Runway Pavement "Abraded" at Roswell International Air Center
Skidabrader enhances pavement surface texture to meet FAA friction level standards.
By Dennis Corsi, C.M.

Best known for the 1947 "UFO Incident" where an alien spaceship supposedly crash-landed nearby, Roswell, New Mexico attracts more than 350,000 alien enthusiasts and curious tourists to town every year to visit the UFO Museum and related attractions. Today, however, the Roswell International Air Center (RIAC) is attracting more than just alien spaceships.

Current day activities at the airport are as unique as the folklore surrounding the alien crash-landing and most people are unaware of the wide variety of aircraft using the facility. On a given day, you will not only see American Eagle's regional jets providing commercial passenger to and from Dallas and the proverbial Cessna or Piper on training or recreational flights, but you are also likely to see U.S. Air Force C-5's or C-130's conducting touch and go's, large BLM air tankers flying slurry to a nearby wildfire, or various business jets coming in to the FBO. The long runway length, dry climate and favorable weather attract several aircraft manufacturers who conduct certification testing of new aircraft models including Boeing's 787 Dreamliner and Gulfstream's G650. Dean Baldwin's aircraft painting company has a reputation for high quality services and several aircraft salvage companies work continuously tearing down the many retired narrow and wide-body airliners that sit in dry-storage at the airport. Recently, a massive 222-foot wingspan Russian Antonov AN-124 cargo plane stopped in twice to refuel at RIAC. Roswell has even attracted Red Bull, who utilized RIAC as the launch site for its record-setting, 128,000-foot Stratos jump from the edge of space.


Wide-body Aircraft Storage at Roswell.

RIAC was originally operated as the Roswell Army Air Field during World War II and as Walker Air Force Base during the Cold War. It was once home to the 509th Bombardment Wing under the Air Force's Strategic Air Command. Runway 3-21 is the 13,000 foot long primary runway and Runway 17-35 is the 10,000 foot long crosswind runway situated on more than 4,600 acres of city-owned property are proving to be a magnet to the commercial, private and military aviation industries.

As a result of decades of heavy use, the pavement surface of the portland concrete cement primary runway eventually became polished smooth. So smooth, that friction testing reported friction levels well below minimum acceptable levels. This condition left the City of Roswell in a challenging predicament. It needed to provide a runway surface that met the FAA's minimum friction levels, while simultaneously providing an acceptable, ungrooved runway with sufficient smoothness for aircraft certification testing.

The FAA originally recommended diamond grinding to enhance the surface texture. However, the aircraft manufacturing companies expressed concerns that the longitudinal mirco grooves would render the surface unacceptable for aircraft testing required by the FAA. The FAA went on to agree that as long as the friction levels were brought up to meet required minimums and that the city would agree to maintain the pavement at acceptable friction levels, they would not require grooving or diamond grinding of the runway.

Jennifer Brady, Roswell International Air Center Manager, with Skidabrader equipment.

Roswell Air Center Manager, Jennifer Brady, orchestrated ongoing consultation and coordination among the city, airport management, the FAA, NASA, New Mexico DOT, Armstrong Consultants, Inc. and various aircraft manufacturers to identify and evaluate potential solutions. Various friction treatment methods were discussed, including simple rubber removal, hydro-blasting and shot-blasting. Ultimately, Skidabrader surface texturing was selected as the preferred method for the surface treatment and increasing the runway friction levels.

The next challenge to overcome was funding. Although the Skidabrader treatment itself was a cost effective solution, there were associated costs of remarking the pavement, conducting certified pre- and post-treatment friction level testing, and project oversight. The city agreed to complete the pavement remarking in-house and to provide project oversite during the treatment. The aircraft testing companies, including Boeing, Gulfstream, Learjet/Bombardier and Cessna agreed to support the project financially, but even with their contributions the available funding was still well below the amount needed. At this point, the New Mexico DOT Aviation Division stepped in with a discretionary aviation grant funding 90 percent of the Skidabrader treatment costs. This grant provided the balance of the funds needed to move forward with the project.

First Skidabrader treatment pass on test section.

The project commenced in July 2013. Upon arrival on site, John Swain the Skidabrader project manager, explained, "The Skidabrader machine can be fine-tuned to provide a desired effectiveness by varying the speed of the equipment across the ground. A slower speed, 100 feet per minute for example, provides a heavier or more aggressive treatment than a faster speed across the ground, such as 135 feet per minute." The objective of the treatment was to provide a surface texture that would result in friction levels far enough above the maintenance planning level to meet FAA standards and offer long-term results, while avoiding too rough of a pavement for aircraft certification testing. Hi-Lite Markings, Inc. provided on-site friction testing with their FAA approved Dynatest friction tester. The target was to provide friction levels halfway between the Maintenance Planning Level and the New Design/Construction Level set forth in FAA Advisory Circular AC 150/5320-12C, *Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces*.

The Skidabrader machine was calibrated along 250-foot test sections by varying the Skidabrader ground speed and testing the resulting friction levels. Different speeds were selected for the touchdown zones, which are more heavily utilized and highly contaminated with rubber deposits, and for the center and outer portions of the runway. Using a No. 390 steel shot blast, the Skidabrader machine propels the shot at the pavement, immediately vacuums the shot and pavement residue into its hopper, magnetically separates the shot blast from the

pavement debris, screens and re-uses the suitable shot pellets, sends the unusable shot to a separate hopper and stores the fine powdery concrete residue in another hopper for disposal.

Skidabrader completed the treatment of the 13,000 foot by 100 foot concrete runway keel section over two evenings while the runway was closed. Following the treatment, the initial friction tests indicated the touchdown zones hit the target friction levels. However, the center portion of the runway was still below acceptable friction levels, i.e. the Skidabrader ground speed was just a little too fast in that area. Skidabrader quickly mounted their machinery and within five hours had re-treated the selected areas. Final friction tests showed the target friction levels were met at 10-foot and 20-foot centerline offsets at both 40 and 60 mph.

No. 390 steel shot blast used in the Roswell Skidabrader treatment.

As a result of the Skidabrader treatment, none of the friction levels were found to be below the Maintenance Planning Level for any portion of the runway, meeting FAA runway friction level standards, while at the same time providing a suitable, ungrooved runway for aircraft certification testing. The City of Roswell intends to regularly utilize their own rubber removal machine to maintain the pavements in serviceable condition and minimize rubber build-up on the runway.

Concrete waste material "dust" pile.

The efforts, ideas, and expertise of the entire project team resulted in a cost effective solution, requiring minimum runway down-time, a treatment that was fine-tuned to provide a precise level of surface texturing, and a desired friction level that was acceptable to the FAA. So, if you are looking for an effective method of renewing your pavement surface, Skidabrader is a great choice. And, the next time you are in the Roswell area, stop by to see the interesting aircraft and activities going on…you might even catch a glimpse of an UFO or two.

Dennis Corsi is a principal with Armstrong Consultants, Inc. The firm provides planning, design and construction administration services to airports across the U.S. and abroad.