

## SECTION 302 - RECYCLED PLANT MIX ASPHALT CONCRETE BASE COURSE

**302.01 Description.** This work includes furnishing and placing recycled plant mix asphalt concrete base (Recycled ACB) according to the contract.

**302.02 Materials.** The recycled ACB includes a mixture of crushed reclaimed asphaltic concrete pavement (RAP), virgin aggregate, and asphalt cement. The Contractor shall select the exact proportion of crushed RAP to virgin aggregate in the mix. The Contractor shall not exceed the proportion of crushed RAP to virgin aggregate:

Proportion	Type Of Mix Plant
30-70	BATCH
40-60	DRIER-DRUM

The Contractor shall conform to the following requirements:

Bituminous Material (Asphalt Cement, Grade AR 60) 702.01

Aggregate for Plant Mix Asphalt Concrete Base Course 703.03

The Contractor shall process the RAP to provide a uniform gradation from fine to coarse. One hundred (100) percent of the RAP shall pass the one and a half (1-1/2) inch sieve. The extracted bitumen content for the crushed RAP shall be not less than two (2) percent when tested according to AASHTO T 164. The Contractor shall handle and size the virgin aggregate material such that the blend of the crushed RAP material and the virgin aggregate material conforms to Subsection 703.03.

The Contractor shall submit for acceptance a job-mix formula for the recycled mixture that the Contractor shall supply. The Contractor shall confirm the job-mix formula, the source of aggregate, grade of bituminous material and the proportion of crushed RAP that the Contractor uses in the mixture. The Contractor shall furnish only one (1) grade of bituminous material and one (1) recycle proportion for the product. The Contractor shall make grade or proportion changes only upon written permission by the Engineer.

The established recycled ACB mixture shall be of optimum cohesion at an air void content of three (3) to six (6) percent and have a minimum stability of thirty-seven (37) when tested according to AASHTO T-246-82. The Contractor shall submit for acceptance a job-mix formula based on tests according to AASHTO T-245 if requested by the Engineer. Subsection 301.02 specifies the job-mix formula. The total amount of bituminous binder in the recycled ACB mixture shall be between four (4) and six (6) percent. The amount added shall be as ordered by the Engineer.

302.02

The Contractor shall not start recycled ACB work on the project nor accept mixtures until: \*

- (1) the Contractor submits samples of the materials intended for use and \*
- (2) the Engineer establishes a satisfactory asphalt content. \*

The Contractor shall submit samples no less than fifteen (15) working days before recycled ACB work. \*

**302.03 Construction Requirements.** Construction methods shall conform to Subsection 301.03, except as specified herein. \*

(A) The Contractor shall thoroughly compact the recycled ACB material according to Subsection 401.03(F) - Compaction immediately upon completion of spreading operation. \*

(B) The equipment shall conform to Subsection 401.03 except as specified herein. \*

**(1) Requirements for Batching Plants.**

(a) The Engineer reserves the right to waive the three (3) bin operation.

(b) The Contractor shall heat the virgin aggregate material to an approximate temperature of four hundred and fifty (450) degrees Fahrenheit to result in a finished mix temperature of approximately two hundred and eighty (280) degrees Fahrenheit. The Contractor shall control mixing and weighing operations to optimize heat transfer from virgin aggregate material to the reclaimed aggregate material. \*

(c) The Contractor shall use an appropriate method to add the crushed RAP material to the heated virgin aggregate material. This method shall allow the crushed RAP material to be added after the virgin aggregate material has left the drier. The method shall provide a positive control on proportioning of the crushed RAP material into the mixture. The crushed RAP material shall:

- 1. feed directly into the weigh hopper or pugmill; \*
- 2. feed to an accuracy of ten (10) percent of the required weight; \*
- 3. Have a maximum moisture content of three (3) percent when mixed with the heated virgin aggregate.
- 4. The Contractor shall retain the recycled ACB mixture in a single silo. \*

(2) Requirements for Drier-Drum Plants. The Contractor shall \*|  
design the cold-feed system to prevent direct flame impingement on \*|  
the recycled crushed RAP material. The Contractor shall conform to \*|  
Subsection 401.03(B)(1)(d)4 - Proportioning for Drier-Drum Mixing \*|  
with Cold-Feed Control.

(3) The Contractor shall equip the paver with an accepted \*|  
electronic screed control device. The electronic device includes a \*|  
grade controlling sensor mounted on each side of the paver. Each \*|  
sensor shall take its grade reference from a ten (10) foot ski for \*|  
the first pass. The Contractor may substitute one (1) ski with a \*|  
joint shoe riding on the finished adjacent pavement for subsequent \*|  
passes. \*|

(C) The criteria on mat thickness shall be as follows: |

(1) The Contractor shall spread and compact the mixture in one (1) \*|  
layer where the required thickness of recycled ACB is six (6) \*|  
inches or less. \*|

(2) The Contractor shall spread and compact the mixture in two (2) \*|  
or more layers of approximately equal thickness where the required \*|  
thickness of recycled ACB is more than six (6) inches. The maximum \*|  
compacted thickness of one (1) layer shall not exceed six (6) \*|  
inches. \*|

(D) The Contractor shall furnish regular ACB conforming to Section 301 \*|  
- Plant Mix Asphalt Concrete Base Course if necessary instead of \*|  
recycled ACB. The Contractor shall notify the Engineer and obtain \*|  
permission before such work. \*|

(E) Brooming off shall conform to Section 310 - Brooming Off. \*|

(F) The Contractor shall cut samples from the compacted pavement for \*|  
-testing within twenty-four (24) hours of lay down. The cut pavement \*|  
samples shall be twelve (12) inches by twelve (12) inches or four (4) \*|  
inch diameter cores, minimum. The Contractor shall take samples of the \*|  
mixture for the full depth of the course at the location as ordered by \*|  
the Engineer. The Contractor shall place and compact new material to \*|  
conform with the surrounding area after taking samples. The Contractor \*|  
consider the cost of sampling and restoring the area incidental to \*|  
recycled ACB. \*|

(G) The Contractor shall apply tack coat to layers of recycled ACB for \*|  
multiple lift construction. Tack coat shall conform to Section 407 \*|  
- Bituminous Tack Coat.

302.04

302.04 Method of Measurement. The Engineer will measure recycled ACB by the ton, cubic yard or square yard. \*|  
\*|

The Contractor shall weigh the quantity of recycled ACB to be measured by the ton according to Section 109 - Measurement and Payment. \*|  
\*|

The Engineer will measure the quantity of recycled ACB to be measured by the cubic yard or square yard in place according to the dimensions shown on the plans or as ordered by the Engineer. \*|  
\*|  
\*|

The Engineer will not measure the furnishing and applying of bituminous tack coat for multiple lift construction for payment. \*|  
\*|

The Engineer will not measure the furnishing and applying of bituminous tack coat for payment if not specified in the proposal. \*|  
\*|

302.05 Basis of Payment. The Engineer will pay the accepted quantities of recycled ACB at the contract unit price per square yard, per cubic yard or per ton. The price shall be full compensation for the completed base, including handling, salvaging, and reprocessing operations of the RAP, bituminous tack coat if not shown in the proposal, materials, equipment, tools, labor, and incidentals necessary to complete the work. \*|  
\*|  
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\*|

The Engineer will not pay the furnishing and applying of bituminous tack coat for multiple lift construction. Consider bituminous tack coat incidental to Recycled ACB. The Engineer will not make separate payment. \*|  
\*|  
\*|

The Engineer will not pay bituminous tack coat if not specified in the proposal. Consider bituminous tack coat incidental to the various contract items if not specified in the proposal. The Engineer will not make separate payment. \*|  
\*|  
\*|  
\*|

The Engineer will make payment under: |

Pay Item	Pay Unit
Recycled Plant Mix Asphalt Concrete Base Course	Ton
Recycled Plant Mix Asphalt Concrete Base Course	Square Yard *
Recycled Plant Mix Asphalt Concrete Base Course	Cubic Yard *