

## SECTION 515

### PLANING OR MILLING PAVEMENT

#### **I. GENERAL**

##### **1.1. DESCRIPTION OF WORK**

This work shall consist of mechanically planing rigid or flexible pavement to the designated depth specified in the Contract Documents in preparation for pavement repair or pavement overlay and disposing of milled cuttings or using such cuttings in the Work if permitted in the Contract or directed by the Owner. Rigid pavement will mean hydraulic cement concrete pavement or hydraulic cement concrete surfaced pavements and flexible pavement will mean asphalt concrete or asphalt concrete surfaced pavements. Planing as used in this section may also be referred to as milling or grinding. The Contractor shall furnish all materials, equipment and labor necessary to mill existing roadway surfaces to the designated depth in preparation for pavement overlay.

##### **1.2. EQUIPMENT**

The Contractor shall perform planing with a pavement planing or pavement grinding machine of a capacity and type that has operated successfully on work comparable to that specified in the Contract Documents. Milling or cold planing equipment shall be capable of accurately cutting to the depth, width, length, and typical section specified for flexible pavement or rigid pavement while leaving a uniformly cut or ground roadway surface capable of safely handling traffic prior to pavement repair or overlay placement. The milling equipment shall not damage the underlying pavement surface or structure. The milling machine shall be equipped with an automatic grade control system that will control the longitudinal profile and cross slope of the milled pavement surface as the milling operation proceeds. The ground speed of the machine and the cutting equipment shall operate independently. The machine shall have a self-contained water system for the control of dust and fine particles. The width of the machine shall allow for the safe passage of controlled public traffic while in use. The machine shall have a dust collection system or have a system capable of minimizing the dust created by the planing operation.

The Contractor shall continuously monitor the cutting or grinding head of the machine so as to produce and maintain the creation of a uniformly textured milled surface. Equipment and vehicles in use under traffic shall be equipped according to the requirements of the Virginia Work Area Protection Manual.

The milling shall incorporate a machine capable of cutting at least two inches deep into flexible pavement while leaving a uniformly cut and drivable roadway surface capable of handling traffic prior to placement of the overlay. The machine shall be capable of working in wet and dry conditions down to 32° Fahrenheit

##### **1.3. SUBMITTALS**

Samples of adjustment rings for utility castings shall be submitted for approval to the Owner prior to beginning the Work. The Contractor shall guarantee the availability of adjustment rings prior to beginning of Work.

## II. EXECUTION

### 2.1. PROCEDURES

- A. The Contractor shall conduct the Work in a manner and sequence that will ensure its expeditious completion with the least interference to traffic and shall have due regard for the location of detours and provisions for handling traffic. The Contractor shall not open any Work to the prejudice or detriment of Work already started. The Owner may require the Contractor to finish a section of Work before Work is started on any other section.
- B. The Contractor may perform either regular planing or performance planing at his option unless otherwise stated in the Contract Documents. The finished surface for regular pavement planing and performance planing shall have a tolerance of plus or minus 1/4 inch per foot between any two contacts of the resultant surface and the testing edge of a 10-foot straightedge unless the Owner directs otherwise.
- C. No application of pavement overlay shall decrease the vertical clearance under a bridge. In situations where the existing pavement under the overpass cannot be planed in direct proportion to the proposed overlay, the Contractor shall tie down the new pavement to the existing pavement under the overpass no less than 75 feet from the outer edges of the overpass in accordance with the *VDOT Road and Bridge Standards* for Asphalt Concrete Overlay Transition.
- D. The finished surface macrotexture for performance planing shall have a pavement macrotexture MTD (mean texture depth) of less than 2.0 millimeters. Testing for performance pavement planing shall be as described hereinafter.
- E. Irregularities and high spots of existing pavement shall be eliminated. The pavement surface shall be planed, milled or ground to the designated grade or gradient specified in the Contract Documents, or when not specified as a grade, shall parallel that of the existing roadway. Transversely, the cross slopes of tangent sections shall be planed to approximately 1/4 inch per foot or as directed by the Owner. Superelevated curves shall be planed as directed by the Owner. Where the pavement is to be resurfaced by means of the application of an overlay on curb and gutter roadways, a 1-inch deep shoulder shall be cut along the gutter line to eliminate the necessity of feathering the edge of the new surface. Payment for providing the 1-inch shoulder shall be based on the total square yards of removed material regardless of the variable depth of the pass.
- F. The finished planed surface shall be true to grade, free from gouges, grooves, ridges, fractures, soot, oil film, and other imperfections and shall have a uniformly textured appearance suitable for use as a temporary riding surface.
- G. Humps and depressions that exceed the specified tolerances and require additional planing or grinding shall be subject to correction or replacement as directed by the Owner at no additional cost to the Owner.
- H. The Contractor shall ensure positive drainage is provided for all planed surfaces in accordance with Section 315. The Contractor shall endeavor to work with existing drainage and grades to maintain positive flow when planing in curb and gutter sections. The Owner may require the Contractor to erect signage to warn motorists, sweep the roadway to vacate

the water, or in extreme cases, close the lane to traffic until proper drainage of the planed surface can be restored in the event of significant buildup of standing water.

- I. The Contractor shall construct temporary transverse pavement-wedge tie-ins where planed existing pavement is to remain temporarily without overlay to the extent allowed or required herein, in Section 315, elsewhere in the Contract Documents, or by the Owner. Each tie-in shall be constructed no less than 3 feet in length for every inch of depth of pavement planing performed and shall consist of a mix that is suitable as a riding surface to provide a smooth transition between planed existing pavement and undisturbed existing pavement or bridge decks. The Contractor shall construct such tie-ins prior to the planed surface being opened to traffic.
- J. Additional or other limitations and conditions to planing operations will be as specified and applicable to the Contract.
- K. All asphalt surface material cut from the road surface by the planer, shall be removed by the Contractor and shall become the property of the Contractor, unless cuttings are designated to be reused. Cuttings to be reused shall be stockpiled and kept in good condition until reused.
- L. All areas showing excessive pavement or base fatigue or failure will be excavated to remove all unsuitable material and repaired as directed by the Owner.
- M. Road and adjacent areas are to be cleaned daily of all rubbish, trash and debris.
- N. Milled streets shall be resurfaced within five (5) consecutive calendar days of milling operation, unless otherwise directed by the Owner.
- O. Milling elevations must be completed as close to utility castings as possible, with remaining asphalt surface to be removed by appropriate equipment or cut out by conventional methods. The finished grade of the structure cover shall match the surrounding finished roadway surface. (See Section 510 for the adjustment of utility structures.)
- P. Restoration, landscaping and seeding will be done on all areas disturbed by the removal and replacement asphalt and will be considered incidental without separate payment.
- Q. Asphalt Concrete Resurfacing shall be performed in accordance with asphalt application procedures in Sections 315.
- R. Transverse tie-ins on milled surfaces shall have a minimum taper of 12-inches.

## 2.2. PERFORMANCE PAVEMENT PLANING TESTING

- A. The Contractor shall perform mean texture depth (MTD) testing of the macrotexture surface on performance planed pavement in accordance with ASTM E965. Testing shall be accomplished by using a volumetric technique after planing operations have been completed and prior to opening a section of performance planed pavement to public traffic on roadways with posted speed limits of 55 mph or greater. The Contractor shall randomly select 10 locations at each section. Each location shall be tested and the average MTD of the 10 locations per section determined. The average MTD of the performance planed site shall be less than 2.0 millimeters and the upper limit for any one MTD measurement shall not exceed 3.1 millimeters prior to opening that section of roadway to traffic.

### **III. MEASUREMENT FOR PAYMENT**

- A. Milling, hand work (where applicable), materials, labor, equipment and clean up, including the removal and delivery of the cut material as well as incidental expenses, will not be measured as a separate pay item and shall be included in the unit price for Asphalt Concrete Pavement (Section 315), unless milling is specified as a separate item on the Bid form. When a separate item, milling shall be specified for rigid or flexible pavement.
- B. The planed area is defined as the area resulting from actual length and width of the planed pavement surface visually verified and approved by the Owner for payment.
- C. Flexible pavement planing will be measured in square yards of pavement surface area removed to the depth(s) specified in the Contract Documents.

If scabbing or laminations still exist and the Contractor has uniformly planed the pavement to the design depth, the Owner may direct the Contractor to perform additional passes to increase the depth to eliminate the scabbing or delamination. The area of additional passes or increased depth beyond the design depth will be measured and paid for in square yards as authorized by the Owner.

- D. Flexible pavement tie-in planing used to tie into existing structures such as curbs, combination curb and gutters, and bridge terminal walls will be measured in square yards of surface area removed within the design depth designated. Measurement will be based on the full surface area (the actual length and width of the planed pavement surface visually verified and accepted by the Owner for payment) within the range of depths specified in the Contract Documents.

If scabbing or laminations still exist after the Contractor has uniformly planed the pavement to the design depth (+1/2 inch), the Owner may direct the Contractor to perform additional pass(es) to increase the depth to eliminate the scabbing or delamination. The area of additional pass(es) of increased depth beyond the design depth (+1/2 inch) will also be measured and paid for in square yards as authorized by the Owner.

- E. Rigid pavement planing will be measured in square yards of pavement surface area removed to the design depth specified in the Contract Documents and will be paid for at the contract unit price per square yard for the design depth indicated on the Bid form.
- F. Rigid pavement tie-in planning will be measured in square yards of pavement surface area removed to the design depth specified in the Contract Documents and will be paid for at the unit price per square yard as indicated on the Bid form.

End of Section