

SECTION 503 -- ASPHALTIC CONCRETE

503.01 -- Description

This work shall consist of placing asphaltic concrete as shown in the plans.

503.02 -- Material Requirements

1. Asphaltic concrete shall conform to the requirements in Section 1028.
2. Asphalt cement shall be the type and grade specified in the plans and shall conform to the requirements in Section 1029.
3. The asphalt cement used in the State maintenance patching shall be the same type used in the asphaltic concrete mixture that is being produced at the time the patching material is procured.
5. The Contractor is cautioned that the quantities of asphaltic concrete and asphalt cement for State maintenance patching shown in the proposal are for bidding purposes only. To insure that the correct quantity of millings and aggregates are stockpiled, the Contractor shall contact the Engineer to determine the State maintenance needs in the project area.

503.03 -- Equipment

1. General Requirements:
 - a. The Contractor shall provide plant calibration documentation.
 - b. If asphaltic concrete is obtained from a commercial plant not under the Contractor's direct control, the Contractor shall reach an agreement with the commercial producer to perform the required calibrations and adjustments.
 - c. Tank volumes shall be available at the plant.
2. Asphalt Mixing Equipment:
 - a. General Requirements:
 - (1) The equipment that is used for heating, proportioning, and mixing the aggregates and asphalt cement shall be able to produce a uniform mixture.

(2) The dryers shall be able to dry and heat all aggregates to the required temperatures with positive control. Aggregates shall be agitated continuously during the process of heating. Damage to asphalt cement in dryer-drum type mixing plants shall be avoided.

(3) Salvaged bituminous material shall not be exposed to open flame.

(4) Continuous temperature and time readings of the asphaltic materials shall be electronically recorded whenever the plant is operated. A copy of the temperature reading shall be given to the Engineer. Temperature and time displays shall be easily accessible. Temperature and time sensors will be provided at the following locations:

(i) Inside the asphaltic concrete mixture discharge chute.

(ii) Inside the surge bin. (The Contractor may manually take and record the temperature. Readings will be taken every 2 hours when the plant is in operation.)

(iii) Inside the asphalt cement storage tank. (The Contractor may manually take and record the temperature. Readings shall be taken every 2 hours when the plant is in operation.)

(5) (i) Equipment used for heating asphalt cement shall conform to the requirements of Section 501.

(ii) During storage, the asphalt cement temperature shall be maintained between 250°F and 350°F. All plants shall be equipped with a circulating system for asphalt cement which is designed to assure proper and continuous circulation during the operating period. Storage tanks shall have sufficient capacity to provide for continuous operation. The tanks shall be situated and constructed to allow the volume of the asphalt cement to be safely and accurately determined at any time.

(6) (i) The plant may have surge bins for the temporary storage of asphaltic concrete.

(ii) The asphaltic concrete taken from the surge bin will not differ significantly from the material taken directly from the plant.

(iii) The first material entering the bin will be the first material removed.

(iv) The surge bin shall be completely emptied at the end of each operating day unless insulated or heated.

(7) All plants shall be equipped with a continuously operated dust collector. The collected material may be wasted or returned to the mix.

(8) Mineral filler bins shall be protected from moisture.

b. Pugmill Plants:

(1) General:

(i) Pugmill plants shall include cold aggregate feeders, oversize screens, storage bins for dried aggregate, ingredient proportioning devices, and all other equipment necessary to produce the specified mixture.

(ii) The pugmill blades shall have a minimum clearance of 3/4 inch from all fixed and moving parts.

(iii) The mixer shall be equipped with a discharge hopper holding approximately 1 ton of hot mixture and capable of intermittent discharge.

(2) Batch Plants:

(i) [1] Batch plants shall have an accurate time lock to control the operations during a complete mixing cycle.

[2] They shall lock the scale box gate after the charging of the mixer until the closing of the mixer gate at the completion of the cycle.

[3] They shall lock the bituminous material bucket throughout the dry mixing period and shall lock the mixer gate throughout the dry and wet mixing periods.

[4] The dry mixing period is defined as the time between the opening of the scale box gate and the addition of bituminous material.

[5] The wet mixing period is the interval of time between the addition of bituminous material and the opening of the mixer gate.

[6] The control of the timing shall be flexible and capable of being set at 5-second intervals or less throughout a total cycle of not less than 3 minutes.

[7] A mechanical batch counter shall be installed as a part of the timing device and shall be designed and constructed to register only upon the release of the bituminous material. It shall not register any dry batches or any material wasted through the bins.

[8] The timing device shall have a suitable case with a locking door that shall always be kept closed and locked except when adjustments or repairs are required.

(ii) Each batch plant shall be equipped with an asphalt cement volume meter or a heated or insulated asphalt bucket with scales.

(iii) Scale hoppers and scales for proportioning aggregates and asphalt to the batch plant's mixer shall be accurate within 0.5 percent; and they shall be sensitive within 0.2 percent or 2 pounds, whichever is greater, throughout the range of use.

(3) Continuous Type:

(i) Plants shall be equipped with a pump synchronized to the feeding mechanism so that the required percentage of asphalt cement is applied continuously and uniformly.

(ii) The feeding system shall be synchronized to the rest of the plant.

c. Dryer-Drum Plants:

(1) These plants shall include cold aggregate feeders, vibratory screening units for removing oversize material from both virgin and reclaimed material, proportioning devices for controlling the quantity of each ingredient in the mixture, and any other equipment necessary to produce the mixture as specified.

(2) Plants shall be equipped with a pump synchronized to the feeding mechanism so that the required percentage of asphalt cement will be applied continuously and uniformly.

(3) The feeding system shall be synchronized to the rest of the plant.

3. Hauling Equipment:

a. The truck beds shall be clean and shall be constructed so that all materials remain in the bed while the truck is in transit.

b. All trucks shall be equipped with a suitable waterproof cover.

c. Any truck that causes excessive material segregation or undue delays shall not be used.

4. Placement Equipment:

a. Asphaltic Concrete Mixture Finish Machines:

(1) Finishing equipment shall place the full-lane width shown in the plans. The machines shall be self-propelled and able to spread and finish the material to the required thickness without segregation of the mixture. The finish machines shall produce a smooth and uniform surface, a profile that meets the required cross section, and layers of uniform density.

(2) The finishing machine shall be equipped with a hopper to receive the asphaltic concrete. It shall be equipped with a distributing auger or other acceptable devices that will distribute the asphaltic concrete evenly across the entire screed width.

(3) The finishing machine shall produce continuous and uniform consolidation of the asphaltic concrete. The screed of the finishing machine shall be adjustable to the crown and heated across its entire length. Controls will be provided to prevent overheating the bituminous material. Screed extensions shall be set to extrude the asphaltic concrete mixture at the same level as the main screed such that the compacted roadway or shoulder will have a uniform slope.

(4) The finishing machine shall employ an automated screed control to regulate slope and grade adjustments. A variation of 1/8 inch along the reference line and a minimum variation of 1/8 inch in required transverse slope for each 12 feet of lane width will be detected and compensated for by the equipment.

(5) The screed shall be controlled by a self-contained grade reference system with a span length (length between extreme points of contact with the roadway) of at least 30 feet.

(6) When the leading edge of the reference system encounters a localized (less than 3 feet long) change in the roadway elevation, the sensing point shall react to compensate for 25 percent of the actual change in elevation.

(7) The self-contained grade reference system shall be used at or near the centerline of the roadway unless this is not possible; in which case, the recommendations of the manufacturer of the finishing machine shall be used.

(8) The self-contained grade reference system shall be used to place all layers of the asphaltic concrete mixture, except that a joint matching shoe may be used when matching the adjacent pass of the final layer and for shoulder surfacing work.

(9) When required by the contract or the Engineer, such as when matching project ends, bridges, railroad crossings, and approach ends or filling settlement areas to the correct grade, the electronic screed shall be controlled by sensors on a string line reference erected by the Contractor to the required elevations.

b. Side-Delivery Machines:

(1) Side-delivery machines shall be self-propelled and capable of spreading and finishing the material to the required thickness with a strike-off device without segregating the mixture. The machine shall be designed for placement of asphaltic concrete in the lane adjacent to the lane in which it is operating. Side-delivery machines shall produce a smooth, uniform surface of the required cross section and density.

(2) The side-delivery machine shall be equipped with a hopper to receive the asphaltic concrete before distribution to the strike-off.

(3) The side-delivery machine shall be able to control the depth of placement by sensors or other devices using the surface of the adjacent lane as a reference.

(4) When a side-delivery machine is used, a mechanical broom shall follow the delivery machine to sweep any spilled material onto the newly placed and uncompacted surface.

5. Elevating Equipment:

a. Elevating machines shall transfer without segregation asphaltic concrete from the roadway surface to the finishing machine's receiving hopper.

b. The machine shall remove essentially all the asphaltic concrete from the roadway surface without inclusion of subgrade material or damage to the existing surface.

6. Material Transfer Vehicles:

Material transfer vehicles are authorized. Before crossing any bridge, these vehicles must be unloaded to a weight approved by the NDR Bridge Division.

7. Compaction Equipment:

a. All roller wheels shall be smooth and free from defects that would mar the surface of the work. Adjustable spring scrapers shall be fitted to each roller to scrape in both directions.

b. All rollers shall have full width wheel sprinkling devices and drip pans designed to keep contamination off the roadway surface.

8. Curb Forming Equipment:

Curb forming equipment shall extrude and compact the asphaltic concrete mixture to the required cross section.

9. Portable Scales:

a. Scales shall be installed on adequate foundations and in accordance with the manufacturer's recommendations. They shall have sufficient capacity to determine the weight of a fully loaded truck.

b. The Contractor shall calibrate the scales accurate to 0.5 percent of a fully loaded truck in the Engineer's presence, or the scale shall have a current Nebraska Department of Agriculture inspection certificate. Documentation showing that scales were calibrated by a scale company service crew during the current season is also acceptable.

c. The scale shall be cross-checked daily for accuracy by comparing its results with a load's gross weight on an approved commercial scale.

d. If the scales are not able to weigh all axles at once, the approaches shall be extended so that the entire hauling unit will be level as each axle is measured.

e. Suitable protection shall be provided against wind currents that may affect the accuracy of the scales. The platform of the scale shall be kept clean and free from accumulations of materials.

503.04 -- Construction Methods

1. Preparation:

a. (1) The Contractor shall prepare the roadbed, subgrade, base, and/or foundation courses as prescribed in Division 300.

(2) Before placing the asphaltic concrete, the surface of the trimmed subgrade shall be tight, dust-free, and rolled to firmly incorporate any loose or disturbed material and provide a suitable foundation for the subsequent construction.

b. When resurfacing a roadway, the Contractor shall remove and dispose of any materials whenever correction of grade elevation is required at project, bridge, and railroad crossing approach ends. Disposal shall be paid for as equipment rental in accordance with Section 919.

c. The Contractor shall clean the pavement surface of all dirt, foreign material, loose surfacing material, crack filler or joint sealing materials, and unstable bituminous patches.

d. (1) When grade correction is necessary to meet a surface elevation, it shall be accomplished by milling or removal as shown in the plans.

(2) The Contractor shall dispose of any surfacing material along the project right-of-way left by maintenance forces.

(3) All asphaltic crack filler or joint sealing material in joints or cracks less than 1 1/2 inches in width shall be removed flush with the surface of the pavement. All asphaltic crack filler or joint sealing material in joints or cracks 1 1/2 inches or more in width shall be removed to a depth of at least 1 inch below the pavement surface.

e. (1) The Contractor shall apply a tack coat in accordance with the requirements of Section 504 after the existing surface has been prepared and before spreading each layer of asphaltic concrete.

(2) Asphaltic concrete shall not be placed over emulsified tack coat until the emulsion has broken and all free moisture has evaporated or drained off the surface.

f. The surface layer shall be laid in one continuous thickness over the length of the project, including core out sections. Thickness adjustment in the transition sections shown in the plans shall take place in the lower layers.

2. Asphalt Mix Control Strip:

a. On the first production day, a 1000 ton (900 Mg) control strip shall be placed and approved before full production begins. The Contractor shall construct the control strip using the approved asphalt mix design with laydown and compaction procedures that are representative for the project.

b. (1) The Contractor shall take at least four (4) control strip mixture samples and evaluate the air voids, the voids in mineral aggregate, and the performance graded binder content.

(2) Random samples shall be taken, and the air voids shall be between the values shown in Table 503.02

**Table 503.02
Control Strip Sampling**

Sample #	Ton (Mg)	Air Voids
1	0 to 200 (0-180 Mg)	2.0 to 6.0
2	201 to 400 (181 – 350 Mg)	2.5 to 5.5
3	401 to 700 (351 – 650 Mg)	3.0 to 5.0
4	701 to 1000 (651 – 900 Mg)	3.0 to 5.0

(3) Marshall air voids of each sample shall be calculated using the average of 4 theoretical maximum specific gravity sample results.

(4) The test results must fall within the specified tolerances, but if subsequent tests continue a trend toward the target values specified, the Department may tentatively accept the control strip with assurance from the Contractor that adjustments will be made in an effort to attain and then maintain target Specifications.

(5) The mixture is acceptable if all test results are within specification limits.

(6) NDR personnel will observe testing procedures.

c. The Contractor shall repeat the control strip process for each mix type and until an acceptable control strip is produced.

d. Accepted control strips, when placed in areas that are to be paved, will remain in place and be measured as a part of the completed pavement.

e. When a control strip for a specific mix type is accepted, full production of that mix type may begin.

f. At locations where the contract requires more than one layer (lift) of asphalt and when different mixes are used in each layer, then the control strips for the upper layers can be placed in the lower layers.

g. When the test results for a control strip indicate the mixture does not meet the specifications, the control strip will be rejected. The Contractor shall remove and replace the strip at no additional cost to the Department.

h. Routine quality control testing will be conducted on all asphalt mix produced except the 1000 tons (900 Mg) control strip, which is tested separately.

i. The various Type 17 asphalt mixes and Asphaltic Concrete Type SPS are excluded from any control strip requirements.

j. The Contractor will be allowed to select three of the four individual air void tests within the control strip and apply those three selected individual values to the individual air void test result of the first 750 ton (680 Mg) subplot of Lot 1 to calculate the initial moving average of four and resulting pay factor for the initial 750 ton (680 Mg) subplot. The Contractor must select the three results to be used prior to the testing of the first 750 ton (680 Mg) subplot of Lot 1.

3. Placement Limitations:

a. The Contractor shall place the asphaltic concrete mixture on a dry and frost-free surface.

b. The minimum laydown temperatures are shown in Table 501.02.

c. (1) After September 15, if the haul distance exceeds 3 miles (5 km), all hauling vehicles shall be equipped with a tarp. Tarping and insulation will be required if it is determined by the Engineer that uniform temperature control of the mixture is not being maintained.

(2) Each surface of a hauling vehicle's bed shall be insulated and have an "R" value of approximately 1.0.

(3) All insulating material shall be firmly attached to the truck box, whether inside the box or out, and shall have no bulges, tears, gaps, or uneven seams.

(4) Unsatisfactory or deteriorated insulating materials shall be replaced.

d. No asphaltic concrete mixture shall be placed after October 31, unless specifically ordered by the Engineer.

e. When side-delivery machines are used, a mechanical broom shall follow behind the delivery machine to sweep all spilled material off the existing surface.

4. Delivery and Production Requirements:

The delivery of asphaltic concrete shall be scheduled to allow continuous laydown operations.

5. Placement Operations:

a. (1) The actual mixing temperature shall be selected by the Contractor to provide adequate aggregate coating and mixture compaction at laydown.

(2) The temperature of the asphaltic concrete mixture shall not exceed 350°F immediately after discharge from the mixer.

(3) Never shall the selection of the mixing temperature be such that drainage of the asphalt cement from the aggregate will result.

b. (1) Asphaltic concrete used in the construction of sections having a uniform width, including the surface layer of surfaced shoulders and the surface layer of intersections and driveways, shall be spread with finishing machines.

(2) All asphaltic concrete shoulder material may be placed with a side-delivery machine except the surface lift. The surface lift shall be placed with a finishing machine.

(3) In deep, irregular, or narrow sections and in flumes, ditch lining, island noses, or where it is impractical to use a mechanical finishing machine, the Contractor may use other approved methods for spreading the mixture.

(4) Dumping bituminous mixtures on pavement which is not to be resurfaced will not be allowed.

c. Each asphaltic concrete layer shall meet the following thickness requirements:

(1) When constructed under traffic maintained conditions, the top layer's thickness shall not exceed 2 inches.

(2) The bottom layer's thickness shall be at least 3 inches when placed on a base course or the subgrade.

d. The entire width of a layer shall be placed before any of the subsequent layer is started.

e. Under traffic maintained conditions, when a layer in one lane is 500 feet or more in advance of the corresponding layer in an adjacent lane at the end of a day, the Contractor shall not resume placement operations in the farthest advanced lane until both lanes have been placed the same distance.

f. Any longitudinal joint shall be parallel and coincident to the major traffic lane edges.

g. Asphaltic concrete lugs shall be constructed at all unsurfaced entrances, driveways, or intersections. They shall be 1 foot by 40 feet measured along the project centerline. For shared entrances, the length may be increased 20 feet for each additional entrance.

h. When surfacing extends beyond the intersection or driveway surfacing areas, the elevation transition shall extend a minimum of 3 feet for each inch of elevation.

i. When the project includes surfaced intersections or driveways for which resurfacing is not shown in the plans, the roadway or shoulder resurfacing shall be feathered onto the intersections or driveways a minimum of 3 feet for each inch of elevation difference.

j. The asphaltic concrete mixture shall be dumped in the center of the finishing machine's hopper without overloading. Care shall be exercised to avoid spilling the mixture on the existing surfacing. The finishing machine shall be operated to produce a lane of uniform thickness and density.

k. Immediately after screeding and before compaction is started, the surface shall be checked. Accumulations of poorly mixed asphaltic concrete which drop onto the surface shall be removed and replaced. All irregularities in alignment and grade shall be corrected.

l. The roller shall pass over the unprotected end of the freshly placed mixture only when the placement of a layer is to be discontinued. When placement is discontinued, a wedge of asphaltic concrete, feathered 3 feet in length for each inch of layer thickness, shall be placed at the end of the lane.

6. Construction of Transverse and Longitudinal Joints:

a. All joints shall be well bonded.

b. The Contractor shall clean all vertical surfaces and apply a tack coat to the surfaces.

c. (1) The Contractor shall cut the surface to expose material the full thickness of the layer when constructing a transverse joint at the end of the existing layer.

(2) The hot mixture shall be placed in contact with the exposed surface and raked to the proper depth and grade.

(3) Before acceptance, the finished transverse joint will be checked for smoothness with a 10 foot straightedge. The allowable surface variation is 1/8 inch.

d. When constructing longitudinal joints, all voids shall be filled and the joint shall be properly "set up" to receive the maximum compression under rolling.

7. Compaction:

a. The Contractor shall roll and compact the asphaltic concrete mixture while it is in a workable condition.

b. (1) Finish rolling shall be accomplished with a steel drum roller.

(2) When paving adjacent to a previously placed lane or when placing the top layer of surfacing adjacent to an existing pavement or curb, the last pass of the roller in which the full roller width is entirely on the freshly

placed material shall be kept approximately 6 inches from the existing facility. The final pass of the roller shall then be made over the remaining uncompacted 6 inch strips, tucking the material into the joint.

(3) Rolling on superelevated curves shall progress from the low side in each lane, maintaining the 6 inch from the edge requirement of the preceding paragraph.

c. Rolling shall be continued until all roller marks are eliminated and the specified density is achieved.

d. The frequency and amplitude of vibratory rollers shall be adjusted to the manufacturer's recommendations for the thickness of layer being placed and the speed at which the roller is being operated.

e. The speed of the roller shall be adjusted to avoid displacement of the hot mixture. Any displacement that occurs shall be corrected. Rolling shall proceed continuously until all roller marks are eliminated.

f. Areas where rollers cannot be properly operated shall be compacted with appropriate equipment.

8. Preparation of Expansion Relief Joints:

a. When an asphaltic concrete pavement is constructed on a portland cement concrete pavement, the Contractor shall construct expansion relief joints as shown in the plans.

b. The Contractor shall remove a continuous full depth transverse section of the concrete pavement approximately 4 inches wide and backfill the void with asphaltic concrete. (The Contractor may use asphalt millings with the Engineer's approval.)

9. Any core hole made in the pavement by the Contractor or the Department shall be filled with asphaltic concrete and compacted to the same density as the surrounding material.

10. Density Core Samples:

a. The Contractor shall sample the pavement as prescribed in NDR T 168.

b. The Department will perform density testing on the pavement sample as prescribed in NDR T 166.

11. Pavement smoothness:

a. If the pay item "Asphalt Pavement Smoothness Testing" is included in the contract, then the asphalt pavement shall be evaluated as prescribed in Section 502 of the *Standard Specifications for Highway Construction*.

b. The Engineer may evaluate any surface irregularities caused by workmanship with a 10-foot (3 m) straight edge. The maximum allowable deviation will be 1/8 inch (3 mm) in 10 feet (3 m) measured longitudinally. If the deviation exceeds 1/8 inch (3 mm) in 10 feet (3 m), then the area shall be corrected by grinding with a machine equipped with diamond blades with spacers until the deviation is less than 1/8 inch (3 mm) in 10 feet (3 m) or the Engineer may authorized a \$500.00 deduction for each irregularity.

503.05 -- Method of Measurement

1. a. The "Asphaltic Concrete" shall be measured for payment in tons on approved scales.

b. The "Asphaltic Concrete" shall be measured with automatic batching plant scales.

c. The scale tickets shall be prepared in duplicate. The truck driver shall carry the original copy of the scale ticket to the delivery point and give it to the NDR placement inspector.

d. (1) The measured quantity shall be the total weight of asphaltic concrete shown on the scale ticket without deduction for the asphalt cement weight in the mixture.

(2) The Engineer shall deduct the weight of all material lost, wasted, damaged, rejected, or applied contrary to these specifications.

2. Placement of driveways and intersections is measured in square yards. The materials used in driveways and intersections shall be included in the roadway material bid items.

3. a. Asphalt cement will be measured in tons.

b. In the event the Contractor cannot verify the asphalt cement quantity from the scale ticket, the Contractor's laboratory test shall be used to determine the asphalt cement percentage.

c. No payment will be made for excess asphalt cement in the mix. Excess asphalt cement is all the cement that is more than 0.7 percent by weight beyond the specified amount.

4. "Asphalt Pavement Smoothness Testing" is measured according to the procedures in Section 502.

5. Expansion relief joint preparation is measured by the linear foot. All asphaltic materials are included in the pavement overlay quantities and are not measured separately.

503.06 -- Basis of Payment

1. Pay Item	Pay Unit
Asphaltic Concrete, Type ____	Ton (Tn)
Asphalt Cement ____	Ton (Tn)
Placement of Asphaltic Concrete for Intersections and Driveways	Square Yard (SY)
Asphalt Pavement Smoothness Testing	Lump Sum (LS)
Prepare Expansion Relief Joint	Linear Foot (LF)

2. a. For each lot of Asphaltic Concrete Type SPS, the asphaltic concrete unit price is multiplied by the average density per lot pay factor for the item "Asphaltic Concrete, Type SPS".

b. (1) If the mean result of the lot 3750 tons (3400 Mg) acceptance tests for asphalt density deviates from the required minimum by more than the extreme value shown under the 0.7 pay factor in Tables 1028.03 or 1028.04, the Engineer may order the removal of any or all such material in the lot 3750 tons (3400 Mg).

(2) For each subplot of Asphaltic Concrete Type SP0, SP1, SP2, SP3, SP4, and SP5, the asphaltic concrete unit price is multiplied by the product of the subplot pay factors for single test air voids and running average of four air voids and average density per lot for the item "Asphaltic Concrete, Type ____". Included in a subplot, following approval of the control strip(s), may be any roadway Asphaltic Concrete Type SP0, SP1, SP2, SP3, SP4, or SP5 which is produced, sampled and tested and approved by the Engineer for use as Patching, State Maintenance Patching, and Asphalt for Intersections and Driveways on project shall be eligible for inclusion in subplot(s) tonnage pay factor determination using the roadway Asphaltic Concrete Type ____ unit price.

(3) (i) The final pay factor for total project tonnage for any one type of superpave asphaltic concrete, expressed as a percentage, shall be computed as follows:

$$\frac{P1(T1) + P2(T2) + P3(T3)...}{T1 + T2 + T3...}$$

Where P1, P2, P3 = % pay factor for each subplot
T1, T2, T3 = tons (Mg) at respective pay factor

3. Deductions will be made for materials which have been damaged by overheating, which have been allowed to cool excessively before laying, which are required to be removed because of defective work, which have been wasted, or which have not been used as directed by the Engineer.

4. a. If the temperature exceeds 350°F but does not exceed 400°F immediately after discharge from the mixer, the pay factor shall be 0.90.

b. If the temperature of the mixture exceeds 400°F, the material will be rejected or, if used on the project, the pay factor for the material will be 0.40.

5. a. Asphalt materials which are outside the specified property ranges shall be paid for at the contract unit price multiplied by the product of the pay factors determined in Tables 503.01 A & B. The pay factors are applicable to the asphalt materials properties shown in Table 503.01 B.

Table 503.01 A

Asphalt Materials - Pay Factors		
Pay Factor *	Specified Property	
	Upper Limit	Lower Limit
1.00	+ 1% to +10%	- 1% to -10%
0.95	Greater than +10% to +15%	Less than -10% to -15%
0.90	Greater than +15% to +20%	Less than -15% to -20%
0.80	Greater than +20% to +25%	Less than -20% to -25%
0.70	Greater than +25% to +30%	Less than -25% to -30%
0.40 or Reject	Greater than +30%	Less than -30%
* If the resultant pay factor for the material is less than 0.70, the material shall be rejected if not already used. If incorporated in any work which is judged to be unsatisfactory, the material shall also be rejected.		
* If the pay factor is less than 0.70 and the material has been incorporated in work which is allowed to remain in place, the pay factor for the material shall be 0.40.		

Table 503.01 B

Applicable Properties						
Property	Asphalt Cement		Asphaltic Oil		Emulsified Asphalt	
	Viscosity Grade	Penetration Grade	Original Material	Distillation Residue	Original Material	Distillation Residue
Viscosity	X ¹		X		X ³	X
Penetration	X	X ¹		X		X ²
Distillation to 435°F			X			
Distillation to 500°F			X			
Distillation to 600°F			X			
Percent Residue			X		X	
Float Test						X
Absolute Viscosity						X
Softening Point						X

¹ Original material and thin film residue.
² Penalties cannot be based on tests made on Residue by Evaporation.
³ No penalties will be assessed if more than 1 day has elapsed between the sampling and the testing of the material.

b. When asphaltic concrete in any lot **3750 tons (3400 Mg)** or portion of a lot **3750 tons (3400 Mg)** is rejected and removed from the road, payment will not be made for the asphaltic concrete or for the asphalt cement contained in the rejected material. The determination of the quantity of asphalt cement for which payment will not be made will be based on the percent of cement used in the rejected material.

c. The order of precedence to determine the asphalt cement quantity is:

- (1) Actual lot **3750 tons (3400 Mg)** tests.
- (2) The average of the day's run.
- (3) The job mix formula.

6. If all required data is available, actual lot **3750 tons (3400 Mg)** tests will determine the quantity of asphalt cement in the rejected material.

7. Pay factors for asphaltic concrete mixtures do not alter the price paid for asphalt cement.

8. Tack coat will be paid for in accordance with Section 504.

9. Disposal of the surfacing material discarded by maintenance forces and the removing and disposing of materials for grade correction elevations and core outs will be measured in accordance with the requirements of Subsection 919.04 and paid for in accordance with Subsection 919.05.

10. a. Any bituminous mixture found contaminated by petroleum distillates or other asphalt solvents may be rejected. If already incorporated in the work, it shall be removed and replaced at no additional cost to the Department or, at the Engineer's option, may be left in place and paid for at 40 percent of the bituminous mixture's contract unit price.

b. The quantity of bituminous mixture to be removed or paid for at the reduced price will be based on full lane widths extending beyond the visible limits of the contaminated area 25 feet in both directions.

11. If more than one type of asphaltic concrete is required, the pay item will be subdivided so the quantities of each type are documented.

12. Pavement thickness cores are paid for as an "established" contract unit price item, which is shown in the bid proposal "Schedule of Items."

13. Density cores are subsidiary to "Asphaltic Concrete, Type ____".

14. The control strip is subsidiary to the materials used.

15. Payment is full compensation for all work prescribed in this Section.