



WSDOT Test Method T 429

Retroreflectance of Newly Applied Pavement Marking Using Portable Hand-Operated Instruments

1. SCOPE

This test method outlines the procedure for measuring the retroreflective properties of horizontal pavement marking materials containing retroreflecting beads, such as traffic stripes and surface symbols, using a portable retroreflectometer. Pavement markings must be checked for retroreflectivity within 14 days of application.

2. REFERENCES

- 2.1. ASTM E 1710 Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
- 2.2. WSDOT Test Method T 716 Method of Random Sampling for Location of Testing and Sampling Sites
- 2.3. CEN EN 1436 Road Marking Materials—Road Marking Performance for Road Users

3. APPARATUS

- 3.1. Portable retroreflectometer meeting the requirements of ASTM E 1710

4. TEST LOCATIONS

- 4.1. Testing locations will be selected at random by WSDOT Test Method T 716

4.2. Solid Longitudinal Lines

4.2.1 Road Lengths < 1000 Feet

Randomly select one test location of pavement marking for testing.

4.2.2 1000 Feet < Road Lengths < One Mile

Randomly select two test locations of pavement marking for testing.

4.2.3 One Mile < Road Length < Six Miles

Randomly select three test locations: near the start, near the midpoint and near the end of the project.

4.2.4 Road Length > Six Miles

Randomly select test locations: near the start and end of the project and at random intervals of approximately every 2 miles within the length of the project.

4.3 Broken Longitudinal Lines

4.3.1 Road Lengths < 1000 Feet

Randomly select one test location of pavement marking for testing.

4.3.2 1000 Feet < Road Lengths < One Mile

Randomly select two test locations of pavement marking for testing.

4.3.3 One Mile < Road Length < Six Miles

Randomly select three test locations: one near the start, one near the midpoint and one near the end of the project.

4.3.4 Road Length > Six Miles

Randomly select test locations near the start and end of the project and at random intervals of approximately every 2 miles within the length of the project.

Note: If the random test location does not fall on a line, the marking closest to the random location will be tested.

5. TESTING LOTS

5.1. Each test location shall be divided into lots as follows:

5.1.1 Divided multi-Lane Two Way Roadways

WHITE -Each edge-line will be a lot.

WHITE -Each lane line will be a lot.

YELLOW -Each edge line will be a lot.

Other non-continuous lines included in the test location (i.e. Drop lane lines, channelizing lines, etc.) shall be included with existing lots by material type, line type and color. If these lines cannot be matched with other lines they shall be a separate lot.

Lines on ramps that are included in the test location shall be included with existing lots by material type, line type and color. If these lines cannot be matched with other lines they shall be a separate lot.

5.1.2 Undivided Two and Four Lane Two Way Roadways with Center Turn Lane

WHITE- Each edge line will be a lot

WHITE- Each lane line will be a lot

YELLOW-Each combination of solid and broken centerline will be a lot

Other non-continuous lines included in the test location (i.e. drop lane lines, channelizing lines, and etc.) shall be included with existing lots by material type, line type and color. If these lines cannot be matched with other lines they shall be a separate lot.

5.1.3 Undivided Four lane and Two Lane Two Way Roadways with or without channelization

WHITE- Each edge line will be a lot

WHITE- Each lane line will be a lot.

YELLOW-Any centerline combination (broken and or solid) will be a lot

Other non-continuous lines included in the test location (i.e. drop lane lines, channelizing lines, and etc.) shall be included with existing lots by material type, line type and color. If these lines cannot be matched with other lines they shall be a separate lot.

6. MEASUREMENT PROCEDURE

6.1 Take retroreflectivity measurements between 7 and 14 days of pavement marking application

6.2 Check pavement marking surface to see that it is clean, dry and free of any loose retroreflective media. If loose media is found, remove it by using a strong brushing motion with a broom, air pressure or any other method that does not damage the correctly embedded spheres.

6.3 Standardize and operate the retroreflectometer per manufacturer's recommendations.

6.4 Measurements will be taken at each test location as follows:

6.4.1 Divided multi-Lane Two Way Roadways

Edge lines - Take ten measurements spaced a minimum of ten feet apart on each edge line within 200 feet of the of the random test location. All measurements will be taken in the direction of traffic. Measurements for lots will be recorded and kept separate.

Lane lines - Take ten measurements, two on each of five broken line segments, within 200 feet of the of the random test location. All measurements will be taken in the direction of traffic. Measurements for lots will be recorded and kept separate.

Other non-continuous lines and ramp lines as described in 5.2.1 above. Ten measurements will be taken on each line.

6.4.2 Undivided Two and Four Lane Two Way Roadways with Center Two-Way Left-Turn Lane or Undivided Four lane and Two Lane Two Way Roadways with channelization

Edge lines - Take ten measurements spaced a minimum of ten feet apart on each edge line within 200 feet of the of the random test location. All measurements will be taken in the direction of traffic. Measurements for lots will be recorded and kept separate.

Lane lines - Take ten measurements, two on each of five broken line segments, within 200 feet of the of the random test location. All measurements will be taken in the direction of traffic. Measurements for lots will be recorded and kept separate.

Yellow Centerlines - Take five measurements within 200 feet of the of the random test location on each line (broken or solid) in one direction then turn the retroreflectometer 180 degrees and take five more measurements on each line in the other direction. Measurements for lots will be recorded and kept separate.

Other non-continuous lines as described in 5.2.2 and 5.2.3 above - Ten measurements will be taken on each line.

7. REPORT

7.1 Report the following information:

Contract number

Test date

Inspector name

Identification of the instrument used.

Value and date of standardization of the instrument standard panel used.

Ambient temperature

Milepost of test locations

Lot description by test location, lot number, type of line, color, material, date of installation and bid item number of the pavement marking

Print out of retroreflectometer readings for each lot at each test location per section, expressed as millicandelas per square meter per lux ($\text{mcd}\cdot\text{m}^{-2}\cdot\text{lx}^{-1}$). Include GPS coordinates for each retroreflectometer reading.

Remarks concerning the overall condition of the line, such as rubber skid marks, carryover of asphalt, snow plow damage, and other factors that may affect the retroreflection measurement.