

## **SAMPLING ASPHALTIC CONCRETE MIXTURES**

(An Arizona Method)

### **1. SCOPE**

- 1.1 This procedure describes the methods which are to be used when sampling asphaltic concrete mixtures in order to best assure representative samples of the materials being placed.
- 1.2 Sampling asphaltic concrete mixtures by this procedure may involve hazardous material, operations, or equipment. This procedure does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user to consult and establish appropriate safety and health practices and determine the applicability of any regulatory limitations prior to use.
- 1.3 For the purpose of this method, asphaltic concrete mixtures are referred to as either Asphaltic Concrete (AC) or Asphaltic Concrete Friction Course (ACFC), regardless of the asphalt binder type.

### **2. APPARATUS**

- 2.1 Sampling Plate - A 4 foot x 1 foot x 1/16 inch steel plate, which has been prepared with a 1/8 inch hole at each corner of one end and a sufficient length of wire tied through each hole to form a loop approximately 4 feet in length. The sampling plate may be used when sampling AC mixtures.
- 2.2 Cookie-Cutter Template - As an alternate to obtaining the sample from the sampling plate, a rectangular metal template ("cookie cutter") and metal plate of sufficient size may be used to sample the AC mixture. The metal template and plate shall be of sufficient size so that the desired amount of material is obtained by a single use of the template and plate at any one location. The metal plate shall be prepared with a wire(s) of sufficient length attached to each corner on one side of the metal plate (the short side when the plate is not square) so the metal plate may be located by raising the wire(s) after the laydown machine has passed.

- 2.3 Miscellaneous Brushes - May be helpful when obtaining the entire amount of AC mixture from a cookie-cutter template.
- 2.4 Flat Square Point Shovel - A flat square point shovel shall be used when sampling AC mixtures. A flat square point shovel may also facilitate sampling ACFC mixtures and when sampling by other procedures as described below.
- 2.5 5-Gallon Bucket, or other suitable container - Shall be used when sampling AC mixtures and ACFC mixtures.

### **3. SIZE OF SAMPLES**

- 3.1 For AC mixtures designed with Marshall design procedures, minimum 75 pounds.
- 3.2 For AC mixtures designed with Gyrotory design procedures, minimum 130 pounds.
- 3.3 For ACFC mixtures, minimum 50 pounds.

### **4. SAMPLING AC MIXTURES**

- 4.1 The sampling plate shall be placed on the roadway just ahead of the laydown machine. Except for wider mats when a sample is being taken from the middle of the mat, the sampling plate is placed so that the end with the wire is approximately one foot in from the right or left edge of the mat being laid. The sampling should be alternated between the right and left edges when practical. The wire attached to the end of the plate shall be held to the ground to allow the laydown machine to pass over the plate and wire.
- 4.2 After the laydown machine has passed, locate the plate by raising the wire.
- 4.3 The sample shall be taken from the plate using a flat square point shovel. The sample shall consist of the full depth of material for one shovel width from the center portion of the plate over its entire length. Material covering the entire plate shall not be taken. A single pass of the shovel shall be made, moving along the surface of the plate until the shovel is full. Carefully deposit the AC mixture into a 5-gallon bucket, or other suitable container. Material which has sloughed into the resultant trench shall not be obtained. At the next undisturbed area of material on the plate, repeat shoveling and placing the material into the container. If necessary, additional material may be obtained by using an

additional plate(s) in the immediate vicinity and combining all material. The use of an additional plate(s) cannot be used in lieu of splitting.

**Note:** When sampling with the “cookie cutter”, the metal plate shall be placed on the roadway at the location where the sample is to be taken, just ahead of the laydown machine. If the metal template is not square, it shall be placed on the roadway so that the longest side is in a transverse direction across the roadway. The wire(s) shall be held to the ground to allow the laydown machine to pass over the plate and wire(s). After the laydown machine has passed, locate the plate by raising the wire(s). The template is pressed through the AC mixture until it rests squarely upon the plate. The entire amount of AC mixture is removed from the interior of the template and carefully placed into a 5-gallon bucket, or other suitable container. Obtaining multiple samples cannot be used in lieu of splitting.

## **5. SAMPLING ACFC MIXTURES**

- 5.1 When sampling ACFC mixtures, an adequate amount of material shall be taken from the truck at the mixing plant and placed into a 5-gallon bucket, or other suitable container. The sample shall be taken from at least 3 random locations, approximately 12" below the surface, within five minutes from the time the loading of the truck is completed.
- 5.2 Material that is to be tested immediately after it has been sampled shall be protected to avoid heat loss while it is being transported to the laboratory.

## **6. SAMPLING FINISHED AC PAVEMENT**

- 6.1 Samples of AC from finished pavement shall be taken through the complete thickness of the pavement or lift, in such a manner which causes minimum disturbance to the sample.
- 6.2 If a coring apparatus is used, the coring bit shall be subjected to enough vertical pressure to penetrate the pavement without causing damage to equipment or disturbance of the sample. The minimum core diameter shall be 4 inches.

- 6.3 If coring equipment is not available, the sample may be taken with the use of a saw, pick, jackhammer, or other suitable means if a suitable specimen can be obtained for the intended testing.
- 6.4 All samples shall be handled carefully so that they maintain their original form. The samples shall be transported on a relatively flat surface, and adequately protected to preserve their shape and to prevent damage.
- 6.5 The use of ice may be found helpful in obtaining and/or preserving the condition of the specimen.
- 6.6 Samples shall be delivered to the laboratory for testing as expeditiously as reasonably possible. Samples shall be transported carefully in a covered container out of extreme environmental conditions.

## **7. SAMPLING MISCELLANEOUS PLACEMENT OF AC MIXTURES**

- 7.1 When required, samples of AC mixtures placed in miscellaneous areas shall be obtained from locations and by means to provide appropriate representation of the AC mixture being placed. Miscellaneous areas are locations where representative samples would be difficult to obtain in-place due to geometry, paving area size, limited access, or other factors. These areas could include paving slopes, median islands, utility trenches, tapers, radius paving and any other area designated by the Engineer.

## **8. SAMPLE IDENTIFICATION**

- 8.1 Each sample shall be identified by an accompanying sample ticket. Sample tickets shall be filled out as required to provide necessary information. The remarks area of the sample ticket shall be used as necessary to provide additional information, including the phone number of an individual who can be contacted regarding the sample.
- 8.2 The source of the sample shall be the "original source" of the material, as indicated on the sample ticket.
- 8.3 An example of a completed sample ticket used by ADOT for construction projects is shown in Figure 1. Commonly used codes for filling out the sample ticket are shown on the back side of the sample ticket (see Figure 2).

- 8.4 The sample ticket consists of three copies. The center copy is kept by the person submitting the sample, the original copy is included inside the sample container, and the third copy is attached to the sample container. When filling out sample tickets, make certain information is clear and easily read on all three copies.

**PRESS FIRMLY USING A BALL-POINT PEN WHILE FILLING OUT FORM**  
 ARIZONA DEPARTMENT OF TRANSPORTATION  
 SAMPLE TABULATION  
 SOIL, AGGREGATE, & BITUMINOUS MIXES

44-9346 R07/14

**ADOT** **USE CAPITAL LETTERS**

LAB NUMBER				ORG NUMBER				MATL		TYPE		PUR-POSE		TEST LAB		SIZE		SIZE %					
				9999				AC		34		A		P									
TEST NO.			LOT OR SUFFIX		SAMPLED BY (FIRST & LAST NAME)						MO		DAY		YEAR		TIME						
			3		8		Bob Tester						09		15		14		10:30 <small>MILITARY TIME</small>				
SAMPLED FROM																LIFT NO.		RDWY		STATION			
Roadway																		1 EB		670+50 <small>IF MILEPOST, INPUT DECIMAL</small>			
ORIGINAL SOURCE						PROJECT ENGINEER / SUPERVISOR				PROJECT NUMBER				TRACS NUMBER									
XYZ COMMERCIAL						F. Bossy				F-099-9(9)				H999909C									
REMARKS																							
EXAMPLE																							
CONTACT PHONE NO. - 999-999-9999																							

FIGURE 1

- |  |   |
|--|---|
| <p><b>Roadway Codes:</b><br/>         NB NORTHBOUND<br/>         SB SOUTHBOUND<br/>         EB EASTBOUND<br/>         WB WESTBOUND<br/>         RA RAMP A<br/>         RB RAMP B<br/>         RC RAMP C<br/>         RD RAMP D<br/>         FR FRONTAGE ROAD<br/>         XR CROSS ROAD<br/>         DE DETOUR</p> <p><b>Purpose Codes:</b><br/>         A ACCEPTANCE<br/>         C CORRELATION<br/>         P INDEPENDENT ASSURANCE<br/>         I INFORMATIONAL</p> <p><b>Testing Lab Codes:</b><br/>         C CENTRAL LAB<br/>         R REGIONAL LAB<br/>         P PROJECT LAB</p> <p><b>Bituminous Mixes:</b><br/>         AC ASPHALTIC CONCRETE<br/>         MA MINERAL AGGREGATE<br/>         34 3/4" ASPHALTIC CONCRETE<br/>         34F 3/4" FINE BAND 417 AC<br/>         34K 3/4" COARSE BAND 417 AC<br/>         12 1/2" ASPHALTIC CONCRETE<br/>         12F 1/2" FINE BAND 417 AC<br/>         12K 1/2" COARSE BAND 417 AC<br/>         BM BASE MIX<br/>         FC ACFC<br/>         RD ASPHALT - RUBBER ASPHALTIC CONCRETE<br/>         RF ASPHALT - RUBBER A.C. FRICTION COURSE<br/>         409MI MISC. STRUCTURAL<br/>         409SP MISC. STRUCTURAL (Special Mix)</p> <p><b>Soils and Aggregates:</b><br/>         AB AGGREGATE BASE (CLASS 1, 2, or 3)<br/>         AS AGGREGATE SUBBASE (CLASS 4, 5, or 6)<br/>         CM COVER MATERIAL (CLASS 1 or 2)<br/>         CA COARSE AGGREGATE<br/>         SG SUBGRADE<br/>         BW BORROW<br/>         BL BLOTTER MATERIAL<br/>         DG DECOMPOSED GRANITE<br/>         BF BACKFILL*<br/>         *AP ALUMINUM PIPE<br/>         *CP CONCRETE PIPE<br/>         *MP METAL PIPE<br/>         *PP PLASTIC PIPE<br/>         *PV PVC PIPE<br/>         *SL SLURRY<br/>         *TR TRENCH BACKFILL</p> <p><b>Other Codes:</b><br/>         RP RECLAIMED ASPHALT PAVEMENT<br/>         C COARSE<br/>         F FINE<br/>         O OTHER<br/>         GR GRANULATED RUBBER<br/>         CB CRASH BARREL SAND<br/>         RR RIP RAP</p> | <p>Not all codes used by FAST are listed above. (See Appendix C of Series 900 of the ADOT Materials Testing Manual for a listing of other codes used by FAST. FAST may reuse codes, delete codes, or add codes at various times. Individuals must assure that they are utilizing the current FAST codes.</p> <p style="text-align: right;">44-9346 R07/14</p> |
|--|---|

FIGURE 2