

SECTION 303 AGGREGATE SUBBASES AND AGGREGATE BASES: of the Standard Specifications is revised to read:

303-1 Description:

The work under this section shall consist of furnishing, placing and compacting aggregate subbases and aggregate bases in accordance with the details shown on the project plans and the requirements of these specifications.

Aggregate subbases and aggregate bases are designated as Class 1 through Class 6. The class of aggregate subbase and aggregate base will be shown on the project plans or specified in the Special Provisions.

303-2 Materials:

Aggregate for the various classes of aggregate subbases and aggregate bases shall consist of stone, gravel or other approved inert material of similar characteristics, and shall be clean and free from vegetable matter and other deleterious substances.

Aggregate subbases and aggregate bases shall conform to the requirements shown in the following table for the class specified:

TABLE 303-1								
Class of Aggregate	Percent Passing Sieve (Inch or No.)							PI, Max.
	3	1-1/2	1	3/4	1/4	8	200	
1			100	90 - 100		35 - 55	0 - 8.0	3
2		100	90 - 100			35 - 55	0 - 8.0	3
3								
4	100				35 - 70		0 - 10.0	5
5	100				30 - 75		0 - 10.0	5
6								

Notes:

- (1) The percentage, by weight, passing each sieve will be determined in accordance with the requirements of Arizona Test Method 201.
- (2) The PI (Plasticity Index) will be determined in accordance with the requirements of AASHTO T 90.
- (3) Classes 1, 2 and 3 are bases; Classes 4, 5 and 6 are subbases.
- (4) The requirements for Class 3 and for Class 6 will be specified in the Special Provisions.

(5) For Class 1 through Class 4 aggregate, the amount of fractured coarse aggregate particles shall be at least 30 percent, when tested in accordance with the requirements of Arizona Test Method 212.

(6) Resistance to abrasion for Class 1 through Class 4 aggregate will be determined in accordance with the requirements of AASHTO T 96 and shall meet the following requirements:

Maximum loss of 9 percent at 100 revolutions

Maximum loss of 40 percent at 500 revolutions

When production of Class 1 through Class 4 aggregate requires composite mixing of materials from more than one source to meet the gradation requirements of Table 303-1, the material from each source shall meet the abrasion requirements specified in herein.

Aggregate subbase and aggregate base material may be comprised in part of salvaged asphaltic concrete, existing aggregate base material, or Portland cement concrete materials.

The source of all salvaged materials shall be approved by the Engineer prior to use. Salvaged asphaltic concrete and Portland cement concrete materials shall not contain hazardous materials. All metal reinforcement materials shall be removed from salvaged Portland cement concrete prior to its use in aggregate subbase and aggregate base material.

Salvaged asphaltic concrete to be used in aggregate subbase and aggregate base material shall be produced by milling, pulverizing, or crushing. Salvaged Portland cement concrete materials shall be produced by crushing.

The contractor shall submit the percentages of salvaged materials and virgin aggregate materials which are intended to be used to the Engineer for approval. The percentages shall not be adjusted after approval, except to maintain a consistent gradation. Any significant change in the proportions must be approved by the Engineer prior to use.

A maximum of 50 percent salvaged material, by weight or volume, will be allowed. The 50 percent maximum shall include all salvaged materials, including any underlying base material recovered when full depth milling or pulverizing is used to remove the asphaltic concrete. Changes in proportions that result in more than 50 percent salvaged material will not be allowed.

Aggregate subbase and aggregate base material containing salvaged materials shall be thoroughly mixed using one of the following methods unless another method is approved by the Engineer:

- (1) By means of a mechanical mixing device prior to placement.

The mechanical mixing device shall be a pugmill type mixer consisting of at least two motorized shafts with mixing paddles. The mixing device shall be designed such that the mixture of virgin aggregate and salvaged materials is moved in a near horizontal direction by the mixing paddles without the aid of conveyor belts for a distance of at least 3 feet. The rate of feed of the combined virgin aggregate and salvaged material shall not exceed the mixing device's rated capacity in tons per hour.

(2) By means of mechanical mixing on grade.

Mixing on grade shall be accomplished using a full depth reclamation machine or pulverizer, manufactured for this purpose. The machine shall be equipped with electronic grade control to ensure that underlying materials are not disturbed during mixing. Motor graders, gannon boxes, auger scrapers, or other similar devices will not be allowed for mechanical mixing on grade.

The total thickness of subbase or base material being placed shall include a layer of virgin aggregate immediately above the prepared underlying subgrade, subbase, or base. This layer shall not contain any salvaged material and shall not be disturbed during placement and mixing of subsequent subbase or base material. The required minimum thickness of this layer shall be 1 inch when geotextile or geogrid is not used and 4 inches when geotextile or geogrid is used. In addition, this virgin aggregate layer will not be included when the percentage of salvaged material allowable in the subbase or base is calculated. The percentage of salvaged material shall only apply to the weight or volume of subbase or base material placed above the layer of virgin aggregate specified herein.

Prior to mixing on grade, the required amount of virgin aggregate and salvaged material necessary to achieve the approved percentages of each shall be placed and uniformly spread on grade; the virgin aggregate being placed and spread first, followed by the salvaged material being placed and spread. Mechanical mixing of the virgin aggregate and salvaged material shall be performed such that the required minimum thickness of virgin aggregate is maintained as specified herein.

The method of mixing to be used shall be approved by the Engineer prior to the start of work.

When mixing of the virgin aggregate and salvaged materials is performed by means of a mechanical mixing device prior to placement, samples of the virgin aggregate shall be obtained from a stockpile or belt prior to blending with any salvaged materials. After blending and transport to the roadway area, samples of the blended virgin aggregate and salvaged materials shall be obtained from the windrow.

When mixing of the virgin aggregate and salvaged materials is performed by means of mechanical mixing on grade, samples of the virgin aggregate shall be obtained from the

windrow prior to blending with any salvaged materials. After blending the virgin aggregate and salvaged materials, the contractor shall prepare a windrow area, at a location specified by the Engineer, for the purpose of obtaining samples of the blended material.

Virgin aggregate shall conform to the gradation, plasticity index, fractured coarse aggregate particles, and abrasion requirements for the class of aggregate specified.

Aggregate subbase and aggregate base material composed of virgin aggregate and salvaged materials shall conform to the gradation requirements for the class of aggregate specified. In addition, aggregate subbase and aggregate base material composed of virgin aggregate and salvaged Portland cement concrete shall conform to the plasticity index requirements for the class of aggregate specified.

If salvaged asphaltic concrete material contains underlying base material, the plasticity index of the salvaged material (including the underlying base material) shall conform to the requirements for the class of aggregate specified.

When determining gradation of aggregate subbase or aggregate base material composed of virgin aggregate and salvaged asphaltic concrete materials, drying to a constant weight shall be performed at a temperature of 140 ± 5 degrees F.

If suitable in-place aggregate subbase or aggregate base materials are available, the contractor shall have the option of re-using such materials as virgin aggregate. Should this option be selected, all existing pavement surface materials shall be removed first. The in-place aggregate subbase or aggregate base material shall then be processed and formed into a windrow for acceptance testing prior to use. When tested, the re-used aggregate subbase or aggregate base material shall conform to the gradation, plasticity index, fractured coarse aggregate particles, and abrasion requirements for the class of aggregate specified. Salvaged asphaltic concrete or Portland cement concrete materials shall be blended with the accepted, re-used aggregate subbase or re-used aggregate base materials by means of either a mechanical mixing device prior to placement, or by mechanical mixing on grade, both as specified above. The blended material shall be sampled and tested as specified above.

303-3 Construction Requirements:

303-3.01 Placement:

Aggregate subbases and aggregate bases shall have water added to them and shall be mixed and processed to produce a uniform blend of material before final placement. After processing, the material shall be placed and spread on the prepared subgrade, subbase or base in a uniform layer or layers not exceeding six inches in compacted depth, unless otherwise approved in writing by the Engineer. The method of dumping or spreading shall be determined by the contractor. The spread material shall be free of segregation.

303-3.02 Compaction:

Each layer of aggregate subbase and aggregate base shall be compacted to a density of not less than 100 percent of the maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer.

Each layer of aggregate subbase and aggregate base material consisting in part of salvaged asphaltic concrete or Portland cement concrete material shall be compacted to at least 100 percent of the maximum density determined in accordance with the requirements of the applicable test methods of the ADOT Materials Testing Manual, as directed and approved by the Engineer. Arizona Test Method 235, "Field Density and Moisture Content of Soil and Soil-Aggregate Mixtures by the Nuclear Method", shall not be used to determine the field density or moisture content of aggregate subbase and aggregate base material containing salvaged asphaltic concrete.

When determining maximum density and optimum moisture content for aggregate subbase and aggregate base material composed of virgin aggregate and salvaged asphaltic concrete materials, drying to a constant weight shall be performed at a temperature of 140 ± 5 degrees F.

303-3.03 Finishing:

The final layer of subbase or base shall be finished with equipment capable of shaping and grading the finish surface within the tolerances specified herein.

The finished surface of aggregate subbase or aggregate base shall not vary from the grades established by the Engineer by more than ± 0.04 feet.

The compacted layers of aggregate subbase and aggregate base shall be maintained in a condition satisfactory to receive any subsequent subbase, base or surfacing material or traffic, when so required.

Areas not within the allowable tolerance shall be corrected by scarifying, placing additional material, re-mixing, reshaping and re-compacting to the specified density and surface tolerance.

303-4 Method of Measurement:

The quantity of aggregate subbase and aggregate base will be calculated by the cubic yard in place, using plan dimensions.

303-5 Basis of Payment:

The accepted quantities of aggregate subbase and aggregate base, measured as provided above, will be paid for at the contract unit price per cubic yard for the class or classes involved, complete in place.