October 4, 2019

REVISION OF SECTION 202

DIAMOND GRINDING CONCRETE PAVEMENT

1. **NOTICE**

This is a standard special provision that revises or modifies CDOT’s *Standard Specifications for Road and Bridge Construction*. It has gone through a formal review and approval process and has been issued by CDOT’s Project Development Branch with formal instructions regarding its use on CDOT construction projects. It is to be used as written without change. Do not use modified versions of this special provision on CDOT construction projects, and do not use this special provision on CDOT projects in a manner other than that specified in the instructions unless such use is first approved by the Standards and Specifications Unit of the Project Development Branch. The instructions for use on CDOT construction projects appear below.

Other agencies that use the *Standard Specifications for Road and Bridge Construction* to administer construction projects may use this special provision as appropriate and at their own risk.

**Instructions for use on CDOT construction projects:**

Use this standard special provision on projects with diamond grinding of concrete pavement.

Section 202 of the Standard Specifications is hereby revised for this project to include the following:

**202.13 Diamond Grinding Concrete Pavement.** This work consists of rehabilitating existing concrete pavement by diamond grinding to restore smoothness and texture at the locations indicated on the plans such that the surface area has a minimum average macrotexture depth of 0.05 inches when tested in accordance with Colorado Procedure 77B. The maximum grinding depth shall be 0.25 inches unless approved by the Engineer.

**202.14 Materials.** A hardness of approximately 7 is anticipated for the existing concrete pavement based on the Mohs hardness scale. For bidding purposes, the Contractor shall be responsible for verifying the hardness of the existing concrete pavement.

**202.15 Construction Requirements.** Prior to beginning work on the project, the Contractor shall submit to the Engineer for approval a detailed plan for accomplishing the grinding. The plan shall include a sequence for grinding which produces the desired surface ride qualities with a minimum macrotexture depth throughout the project. Grinding shall be performed in the longitudinal direction. The entire surface width of the driving and passing lane pavement shall be ground until the pavement surfaces on both sides of all transverse joints and random cracks are in the same plane and meet the smoothness requirements specified herein. Grinding shall begin and end at lines normal to the pavement centerline.

The Contractor shall grind driving and passing lane pavement surfaces within designated limits as shown on the plans. The finished grinding shall maintain the existing cross slope of the roadway in the driving and passing lanes. A feather pass shall be ground at the edge of traveled-way as indicated on the plans or as directed by the Engineer. No adverse drainage conditions shall be caused by the grinding operations. The sequence of work shall not allow for ponding of water in the travel lanes due to a weather event. Shoulders that require grinding will be designated on the plans.

Approach slabs and bridge decks shall not be ground and textured. Grinding depth shall transition to 0 inches before the approach slab interface.

One stratified random acceptance test for texture per 2,500 linear feet or fraction thereof in each lane and shoulder shall be taken with a minimum of one test per day.

Smoothness for this project will be measured by the Department in accordance with subsection 105.08. The MRI after grinding for each 0.10 mile section or fraction thereof shall have a MRI of 95 in/mile or less. Sections with a MRI greater than 95 in/mile shall be corrected by further diamond grinding.

At various locations within the driving and passing lanes, miscellaneous tie bars may be exposed due to wearing of the pavement surface. Removal of these tie bars will be incidental to the grinding and texturing work.

All grinding shall be parallel to the longitudinal joints. Adjacent passes shall be overlapped by a maximum of 2 inches**.**

Grinding shall be performed using diamond blades mounted on a self-propelled machine designed for grinding and texturing concrete pavement. The equipment shall weight a minimum 35,000 pounds including the grinding head and be of a size that will grind a strip at least 3 feet wide in a single pass. The effective wheel base of the machine shall be at least 12 feet. Grinding equipment that causes raveling, aggregate fractures or disturbance to the joints shall not be permitted. The equipment shall be maintained to ensure it is in proper working order, including the roundness of the match and depth of control wheels. Any wheels found to be out of round shall be immediately replaced. Smaller equipment may be approved by the Engineer for areas that the above equipment cannot reach.

The grinding process shall produce a pavement surface that is true to grade and uniform in appearance. Grooves shall be evenly spaced. Ridges on the outside edge next to the shoulder, auxiliary, or ramp lanes greater than 3/16 inch high shall be feathered out to the satisfaction of the Engineer in a separate, feather pass operation. No adverse drainage conditions shall be caused by the grinding operations.

The pavement surface after grinding shall have no depressions or misalignment of slope in the longitudinal direction exceeding 1/8 inch in 10 feet when measured with a 10-foot straightedge placed parallel to the centerline. The grinding coverage shall be at least 95 percent of the pavement surface area. All areas of deviation shall be reground at no additional cost.

When the texture depth is below the lower specified limit, the Contractor shall determine the area represented by this test. The area shall be determined by taking additional tests at 15 foot intervals parallel to the centerline in each direction from the affected location until two consecutive tests are found to be within the specified limits. Any surface with unacceptable texturing exceeding 25 linear feet in any lane or shoulder shall be reground (full width). After the Engineer approves the limits, the Contractor shall correct the deficient surface texture by grinding full width at no additional cost to the project. The corrected surface texture will be retested for acceptance. Correcting surface texture deficiencies shall occur prior to pavement smoothness testing. Upon the second unacceptable test result, the Contractor shall notify the Engineer, in writing, the action taken to provide an acceptable surface macrotexture. Upon the project’s third unacceptable test result from the Department, the Engineer will notify the Contractor, in writing, and the pay estimate will be withheld until diamond grinding is taken to provide an acceptable surface macrotexture.

The slurry and residue, including joint sealant, resulting from the grinding operation shall not be allowed to flow across lanes occupied by traffic and shall be continuously removed during the grinding operation, leaving the pavement in a clean condition.

The Contractor shall haul the grinding residue to an approved suitable location at no additional cost. The Contractor shall obtain approval of the disposal method from the Engineer prior to beginning the grinding operation.

**202.16 Method of Measurement.** Diamond Grinding Concrete Pavement will be measured by the square yard of acceptable finished surface regardless of the number of passes required. The quantity of grinding and texturing will be determined by measuring the finished area ground within the limits indicated on the plans or as directed by the Engineer.

**202.17 Basis of Payment.** Diamond Grinding Concrete Pavement will be paid for at the contract unit bid price per square yard. Payment will be considered full compensation for all labor, materials, supplies, tools, water, equipment, and incidentals necessary for completing the work as specified.

Payment will be made under:

**Pay Item Pay Unit**

Diamond Grinding Concrete Pavement Square Yard