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**3.16 COLD MILLING ASPHALT PAVEMENT****3.16.1 GENERAL****3.16.1.1 Description**

Cold milling asphalt pavement is the process of removing existing pavement from the roadway to the lines and dimensions shown on the plans or as directed by the Consultant.

**3.16.2 RECLAIMED ASPHALT PAVEMENT (RAP)**

The material produced as a result of cold milling shall be defined as Reclaimed Asphalt Pavement (RAP).

Ownership of the RAP will be specified in the Special Provisions and shall be one of or a combination of the following:

**(a) Department Ownership of the RAP**

The Department will retain ownership of the RAP material, and the Contractor shall haul it to a designated location.

**(b) Contractor Ownership of the RAP**

The Contractor will assume ownership of the RAP material and shall haul it from the roadway to his own storage site or otherwise dispose of it.

**3.16.3 SAMPLING AND TESTING****3.16.3.1 General**

Sampling and testing will only be required if RAP is to be used for the production of asphalt concrete pavement or stockpiled for the Department.

The Consultant shall have access to the Work at all times for taking samples. The Contractor shall provide, at his own expense, sampling stands, sampling devices and other facilities which the Consultant may require to safely obtain representative samples of the item being produced.

**3.16.3.2 Methods of Testing**

Unless otherwise specified, the latest edition of the following standard Alberta Transportation test methods (ATT) shown in Table 3.16.3.2 will be used to determine material characteristics of the RAP.

**TABLE 3.16.3.2  
TEST METHODS**

TEST DESCRIPTION	TEST METHOD
1. Sampling Mixes	ATT - 37
2. Sieve Analysis, RAP	ATT - 53
3. Extraction	ATT - 12
4. Sieve Analysis, 20 000 $\mu$ m Minus	ATT - 26

**NOTES:**

- (1) In all test methods used as reference in this specification, metric sieves as specified in Canadian General Standards Board Specification 8-GP-2M shall be substituted for any other specified wire cloth sieves in accordance with Specification 3.2, Aggregate Production and Stockpiling.
- (2) In all cases the latest amendment or revision current at the closing date of the tender is implied when reference is made to one of the above standards in the specification.

**3.16.3.3 Quality Control Testing**

Quality control testing is the responsibility of the Contractor. Tests performed by the Consultant will not be considered to be quality control tests. The Contractor shall provide and pay for equipment and qualified personnel to perform all quality control testing necessary to determine and monitor the characteristics of the RAP and to ensure that it meets specification requirements.

Test methods, sampling and minimum frequency of testing are described in Section 3.16.3.2, Methods of Testing and Table 3.16.3.3 Quality Control Testing Requirements.

Results of all quality control tests shall be submitted to the Consultant on a daily basis.

**TABLE 3.16.3.3**  
**QUALITY CONTROL TESTING REQUIREMENTS**

TEST	STANDARD	MINIMUM FREQUENCY
Sampling Mixes	ATT - 37	One per 1000 tonnes
RAP Sieve Analysis	ATT - 53	One per 1000 tonnes
RAP Asphalt Content (Extraction)	ATT - 12	One per 1000 tonnes
Extraction Sieve Analysis	ATT - 26	One per extraction test

#### 3.16.3.4 Acceptance Sampling and Testing

Within this specification certain requirements, limits, and tolerances are specified regarding the quality of materials and workmanship to be supplied. Compliance with these requirements where so specified, shall be measured and accepted based on the Consultant's quality assurance test results.

#### 3.16.4 CONSTRUCTION

##### 3.16.4.1 Cold Milling Equipment

The Contractor shall use equipment with automatic grade and slope controls, capable of cold milling existing asphalt pavement to an accurate depth of cut, profile and cross slope and shall be capable of loading the milled material directly into trucks.

The cutting head of the cold milling machine shall be a minimum width of 1.9 metres.

##### 3.16.4.2 Cold Milling Asphalt Pavement

Cold milling asphalt pavement shall be performed in a manner which prevents the tearing and breaking of underlying and adjacent pavement and the contamination of the RAP with granular, subgrade or deleterious materials. All RAP shall be loaded directly to trucks from the milling machine and hauled to stockpile or disposed of.

The milled roadway surface shall be swept clean prior to opening to traffic. At locations including but not limited to urban areas and bridge decks, the Contractor shall sweep the surface in a manner which minimizes dust.

The Contractor shall, at his own expense, promptly repair any localized areas of distress in the milled surface that may present a hazard to traffic.

At the point of daily termination of cold milling operations, changes in roadway surface profile or cross-section shall be limited to 50 mm and longitudinal transitions shall be a maximum of 25 mm vertically per metre.

In the event of rain or other inclement weather, the Contractor shall suspend cold milling operations. The Contractor shall make necessary allowances for drainage of water that may pond in areas where the milled sections have not been paved.

3.16.5      STOCKPILING RECLAIMED ASPHALT PAVEMENT

3.16.5.1      **Department Ownership**

When stockpiling of RAP for Department ownership is specified, it shall be performed in accordance with Specification 3.2 Aggregate Production and Stockpiling and the following:

- (i)      A granular stockpile base layer shall be constructed upon the prepared stockpile site to a compacted thickness of at least 150 mm, using granular material containing 100 percent passing the 16 000 sieve, and no more than 10% passing the 80 sieve. The stockpile base layer shall be of such dimensions as to accommodate the maximum quantity of RAP which will exist in the stockpile.
  
- (ii)      No equipment shall operate on the stockpile at anytime.

3.16.5.2      **Contractor Ownership**

When it is specified that the Contractor shall assume ownership of the RAP and he elects to use this material in the production of asphalt concrete pavement, stockpiling of the RAP shall be performed in a manner which prevents contamination and consolidation of the RAP material being used.

All costs associated with the construction of a stockpile base will be considered incidental to the work and will not be paid for separately.

3.16.5.3      **Gradation of Reclaimed Asphalt Pavement**

Reclaimed asphalt pavement to be used in the production of asphalt concrete pavement shall meet the gradation requirements specified in Table 3.16.5.3.

**TABLE 3.16.5.3**  
**GRADATION SPECIFICATIONS FOR**  
**RECLAIMED ASPHALT PAVEMENT**

Percent Passing Metric Sieve (CGSB 8-GP-2M) $\mu\text{m}$	125 000	100
	80 000	99 - 100
	40 000	95 - 100

3.16.5.4      **Hauling**

Haul of RAP shall be carried out in accordance with Specification 4.5, Hauling.

3.16.6 MEASUREMENT AND PAYMENT3.16.6.1 **Cold Milling Asphalt Pavement**

Measurement of cold milling asphalt pavement will be made in square metres of roadway milled, or tonnes or cubic metres (truck box measurement), whichever is specified, of RAP produced.

Payment will be made at the unit price bid per square metre, tonne, or cubic metre, whichever is specified, for "Cold Milling Asphalt Pavement". This payment will be full compensation for cold milling the asphalt pavement, sweeping the milled surface, loading the RAP into trucks, stockpiling or disposing of the RAP and quality control testing as required.

3.16.6.2 **Granular Stockpile Base Layer**

When RAP is stockpiled for Department ownership, separate payment will be made for the granular stockpile base layer.

Measurement of the granular stockpile base layer will be in tonnes or cubic metres (truck box measurement), whichever is specified.

Payment will be made at the unit price bid per tonne or cubic metre, whichever is specified, for "Granular Stockpile Base Layer". This payment will be full compensation for excavating, processing, hauling, placing and compacting the material.