

CITY OF ALBANY

Standard Specifications Technical Provisions

Section 15

Pavement Delineation

15-1 General — The Contractor shall apply all traffic striping, markings and all other directional information or pavement delineation on the surfaces of streets, detour roads, parking lots, median strips and curbing in accordance with the plans, Special Provisions and as specified herein, in conformance with the applicable provisions of the State Specifications and California Vehicle Code. Where no plans for pavement delineation have been provided and the existing delineation is to be covered or obliterated by the Contractor's work, the existing delineation shall be restored. Restoration shall conform to the requirements specified herein. When part of a pavement marking has been removed or obliterated, the entire marking shall be restored.

Unless otherwise specified in the plans or Special Provisions, all replacement delineation shall be thermoplastic.

15-2 Layout, Alignment and Spottings — All layouts, spotting and tracking required shall be performed by and at the expense of the Contractor, and approved by the Engineer prior to placement of pavement striping or markings.

When no previously applied figures, markings, or traffic striping are available to serve as a guide, suitable layouts shall be spotted in advance of the permanent paint application by any means satisfactory to the Engineer.

The Contractor shall mark or otherwise delineate the traffic lane in the new roadway or portion of roadway, or detour before opening it to traffic.

The Contractor shall provide an experienced technician to supervise the location, alignment, layout, dimensions, and application of the pavement delineation.

The Contractor shall furnish all equipment, materials, labor and supervision necessary for installing pavement striping and markings in accordance with the contract plans or temporary detours required for the safe control of traffic through and/or around the project.

15-3 Pavement Markers — Pavement markers shall be installed in accordance with Section 85 of the State of California Standard Specifications, and as specified herein and in the Special Provisions.

Should the Contractor elect to alter the existing traffic stripes and markings, or to divert the flow of traffic on construction projects for his own convenience and there are no special pavement markings or delineations shown on the plans or in the Special Provisions, he shall, at no expense to the City, provide the necessary temporary striping in accordance with the State Traffic Manual, unless otherwise directed by the Engineer. Removal of such striping shall be at the Contractor's expense. The Contractor shall remove all existing or temporary detour striping or marking that may confuse the public. When temporary detour striping or markings are no longer required, they shall be removed prior to applying the new traffic stripes or markings.

Standard word markings, letters, numerals and symbols shall be as shown on the plans. In the absence of such information, all stencils and templates shall be identical with those used by the City. The Contractor shall provide stencils for all required legends.

Unless otherwise specified in the Special Provisions or contract plans, all pavement striping and markings, including restoration (except temporary), shall be thermoplastic.

15-4 Removal of Existing Markings — Existing striping and pavement markings that will be in conflict with the finish traffic circulation shall be removed as directed by the Engineer in accordance with Section 15-2.02 of the State Standard Specifications.

15-5 Thermoplastic Striping — The installation of thermoplastic striping and marking shall conform to Section 84-2 and 84-3 of the State Standard Specifications.

15-6 Painted Striping and Markings — General: Paint for pavement striping and markings, if such are required, shall conform to State Specifications 721-80-97 with color required and as specified herein.

15-7 Red Curb Painting — Red curb painting shall be applied as shown on the plans and as directed by the Engineer. Red curb painting shall include the application of two coats of traffic paint with glass beads incorporated in the second coat. Top and face of curb shall be painted.

15-8 Glass Beads — All traffic stripes, except the black separation line, shall be beaded.

15-8.1 General — Glass beads shall be applied directly and uniformly to the traffic

line with a bead dispenser machine, placed the proper distance behind the paint spray nozzle.

Glass beads shall be applied to pavement marking and crosswalks by a special paint spray gun developed for this purpose.

15-8.2 Application Rate

Broken Stripe

First Painting

New Surface, first coat: 4 to 5 gallons per mile

Second Coat: 7 to 7.4 gallons per mile

Restriping: 7 to 7.4 gallons per mile

Glass Beads: 42 pounds per mile

Solid Stripe

First Painting

New Surface, first coat: 12 to 14 gallons per mile

Second Coat: 16 to 18 gallons per mile

Glass Beads with second coat: 110± pounds per mile

Restriping: 16 to 18 gallons per mile

Glass Beads: approximately 110 pounds per mile

Black Traffic paint: approximately 8 gallons per mile

Pavement Markings

First Painting: light application to seal pavement

Second Coat: 1 gallon per 100 square feet

Glass Beads: 6 pounds per gallon of paint

Restriping: 1 gallon per 100 square feet

Glass Beads: 6 pounds per gallon of paint

15-9 Raised Bars

15-9.1 General Description — These specifications apply to pre-cast, cast-in-place or extruded raised bars intended to be used as traffic delineators or bumper stops. This work consists of furnishing and installing pre-cast, cast-in-place or extruded raised bars at the locations shown on the plans or directed by the Engineer and

to the requirements specified in these specifications and the Special Provisions.

Raised bars shall conform to the details and dimensions shown on the plans.

15-9.2 Classification Types — Raised bars are classified by type in accordance with the minimum supportive strength of the bar. The types are as follows:

Type A — 400 pounds minimum load

Type B — 150 pounds minimum load

The type of bar to be used shall be as shown on the plans or specified in the Special Provisions. If the type designation of the bar is not shown on the plans or specified in the Special Provisions, Type A will be used.

Type A raised bars may be either pre-cast, cast-in-place, or extruded, at the option of the Contractor. Type B raised bars shall be pre-cast.

15-9.3 Materials

Pre-cast Raised Bars — Pre-cast raised bars shall be constructed of 560-D-3000 concrete. Other materials such as glass fiber and wood chips may be substituted for the aggregate in raised bars provided the portland cement content is adjusted to such materials and such use of other materials is approved by the Engineer.

Cast-in-Place Raised Bars — Concrete used in cast-in-place raised bars shall be 560-D-3000 concrete containing calcium chloride at the rate of 2 pounds per 100 pounds of cement. The slump of the concrete shall be not less than ½ inch and not greater than 1½ inches and within these limits the consistency shall be regulated as necessary to provide a dense bar having the shape shown on the plans.

Concrete used in forming bars by the extrusion process shall consist of a homogeneous mixture of portland cement, aggregate, and water in which an air-entraining agent may be incorporated.

Cast-in-place or extruded raised bars in place, represented by test bars that do not comply with the strength requirement at the end of 72 hours, shall be removed from the work and be replaced with acceptable bars by the Contractor at his expense. No payment will be made for bars so replaced.

Each pre-cast bar shall be properly cured and, at the time of shipment, shall be capable of supporting the minimum load for each type as specified. Pre-cast bars shall be tested as described above.

Pre-cast bars shall be marked with the date of manufacture and the identifying mark of the manufacturer.

The manufacturer of pre-cast raised bars shall establish the necessary quality control and inspection practice to assure compliance with these specifications.

15-9.4 Extruded Raised Bars Equipment — The machine used for extrusion shall be capable of forming bars of the dimensions shown on the plans. Raised bars shall be extruded onto a previously placed adhesive.

The extrusion machine shall be so operated as to produce a well compacted mass free from large torn areas in the surface. If minor surface pits or small torn areas are formed, the surface of the bar shall be worked with a template type trowel until defects have been eliminated. The ends of the bars while plastic shall be formed to the shape and angle shown on the plans. When bars are placed over an open joint or crack, an open joint shall be formed through the bar at that point.

15-10 Measurement — The quantity of paint of traffic striping and markings shall be measured by one or more of the following methods: lineal footage, the area in square feet, or one lump sum item as provided in the bid proposal.

15-11 Payment — The contract lump sum or unit prices paid for the various types of pavement striping and markers shown in the bid proposal shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in striping and markings, complete in place, as shown on the plans, as specified in these specifications and the Special Provisions, and as directed by the Engineer, and no additional payment shall be made therefor.

Where the bid proposal contains no item for pavement delineation or restoration, full payment shall be considered as included in the various contract items of work and no additional payment shall be made therefor.