

Engineering Brief # 28

Date: October 21, 1981

In Reply Refer To: AAS-200

Subject: ACTION: Engineering Brief No. 28,
Performance of Recycled Asphalt Pavements
at New England Airports

From: Chief, Engineering and Specifications Division, AAS-200
To: All Regions

Attn: Chief, Airports Division

Engineering Brief No. 14 dated April 15, 1977, described how old asphalt pavements at some New England Airports had been reconstructed by recycling them into a reconstituted base. The attached Engineering Brief No. 28 resulted from a July 1981 inspection of those pavements and reports on their performance.

The purpose of Engineering Briefs is to keep FAA field offices informed of the performance of airport construction techniques which are being tried on a case-by-case basis in one or more regions, but which are not necessarily known to other regions and ADO's. Any comments you care to offer on the performance of recycled airport pavements will be appreciated.

ORIGINAL SIGNED BY:
EDWARD AIKMAN

Attachment

Engineering Brief No. 28
PERFORMANCE OF RECYCLED ASPHALT PAVEMENTS AT NEW ENGLAND AIRPORTS

The subject of Engineering Brief No. 14 dated April 15, 1977, was the Reconstruction of Airfield Pavements from Recycled Materials. One portion of the brief dealt with (Asphalt) Runway Reconstruction Using Reconstituted Base at New England Airports. The report was based on on-site inspections which I made in the summer of 1976 and covered the following locations and runways:

Marthas Vineyard

1. Runway 6-24 and its parallel taxiway - completed in 1975 using reconstituted base.
2. Runway 15-33 - completed in 1976 using reconstituted base.

Rockland, Maine

1. Runway 3-21 - completed in 1974 using reconstituted base.
2. Runway 13-31 - completed in 1970 using conventional 2 to 4 inch overlay.

Beverly, Massachusetts

1. Runway 9-27 which was in very poor condition due to extensive cracking. Was inspected in 1976 prior to rebuilding with reconstituted base in 1977.

In general the procedure used in New England to reconstruct runways using a reconstituted base is as follows:

1. The old asphalt pavement is broken up by scarifiers mounted on bulldozers or graders.
2. The old pavement is reduced to base course gradation by a traveling hammer mill or by running it through a portable crushing plant located on the airport site. Blending of additional material is sometimes required to meet specified gradations.
3. The processed recycled material is placed as a base for runway keel sections 100' wide or full width runway pavements as required.
4. A new 2 to 4 inch asphalt runway surface is placed over the reconstituted base.
5. The outer 25 feet on each side of 150 feet wide runway pavements are usually rehabilitated by repairing cracks and treating the surface with a double treatment aggregate slurry seal.
6. In general the reconstituted base procedure has been limited to airports serving aircraft of 60,000 pounds or less. However, pavements using reconstituted base at Presque Isle, Maine, were designed for 170,00 pound dual-wheel aircraft and are performing satisfactorily.

In July of 1981, I inspected most of the reconstituted base runways and taxiways which have been constructed in New England to see how well they are performing. This included the pavements I had inspected in 1976. The results were as follows:

Marthas Vineyard

Runway 6-24 and its parallel taxiway are in excellent condition after 6 years of service.

Runway 15-33 is in excellent condition after 5 years of service.

(The outer 25' of both runways which were treated with a aggregate slurry seal are in stable condition but are in need of new seal coat.)

Beverly, Massachusetts

Runway 9-27. It was reconstructed with reconstituted base in 1977. After 4 years service it is in good condition and handles aircraft up to 70,000 pounds. The outer 25 foot edges of the runway were not sealed and are in fair condition.

Miscellaneous taxiways - Taxiways Bravo and Delta and a

portion of taxiway Alpha have been reconstructed during the past two years using reconstituted base. They are in excellent condition. The remainder of taxiway alpha was overlaid 8 years ago and has extensive reflective cracking.

Gardner, Massachusetts

Runway 18-36 was reconstructed in 1978 for its full width of 75 feet with a 6" reconstituted base and new 2 inch asphalt surface. Although the pavement is generally in good condition it has developed transverse cracks at about 100 intervals which is unusual for this type of construction. The transverse cracking has been attributed to subsurface drainage conditions rather than the reconstituted base and subsurface runway edge drains have been installed. Their performance is being monitored by airport personnel.

Orange, Massachusetts

Runway 14-32 was reconstructed in 1972 with a 6-inch reconstituted base and new 2-inch asphalt surface. It was the first New England runway to receive a reconstituted base treatment. The pavement condition is fair to good with some cracking occurring in the first 500 feet at either end of the runway. The durability of the reconstituted base is considered to be highly successful in view of runway pavements performance over a 10 year period with severe winter conditions.

Keene, New Hampshire

Runway 14-32 was rebuilt in 1977 using 7 and 8 inch reconstituted base and 3 and 4 new asphalt surface course. The runway is in good condition. Several adjacent taxiways were redone in 1979 using 6 inch reconstituted base and new 4 inch asphalt surface. They are all in excellent condition.

Westfield, Massachusetts - Barnes Municipal Airport

Runway 15-33 was reconstructed in 1975 using 7 and 8 inch reconstituted base and 3 and 4 inch new asphalt surface course. The runway is in good condition. Runway 2-20 and terminal apron areas are in fair condition but with significant bad cracking. The airport management hopes to rebuild the pavements in the near future using the reconstituted base procedure. This desire is the result of the good performance of the reconstituted base on Runway 15-33.

Rockland, Maine

Runway 3-21 was rebuilt in 1974 using reconstituted base and new asphalt surface course as was the terminal apron and adjacent taxiway in 1971. They are all in good condition. However, Runway 13-31 was rebuilt in 1969 with a 2 to 4 inch overlay. Cracks in the original pavement reflected up through the overlay soon after its construction and grass is now growing up through the cracks. The condition of 13-31 is very poor when compared with the reconstituted base pavements on the airport.

In view of the good performance of the reconstituted base pavements at the above mentioned New England Airports, it is recommended that the reconstituted base procedure recycling of old asphalt pavements using the reconstituted base procedure be considered at airports serving aircraft with gross weights of 60,000 pounds or less. Your comments of recycled asphalt pavements serving heavier aircraft will be appreciated.

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