
Special Specification 6081

All-Weather Paint



1. DESCRIPTION

Furnish and install a wet reflective pavement marking system in accordance with this specification and in reasonably close conformance to the dimensions and lines shown on the plans or established by the Engineer.

2. MATERIALS

Use materials conforming to the pertinent requirements of the following Standard Specification Items:

- Item 502, "Barricades, Signs, and Traffic Handling"
- Item 677, "Eliminating Existing Pavement Markings and Markers"
- DMS-8200, "Traffic Paint"

2.1. **Waterborne Traffic Marking Paint.** Furnish waterborne high build traffic marking paint meeting the minimum requirements of DMS-8200. The finished paint will be formulated and manufactured from first – grade materials and will be a fast drying, water based, acrylic resin type paint capable of withstanding air and roadway temperatures without bleeding, staining, discoloring, or deforming.

2.2. **Traffic Beads.** Furnish a traffic bead system to meet the desired performance requirements of this specification.

3. EQUIPMENT

3.1. **General.** Use pavement marking application equipment that:

- is maintained in satisfactory condition,
- meets or exceeds the requirements of the National Board of Fire Underwriters and the Texas Railroad Commission for this application,
- uses an automatic bead dispenser attached to the pavement marking equipment, and
- can provide continuous mixing and agitation of the pavement marking material.

3.2. **Material Placement Requirements.** Pavement marking equipment must also meet the following requirements:

- Equipment will be capable of producing varying widths and thickness of water based traffic stripes.
- The equipment will be a mobile, truck mounted and self –contained pavement marking machine.
- The equipment will be capable of traveling at a uniform, predetermined speed over variable road grades to produce uniform application of striping material, following straight lines and making normal curves in a true arc.
- The equipment will be capable of air-blasting the pavement, applying the stripe and immediately applying the drop-on glass beads in a single pass.
- The equipment will be capable of application of drop-on glass beads to the surface of the pavement marking by double drop application.
- The applicator for the drop-on glass beads will be equipped with an automatic cut-off control that is synchronized with the cut-off of the material.

- The applicator for the drop-on glass beads will be capable of delivering a uniform drop rate at variable application speeds.
- The drop-on glass beads are applied such that they appear uniform on the entire traffic stripe and markings.

3.3 **Reflectometers.**

- 3.3.1. **Mobile Retroreflector.** Use a mobile retroreflector approved by the Construction Division and certified by the Texas Transportation Institute Mobile Retroreflector Certification Program.
- 3.3.2. **Portable Retroreflector.** Use a portable retroreflector meeting the requirements of ASTM E1710 and ASTM E2832 and that has either an internal global positioning system (GPS) or the ability to be linked with an external GPS with a minimum accuracy rating of 16.4 ft. in accordance with the circular error probability (CEP) method (CEP is the radius of the circle with its origin at a known position that encompasses 50% of the readings returned from the GPS instrument); and can record and print the GPS location and retroreflectivity reading for each location where readings are taken.

4. **CONSTRUCTION**

Place markings before opening to traffic unless providing for short-term or work-zone markings.

- 4.1. **General.** Obtain approval for the sequence of work and estimated daily production. On roadways already open to traffic, place markings with minimum interference to the operations of that roadway. Use traffic control as shown on the plans or as approved. Protect all markings placed under open-traffic conditions from traffic damage and disfigurement.

Establish guides to mark the lateral location of pavement markings as shown on the plans or as directed and have guide locations verified. Use material for guides that will not leave a permanent mark on the roadway.

Apply markings on pavement that is completely dry and meets all temperature and humidity requirements of the manufacturer:

- using widths, colors, and at locations shown on the plans,
- in proper alignment with the guides without deviating from the alignment more than 1 in. per 200 ft. of roadway or more than 2 in. maximum,
- with uniform cross-section and thickness,
- with clean and reasonably square ends,
- using personnel skilled and experienced with installation of pavement markings,
- that are reflectorized, and
- that meet requirements in Tex-828-B.

Remove all applied markings that are not in alignment or sequence as stated on the plans or as stated in the specifications at the Contractor's expense in accordance with Item 677, "Eliminating Existing Pavement Markings and Markers," except for the "Measurement" and "Payment" articles.

- 4.2. **Surface Preparation** Apply markings on surfaces with a minimum surface temperature of 50°F, when measured in accordance with Tex-829-B.

Apply markings during good weather unless otherwise directed. If markings are placed at Contractor option when inclement weather is impending and the markings are damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the markings if required.

Liquid thickness – the liquid paint will be applied at 25 mil +/- 2 mil wet film thickness.

- 4.3. **Retroreflective Requirements.** Meet the minimum retroreflectivity values in Table 1 and Table 2 for edge line markings, center-line or no passing barrier-line, and lane lines when measured any time after 3 days but not later than 10 days after application.

For smooth, dense graded Asphalt Cement Concrete surfaces or Portland Cement Concrete surfaces, the initial retroreflectance averaged over many installations will be at least the values in the following table:

Table 1
Retroreflectivity
(mcd(ft-2)(fc-1)) {metric equivalent mcd(m-2)(lux-1)}

	White	Yellow
Dry	350	275
Wet recovery (ASTM 2177)	350	275
Wet continuous (ASTM 2176)	100	75

For rough, open graded Asphalt Cement Concrete surfaces or Portland Cement Concrete surfaces, the initial retro-reflectance averaged over many installations will be at least the values in the following table:

Table 2
Retroreflectivity
(mcd(ft-2)(fc-1)) {metric equivalent mcd(m-2)(lux-1)}

	White	Yellow
Dry	250	200
Wet recovery (ASTM 2177)	250	150 (Direction of striping) 125 (Opposite direction of striping)
Wet continuous (ASTM 2176)	75	75

- 4.4. **Retroreflectivity Measurements.** Use a mobile retroreflectometer, unless otherwise shown on the plans.
- 4.4.1. **Mobile Reflectometer Measurements.** Provide mobile measurements averages for every 0.1 miles unless otherwise specified or approved by the Engineer. Take measurements on each section of roadway for each series of markings (i.e. edge-line, center skip line, each line of a double line, etc.) and for each direction of travel. Take all measurements in the direction of traffic flow, except on centerline on two-way roadways, take measurements in both directions. Furnish measurements in compliance with Special Specification 6040, "Mobile Retroreflectivity Data Collection for Pavement Markings," unless otherwise approved by the Engineer. The Engineer may require an occasional field comparison check with a portable retroreflectometer meeting the requirements listed above to ensure accuracy. Use all equipment in accordance with the manufacturer's recommendations and directions. Inform the Engineer at least 24 hr. in advance of taking any measurements.
- 4.4.2. **Portable Reflectometer Measurements.** When using a portable reflectometer to measure continuous wetting retroreflection, take measurements in accordance with ASTM E2832.
- 4.4.3. **Traffic Control.** Provide traffic control, as required, when taking retroreflectivity measurements after marking application. On low volume roadways (as defined on the plans), refer to the figure, "Temporary Road Closure" in Part VI of the Texas Manual on Uniform Traffic Control Devices for the minimum traffic control requirements. For all other roadways, the minimum traffic control requirements will be as shown on standard plans TCP (3-1) and TCP (3-2). The lead vehicle will not be required on divided highways. The traffic control plan and traffic control devices must meet the requirements listed in Item 502, "Barricades, Signs, and Traffic Handling". Time restrictions that apply during striping application will also apply during the retroreflectivity inspections except when using the mobile retroreflectometer, unless otherwise shown on the plans or approved.

- 4.5. **Performance Period.** All markings must meet the requirements of this specification for at least 30 calendar days after installation. Unless otherwise directed, remove pavement markings that fail to meet requirements, and replace at the Contractor's expense. Replace failing markings within 30 days of notification. All replacement markings must also meet all requirements of this Item for a minimum of 30 calendar days after installation.

5. MEASUREMENT

This Item will be measured by the foot. Double stripes will be measured separately.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal unless modified by Article 9.2, "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "All-Weather Pavement Markings" of the type and color, shape and size specified. This price is full compensation for cleaning and preparing the pavement surface, for furnishing and placing all materials, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.