Section 2532. Pavement Surface Repair (Diamond Grinding)

2532.01 DESCRIPTION.

A. Use a diamond grinder to grind an existing PCC pavement surface, used as traffic surface, for profile improvement. Perform grinding and texturing at the locations shown in the contract documents. Refer to Article 2532.03, B, 3 for grinding bridge decks.

B. The existing surface and the coarse aggregate will be described in the contract documents.

C. This work may involve using a diamond grinder to grind a newly constructed deck surface for temporary surface texture. Perform grinding prior to opening the deck segment to traffic.

2532.02 MATERIALS.

None

2532.03 CONSTRUCTION.

A. Equipment.

1. Perform grinding and texturing using diamond blades mounted on a self propelled machine that has been designed for grinding and texturing concrete surfaces. Ensure the equipment will not cause strain or damage to the underlying pavement.

2. Do not use grinding and texturing equipment that causes excessive ravels, aggregate fractures, spalls, or disturbance of the transverse and/or longitudinal joints.

3. Use grinding equipment with a minimum effective head width of 36 inches (300 mm).

B. Pavement Surface Repair.

1. General.

a. Grind and texture the concrete surface in a longitudinal direction.

b. Ensure the surface, after grinding, is of uniform texture.

c. When using more than one grinding machine in the same travel lane, use similar blade segment thicknesses, blade spacings, and blade diameters on all machines so the texture of the ground surface is reasonably uniform across the lane.

d. To be in compliance, the land area and the texture depth shall be within the specified ranges. It may be necessary to adjust the blade spacing during a project to stay within specified ranges.

e. For multiple passes, carefully control the equipment to minimize the overlap. Ensure overlaps do not exceed 1 inch (25 mm).

f. Ensure that, after grinding, the transverse slope of the concrete surface is uniform to a degree that there are no depressions or misalignment of slope greater than 1/4 inch in 12 feet (6 mm in 3.6 m) when tested by stringline or straightedge placed perpendicular to the center line.

g. In order to match the outside edge of the pavement, grind adjacent paved areas (for example shoulders, curb and gutter, turn lanes, tapers, paved crossovers, and so forth) to minimize vertical projections.

h. The Contractor is responsible for quality control of the texture. The Engineer will conduct random Quality Assurance inspections.

2. PCC Pavement.

a. Grind and texture substantially the entire surface area of the pavement until:

- The pavement surface on both sides of the transverse joints and all cracks are in the same plane, and
- The pavement surface meets the smoothness required.

b. In each lane, ensure at least 95% of the area in each 100 foot (30 m) section has a newly textured surface.

c. Meet the following requirements for grinding:

1) Ensure all construction traffic entering or leaving the work area moves in the direction of traffic of the open lane.

2) Begin and end at lines normal to the pavement center line within any one ground area and at the project limits. This will not be required at the end of each shift.
3) Maintain good transverse drainage at all times.
4) Assemble the grinding head to produce the tolerances in Table 2532.03-1 on pavements with the indicated coarse aggregates.

Table 2532.03-1: Grinding Head Tolerances

(ENGLISH)	Limestone	Gravel
Blade segment thickness Land area between grooves[(a)]	0.130 inch maximum 0.100 inch to 0.125 inch	0.130 inch maximum 0.080 inch to 0.110 inch
Texture depth[(b)]	Target of 1/16 inch with average between 1/32 inch to 3/32 inch	
(METRIC)	**Limestone**	**Gravel**
Blade segment thickness Land area between grooves[(a)]	3.30 mm maximum 2.5 mm to 3.4 mm	3.30 mm maximum 2 mm to 2.75 mm
Texture depth[(b)]	Target of 2 mm with average between 1 mm to 2.5 mm	

(a) Based on an average of a minimum of ten measurements across the ground width for one pass.

(b) Based on an average of a minimum of six measurements across the ground width for one pass.

5) A test area 500 feet (150 m) long and the width of the grinding head will be allowed for each new or restacked head, provided a surface texture in reasonable conformance with the specification is being produced.

3. Bridge Deck.

a. Grind and longitudinally groove the entire surface of the bridge deck according to Article 2412.03, D, a.
b. Assemble the grinding head to produce the tolerances in Table 2532.03-2 on bridge decks.

Table 2532.03-2: Grinding Head Tolerances

(ENGLISH)	Limestone
Blade segment thickness Land area between grooves[(a)]	0.130 inch maximum 0.100 inch to 0.125 inch
Texture depth[(b)]	Target of 1/8 inch ± 1/32 inch
(METRIC)	**Limestone**
Blade segment thickness Land area between grooves[(a)]	3.30 mm maximum 2.5 mm to 3.4 mm
Texture depth[(b)]	Target of 3 mm ± 1 mm

(a) Based on an average of a minimum of ten measurements across the ground width for one pass.

(b) Based on an average of a minimum of six measurements across the ground width for one pass.

C. Smoothness.

1. PCC Pavement.

a. The Engineer will partly profile the pavement on the initial trace using the procedure described in Article 2316.02, B. The average profile index for each area will be shown in the contract documents. The bidder is also advised that all profilograph information is available for review at the Office of Contracts by contacting the Contracts Engineer. After the contract is awarded, the profilograph information 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 milling.

b. Provide a control profilograph trace as described in Article 2316.02, B prior to performing grinding work. This control trace will be used to identify the required smoothness for the project. Each segment of the finished ground surface is to:

- Have a final profile index of 10 inches per mile (160 mm/km)or less, and
- Not include any bumps exceeding 0.5 inches in 25 feet (13 mm in 8 m).

c. Identify depressed pavement areas and localized areas with excess faulting greater than 1 inch (25 mm). Review these areas with the Engineer to determine the limits for exclusion from the profile index calculation.

d. After grinding, test and evaluate the surface according to Section 2316. Incentives for pavement smoothness will not apply.

2. Bridge Deck.

Ensure the smoothness requirements of Section 2428 are met prior to performing the texturing. After texturing, test the bridge deck again according to Article 2428.02, C. Ensure the resulting profile index does not exceed the corrected profile index prior to the texturing.

D. Limitations.

1. General.

a. When nighttime work is required, include lighting at each work area. Ensure lighting does not glare into oncoming motorists.

b. Continuously remove all slurry or residue resulting from the grinding operations. Do not deposit on the slab or shoulder. Leave pavement and paved shoulders in a clean condition. Ensure residue from grinding operations does not flow across lanes occupied by public traffic or into gutters or other drainage facilities. This residue may be spread on the foreslope or removed according to Article 1104.08.

2. PCC Pavements.

a. Uncompleted sections may be opened to traffic without completion of grinding across an entire lane.

b. During nighttime grinding operations, progress in the direction with normal traffic flow.

c. When the following work is included in the contract, sequence the operations in the following order:

1) Undersealing,
2) Longitudinal subdrains,
3) Patching,
4) Installation of retrofit load transfer,
5) Diamond grinding, and then
6) Crack and joint sealing.

3. Bridge Decks.

Prior to opening to traffic, complete the work under this specification and meet the smoothness requirements.

2532.04 METHOD OF MEASUREMENT.

Measurement will be as follows:

A. PCC Pavement.

1. Square feet (square meters) of Pavement Surface Repair, of the type specified, shown in the contract documents.

2. Adjacent paved areas ground to minimize vertical projections will not be measured for payment.

B. Bridge Deck.

Square yards (square meters) of Pavement Surface Repair, of the type specified, shown in the contract documents.

2532.05 BASIS OF PAYMENT.

Payment will be as follows:

A. Contract unit price per square yard (square meter) for Pavement Surface Repair (Grinding Limestone) or Pavement Surface Repair (Grinding Gravel).

B. Payment is full compensation for furnishing all equipment, materials, and labor to:

- Grind the concrete surface,
- Test for smoothness according to the contract documents, and
- Remove slurry and residue from this operation.