

ITEM 21
ASPHALT MILLING

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ITEM 21

ASPHALT MILLING

21.1 DESCRIPTION

This item shall consist of furnishing all equipment, supervision, labor, and necessary items for removal and disposal of pavements and pavement markings as illustrated in the Plans. It shall also include salvaging and hauling away all planed material, and sawing and cutting to facilitate controlled breaking and removal of concrete and asphalt cement concrete pavement to a neat line. Traffic control is considered part of this Item and shall not be paid for separately.

21.2 EQUIPMENT

The **CONTRACTOR** shall supply all equipment necessary to perform the work, including but not limited to:

A planer with sufficient power, traction, and stability shall be required to maintain an accurate depth of cut. The propulsion and guidance system of the planer shall be maintained in such condition that the planer may be operated to straight and true lines without excessive lateral deviation. Operation with broken or missing teeth will not be allowed. Worn teeth shall be replaced if the planer does not produce a uniform surface. The planer shall be capable of picking up the removed asphalt cement concrete pavement in a single operation. A self loading conveyer shall be an integral part of the planer. Windrows will not be allowed. A sufficient number of brooms shall be used immediately after planing to remove all planed material remaining on the roadway. Signage and traffic control shall be consistent with the Manual of Uniform Traffic Control Device, latest edition. Longitudinal profilograph and trained operator shall also be provided. Equipment shall be approved by the **AGENCY**. All equipment and machinery shall be kept in good working order, free of leaks and properly muffled. All taxes, licenses and fees shall have been paid and proper licenses and permits shall be posted as required by law.

21.3 PROCEDURE

Prior to beginning planing operations, the **CONTRACTOR** shall submit a planing plan for approval by the **AGENCY**. This plan shall include as a minimum:

- The number and types of planers to be used.
- The width and location of each planing pass.
- The number and types of brooms to be used, and their locations with respect to the planers. The **CONTRACTOR** shall have at least one back-up broom on the project at all times in case one of the operating brooms breaks down.
- Traffic control plan.

When planing adjacent to new asphalt cement concrete pavement, the planer shall cut a minimum of 3 inches laterally into the new asphalt cement concrete pavement. When a planed area is adjacent to Portland cement concrete, the concrete shall be cut with a saw to form a smooth, straight line at the joint with the Portland cement concrete. The asphalt cement concrete pavement shall be broken or chipped away to match the plane depth. Profilograph measurements shall be taken before and after planing. The planed surface shall be no rougher (in inches/mile) than the original surface.

21.4 QUALITY CONTROL / TESTING

The longitudinal surface smoothness of the pavement surface prior to and after planing shall be tested in accordance with the Profilograph Method. The **CONTRACTOR** shall provide, operate, and maintain on the project, an approved "California Type" multi-wheel profilograph manufactured by Cox or McCracken that meets the requirements of Colorado Procedures (CP) 64 (0.2" 15 mm] blanking band), and this specification. The profilograph shall be equipped with:

- A micro-computer capable of automatically reducing the data recorded.
- A printer compatible with the micro-computer.
- A power source for the micro-computer and printer.

The computer shall contain a Third Order Filter with adjustable settings 1 through 5. A setting of 2 shall be used.

The computer shall download the profilograph data onto a disk which shall be delivered to the **AGENCY**. The data on the disk shall be formatted to permit evaluation of the data by the **AGENCY**. If software is required for this evaluation, the **CONTRACTOR** shall provide copies of the software for the **AGENCY's** use.

The **CONTRACTOR** shall arrange and pay for training for **CONTRACTOR** personnel in the calibration operation and maintenance of the profilograph conducted by a representative of the manufacturer of the profilograph that will be utilized on the project. The **CONTRACTOR's** operator shall have attended the aforementioned training and have a letter so stating. The **CONTRACTOR's** operator shall follow the manufacturer's instructions and shall measure and record profiles in accordance with CP 64, and this specification.

The profilograph shall be operated at a speed of not less than one mile per hour, nor more than 3 miles per hour in accordance with the Manufacturer's recommendations, without interfering with traffic or the operation of the profilograph. The profilograph shall be calibrated after transportation and before each day's use in accordance with the manufacturer's instructions and CP 64.

The Profile Index (PI) in inches per mile shall be determined for each lane. This profile will be called a Lane Profile Index (LPI). The LPI shall consist of two profiles taken 3 feet (0.9 m) from and parallel to the edge of each lane. The LPIs' of the two profiles for each lane shall be averaged to determine the LPI. Each LPI shall include the following information:

General information:

- Project number
- Project location
- Date
- Lane and wheel path profiled
- Beginning and ending stations
- Operator's signature
- Net total linear feet of each lane
- LPI in inches per mile

Lanes with a LPI after planning which is greater than the LPI prior to planning shall be replanned or corrected by a method approved in writing by the **AGENCY** until the LPI is no greater than the LPI prior to planning. The hot bituminous pavement (HBP) overlay thickness in a replanned area shall be increased by the depth of the replanning. All corrective work shall be at the **CONTRACTOR'S** expense including all traffic control necessary for completion of the corrective work and all additional HBP necessary to replace the replanned material.

21.5 MEASUREMENT

The planning areas will be measured by the square yard planed and cleaned per the plans. No excess beyond the plan quantities shall be paid.

21.6 PAYMENT

The work performed in accordance with this Item and measured as provided under 21.5 Measurement will be paid for at the unit price bid for "Asphalt Cement Concrete Planing". Payment for planing shall include all equipment, supervision, labor, material, supplies, maintenance and other items necessary to perform the items included in the Specifications, including all engineering calculations, traffic control and tests provided by the **CONTRACTOR**. Profile testing of the roadway surface prior to and after planing will not be measured and paid for separately but shall be included in the work.

Item	Description	Payment
21.6	Asphalt Cement Concrete Pavement Planing	\$/yd ²