STANDARD CONSTRUCTION SPECIFICATIONS

FOR ASPHALT CONCRETE PAVEMENT

DIVISION 400

INDEX

SECTION 401 GENERAL

401.1 General

Asphalt concrete pavement placed under this contract shall conform to Section 401 of the State of Alaska Department of Transportation and Public Facilities, Standard Specifications for Highway Construction, 1988 unless otherwise stated. All references to the "State" are changed to the "City."

The following changes apply to the above mentioned Standard Specifications:

401.2 Composition of Mixtures

Delete this Article in its entirety and substitute the following:

a. **At least fifteen (15) days prior to the production of asphalt concrete the Contractor shall submit the Job Mix Design to the City**. The Job Mix Design shall be performed by a certified laboratory experienced in Asphalt Mix Design by the Marshall Method. Proposals by the Contractor shall be within the master range of required sieve analysis for the particular type of mix and should be determined to take full advantage of the job tolerances as state below.

Sieve Size or Item	Tolerance % Passing
No. 4 and above	+/- 7.0
No. 10	+/- 6.0
No. 40	+/- 4.0
No. 200	+/- 3.0
Asphalt %	+/- 0.5

The above permissible variations from the Job Mix Design shall not cause the use of any mix to fall outside the broad band specification.

The Engineer may require an increased asphalt content of up to 0.5% above that indicated by the Job Mix Design criteria.

Mix Design Method

The Job Mix Design method shall be determined according to the Marshall Method, as set forth in the "The Asphalt Institute Manual, Series No. 2 (MS-2), Second Edition." The Job Mix Design shall be in accordance with the following Marshall criteria for medium traffic:

Compaction	50 blows, each end of specimen
Stability	750 pounds, minimum
Flow	8 to 18 (0.01 inches)
Percent Air Voids	3 to 5
Percent Voids in Mineral Aggregate	14 to 16

b. The Asphalt Concrete used shall be Type II.

c. The Asphalt Cement shall be AC 5.

d. The percentage of Asphalt Cement shall be 5.0% to 8.0%.

401.3 Compaction

Add the following to Article 401- 3.12:

The completed pavement shall have a density equal to or greater than ninety-two percent (92%) of the theoretical maximum density and equal to or greater than ninety-six percent (96%) of a laboratory specimen made from the same day's mix.

When requested by the Engineer, the Contractor shall provide test samples from the finished asphalt surface at no cost to the Owner. All samples shall be cored from the completed pavement and shall be a minimum of four inches (4") in diameter. The Contractor shall supply and finish new asphalt voids left by the sampling within 24 hours.

401.5 Joints

Add the following to Article 401 – 3.13:

When the first lane is paved, the longitudinal centerline joint shall be hand compacted with a lute (asphalt rake) prior to compaction by the breakdown roller.

401.6 Contract Price Adjustments

Delete Article 401 – 4.02 in its entirety and substitute the following:

Asphalt Concrete Pavement that exceeds the allowable specification tolerances listed in Article 401-2., Composition of Mixtures, will be removed from the project and replaced with fresh, specification mixture at no additional cost to the Owner.

401.7 Basis of Payment

Delete the second paragraph in Article 401 – 5.01 and substitute the following:

Anti-stripping additive shall be added to the asphalt in the amount of one-fourth (1/4) of one percent (1%) by weight of asphalt. No separate payment shall be made for anti-stripping additive.

Payments shall be made under:

ITEM	DESCRIPTION	UNIT
401	Asphalt Pavement	Ton

SECTION 402 PAINTED TRAFFIC MARKINGS

402.1 General

Painted Traffic Markings placed under this Contract shall conform to Section 670 of the State of Alaska Department of Transportation and Public Facilities, Standard Specifications for Highway Construction, 1988 unless otherwise stated. All references to the "State" are changed to the "City."

402.2 Types of Lines

The roadway shall be striped under the following schedule:

Centerline: 4-inch wide double yellow stripes for the full length of paving improvements.

Fog Lines: 4-inch wide single white stripes each side of roadway. The fog line shall be located ten feet (10') from centerline.

402.3 Basis of Payment

Payment shall be made under:

ITEM NO.	DESCRIPTION	UNIT
402	Painted Traffic Markings	Lump Sum

SECTION 403 RECYCLED ASPHALT PAVING (RAP)

403.1 General

The work under this section consists of furnishing all materials and performing all operations necessary to complete placement and construction of a recycled asphalt paving (RAP) surface on an existing prepared subbase.

403.2 Material

The RAP shall consist of crushed gravel, rock, sand, or other approved material. The aggregate shall be derived from recovered AC pavement and be free from lumps, balls of clay, or other objectionable matter, and shall be durable and sound. The portion of material retained on a No. 4 sieve shall be know as coarse aggregate.

RAP is to be delivered to the job site in an unheated condition. Delivery of heated material to the job site will be rejected unless previously approved by the Engineer.

A. Coarse Aggregate

The coarse aggregate material conforming to the requirement specified above shall have a percentage of wear not to exceed 50 after 500 revolutions, as determined by the current requirements of ASTM C-131. It shall consist of angular fragments reasonably uniform in density and quality, and reasonably free from thin elongated pieces, dirt, and other objectionable material. At least fifty (50) percent of the coarse aggregate particles shall have at least two (2) mechanically fractured faces. Asphalt extraction and sieve analysis shall be performed in accordance with ASTM D 2172 – A or B, AASHTO T-164 –A or B, and AASHTO T-30.

B. Fine Aggregate

The fine aggregate shall consist of material free of organic or other objectionable matter. The fine aggregate, either naturally combined with coarse aggregate or separately obtained and mixed therewith, shall be of such character that the composite material will conform to the gradation and other requirements specified.

C. Gradation

The composite mixture of coarse aggregate and fine aggregate, processed as hereinafter specified, shall conform to the following gradation limits:

SIEVE SIZE	PERCENTAGE PASSING BY WEIGHT
1”	100
¾”	70-100
3/8”	50-85
#4	35-65
#10	20-50
#40	10-30
#80	5-20
#200	2-10

Asphalt Content : 2.7% - 4.7%
Moisture Content : 3.5% Maximum

The asphalt content of RAP delivered to the project shall be determined on the individual extraction test results and not on average of extractions conducted.

403.3 Construction

The RAP shall be placed to the lines, grades, and thickness shown on the Drawings and shall consist of the materials hereinbefore specified. The RAP shall provide a smooth stabilized paved surface on which vehicular traffic can drive.

A. Preparation of Subbase

The subbase shall be compacted to 95% of maximum density. Graded material which is excessively wet shall be aerated by means of blade graders, harrows, or other suitable equipment until the moisture content is satisfactory.

B. Placing

The approved RAP material shall be deposited and spread uniformly on the prepared subbase in one uniform layer to the required contour and grades and to such loose depth that when compacted to the density required, will achieve the specified thickness. Portions of the layer which become segregated in spreading shall be re-mixed to the required gradation.

C. Compacting

The RAP shall be compacted to at least 95% of maximum density as per AASHTO T-180d. In all places not accessible to the rolling equipment, the mixture shall be compacted with tamping equipment capable of attaining the specified density. Blading, rolling, and tamping shall continue until the surface is smooth and free from waves and inadequacies. If at any time the mixture is determined to be above or below optimum moisture, it shall be aerated by means of blade graders, harrows, or other approved equipment or moisture added until the moisture content is such that the surface can be re-compacted and finished as above. In-place compaction shall be accomplished with a

double-drum vibratory asphalt compactor with a minimum of 15,000 pounds of dynamic force per drum. All requests for equipment substitution shall require a current certification test, identifying the capability of the equipment to meet required specifications.

D. Smoothness Test

The surface of the RAP, when finished, shall not show any deviation in excess of 3/8 inch when tested with a ten (10) foot straight-edge applied parallel with, and at right angles to, the centerline of the area to be paved. Any deviation in excess of this amount shall be corrected by loosening, adding, or removing material and reshaping and compacting to satisfy the above requirement.

The Contractor shall furnish a ten (10) foot long straight-edge and shall, in the presence of the Engineer, straight-edge test the entire surface.

403.4 Measurement

The RAP shall be measured in tons of materials delivered and placed in accordance with these specifications and adjusted for excess moisture as hereinafter provided. Said measurement may include moisture up to a maximum of 3.5% of dry weight of the material.

When tests by the Engineer indicate that moisture contents in excess of 3.5% may be occurring consistently, the frequency of testing will be increased as necessary and the results averaged over a period of one week. When this average is greater than 3.5%, the tonnage as measured over the above period shall be reduced by the difference. No credit will be due the Contractor when moisture content is less than 3.5%. Testing will be done in accordance with AASHTO Designation: T255-76 (1982).

403.5 Basis of Payment

Payment for this work shall be full payment for all work described in this section and shall be made under the following unit:

ITEM	DESCRIPTION	UNIT
403	Furnish & Install RAP	Ton