

ALDOT-224-71A
CONSTRUCTION OF DENSITY CONTROL STRIPS FOR BITUMINOUS MIXTURES

1. Scope

- 1.1. For use in conjunction with nondestructive in-place density test methods contained in ALDOT-222.

2. Location

- 2.1. Each control strip shall be constructed on a normal tangent section of the project and on an underlying surface approved by the Engineer.

Note 1: When a 500 ft. (150 m) length tangent section is not available, a curved section may be used.

3. Materials

- 3.1. The materials used in constructing control strips for each of the respective courses shall conform to the specified requirements for the material to be used in such courses. Further, the material used in each control strip shall be furnished from the same source, shall be of the same type, and manufactured from the same job mix formula, as the material to be used in the test sections whose density requirements are to be established by that control strip.

4. Equipment

- 4.1. Equipment proposed by the Contractor for use in the construction of control strips shall be subject to the approval of the Engineer prior to use. The type and weight of the compaction equipment shall be such that uniform density shall be obtained throughout the depth of the layer of material being compacted. A steel wheel breakdown roller capable of applying a total applied force (sum of static and dynamic forces) of a minimum of 400 lbs/in (71.6 kg/cm) of roller width, a multi-wheel pneumatic tired intermediate roller having a weight of not less than 12 T.(10.9 t) and a tandem steel wheel finish roller having a weight of not less than 10 T (9 t) shall be provided. On thin layers (those of 150 lbs/yd² (81.5 kg/m²) or less) and for leveling, a pneumatic tired roller may be used both as the breakdown and compactive or intermediate roller as long as acceptable results are achieved. On thick layers (those of 500 lbs/yd² (271.8 kg/m²) or more, a self-propelled, multi-wheel pneumatic tired roller having a weight not less than 25 T (22.7 t) shall be provided.

5. Temperature

- 5.1. The placement temperature of the mixture shall be within $\pm 20^{\circ}\text{F}$ (11°C) of the temperature specified in writing by the Engineer.

6. Procedure

- 6.1. The spreader speed shall be controlled to the extent that the breakdown roller will never be more than 100 ft. (30 m) behind the spreader, and rolling shall begin immediately after placement for hot mixes. The rolling shall begin at the pavement edge and in passes parallel to the edge progress inward to the center of the pavement. A test point within the control section shall be selected, and each coverage of this point shall be checked by the non-destructive test device. Complete roller coverage of the control strip layer being tested shall continue until no significant increase in density is measured by the nondestructive test device at the test point.

Note 2: When a control strip is constructed on a curved section, rolling shall begin at the lower edge and, in passes parallel to the lower edge, progress to the high side.

Note 3: If the mixture has a tendency to stick to the roller wheels, a nonfoaming detergent shall be added to the water in an amount sufficient to reduce or eliminate the sticking.

- 6.2 After completion of the breakdown and intermediate rolling, the finish rolling with the tandem steel wheel roller shall begin. Finish rolling shall be in the same sequence as the breakdown and intermediate rolling and shall continue until no significant increase in density is recorded by the nondestructive test device, all breakdown roller marks are eliminated, and the surface requirements are in compliance with the specifications for the applicable layer.
- 6.3 After completion of the finish rolling, ten (10) test points within the control strip shall be selected. These will be selected by use of a random number table for both longitudinal and transverse location.
- 6.4 After selection of test sites, two individual readings will be taken at each test point.
- 6.5 Determine the mean reading for the twenty tests; if individual test points vary more than ± 5 percent of the mean, the control strip will be disregarded but may remain in place as a test section provided 95 percent of the standard design density (91.2% of the theoretical maximum density) has been obtained, or if it meets the requirements of ALDOT Specifications, Section 306, control strip method on a subsequently established control strip. After evaluation of equipment, a new control strip shall be constructed.
- 6.6 Convert the mean reading into in-place density, expressed in lbs/ft^3 (kg/m^3) from calibration data supplied with the nondestructive test device.