1. Percent of asphalt cement for each sublot multiplied by the total weight represented by that sublot. Percent of asphalt cement will be determined by ATM 405 or WAQTC FOP for AASHTO T 308. The same tests used for the acceptance testing of the sublot will be used for computation of the asphalt cement quantity. If no acceptance testing is required, the percent of asphalt cement is the target value for asphalt cement in the Job Mix Design.

2. Supplier's invoices minus waste, diversion and remnant. This procedure may be used on projects where deliveries are made in tankers and the asphalt plant is producing asphalt concrete mixture for one project only.

   The Engineer may direct, at any time, that tankers be weighed in the Engineers presence before and after unloading. If the weight determined at the project varies more than 1% from the invoice amount, payment will be based on the weight determined at the project.

   Any remnant or diversion will be calculated based on tank stickings or weighing the remaining asphalt cement. The Engineer will determine the method. The weight of asphalt cement in waste asphalt concrete mixture will be calculated using the target value for asphalt cement as specified in the Job Mix Design.

Temporary Pavement. By weighing. No deduction will be made for the weight of asphalt cement or anti-stripping additive.

Longitudinal Joint. By the lineal foot of longitudinal joint.

401-4.02 ACCEPTANCE SAMPLING AND TESTING. The quantity of each type of asphalt concrete mixture produced and placed will be divided into lots and the lots evaluated individually for acceptance.

A lot will normally be 5,000 tons. The lot will be divided into sublots of 500 tons, each randomly sampled and tested for asphalt cement content, density, and gradation according to this Subsection. If the project has more than 1 lot, and less than 8 additional sublots have been sampled at the time a lot is terminated, either due to completion of paving operations or the end of the construction season (winter shutdown), the material in the shortened lot will be included as part of the prior lot. The price adjustment computed, according to Subsection 401-4.03, for the prior lot will include the samples from the shortened lot.

If 8 or 9 samples have been obtained at the time a lot is terminated, they will be considered as a lot and the price adjustment will be based on the actual number of test results (excluding outliers) in the shortened lot.

If the contract quantity is between 1,500 tons and 4,999 tons, the contract quantity will be considered one lot. The lot will be divided into sublots of 500 tons and randomly sampled for asphalt cement content, density, and gradation according to this Subsection. Hot mix asphalt quantities of less than 300 tons remaining after dividing the lot into sublots will be included in the last sublot, hot mix asphalt quantities of 300 tons or greater will be treated as an individual sublot. The lot will be evaluated for price adjustment according to Subsection 401-4.03 except as noted.

For contract quantity of less than 1,500 tons (and for temporary pavement), hot mix asphalt will be accepted for payment based on the Engineer's approval of a Job Mix Design and the placement and compaction of the hot mix asphalt to the specified depth and finished surface requirements and tolerances. Remove and replace any hot mix asphalt that does not conform to the approved JMD.

Any area of finished surfacing that is visibly segregated, fails to meet surface tolerance requirements is considered unacceptable per Subsection 105-1.11.

1 Asphalt Cement. Samples for the determination of asphalt cement content will be taken from either the windrow in front of the paver, or at the end of the auger, or behind the screed prior to initial compaction. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if

applicable. At the discretion of the Engineer, asphalt cement content will be determined in accordance with ATM 405 or WAQTC FOP for AASHTO T 308.

2. Asphalt Cement Quality. The Contractor shall sample asphalt cement from the asphalt cement supply line when requested, witnessed by the Engineer's representative. After purging residual asphalt cement, take 3 one-quart samples into wide mouth one-quart metal containers. Asphalt cement will be sampled for acceptance testing in accordance with WAQTC FOP for AASHTO T 40 and tested for conformance to the specifications in Section 702. Three separate samples will be taken, one for acceptance testing, one for Contractor retesting, and one held in reserve for referee testing.

3. Aggregate Gradation.
   a. Drum Mix Plants. Samples taken for the determination of aggregate gradation from drum mix plants will be from the combined aggregate cold feed conveyor via a diverter device, from the stopped conveyor belt or from the same location as samples for the determination of asphalt cement content. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. The aggregate gradation for samples from the conveyor system will be determined in accordance with WAQTC FOP for AASHTO T 27/T 11. For asphalt concrete mixture samples, the gradation will be determined in accordance with WAQTC FOP for AASHTO T 30 from the aggregate remaining after the ignition oven (WAQTC FOP for AASHTO T 308) has burned off the asphalt cement. Locate diverter devices for obtaining aggregate samples from drum mix plants on the conveyor system delivering combined aggregates into the drum. Divert aggregate from the full width of the conveyor system and maintain the diverter device to provide a representative sample of aggregate incorporated into the asphalt concrete mixture.

   b. Batch Plants. Samples taken for the determination of aggregate gradation from batch plants will be from the same location as samples for the determination of asphalt cement content, or from dry batched aggregates. Two separate samples will be taken, one for acceptance testing and one held in reserve for retesting if applicable. Dry batched aggregate gradations will be determined in accordance with WAQTC FOP for AASHTO T 27/T 11. For asphalt concrete mixture samples, the aggregate gradation will be determined in accordance with WAQTC FOP for AASHTO T 30 from the aggregate remaining after the ignition oven (WAQTC FOP for AASHTO T 308) has burned off the asphalt cement.

4. Density. Cut full depth core samples from the finished asphalt concrete pavement within 24 hours after final rolling. Neatly cut one 6-inch diameter core sample with a core drill from each sublot at the randomly selected location marked by the Engineer including locations having low cyclic density. Use a core extractor to prevent damage to the core. The Engineer will determine the density of the core samples in accordance with WAQTC FOP for AASHTO T 166/T 275. Do not core asphalt concrete pavement on bridge decks. Backfill and compact all voids left by coring with new asphalt concrete mixture within 24 hours. This work shall be performed by the contractor with no cost to the Department.

   Failure to cut core samples within the specified period will result in a deduction of $100.00 per sample per day. Failure to backfill voids left by sampling within the specified period will result in a deduction of $100.00 per hole per day. The accrued amount will be subtracted under Item 401(6), Asphalt Price Adjustment.

5. Retesting. A retest of any sample outside the limits specified in Table 401-2 may be requested provided the quality control requirements of 401-2.05 are met. Deliver this request in writing to the Engineer within 7 days of receipt of the initial test result. The Engineer will mark the sample location for the density retest. The original test results for gradation, asphalt cement content, or density will be discarded and the retest result will be used in the price adjustment calculation regardless of whether the retest result gives a higher or lower pay factor. Only one retest per sample is allowed. Except for the first lot, gradation or asphalt cement content retesting of the sample from the first sublot of a lot will include retesting for the MSG. There shall be no resampling and testing of cores taken for low cyclic density.

401-4.03 EVALUATION OF MATERIALS FOR ACCEPTANCE. The following method of price adjustment will be applied to each type of Asphalt Concrete Pavement for which the contract quantity equals or exceeds 1,500 tons, except as specified in Subsection 401-4.02.

Acceptance test results for a lot will be analyzed collectively and statistically by the Quality Level Analysis method as specified in Subsection 106-1.03 to determine the total estimated percent of the lot that is within specification limits. Asphalt cement content results will be reported to the nearest 0.1 percent.

The price adjustment is based on the lower of two pay factors. The first factor is a composite pay factor for asphalt concrete mixture, which includes gradation and asphalt cement content. The second factor is for density. Sublot density values used will be lesser of either the random mat density or an average of cyclic low densities taken within the limits of the sublot.

A lot containing asphalt concrete pavement with less than a 1.00 pay factor will be accepted at an adjusted price, provided the pay factor is at least 0.75 and there are no isolated defects identified by the Engineer. A lot containing asphalt concrete pavement that fails to obtain at least a 0.75 pay factor will be considered unacceptable and rejected under Subsection 105-1.11.

The Engineer will reject asphalt concrete mixture that appears to be defective based on visual inspection. A minimum of two samples will be collected from the rejected mixture and tested if requested. If all test results are within specification limits, payment will be made for the mixture. If any of the test results fail to meet specifications, no payment will be made and the cost of the testing will be subtracted under Item 401(6), Asphalt Price Adjustment. All costs associated with removal and disposal of the rejected asphalt concrete mixture are subsidiary to the Asphalt Concrete pay item.

Outlier Test. Before computing the price adjustment, the validity of the test results will be determined by SP-7, the Standard Practice for Determination of Outlier Test Results. Outlier test results will not be included in the price adjustment calculations. Cyclic low density will not be considered outliers.

If any sieve size on a gradation test or the asphalt cement content is an outlier, then the gradation test results and the asphalt cement content results for that sublot will not be included in the price adjustment. The density test result for that sublot will be included in the price adjustment provided it is not an outlier.

If the density test result is an outlier, the density test result will not be included in the price adjustment, however, the gradation and asphalt cement content results for that sublot will be included provided neither is an outlier.

Quality Level Analysis. Pay factors are computed as follows:

1. Outliers (determined by SP-7), and any test results on material not incorporated into the work, are eliminated from the quality level analysis.

   The arithmetic mean ($\bar{x}$) of the remaining test results is determined: $\bar{x} = \frac{\Sigma x}{n}$

   Where: Σ = summation of
   x = individual test value to x_n
   n = total number of test values

   $\bar{x}$ is rounded to the nearest tenth for density and all sieve sizes except the No. 200 sieve. $\bar{x}$ is rounded to the nearest hundredth for asphalt cement content and the No. 200 sieve.

2. The sample standard deviation(s), after the outliers have been excluded, is computed:

$$s = \sqrt{\frac{n\Sigma(x^2) - (\Sigma x)^2}{n(n-1)}}$$

Where: $\Sigma (x^2)$ = sum of the squares of individual test values.
$(\Sigma x)^2$ = square of the sum of the individual test values.

The sample standard deviation (s) is rounded to the nearest hundredth for density and all sieve sizes except the No. 200 sieve. The sample standard deviation (s) is rounded to the nearest 0.001 for asphalt cement content and the No. 200 sieve.

If the computed sample standard deviation (s) is <0.001, then use s = 0.20 for density and all sieves except the No. 200. Use s = 0.020 for asphalt cement content and the No. 200 sieve.

3. The USL and LSL are computed. For aggregate gradation and asphalt cement content, the Specification Limits (USL and LSL) are equal to the Target Value (TV) plus and minus the allowable tolerances in Table 401-2. The TV is the specification value specified in the approved Job Mix Design. Specification tolerance limits for the largest sieve specified will be plus 0 and minus 1 for Quality Level Analysis purposes. The TV for density is 94% of the maximum specific gravity (MSG), the LSL is 92% of MSG and the USL is 98%.

TABLE 401-2
LOWER SPECIFICATION LIMIT (LSL) & UPPER SPECIFICATION LIMIT (USL)

Measured Characteristics	LSL	USL
3/4 inch sieve	TV-6.0	TV+6.0
1/2 inch sieve	TV-6.0	TV+6.0
3/8 inch sieve	TV-6.0	TV+6.0
No. 4 sieve	TV-6.0	TV+6.0
No. 8 sieve	TV-6.0	TV+6.0
No. 16 sieve	TV-5.0	TV+5.0
No. 30 sieve	TV-4.0	TV+4.0
No. 50 sieve	TV-4.0	TV+4.0
No. 100 sieve	TV-3.0	TV+3.0
No. 200 sieve[1]	TV-2.0	TV+2.0
Asphalt %	TV-0.4	TV+0.4
Density %	92	98

Note 1.Tolerances for the No. 200 sieve may not exceed the broad band limits in Table 703-3.

4. The Upper Quality Index (Q_U) is computed: $Q_U = \frac{USL - \bar{x}}{s}$

Where: USL = Upper Specification Limit
Q_U is rounded to the nearest hundredth.

5. The Lower Quality Index (Q_L) is computed: $Q_L = \frac{\bar{x} - LSL}{s}$

Where: LSL = Lower Specification Limit
Q_L is rounded to the nearest hundredth.

6. P_U (percent within the upper specification limit which corresponds to a given Q_U) is determined. See Subsection 106-1.03.

7. P_L (percent within the lower specification limit which corresponds to a given Q_L) is determined. See Subsection 106-1.03.

8. The Quality Level (the total percent within specification limits) is determined for aggregate gradation, asphalt cement content, and density.

$$\text{Quality Level} = (P_L + P_U) - 100$$

9. Using the Quality Levels from Step 8, the lot Pay Factor is determined for Density (DPF) and gradation and asphalt cement content pay factors (PF) from Table 106-2. The maximum pay factor for the largest sieve size specification for gradation is 1.00.

10. The Composite Pay Factor (CPF) for the lot is determined using the following formula:

$$CPF = \frac{[f_{3/4\ inch}\ (PF_{3/4\ inch}) + f_{1/2\ inch}\ (PF_{1/2\ inch}) + \ldots f_{ac}\ (PF_{ac})]}{\Sigma f}$$

The CPF is rounded to the nearest hundredth.

Table 401-3 gives the weight factor (f) for each sieve size and asphalt cement content.

TABLE 401-3
WEIGHT FACTORS

Gradation	Factor "f"
3/4 inch sieve	4
1/2 inch sieve	5
3/8 inch sieve	5
No. 4 sieve	4
No. 8 sieve	4
No. 16 sieve	4
No. 30 sieve	5
No. 50 sieve	5
No. 100 sieve	4
No. 200 sieve	20
Asphalt %	40

The price adjustment will be based on either the CPF or DPF, whichever is the lowest value. The price adjustment for each individual lot will be calculated as follows:

Price Adjustment = [(CPF or DPF)* -1.00] x (tons in lot) x (PAB)

* CPF or DPF, whichever is lower.

PAB = Price Adjustment Base = $46.50 per ton

EVALUATION OF ASPHALT CEMENT

Asphalt cement will be randomly sampled and tested every 200 tons and evaluated for price adjustment. If the last sample increment is 100 tons or less, that quantity of asphalt cement will be added to the quantity represented by the previous sample and the total quantity will be evaluated for price adjustment. If the last sample increment is greater than 100 tons, it will be sampled, tested and evaluated separately. Asphalt cement pay reduction factors for each sample will be determined from Table 401-4.

The total asphalt cement price adjustment is the sum of the individual sample price adjustments and will be subtracted under Item 401(6), Asphalt Price Adjustment.

Table 401-4
ASPHALT CEMENT PAY REDUCTION FACTORS
(Use the single, highest pay reduction factor)

	Spec	Pay Reduction Factor (PRF)								
		0	0.04	0.05	0.06	0.07	0.08	0.1	0.25	Reject or Engr Eval
Tests On Original Binder										
Viscosity	<3 Pa-s	≤3		>3						
Dynamic Shear	>1.00 kPa	>1.00		0.99-0.88				0.87-0.71	0.70-0.50	<0.50
Toughness	>110 in-lbs	>93.5	90.0-93.4	85.0-89.9	80.0-84.9	75.0-79.9	70.0-74.9			<70.0
Tenacity	>75 in-lbs	>63.8	61.0-63.7	58.0-60.9	55.0-57.9	52.0-54.9	48.0-51.9			<48.0
Tests On RTFO										
Mass Loss	<1.00 %	<1.00		1.001-1.092				1.093-1.184	1.185-1.276	>1.076
Dynamic Shear	>2.20 kPa	>2.20		2.199-1.816				1.815-1.432	1.431-1.048	<1.048
Test On PAV										
Dynamic Shear	<5000 kPa	<5000		5001-5289				5290-5578	5579-5867	>5867
Creep Stiffness, S	<300 MPa	<300		301-338				339-388	389-450	>450
Creep Stiffness, m-value	>0.300	>0.300		0.299-0.287				0.286-0.274	0.273-0.261	<0.261
Direct Tension	>1.0 %	>1.0		0.99-0.86				0.85-0.71	0.70-0.56	<0.5

Asphalt Cement Price Adjustment for each sample = 5 x PAB x Qty X PRF
PAB = Price Adjustment Base
Qty = Quantity of asphalt cement represented by asphalt cement sample
PRF = Pay Reduction Factor from Table 401-4

Asphalt Cement Appeal Procedure. Once notified of a failing test result of an asphalt cement sample, the Contractor has 21 days to issue a written appeal. The appeal must be accompanied by all of the Contactor's quality control test results and a test result of Contactor's sample of this lot tested by an AASHTO accredited asphalt laboratory (accredited in the test procedure in question). The Engineer will review these test results and using ASTM D3244 determine a test value upon which to base a price reduction.

If the Contractor challenges this value, then the referee sample held by the Engineer will be sent to a mutually agreed upon independent AASHTO accredited laboratory for testing. This test result will be incorporated into the ASTM D3244 procedure to determine a test value upon which to base a price reduction. If this final value incurs a price adjustment, the Contractor under Item 408(3), Asphalt Price Adjustment, shall pay the cost of testing the referee sample.

The total Asphalt Price Adjustment is the sum of all the price adjustments for each lot and will be included in 401(6) asphalt price adjustment.

EVALUATION OF PAVEMENT SMOOTHNESS. The top layer of asphalt concrete pavement will be measured in accordance with 401-3.15 and evaluated for smoothness price adjustment. The Engineer will calculate the smoothness price adjustment as follows:

Smoothness Price Adjustment = PAB x PQ x SF
PAB = Price Adjustment Base (401-4.03)
PQ = Final quantity of Asphalt Concrete Mixture, tons
PrI = Final measured pavement smoothness, inches/mile
SF = Smoothness Factor

If the PQ is less than 1,500 tons, the SF = 0
If the PQ is 1,500 to 5,000 tons, the SF = 0.1166 – (0.01666 x PrI)
If the PQ is greater than 5,000 tons, the SF = 0.0583 – (0.0083 x PrI)

The smoothness price adjustment will be applied under Item 401(6), Asphalt Price Adjustment.

EVALUATION OF LONGITUDINAL JOINT DENSITY. Longitudinal joint density price adjustments apply when asphalt concrete mixture quantities are equal to or greater than 1,500 tons. An price adjustment will be based on the average of all the joint densities on a project and determined as follows:

1. If project average joint density is less than 91% MSG, apply the following disincentive:

   Deduct = ($1.00 per lineal foot) x (lineal feet of paved joint for the entire project) x (91 % – Project Average Joint Density %) x 100 (Note: convert % to decimals in this equation)

2. If project average joint density is greater than 91% MSG apply the following incentive:

   Add = ($1.00 per lineal foot) x (lineal feet of paved joint for the entire project) x (Project Average Joint Density % – 91%) x 100 (Note: convert % to decimals in this equation)

The longitudinal joint price adjustment will be included in Item 401(6), Asphalt Price Adjustment.

401-5.01 BASIS OF PAYMENT. Separate payment will not be made for asphalt cement or anti-strip additives for Item 401(3), Temporary Pavement, or asphalt concrete for leveling course.

Asphalt cement, anti-stripping additives, tack coat, and crack sealing (401-3.07) are subsidiary to the asphalt concrete pavement unless specified as pay items.

Price adjustments will not apply to:

1. Asphalt Concrete Mixture for leveling course
2. Temporary Pavement

Payment for furnishing and installing joint adhesive and sealing the pavement adjacent to the joints will be paid as 401(9) Longitudinal Joint Adhesive and Sealing.

All crushed aggregate base course, Grading D-1 for the side slopes is subsidiary to item 401(1) Asphalt Concrete.

All **work required to transition the new pavement according to the plans into existing roads, driveways, and pathways at all approaches, is subsidiary to Item 401(1), Asphalt Concrete.**

Payment will be made under:

Pay Item	Pay Unit
401(1) Asphalt Concrete, Type __; Class __	Ton
401(2) Asphalt Cement, __	Ton
401(3) Temporary Pavement	Ton
401(4) Asphalt Concrete, Type __; Class __	Square Yard
401(6) Asphalt Price Adjustment	Contingent Sum
401(9) Longitudinal Joint Adhesive and Sealing	Lineal Foot

SECTION 604

MANHOLES AND INLETS

604-4.01 METHOD OF MEASUREMENT. *Add the following:* Frames, grates, and lids will not be measured for payment.

604-5.01 BASIS OF PAYMENT. *Delete this subsection and substitute the following:* Frames, grates and lids are subsidiary to the drainage structure.

All excavation, concrete coring, and inlet adjustments are subsidiary to Item 604(5), Inlet, Type A.

Payment will be made under:

Pay Item	Pay Unit
604(5) Inlet, Type A	Each

SECTION 606

GUARDRAIL

606-2.01 MATERIALS. *Delete* "Flexible Markers" *in its entirety and substitute the following:*

Flexible Markers. Use flexible markers with an over all length of 72 inches. The marker shaft shall have a coil spring at the bottom and a flag at the top. The shaft and spring shall be one piece and made from galvanized spring steel. The flexible marker shall have an orange HDPE flag which provides approximately 20 square inches of surface area. Use stainless or galvanized steel attaching hardware. The following is an example of an acceptable flexible marker:

Model:	FF2
Manufacturer:	Nordic Fiberglass, Inc. P.O. Box 27 Highway 75 South Warren, MN 56762
Phone:	(218) 745-5095
Fax:	(218) 745-4990
E-mail:	www.nordicfiberglass.com

If using another brand, submit specifications to the Engineer for approval prior to ordering the markers.

Locations for raising the guardrail will be specified by the Engineer.

Replacement of all W-Beam will be specified and approved by the Engineer.

606-3.02 POSTS. *Delete the first two numbered items in this Subsection and substitute the following:*

1. Exclusive of end treatments, use one type of post in each run of guardrail.

606-3.05 TERMINAL SECTIONS. *Delete the second paragraph.*

606-3.06 REMOVAL AND RECONSTRUCTION OF GUARDRAIL. *Add the following:* Guardrail removed and to be replaced with new guardrail shall have the entire new run installed within 7 calendar days after removal.

Guardrail located within 50 feet of bridge ends shall have the new guardrail installed by the end of the shift in which the existing guardrail is removed.

Add the following subsections:

606-3.09 FLEXIBLE MARKERS. For each slotted rail terminal, a flexible marker shall be attached to the extreme piece of rail. The flexible markers shall be attached using hardware and attachment methods recommended by the manufacturer.

606-5.01 BASIS OF PAYMENT.

2. Terminal Sections. *In subparagraph b. change* "(ET-2000)" *to read:* (ET-2000 Plus).

Add the following pay item:

Pay Item	Pay Unit
606(13) Extruder Terminal (ET-2000 Plus)	Each

SECTION 608

SIDEWALKS

Add the following subsection:

608-3.04 DETECTABLE WARNINGS. Construct detectable warnings according to the details, **notes** and the locations shown on the Plans. *****Deleted*** Align pattern perpendicular to the pathway as shown on the plans. ***Deleted*****

When detectable warnings are required for uncurbed asphalt path to roadway intersections, install Top Mark **heat activated glue down 12" X 24" panels, or approved equal**, according to the manufactures instructions full width of the path.

*****Deleted*****

608-4.01 METHOD OF MEASUREMENT, *Delete in its entirety and substitute the following:* Detectable Warning System, material, and placement are not measured separately and are subsidiary to Item 401(1).

*****Deleted*****

SECTION 615

STANDARD SIGNS

615-2.01 MATERIALS. *Under item 1. Change the first sentence to the following:* Unless Shop Drawings have been provided in the Contract, submit shop drawings for all signs that require the use of the Alaska Sign Design Specifications (ASDS), the Department of Transportation and Public Facilities-Sign Face Fabrication Requirements, and the Alaska Traffic Manual, letter width and spacing charts for approval before fabrication.

Under item 3. delete the first sentence and replace with the following: Construct sleeve type concrete foundations for signs.

615-3.01 CONSTRUCTION REQUIREMENTS. *Replace item 1 with the following:*

1. Install foundations according to subsection 660-3.02.

Under item 7 replace the 6th sentence with the following: Deliver salvaged sign panels, post, and hardware to the Soldotna Maintenance Yard.

615-3.02 SIGN PLACEMENT AND INSTALLATION. *Add the following:* Do not remove existing signs unless authorized by the Engineer. Do not remove any S1-1, S2-1, S5-1, or S5-2 school zone signs. Install replacement signs the same day the existing signs are removed.

615-5.01 BASIS OF PAYMENT. *Delete the first sentence and substitute the following*: Sign posts, bases, mounting hardware, and concrete used for sign bases are subsidiary.

Add the following: Keeping existing signs in service until no longer required by the Department, or temporarily relocating existing signs, will be subsidiary to 615 items.

Removal of existing signpost foundations, or work required to be abandoned in place shall be subsidiary to 615 items.

SECTION 640

MOBILIZATION AND DEMOBILIZATION

03/13/05 (E21)

640-1.01 DESCRIPTION *Add the following:*

6. Comply with the Alaska Department of Labor and Workforce Development (DOLWD) requirements for Worker Meals and Lodging, or Per Diem; as described in their October 15, 2004 memo WHPL #197 (Amended) and the State Laborer's and Mechanic's Minimum Rates of Pay (current issue).

   Ensure subcontractors comply with the DOLWD requirements.

   Ensure facilities meet the Alaska Administrative Code 8 AAC 61.1010 and 8 AAC 61.1040 *Occupational Safety and Health Standards*, 18 AAC *31 Alaska Food Code*, and U. S. Code of Federal Regulations 29 CFR Section 1910.142 *Temporary Labor Camps.*

   Do not consider the cost of Meals and Lodging, or Per Diem in setting wages for the worker or in meeting wage requirements under AS 23.10.065 or AS 36.05.

640-4.01 METHOD OF MEASUREMENT. *Delete the numbered paragraph 3 and substitute the following:*

3. The remaining balance of the amount bid for Mobilization and Demobilization will be paid after all submittals required under the Contract are received and approved.

Add the following:

4. Progress payments for Worker Meals and Lodging, or Per Diem will be computed as equivalent to the percentage, rounded to the nearest whole percent, of the original contract amount earned.

640-5.01 BASIS OF PAYMENT. *Add the following pay item:*

Pay Item	Pay Unit
640(4) Worker Meals and Lodging, or Per Diem	Lump Sum

SECTION 642

CONSTRUCTION SURVEYING AND MONUMENTS

Special Provisions

642-3.01 GENERAL. *Add the following after item 10: Before starting work on the project, stake and reference the construction centerline. Reference the existing centerline at 100 foot on tangents and 50 foot intervals on curves from the beginning and ending of superelevation changes when the roadway is no longer at normal crown. Also stake the beginning and ending of tapers of the edge of pavement. The reference stake shall be a minimum of 1 inch by 2 inch by 2 feet and be offset 4 to 8 feet from the shoulder on the right side of the roadway. They shall show the offset distance to centerline and the station from the beginning of the project. Ensure the stakes are visible from the roadway by clearing as necessary. Maintain staking until the final roadway striping is completed.*

Install a reference sign every 500 feet. The reference signs shall meet the following requirements:

1. *mounted a minimum of 5 feet above the shoulder,*

2. *located a minimum of 5 feet from the edge of shoulder, or behind guardrail,*

3. *marked with the station from the beginning of the project, in 2 inch high black lettering on an orange background.*

Compute design centerline profile to best fit the existing centerline profile. Prepare existing top of pavement cross sections for horizontal curves and transitions with design superelevated pavement plotted for each curve. The Engineer may require minor adjustments to the roadway grades. This shall not be considered extra work. Provide this profile information to the Engineer (electronically in Excel format) immediately upon its completion, along with checked computations on level loops, but in no case later than 7 calendar days before slope staking or blue topping.

The Contractor shall also reference the beginning and ending points of the existing no passing zones in a separate field book.

SECTION 643

TRAFFIC MAINTENANCE

643-1.03 TRAFFIC CONTROL PLAN. *Replace the last paragraph with the following:* A waiver may be requested of regulation 17 AAC 25 regarding oversize and overweight vehicle movements within this project in writing. If the waiver is approved, movements of oversize and overweight vehicles in or near traffic within

the project limits will be done according to the provisions of an approved Traffic Control Plan. Maintain a minimum12-foot lateral separation between the non-street legal vehicles and the motoring public. The Traffic Control plan shall specify the traffic control devices required for these operations.

643-2.01 MATERIALS. *Add the following:*

17. Flexible Markers. Refer to subsection 606-2.01 Materials.

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. *Add the following:* Whenever construction activity encroaches onto the safe route in a traffic control zone, station a flagger at the encroachment to assist pedestrians and bicyclists past the construction activity.

643-3.02 ROADWAY CHARACTERISTICS DURING CONSTRUCTION. *Add the following:* Traffic may be maintained on a continuous gravel surface for 10,000 feet.

643-3.04 TRAFFIC CONTROL DEVICES. *Delete the first sentence of the eighth paragraph and substitute the following:* Items paid under this Section remain the Contractor's property unless stated otherwise.

Add the following to item 1. Embankments: Close trenches and excavations at the end of each continuous work shift.

Add the following to item 3. Fixed Objects: Remove obstructions greater than 4 inches above the nominal foreslope grade at the end of each continuous work shift.

Delete item 4.b. and replace with the following: Flagger Certification by ATSSA

Delete item 6 and replace with the following:

6. Street Sweeping. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material using a street sweeper that can collect materials rather than eject them to the shoulder of the road.

7. Power Brooming. Keep free of loose material paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where the Contractor's operations have deposited loose material using a power broom that can eject them to the shoulder of the road.

Change items 7 and 8 to 8 and 9 respectively.

Add the following:

10. ET-2000 LET. The price listed in the Traffic Control Rate Schedule will be full compensation for the purchase, installation, maintenance during construction, removal and salvaging the ET-2000 LET unit(s). Deliver the salvaged unit(s) to the nearest DOT &PF Maintenance and Operations' district office, or as directed by the Engineer.

643-3.05 AUTHORITY OF THE ENGINEER. Add the following after the second sentence: In no case shall this time exceed 24 hours.

643-3.06 TRAFFIC PRICE ADJUSTMENT. Add the following: Traffic Price Adjustment will also apply to unacceptable driving conditions, such as severe bumps, "washboarding," potholes, excessive dust or mud, or dirty or out of place traffic control devices. The Engineer will make the sole determination as to whether the roadway or pedestrian facility is acceptable for full unimpeded use by the public. Failure to maintain an acceptable infrastructure or traffic control plan will result in a price adjustment equal to 100 percent of the applicable rate shown in Table 643-1, for the time the roadway or pedestrian facility is in an unacceptable condition.

Delete Table 643-1 and substitute the following:

TABLE 643-1
ADJUSTMENT RATES

Published ADT	Dollars/Minute of Delay/Lane
0-9,999	$30
10,000+	$40

643-3.08 CONSTRUCTION SEQUENCING. *Delete the last sentence and substitute the following:* Unless otherwise determined by the Engineer and on an approved Traffic Control Plan (TCP), do not restrict traffic during the times listed below.

1. Friday from 1200 hours to Sunday 2300 hours

2. Around any holiday:

   a. If a holiday falls on Sunday, Monday or Tuesday, the above stipulations apply from 1200 on the Friday before the holiday to 0300 on the day after the holiday.

   b. If a holiday falls on Wednesday, the above stipulations apply from 1200 on the Tuesday before the holiday to 0300 on the Thursday after the holiday.

   c. If a holiday falls on Thursday, Friday or Saturday, the above stipulations apply from 1200 on the day before the holiday to 0300 on the Monday after the holiday.

3. ***deleted***

4. Weekdays:

   a. From 0600 hrs to 0800hrs, Monday through Friday
   b. From 1600 hrs to 1800 hrs, Monday through **Thursday**

Lane restrictions, if allowed shall be conducted so that no more than a **5** minute accumulated stopped delay, **20** vehicles, or ***deleted*** **660** feet of traffic is detained, whichever occurs first, before releasing the detained motorists. ***deleted*** If a queue of traffic develops at a stop, the entire queue must be emptied to include the last car that entered the queue at the time the queue was released.

Obtain the local school bus schedule and coordinate his work efforts to ensure the school buses are not delayed through the construction zone. This plan shall be submitted, as a TCP, to the Engineer for approval before the implementation of the school bus coordination plan.

643-3.09 INTERIM PAVEMENT MARKINGS. *In the second paragraph, delete the words* "or cover them with black removable preformed marking tape."

Replace the first sentence in the last paragraph with the following: Apply final pavement markings according to subsection 670-3.01, Construction Requirements of these Special Provisions.

643-4.01 METHOD OF MEASUREMENT. *Add the following:* No measurement required to provide a 24-hour toll free (1-800-###-####) "hotline road report" telephone with a prerecorded message, and weekly notices with daily updates. Work will be subsidiary to Item 643(1) or 643(2), Traffic Maintenance.

643-5.01 BASIS OF PAYMENT. *Add the following:* The Engineer does not require a change order/directive for Item 643(25) Traffic Control.

TRAFFIC CONTROL RATE SCHEDULE

Traffic Control Device	Pay Unit	Unit Rate
Construction Signs	Each/Day	$5.00
Special Construction Sign	Square Foot	$20.00
Type II Barricade	Each/Day	$ 3.00
Type III Barricade	Each/Day	$ 10.00
Traffic Cone or Tubular Marker	Each/Day	$ 1.00
Drums	Each/Day	$ 3.00
Sequential Arrow Panel	Each/Day	$55.00
Portable Concrete Barrier	Each	$60.00
Temporary Crash Cushion / ET-2000 LET	Each	$3,000.00
Pilot Car	Hour	$65.00
Watering	M-Gallon	$ 20.00
Street Sweeping	Hour	$150.00
Power Broom	Hour	$75.00
Plastic Safety Fence	Foot	$2.50
Portable Changeable Message Board Sign	Calendar Day	$150.00
Temporary Sidewalk Surfacing	Square Foot	$1.15
Flexible Markers	Each	$50.00
Removal of Pavement Markings	Foot	$1.25
Temporary Guardrail	Foot	$21.00
Interim Pavement Markings Painted Markings Removable Preformed Markings Temporary Raised Pavement Markings Word or Symbol Markings	 Foot Foot Each Each	 $0.30 $0.65 $0.90 $40.00

The Engineer will pay for Item 643(15) Flagging on a contingent sum basis at the rate of $36/hour. The Engineer does not require a change order/directive for the flagging pay item. Flagging associated with Change Order work will be paid at the prices agreed to in the Change Order, or on a time and materials basis according to subsection 109-1.05. (08/02/04)R222USC04

Delete Item 643(15) and substitute the following:

Pay Item	Pay Unit
643(15) Flagging	Contingent Sum

SECTION 644

SERVICES TO BE FURNISHED BY THE CONTRACTOR

644-2.01 FIELD OFFICE. *Delete this subsection in its entirety and substitute the following*: Furnish and maintain a suitable office for the Engineer, available for occupancy from 2 weeks before beginning work, through 30 days after issuance of the notice of project completion as defined in subsection 105-1.15. The following office requirements shall be met:

1. A minimum of 1,000 square feet of floor area. The office area shall be divided so that it contains an office room separated by a closable door. The office room shall have a minimum of 160 square feet of floor area.

2. A thermostatically controlled interior heating system with necessary fuel.

3. Adequate electrical lighting and 120 volt, 60 hertz power, with a minimum of 6 electrical outlets.

4. A minimum of 100 square feet of window area and adequate ventilation.

5. Adequate parking for a minimum of 16 vehicles, with one disability parking space meeting the requirements of Americans with Disabilities Act Accessibility Guidelines (ADAAG). The Engineer's office shall be accessible by the disability parking.

6. Attached indoor plumbing with sanitary lavatory facilities and potable drinking water.

7. Four telephone service lines available at the office location.

8. If a part of the Contractor's building, it shall be completely partitioned off from the balance of the structure and provided with a separate outside door equipped with a lock.

9. Located within 3 miles of the project.

10. Weekly janitorial service consisting of emptying trash receptacles, vacuuming office area and cleaning restrooms and counter areas.

Add the following Section:

SECTION 669

AUTOMATED TRAFFIC RECORDERS

669-1.01 DESCRIPTION. This work shall consist of furnishing and installing piezoelectric sensors, inductive loop sensors, temperature sensor and cabinets. The work also includes removal and disposal of existing piezoelectric sensors, traffic loops, conduit, and cabinets.

AVC
A typical AVC consists of inductive loop and piezoelectric sensors connected to a traffic counter. In each traffic lane, three inductive loops are separated by a specific travel distance and located beneath the pavement. A piezoelectric sensor is located between the second and third detector loop, and is embedded in the pavement surface. Lead wires run in underground conduit from the sensors to a cabinet located at the side of the road. Inside the cabinet, the lead wires connect to the traffic counter. The traffic counter detects the presence and speed of passing vehicles from inductive loop signals. The traffic counter detects axle number and center-to-center axle spacing from piezoelectric signals. Presence, speed and axle passage information is processed by the traffic counter to classify the number and type of vehicles, which is stored for later retrieval.

TDP
ATR stations are also equipped with a Temperature Data Probe (TDP), which consists of temperature sensors connected to a datalogger. Three separate sensors sample air temperature, pavement temperatures and vertical ground temperature profiles. Temperature sensors send voltage signals to the datalogger. Sensor voltage levels are processed by the datalogger to yield temperature information that is stored for later retrieval.

The existing data collection sites shall not be disabled for more than one month each.

The locations of load centers and cabinets shown on the plans are approximate and the Engineer shall establish the exact locations in the field on coordination with the DOT/PF Highway Data Section.

A general description of the Automated Traffic Recorders Sites on the project is as follows:

H8 ATR Kenai Spur Highway, Sta. 274+75. Install two new detection loops and replace conduit to JB01. Remove and replace CBA1 cabinet.

The Contractor shall supply and install the CBA1 cabinet , detection loops, conductors and conduit to JB01. The Contractor shall splice the new conductors to the existing system within JB01 with a non-reenterable wet location splice. The new cabinet shall be installed on the existing post and foundation. The Contractor shall install the loops in the recycled asphalt prior to final paving.

The Contractor shall remove and dispose of the existing cabinet, traffic detection loops, and conduit to JB01.

H9 ATR Kenai Spur Highway, Sta 306+40. Install two new detection loops and replace conduit to JB01. Remove and replace CBA1 cabinet.

The Contractor shall supply and install the CBA1 cabinet , detection loops, conductors and conduit to JB01. The Contractor shall splice the new conductors to the existing system within JB01 with a non-reenterable wet location splice. The new cabinet shall be installed on the existing post and foundation.. The Contractor shall install the loops in the recycled asphalt prior to final paving.

The Contractor shall remove and dispose of the existing cabinet, traffic detection loops, and conduit to JB01.

H11 AVC Kenai Spur Highway, Sta 386+55. Install two piezoelectric sensors and one pavement temperature probe.

The Contractor shall supply and install the temperature sensor, and piezoelectric sensors as shown on the plans.

The Contractor shall reduce asphalt recycling depth to 2 inches in the area of the AVC in order to preserve the detection loops. The Contractor shall install Piezoelectric Sensors in the surface of the new asphalt concrete pavement by sawcutting as shown on the plans.

The Contractor shall remove and dispose of the existing piezoelectric sensors and temperature probe.

669-1.02 REGULATIONS AND CODE. All materials and workmanship shall conform to the standards of the Underwriter's Laboratories, Inc. and the National Electrical Safety Code and local safety code requirements, where applicable.

All electrical equipment shall conform to the standards of the National Electrical Manufacturer's Association, where applicable.

669-2.01 MATERIALS. All materials provided shall be new, unless otherwise stated, and shall meet the following requirements:

1. Wiring. All wiring shall be in accordance with subsection 660-3.05, Wiring. All single wire conductors and cables shall have clear, distinctive and permanent markings on the outer surface throughout the entire length giving the manufacturer's name or trademark, the insulation type-letter designation, the conductor size, voltage rating and the number of conductors if a cable. All wires and cables must be home run labeled in each junction box and cabinet; for example, W1SLA (for wire) and GaSLA (for cable) as shown on the plans.

2. Conduit. All conduit shall be in accordance with subsection 660-3.03, Conduit. All conduit, except for PVC conduit forming the inductive loops, shall be galvanized rigid metal. All grounding bushings shall be plastic-sleeved to minimize the potential for insulation damage during wire pulls. Install plastic-sleeved grounding bushings before pulling any wire.

3. Presence Loops. All presence loops shall be in accordance with subsection 740-2.05, Conductors. Conductors used for detector presence loops shall be UL listed as IMSA specification #51-5-1984 single conductor PVC nylon with tube jacket, type THHN, #12 AWG.

4. Piezoelectric Sensors. Piezoelectric sensors shall meet the following requirements:

    a. Functional Class. The piezoelectric sensors shall be Class I type.

    b. Center Core. The piezoelectric sensors' center cores shall be 16 gauge, flat, braided, silver plated copper wire.

    c. Piezoelectric Material. The piezoelectric sensors' piezoelectric material shall be highly compressed piezoelectric copolymer, P(VDF-TrFE).

    d. Outer Sheath. The piezoelectric sensors' outer sheaths shall be 0.016-in thick brass, CDA-260, ASTM B 587-88.

    e. Dimensions. Unless shown otherwise on the plans, the piezoelectric sensors shall be 10-ft long, 0.260-in wide and 0.063-in thick; ±0.005-in.

    f. Insulation resistance. The piezoelectric sensors' insulation resistance between core and shield shall be greater than 500M ohms.

g. Piezoelectric Coefficient. The piezoelectric sensors' piezoelectric coefficient shall be greater than or equal to 20 pC/N – nominal.

h. Passive Signal Cable. The piezoelectric sensors' cables shall be RG 58 type or electrical equivalent, with a direct-burial rated outer jacket. The nominal capacitance of the cable shall be 89 pF/m.

i. Installation Bonding Agent. The piezoelectric sensors' bonding agent shall be AS475 methyl methacrylate grout.

5. Style CBA1 Cabinets. All cabinets shall meet or exceed a NEMA Type 3R rating. Style CBA1 cabinets shall meet the following requirements:

a. Cabinet Construction. The cabinet and hinged door shall be constructed from sheet aluminum alloy, and shall be unpainted with a smooth exterior finish. Welds shall be neatly formed and free of irregularities. Inside and outside edges of the cabinet shall be free of burrs. Provide cabinet with aluminum mounting plate as shown on the plans.

b. Latch/Lock. The lock shall be a Corbin #2 lock keyed to match existing Highway Data Section (HDS) cabinets. Two keys shall be furnished with each lock.

6. Temperature Sensors. The Contractor shall provide the Alternate Pavement Sensor (TP).

a. Road Temperature Thermocouple (TP). The Datalogger Road Temperature Thermocouples shall be equal to or better than a Campbell Scientific Model 105-L100 Road Temperature Thermocouple.

Temperature Sensors are available from:

Campbell Scientific, Inc.
815 W. 1800 N
Logan, Utah 84321-1784

http://www.campbellsci.com

voice: (801) 753-2342
fax: (801) 752-3268

669-3.01 CONSTRUCTION REQUIREMENTS.

1. Wiring.

a. Referenced Requirements. All wiring shall be installed in accordance with subsection 660-3.05, Wiring.

b. Termination. At junction boxes, unused pairs shall be terminated within splices. At cabinets, unused pairs shall be terminated to a terminal block. At terminal blocks, all conductors, including unused spares, shall terminate and be soldered to "spade" type terminal lugs.

c. Relief. All wiring shall have at least 2-ft of slack cable in each junction box and at least 6-ft of slack cable available in the equipment cabinet prior to the terminal block.

d. Labeling. All wiring shall be labeled in all junction boxes and at all terminal blocks.

2. Conduit.

   a. Referenced Requirements. All conduit shall be installed in accordance with subsection 660-3.03, Conduit, or as indicated on the plans.

   b. Pull Cords. Nylon pull cords shall be left in all conduits larger than 1-in and in all spare conduits.

   c. Bushings. Plastic-sleeved bushings shall be in place before wire pulls are performed.

3. Terminal Blocks.

   a. Terminal Block Placement. Terminal blocks within cabinets shall be mounted so that all terminals are easily accessible from the front of the cabinet.

   b. Labeling. All terminal blocks and wire pairs shall be clearly labeled on the block.

   c. Termination. All conductors, including unused spares, shall terminate and be soldered to "spade" type terminal lugs.

4. Presence Loops.

   a. Referenced Requirements. All presence loops shall be installed and constructed in accordance with subsection 660-3.05, Wiring, unless otherwise specified on the plans.

   b. Placement Design Adherence. The plans are not schematics; installation of the presence loops shall closely conform to the location and layout of conduit runs shown in the plans.

   c. Presence Loop Dimensions. Unless otherwise noted, presence loops shall be formed of four turns of wire, and shall be 6-ft square with plus-or-minus 1-in (± 1-in) tolerance.

   d. Lead-in Conduit. All lead-in conduit from edge of pavement to the presence loops shall be straight and perpendicular to the center line of the road.

   e. Presence Loop Alignment. Presence detector loops shall be centered in the traffic lane plus-or-minus 1-in (± 1-in) tolerance.

   f. Presence Loops in Asphalt Concrete Pavement.

      I. Presence Loops In New Asphalt Concrete Pavement . All loops installed in new asphalt concrete paving shall be installed immediately prior to final paving. Installation of loops after final lift paving shall not be permitted.

5. Piezoelectric Sensors.

   a. Manufacturer's Recommendations: All piezoelectric sensors shall be installed per AVC equipment and piezoelectric sensor manufacturer's recommendations.

   b. Placement Design Adherence. The plans are not schematics; installation of the piezoelectric sensors shall closely conform to the location and layout of conduit runs shown in the plans.

   c. Sawcut Requirement. Piezoelectric sensors shall be installed in sawcut slots in final pavement. "Blockouts" shall not be used.

   d. Coaxial Cable. All coaxial cables shall be run to the equipment cabinet without splices and terminated on the specified terminal block, with at least 6-ft of slack cable available in the equipment cabinet prior to the terminal block.

e. Lead-in Conduit. All lead-in conduit from edge of pavement to the piezoelectric sensors shall be straight and perpendicular to the center line of the road. Lead-in conduits for piezoelectric sensors shall be installed and capped at the sensor end with tape or sealant prior to paving. Lead-in conduits shall extend beyond the edge of the pavement. Lead-in conduit runs to junction boxes and cabinets may be completed before or after paving.

f. Piezoelectric Sensor Alignment . Piezoelectric Sensors shall be offset from centerline toward the outside shoulder. Piezoelectric Sensors shall extend 1-ft beyond the fog line plus-or-minus 1-in (± 1-in) tolerance.

g. Piezoelectric Sensor Interval. Unless otherwise noted, each piezoelectric sensor shall be centered in the travel interval between that sensor's adjoining inductive loops. Piezoelectric sensor placement shall be within plus-or-minus 1-in (± 1-in) tolerance.

h. Piezoelectric Sensor Replacement In Existing Pavement. Any piezoelectric sensors and epoxy to be replaced shall be completely removed by sawcutting. Sawcuts for piezoelectric sensor removal shall be straight and square. Sawcut slots resulting from piezoelectric sensor removal shall be filled with the same type epoxy as used to install piezoelectric sensors. Epoxy patched sawcut slots shall be formed by grinding to match the pavement surface profile.

i. Replacement piezoelectric sensors shall be centered 1-ft from the original location of removed sensors, offset in the direction opposite of lane traffic flow.

j. Piezoelectric Sensors in New Asphalt. All piezoelectric sensors installed in new asphalt pavement shall be installed only after final paving and three day's normal traffic use of the road.

6. Cabinets.

a. Cabinet Placement and Orientation. All Cabinets shall be installed with the doors facing away from the road.

b. Conduit Entry. All conduits entries for any above-ground enclosure shall be made through the bottom of the enclosure. No conduit runs shall be cut through the sides or top of any above-ground enclosure.

c. Style CBA1 Cabinets.

1) Mounting. The Style CBA1 cabinets shall be mounted on existing 2.5 inch perforated steel tube and supported with a sleeved concrete foundation as shown on the plans.

2) Terminal Blocks. Terminal blocks in CBA1 cabinets shall be mounted vertically as shown on the plans.

7. Field Inspection. Before installation of conduit, wiring, loops, or piezoelectric sensors, temperature sensors or cabinets, the Contractor shall notify the Engineer. Notification shall be given in writing, through the Project Engineer, a minimum of 3 working days prior to installation (excluding Saturday, Sunday and State or Federal Holidays). The Engineer shall be present to approve the installation prior to final burial or encasement. Any unacceptable installations shall be corrected and re-inspected for completeness prior to burial or encasement. Any burial or encasement without approval by the Engineer shall be uncovered, removed, and/or replaced at the Contractor's expense. Any expense or delay in the project scheduling will be the responsibility of the Contractor.

669-3.02 ACCEPTANCE TESTING. The Contractor shall perform acceptance testing on all installations.

1. General Tests. The contractor shall perform tests on the ATR installations in accordance with subsection 660-3.01.7, Field Tests.

669-3.05 DELIVERABLES. All deliverables shall be submitted to the Engineer prior to final approval of the work or as otherwise called for herein.

1. Materials Submittal.

   a. Format and Contents. The Contractor shall provide a Materials Submittal of proposed equipment and materials for the ATR installations. The Materials Submittal shall consist of three collated copies of an equipment and materials portfolio. Each identical portfolio shall contain information of sufficient detail to determine the suitability of the equipment and materials proposed.

   b. Table of Contents. Each portfolio shall include a table of contents listing each item's intended uses, item description, product name, manufacturer, model or part number and reference to associated information within the portfolio.

   c. Reference Drawings. The Materials Submittal shall include a detailed shop drawing of each equipment cabinet showing the location of all mounted components.

   d. Delivery Interval. The Materials Submittal shall be delivered for review and approval of the Engineer within thirty days following award of the contract.

   e. Liability. The State of Alaska will not be liable for any materials purchased, labor performed, equipment used or delay to the work before all equipment and materials have been reviewed and approved.

2. As-Built Plans.

   a. Format and Contents. The Contractor shall prepare four complete sets of as-built plans. The as-built plans shall detail all construction changes made to the design and include the following information on the appropriate sheets:
      I. location and depth of all inductive loops, piezo sensors, and conduit runs.

   b. Distribution. Three sets of as-built plans shall be presented to the Engineer, and one set shall be affixed to the inside of the cabinet door at the appropriate Automated Traffic Recorder Installation in a waterproof, clear plastic holder.

   c. Redlines. Redlines of full size construction plans will be acceptable as-builts.

3. Photographs.

   a. Scope. The Contractor shall provide photographic documentation of all sensor installations.

   b. Media. The Contractor shall provide all photographs in the form of prints, 35 mm negatives and Kodak PictureCD, JPEG format CDROMs.

   c. Format. Photographs, negatives and CDROMs shall be delivered organized in one or more white colored, D-ring style, 3 ring binders with clear insert overlays on fronts and spines. Photographs and negatives will be mounted in archival quality polypropelene pocketed sheets. CDROMs will be placed in CD storage sheets inside the binders.

   d. Print Size. The photographs shall be 5-in x 7-in color prints.

e. Labeling. Each photograph shall be labeled with the identification of its subject. ATR station and device designation as indicated on the plans will be used as identification whenever possible (example: H1-W1NLA). Labels will be photographed with the subject and will be rendered large enough to be read with the unaided eye.

f. Content. The photographs shall show the inductive loops and conduit in place prior to covering with gravel and pavement for asphalt pavement sites, or prior to covering with epoxy compound for concrete pavement sites. The photographs shall include:

I. two or more overall views of each ATR installation showing placement of the inductive loops.

II. one or more views of each loop showing the loop and the conduit to the nearest junction box

III. one or more views of each piezoelectric sensor conduit showing the coaxial cable, sawcut, and conduit to the nearest junction box

IV. one or more views of each temperature sensor showing the lead-in cables, sawcut, and conduit to the nearest junction box

4. Manuals. The Contractor shall provide to the Engineer all installation, repair and operation manuals for piezoelectric sensors, temperature sensors, and cabinets.

669-4.01 METHOD OF MEASUREMENT. Section 109.

669-5.01 BASIS OF PAYMENT. The contract lump sum bid price shall be full compensation for furnishing all equipment, labor and materials necessary to complete the work as specified.

Traffic Control required to install Automated Traffic Recorders is paid for under 643 items.

Payment will be made under:

Pay Item	Pay Unit
669(2) Traffic Recorder Equipment	Lump Sum

SECTION 670

TRAFFIC MARKINGS

670-1.01 DESCRIPTION. *Delete this subsection in its entirety and substitute the following:* This work consist of furnishing, preparing and placing pavement markings at the locations shown on the plans or as directed. Meet these specifications and the applicable portions of the Alaska Traffic Manual.

670-3.01 CONSTRUCTION REQUIREMENTS. *Delete all paragraphs under item 4. Methyl Methacrylate Pavement Markings. and substitute the following:*

a. General. 15 days prior to starting work meet with the Engineer for a pre-striping meeting. At the meeting do the following:

- Furnish A striping schedule showing areas and timing of work, placing materials and the traffic control plans to be used.
- Discuss placement of materials, potential problems.
- Discuss work plan at off ramps, on ramps and intersections.
- Discuss material handling procedures.
- Provide copies of the manufacture's installation instructions and copies of the Material Safety Data Sheets

b. Manufacturers' Representative. Provide the services of a manufacturer's representative on each day that pavement markings are installed. Ensure the Manufacturer's Representative observes the application of the pavement marking materials. Cooperate with the Manufacturer's Representative and the Engineer to ensure that the materials are placed in accordance with these specifications and the manufacturers recommended procedures. The manufacturers representative

c. Manufacturer Certified Installers. Install methyl methacrylate pavement markings using only striping installers certified by the marking materials manufacturer for the specific striping material and method. Submit these certifications to the Engineer at the Preconstruction Conference.

e. Preparation. Prepare the roadway surface to receive methyl methacrylate in accordance with these specifications and the manufacturer's recommendations. Clean and dry the roadway surface. Completely remove contaminants such as dirt, loose asphalt, curing agents, surface oils, or existing road marking materials prior to applying pavement marking material.

f. Application. Apply methyl methacrylate marking material according to these specifications and the manufacturer's recommendations. Use equipment designed and capable of properly mixing at the point and time of application and approved by the manufacturer for the type of product being installed.

For longitudinal markings use truck mounted automatic extrusion equipment capable of installing a double line in a single pass. Use automatic bead applicators that place a uniform layer of beads on the lines. Hand units will not be allowed

For Transverse markings legends, symbols and transverse markings use manual or automatic application equipment. Stencils or extruders are required to form sharply defined markings.

For inlaid applications use grooving equipment that produces a dry cut. Use vacuum shrouded equipment or other equally effective containment procedures. Install markings in the same workshift as the grooving operation.

(1) Longitudinal Extruded Markings Surface Applied. Apply markings for lane lines, edge lines, and centerlines to yield a thickness of 60 mils as measured from the surface of the pavement. Use Type B material.

(2) Longitudinal Extruded Markings Inlaid. Apply markings for lane lines, edge lines and centerlines to yield a thickness of 250 mils as measured from the surface of the pavement. Use Type B material. Groove the area for the inlaid markings to a depth of 250 mils.

(3) Transverse and Symbol Markings Inlaid Apply markings for onlys, arrows, stop bars, gore stripes, cross walks and railroad symbols Apply markings to yield a thickness of 250mils as measured from the surface of the pavement. Use Type C material. Groove the area for the inlaid marking to a depth of 250 mils.

(4) Transverse and Symbol Markings Surface Applied. Apply markings for onlys, arrows, stop bars, gore stripes and cross walks to yield a thickness of 120 mils as measured from the surface of the pavement. Use Type C material.

g. Disposal of Waste. Waste material becomes your property. This includes all grindings and all removed marking material. Do not dispose of or store stripe removal wastes materials or asphalt grindings on State property. Dispose of waste material according to applicable Federal, State, and local regulations.

h. Sampling. On the form provided by the engineer, record the following readings, and the locations where they were taken, and submit them to the Engineer within 24 hours for evaluation. Thickness of material and depth of slot are measured from the surface of the pavement.

- For inlay applications, record the depth of the slot every 300 feet during the grinding operation.
- For all other longitudinal applications, measure the thickness of the lines (above the pavement surface), at the time of application, every 300 feet.
- For surface applied transverse markings measure the thickness in three locations for each marking.
- Inspect the markings initially, and again two weeks after placement, to ensure the material has cured properly. Remove all soft spots or abnormally darkened areas and replace with material meeting specifications.
- Measure the retoreflectivity of each transverse marking at three locations, and of each line at intervals not to exceed 1500 feet. Take these measurements using a Delta LTL2000 Retrometer, a 30-meter retro-reflectometer, or approved similar device. Perform testing within 72 hours of curing.

The Engineer may elect to use the Contractors readings or perform additional sampling.

670-3.04 PAVEMENT MARKING REMOVAL. *Add the following:* Coordinate all removal work with construction activity. Remove pavement markings the same day permanent markings are applied, unless otherwise directed. Use vacuum shrouded equipment or other equally effective containment procedures.

Add the following new section:

670-3.07 TOLERANCES FOR METHYL METHACRYLATE PAVEMENT MARKINGS.

1. Length of Stripe. ± 2 inches
2. Width of Stripe. + 1/8 inch, - 1/8inch
3. Lane Width. ± 4 inches from the width shown in the Plans.
4. Stripes on Tangent. Do not vary more than 1 inch laterally within a distance of 100 feet when using the edge of the stripe as a reference.
5. Stripes on Curves. Uniform in alignment with no apparent deviations from the true curvature.
6. All Stripes. Keep the center of the stripe within 4 inches from the planed alignment.
7. Double Stripes. ± 1/4 inch
8. Thickness of surface applied. Minimum specified to a maximum of + 30 mils.
9. Depth of Inlay Slot. Minimum 250 mils to a maximum of 290 mils.
10. Thickness of Inlaid Marking Material. Fill inlay area completely from the bottom of the inlay to the surface of the pavement.

If it is determined that the material is being placed too thin, or otherwise not to specification, make immediate adjustments to correct the problem.

Methyl methacrylate pavement markings applied by any method will be unacceptable if:

1. The marking is not straight or wide enough.
2. The thickness of the line is not uniform or less than specified.
3. The top of the line is not smooth and uniform.
4. The material is uncured.
5. The material blackens or is inconsistent in color.
6. The inlay slot is not ground to the specified depth.
7. The inlay slot is not filled to the specified depth.
8. The edge of the markings are not clear-cut and free from overspray.
9. The reflective elements are not properly embedded.
10. The markings exhibit poor adhesion.
11. The retro-reflectivity of the markings is less than specified.
12. The color is not as specified.

Perform repairs using equipment similar to the equipment initially used to place the materials. Do not perform repairs in a "patch-work" manner. If more than one repair is required in a single 300-foot section, grind and repair the entire section.

670-4.01 METHOD OF MEASUREMENT. *Add the following:* Thickness will be measured from the top of the marking to the top of the wearing surface. Marking material placed in a depression left by pavement line removal will not be included in measuring the thickness of the line.

Delete Items 2 and 3 and replace with the following:

2. Square Foot Basis. Transverse pavement marking lines, stop bars, cross walks and gore stripes will be measured by nominal width times actual length. This does not include 24" wide lines required for Railroad Markings.

3. Each. Symbol pavement markings only's and arrow's will be measured on a unit basis with each separate word or symbol constituting a unit. Railroad Markings will be measured by the complete unit shown for each lane of travel.

4. Foot Basis: Longitudinal Pavement Markings, surface applied or inlaid, will be measured by the linear foot of 4-inch wide line. Wider striping will be measured in multiples of 4 inches.

670-5.01 BASIS OF PAYMENT. *Add the following:* There will be no separate or additional payment for the following:

- Over-runs of material caused by the variation of the gradation of the asphalt.
- Additional material required to achieve the thickness specified an open-graded pavement.

Milling for installation of the inlaid markings is subsidiary to the 670 item the milling is required for. Payment includes all costs associated with this item, including the removal of millings.

In the Pay Item table delete items 670(11) and 6709(12) and add the following:

Pay Item	Pay Unit
670(10A) MMA Pavement Markings Longitudinal Surface Applied	Linear Foot
670(10D) MMA Pavement Transverse Markings Surface Applied	Square Foot

SECTION 703

AGGREGATES

703-2.04 AGGREGATE FOR ASPHALT CONCRETE PAVEMENT.

Coarse Aggregate (retained on the No. 4 sieve). Crushed stone or crushed gravel consisting of sound, tough, durable rock of uniform quality. Remove all natural fines passing a #4 sieve before crushing aggregates for Type V or VH asphalt concrete mixtures. Free from clay balls, organic matter, and other deleterious material. Not coated with dirt or other finely divided mineral matter. ***Deleted***

Meet the following requirements (note A or B indicate class of mix, see Table 401-1), the Engineer may modify the fracture requirements if the hard aggregate sources stated in 106-1.02 do not meet specifications:

		Type IIA, IV	Type I, IIB, III	Type V	Type VH
LA Wear, % max	AASHTO T 96	45	45	45	45
Degradation Value, min	ATM 313	30	30	30	30
Sodium Sulfate Loss % max (5 cycles)	AASHTO T 104	9	9	9	9
Fracture, min %	WAQTC FOP for AASHTO TP61	90, 2 face	80, 1 face	95, 2 face	95, 2 face
Thin-Elongated Pieces, max % 1:5 1:3	ATM 306	 8 20	 8 -	 5 15	 5 15
Nordic Abrasion, max.%	ATM 312			12	8
Absorption, max. %	AASHTO T85	2.0		2.0	2.0

TABLE 703-3
BROAD BAND GRADATIONS FOR ASPHALT CONCRETE PAVEMENT AGGREGATE
Percent Passing by Weight

SIEVE		GRADATION				
	mm	Type I	Type II	Type III	Type IV	Type V, VH
1 inch	25.0	100				100
¾ inch	19.0	80-90	100			90-100
½ inch	12.5	60-84	75-95	100	100	65-75
3/8 inch	9.5	48-78	60-84	80-90	80-95	48-60
No. 4	4.75	28-63	33-70	44-81	55-70	30-40
No. 8	2.36	14-55	19-56	26-70	35-50	20-30
No. 16	1.18	9-44	10-44	16-59	20-40	≤ 22
No. 30	0.600	6-34	7-34	9-49	15-30	≤ 17
No. 50	0.300	5-24	5-24	6-36	10-24	≤ 14
No. 100	0.150	4-16	4-16	4-22	5-15	≤ 12
No. 200	0.075	3-8	3-8	3-8	3-8	3-8

Fine Aggregate
Fine Aggregate (passing the #4 sieve). Meet the quality requirements of AASHTO M 29, including S1.1, Sulfate Soundness.

For Type IV, V and VH mixes, remove all natural fines passing a #4 sieve before crushing aggregates for this asphalt concrete mixture. Consist entirely of aggregate produced from aggregate crushing process and be non-plastic as determined by WAQTC FOP for AASHTO T 90, and meets the following:

Property	Test Method	Requirement
Fine Aggregate Angularity	AASHTO T 304	45% min.

SECTION 710

FENCE AND GUARDRAIL

710-2.11 GUARDRAIL TERMINALS. *Delete numbered paragraphs 1 and 2 and substitute the following:*

1. Slotted Rail Terminal. SRT-350 manufactured by Trinity Industries, Inc., Highway Safety Products, 2525 N. Stemmons Freeway, Dallas, TX 75207, Telephone 800-644-7976. Conform to Trinity Industries, Inc. drawings approved by the Department.

2. Extruder Terminal. ET-2000 Plus manufactured by Trinity Industries, Inc., Highway Safety Products, 2525 N. Stemmons Freeway, Dallas, TX 75207, Telephone 800-644-7976. Conform to Trinity Industries, Inc. drawings approved by the Department.

SECTION 712

MISCELLANEOUS

712-2.17 METHYL METHACRYLATE PAVEMENT MARKINGS. *Delete the first and second paragraphs under item 1. Quality Requirements: and substitute with the following:* Use a marking material formulated for the application type specified. Use a marking material manufactured from new materials and free from dirt and other foreign material. Use a methyl methacrylate based resin system for part "A". Use benzoyl peroxide system for part "B".

Type A – Spray application: Material formulated for spray application without factory intermix beads or anti skid aggregate. Use glass beads and aggregate designed to be applied to freshly applied material to meet the specified retroreflectance and anti-skid properties, such as Dura-Stripe Plus Type V or approved equal.

Type B – Extruded application: Material formulated for extruded application with factory intermix beads and anti skid aggregate, and additional surface applied beads, such as Dura-Stripe Plus Type III or approved equal.

Type C – Spray or Extruded: Material formulated for spray or extruded application with factory intermix beads and anti skid aggregate and additional surface applied beads, such as Dura-Stripe Plus Types I, III or IV.

2. Performance Properties: *Add the following:*

k.	Adhesion:	To Portland Cement, minimum 13.8 MPa, to asphalt, dependent on tensile failure of the substrate. (07/17/03)R246M98
l.	Color:	Yellow, PR-1 chart, 33538 Federal Yellow. White, minimum daylight reflectance of 84.

712-2.18 GLASS BEADS FOR METHYL METHACRYLATE PAVEMENT MARKINGS. *Delete the bead table and substitute the following:* Use the type and amount of beads specified in writing by the marking material manufacturer necessary to meet the performance requirements. (08/10/04)R246usco04

State of Alaska, Standard Specifications for Highway Construction, Dated 2004 are modified as follows:

STANDARD MODIFICATIONS

SECTION 102

BIDDING REQUIREMENTS AND CONDITIONS

06/30/04 (E18)

102-1.05 PREPARATION OF BID. *Modify the second sentence in the third paragraph, after:* "If a bidder is a corporation, the bid must be signed by a corporate officer" *add:* or agent.

SECTION 105

CONTROL OF WORK

06/30/04 (E19)

105-1.16 FINAL ACCEPTANCE AND RECORD RETENTION. *Modify the first paragraph, Item 4, after:* "DOLWD" *add:* and State Department of Revenue.

SECTION 109

MEASUREMENT AND PAYMENT

06/30/04 (E11)

109-1.08 FINAL PAYMENT. *Add the following sentence to the first paragraph:* The Department will not process the final estimate until the Contractor completes Items 1 through 4 in the first paragraph of Subsection 105-1.16.

SECTION 641

EROSION, SEDIMENT, AND POLLUTION CONTROL

06/30/04 (E15)

641-1.02 DEFINITIONS. *Item 6, delete* "7" *so sentence reads:* Use EPA Form 3510-13.

SECTION 643

TRAFFIC MAINTENANCE

02/05/04 (E10)

643-3.01 GENERAL CONSTRUCTION REQUIREMENTS. *Add the following:* Immediately notify the Engineer of any traffic related accident that occurs within the project limits as soon as you, an employee, or a subcontractor becomes aware of the accident.

06/30/04 (E16)

643-3.04 TRAFFIC CONTROL DEVICES. *In the sixth paragraph and also in Item 4.b., delete:* "ATTSA" *and replace with:* ATSSA (American Traffic Safety Services Association)

Add the following subsection:

643-3.11 HIGH VISIBILITY CLOTHING. Ensure all workers within project limits wear an outer visible surface or layer that complies with the following requirements:

1. Tops.
   Wear fluorescent vests, jackets, or coverall tops conforming to Class 2 at all times. Class 2 requires at least 775 square inches of conforming fluorescent red-orange background material and at least 201 square inches of conforming retroreflective striping. Retroreflective striping shall be fluorescent yellow-green combined-performance material.

   The vest, jacket, or coverall top shall have two over the shoulder combined-performance retroreflective stripes, and at least one 360-degree horizontal combined-performance retroreflective stripe around the torso. Jackets and coverall tops shall have two horizontal combined-performance retroreflective bands on each sleeve; one above and one below the elbow.

2. Bottoms.
   Wear fluorescent red-orange Class E pants or coverall bottoms during nighttime work (sunset to sunrise). Flaggers shall wear fluorescent red-orange Class E pants or Class E coverall bottoms at all times. Furnish each garment with two 2-inch wide combined-performance fluorescent yellow-green retroreflective horizontal stripes on each leg.

3. Raingear.
   Raingear tops and bottoms, when worn as the outer visible surface or layer, shall conform to the requirements listed above in (1) Tops and (2) Bottoms.

4. Exceptions.
   When workers are inside an enclosed compartment of a vehicle, they are not required to wear high visibility clothing.

5. Standard.
   All high visibility garments shall conform to the requirements of ANSI 107-1999 as well as this specification. Class 2 and Class E garment requirements are defined in that standard. All retroreflective material must also qualify as combined-performance fluorescent material.

6. Labeling.
   All garments shall be labeled in conformance with Section 10.2 of ANSI-107-1999.

7. Condition.
   Furnish and maintain all vests, jackets, coveralls, rain gear, hard hats, and other apparel in a neat, clean, and presentable condition.

643-4.01 METHOD OF MEASUREMENT. *Add the following:* Payment for high visibility clothing for workers is subsidiary to other items.

SPECIAL PROVISIONS

SECTION 105

CONTROL OF WORK

105-1.06 UTILITIES.

2. Cooperation with Utility Owners. *Add the following:* Request locates from all the utilities having facilities in the area. Use the Alaska Digline, Inc. Locate Call Center for the following utilities:

ALASKA DIGLINE, INC.	
Locate Call Center Anchorage Area	278-3121
Statewide	800-478-3121
who will notify the following:	
ACS Aircraft Service International Group Alaska Fiberstar Alaska Native Hospital Alaska Railroad Corp Anchorage School District Anchorage Water & Wastewater Alyeska Cable AT&T Alascom, Inc. City of Wasilla Chugach Electric Assoc DOT Street Lights, State of Alaska Enstar Natural Gas Eyecom TV/Interior Telephone GCI Communications Homer Electric Assoc. Interior Telecom. Marathon Oil Matanuska Electric Assoc Matanuska Telephone Assoc MOA Street Maint. Dept MFS Technologies, inc. Tesoro Alaska Pipeline Mukluk Telephone Association Municipality of Anchorage Municipal Light & Power Phillips Petroleum PTI Telalaska Unocal United Utilities Yukon Telephone	

Call the following utilities and agencies directly:

Contact the Central Region Maintenance & Operations Office at (907) 269-0760 to obtain the appropriate District Superintendent's phone number for this project.

There are various utility appurtenances located within the project limits. Utilities scheduled for relocation are addressed in the following utility specific sections.

Right of Way and/or Construction surveying is required before utility relocation.

Payment will be made as follows:

1. Subsidiary to Item 642(1), Construction Surveying, if the Contractor is required to provide the surveying as part of the contract an/or

2. Under Item 642(3), Three Person Survey Party, if the construction or Right of Way staking required by the utility is either in advance of the two (2) week work plan, or not required by the contract.

The utility shall give the Contractor, through the Engineer, fifteen (15) calendar days advance written notice for required staking. (09/01/04)R3

105-1.17 CLAIMS FOR ADJUSTMENT AND DISPUTES. *Add the following* Appeals to the superior court under AS 36.30.685 must be filed in the third judicial district. (03/21/01)R93

SECTION 106

CONTROL OF MATERIAL

08/31/99 (S13)

106-1.01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS. *Add the following:*

Buy America Provision. The Contractor shall comply with the requirements of 23 CFR 635.410, Buy America Requirements, and shall submit a completed Material Origin Certificate, Form 25D-60, prior to award of the contract.

All steel and iron products which are incorporated into the work, shall be manufactured in the United States except that minor amounts of steel and iron products of foreign manufacture may be used, provided the aggregate cost of such does not exceed one tenth of one percent (0.001) of the total contract amount, or $2500, whichever is greater. For the purposes of this paragraph, the cost is the value of the products as they are delivered to the project including freight.

"Manufactured in the United States" means that all manufacturing processes starting with the initial mixing and melting through the final shaping, welding, and coating processes must be undertaken in the United States. The definition of "manufacturing process" is smelting or any subsequent process that alters the material's physical form, shape or chemical composition. These processes include rolling, extruding, machining, bending, grinding, drilling, etc. The application of coatings, such as epoxy coating; galvanizing, painting or any other coating that protects or enhances the value of steel or iron materials shall also be considered a manufacturing process subject to the "Buy America Requirements."

Buy America does not apply to raw materials (iron ore), pig iron, and processed, pelletized and reduced iron ore. It also does not apply to temporary steel items (e.g., temporary sheet piling, temporary bridges, steel scaffolding, and falsework). Further, it does not apply to materials which remain in place at the Contractor's convenience (e.g., sheet pilings, and forms).

The North American Free Trade Agreement (NAFTA) does not apply to the Buy America requirement. There is a specific exemption within NAFTA (article 1001) for grant programs such as the Federal-aid highway program.

When steel and iron products manufactured in the United States are shipped to a foreign country where non steel or iron products are installed on or in them (e.g., electronic components in a steel cabinet), the steel and iron is considered to meet the requirements of this subsection.

The Contractor shall take whatever steps are necessary to ensure that all manufacturing processes for each covered product comply with this provision. Non-conforming products shall be replaced at no expense to the State. Failure to comply may also subject the Contractor to default and/or debarment. False statements may result in criminal penalties prescribed under Title 18 US Code Section 1001 and 1020.

SECTION 107

LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

08/13/98 (S80)

Add the following subsection:

107-1.21 FEDERAL AFFIRMATIVE ACTION. The Federal Equal Employment Opportunity, Disadvantaged Business Enterprise, and On-the-Job Training affirmative action program requirements that are applicable to this Contract are contained in the project Special Provisions and Contract Forms, and may include:

Disadvantaged Business Enterprise (DBE) Program	Section 120
Training Program	Section 645
Federal EEO Bid Conditions	Form 25A301
EEO-1 Certification	Form 25A304
DBE Subcontractable Items	Form 25A324
ADOT&PF Training Program Request	Form 25A310
Training Utilization Report	Form 25A311
Contact Report	Form 25A321A
DBE Utilization Report	Form 25A325C
Summary of Good Faith Effort Documentation	Form 25A332A
Required Contract Provisions, Federal-Aid Contracts	Form 25D-55

In addition to the sanctions provided in the above references, non-compliance with these requirements is grounds for withholding of progress payments.

****Deleted****

SECTION 109

MEASUREMENT AND PAYMENT

109-1.05 COMPENSATION FOR EXTRA WORK. *Under item 3. Equipment, item a. add the following to the second paragraph:* The rental rate area adjustment factors for this project shall be as specified on the adjustment maps for the Alaska - South Region. (2/24/05)R14

Add the following section:

11/17/00 (S33)

SECTION 120

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PROGRAM

120-1.01 DESCRIPTION. The work consists of providing Disadvantaged Business Enterprises (DBEs), as defined in Title 49, CFR (Code of Federal Regulations), Part 26, with the opportunity to participate on an equitable basis with other contractors in the performance of contracts financed in whole, or in part, with federal funds. The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of USDOT assisted contracts.

120-1.02 INTERPRETATION. It is the intent of this section to implement the requirements of 49 CFR, Part 26, and the Department's federally approved DBE Program.

120-1.03 ESSENTIAL CONTRACT PROVISION. Failure to comply with the provisions of this section will be considered a material breach of contract, which may result in the termination of this contract or such other remedy as ADOT&PF deems appropriate. The Department also considers failure to comply with this section to be so serious as to justify debarment action as provided in AS 36.30.640(4).

120-1.04 DEFINITIONS AND TERMS. The following definitions will apply.

1. Broker. A DBE certified by the Department that arranges for the delivery or provision of creditable materials, supplies, equipment, transportation/hauling, insurance, bonding, etc., within its certified category, that is necessary for the completion of the project. A broker of materials certified in a supply category must be responsible for scheduling the delivery of materials and fully responsible for ensuring that the materials meet specifications before credit will be given.

2. Commercially Useful Function (CUF). The execution of the work of the Contract by a DBE carrying out its responsibilities by actually performing, managing, and supervising the work involved using its own employees and equipment. The DBE shall be responsible, with respect to materials and supplies used on the Contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself. To determine whether a DBE is performing a commercially useful function, an evaluation of the amount of work subcontracted, industry practices, whether the amount the firm is to be paid under the Contract is commensurate with the work it is actually performing and the DBE credit claimed for its performance of the work. Other relevant factors will be considered. The determination of CUF is made by the Engineer after evaluating the way in which the work was performed during the execution of the Contract.

3. Disadvantaged Business Enterprise (DBE). An enterprise which is a for-profit small business concern

   a. that is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals;

   b. whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it; and

   c. has been certified by the Department in accordance with 49 CFR, Part 26.

4. DBE Key Employee. Permanent employees identified by the DBE owner in its certification file in the Department Civil Rights Office.

5. DBE Utilization Goal. The percent of work to be performed by certified DBEs that is established by the Department and specified in the Contract.

6. Good Faith Efforts. Efforts by the bidder or Contractor to achieve a DBE goal or other requirement of 49 CFR Part 26, by their scope, intensity, and appropriateness to the objective, that can reasonably be expected to fulfill the program requirement.

7. Manufacturer. A DBE certified by the Department in a supply category that changes the shape, form, or composition of original material in some way and then provides that altered material to the project and to the general public or the construction industry at large on a regular basis.

8. Notification. For purposes of soliciting DBE participation on a project and to count toward a contractor's Good Faith Efforts, notification shall be by letter or fax transmission, with a return receipt requested or successful transmission report. Telephonic contact with a DBE may be allowed, however it shall be based on the ability of Civil Rights staff to independently verify this contact.

9. Regular Dealer. A DBE certified by the Department in a supply category that

   a. maintains an in-house inventory on a regular basis of the particular product provided to this project; and

   b. keeps an inventory in an amount appropriate for the type of work using that product; and

   c. offers that inventory for sale to the general public or construction industry at large (private and public sectors), not just supplied as needed on a project by project basis during the construction season, except where the product requires special or heavy equipment for delivery and the DBE possesses and operates this equipment on a regular basis throughout the construction season in order to deliver the product to the general public or construction industry at large. If the distribution equipment is rented or leased, it must be on a repetitive, seasonal basis; and may additionally

   d. fabricate (assembles large components) for use on a construction project, consistent with standard industry practice, for delivery to the project.

120-2.01 UTILIZATION GOAL. The DBE Utilization Goal for this contract is shown on Form 25A324 (DBE Subcontractable Items) as a percentage of the total basic bid amount. A DBE may be considered creditable towards meeting the DBE Utilization Goal at time of Contract award, if the DBE is certified by the Department in a category covering the CUF to be performed at the time of listing on Form 25A325C (DBE Utilization Report).

A bidder shall demonstrate the ability to meet the DBE Utilization Goal or perform and document all of the required Good Faith Efforts under Subsection 120-3.02 in order to be eligible for award of this Contract.

If the quantity of work of a bid item involving a DBE firm is reduced by the Department, the DBE Utilization Goal on Form 25A325C will be reduced proportionately.

120-3.01 DETERMINATION OF COMPLIANCE.

1. Phase I - Bid. Each bidder must register with the Civil Rights Office annually in accordance with §§26.11 & 26.53(b)(2)(iv) of 49 CFR, Part 26. No contract may be awarded to a bidder that is not registered.

2. Phase II - Award. The apparent low bidder will provide the following within 15 days of receipt of notice of intent to award:

   a. Written DBE Commitment. Written commitments from DBEs to be used on the project. The written commitment shall contain the following information:

      1) A description of the work that each DBE will perform;

2) The dollar amount of participation by the DBE firm;

3) Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal; and

4) Written confirmation from the DBE that it is participating in the contract as provided in the prime Contractor's commitment.

b. DBE Utilization Report. Form 25A325C listing the certified DBEs to be used to meet the DBE Utilization Goal.

c. Good Faith Effort Documentation. Summary of Good Faith Effort Documentation (Form 25A332A and attachments) and DBE Contact Reports (Form 25A321A) if the Contractor submits less DBE utilization on Form 25A325C than is required to meet the DBE Utilization Goal. If accepted by the Department, this lower DBE utilization becomes the new DBE Utilization Goal. If the bidder cannot demonstrate the ability to meet the DBE Utilization Goal, and can not document the minimum required Good Faith Efforts (as outlined in Subsection 120-3.02 below), the Contracting Officer will determine the bidder to be not responsible.

3. Phase III - Construction.

a. Designation of DBE/EEO Officer. At the preconstruction conference, the Contractor shall submit, in writing, the designation of a DBE/EEO officer.

b. DBE Creditable Work. The CUF work items and creditable dollar amounts shown for a DBE on the DBE Utilization Report (Form 25A325C) shall be included in any subcontract, purchase order or service agreement with that DBE.

c. DBE Replacement. If a DBE replacement is approved by the Engineer, the Contractor shall replace the DBE with another DBE for the same work in order to fulfill its commitment under the DBE Utilization Goal. In the event that the Contractor cannot obtain replacement DBE participation, the Engineer may adjust the DBE Utilization Goal if, in the opinion of the Engineer and the Civil Rights Office, both of the following criteria have been met:

1) The Contractor has not committed any discriminatory practice in its exercise of good business judgement to replace a DBE.

2) If the Contractor is unable to find replacement DBE participation and has adequately performed and documented the Good Faith Effort expended in accordance with Subsection 120-3.02.

d. DBE Utilization Goal. The DBE Utilization Goal will be adjusted to reflect only that amount of the DBE's work that can not be replaced.

120-3.02 GOOD FAITH EFFORT.

1. Good Faith Effort Criteria. The Contracting Officer will use the following criteria to judge if the bidder, who has not met the DBE Utilization Goal, has demonstrated sufficient Good Faith Effort to be eligible for award of the contract.

Failure by the bidder to perform and document all of the following actions constitutes insufficient Good Faith Effort.

a. Consideration of all subcontractable items. The bidder shall, at a minimum, seek DBE participation for each of the subcontractable items upon which the DBE goal was established

as identified by the Department (on Form 25A324) prior to bid opening. It is the bidder's responsibility to make the work listed on the subcontractable items list available to DBE firms, to facilitate DBE participation.

b. If the bidder can not achieve the DBE Utilization Goal using the list of available DBE firms based on the subcontractable items list, then the bidder may consider other items that could be subcontracted to DBEs.

c. Notification to all active DBEs listed for a given region in the Department's most current DBE Directory at least 7 calendar days prior to bid opening. The bidder must give the DBEs no less than five days to respond. The bidder may reject DBE quotes received after the deadline. Such a deadline for bid submission by DBEs will be consistently applied. DBEs certified to perform work items identified on Form 25A324 must be contacted to solicit their interest in participating in the execution of work with the Contractor. Each contact with a DBE firm will be logged on a Contact Report (Form 25A321A).

d. Non-competitive DBE quotes may be rejected by the bidder. Allegations of non-competitive DBE quotes must be documented and verifiable. A DBE quote that is more than 10.0% higher than the accepted non-DBE quote will be deemed non-competitive, provided the DBE and non-DBE subcontractor quotes are for the exact same work or service. Bidders must have a non-DBE subcontractor quote for comparison purposes. Such evidence shall be provided in support of the bidder's allegation. Where the bidder rejects a DBE quote as being non-competitive under this condition, the work must be performed by the non-DBE subcontractor and payments received by the non-DBE subcontractor during the execution of the Contract shall be consistent with the non-DBE's accepted quote. This does not preclude increases as a result of Change documents issued by the Department.

e. Provision of assistance to DBEs who need help in obtaining information about bonding or insurance required by the bidder.

f. Provision of assistance to DBEs who need help in obtaining information about securing equipment, supplies, materials, or related assistance or services.

g. Providing prospective DBEs with adequate information about the requirements of the Contract regarding the specific item of work or service sought from the DBE.

h. Follow-up of initial notifications by contacting DBEs to determine whether or not they will be bidding. Failure to submit a bid by the project bid opening or deadline by the bidder is de facto evidence of the DBE's lack of interest in bidding. Documentation of follow-up contacts shall be logged on the Contact Report (Form 25A321A).

i. Items c through h will be utilized to evaluate any request from the Contractor for a reduction in the DBE Utilization Goal due to the default or decertification of a DBE and the Contractor's subsequent inability to obtain additional DBE participation.

2. Administrative Reconsideration. Under the provisions of 49 CFR. Part 26.53(d), if it is determined that the apparent successful bidder has failed to meet the requirements of this subsection, the bidder must indicate whether they would like an opportunity for administrative reconsideration. Such an opportunity must be exercised by the bidder within 3 calendar days of notification it has failed to meet the requirements of this subsection. As part of this reconsideration, the bidder must provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so.

a. The decision on reconsideration will be made by the DBE Liaison Officer.

b. The bidder will have the opportunity to meet in person with the DBE Liaison Officer to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. If a meeting is desired, the bidder must be ready, willing and able to meet with the DBE Liaison Officer within 4 days of notification that it has failed to meet the requirements of this subsection.

c. The DBE Liaison Officer will render a written decision on reconsideration and provide notification to the bidder. The written decision will explain the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so.

d. The result of the reconsideration process is not administratively appealable to US DOT.

120-3.03 COMMERCIALLY USEFUL FUNCTION (CUF).

1. Creditable Work. Measurement of attainment of the DBE Utilization Goal will be based upon the actual amount of money received by the DBEs for creditable CUF work on this project as determined by the Engineer in accordance with this Section. CUF is limited to that of a:

   a. regular dealer;
   b. manufacturer;
   c. broker;
   d. subcontractor;
   e. joint-venture; or
   f. prime contractor.

2. Determination of Commercially Useful Function. In order for the CUF work of the DBE to be credited toward the goal, the Contractor will ensure that all of the following requirements are met:

   a. The CUF performed by a DBE certified in a supply category will be evaluated by the Engineer to determine whether the DBE performed as either a broker, regular dealer, or manufacturer of the product provided to this project.

   b. A DBE trucking firm certified and performing work in a transportation/hauling category is restricted to credit for work performed with its own trucks and personnel certified with the CRO prior to submitting a bid to a contractor for DBE trucking. The DBE trucking firm must demonstrate that it owns all trucks (proof of title and/or registration) to be credited for work and that all operators are employed by the DBE trucking firm. A DBE trucking firm that does not certify its trucks and personnel that it employs on a job will be considered a broker of trucking services and limited to credit for a broker. (This does not effect the CUF of that same firm, when performance includes the hauling of materials for that work.)

   c. The DBE is certified in the appropriate category at the time of

      1) the Engineer's approval of the DBE subcontract, consistent with the written DBE commitment; and

      2) the issuance of a purchase order or service agreement by the Contractor to a DBE performing as either a manufacturer, regular dealer, or broker (with a copy to the Engineer).

   d. The Contractor will receive credit for the CUF performed by DBEs as provided in this Section. Contractors are encouraged to contact the Engineer in advance of the execution of the DBE's work or provision of goods or services regarding CUF and potential DBE credit.

   e. The DBE may perform work in categories for which it is not certified, but only work performed in the DBE's certified category meeting the CUF criteria may be credited toward the DBE Utilization Goal.

f. The work of the DBE firm must meet the following criteria when determining when CUF is being performed by the DBE:

1) The work performed will be necessary and useful work required for the execution of the Contract.

2) The scope of work will be distinct and identifiable with specific contract items of work, bonding, or insurance requirements.

3) The work will be performed, controlled, managed, and supervised by employees normally employed by and under the control of the certified DBE. The work will be performed with the DBE's own equipment. Either the DBE owner or DBE key employee will be at the work site and responsible for the work.

4) The manner in which the work is sublet or performed will conform to standard, statewide industry practice within Alaska, as determined by the Department. The work or provision of goods or services will have a market outside of the DBE program (must also be performed by non-DBE firms within the Alaskan construction industry). Otherwise, the work or service will be deemed an unnecessary step in the contracting or purchasing process and no DBE credit will be allowed.

There will be no DBE credit for lower-tier non-DBE subcontract work.

5) The cost of the goods and services will be reasonable and competitive with the cost of the goods and services outside the DBE program within Alaska. Materials or supplies needed as a regular course of the Contractor's operations such as fuel, maintenance, office facilities, portable bathrooms, etc. are not creditable.

The cost of materials actually incorporated into the project by a DBE subcontractor is creditable toward the DBE goal only if the DBE is responsible for ordering and scheduling the delivery of creditable materials and fully responsible for ensuring that the materials meet specifications.

6) All subcontract work, with the exception of truck hauling, will be sublet by the same unit of measure as is contained in the Bid Schedule unless prior written approval of the Engineer is obtained.

7) The DBE will control all business administration, accounting, billing, and payment transactions. The prime contractor will not perform the business, accounting, billing, and similar functions of the DBE. The Engineer may, in accordance with AS 36.30.420(b), inspect the offices of the DBE and audit the records of the DBE to assure compliance.

g. On a monthly basis, the Contractor shall report on Form 25A336 (Monthly Summary of DBE Participation) to the Department Civil Rights Office the payments made (canceled checks or bank statements that identify payor, payee, and amount of transfer) for the qualifying work, goods and services provided by DBEs.

3. Decertification of a DBE. Should a DBE performing a CUF become decertified during the term of the subcontract, purchase order, or service agreement for reasons beyond the control of and without the fault or negligence of the Contractor, the work remaining under the subcontract, purchase order, or service agreement may be credited toward the DBE Utilization Goal.

Should the DBE be decertified between the time of Contract award and the time of the Engineer's subcontract approval or issuance of a purchase order or service agreement, the work of the decertified

firm will not be credited toward the DBE Utilization Goal. The Contractor must still meet the DBE Utilization Goal by either

a. withdrawing the subcontract, purchase order or service agreement from the decertified DBE and expending Good Faith Effort (Subsection 120-3.02, Items c through h) to replace it with one from a currently certified DBE for that same work or service through subcontractor substitution (Subsection 103-1.01); or

b. continuing with the subcontract, purchase order or service agreement with the decertified firm and expending Good Faith Effort to find other work not already subcontracted out to DBEs in an amount to meet the DBE Utilization Goal through either

   1) increasing the participation of other DBEs on the project;
   2) documenting Good Faith Efforts (Subsection 120-3.02, items c through h); or
   3) by a combination of the above.

4. DBE Rebuttal of a Finding of no CUF. Consistent with the provisions of 49 CFR, Part 26.55(c)(4)&(5), before the Engineer makes a final finding that no CUF has been performed by a DBE firm the Engineer will coordinate notification of the presumptive finding through the Civil Rights Office to the Contractor, who will notify the DBE firm.

   The Engineer, in cooperation with the Civil Rights Office, may determine that the firm is performing a CUF if the rebuttal information convincingly demonstrates the type of work involved and normal industry practices establishes a CUF was performed by the DBE. Under no circumstances shall the Contractor take any action against the DBE firm until the Engineer has made a final determination. The Engineer's decisions on CUF matters are not administratively appealable to US DOT.

120-3.04 DEFAULT OF DBE. In the event that a DBE firm under contract or to whom a purchase order or similar agreement has been issued defaults on their work for whatever reason, the Contractor shall immediately notify the Engineer of the default and the circumstances surrounding the default.

The Contractor shall take immediate steps, without any order or direction from the Engineer, to retain the services of other DBEs to perform the defaulted work. In the event that the Contractor cannot obtain replacement DBE participation, the Engineer may adjust the DBE Utilization Goal if, in the opinion of the Engineer, the following criteria have been met:

1. The Contractor was not at fault or negligent in the default and that the circumstances surrounding the default were beyond the control of the Contractor; and

2. The Contractor is unable to find replacement DBE participation at the same level of DBE commitment and has adequately performed and documented the Good Faith Effort expended in accordance with items c through h of Subsection 120-3.02 for the defaulted work; or

3. It is too late in the project to provide any real subcontracting opportunities remaining for DBEs.

The DBE Utilization Goal will be adjusted to reflect only that amount of the defaulted DBE's work that can not be replaced.

120-4.01 METHOD OF MEASUREMENT. The Contractor will be entitled to count toward the DBE Utilization Goal those monies actually paid to certified DBEs for CUF work performed by the DBE as determined by the Engineer. The Contractor will receive credit for the utilization of the DBEs, as follows:

1. Credit for the CUF of a DBE prime contractor is 100% of the monies actually paid to the DBE under the contract for creditable work and materials in accordance with 49 CFR 26.55.

2. Credit for the CUF of a subcontractor is 100% of the monies actually paid to the DBE under the subcontract for creditable work and materials. This shall include DBE trucking firms certified as a subcontractor and not a broker. Trucks leased from another DBE firm shall also qualify for credit and conforms to the provisions of 49 CFR 26.55(d).

3. Credit for the CUF of a manufacturer is 100% of the monies paid to the DBE for the creditable materials manufactured.

4. Credit for the CUF of a regular dealer of a creditable material, product, or supply is 60% of its value. The value will be the actual cost paid to the DBE but will not exceed the bid price for the item.

5. Credit for the CUF of a broker performed by a DBE certified in a supply category for providing a creditable material, product or supply is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the cost of the procurement contract for the creditable item.

6. Credit for the CUF of a broker performed by a DBE certified in the transportation/hauling category for arranging for the delivery of a creditable material, product or supply is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the cost of the hauling subcontract.

7. Credit for the CUF of a broker performed by a DBE certified in a bonding or insurance category for arranging for the provision of insurance or bonding is limited to a reasonable brokerage fee. The brokerage fee will not exceed 5% of the premium cost.

8. Credit for the CUF of a joint venture (JV) (either as the prime contractor or as a subcontractor) may not exceed the percent of the DBE's participation in the joint venture agreement, as certified for this project by the Department. The DBE joint venture partner will be responsible for performing all of the work as delineated in the certified JV agreement.

120-5.01 BASIS OF PAYMENT. Work under this item is subsidiary to other contract items and no payment will be made for meeting or exceeding the DBE Utilization Goal.

If the Contractor fails to utilize the DBEs listed on Form 25A325C as scheduled or fails to submit required documentation to verify proof of payment or documentation requested by the Department to help in the determination of CUF, the Department will consider this to be unsatisfactory work. If the Contractor fails to utilize Good Faith Efforts to replace a DBE, regardless of fault (except for Subsection 120-3.04 item 3), the Department will also consider this unsatisfactory work. Unsatisfactory work may result in disqualification of the Contractor from future bidding under Subsection 102-1.13 and withholding of progress payments consistent with Subsection 109-1.06.

Delete Section 401 in its entirety and substitute the following:

SECTION 401

ASPHALT CONCRETE PAVEMENT

401-1.01 DESCRIPTION. Construct one or more layers of plant-mixed hot asphalt concrete pavement on an approved surface, to the lines, grades, and depths shown on the Plans.

MATERIALS

401-2.01 COMPOSITION OF MIXTURE - JOB MIX DESIGN. Meet the requirements of Table 401-1 for the Job Mix Design performed in accordance with ATM 417.

TABLE 401-1
ASPHALT CONCRETE MIX DESIGN REQUIREMENTS

DESIGN PARAMETERS	CLASS "A"	CLASS "B"
Stability, pounds	1800 min.	1200 min.
Flow, 0.01 inch	8-14	8-16
Voids in Total Mix, %	3-5	3-5
Compaction, number of blows each side of test specimen	75	50
Percent Voids Filled with Asphalt (VFA)	65-75	65-78
Asphalt Content, min. %	5.0	5.0
Dust-asphalt ratio*	0.6-1.4	0.6-1.4
Voids in the Mineral Aggregate (VMA), %, min.		
Type I	12.0	11.0
Type II	13.0	12.0
Type III, IV	14.0	13.0

*Dust-asphalt ratio is the percent of material passing the No. 200 sieve divided by the percent of effective asphalt (calculated by weight of mix).

The approved Job Mix Design will specify the target values for gradation, the target value for asphalt cement content, the Maximum Specific Gravity (MSG) of the mix, the additives, and the allowable mixing temperature range.

Target values for gradation in the Job Mix Design must be within the broad band limits shown in Table 703-3, for the type of asphalt concrete pavement specified but asphalt concrete mixture will have the full tolerances in Table 401-2 applied for evaluation in accordance with 401-4.03 except the tolerances for the largest sieve specified will be plus 0% and minus 1%, and the #200 sieve is limited by the broad band limits.

Do not produce asphalt concrete mixture for payment until the Engineer approves the Job Mix Design. Do not mix asphalt concrete mixtures produced from different plants.

Use Asphalt Concrete Type II, Class B, minimum, for temporary pavement.

Submit the following to the Engineer at least 15 days before the production of asphalt concrete mixture:

1. A letter stating the location, size, and type of mixing plant, the proposed gradation for the Job Mix Design, gradations for individual stockpiles with supporting process quality control information, and the blend ratio of each aggregate stockpile. The proposed gradation must meet the requirements of Table 703-3 for each type of asphalt concrete pavement specified in the Contract.

2. Representative samples of each aggregate (coarse and/or intermediate, fine, and natural blend material) in the proportions required for the proposed mix design. Furnish a total of 500 pounds of material.

3. Five separate 1-gallon samples of the asphalt cement proposed for use in the mixture. Include name of product, manufacturer, test results of the applicable quality requirements of Subsection 702-2.01, manufacturer's certificate of compliance per Subsection 106-1.05, a temperature viscosity curve for the asphalt cement or manufacturer's recommended mixing and compaction temperatures, and current Material Safety Data Sheet.

4. One sample, of at least 1/2 pint, of the anti-strip additive proposed, including name of product, manufacturer, and manufacturer's data sheet, and current Material Safety Data Sheet.

The Engineer will then evaluate the material and the proposed gradation using ATM 417 and the requirements of Table 401-1 for the appropriate type and class of asphalt concrete pavement specified and establish the approved Job Mix Design which will become a part of the Contract.

The Engineer will assess a fee of $2,500.00 under Item 401(6), Asphalt Price Adjustment, for each mix design subsequent to the approved Job Mix Design for each Type and Class of Asphalt Concrete Pavement specified.

No payment for asphalt concrete pavement for which a new Job Mix Design is required, will be made until the new Job Mix Design is approved. Approved changes apply only to asphalt concrete mixture produced after the submittal of the changes.

Changes. Failure to achieve results conforming to Table 401-1 or changes in the source of asphalt cement, source of aggregates, aggregate quality, aggregate gradation, or blend ratio, will require a new Job Mix Design. Submit changes and new samples in the same manner as the original submittal.

401-2.02 AGGREGATES. Conform to Subsection 703-2.04.

Use a minimum of three stockpiles for crushed asphalt concrete aggregate (coarse, intermediate, and fine). Place blend material in a separate pile.

401-2.03 ASPHALT CEMENT. Provide the grade of asphalt cement specified in the Contract meeting the applicable requirements of Section 702. If not specified, use PG 52-28.

Provide test reports for each batch of asphalt cement showing conformance to the specifications in Section 702 prior to delivery to the project. Document the storage tanks used for each batch on the test report, the anti-strip additives required by the mix design be added during load out for delivery to the project, and a printed weight ticket for anti-strip is included with the asphalt cement weight ticket. The location where anti-strip is added may be changed with the written approval of the Engineer.

Furnish the following documents at delivery:

1. Manufacturer's certificate of compliance (106-1.05).
2. Conformance test reports for the batch (Section 702).
3. Batch number and storage tanks used.
4. Date and time of load out for delivery.
5. Type, grade, temperature, and quantity of asphalt cement loaded.
6. Type and percent of anti-strip added.

401-2.04 ANTI-STRIP ADDITIVES. Use anti-strip agents in the proportions determined by ATM 414 and included in the approved Job Mix Design. At least 70% of the aggregate must remain coated when tested according to ATM 414. Add a minimum of 0.25 percent of antistrip per ton of asphalt cement.

401-2.05 PROCESS QUALITY CONTROL. Sample and test materials for quality control of the asphalt concrete mixture according to Subsection 106-1.03. Provide copies of these test results to the Engineer within 24 hours.

Failure to perform quality control forfeits your right to a retest under Subsection 401-4.02.

Submit a paving and plant control plan at the pre-paving meeting to be held a minimum of 5 working days before initiating paving operations. Address the sequence of operations and joint construction. Outline steps to assure product consistency, to minimize segregation, and to prevent premature cooling of the asphalt concrete mixture. Include a proposed quality control testing frequency for gradation, asphalt cement content, and compaction.

CONSTRUCTION REQUIREMENTS

401-3.01 WEATHER LIMITATIONS. Do not place the asphalt concrete mixture on a wet surface, on an unstable/yielding roadbed, when the base material is frozen, or when weather conditions prevent proper handling or compaction of the mix. Do not place asphalt concrete mixture unless the roadway surface temperature is 40 °F or warmer.

401-3.02 EQUIPMENT, GENERAL. Use equipment in good working order and free of asphalt concrete mixture buildup. Make all equipment available for inspection and demonstration of operation a minimum of 24 hours before placement of asphalt concrete mixture.

401-3.03 ASPHALT MIXING PLANT. Meet AASHTO M 156. Use an asphalt plant designed to dry aggregates, maintain accurate temperature control, and accurately proportion asphalt cement and aggregates. Calibrate the asphalt plant and furnish copies of the calibration data to the Engineer at least 4 hours before asphalt concrete mixture production. Maintain a current Air Quality Permit issued by the State Of Alaska.

Provide a scalping screen at the asphalt plant to prevent oversize material or debris from being incorporated into the asphalt concrete mixture.

Provide a tap on the asphalt cement supply line just before it enters the plant (after the 3-way valve) for sampling asphalt cement.

Certify weigh silo scales if the weights from them are used for payment.

401-3.04 HAULING EQUIPMENT. Haul asphalt mixtures in trucks with tight, clean, smooth metal beds, thinly coated with a minimum amount of paraffin oil, lime water solution, or an approved manufactured asphalt release agent. Do not use petroleum fuel as an asphalt release agent.

Cover the asphalt concrete mixture in the hauling vehicle, when directed.

401-3.05 ASPHALT PAVERS. Use self-propelled pavers equipped with a heated vibratory screed. Control grade and cross slope with automatic grade and slope control devices. Use a 30-foot minimum ski, or other approved grade follower, to automatically actuate the paver screed control system. Use grade control on either (a) both the high and low sides or (b) grade control on the high side and slope control on the low side.

Use a screed assembly that produces a finished surface of the required smoothness, thickness and texture without tearing, shoving or displacing the asphalt concrete mixture. Heat and vibrate screed extensions. Place auger extensions within 20 inches of the screed extensions or per written manufacturer's recommendations.

Equip the paver with a means of preventing the segregation of the coarse aggregate particles from the remainder of the bituminous plant mix when that mix is carried from the paver hopper back to the paver augers. The means and methods used shall be approved by the paver manufacturer and may consist of chain curtains, deflector plates, or other such devices and any combination of these.

The following specific requirements apply to the identified bituminous pavers:

(1) Blaw-Knox bituminous pavers shall be equipped with the Blaw-Knox Materials Management Kit (MMK).
(2) Cedarapids bituminous pavers must have been manufactured in 1989 or later.
(3) Caterpillar bituminous pavers shall be equipped with deflector plates as identified in the December 2000 Service Magazine – entitled: New Asphalt Deflector Kit {6630, 6631, 6640}.

The Contractor shall supply a Certificate of Compliance that verifies the required means and methods used to prevent bituminous paver segregation have been implemented.

The Engineer shall approve all means and methods used to prevent bituminous paver segregation before the bituminous paver is used to place bituminous plant mix on the project.

The use of a "Layton Box" or equivalent towed paver is allowed on bike paths, sidewalks, and driveways.

401-3.06 ROLLERS. Use both steel-wheel (static or vibratory) and pneumatic-tire rollers. Operate rollers according to manufacturer's instructions. Avoid crushing or fracturing of aggregate. Use rollers designed to compact hot asphalt concrete mixtures and reverse without backlash.

Use fully-skirted pneumatic-tire rollers with a minimum operating weight of 3000 pounds per tire for at least one coverage.

401-3.07 PREPARATION OF EXISTING SURFACE. Prepare existing surfaces in conformance with the Plans and Specifications. Prior to applying tack coat to the existing surface, clean out loose material from cracks in existing pavement wider than 1 inch in width full depth then fill using asphalt concrete tamp in place. Clean, wash, and sweep existing paved surfaces of loose material.
Preparation of a milled surface,

- Prelevel remaining ruts, pavement delaminations, or depressions having a depth greater than ½-inch with Asphalt Concrete, Type IV. No density testing is required for the leveling course material. The Engineer will inspect and accept this material.

- If planing breaks through existing pavement remove 2 inches of existing base and fill with Asphalt Concrete, Type II, Class B. Notify the Engineer of pavement areas that might be considered thin or unstable during pavement removal.

Existing surface must be approved by the Engineer before applying tack coat.

Prior to placing the asphalt concrete mixture, uniformly coat contact surfaces of curbing, gutters, sawcut pavement, cold joints, manholes, and other structures with tack coat material meeting Section 402.

Allow prime coat to cure or emulsion tack coat to break before placement of asphalt concrete mixture on these surfaces.

401-3.08 PREPARATION OF ASPHALT. Provide a continuous supply of asphalt cement to the asphalt mixing plant at a uniform temperature, within the allowable mixing temperature range.

401-3.09 PREPARATION OF AGGREGATES. Dry the aggregate so the moisture content of the asphalt concrete mixture, sampled at the point of acceptance for asphalt cement content, does not exceed 0.5% (by total weight of mix), as determined by WAQTC TM 6.

Heat the aggregate for the asphalt concrete mixture to a temperature specified in the mix design.

Adjust the burner on the dryer to avoid damage to the aggregate and to prevent the presence of unburned fuel on the aggregate. Asphalt concrete mixture containing soot or fuel is considered unacceptable per Subsection 105-1.11.

401-3.10 MIXING. Combine the aggregate, asphalt cement and additives in the mixer in the amounts required by the Job Mix Design. Mix to obtain 98% coated particles when tested according to AASHTO T 195.

For batch plants, put the dry aggregate in motion before addition of asphalt cement.

Mix the asphalt concrete mixture within the temperature range determined by the Job Mix Design.

401-3.11 TEMPORARY STORAGE. Silo type storage bins may be used, provided that the characteristics of the asphalt concrete mixture are not altered. Signs of visible segregation, heat loss, changes from the Job Mix Design, change in the characteristics of asphalt cement, lumpiness, or stiffness of the mixture are causes for rejection.

401-3.12 PLACING AND SPREADING. Place the asphalt concrete mixture upon the approved surface, spread, strike off, and adjust surface irregularities. Use asphalt pavers to distribute asphalt concrete mixture, including leveling courses. The maximum compacted lift thickness allowed is 3 inches.

Use hand tools to spread, rake, and lute the asphalt concrete mixture in areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impracticable.

When the section of roadway being paved is open to traffic, pave adjacent traffic lanes to the same elevation within 24 hours. Place approved material against the outside pavement edge when the drop-off exceeds 2 inches.

When multiple lifts are specified in the Contract, do not place the final lift until all lower lifts throughout that section, as defined by the Paving Plan, are placed and accepted.

Do not pave against new Portland concrete curbing until it has cured for at least 72 hours.

Place asphalt concrete mixture over bridge deck membranes according to Section 508 and the manufacturer's specifications.

401-3.13 COMPACTION. Thoroughly and uniformly compact the asphalt concrete mixture by rolling. In areas not accessible to large rollers, compact with mechanical tampers or trench rollers.

During placement of asphalt concrete the Engineer may evaluate the HMA immediately behind the paver for cyclic low density using an infrared camera. If there is a temperature differential that exceeds 25° F within the newly placed mat, low density is likely to occur. The real time thermal images and thermal profile data will become part of the project records shared with the Contractor. The Contractor shall immediately adjust his laydown procedures to correct the problem. If the Engineer observes areas in any given pay sublot where the thermal images indicate cyclic low density is probable, he will order those areas to be cored for determination of density. These cores will be evaluated under Subsection 401-4.02 and 401-4.03.

The target value for density is 94% of the maximum specific gravity (MSG), as determined by WAQTC FOP for AASHTO T 209. For the first lot of each type of asphalt concrete pavement, the MSG will be determined by the Job Mix Design. For additional lots, the MSG will be determined by the sample from the first sublot of each lot.

Acceptance testing for density will be performed in accordance with WAQTC FOP for AASHTO T 166/T 275 using a 6-inch diameter core. (Acceptance testing for density of leveling course or temporary pavement is not required.)

Do not leave rollers or other equipment standing on pavement that has not cooled sufficiently to prevent indentation.

401-3.14 JOINTS. Minimize the number of joints to ensure a continuous bond, texture, and smoothness between adjacent sections of the pavement.

Remove to full depth improperly formed joints resulting in surface irregularities. Replace with new, and thoroughly compact.

Precut all pavement removal to a neat line with a power saw or by other approved method.

Form transverse joints by saw-cutting back on the previous run to expose the full depth of the course or use a removable bulkhead. Skew transverse joints between 15-25 degrees.

Offset the longitudinal joints in one layer from the joint in the layer immediately below by at least 6 inches. Align the joints of the top layer at the centerline or lane lines. Where preformed marking tape striping is required, offset the longitudinal joint in the top layer not more than 6 inches from the edge of the stripe.

Seal the vertical edge of all longitudinal joints with Crafco 34524 Joint Adhesive or approved equal before paving against it. Apply a 1/8 inch thick band of joint adhesive over the surface according to manufacturer's recommendations.

For the top layer of asphalt concrete pavement, the minimum specification limit for longitudinal joint density is 91% of the MSG of the panel completing the joint. Cut one 6 inch diameter core centered on the longitudinal joint at each location the panel completing the joint is cored for acceptance density testing. Density will be determined in accordance with WAQTC FOP for AASHTO T 166/T 275.

Seal the pavement surface 12 inches on each side of all the longitudinal joints while the pavement is clean, free of moisture, and before traffic marking with GSB-78 (from Asphalt Systems), or approved equal.

401-3.15 SURFACE TOLERANCE. The Engineer will test the finished surface after final rolling at selected locations using a 16-foot straightedge. Correct variations from the testing edge, between any two contacts of more than 1/4 inch.

401-3.16 PATCHING DEFECTIVE AREAS. Remove any asphalt concrete mixture that becomes contaminated with foreign material, is segregated, or is in any way determined to be defective. Do not skin patch. Remove defective materials for the full thickness of the course. Cut the pavement so that all edges are vertical, the sides are parallel to the direction of traffic and the ends are skewed between 15-25 degrees. Coat edges with a tack coat meeting Section 402 and allow to cure. Place and compact fresh asphalt concrete mixture per Subsection 401-3.13 to grade and smoothness requirements.

All costs associated with patching defective areas are subsidiary to the Asphalt Concrete pay item.

401-4.01 METHOD OF MEASUREMENT. Section 109 and the following:

Asphalt Concrete. By weighing, no deduction will be made for the weight of asphalt cement or anti-stripping additive, or by the area of final pavement surface.

Asphalt Price Adjustment. Calculated by quality level analysis under Subsection 401-4.03.

Asphalt Cement. By the ton, as follows. Method 1 will be used for determining asphalt quantity unless otherwise directed in writing. The procedure initially used will be the one used for the duration of the project. No payment will be made for any asphalt cement more than 0.4% above the optimum asphalt content specified in the Job Mix Design.