

**SECTION 93: FUGITIVE DUST FROM PAVED ROADS AND  
STREET SWEEPING EQUIPMENT**

- 93.1 **Fugitive Dust from Paved Roads and Street Sweeping Equipment**
- 93.1.1 **Purpose:** To limit the Emission of particulate matter into the ambient air from paved roads and Paved alleys.
- 93.1.2 **Applicability:** The provisions of this regulation shall apply to Paved roads and Paved alleys which are located in a PM<sub>10</sub> nonattainment area, an area subject to a PM<sub>10</sub> maintenance plan defined under 42 U.S. Code § 7505a, or the Apex Valley (hydrographic areas 216 and 217). Nothing in Subsections 93.1 through 93.4 of these Regulations shall be construed to prevent enforcement of Section 40 (Prohibition of Nuisance Conditions) of these Regulations. The provisions of this regulation shall not apply to non-commercial and non-institutional private driveways. The provisions of this regulation shall not apply to Stationary Sources as defined in Section 0, except that these Control Measures shall be considered as part of a BACT determination.
- 93.2 **Requirements:**
- 93.2.1 **Paved Road Development Standards:** Owners and/or Operators having jurisdiction over, or ownership of, public or private Paved roads shall construct, or require to be constructed, all new or modified Paved roads in conformance with the road shoulder width and drivable median stabilization requirements as specified below:
- 93.2.1.1 New construction, modification, or approvals of Paved roads shall be constructed with a Paved travel section, and four (4) feet of Paved or stabilized shoulder on each side of the Paved travel section. The four (4) feet of shoulder shall be Paved or stabilized with a dust palliative or gravel to prevent the trackout of mud and dirt to the Paved section. Where shoulder stabilization is used in place of paving, the stabilized shoulders must be maintained in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation.
- 93.2.1.2 New construction, modification, or approvals of Paved roads on which vehicular traffic is greater than or equal to 3,000 vehicles per day after March 1, 2003 shall be constructed with a Paved travel section, and eight (8) feet of stabilized shoulder adjacent to the Paved travel section where right-of-way is available for the stabilized shoulder. Where the right-of-way is not available for the full eight (8) feet of stabilized shoulder, curbing shall be installed adjacent to the shoulder. Stabilized shoulders must be maintained in

compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation.

93.2.1.3 Where curbing is constructed adjacent to and contiguous with the travel lane or Paved shoulder of a road, the shoulder width design standards specified in Subsection 93.2.1.1 shall not be applicable.

93.2.1.4 Where Paved roads are constructed, or modified with shoulders and/or medians, the shoulders and/or medians shall be constructed as set forth below. If the shoulder, median, or extended right-of-way is located in a limited access freeway right-of-way, then the requirements of Section 90 apply.

(a) With curbing, or

(b) With solid paving across the median, or

(c) Apply dust palliatives, in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation, or

(d) Apply two (2) inches of gravel in compliance with the stabilization standards set forth in Subsection 93.2.1.5 of this regulation, or

(e) With materials that prevent the trackout of mud and dirt to the Paved section such as landscaping or decorative rock.

93.2.1.5 **Stabilization Standards:** For the purpose of this regulation, the unpaved shoulders and medians of Paved roads shall be considered to have Control Measures effectively implemented when Fugitive Dust Emissions do not exceed 20% Opacity and silt loading does not equal or exceed 0.33 oz/ft<sup>2</sup> silt loading, as determined by Subsection 93.4.1 (Test Methods-Stabilized Paved Road Shoulders and Medians) of these Regulations, except for unpaved shoulders on which gravel has been applied under the provisions of Subsection 93.2.1.1. Failure to comply with either the 20% Opacity limit or silt loading limit indicates that the shoulder is not stable. Where gravel is utilized to prevent trackout from unpaved shoulders and medians of Paved roads, surface gravel shall be uniformly applied and maintained to a depth of two (2) inches to comply with the 20% Opacity standards set forth in Subsection 93.4.1.1 of these Regulations and the gravel depth and Silt Content Test Method set forth in Subsection 93.4.1.3 of these Regulations. For the purposes of this section, the term gravel shall include “aggregate” and shall mean unconsolidated material greater than 0.25 (1/4) inch but less than three (3) inches, and contain no more than six (6) percent silt, by dry weight, that will pass through a No. 200 sieve. Failure to comply with either the 20% Opacity limit or the Gravel Depth and Silt Content Test Method indicates that the shoulder is not stable.

- 93.2.1.6 Requirements For existing nonconforming Paved roads: Owners and/or Operators having jurisdiction over, or ownership of, existing public or private Paved roads which do not conform with the requirements of Subsections 93.2.1.1 through 93.2.1.5 of this regulation, shall reconstruct, or require to be reconstructed, the existing nonconforming Paved road within 365 calendar days following the initial discovery that the road fails to meet the requirements set forth in Subsections 93.2.1.1 through 93.2.1.5 of these Regulations. The Control Officer may require short-term stabilization of any Paved road subject to the requirements set forth in Subsections 93.2.1.1 through 93.2.1 of these Regulations. Other stabilization methods of equal or greater effectiveness may be implemented with the written approval of the Control Officer, providing emissions do not exceed 20% Opacity, unless the US EPA Region 9 objects to such approval within ninety (90) days from the date notification of the proposed alternative stabilization method is sent to the US EPA Region 9 by the Control Officer. If the US EPA Region 9 does not object within the ninety (90) days from the date notification, the proposed alternative stabilization method may be implemented. If the US EPA Region 9 objects to the proposed alternative stabilization method, the proposed alternative stabilization method shall require written approval from both the Control Officer and the US EPA Region 9 prior to the implementation of the proposed alternative stabilization method.
- 93.2.2 **Street Sweeper Requirements:** After January 1, 2001, any Owner and/or Operator which utilizes street sweeping equipment or street sweeping services for street sweeping on Paved roads or Paved parking lots, shall acquire or contract to acquire only certified PM<sub>10</sub>-efficient street sweeping equipment.
- 93.2.2.1 PM<sub>10</sub>-Efficient Street Sweepers: For the purposes of Subsection 93.2.2 of this regulation, a PM<sub>10</sub>-efficient street sweeper is a street sweeper which has been certified by the South Coast Air Quality Management District (California) (SCAQMD) to comply with the District's performance standards set forth in SCAQMD Rule 1186 utilizing the test methods set forth in SCAQMD Rule 1186, Appendix A.
- 93.2.3 **Equipment Restriction:** The use of dry rotary brushes and blower devices for the removal of dirt, rock, or other debris from a Paved road or Paved parking lot is prohibited without the use of sufficient wetting to limit the visible emissions to not greater than 20% Opacity when measured as set forth in Subsection 93.4.1.1. The use of dry rotary brushes or blower devices without the use of water is expressly prohibited.
- 93.2.4 **Crack Seal Equipment Requirements:** After December 31, 2005 any Owner and/or Operator which utilizes crack seal cleaning equipment shall acquire, or contract to acquire, only vacuum type crack cleaning seal equipment.

### 93.3 **Record Keeping and Reporting Requirements**

93.3.1 **Record Keeping:** Any Person subject to the requirements of this regulation shall compile and retain records that provide evidence of Control Measure application, by indicating type of treatment or Control Measure, extent of coverage, and date applied. The records and supporting documentation shall be made available to the Control Officer within 24 hours of a written request.

93.3.2 **Reporting Requirements:** Owners and/or Operators having jurisdiction over Paved roads shall prepare and submit a written report to the department documenting compliance with the provisions of this regulation. This report shall be prepared annually on a calendar year basis. The reports shall be transmitted no later than 90 days after the end of the calendar year and shall include:

93.3.2.1 The total miles of Paved roads under the jurisdiction of the Owner and/or Operator and the miles of Paved roads constructed or modified during the reporting period.

93.3.2.2 For newly constructed or modified roads, documentation on how the requirements of Subsections 93.2.1.1 through 93.2.1.5 have been met.

93.3.2.3 Other information which may be needed by the Control Officer for compliance with EPA requirements for enforcement of this regulation.

93.3.3 **Records Retention:** Copies of the records required by Subsection 93.3.1 (Record Keeping Requirements) of this regulation shall be retained for at least one year.

### 93.4 **Test Methods**

#### 93.4.1 **Stabilization Test Methods for Unpaved Shoulders and Medians of Paved Roads:**

93.4.1.1 **Opacity Test Method:** The purpose of this test method is to estimate the percent Opacity of Fugitive Dust plumes caused by vehicle movement on unpaved road shoulders and medians of Paved roads. This method can only be conducted by an individual who has received certification as a qualified observer.

- (a) Step 1: Stand at least 20 feet from the Fugitive Dust source in order to provide a clear view of the Emissions with the sun oriented in the 140-degree sector to the back. Following the above requirements, make Opacity observations so that the line of vision is approximately

perpendicular to the dust plume and wind direction. If multiple plumes are involved, do not include more than one plume in the line of sight at one time.

- (b) Step 2: Record the Fugitive Dust source location, source type, method of control used, if any, observer's name, certification data and affiliation, and a sketch of the observer's position relative to the Fugitive Dust source. Also, record the time, estimated distance to the Fugitive Dust source location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), observer's position to the Fugitive Dust source, and color of the plume and type of background on the visible Emission observation form both when Opacity readings are initiated and completed.
- (c) Step 3: Make Opacity observations, to the extent possible, using a contrasting background that is perpendicular to the line of vision. Make Opacity observations approximately 3 feet above the surface from which the plume is generated. Note that the observation is to be made at only one visual point upon generation of a plume, as opposed to visually tracking the entire length of a dust plume as it is created along a surface. Make two observations per vehicle, beginning with the first reading at zero seconds and the second reading at five seconds. The zero-second observation should begin immediately after a plume has been created above the surface involved. Do not look continuously at the plume but, instead, observe the plume briefly at zero seconds and then again at five seconds.
- (d) Step 4: Record the Opacity observations to the nearest 5% on an observational record sheet. Each momentary observation recorded represents the average Opacity of Emissions for a 5-second period. While it is not required by the test method, EPA recommends that the observer estimate the size of vehicles which generate dust plumes for which readings are taken (e.g. mid-size passenger car or heavy-duty truck) and the approximate speeds the vehicles are traveling when readings are taken.
- (e) Step 5: Repeat Step 3 (Subsection 93.4.1.1 (c) of this regulation) and Step 4 (Subsection 93.4.1.1 (d) of this regulation) until you have recorded a total of 12 consecutive Opacity readings. This will occur once six vehicles have driven on the source in your line of observation for which you are able to take proper readings. The 12 consecutive readings must be taken within the same period of observation but must not exceed 1 hour. Observations immediately preceding and following interrupted observations can be considered consecutive.

- (f) Step 6: Average the 12 Opacity readings together. If the average Opacity reading equals 20% or lower, the source is in compliance with the Opacity standard described in Section 93 of these Regulations.

93.4.1.2 Silt Loading Test Method: The purpose of this test method is to estimate the silt loading of the representative surfaces of dust palliative and untreated shoulders and medians of Paved roads. The higher the silt loading, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on unpaved shoulders and medians of Paved roads.

(a) Equipment:

- (1) A set of sieves with the following openings: 4 millimeters (ASTM No. 5), 2 millimeters, (ASTM No. 10), 1 millimeter (ASTM No. 18), 0.5 millimeter (ASTM No. 35) and 0.25 millimeter (ASTM No. 60), (or a set of standard/commonly available sieves), a lid, and collector pan.
- (2) Equipment necessary to collect a sample of material from the surface of the subject area. (e.g., a small whisk broom or paintbrush with bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags.)
- (3) Equipment necessary to complete field analysis of material. (e.g., weighting scale with half ounce increments, calculator, writing material.)

- (b) Step 1: Look for a representative surface within four (4) feet of the edge of the pavement. [Only collect samples from surfaces that are not damp due to precipitation or dew. This statement is not meant to be a standard in itself for dampness where watering is being used as a Control Measure. It is only intended to ensure that surface testing is done in a representative manner.] Gently press the edge of a dustpan into the surface to mark an area that is 1 square foot. Collect a sample of loose surface material using a whiskbroom or brush and slowly sweep the material into the dustpan, minimizing escape of dust particles. Use a spatula or similar device to lift heavier elements such as gravel. Only collect dirt/gravel to an approximate depth of 3/8 inch in the 1 square foot area. If you reach a hard, underlying subsurface that is less than 3/8 inch in depth, do not continue collecting the sample by digging into the hard surface. In other words, you are only collecting a surface sample of loose material down to 3/8 inch. In order to confirm that samples are

collected to 3/8 inch in depth, a wooden dowel or other similar narrow object at least one foot in length can be laid horizontally across the survey area while a ruler is held perpendicular to the dowel.

- At this point, you can choose to place the sample collected into a plastic bag or container and return to the department facilities to complete the remaining steps or take it to an independent laboratory for silt loading analysis. A reference to the procedure the laboratory is required to follow is at the end of this section.
- (c) Step 2: Place a scale on a level surface. Place a lightweight container on the scale. Zero the scale with the weight of the empty container on it.
- (d) Step 3: Stack a set of sieves in order according to the size openings specified above, beginning with the largest size opening (4 mm) at the top. Place a collector pan underneath the bottom (0.25 mm) sieve.
- (e) Step 4: Carefully pour the sample into the sieve stack, minimizing escape of dust particles by slowly brushing material into the stack with a whiskbroom or brush, (on windy days, use the trunk or door of a car as a wind barricade). Cover the stack with a lid. Lift up the sieve stack and shake it vigorously up, down and sideways or place on a powered shaker for at least 1 minute.
- (f) Step 5: Remove the lid from the stack and disassemble each sieve separately, beginning with the top sieve. As you remove each sieve, examine it to make sure that all of the material has been sifted to the finest sieve through which it can pass; e.g., material in each sieve (besides the top sieve that captures a range of larger elements) should look the same size. If this is not the case, re-stack the sieves and collector pan, cover the stack with the lid, and shake it again for at least 1 minute (you only need to reassemble the sieve(s) that contain material, which requires further sifting).
- (g) Step 6: After disassembling the sieves and collector pan, slowly sweep the material from the collector pan into the empty container calibrated on the scale in Step 2 (Subsection 93.4.1.2(c)). Take care to minimize escape of dust particles. You do not need to do anything with material captured in the sieves; only the collector pan. Weigh the container with the material from the collector pan and record its weight.

- (h) Step 7: Multiply the resulting weight by 0.38. The resulting number is the estimated silt loading.
- (i) Step 8: Select another two representative surfaces of the unpaved road shoulder or median and repeat this test method. Once you have calculated the silt loading of the 3 samples collected, average your results together.
- (j) Step 9: Examine Results. If the average silt loading is less than 0.33 oz/ft<sup>2</sup>, the surface is stable.
- (k) Independent Laboratory Analysis: You may choose to collect 3 samples from the source, according to Step 1 (Subsection 93.4.1.2 (b) of this regulation), and send them to an independent laboratory for silt loading analysis rather than conduct the sieve field procedure. If so, the test method the laboratory is required to use is:

"Procedures for Laboratory Analysis of Surface/Bulk Loading Samples", (Fifth Edition, Volume I, Appendix C.2.3 "Silt Analysis", 1995), AP-42, Office of Air Quality Planning & Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

#### 93.4.1.3

**GRAVEL DEPTH AND SILT CONTENT TEST METHOD:** The purpose of this two (2) part test method is to estimate the gravel depth and silt content of graveled road shoulders and medians of Paved roads. Two (2) inches of gravel are required to prevent vehicle tires from digging through the gravel. The higher the silt content in the top inch of the gravel, the greater the amount of fine dust particles that are entrained into the atmosphere when vehicles drive on gravel-stabilized shoulders.

(a) Equipment necessary to collect a sample of material from the surface of the subject area, including a sampling device one (1) foot by one (1) foot by one (1) inch deep, and other equipment such as, a small whisk broom or paintbrush with bristles no longer than 1.5 inches, dustpan, spatula, shallow container, sealable plastic bags, ruler, and wood dowel or similar straight edge device.

(b) Step 1: Look for a section within four (4) feet of the edge of pavement that has an existing gravel surface that appears representative of the gravel shoulder. Using the spatula, remove the gravel from a three (3) to five (5) inch diameter area to the depth of the applied gravel surface. Make sure that the removed gravel is placed well away from the cleared area. Place a wooden dowel or other similar narrow object across the cleared survey area, and



measure, perpendicular to the narrow object, to depth of the cleared area to determine the depth of the gravel material. If the depth of the gravel material is less than two (2) inches, the area fails and is not considered stable. If the depth of the gravel material is two (2) inches or greater, go to Step 2 (Subsection 93.4.1.3 (c) of this regulation).

(c) Step 2. Using the one (1) foot by one (1) foot by one (1) inch deep sampling frame, gently press the edges of the frame into the road shoulder surface to a depth of one (1) inch. Collect the sample of loose surface material using the whiskbroom, brush, spatula, and dustpan to collect the material into the sample bag, minimizing escape of dust particles. Collect all material to a one (1) inch depth in the one (1) square foot sampling frame.

(d) Step 3. Repeat Steps 1 and 2 to obtain two (2) additional samples for a total of three (3) samples. In the event any sampled location is found to have less than (2) inches of gravel under Step 1, the shoulder is considered to be unstable. Do not proceed with additional sampling.

(e) Step 4. Laboratory Analysis: Samples collected from this source, according to Step 3 (Subsection 93.4.1.3 (d) of this regulation), are sent to a laboratory for silt content analysis. The test method the laboratory is required to use is:

i. Wet screen the entire sample through a one (1) inch sieve.

ii. For all material passing through the one (1) inch sieve, use ASTM No. 200 wet Sieve Method to determine the percentage content of silt.

(f) Step 5: Examine Results. Average the silt content for the (3) samples. If the average silt content of the three samples is equal to or less than or six (6) percent, the surface is stable.

---

History: Initial adoption: June 22, 2000  
Amended: November 16, 2000; November 20, 2001; December 17, 2002; March 4, 2003;  
June 3, 2003; July 1, 2004, April 15, 2014; January 21, 2020.