

# Overview: FAA Guidance Part I

**Concrete Airport Pavement Workshop  
Right Choice, Right Now**

**November 7-8, 2012  
Atlanta, GA**

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**Federal Aviation  
Administration**



# Presentation Objectives

- FAA Airports Safety & Standards Engineering Division
- Guidance Available at FAA Airports
- Summarize / Provide information on Pavement related Advisory Circulars (AC) and Engineering Briefs (EB)
- Priorities and Direction for FY13 and Beyond
- Availability of Research and Development Products



# Airport Engineering Division AAS-100

- Division Manager **John Dermody**
- Assistant Manager (primarily for Airports GIS)
- Administrative Assistant
- National Resource Expert on Air Space
- ~~7~~<sup>5</sup> Civil Engineers ~~2~~<sup>1</sup> (pavements)
- 3 Electrical/Electronics Engineers
- ACRP Research Engineer (Mechanical)
- Airport Safety Data Program (Program Manager)
- Airports GIS (Computer Scientist)
- Technical Support Contractor (ISI)



# FAA Guidance

- **FAA guidance is part of the authorizing legislation for airport development using Federal funds.**
- **FAA airport design, construction, and maintenance guidance are contained in Advisory Circulars, the 150's series.**
- **Interim FAA airports engineering guidance is provided in Engineering Briefs.**
- **FAA airport guidance is available from FAA web sites: <http://www.faa.gov/arp/>**



# Establishing or Changing Guidance

- **HQ Office Initiates and Prepares Draft.**
- **Review by HQ Airports Offices.**
- **Revised Draft Sent for Concurrent Review to FAA Regions and Industry.**
  - ✓ The Boeing Company and the Airports Consultants Council (ACC) Receive Copies of Draft Changes and Reviews.
  - ✓ Tri-Service Airfield Pavement Working Group Team and ASCE T&DI APC Reviews Draft Changes.
- **Comments Accepted for 60 days (General).**
- **Change Finalized.**
- **FAA Legal Review, Office Director Signs.**



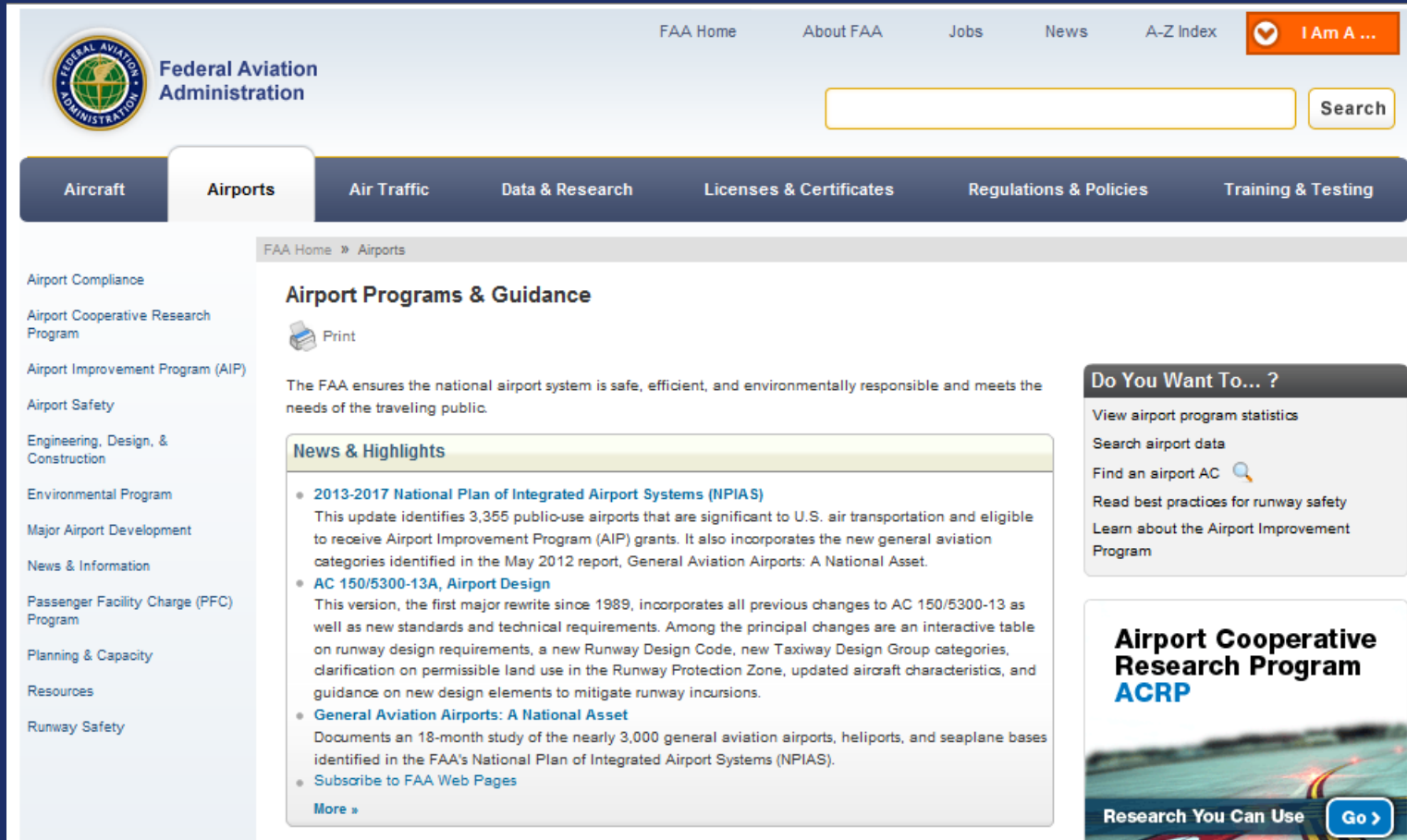
# What Delays a Change

- **Non-Concurrence from HQ Offices.**
- **Non-Concurrence from FAA Regions.**
- **Inability to Reconcile Comments from Boeing, ACC, Peer Review Associations, or Industry.**
- **Substantive Alterations to a Proposed Change May Require New Draft.**



# Airports Web Site

<http://www.faa.gov/arp/>



The screenshot shows the FAA Airports Web Site interface. At the top left is the FAA logo and the text "Federal Aviation Administration". To the right are navigation links: "FAA Home", "About FAA", "Jobs", "News", "A-Z Index", and a dropdown menu "I Am A ...". Below these is a search bar with a "Search" button. A dark blue navigation bar contains tabs for "Aircraft", "Airports" (which is selected), "Air Traffic", "Data & Research", "Licenses & Certificates", "Regulations & Policies", and "Training & Testing".

Below the navigation bar, the breadcrumb "FAA Home » Airports" is visible. The main content area is titled "Airport Programs & Guidance" and includes a "Print" icon. The text states: "The FAA ensures the national airport system is safe, efficient, and environmentally responsible and meets the needs of the traveling public."

A "News & Highlights" section lists three items:

- **2013-2017 National Plan of Integrated Airport Systems (NPIAS)**  
This update identifies 3,355 public-use airports that are significant to U.S. air transportation and eligible to receive Airport Improvement Program (AIP) grants. It also incorporates the new general aviation categories identified in the May 2012 report, General Aviation Airports: A National Asset.
- **AC 150/5300-13A, Airport Design**  
This version, the first major rewrite since 1989, incorporates all previous changes to AC 150/5300-13 as well as new standards and technical requirements. Among the principal changes are an interactive table on runway design requirements, a new Runway Design Code, new Taxiway Design Group categories, clarification on permissible land use in the Runway Protection Zone, updated aircraft characteristics, and guidance on new design elements to mitigate runway incursions.
- **General Aviation Airports: A National Asset**  
Documents an 18-month study of the nearly 3,000 general aviation airports, heliports, and seaplane bases identified in the FAA's National Plan of Integrated Airport Systems (NPIAS).

A "Subscribe to FAA Web Pages" link is also present. A "More »" link is at the bottom of the list.

On the right side, there is a "Do You Want To... ?" section with links to "View airport program statistics", "Search airport data", "Find an airport AC" (with a magnifying glass icon), "Read best practices for runway safety", and "Learn about the Airport Improvement Program".

At the bottom right is a banner for the "Airport Cooperative Research Program ACRP" with the text "Research You Can Use" and a "Go >" button.

On the left side, a vertical menu lists various topics: Airport Compliance, Airport Cooperative Research Program, Airport Improvement Program (AIP), Airport Safety, Engineering, Design, & Construction, Environmental Program, Major Airport Development, News & Information, Passenger Facility Charge (PFC) Program, Planning & Capacity, Resources, and Runway Safety.



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# Availability of Airport-Related Research and Development Products

## Advisory Circular 150/5000-15A

- **PURPOSE.** This advisory circular (AC) explains how to obtain the latest airport-related research and development (R&D) products funded by the Federal Aviation Administration's (FAA's) Airports Organization.
- **SCOPE.** This AC describes R&D products from:
  - The FAA's Airport Technology Research and Development Branch,
  - The Airport Cooperative Research Program (ACRP),
  - The Innovative Pavement Research Foundation (IPRF), and
  - The Airfield Asphalt Pavement Technology Program (AAPTTP).





# Airfield Concrete Pavement Technology Program (ACPTP)

ACPTP mission was to provide a unified means of building resources, developing strategies, and implementing programs to address concrete pavement research, technology advancement and transfer, and public education.

Focused on the inherent economic efficiencies, safety, and quality-of-life of Portland cement concrete pavements.

The ACPTP was established through Cooperative Agreement by the **Innovative Pavement Research Foundation (IPRF)** in 2001 and completed in September 2011; no additional RFPs are planned; all reports will continue to be available on the IPRF website.

**Note: This program is/has always been referred to as the I P R F**



# IPRF

# <http://www.iprf.org/>

| Project | Title   |
|---------|---|
| 01-01   | Best Practices for Airport Portland Cement Concrete Pavement Construction   |
| 01-02   | Improved Concrete Overlay Design Parameters For Airfield Pavements  |
| 01-03   | Innovative Rehabilitation of Pavement for Light-Load Aircraft   |
| 01-04   | Strength Measurements Using Maturity for Portland Cement Concrete Pavement Construction at Airfields                      |
| 02-01   | Stabalized and Drainable Base in Rigid Pavement Systems   |
| 02-02   | Acceptance Criteria of Airfield Concrete Pavement Using Seismic and Maturity Concepts                                     |
| 02-03   | Accelerated Practices for Airfield Concrete Pavement Construction   |
| 02-04   | Airfield Concrete Pavement Smoothness - A Reference   |
| 02-05.1 | Evaluation of Alkali Silica Reactivity of Mineral and Aggregate Using Dilatometer Method                                  |
| 03-01   | Constructing In-Pavement Lighting, Portland Cement Concrete Pavement  |
| 03-02   | Mitigation of ASR In Concrete Pavement - Combined Materials Testing   |
| 03-03   | Design and Construction of Concrete Pavement for Aircraft De-icing Facilities   |
| 03-04   | Precision Statement for ASTM C- 78, Flexural Testing, Airfield Concrete   |
| 03-05   | Evaluation, Design and Construction Techniques for the Use of Airfield Concrete Pavement as Recycled Material for Subbase |
| 03-06   | Using Maturity Testing for Airfield Concrete Pavement Construction and Repair   |
| 03-09   | Potential for Acceleration of ASR in the Presence of Pavement Deicing Chemicals   |
| 03-10   | Field Studies in Mitigating ASR in Existing Pavement, Topical Application of Lithium Programs                             |
| 04-01   | A Proposed Specification for Construction of Concrete Airfield Pavement   |
| 04-02   | Improved Overlay Design Parameters for Concrete Airfield Pavements  |
| 04-06   | Lithium Admixtures (LiNO <sub>3</sub> ) And Properties of Early Age Concrete  |
| 04-08   | Mitigation of ASR in the Presence of Pavement Deicing Chemicals   |
| 05-01   | Airfield Marking Handbook   |
| 05-02   | Joint Load Transfer in Concrete Airfield Pavements  |
| 05-03   | Highway Materials—Concrete Airfield Pavement  |
| 05-07   | Performance of Concrete in the Presence of Airfield Pavement Deicers and Identification of Induced Distress Mechanisms    |
| 05-10   | Evaluation of Lab and Field Performance of LithMelt Deicer  |
| 06-01   | Using Design/Build Acquisition for Airfield Pavements   |
| 06-02   | Concrete Mixes Using Flyash   |
| 06-03   | Improved Overlay Design Parameters for Concrete Airfield Pavements – SCI Validation                                       |
| 06-05   | Role of Dirty Aggregates in the Performance of Concrete Exposed to Airfield Pavement Deicers                              |
| 06-06   | Materials Related Distress and Projected Pavement Life Concrete Airfield Pavement   |



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# Pavement related Advisory Circulars FY2011 ~ FY2012

- 5100-13B**    **DEVELOPMENT OF STATE STANDARDS FOR NONPRIMARY AIRPORTS [8/31/2011]**
- 5335-5B**    **STANDARD METHOD FOR REPORTING AIRPORT PAVEMENT STRENGTH (PCN) [8/31/2011]**
- 5370-10F**    **STANDARD FOR SPECIFYING CONSTRUCTION OF AIRPORTS [9/30/2011]**
- 5370-11B**    **USE OF NONDESTRUCTIVE DEVICES IN THE EVALUATION OF AIRPORT PAVEMENTS [9/30/2011]**
- 5370-15B**    **AIRSIDE APPLICATIONS FOR ARTIFICIAL TURF [9/30/2011]**
- 5370-17**    **AIRSIDE USE OF HEATED PAVEMENT SYSTEMS [3/29/2011]**



# Pavement related Advisory Circulars FY2012 Work ~ FY2013 AC Plan

**5370-10 STANDARD FOR SPECIFYING CONSTRUCTION OF AIRPORTS**

**5335-05 STANDARD METHOD FOR REPORTING AIRPORT PAVEMENT STRENGTH (PCN)**

**5380-06 GUIDELINES AND PROCEDURES FOR MAINTENANCE OF AIRPORT PAVEMENTS**

**5370-14 HOT MIX ASPHALT PAVING HANDBOOK**

5370-11 USE OF NONDESTRUCTIVE DEVICES IN THE EVALUATION OF AIRPORT PAVEMENTS

5320-17 AIRFIELD PAVEMENT SURFACE EVALUATION AND RATING (PASER) MANUALS

5380-07 PAVEMENT MANAGEMENT SYSTEM



# Advisory Circular 150/5370-10G

## FY2012 Work ~ FY2013 AC Plan

### AC 150/5370-10 STANDARD FOR SPECIFYING CONSTRUCTION OF AIRPORTS

Complete Draft end of 2<sup>nd</sup> Quarter FY13  
Published end of FY2013

|                |   |                     |
|----------------|---|---------------------|
| <b>5335-05</b> | <b>STANDARD METHOD FOR REPORTING AIRPORT PAVEMENT STRENGTH (PCN)</b>  | <b>FY2013</b>       |
| <b>5380-06</b> | <b>GUIDELINES AND PROCEDURES FOR MAINTENANCE OF AIRPORT PAVEMENTS</b> | <b>DRAFT FY2013</b> |
| <b>5370-14</b> | <b>HOT MIX ASPHALT PAVING HANDBOOK</b>                                | <b>FY2013</b>       |
| 5370-11        | USE OF NONDESTRUCTIVE DEVICES IN THE EVALUATION OF AIRPORT PAVEMENTS  | FY2014              |
| 5320-17        | AIRFIELD PAVEMENT SURFACE EVALUATION AND RATING (PASER) MANUALS       | FY2014              |
| 5380-07        | PAVEMENT MANAGEMENT SYSTEM  | FY2014              |



# **Priorities and Direction FY13 and Beyond**

**ONE Standard Guide Specification for  
Airfield Pavement**

**Design Life for Airfield Pavement  
20 years to 40 years**

**FY13 Work – Pavement ACs**



# **ONE Standard Guide Specification for Airfield Pavement**

**We are Changing Existing Advisory Circular Format to the Construction Specifications Institute (CSI) Format and following / adopting Unified Facilities Guide Specifications (UFGS) format.**

**Include all Parts of AC 150/5370-10**

**Support garnered from FAA personnel, Airport Consultants Council (ACC), ASCE T&DI Airfield Pavement Committee, and representatives from the Concrete and Asphalt Associations**

**Ongoing efforts of Tri-Service / FAA Airfield Pavements Engineers  
Formal meetings during the Annual Meeting at TRB**



# Design Life for Airfield Pavement 20 years to 40 years





# Design Life for Airfield Pavement 20 years to 40 years

## Initiated in FY 2011

2011 ARP Business Plan Core Activity for Airport Standards  
Draft Project Management Plan by ANG-E26 Developed

## Work started in FY 2012

Final Draft Project Management Plan Approved by AAS-100  
REDAC Briefed at Spring and Fall Meetings  
Technical Support and Support of Needed Funding Levels  
Outreach – Briefs – Presentations

## Funding starts in FY 2013

AAS-100 Memo Requesting Support to Complete “Fact Finding Tour”



# Multi Year Plan for AC 150/5370-10

**FY 2011**      **'F'**

**FY 2012**      **Meetings, Comments, Presentations;  
Industry, Suppliers, Agencies, Internal;  
'G' delayed due to funding**

**FY 2013**      **'G'**

**FY 2014**      **Other ACs closely related;  
Daft CSI format – long review time to assure  
technically correct from one format to the other**

**FY 2015**      **CSI Format**



# FAA AC 150/5370-10F

## PRINCIPAL CHANGES – P-501

### **P-501-3.4. Concrete Mix Design Laboratory**

Contractor's laboratory used to develop the concrete mix design shall meet the requirements of ASTM C 1077.

Laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for developing the concrete mix design must be listed on the lab accreditation.

A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Engineer prior to start of construction

### **P-501-5.1. Acceptance Testing Laboratory – Same**



# FAA AC 150/5370-10F

## PRINCIPAL CHANGES – P-501 (& P-610)

Updates information on testing protocol of aggregate for reactivity and use of cementitious materials related to reactivity requirements

(1) 501-2.1 and 610-2.1: Reactivity tests will be tested for expansion at 28-days (30-days from casting).

(2) 501-2.1: Deleted Engineers Note referring to Engineering Brief No. 70

(3) 501-2.3 and 610-2.6: Additional requirements added for use of Class F fly ash when mitigating alkali-silica reactivity and deleted use of Class C fly ash.



# P-501 ~ ASR Related Changes

## 501-2.3 CEMENTITIOUS MATERIALS

a. Flyash or Natural Pozzolan. Flyash shall meet the requirements of ASTM C 618, **Class F or N** with the exception of loss of ignition, where the maximum shall be less than 6 percent. [The following tests in Supplementary Optional Physical Requirements of Table 3 contained in ASTM C 618 shall apply: Select the appropriate tests when project specific conditions or exposures dictate (Increase of drying shrinkage of mortar bar); (Effectiveness in Contributing to Sulfate Resistance Procedure A) or (Effectiveness in Contributing to Sulfate Resistance Procedure B). Select either sulfate resistance test, but not both.] **Class F or N flyash for use in mitigating alkali-silica reactivity shall have a Calcium Oxide (CaO) content of less than 13 percent and a total equivalent alkali content less than 3 percent.** Flyash such as is produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C-618 reports for each source of flyash proposed in the mix design, and shall furnish each additional report as they become available during the project. The reports can be used for acceptance or the material may be tested independently by the Engineer.



# P-501 ~ ASR Related Changes

## 501-2.3 CEMENTITIOUS MATERIALS

a. Flyash or Natural Pozzolan.

\*\*\*\*\*

**Class C flyash may be proposed on a case-by-case basis where innocuous aggregates are used and the pavement is not subjected to airfield pavement de-icers. Any use of Class C flyash is subject to the approval of the engineer and FAA. A modification to standards will be required.**

\*\*\*\*\*



# FY13 Work – Pavement ACs

## 5370-10G

### **Modify changes from last relative to ASR**

Calcium Oxide (CaO) content of less than 13 percent

Total Equivalent Alkali content less than 3 percent

? Industry problem – new regulations for scrubbing coal stacks (source of flyash) causes a dramatic increase in Alkali – so high, flyash may not be able to be used in the future - - - VERY NEAR future. Therefore 3% will change but not sure what or how.

### **Class C flyash may be proposed**

Use Chart/Table in UFGS which eliminates discussing C, F, N



# FY13 Work – Pavement ACs 5370-10G

... P-501 ...



Modify changes from last relative to ASR

Total Equivalent Alkali content < 3 percent

Use Chart/Table in UFGS eliminates discussing C, F, N

Aggregate Optimization (Alternate “combined” grading )

Flex Strength: Beam/Beam or Beam/Cylinder Correlations

??





# Thank You

## Questions / Discussion

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