

ITEM 01502.5010 M - FULL DIAMOND GRINDING AND TEXTURING OF CONCRETE PAVEMENT

DESCRIPTION

Diamond grind the entire portland cement concrete pavement at the locations indicated on the plans such that a minimum 95% of the surface area is textured.

MATERIALS (Equipment)

Use diamond grinding equipment specifically designed with gang mounted diamond saw blades. The grinding machine must have a vacuum pickup to continually remove the slurry and residue from the pavement surface. Use continuous grinding equipment such as the Target 3800 or Target 3804 or equal as approved by the Director, Materials Bureau.

CONSTRUCTION DETAILS

Determine the blade spacing between 1.50 and 3.25 mm based on the aggregate hardness. Inform the Engineer of the spacing.

Arrange the grinding operation such that successive grinding operations progress within a time period that will insure the proper maintenance of traffic. Grind the pavement in a longitudinal direction parallel to the pavement centerline in the areas designated on the plans. Grind across the entire lane surface. Grind in a manner that eliminates joint or crack faults while providing positive lateral drainage by maintaining a constant cross slope between grinding passes.

Continuously remove the slurry from the pavement using a vacuum pickup. Deposit the slurry in a truck equipped to transport the liquid material off the job site. Do not allow the slurry and residue to flow across lanes occupied by traffic or into drainage structures.

After grinding, both sides of joints and/or cracks must be substantially in the same plane. Misalignment of the planes of the surfaces on adjacent sides of the joint or crack which is in excess of 2 mm, when measured with a 1 m straight edge, must be reground. Test ground surfaces with a 3 m long straight edge held both parallel and transverse to the pavement centerline. Surface deviations greater than 3 mm in 3 m must be reground until this tolerance is achieved.

METHOD OF MEASUREMENT

Square meter of acceptable finished surface regardless of the number of passes required. The quantity of grinding will be determined by measuring the finished area ground.

BASIS OF PAYMENT

Include the cost of all labor, equipment, materials, supplies, water and incidentals necessary to grind the pavement including removing slurry and residue.

ITEM 04502.8032 M - FULL DIAMOND GRINDING OF PCC PAVEMENT
ITEM 04502.8033 M - FULL DIAMOND GRINDING OF PCC PAVEMENT WITH
SLURRY REMOVAL

DESCRIPTION

Diamond grind the entire portland cement concrete (PCC) pavement surface where indicated on the plans or where directed by the Engineer.

EQUIPMENT

1. Diamond Grinding. Use equipment specifically designed for production diamond grinding of PCC pavement, such as the Target 3800 or Target 3804, or equal as approved by the Director, Materials Bureau. The equipment must use gang mounted diamond saw blades on a multi-blade arbor such that a 900 mm, minimum, grinding pass width is achieved. The equipment must also have a vacuum system capable of removing slurry from the pavement surface.
2. Profilograph. Use an automated California-type profilograph meeting the written requirements of the Materials Bureau. The profilograph must be capable of producing and analyzing a profile trace in accordance with those instructions. Provide the means to transport the profilograph as required by the Engineer. Alternate equipment is subject to the approval of the Director, Materials Bureau.

CONSTRUCTION

Prior to beginning any work on the pavement and after diamond grinding, produce a profilograph trace in accordance with the written procedures of the Materials Bureau. Provide traffic control and survey stationing for referencing measurements. The initial profilograph trace shall be obtained for only one (1) wheel path obtained per lane where diamond grinding will be performed. The final profilograph trace shall be obtained for both (2) wheel paths per lane where diamond grinding has been performed. The Engineer will analyze the profile trace of each wheel path and determine the profile index (PI) of the initial and final pavement surface. A wheel path is defined as a longitudinal line parallel to the centerline of pavement located approximately 900 mm inside all lane edges. The Engineer will report the PI in 160 m increments. The Contractor shall provide the Engineer the initial profilograph trace within 5 days of completing the profilograph of the pavement surface.

Begin and end diamond grinding at lines normal to the pavement centerline. Grind the pavement longitudinally in either direction. The finished surface must be at least 95% diamond ground. After grinding, the PCC pavement across a joint or crack must be in the same plane when measured with a 1.0 m (minimum) straightedge. Provide surface drainage by maintaining a constant cross slope on the finished surface and by blending adjacent passes.

If required in the contract documents, continuously remove the slurry from the pavement using the vacuum system on the grinding equipment. Transfer the slurry into equipment capable of transporting it from the job site without spills. Slurry disposal is the Contractor's responsibility. Do not allow the slurry into occupied travel lanes or drainage structures.

METHOD OF MEASUREMENT

Square meters of diamond ground surface regardless of the number of passes required. No deductions will be made for isolated low areas, provided 95% of the surface is diamond ground.

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BASIS OF PAYMENT

In the unit bid price, include the cost of all labor, equipment, materials, supplies, water, and incidental supplies necessary to grind the pavement, remove the slurry (if required), and profilograph the initial and final pavement surface.

Payment will be made for each 160 m segment. The Engineer may include segments less than 160 m long with adjacent 160 m segments. The unit bid price for each segment will be adjusted in accordance with the Payment Adjustment Table below based on the PI's determined by the Engineer.

PAYMENT ADJUSTMENT TABLE

Profile Index (mm/km)	Adjustment (% of Bid Price)
0.0 - 15.9	110
16.0 - 31.9	107
32.0 - 47.9	104
48.0 - 63.9	102
64.0 - 79.9	101
80.0 - 95.9	100
96.0 +	See note (1)

If an isolated dip is too low to grind in the Engineer's opinion, the Engineer may remove it from PI determination, provided 95% of the pavement surface has been ground. The Engineer may begin or terminate a payment interval at an isolated low area to facilitate PI determination.

Note 1: Re-grind and re-profilograph as ordered by the Engineer until a profile index of between 80.0 - 95.6 mm/km or less is obtained. No payment will be made for producing a re-profilograph trace or for grinding or re-grinding until a profilograph index of between 80.0 - 95.6 mm/km or lower is obtained.

**ITEM 18502.5010 M - FULL DIAMOND GRINDING AND TEXTURING OF
CONCRETE PAVEMENT**

**ITEM 18502.5020 M - PARTIAL DIAMOND GRINDING AND TEXTURING OF
CONCRETE PAVEMENT**

DESCRIPTION

This work shall consist of diamond grinding and texturing the entire surface (full grinding) or a portion of the surface (partial grinding) of existing Portland cement concrete pavement at the locations indicated on the plans.

MATERIALS (Equipment)

Grinding and texturing shall be done utilizing power driven diamond blades mounted on a self-propelled machine that has been designed for grinding and texturing pavements. The machine shall be equipped with a vacuum system that is capable of removing the slurry residue that results from grinding. With partial grinding, the vacuum system cannot be used to its full potential and remnants of slurry residue remain after grinding. These remnants shall be immediately removed from the pavement and shoulder surfaces by means acceptable to the Engineer. The machine shall be capable of grinding the surface without causing spalls at cracks, joints or other locations. The machine shall also be a shape and dimension that does not encroach on traffic outside the work area.

CONSTRUCTION DETAILS

The Contractor shall arrange the operation such that successive grinding operations will progress within a time period that will insure the proper maintenance of traffic.

Grinding and texturing shall be performed in a longitudinal direction in the areas designated on the plans. Grinding shall begin and end at lines perpendicular to the pavement centerline. Grinding shall be accomplished in a manner that eliminates joint or crack faults while providing positive lateral drainage by maintaining a constant cross slope between grinding passes. Extra depth grinding to eliminate minor depressions in order to provide texturing across the entire width of pavement being ground will not be required. "Space cutting" will be permitted. Space cutting is defined as a wider spacing of saw blades for an initial pass in deep grinding areas followed by a final pass meeting the requirements below. Space cutting will be permitted provided results are satisfactory to the Engineer.

After grinding both sides of joints and/or cracks shall be substantially in the same plane. Misalignment of the planes of the surfaces on adjacent sides of the joint or crack which is in excess of 2 mm, when measured with a 1 m straight edge, shall be reground.

A bevel of the dimensions shown on the plans shall be ground into adjacent lanes to provide an elevation transition from a ground lane to an unground lane.

The diamond blades shall be spaced such that the thin fins of concrete left between the cuts break off during the grinding process. Blade spacing may be varied by the Contractor depending on aggregate hardness.

5/3/88
1/25/94
1/04/95 M

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Generally, the spacing for soft aggregate will be between 2.0 mm and 2.5 mm while the spacing for hard aggregate will be between 1.6 mm and 2.0 mm. The cut grooves shall be between 2.3 mm and 3.3 mm in width. The blade spacing determined by the Contractor and approved by the Engineer shall result in a texture with the peaks of ridges approximately 1 mm higher than the bottom of the grooves.

The slurry and residue resulting from grinding shall be continuously removed during the grinding operation leaving the pavement in a clean condition. Slurry and residue shall not be permitted to flow across lanes occupied by traffic or into drainage structures.

Full and/or partial ground surfaces shall be tested with a 3 m long straight edge held both parallel and transverse to the pavement centerline. Any surface deviations found to be greater than 3 mm in 3 m shall be reground until this tolerance is achieved. These measurements shall be performed by the Contractor, under the direction of the Engineer, with a 3 m straight edge provided by the Contractor. If steel reinforcing mesh is encountered during pavement grinding, these areas do not have to be ground but will be repaired, under other items in the contract, or according to Section 104-03 Contingencies, Extra Work, Deductions.

METHOD OF MEASUREMENT

Pavement grinding will be measured by the square meter of acceptable finished surface regardless of the number of passes required. The quantity of grinding will be determined by measuring the finished area ground.

BASIS OF PAYMENT

The unit bid price per square meter of pavement grinding shall include the cost of all labor, equipment, materials, supplies, tools, water and incidentals necessary to grind and texture the pavement including removing slurry and residue, cleaning the pavement and shoulders.

Payment will be made under:

Item No.	Item	Pay Unit
8502.5010 M	Full Diamond Grinding and Texturing of Concrete Pavement	Square Meters
8502.5020 M	Partial Diamond Grinding and Texturing of Concrete Pavement	Square Meters

5/3/88
1/25/94
1/04/95 M