

## **SECTION 622.30 DIAMOND GRINDING OF EXISTING PORTLAND CEMENT CONCRETE PAVEMENT**

**622.30.1 Description.** This work shall consist of grinding concrete pavement to provide good riding characteristics, a surface texture and proper drainage. The finished surface shall be as shown on the plans or as directed by the engineer.

**622.30.2 Equipment.** The equipment shall be of a size that will grind a strip at least 3 feet (1 m) wide using diamond blades, and shall not cause spalls at cracks, joints or other locations.

### **622.30.3 Construction Requirements.**

**622.30.3.1** The construction operation shall be scheduled and proceed in a manner that produces a uniform finished surface. Auxiliary or ramp lane grinding shall transition from the edge of the mainline as required to provide drainage and an acceptable riding surface. Grinding of bridge decks will not be permitted unless specified in the contract.

**622.30.3.2** Pavement undersealing or pavement repair, if required, shall be completed prior to any grinding.

**622.30.3.3** Grinding shall be accomplished in a manner that eliminates joint or crack faults and provides lateral drainage by maintaining a constant cross slope between grinding extremities in each lane. A maximum tolerance of 1/16 inch (2 mm) will be allowed for adjacent sides of joints and cracks, except that under no circumstances shall the grinding depth exceed 3/4 inch (20 mm) from the top of the original surface. When grinding across faulted joints, a minimum of a 20-foot (6 m) transition onto the approach side slab shall be used.

**622.30.3.4** The cross slope of the pavement shall be as shown on the plans and shall have no depressions or misalignment of slope greater than 1/4 inch in 12 feet (2 mm/m) when measured with a 12-foot (3.6 m) straightedge placed perpendicular to the centerline. Areas of deviation shall be reground. Straightedge requirements will not apply across longitudinal joints or outside the ground area.

**622.30.3.5** As soon as practical after grinding, the surface will be straightedged longitudinally and all variations exceeding 1/8 inch in 10 feet (1 mm/m) will be plainly marked. Areas of deviation shall be reground.

**622.30.3.6** Substantially all of the pavement surface shall be textured. Extra depth grinding to eliminate minor depressions in order to provide texturing on 100 percent of the pavement surface will not be required. No unground surface area between passes will be permitted.

**622.30.3.7** The grinding process shall produce a final pavement surface that is true to grade and uniform in appearance with a longitudinal line type texture. The line-type texture shall contain parallel longitudinal corrugations that present a narrow ridge corduroy-type appearance. The peaks of the ridges shall be approximately 1/32 inch (0.8 mm) higher than the bottoms of the grooves. The grooves shall be evenly spaced. There shall be approximately 50-55 grooves per foot (164-180 grooves/m), measured perpendicular to the centerline.

**622.30.3.8** The contractor shall remove and dispose of all residue from the grinding in a manner and at a location to satisfy environmental regulations. The contractor shall have the engineer's approval for the method of spreading and disposal of the residue prior to beginning any grinding operations.

**622.30.3.8.1** Solid residue shall be removed from the pavement surface before any residue is blown by traffic action or wind.

**622.30.3.8.2** Residue shall not be permitted to encroach on open lanes.

**622.30.3.8.3** The residue shall not enter into gutters or closed drainage systems. Suitable means to restrict the infiltration of the residue into a closed drainage system shall be provided.

**622.30.3.8.4** The contractor may disperse residue onto unpaved shoulders, adjacent roadside embankments, or median ditch areas of divided highways where the residue runoff can percolate into the soil, unless specified otherwise in the contract. The spread rate shall not generate surface runoff. If surface runoff occurs at a grinding location, the contractor shall haul the residue to an approved location at the contractor's expense.

**622.30.3.8.5** Discharge of any residue runoff shall not flow into adjacent rivers, streams, lakes, ponds or other open bodies of water.

**622.30.3.8.6** Residue shall not be spread within 100 feet (30 m) of any streams, lakes or other open bodies of water, or within 15 feet (5 m) of a water filled ditch.

**622.30.3.8.7** The contractor shall use appropriate equipment and methods so the discharging of the residue does not cause erosion of soil or damage to established vegetation along the roadway. The contractor shall repair and reseed any areas where the discharge of grinding residue causes damage to roadway slopes or vegetated areas at the contractor's expense.

**622.30.3.8.8** If the solids concentration of discharged residue at any particular area is determined to be excessive by the engineer, the contractor shall provide equipment and material to flush the areas with water as directed by the engineer, at the contractor's expense.

**622.30.3.8.9** Obliterated edgelines next to a shoulder will not be required to be replaced by the contractor unless specified in the contract. Any centerline or lane line markings removed by the contractor's operations shall be replaced with temporary pavement marking material in accordance with [Sec 620](#), unless permanent pavement marking material is specified in the contract. Prior to installation of permanent pavement marking material, all joints and cracks shall be cleaned and sealed if specified in the contract.

#### **622.30.4 Smoothness Requirements.**

**622.30.4.1** An initial profile index of representative portions of the pavement will be available through the project contact person upon written request. After the contract is awarded, the initial profile index will be available from the engineer. This information represents a summary of conditions found to exist at the time the survey was made. The availability of this information will not constitute a guarantee that a profile other than that indicated will not be encountered at the time of grinding. This information is provided only to give the contractor an idea of the condition of the pavement in regard to smoothness when bidding on this work. The contractor assumes the risk of error if the information is used for any purpose other than the intended purpose. The Commission makes no representation as to the accuracy of the initial profile index, since the accuracy of the profile index is limited by the number of profiles taken. Any assumption the contractor makes from this data will be at the contractor's risk, none are intended by the Commission.

**622.30.4.2** Prior to performing any grinding work, the contractor shall provide a control profilograph trace in accordance with [Sec 502](#). This control trace will be used to identify the required smoothness for the project. Each segment of the finished ground surface shall have a final profile index of 35 percent of the control profilograph trace or 30 inches per mile

(45 mm/km), whichever is greater, and shall not include any bumps exceeding 0.5 inch in 25 feet (13 mm in 8 m). Depressed pavement areas due to subsidence or other localized causes and areas where the maximum cut at mid panel or a fault restricts further grinding, will be excluded from testing with the profilograph when approved by the engineer.

**622.30.4.3** Profilograph testing shall end 15 feet (5 m) prior to excluded areas and shall resume 15 feet (5 m) following excluded areas.

**622.30.4.4** The ground surface shall be tested and evaluated in accordance with [Sec 502](#), with the following modifications:

(a) The test shall be run and the profilogram shall be evaluated using the same procedure as for the control trace.

(b) Each segment for which continuous grinding is designated will be evaluated individually, and shall meet the smoothness and bump requirements in accordance with [Sec 622.30.4](#), regardless of the segment's length. The engineer may require removal of unbroken fins at the contractor's expense.

(c) In excluded areas, smoothness requirements will be modified or may be waived by the engineer.

(d) The engineer may test for smoothness and bumps near the center line and at other spot locations where compliance is questionable. Additional grinding may be required. The provisions under [Sec 502.8.6](#) will not apply.

(e) The original and final profilograph traces shall not be used to determine grinding depth.

**622.30.5 Method of Measurement.** Final measurement will not be made except for authorized changes during construction or where appreciable errors are found in the contract quantity. Where required, measurement will be made to the nearest square yard (m<sup>2</sup>). Measurement will be based upon the full pavement lane width. No deduction will be made for gaps within the pavement lane to avoid striping, raised pavement markers, manholes or other structures.

**622.30.6 Basis of Payment.** The accepted quantity of ground pavement surface will be paid for at the contract unit price for diamond grinding concrete pavement. Payment will be considered full compensation for all labor, equipment, material and incidentals to complete this work, including hauling and disposal of grinding residue.

## **SECTION 622.40 DIAMOND GRINDING OF NEW PORTLAND CEMENT CONCRETE PAVEMENT**

**622.40.1 Description.** This work shall consist of grinding new Portland cement concrete pavement to provide good riding characteristics and surface texture. The finished surface shall be as shown on the plans.

**622.40.2 Equipment.** The grinding equipment shall be in accordance with [Sec 622.30.2](#).

### **622.40.3 Construction Requirements.**

**622.40.3.1 Paving.** When diamond grinding is used as the final texturing for new Portland cement concrete pavement, concrete paving shall be in accordance with [Sec 502](#), except as follows. All joints shall be protected to prevent grinding residue from entering. Joints to be

diamond ground shall be cleaned and sealed in accordance with [Sec 502](#) after diamond grinding is completed.

#### **622.40.3.2 Smoothness Requirements.**

**622.40.3.2.1** No diamond grinding shall be done until the pavement has attained a strength sufficient to be opened to all types of traffic, and no sooner than twenty one days after being placed. All diamond grinding shall be completed on any section prior to opening that section to other than construction traffic, unless approved by the engineer.

**622.40.3.2.2** The final pavement surface from the grinding process shall be in accordance with [Sec 622.30.3.7](#). All grooves and adjacent passes shall be parallel to each other and the roadway, with no variation. Adjacent passes shall completely lap with no unground surface between, however, they shall not overlap more than 1 1/2 inches (35 mm). Adjacent passes shall be within 1/8 inch (10 mm) of the same height as measured with a 3-foot (914 mm) straightedge. No less than 98 percent of the specified surface shall be textured by grinding. There shall be no ridge between lanes. Any remaining ridges on the outside edge next to the shoulder greater than 1/8 inch (10 mm) high shall be feathered out to the satisfaction of the engineer in a separate operation.

**622.40.3.2.3** Any deficiencies in the final surface due to improper contractor operations or equipment shall be corrected by the contractor, at the contractor's expense.

**622.40.3.2.4** The contractor shall remove and dispose of all residue from grinding operations in accordance with [Sec 622.30.3.8](#).

**622.40.4 Basis of Payment.** No direct payment for diamond grinding new concrete pavement will be made. Diamond grinding new concrete pavement will be considered as part of the work paid for under the contract unit price for Portland concrete pavement in accordance with [Sec 502](#).