

Engineering Brief # 2

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ENGINEERING BRIEF NO. 2

WIRE COMBED RUNWAY SURFACE AT ATLANTA AIRPORT
(PLASTIC GROOVING)

I was in Atlanta on May 30 on my way back from the inspection of CMI plastic grooving at Lawton, Oklahoma. Prior to this I had talked to Horry Johns (Engineering Branch, Airports Division, Southern Region) about interesting projects in the Southern Region. He said that Runway 9L-27R at Atlanta Airport was being completely rebuilt, a project which would be of considerable interest, but he thought I might be equally interested in the wire-combed surface texture which had been applied during the recent construction of Runway 9R-27L (opened in February 1973).

Horry Johns, Dave Clemens (New Planning Branch Chief in Southern Region), and I were escorted around the runway project site by Jim Tuttle who is project engineer for the consulting firm of Howard, Needles, Tammen and Bergendoff. The runway construction project consists of completely removing old Runway 9L-27R and its parallel taxiway and reconstructing them with a soil cement subbase, a cement treated aggregate base and a 16-inch concrete pavement. The new pavement will receive a wire combed surface treatment similar to the one applied to 9R-27L. Both of these runways are ADAP funded.

The reason for applying the wire combed treatment to the new Runway 9L-27R is the apparent satisfaction of all parties concerned with its performance on 9R-27L. Examination of the existing surface revealed that wire combing results in closely spaced grooves about 1/8" wide, 1/8" deep and a quarter to a half inch apart. Combing is performed while the concrete is still plastic, transverse to runways and taxiways. The combing machine is a component of the paving train which consists of slip form pavers, float finishers, wirecomb machine, and curing machine.

Paving of the runway under reconstruction will begin later this summer. Right now they are removing the old pavement, removing soft spots from the old subgrade, regrading to new subgrade elevations and soil cementing.

The existing wire combed surface on 9R-27L is performing very well. It is now approximately 1 1/2 years old. Apparently, surface friction is good under rain conditions, signs of wear are negligible even in heavy traffic areas, and it is reported that buildups of rubber deposits in touchdown areas are considerably less than on smoother runway surfaces. According to Jim Tuttle the cost of providing the wire combed texture is negligible.

The Southern Region feels that wire combing provides texturing which is about equivalent to that provided by recommended sawed

groove configurations. This is borne out by tests which were conducted by NASA on the wire combed runway surface at Patrick Henry Airport, Newport News, Virginia. The Southern Region also points out that the cost of wire comb finish is about the same as a burlap drag finish. This was demonstrated in the bids on runway 9L-27R where the contractor had the option of providing a burlap drag or wire comb finish to taxiways. The contractor will provide the wire comb finish at no additional cost. This means that wire comb finish can be provided as part of the normal paving operation and is included in the unit price for PCC pavement whereas sawed grooves are bid as a separate contract item and are constructed by a separate procedure which is not part of the normal paving operation. Since the cost of 1/4" by 1/4" sawed grooves is about 15 cents per square foot, savings resulting from the use of wire comb texturing are considerable.

The report on the Patrick Henry wire-combed surface is entitled "Plastic (Wire-Combed) Grooving of a Slip-Formed Concrete Runway Overlay at Patrick Henry Airport- An Initial Evaluation." It does not evaluate the long-range durability of the wire combed surface since tests were performed on the new pavement surface. Experience with heavy traffic on Atlanta's 9R-27L indicates that durability since its opening in February 1973 is good. However, close observation of the performance of 9R-27L surface will be continued so that its durability and effectiveness can be compared in the long range with sawed grooves in concrete pavements.

Comments on your experience with wire combed surfaces will be appreciated.

ORIGINAL SIGNED BY:
EDWARD AIKMAN
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