**Paving Joints, Milling Rebates, and Protruding Utilities**

**Question and Answer**

**Question:**
Are paving joints, milling rebates and protruding utility/facilities required to be ramped?

**Answer:**
Yes, Standard Specification Section 619-3.02(A) requires pavement joints and milling rebates resulting in longitudinal or transverse vertical faces exceeding 25 mm in height that would be exposed to traffic during non-work hours shall be sloped or tapered with temporary patches or shims providing a taper rate in accordance with Table 619-1.

Vertical faces on paving joints, milling rebates and protruding utilities greater that 25 mm (1 inch) are a hazard to vehicles, especially motorcycles. Milling operations and road surfaces being prepared for paving must also accommodate drainage. Protruding utility/facilities outside of traffic lanes may be delineated rather than ramped.

**Reference:**

Standard Specification Section 619-3.02

**619-3.02 Basic Work Zone Traffic Control.** The Contractor shall control traffic so that a person who has no knowledge of conditions may safely and with a minimum of discomfort and inconvenience ride, drive, or walk, day or night, over all or any portion of the highway and/or structure under construction where traffic is to be maintained.

The Contractor shall cease operations and restore the traveled way to safe operating condition during any specific periods listed in the contract documents, at such times as traffic renders conditions unsafe to continue work, and during periods of darkness (before sunrise or after sunset), fog, snow or rain, high winds, or other inclement weather that renders conditions unsafe to continue work, for either the traveling public or the workers. The Engineer will determine when traffic or weather conditions render work operations unsafe.

**A. Surface Condition, Debris, Drainage and Dust Control.** The traveled way, sidewalks and pedestrian walkways shall be kept reasonably smooth and hard at all times, and shall be well drained and free of potholes, bumps, irregularities, and depressions that hold water. Except when construction operations necessitate disturbance of the normal surface, the Contractor shall maintain the pavement surface in such a condition as to permit the safe, comfortable passage of vehicles at the posted speed limit. A satisfactory riding surface shall be maintained both when work is underway, and when work is inactive. Special attention shall be given to maintenance of the traveled surface during hours of inactivity, including nights, weekends, holidays, and the winter season.

Milling operations shall be conducted to prevent pavement runoff from collecting along milled joints. Bumps and transverse irregularities shall be eliminated to the extent practical. Pavement joints and milling rebates resulting in longitudinal or transverse vertical faces exceeding 25 mm in height that would be exposed to traffic during non-work hours shall be sloped or tapered with temporary patches or shims providing a taper rate in accordance with Table 619-1 **Required Treatment for Transverse Bumps.**
Where longitudinal tapered wedge paving joints are used, temporary pavement markings shall be provided prior to reopening lanes to traffic. The joints may be left open to traffic provided traffic is not expected to frequently change lanes, and UNEVEN LANES (W8-11) signs are posted in advance of the condition, posted at each ramp and roadway intersection and repeated every 800 m, supplemented with NEXT [X] MILES (W16-4) auxiliary signs.

Transverse bumps or vertical faces, unpaved surfaces, milled or grooved pavement, rough pavement, and other surface irregularities 25 mm or more in height shall be adequately sloped or tapered, or BUMP (W8-1) or other appropriate warning signs shall be posted in advance of the condition. An object marker (OM1-1) or a drum with a flashing warning light shall be installed on the right side of the roadway at the bump or other condition. On divided highways, an object marker or a drum with a flashing warning light shall be installed on both sides of the roadway.

Where traffic will be riding on a milled pavement, the Contractor shall install GROOVED PAVEMENT (NYW4-5) signs on the approaches. On multilane highways where only one lane in a direction is milled and both lanes are open to traffic, the Contractor shall supplement the GROOVED PAVEMENT sign with a LEFT LANE or RIGHT LANE panel below the sign. Where only an entrance or exit ramp is milled, the Contractor shall sign the mainline with a GROOVED PAVEMENT sign and a supplemental RAMP panel. The Contractor shall sign all side streets approaching the milled section.

Where both BUMP and GROOVED PAVEMENT signs are warranted the GROOVED PAVEMENT sign shall be installed 150 m upstream of the BUMP sign in non-urban areas, and 100 m upstream in urban areas. For expressways where the posted speed limit is 45 mph or higher, the Contractor shall not leave milled or grooved payment for more than 7 calendar days before replacement of the HMA binder course. The Contractor shall place a portable variable message sign (PVMS) in advance of pavement that has been milled or grooved and is open to traffic, warning motorcycle riders to use caution. The PVMS will be paid for separately.

The Contractor shall keep the traveled way, sidewalks, and walkways free of construction materials and foreign objects that fall from vehicles or equipment. Materials spilled by, dropped from, or tracked by traffic or by any vehicle used in the Contractor's operations along or across any public traveled way shall be removed immediately.

The Contractor shall keep all surface drainage facilities operative at all times. Positive drainage shall be provided at all times, even during grading operations and periods of accumulated plowed snow, to adequately drain the traveled way and the remainder of the right-of-way areas. Maintaining positive drainage shall include cleaning of drainage grates on roadway pavements. Cleaning of drainage structures and drainage pipes of material not deposited due to the Contractor’s operations will be paid for separately. Repair of drainage structures will be paid for separately.

Dusty conditions resulting from the Contractor's operations may be corrected by the use of calcium chloride and/or water. Dust control measures shall be applied to control dust resulting from traffic on unpaved surfaces and from Contractor operations on or adjacent to the roadway. Dust control shall be adequate to prevent dust which hinders driver visibility or which creates a nuisance condition for property owners and residents adjacent to the contract. If used, water shall be distributed uniformly using a suitable spray head or spray bar.

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<tr>
<th>TABLE 619-1 REQUIRED TREATMENT FOR TRANSVERSE BUMPS</th>
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<tr>
<td><strong>Height of Bump (mm)</strong></td>
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