20	

Maximum F/A ratio shall be 1.2:1 on all surface and intermediate mixtures
Maximum F/A ratio shall be 1.4:1 on all base mixtures
Minimum F/A ratio shall be 0.6:1 on all surface and intermediate mixtures
Asphalt content shall be selected at the mid point of VTM range

B. Job-Mix Formula: The Contractor shall submit his source of supply for approval to the Engineer, with a job-mix formula for each mixture to be supplied for the project prior to starting work. Materials from more than one source shall not be used alternately or mixed when used in resurfacing courses without the written consent of the Engineer. In the event the job-mix formula is modified within a lot, the mean test results of the samples taken will be compared to the applicable process tolerance shown in the

following table:

PROCESS TOLERANCE

Tolerance on each Laboratory Sieve and Asphalt Content - Percent

Number	Size	1½"	¾"	½"	3/8"	No. 4	No. 8	No. 30	No. 50	No. 200	A.C.
1	0.0	±8.0	±8.0	±8.0	±8.0	±8.0	±8.0	±6.0	±5.0	±2.0	±.60
2	0.0	±5.7	±5.7	±5.7	±5.7	±5.7	±5.7	±4.3	±3.6	±1.4	±.43
3	0.0	±4.4	±4.4	±4.4	±4.4	±4.4	±4.4	±3.3	±2.8	±1.1	±.33
4	0.0	±4.0	±4.0	±4.0	±4.0	±4.0	±4.0	±30	±2.5	±1.0	±.30
8	0.0	±2.8	±2.8	±2.8	±2.8	±2.8	±2.8	±2.1	±1.8	±0.7	±.21

C. All sources supplying Asphalt concrete must, when requested by the Engineer, be able to supply written evidence that they meet or exceed the minimum standards of VDOT Road and Bridge Specifications Section 212.07, .08, .10, .11 and .12 for Acceptance, Adjustments, Handling and Storing Aggregates, Asphalt Concrete Mixing Plant, and Preparation of mixtures respectively.

D. Tests for conformance with the Specifications may be made of samples of materials as requested by the Engineer. All test samples shall meet or exceed the minimum standards of VDOT Special Provision for Sec. 212 Asphalt Concrete dated October 11, 1989 and if said tests fail, costs of tests and corrective measures will be at the Contractor's expense with no additional costs to the Owner.

E. Asphalt Concrete Surface Course will be as per the type and location shown on the schedule and shall conform with the following provisions.

1. Asphalt Concrete Resurfacing Course types currently suitable for use within the City of Chesapeake are as follows:

a. Type SM-1 Asphalt Concrete shall consist of siliceous fine aggregate, granite, slag, gravel screenings or combination thereof combined with asphalt cement.

At least 20 percent Grading A sand shall be used conforming to VDOT Section 202 of the Specifications.

b. Type SM-2A, SM-2B and SM-2C Asphalt Concrete shall consist of crushed stone, crushed slag, or crushed gravel and fine aggregate, slag or stone screenings, or a combination thereof combined with asphalt cement.

For mixtures SM-2B and SM-2C at least 10 percent sand conforming to VDOT Section 202 of the Specifications for Grading A, F, G or a combination thereof shall be used. Natural sand shall not exceed 20%.

No more than 5 percent of the aggregate retained on the No. 4 sieve and no more than 20 percent of aggregate passing the No. 4 sieve may be polish susceptible.

c. Type SM-3A, SM-3B and SM-3C Asphalt Concrete shall consist of crushed stone, crushed slag or crushed gravel and fine aggregate, slag, or crushed screenings, or combination thereof combined with asphalt cement.

For mixtures SM-3B and SM-3C at least 10 percent sand conforming to VDOT Section 202 of the Specifications of Grading A, F, G or a combination thereof shall be used. Natural sand shall not exceed 20%.

No more than 5 percent of the aggregate retained on the No. 4 sieve shall be polish susceptible. All material passing the No. 4 sieve may be polish susceptible.

2. Whenever the amount of aggregate passing the No. 200 sieve exceeds five percent (5%), minimum of fifteen percent (15%) siliceous sand (Minimum Grading B) may be required to be added to the mix.

	Percentage by Weight Passing Square Mesh Sieves											Mix Temp.
Type	2	1½	1	¾	½	3/8	No. 4	No. 8	No. 30	No. 50	No.200	(at Plant)
SM-1					100	94-100	65-85		20-40	9-25	4-8	210°-300°F
SM-2 A-B-C				100	97-100	82-94	48-62		18-24		4-7	210°-300°F
SM-3 A-B-C			100	97-100	72-86		40-58		14-24		3-6	210°-300°F

3. Adjustment rings for the purpose of utility adjustments shall be submitted for approval.

49.03 EXECUTION: Asphalt Concrete Resurfacing Course(s) shall consist of one or more courses placed on existing pavement in accordance with the applicable division of these Specifications and in addition shall meet the following requirements.

A. Asphalt Concrete mixtures shall conform to VDOT Road and Bridge Speci-fications Sections 320.03-.08 for Placing Limitations, Equipment, Conditioning of Existing Surfaces, Spreading and Finishing, Compaction, and Joints respectively.

B. When directed, the Contractor shall cut samples from the compacted pavement for testing depth and density as directed by the Engineer.

Construction of Density Control Strips will be required as per VDOT Special Provision for Sec. 320 Asphalt Concrete Pavement dated October 12, 1989 and VTM-10. If said

tests fail to meet density as per the test method, costs of the tests and corrective measures shall be borne by the Contractor, at no additional expense to the Owner. However, if the test(s) should pass, all cost(s) shall be paid by the Owner.

C. Surface tolerances shall not exceed 1/4 inch when tested with a ten foot straightedge placed at any two contacts with the surface. All humps or depressions exceeding the specified tolerance shall be corrected or the defective work removed and replaced with new material by the Contractor at no additional expense to the Owner.

D. The Contractor will be responsible for adjusting all City owned utilities in accordance with City of Chesapeake Standard Utility Top Adjustment UTA-1

Drawing, as shown on Page GT-103. The quantities in the appropriate bid items are approximate only, and it will be the Contractor's responsibility to determine the actual quantities. Also, the bid units in those bid items are for the total cost of utility adjustments whether adjusted by adjusting rings or manually adjusted in the event adjusting rings cannot be obtained.

All existing manholes that have adjustable frame and cover will be adjusted with filler rings, or manually adjusted.

All utility adjustments are to be completed prior to resurfacing the existing pavement.

E. All asphalt concrete application that exceeds 165 pounds per square yard shall be applied in two (2) courses to include leveling courses as directed.

F. The paver used for paving the streets on the schedule is to be a track paver.

Also, the streets noted on the schedule with an * are to be track type paver with an automatic leveling device.

G. The Engineer or representative of the Engineer may implement the provision of the Supplementary Conditions, Part One, Section 9.j.

H. Road and adjacent area to be cleaned daily.

I. Rate of proposed application will be varied by Engineer's representative to accomplish desired results.

J. No open longitudinal joint will be allowed on streets that the speed limit is equal to or greater than 35 MPH. In the event that the rate of application is equal to or greater than 220 pounds per square yard, no longitudinal joint will be allowed regardless of posted speed limit.

K. Connecting road and entrance tie-ins are to be done concurrent with resurfacing. A maximum of three (3) days will be allowed in the event that a second crew will do tie-ins.

49.04 MEASUREMENT AND PAYMENT: Costs of all materials, labor, and equipment as well as incidental expenses shall be included in the unit price for furnishing, placing, and compacting the asphalt concrete resurfacing material and shall be measured and paid for as follows:

A. Asphalt concrete will be measured in tons of the type specified, complete-in-place. Net weight information will be furnished in the form of individual weight. Tickets are to be provided with each vehicle load.

B. Each vehicle used to transport asphalt material shall be inspected when it is reported empty and the quantity of asphalt material remaining therein, if any, shall be gaged and agreed upon as to quantity by representatives of the City and Contractor. All asphalt material remaining shall be deducted from the vehicle net weight ticket.

C. Payment will be made at the unit price per ton for each type as specified in the unit price table.