

## **SECTION 733 -- BRIDGE DECK AND APPROACH SLAB SMOOTHNESS**

### **733.01 -- Description**

1. This specification applies when a new bridge deck is constructed and when an existing deck is replaced. It also applies to bridge ramps when the ramp is additional paved surface bridging an obstruction. This specification does not apply to overlays of existing bridge decks or to bridges built on gravel roads.

2. This specification establishes a standard for bridge deck and approach slab smoothness. It is intended that the bridge deck placement operation and the approach slab placement operation produce a finished driving surface with a profile index no greater than .50 inch/100 feet (12 mm/30 m). The smoothness test will be conducted by Department personnel using a 12-foot (4 m) California type profilograph.

### **733.02 -- Equipment**

The 12-foot (4 m) California type profilograph will record the pavement profile by measuring the vertical movement of a sensing wheel, attached to the frame at mid-point, with reference to the mean elevation of the support wheels at each end. The profilograph will produce a profilogram with a vertical scale of one inch (25 mm) equals one inch (25 mm) vertically and one inch (25 mm) equals 25 feet (7.6 m) longitudinally.

### **733.03 -- Test Procedure**

1. The profilograph test will be run after completion of the bridge deck and the approach slabs. In the case of a bridge contract which does not include the approach slabs, but which will be let to contract at a future date, the profilograph test will be run on the bridge deck only.

2. In the case where the approach slabs are not part of the bridge contract but are part of another concurrent contract, the profilograph test will be run after the bridge deck and the approach slabs are completed. In this case, if the approach slabs and the bridge are constructed by separate Contractors, both Contractors will receive a profilogram.

3. Profile of the first and last six feet (2 m) (longitudinally) of the surface being tested cannot always be obtained with the profilograph. These areas will be measured for bumps with a 10-foot (3 m) straightedge according to Subsection 601.16 of the Standard Specifications.

4. One profile will be obtained in each lane approximately three feet from the outside lane line. The profiles will be divided into test sections each 100 feet (30 m) in length with any remaining short length also considered a test section. The profilogram will be labeled with the stationing, lane designation, position on the pavement, and the direction of travel. All station references used on the profilograms will be actual project stationing.

### **733.04 -- Evaluation**

1. A profile index will be calculated for each section and furnished to the Contractor within 72 hours of the completion of the tests. The index is

calculated by summing the vertical deviations outside of a 0.2-inch (5 mm) blanking band. The units for this measurement are inches (mm) per 100 feet (30 m).

2. Bumps will be identified separately. These appear as high points on the profile trace and correspond to high points or bumps on the pavement surface. They are identified by locating vertical deviations exceeding 0.15 inch (3.8 mm) for a 12-foot (3.6 m) span as indicated on the profile trace.

3. When surface correction is required, this will be considered a preliminary profile index.

#### **733.05 -- Surface Correction**

1. All corrective work shall be done with the approval and in the presence of the Engineer.

2. Correction of the concrete surface will be done by diamond grinding. Grinding equipment shall be power driven, self-propelled units specifically designed to grind and texture concrete pavements. The cutting head shall be at least 36 inches (900 m) wide and consist of diamond blades with spacers.

3. Each profile will represent a surface width, extending from the centerline of the bridge to 3'-0" (900 mm) in front of the curb or rail, and surface correction will be made over this entire width.

4. The maximum depth of grinding that will be permitted is 1/2-inch (12.5 mm).

5. Residue from grinding operations shall not be permitted to flow across shoulders or lanes occupied by public traffic or to flow into streams, gutters, or other drainage facilities. Solid residue resulting from grinding operations shall be removed from pavement surfaces before such residue is blown by action of traffic or wind.

6. After all required correction work is completed, another profile index will be run and recorded as the final profile index for the segment.

#### **733.06 -- Acceptance**

1. All bumps exceeding a vertical height of 0.15 inch (3.81 mm) in a 12-foot (3.65 m) span, as indicated on the profile trace, shall be corrected. The corrected bumps will be considered satisfactory when measurement by the profilograph shows that the bumps are 0.15 inch (3.81 mm) or less in a 12-foot (3.65 m) span.

2. The Contractor, at his/her expense, shall correct the surface profile of all pavement which has a profile index greater than .50 inches (12.5 mm) per 100 feet (30 m) after bump removal. The surface profile of any such section shall be corrected to an index less than .50"/100 feet (12.5 mm/30 m).

3. If the profile index cannot be corrected by grinding, to less than .50"/100' (12.5 mm/30 m), those areas will be removed and replaced or overlaid with high density-low slump concrete. All remedial work will be at no additional cost to the Department.

4. Bump and smoothness correction work shall be for a width and length satisfactory to the Engineer.