Standard Method of Test for
Methods of Sampling Coarse Aggregates
SCDOT Designation: SC-T-1 (9/16)

1. SCOPE

1.1. These methods are intended to apply to coarse aggregates of gravel and crushed stone that have been sized and processed for use in construction items of work.

1.2. This standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. SUMMARY OF TEST METHOD

2.1. A sample of coarse aggregate is obtained by combining portions taken from a conveyor belt, storage bin, stockpile, sample pad, or truck dump.

3. SIGNIFICANCE AND USE

3.1. Sampling is equally as important as the testing, and the sampler must use every precaution to obtain samples that will show the true nature and condition of the materials that they represent.

4. APPARATUS

4.1. Round or square point shovel, large sample bags, board (optional).

5. TEST SPECIMENS

5.1. The minimum size of sample shall conform to the requirements shown in Figure SC-T-1A.

6. PROCEDURE

6.1. Sampling from Conveyor Belts — Conveyor belts furnish a good point for sampling. It is necessary to stop the belt before taking a portion of the sample. Scrape clean at least 2 feet of the belt for the entire width and depth. Take at least three (3) portions from the belt and combine them into one sample. Allow the conveyor belt to make at least two (2) revolutions between the taking of each sample portion.

6.2. Sampling from Storage Bins — If samples are taken from a bin, take them from the entire cross-section of the flow of material as it is being discharged. At the beginning of
Table 7-3: Minimum Weight of Field Samples (pounds)

<table>
<thead>
<tr>
<th>Product Sampled</th>
<th>Minimum Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coarse Aggregate (5, 57, 67, 789, etc.)</td>
<td>40</td>
</tr>
<tr>
<td>Aggregate Base (Macadam, MLBC, RPCC)</td>
<td>70</td>
</tr>
</tbody>
</table>

**TABLE OF MINIMUM SAMPLES SIZES**

Figure SC-T-1A

The discharge from the bins, permit sufficient material to flow to insure normal uniformity before the sample is selected.

6.3. **Sampling from Stockpiles** — It is extremely difficult to obtain a representative sample of coarse aggregate from a stockpile and this method of sampling should be avoided whenever possible. When it is necessary to obtain samples from a stockpile, take a sample by combining approximately equal portions of materials taken from three (3) or more different locations with care being taken to avoid sampling a segregated area of coarse-grained material that is likely to exist at the base of the pile. The first portion should be obtained approximately three (3) feet above the base of the stockpile. The second portion should be obtained by moving diagonally across the loading face of the stockpile and approximately six (6) feet above the base of the pile. The third portion should be obtained by again moving diagonally across the loading face of the stockpile and approximately nine (9) feet above the base of the stockpile (see Figure SC-T-1B). If additional material is needed to make the minimum sample size requirement, take an additional portion from the middle sampling location. Before obtaining the material at each sampling point, remove the aggregate to a depth of 1 foot and then, with a round or square point shovel, obtain one shovel full from the bottom of the hole. Do not let pieces of aggregate fall off the shovel when transferring the material to the sample bag. To
help in preventing further segregation during sampling, a board may be placed into the pile just above the point of sampling. The separate portions of material taken from three (3) different holes must be combined to form a composite sample.

6.4. **Sampling from Mini-stockpiles/ Sample Pads** – Whenever possible, take samples from a stockpile using the sample pad (also known as mini-stockpile) technique. To form a sample pad, the loader operator will take a minimum of two (2) buckets of material from the loading face of the large stockpile and place it onto the ground near the large stockpile by gently rolling the material out of the bucket. The loader operator should take care not to drop the material from any higher than necessary to prevent segregation of the material in the sample pad. The sample pad will then be struck off to approximately half its original height (about 15 to 18 inches) by back dragging with the loader bucket in the dumped position. As shown in Figure SC-T-1C, take the required amount of material for the sample from the exposed surface of the sample pad by sampling with a shovel taking care not to let material fall off of the shovel. Sample material by inserting the shovel vertically into the surface of the pad. Make sure the shovel is driven completely into the pad (but being careful not to remove any of the substrate material). Collect material from each of the four quadrants in order to obtain the minimum field sample size required for the type of aggregate being sampled. If additional material is needed to meet the minimum sample requirement, take additional portions from the center of the sample pad. Care should be taken to stay away from the edges of the pad where the material is subject to segregation.

![SAMPLE PAD](image)

Sample from all 4 quadrants (A,B,C and D)

**SAMPLING FROM A MINI-STOCKPILE/ SAMPLE PAD**
Figure SC-T-1C

6.5. **Sampling from a Truck Dump.** Sampling from truck dumps should be avoided if possible. If a loader is available, then the truck dump should be remixed with the loader and struck off to form a sample pad that may be sampled by that procedure. If no other method is available and a truck dump must be sampled, obtain three (3) portions of material from locations across the truck dump, one portion from a front corner, one portion from the opposite back corner and one portion from the top of the dumped load (see Figure SC-T-1D). Before obtaining the material at each corner sampling point,
remove the aggregate to a depth of 1 foot and then, with a round or square point shovel, obtain one shovel full from the bottom of the hole. Do not let pieces of aggregate fall off the shovel when transferring the material to the sample bag. To help in preventing further segregation during sampling, a board may be placed into the pile just above the point of sampling. The separate portions of material taken from the three (3) different locations must be combined to form a composite sample. Take additional material from the center of the dumped load if required to meet the minimum sample size. Do not sample a truck dump after any material has been removed from that dumped load.

TRUCK DUMP

SAMPLING FROM A TRUCK DUMP

Figure SC-T-1D

6.6. **Sampling Graded Aggregate Base Materials from the Roadway:** Obtain Graded Aggregate Base samples after all mixing and shaping have been performed, but prior to initial compaction. Obtain three (3) portions of sample with a round or square point shovel at the station from which the sample is desired. Obtain one portion from the centerline and obtain the two remaining portions approximately two (2) feet from either edge of the base course. If the base material was placed with a joint at the centerline, then obtain that portion of the sample far enough off of the centerline that it does not come from the segregated area that may occur at the joint (See Figure SC-T-1E). Obtain portions for the full depth of the layer being sampled with care being taken not to contaminate the sample by going too deep and mixing subgrade soil with the base
material. A sampling ring may be used to help isolate the sampling area and prevent material from falling into the hole. Combine the three (3) portions to form a composite sample.

<table>
<thead>
<tr>
<th>Sample Location</th>
<th>1st Sample Location</th>
<th>Next Sample Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Edge</td>
<td>2 feet</td>
<td>2 feet</td>
</tr>
<tr>
<td>Centerline</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Right Edge</td>
<td>2 feet</td>
<td>2 feet</td>
</tr>
</tbody>
</table>

SAMPLING GRADED AGGREGATE BASE MATERIALS FROM THE ROADWAY
Figure SC-T-1E