



City of Oakdale
1584 Hadley Avenue North
Oakdale, MN 55128

Date: 05-02-08

**ENGINEERING SPECIFICATION
CITY OF OAKDALE NO. 2582**

PERMANENT PAVEMENT MARKING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes application of temporary and permanent markings on pavement surfaces.
- B. Method of Measurement:
 - 1. Solid Lines:
 - a. Measure solid lines (single and double) by distance in linear feet of applied material.
 - b. Measure each color and line width separately.
 - c. Measure transverse sections by the linear foot of applied material (using twelve (12) inch solid yellow transverse lines surrounded by four (4) inch solid double yellow lines).
 - 2. Broken Lines:
 - a. Measure by distance in linear feet of *applied* material.
 - b. Do not measure spacing between line segments.
 - c. Measure each color and line width separately.
 - 3. Crosswalks:
 - a. Measure zebra crosswalks by area in square feet of applied material.
 - b. Measure lined crosswalks by linear foot of solid line as described above.
 - 4. Pavement Messages: Measure individually as a unit for each message type (Left Turn Arrow, Right Turn Arrow).
- C. Basis of Payment:
 - 1. Payment for pavement markings and messages shall be at the Contract Unit Price as listed on the Bid Form.
 - 2. All associated Work items shall be considered incidental, including the following:
 - a. Preparing the surface.
 - b. Controlling and protecting traffic.
 - c. Maintaining the Work through the duration of the Project.
 - d. Removing conflicting pavement markings and messages.



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3. Consider primer, labor and other materials required for the installation of preformed plastic pavement markings as incidental of the applicable pavement marking item.

1.02 REFERENCES

- A. Minnesota Traffic Engineering Manual.
- B. MN/DOT:
 1. MN/DOT Specifications for Construction, including all supplemental Specifications.
 2. MN/DOT Specification 2102: Pavement Marking Removal
 3. MN/DOT Specification 2582: Permanent Pavement Markings.
 4. MN/DOT Specification 3590: Specification for Epoxy Resin Pavement Markings (free of toxic heavy metals).
 5. MN/DOT Specification 3592: Drop-on Glass Beads

1.03 SCHEDULE

- A. Place epoxy pavement markings together with appropriate glass spheres in accordance with MN/DOT specifications.
- B. Application of pavement markings during hours of darkness shall be allowed only by approval of Engineer.
- C. On pavement open to traffic, installation of pavement markings may be suspended by direction of Engineer during peak traffic hours or at any other time traffic is being unduly hampered or delayed by the work in progress.
- D. Apply epoxy pavement marking to bituminous surface not less than 24 hours after placement of bituminous surface.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Epoxy: Provide in accordance with MN/DOT Specification 3590: Epoxy Resin Pavement Markings (Free of Toxic Heavy Metals).
- B. Glass Beads: Provide in accordance with MN/DOT Specification 3592: Drop-on Glass Beads.

2.02 EQUIPMENT



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- A. Epoxy: Provide in accordance with MN/DOT Specification 3590: Epoxy Resin Pavement Markings (Free of Toxic Heavy Metals).

PART 3 EXECUTION

3.01 SURFACE PREPARATION

- A. Clean the road by sweeping immediately prior to application.
- B. Do not apply pavement markings to wet surfaces.

3.02 APPLICATION

- A. Epoxy Application:
 - 1. Apply epoxy pavement markings in accordance with MN/DOT Specifications 3590: Epoxy Resin Pavement Markings (Free of Toxic Heavy Metals).
 - 2. Furnish and place epoxy pavement markings together with appropriate glass spheres for reflectorizing the resin.
- B. Spacing and Layout:
 - 1. Apply all markings in accordance with Drawing layout and details.
 - 2. Center four (4) inch space between double lines on the roadway centerline, as shown on Drawings, or as directed by Engineer.
 - 3. Provide four (4) inch space between four (4) inch solid yellow and four (4) inch broken yellow where used for center left turn lane delineation or for centerline striping.
 - 4. Apply broken lines in a pattern of ten (10) feet of marking and forty (40) feet of space.
 - 5. Apply twenty-four (24) inch wide stop lines from edge of gutter across all approach lanes to the intersection, as shown in Drawings.
 - 6. Locate twenty-four (24) inch wide stop lines four (4) feet behind crosswalk pavement markings or as directed by Engineer.
 - 7. Apply zebra crosswalk design in accordance with Figure 7.20 of the Minnesota Traffic Engineering Manual and the following:
 - a. Dimension "W" shall be three (3) feet.
 - b. Dimension "S" shall be three (3) feet.
 - c. Crosswalk width shall be six (6) feet.
 - d. No transverse lines.
 - 8. Transverse areas shown on Drawings shall consist of:
 - a. Solid yellow lines: Twelve (12) inch, in accordance with Figure 7.9 of the Minnesota Traffic Engineering Manual.



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- b. Solid double yellow line: Install along each end of the transverse markings in accordance with Figure 7.9.
- c. Twenty (20) feet of space shall be left between each transverse line, in accordance with Figure 7.9.
- 9. Turn Lane Pavement Messages:
 - a. Install as shown in Figure 7.9 of the Minnesota Traffic Engineering Manual.
 - b. Top-to-bottom length of arrows shall be 6'-11".
 - c. Top-to-bottom length of words (ONLY) shall be 8'-0".
- 10. Distance between arrows in two-(2) way center left turn lanes shall be 32 feet, measured from top of arrow to top of arrow.
- 11. Engineer shall place necessary "spotting" at appropriate points to provide horizontal control for striping, and determine necessary starting and cutoff points.
 - a. Skip-line intervals will not be marked.
 - b. Longitudinal joints and pavement edges shall serve as horizontal control when directed by Engineer
- 12. A tolerance of plus ¼ inch and -0 inch from the specified width will be allowed for striping provided the variance is gradual and does not detract from the general appearance.
 - a. Lengths for the broken line segments may vary no more than plus or minus three (3) inches.
 - b. Alignment deviations from the control guide or existing lines specified by the Engineer shall not exceed two (2) inches.
 - c. All longitudinal markings shall be placed two (3) inch plus or minus one (1) inch from the edge of pavement or longitudinal (centerline) joint. Material shall not be applied over a longitudinal joint.
 - d. Establishment of application tolerances shall not relieve the Contractor of the responsibility to comply as closely as practicable with the planned dimensions.

3.03 PROTECTION OF TRAFFIC AND MARKINGS

- A. Furnish and install all necessary warning and directional signs and devices in order to: maintain traffic whenever pavement markings are applied in the presence of traffic, and to protect uncured markings as needed until traffic can cross markings without damaging markings.
- B. When necessary, a pilot car and flaggers shall be used to provide adequate control and direction of traffic.



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- C. Warning signs and barricades shall be placed only where marking operations are in progress, shall be relocated as often as necessary, and shall not be left in place overnight.
- D. Traffic shall be allowed to keep moving at all times and the striping equipment shall be operated in a manner that will not make it necessary for traffic to cross uncured markings.
- E. Protective devices such as "cones" shall be an approved type that will not cause damage to the vehicle when accidentally struck.

END OF SECTION