Kentucky Method 64-202-~~10~~12
Revised ~~1/15/10~~1/20/12
Supersedes KM 64-202-~~08~~10
Dated ~~3/6/08~~1/15/10

EVALUATION OF RETROREFLECTIVITY ON PAVEMENT MARKINGS USING PORTABLE HAND-OPERATED INSTRUMENTS

1. SCOPE:

1.1. This method covers the evaluation of retroreflectivity on pavement markings using portable hand-operated 30-meter geometry instruments.

1.2. It is intended to provide standards of horizontal pavement markings to assure that adequate retroreflectivity for the driver is provided by newly applied markings.

1.3. Waterborne and durable waterborne pavement markings will be evaluated in a period of not less than 30 to no more than 60 days after the date the materials are applied.

1.4. Durable pavement markings such as Thermoplastic, Permanent Pavement Tapes, and Epoxies will be evaluated in a period of time not less than 150 days to no more than 210 days after the date the materials are applied.

2. TERMINOLOGY:

2.1. Section: a portion of striping completed for a single color per line width by one striping crew in one shift.

2.2. Segment: a portion equal to one fifth (or more) of a section.

2.3. Zone: a location in each segment where one begins taking retroreflectivity readings.

2.4. Retroreflectivity: a standard of measure for pavement markings. The units for these readings are millicandelas per square meter per lux ($mcd/m^2/lx$).

2.5 Crew: a group of two or more people identified by the striper and the driver of the striper applying pavement markings.

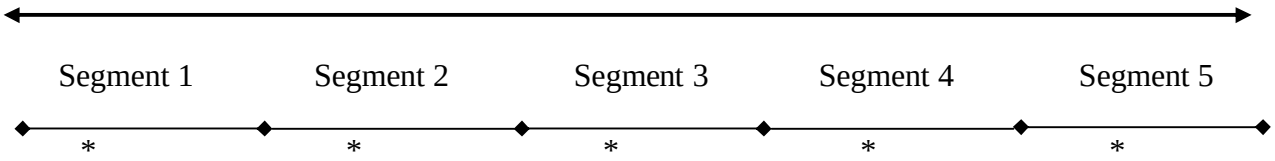
2.6 Shift: a period of time whereby a single crew works continuously stopping only for legally required breaks

3. SUMMARY OF SPECIFICATION:

3.1. For the purpose of evaluating retroreflectivity, each section will be evaluated separately. Divide each section into segments containing a zone (as shown in Figure 1A, Figure 1B, Figure 1C**,** and as described in Step 3.2). Establish five segments to collect readings to

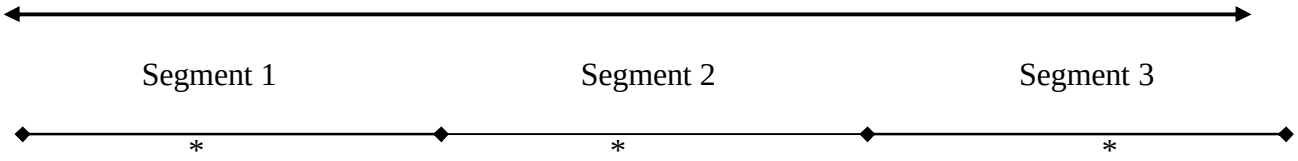
represent a day's striping if the total day's striping is ≥ 30 miles. Establish three segments to collect readings to represent a day's striping if the total day's striping is ≥10 miles and <30 miles. If the total day's striping is <10 miles the day will be considered one segment.

Figure 1A. Striping Day (≥ 30 miles)



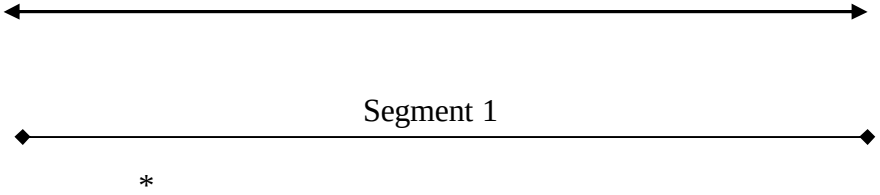
*Marks beginning of the Zone in each Segment

Figure 1B. Striping Day (≥ 10 miles and < 30 miles)



*Marks beginning of the Zone in each Segment

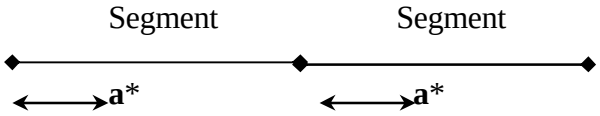
Figure 1C. Striping Day (< 10 miles)



*Marks beginning of Zone in the Segment

3.2. As stated in Step 3.1, divide the number of miles striped in a day to establish the length of each segment. In the first segment, randomly generate a milepoint (to the nearest tenth of a mile) to begin taking readings in the first zone. The distance from the beginning of the segment to the beginning of the zone (distance **a***), in the first zone, will be used to establish the location of each successive zone within successive segments (See Figure 2).

Figure 2.



NOTE: **a*=**distance each time, from beginning of each segment, to beginning of zone.

3.3. Mark the beginning and ending point of each zone with spray paint. Make sure the calibration transfer is not more than one week old. Perform a daily calibration on the hand-operated instrument according to the manufacturer's instructions. Print the calibration readings at the beginning of each days work. Recalibrate the instrument every 2 hours when taking continuous readings or before taking readings if the instrument has not been used for 30 minutes or more. Print the calibration readings each time these operations are performed.

3.4. Take 20 readings in each of the zones in the direction the striper applied the traffic markings. Take the first reading exactly at the beginning of the zone. Take subsequent readings at approximately 15-foot intervals (5 paces). If any portion of the zone is unsafe for taking readings, move forward to the first point which can be inspected safely and begin the zone there. Do not move the zone simply for convenience. A change in the starting point of one zone should not change the starting points of any subsequent zones. Also, if a valid reading is not attainable at a location within the zone due to a pothole, grass, occasional tracking, etc., move forward in the zone to the first available location for a valid reading, then resume the subsequent readings within that zone in the incremental procedure described above. However, readings will be taken in areas with substantial amounts of tracking.

3.5. For readings taken on centerlines, take alternating readings between solid lines or on the combination of solid and skip lines.

3.6. When a zone contains only skip lines for evaluation, measure each skip line at two evenly spaced locations on the line. Continue measuring within the established zone in this manner until 20 readings are obtained.

3.7 When a zone contains multiple line types of the same color and width, i.e. edgeline and lane line, obtain measurements representative of the quantities of line types.

4. PERFORMANCE REQUIREMENTS:

4.1. Retroreflectivity: The pavement marking will be evaluated for acceptance within the time period detailed in sections 1.3 and 1.4.

4.2. If 80% (16 or more) of the readings in a zone meet or exceed the required minimum retroreflectivity values established for the materials that are being measured, the segment that is being evaluated will be accepted.

4.3. If less than 80% (less than 16) of the readings in a zone meet the required minimum retroreflectivity values established for the materials that are being measured, additional readings will be taken within the segment that is being evaluated.

4.4. Taking additional readings - Randomly establish two (2) new zones within the segment in question using the procedure detailed in section 3.2. Obtain readings for each of these zones as described in 3.2 –3.4. These readings will be combined with the initial readings for evaluation of the segment. If less than 80% of the 60 readings (20 in each of three zones) taken within a segment meet the minimum retroreflectivity requirements established for the materials that are being measured, the segment is not accepted. Alternatively, if 13 or more of the first 20 readings taken within a segment fail to meet the minimum retroreflectivity requirements established for the materials that are being measured, the segment is not accepted and additional testing within that segment is not required.

4.5. If three of five segments are not accepted on a section of striping that is ≥ 30 miles in length, the entire section of striping will not be accepted. If one segment is not accepted on a section of striping that is <30 miles in length, the entire section of striping will not be accepted.

5. REPORTING:

5.1. Include the following in the inspection report:

5.1.1. Printout of the readings taken with the hand-operated instrument (which should show date and time of test and zero reading and calibration)

5.1.2. Date and time of application of the pavement marking from the Contractors Daily Striping Report

5.1.3. Location (County, route, milepoint, intersection, direction of travel, color of line, line type and any special information)

5.2. Record readings in millicandelas per square meter per lux ($mcd/m^2/lx$).

5.3. Report measurements for each section of striping per color per line width per shift.

APPROVED _____

DIRECTOR
DIVISION OF MATERIALS

DATE 01/24/12

~~APPROVED _____~~
~~Director~~
~~DIVISION OF MATERIALS~~

~~DATE _____~~

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