

Test Procedure for

SAMPLING AGGREGATE AND LIMESTONE ROCK ASPHALT (LRA)



TxDOT Designation: Tex-221-F

Effective Date: October 2022

1. SCOPE

- 1.1 Use this test procedure for sampling completed stockpiles of coarse and fine aggregate used to produce hot-mix asphalt (HMA), hot-mix cold-laid asphalt, Limestone Rock Asphalt (LRA), microsurfacing, and for the placement of surface treatments.
- 1.2 Use this test procedure to sample completed coarse or fine aggregate and LRA stockpiles using a front-end loader or shovel. The preference for sampling is to use a front-end loader. Only use a shovel where a front-end loader is not available.

2. SAMPLE SIZE

- 2.1 Use Table 1 to determine the minimum sample size to perform the required tests listed in the applicable specification.
- 2.2 Obtain samples from completed stockpiles that show the true nature and condition of the materials they represent. Do not combine materials that apparently differ in property or character to make a composite sample. Differences may be indicated by color or texture.
- 2.3 Use a sample splitter or quartering cloth to reduce the field sample to laboratory test size.

Table 1—Min Size of Samples

Nominal Max Size of Aggregate ¹	Min Weight of Field Samples ² (pounds)
No. 8	10
No. 4	25
3/8 in.	25
1/2 in.	35
3/4 in.	55
1 in.	110
1-1/2 in.	165

1. Nominal maximum size is one sieve size larger than the first sieve that retains more than 10% of the aggregate.
 2. The minimum sample mass depends on the nominal maximum aggregate size as well as the number and type of test required.

3. SAMPLING PROCEDURES

- 3.1 This test procedure does not claim to address the safety concerns associated with its use. It is the responsibility of the user of this test procedure to establish the appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations before use.
- 3.2 *Sampling procedure for aggregate from completed stockpiles using a front-end loader.*
- 3.2.1 Use this procedure to sample completed stockpiles of coarse or fine aggregate and LRA using a front-end loader.
- 3.2.2 Determine the minimum number of samples required for approval based on the Department's Guide Schedule frequency for HMA, hot-mix cold-laid asphalt, seal coat, and LRA.
- 3.2.3 Identify the sampling locations by dividing the stockpile in approximately equal sectors based on the number of samples determined from Section 3.2.2. Stockpiles must be sampled from a minimum of two sectors or locations for acceptance.
- 3.2.4 Clean and level the ground at the sampling location to prevent contamination of the sampling pile.
- 3.2.5 Cut approximately at the ground level to the top edge of the stockpile until a clean face is exposed. This represents the full height of the stockpile.
Note 1-The exposed vertical face should be perpendicular to the top edge of the stockpile, but this may not be possible with stockpiles of dry, coarse aggregates.
- 3.2.6 Discard the material cut away while exposing the clean face.
- 3.2.7 Build a sample pad by cutting into the vertical face at the ground level to the full height of the stockpile to obtain material.
- 3.2.8 Lower the bucket as close as possible to the ground to avoid segregation and empty the entire contents of the bucket in one motion onto the ground.
- 3.2.9 Using the loader bucket, strike and level the sample pad at mid-height in the direction the bucket was emptied to create a flat surface for sampling. Back-drag the sampling pad only once.
- 3.2.10 Using a shovel or straightedge, visibly trace lines on top of the sample pad to outline four evenly sized quarters.
- 3.2.11 Place clean sample bags or containers near the center of the sampling pad and obtain the sample across the flat area staying more than 1 ft. away from the edges.
- 3.2.11.1 Sample equal amounts of aggregate or LRA evenly across each quadrant. Fully insert the shovel as near as vertical as possible and then slowly roll the shovel back and lift slowly to avoid coarse aggregate rolling off the sides of the shovel.
Note 2-Spade-tip shovels are not recommended for sampling. Square-tip shovels work well preventing aggregate from rolling from the side.
- 3.2.11.2 Obtain additional shovelfuls from different quadrants of the sampling pad, and in areas avoiding previous shovel holes.
- 3.2.12 Place the material into the clean sample bags or containers.

- 3.2.13 Seal and label the sample bags or containers.
- 3.2.14 Repeat Section 3.2.4 to 3.2.13 for each additional location as determined from Section 3.2.3.
- 3.3 *Sampling procedure for aggregate from completed stockpiles using a shovel.*
- 3.3.1 Use this procedure to sample completed stockpiles of coarse or fine aggregate and LRA using a shovel where a front-end loader is not available. The preference for sampling is to use a front-end loader.
- 3.3.2 Determine the minimum number of samples required for approval based on the Department's Guide Schedule frequency for HMA, hot-mix cold-laid asphalt, seal coat, and LRA.
- 3.3.3 Identify the sampling locations by dividing the stockpile in approximately equal sectors based on the number of samples determined from Section 3.3.2. Stockpiles must be sampled from a minimum of two sectors or locations for acceptance.
- 3.3.4 Identify locations within each sector from the top third, at the mid-point, and bottom third of the stockpile. Sampling must be performed in no less than these three increments.
- 3.3.5 Dig a small trench into the stockpile at each location approximately 1 ft. deep and 3 ft. in diameter.
Note 3-A board may be shoved vertically into the stockpile just above the point of sampling to prevent segregation from coarser aggregate rolling down during sampling.
- 3.3.6 Do not use the aggregate or LRA removed from the trenched area as a part of the sample.
- 3.3.7 Shovel material from the stockpile into clean sample bags or containers from the innermost part of the trench. Minimize larger sized aggregate falling back into the trench.
Note 4-When sampling sands, sampling tubes of at least 1-1/4 in. diameter may be used where experience has indicated representative samples cannot be obtained otherwise.
- 3.3.8 Seal and label the sample bags or containers.
- 3.3.9 Repeat Section 3.3.4 to 3.3.8 for each additional location as determined from Section 3.3.3.
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4. **ARCHIVED VERSIONS**

- 4.1 Archived versions are available.