

Qualification of Monitoring Systems for Pavement Markings Application Vehicles

1. SCOPE

- 1.1 This method covers the qualification requirements for monitoring systems of striping vehicles used to apply longitudinal lane markings to roadway surfaces (striping trucks) to assure adequate measures are used to monitor and record application properties of installed lane markings.
- 1.2 This method will be used for qualification of monitoring systems for each striping vehicle used to apply waterborne striping paint on KYTC District Wide Striping contracts.
- 1.3 This method does not purport to address all of the safety concerns, or any associated with its use. It is the responsibility of the user of this method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. BASIC REQUIREMENTS

- 2.1 Striping vehicle calibrated and maintained in operational condition.
- 2.2 Waterborne or durable waterborne striping paint with manufacturers certification of compliance to Section 842 or Section 846, as appropriate, of the Kentucky Standard Specifications.
- 2.3 Beads of the gradation and coating(s) preference of the contractor intended to be utilized to meet the minimum retroreflectivity requirements of the contract.
- 2.4 Provide adequate location to verify distance monitoring devices.
- 2.5 Label each material container and monitoring system with a unique identification.

3. QUALIFICATION PROCEDURES

- 3.1 General

- 3.1.1 Qualification and certification of calibration must be obtained annually, after January 1 of the contract year and prior to use of the striping vehicle for application of lane markings.
- 3.1.2 Certification procedures shall be conducted by a licensed independent commercial scale calibration company.
- 3.1.3 Qualification procedures and verifications shall be conducted by the Department.
- 3.1.4 Documentation of all measurements made for certification and qualification processes shall be reported on forms approved by the Department.
- 3.2 Weight monitoring system.
 - 3.2.1 Obtain certification of weight monitoring systems prior to qualification of the monitoring system for a striping vehicle.
 - 3.2.2 Obtain certification of calibration for each weight monitoring system installed on the striping vehicle.
 - 3.2.2.1 Obtain certification of calibration from an independent commercial scale calibration company licensed through the Kentucky Department of Agriculture, Division of Regulation and Inspection.
 - 3.2.2.2 Determine the maximum working load of the system and divide into 10 uniform test intervals. Perform calibration of the system using certified Class F test weights conforming to NIST Handbook 105 at each identified interval.
 - 3.2.2.3 Appropriate materials (paint or beads) may be utilized to apply build up loads equal to the displayed weight of the previous interval.
 - 3.2.2.4 Indicated weight displayed by the data logger must be within 3% of the actual load.
 - 3.2.2.5 Difference between indicated weights displayed by the data logger for consecutive intervals must be within 3% of the actual interval test load.

Example:

Tank capacity: 15,000 lbs.

I Interval test load: 1,500 lbs.

Interval	Cert. Weight (CW)	Previous Displayed Load (Build-Up)	Actual Test Load (ATL)	Displayed Weight (DW)	Load Deviation (LD) = (ATL-DW)	% Load Deviation = ((ABS)LD/ATL)*100	Interval Deviation (ID) = CW-(DW-Previous DW)	% Interval Deviation = ((ABS)ID/CW)*100
0	0	0	0	0	0	0	-	-
1	1500	0	1500	1475	25	1.7	25	1.7
2	1500	1475	3000	2970	30	1.0	5	0.3
3	1500	2970	4500	4482	18	0.4	-12	0.8
...

ABS = Absolute Value

3.3 Volume monitoring system (Stroke counter)

3.3.1 Obtain a sample of the paint to be used for qualification testing.

3.1.1 Determine the density of the sample in accordance with ASTM D1475.

3.3.2 Load the system with a suitable quantity of paint.

3.3.2.1 Adjust the system to operating conditions and dispense a sufficient quantity of paint to ensure a continuous flow of material.

3.3.3 Zero the monitoring system.

3.3.4 Operate the system to dispense a minimum of 15 gallons of paint into an appropriately sized and tared container. Record the number of pump strokes made to dispense the material.

3.3.4.1 Weigh the collected sample and determine the actual quantity of material dispensed in gallons.

3.3.4.2 Calculate the scaling factor for system.

3.3.4.3 Verify the number of pump strokes recorded by the monitoring system.

3.3.4.4 Document the established scaling factor for the system and compare to the calculated scaling factor.

3.3.4.5 Indicated volume displayed by the data logger must be within 3% of the actual volume dispensed.

3.4 Distance monitoring system (Electrical foot counter)

3.4.1 Establish a straight-line distance using a suitable measuring device.

3.4.2 Zero the monitoring system.

3.4.3 Operate the striping vehicle for the established distance.

3.4.3.1 Verify the distance recorded by the monitoring system.

3.4.3.2 Indicated distance displayed by the data logger must be within 0.3% of the actual distance traveled.

3.5 Temperature monitoring system (Ambient, Surface, and Material)

3.5.1 Obtain an appropriate temperature measurement using an NIST Traceable temperature measuring device.

3.5.2 Obtain appropriate temperature measurement using the installed temperature measuring device.

3.5.2.1 Verify the temperature measurement recorded by the monitoring system.

3.5.2.2 Indicated temperature displayed by the data logger must be within 2° F of the actual temperature.

3.6 Other monitoring systems

3.6.1 Monitoring systems not described herein shall be inspected for qualification upon notification to the Department.

4. FIELD VERIFICATION

4.1 The Department reserves the right to perform field verifications of qualified monitoring systems.

- 4.2 The Department reserves the right to perform field verifications to determine compliance to all stated application properties within the contract.

5. DISQUALIFICATION

- 5.1 Striping vehicles found to be out of tolerance (monitoring system for weight, volume, distance, or temperature) shall be disqualified.
- 5.2 Removal or replacement of any component of a monitoring system shall result in disqualification of the striping vehicle.
- 5.3 Disqualified striping vehicles will not be permitted to return to service until approved by the Department.

6. RECORD KEEPING

- 6.1 Quality control and verification checks performed by the contractor during production shall be documented and maintained. If requested, these records shall be provided to the Department.

APPROVED _____
Director
DIVISION OF MATERIALS

DATE _____

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