



SOUTH CAROLINA
DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION
P.O. BOX 191
COLUMBIA, S.C. 29202

DANIEL P. FANNING
EXECUTIVE DIRECTOR

INSTRUCTIONAL BULLETIN NO. 94 - 1

SUBJECT: Recycled Asphalt Concrete Mixtures
EFFECTIVE DATE: December 8, 1993
SUPERSEDES: New
RE: Recycled Asphalt Concrete Mixtures Dated November 10, 1993

Beginning with the October 1993 letting, the ISTEA requires the introduction of recycled rubber into asphalt concrete mixtures placed on Federal Aid Projects. The Department can meet a portion of this requirement by placing asphalt concrete mixtures which include Recycled Asphalt Pavement (RAP). In preparation for this requirement, the Department intends to begin requiring the utilization of RAP on projects which include milling as a source of RAP while continuing to study methods for the introduction of recycled rubber into asphalt concrete mixtures. The selection of Asphalt-Rubber Concrete Courses will be determined by others on a project by project basis.

Quantities for RAP mixtures will be determined by Road Design. Its selection is determined by the amount of milling being performed on a contract. If no asphalt pavement is being milled, then no recycled mixtures will be used on that project. When milling of the asphalt pavement is part of the project, then the number of tons of available RAP will be compared to the estimated quantity of asphalt pavement mixtures. The available RAP is calculated by multiplying the number of square yards of milling times the average pound per square yard milled; i.e.: each inch milled is assumed to be 100 pounds per square yard. Divide this product by 2,000 to obtain the number of tons of available RAP. When the depth of milling specified is variable, then use the average depth from the typical section in the plans.

Beginning with the lowest layer of asphalt plant mix specified, compare the available RAP tonnage obtained above to the tons required for the specific layer of asphalt plant mix.

If the RAP tonnage is less than 10% of the tons estimated for that particular layer of plant mix, then that layer of plant mix will not be a recycled mix. At this time, the next highest layer of asphalt plant mix will be compared to the amount of available RAP. This process continues until all available RAP is used or is determined not to have sufficient quantities to use. Layers of asphalt mixtures will be either all recycled mixtures or all virgin mixtures.

When the quantity of available RAP is between 10 and 12 percent inclusive of the layer of plant mix being compared, then the decision to use a recycled asphalt concrete mixture for that layer will be determined by consulting with the Road Construction Engineer. When the quantity of available RAP is over 12 percent, then a recycled asphalt concrete mixture will be selected. When an asphalt pavement layer is determined to be a recycled mixture, the maximum quantity of RAP allowed in the mixture must be computed using the maximum percentages of RAP allowed found in the attached addendum entitled "Recycled Asphalt Concrete Mixtures". If additional quantities of RAP exceed the maximum for the selected recycled layer, then the remaining quantity of RAP should be compared to the next highest layer as described above. If no additional quantities of RAP exceed the maximum for the selected recycled layer, then no other layers will be selected for recycling. There are two types of asphalt plant mixtures that RAP is not approved. They are ACSC Type 1-A and ACSC Type 1-B.

The amount of Asphalt Cement in Paving Mixture will remain the same in recycled mixtures as virgin mixtures. The pay item numbers for the recycled mixtures and rubber mixtures are shown below:

ITEM NO.	LONG DESCRIPTION	UNITS
4011000	Asphalt Cement in Pavement Mixture	Ton
4011100	Asphalt-Rubber Binder	Ton
31020R0	Hot Laid Asph. Agg. Base Cr. - Type 1 Recycled	Ton
31030R0	Hot Laid Asph. Agg. Base Cr. - Type 2 Recycled	Ton
40220R0	Hot Laid Asph. Conc. Binder Cr. - Type 1 - Recycled	Ton
40230R0	Hot Laid Asph. Conc. Binder Cr. - Type 2 - Recycled	Ton
40311R0	Hot Laid Asph. Conc. Surface Cr. Type 1 Recycled	Ton
40320R0	Hot Laid Asph. Conc. Surface Cr. Type 2 Recycled	Ton
40330R0	Hot Laid Asph. Conc. Surface Cr. Type 3 Recycled	Ton
40341R0	Hot Laid Asph. Conc. Surface Cr. Type 4 Recycled	Ton
40350R0	Hot Laid Asph. Conc. Surface Cr. Type 5 Recycled	Ton
4036101	Asphalt-Rubber Concrete Course	Ton

INSTRUCTIONAL BULLETIN NO. 94 - 1
December 8, 1993
Page III

An example of this procedure is attached. Please let me know if you have any questions. Thank you for your attention to this matter.

APPROVED:



E. S. Eargle
Road Engineer-Design