

## SECTION 27

### STRIPING, LEGENDS, MARKERS AND SIGNAGE

- 27-1 GENERAL – Work shall include but be limited to the following: removal and replacement of pavement striping and legends, permanent traffic signs, and removal and disposal of yellow thermoplastic and yellow painted stripe and pavement markings.
- 27-2 RELATED WORK – Refer to the Caltrans Standard Plans, Specifications and Palo Alto’s Traffic Control Requirements, Manual on Uniform Traffic Control Devices (MUTCD) and California’s Supplement to the MUTCD.
- 27-3 PRODUCTS
- A. Thermoplastic Material
1. The thermoplastic material and glass beads shall conform to the Caltrans Standard Specifications Section 84-2 except as noted below.
  2. The solid resin for the thermoplastic materials shall be "maleic-modified glycerol ester resin" (alkyd binder). This binder shall consist of a mixture of synthetic resins, at least one of which is solid at room temperature, and high boiling point plasticizers. At least one-third of the binder composition shall be solid maleic-modified glycerol ester resin and shall be no less than 8 percent by weight of the entire material formulation. The binder shall not contain petroleum based hydrocarbon resins.
  3. Materials for green bicycle lane or shared lane marking (sharrow) shall be thermoplastic, all other materials need prior approval from City Engineer.
- B. Pavement Markers
1. Reflective and non-reflective pavement markers shall conform to Section 81-3, "Pavement Markers", of the Caltrans Standard Specifications.
  2. Hot melt bituminous adhesive shall be used to cement pavement markers to the pavement.
- C. Disabled Person Parking Stall Legends
1. Disabled person parking stall legends shall be thermoplastic or approved equal. Legends shall be a minimum of thirty-six (36) inch square and comply with California Title 24 and ADA standards.
- D. Permanent Traffic Signs
1. All traffic signs shall be per the City and Caltrans Standards. The Contractor shall

provide shop drawings and material specifications for the new traffic signs including installation method for approval by the Engineer.

#### 27-4 EXECUTION

- A. Removal and Disposal of Yellow Thermoplastic and Yellow Painted Traffic Stripe and Pavement Markings
  - 1. Waste from removal of yellow thermoplastic and yellow painted traffic stripe and pavement marking may contain lead chromate. Provide test results to the Public Works Department to ensure no lead is present. Otherwise, the removed yellow thermoplastic and yellow paint shall be disposed of at a Class 1 disposal facility or a Class 2 disposal facility permitted by the Regional Water Quality Control Board in conformance with the requirements of the disposal facility operator.
  - 2. Prior to removing yellow thermoplastic and yellow traffic striping and pavement marking, personnel who have no prior training, shall complete safety training program provided by the Contractor that meets the requirements of Title 8, California Code of Regulations, Section 1532.1, "Lead," and the Contractor's Lead Compliance Program.
  - 3. Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic and yellow painted traffic stripe and pavement markings, the removed residue, including dust, shall be contained and collected immediately. Sweeping equipment shall not be used.
  - 4. Collection shall be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective methods approved by the Engineer.
- B. Removal of All Other Thermoplastic and Painted Stripe and Pavement Marking
  - 1. All methods of removal shall be reviewed and approved by the Engineer.
  - 2. The stripe and marking grinding shall be vacuumed for dust control. If the Contractor decides to sweep the grinding causing dust, the Engineer shall request that the Contractor use different methods of grinding removal.
- C. Pavement Striping, Legends and Marker Installation
  - 1. All existing striping shall be tied-out prior to removal. This tie-out procedure shall consist of triangulation points on adjacent sidewalk, curb or other reference points.
  - 2. Contractor shall replace all existing pavement striping and legends, unless a redesign is ordered by the Engineer.

3. Bike lane striping, six (6) inches wide white stripe, shall conform to the Caltrans Highway Design Manual Figure 1004.3.
    - a) Temporary traffic striping and legends shall be placed on the newly patched street prior to the release of the street to the public. These materials shall be either pop-up temporary markers (for arterial streets) or tape (for residential streets). The proposed materials must be submitted to the Engineer for approval prior to use.
  4. Permanent striping must be installed seven calendar days after but within ten (10) calendar days of completion of pavement repair or pavement replacement or striping removal, unless directed otherwise by the Engineer.
  5. Alignment lines shall be established by the application of cat tracks or dribble lines, the use of laser guidance devices or a combination of both, as detailed in Caltrans Specifications Section 84-1.01 through 1.03.
  6. Thermoplastic material shall be applied only to dry pavement surfaces and only when the pavement surface temperature is above 50 degree Fahrenheit.
  7. Pavement markers shall be placed in accordance with the Caltrans Standard Specifications, Section 81-3, "Pavement Markers", and manufacturer's installation procedures.
  8. Thermoplastic material and glass beads shall be applied in accordance with the Caltrans Standard Specifications, Section 84-2.02, and manufacturer's installation procedures.
  9. If the loop is not visible, the "head signal loop" in left-turn lanes, curb lanes on multi-lane streets, and one-lane side streets, shall have the Caltrans bicycle loop detector legend applied in thermoplastic. See Part III for standard drawings. The Contractor must contact the CPA Traffic Signals Division to have these loops marked and the locations for the legends identified.
  10. A twelve (12) inch stop bar and the "STOP" legend shall be in the street at the location of every stop sign (twelve (12) inch stop bar may not be necessary where there is a crosswalk only when directed by the Engineer).
  11. All permanent striping shall be thermoplastic material.
  12. Thermoplastic material shall be applied in a single uniform layer by extrusion methods as per section 84-2.02 of the Caltrans Standard Specifications.
- D. Bike Lanes
1. Bike lanes are to be five (5) feet wide, made up of a two (2) foot wide gutter pan and three (3) feet wide of asphalt paving that is striped and labeled as a bike lane along the edge of the vehicle roadway.

2. Gutter pans transitioning from three (3) feet wide to two (2) feet wide shall have a transition zone of six (6) feet. Reference standard drawing 142 - Curb Transitions

END OF SECTION