Airport Case Studies
North Carolina and the Southeast

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Why FDR for airports?

- Accepted method by FAA for airport pavement
- Recently introduced P-207 specification for FDR
Part 4 – Base Courses

Item P-207 In-place Full Depth Reclamation (FDR) Recycled Asphalt Aggregate Base Course

Item P-207 may be used as a base course under flexible and rigid pavements when pavement loads are 60,000 pounds or less, or when used as a base under stabilized bases. With FAA approval, P-207 may be used under pavement loads greater than 60,000 pounds.

This specification is intended for projects that will utilize recycling operations to reuse existing asphalt pavement and aggregate base course to create a recycled asphalt aggregate base course. Refer to P-219 for recycled concrete aggregate base course.

During the design phase the Engineer and Geotechnical engineer must (1) determine the structure of the existing pavement (2) Determine if the existing asphalt surface must be milled off (3) Determine depth of pulverization (4) Determine if mechanical or chemical stabilization is required, and if so, what type and how much stabilizing...
FDR advantages

• Fastest reconstruction method
• Environment for fastest production
  - No traffic control
  - One location
  - Easy access
  - One property owner
• Typically lowest cost base
• Can be overlaid with PCC or asphalt
• Green process
  - Utilizes existing pavement
  - Reduces hauling compared to reconstruction
Special airfield considerations

- Projects can be constructed to tighter schedule than highway work.
- Final grade is more controlled than highway work.
- Automated machine guidance/3D modeling may be required due to grade control and wide area.
- Landside improvements may also benefit from FDR.
Carolinas Reclaimed Asphalt Airports

- Bennettsville SC
- Pageland SC
- Marlboro County SC
- Laurens County SC
- Anderson County SC
- Newberry County SC
- Duplin County NC
- Lincoln County NC
- Montgomery County NC
- Harnett County NC
- Raleigh Executive NC
- Brunswick County NC
- Boone County NC
- Elizabeth City NC
- Charlotte-Douglas NC (Landside)
- Piedmont-Triad NC
- Mt. Airy NC
Raleigh Executive Airport
Raleigh Executive Airport

- Precut entire project using 2 reclaimers
- Adjusted grade and stockpiled excess material onsite
- Reclaimed using one reclaimer
- Averaged 12,000 sy per day
- Placed from 12 to 18 tankers (288 to 432 tons) per day
Raleigh Executive Airport
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Raleigh Executive Airport
Mount Airy/Surry County Airport

- Reconstruction of main runway plus 1200-foot extension
- Precut existing runway 30,000 sy in 20 hours
- Spent 3 days grading to required elevations
- Utilized excess pulverized material from existing runway to construct extension
- Spreading cement, mixing, and compacting conducted over 5 days
- Averaged 12 tankers (300 tons) over cement per day
Mount Airy/Surry County Airport

• Old pavement section
  - 2.5 inches Asphalt in poor condition
  - 6 inches Aggregate Base Course
  - Rated for 12,500 pound single wheel aircraft

• New pavement section
  - 3 inches P-401 Asphalt
  - 12 inches FDR base at 3.5% cement content
  - Rated for 27,000 pound single wheel aircraft and 42,000 pound dual wheel aircraft.
Mount Airy/Surry County Airport
Mount Airy/Surry County Airport
Mount Airy/Surry County Airport

Photo courtesy of PARRISH & PARTNERS
Elizabeth City Coast Guard Air Station/Regional Airport

Elizabeth City, NC
Elizabeth City Airport

- Reconstruction of apron outside terminal building
- Pulverized to a depth of 16 inches to improve stability
- Removed 8 inches to achieve required grade
- Located problem areas, undercut 3.75 feet, and backfilled with sand and 8 inches pulverized material
- Mixed with cement to a depth of 8 inches and compacted
- Used 6 to 8 tankers (144 to 192 tons) of cement daily
- Overlaid with 9 inches of PCC pavement
Airports in Virginia

• Lake Anna Airport
• Manassas Airport
• Stafford County Airport
• Dulles International Airport
• Richmond Airport
• Williamsburg/Newport News Airport
Military Air Fields

• Andrews Air Force Base
• Dover Air Force Base
• Camp Lejeune Marine Air Station