

# FAA AC 5370-10

## Standards for Specifying Construction of Airports

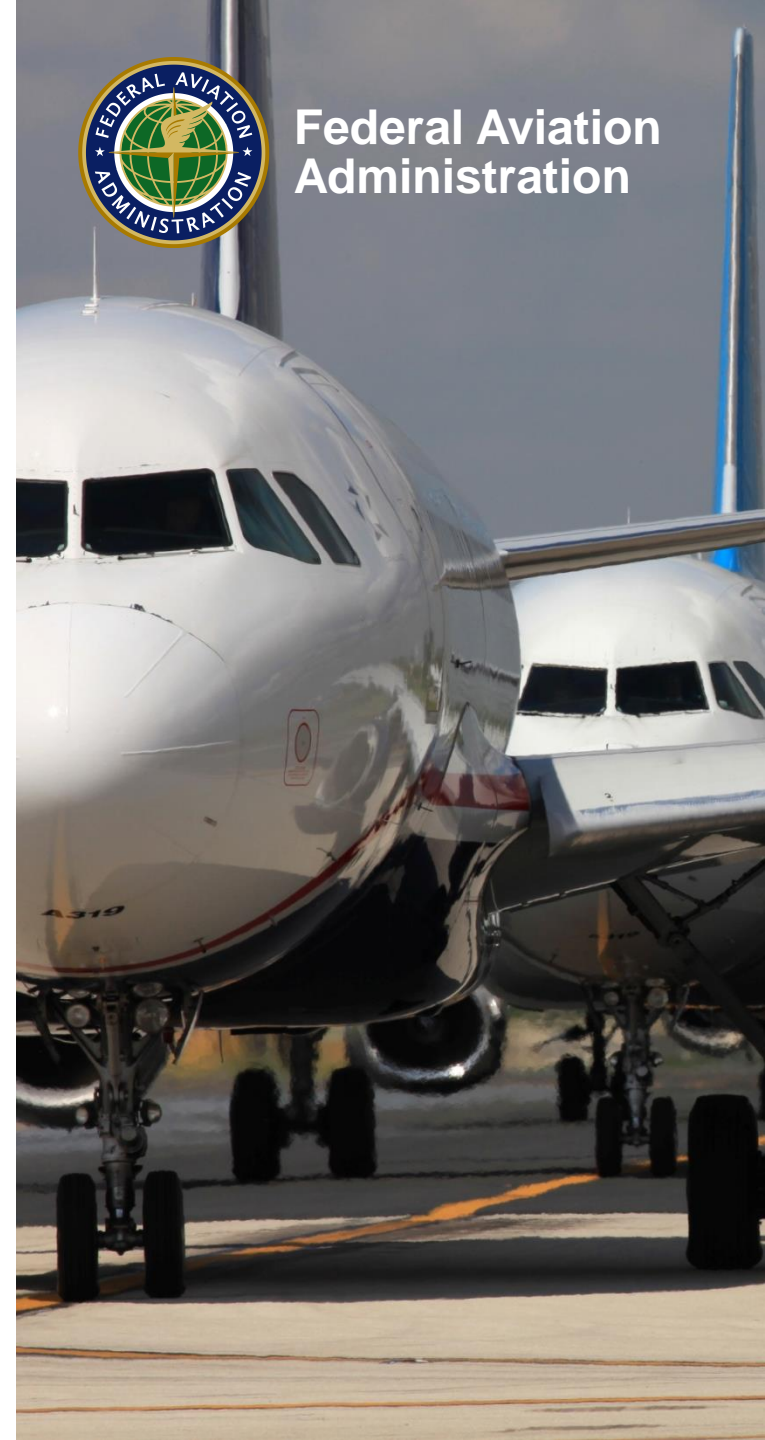
### FAA Pavement Specifications State Standards & State Specifications

**Cindy Hirsch P.E.**  
**Lead Civil Engineer**  
**FAA Northwest Mountain Region Safety  
and Standards Branch**

**Prepared with Doug Johnson, P.E.**  
**Sr. Civil Engineer-Paving**  
**FAA Airport Engineering, AAS-100**



**Federal Aviation  
Administration**



# Overview

## Editing FAA Specifications

- Editing vs MOS

## State Specifications

## Quality Control

- Purpose and Objectives

## Project Laboratories

- QC vs QA

## P Spec Highlights



# FAA Construction Specifications

- **AC 150/5370-10G**  
**Standards for Specifying Construction of Airports**

---

**Subject:** Standards for Specifying  
Construction of Airports

**Date:** 7/21/2014

**AC No:** 150/5370-10G

**Initiated by:** AAS-100

**Change:**

---

1. **Purpose.** The standards contained in this advisory circular (AC) relate to materials and methods used for the construction on airports. Items covered in this AC include general provisions, earthwork, flexible base courses, rigid base courses, flexible surface courses, rigid pavement, fencing, drainage, turf, and lighting installation.

2. **Application.** The Federal Aviation Administration (FAA) recommends the guidelines and specifications in this AC for materials and methods used in the construction on airports. In general, use of this AC is not mandatory. However, use of this AC is mandatory for all projects funded with federal grant monies through the Airport Improvement Program (AIP) and with revenue from the Passenger Facility Charge (PFC) Program. See Grant Assurance No. 34, Policies, Standards, and Specifications, and PFC Assurance No. 9, Standards and Specifications.

**Mandatory on federally funded projects**

**Developed specifically for use on airports**



Federal Aviation  
Administration

# FAA AC 150/5370-10

## Starting Point for Project Specifications

3. **Developing Project Specifications.** The standards in this AC may be used to develop construction specifications for an individual project or for a particular State.

For individual projects, the standards must not be made a part of a contract merely by reference and pertinent portions of the specifications must be copied into the contract documents. For State specifications, the standards should be developed into specifications for a particular State. On approval by the FAA, these State specifications may be incorporated in construction contracts by reference.

Modifications to standards requests contained in this AC must meet the requirements of Order 5300.1, Modifications to Agency Airport Design, Construction, and Equipment Standards.

When preparing construction contracts for AIP or PFC projects or for grant obligated airports, the user should review the contract provisions, found at the FAA's Procurement and Contracting Under AIP Airports website <http://www.faa.gov/airports/aip/procurement/>, to obtain the mandatory provisions (wage, labor, Disadvantaged Business Enterprises (DBE), Equal Employment Opportunity (EEO), etc.) that must be included in the contract proposals. Additional contract clauses may be required to comply with local and state laws relating to advertising, awarding, and administering construction contracts.



# MOS must be approved by FAA



RESUBMIT



**You don't have to file a MOS  
Following AC 150/5370-10  
is ALWAYS\* AIP ELIGIBLE!**

**\*Provided procurement in accordance with Federal Requirements**



**Federal Aviation  
Administration**

# Pavement Specifications 'P Specs'

- **All include option in note to engineer regarding use of State highway department specifications for materials**
- **IPRF 05-03 Highway Materials**
- **AC 150/5100-13 Development of State Standards for Nonprimary Airports**
  - Addresses how to develop and use state standards and state specifications for materials
- **Note there is a difference between State Standards for Airport Pavements and State Specifications for Highway Pavements.**



# State Standards for Non Primary Airports

- 49 USC 47105

## Gives FAA authority to approve State Standards for Airport Development

information the Secretary prescribes.

is

(c) STATE STANDARDS FOR AIRPORT DEVELOPMENT.—The Secretary may approve standards (except standards for safety of approaches) that a State prescribes for airport development at nonprimary public-use airports in the State. On approval under this subsection, a State's standards apply to the nonprimary public-use airports in the State instead of the comparable standards prescribed by the Secretary under subsection (b)(3) of this section. The Secretary, or the State with the approval of the Secretary, may revise standards approved under this subsection.

et

es

d-

e-

ll

e-

ie

3F

3F

3F

3F

3F



# State Specifications for Airfield Pavement

- **49 USC 47114 Allows the Secretary to permit the use of State Highway Specifications for airfield pavement construction at non primary airports with runways 5,000 feet or shorter serving aircraft that do not exceed 60,000 pounds gross weight**

part in those respective jurisdictions.

(5) USE OF STATE HIGHWAY SPECIFICATIONS.—

(A) IN GENERAL.—The Secretary may permit the use of State highway specifications for airfield pavement construction using funds made available under this subsection at nonprimary airports with runways of 5,000 feet or shorter serving aircraft that do not exceed 60,000 pounds gross weight if the Secretary determines that—

(i) safety will not be negatively affected; and

(ii) the life of the pavement will not be shorter than it would be if constructed using Administration standards.

(B) LIMITATION.—An airport may not seek funds under this subchapter for runway rehabilitation or reconstruction of any such airfield pavement constructed using State highway specifications for a period of 10 years after construction is completed unless the Secretary determines that the rehabilitation or reconstruction is required for safety reasons.

(6) INTEGRATED AIRPORT SYSTEM PLANNING

- This 'permits' the FAA to 'allow' the use of State Highway Specs
- FAA MOS order clarifies how may be used



Federal Aviation  
Administration



# Standards vs Specifications

- **State Standards for Airport Pavements**
  - Standards developed **by state** for use at any non primary airport within state
  - Once developed and approved for use, may be used at non primary airports within the state
  
- **Standard Specifications for Highway Pavement**
  - With appropriate clarifications may follow state highway specifications for materials, construction and acceptance
  - Incorporation of materials meeting state specifications for an individual project



# State Specifications

- **Have been permitted for < 60,000 since 1976**  
(first under ADAP, continued with AIP, expanded when NP Entitlement emerged)
- **Use requires Specification developed in accordance with AC 150/5100-13**
- **State Specifications are set up with State DOT being owner and contracting officer**
- **Incorporation of State Specifications for Pavements requires more than just saying ‘use state specs’**



# AC 5100-13B Development of State Standards for Nonprimary Airports

- **Both AC 5370-10 and AC 5100-13 very clear that any state standards for airports should start from 5370-10**
- **Do Not Just Reference 'follow DOT specification'**

8/31/2011

AC 150/5100-13B

(1) FAA Standards. These standards are contained in AC 150/5370-10, are general in scope, and serve as a guide to develop specifications for specific projects. They are not limited to construction of pavements. It is recommended that the format, language, and options of these standards be used to the maximum extent possible in developing State standards and that modifications and changes be made if necessary to adjust to local conditions, policies, or available materials. For runways longer than 5,000 feet or those that will receive use by aircraft exceeding 60,000 pounds gross weight, FAA standards apply.

# AC 5100-13B

## Development of State Standards for Nonprimary Airports

- **AC presents guidelines for the development of State Standards for Airport Projects**
- **Submitted in accordance with Order 5100.1**
- **Once approved the Standards for Airport Development developed by State may be used by reference at nonprimary airports in state**



# AC 150/5100-13B

## State Specifications for Nonprimary Airports

- **Airport Pavements and Highway Pavements**
- **Highway:**
  - DOT owns and maintains
  - Channelized High Volume
  - Structural failure
  - FOD not a major issue
- **Airport:**
  - Individually owned and maintained
  - High Wheel and Gross Loading
  - Environment & Climate may be major distress
  - FOD major issue



# AC 5100-13B

## State Highway Specifications

- **State Highway Specifications**
  - Developed for highway loads not airport
  - May not seek AIP funds for rehabilitation or reconstruction for 10 years after construction (grant special condition)
  - May need to increase pavement layer thickness's
- **Will require a MOS to utilize in accordance with FAA Order 5100.1**



# AC 5100-13B Development of State Standards for Nonprimary Airports

- **FAA Order 5300.1 Modifications to Agency Airport Design, Construction and Equipment Standards**
  - Details on process for approval of State Standards
  - Submit through appropriate FAA Airport District Office or Region
  - Proposed Pavement Sections
  - Quality Control and Quality Acceptance Plans
  - Method of Measurement
  - Basis of Payment
- **Requires approval AAS-1 Director of Airport Safety and Standards**
- **Must be updated periodically and reflect current FAA standards**



# State Specifications for Material

- **Airports serving aircraft 12,500 lbs or less**
  - No MOS since our spec is not required
- **Airports serving aircraft >12,500 lbs but < 60,000**
  - MOS approval for materials for use of state materials current MOS procedure as outlined in Order 5100.1 (Regional Approval)
- **Airports serving aircraft > 60K**
  - No State materials
  - MOS approval follow Order 5100.1





# QC & QA Laboratories

- **P401/501**
  - QC Laboratory ‘shall meet’ requirements of ASTM D3666 or C1077
  - QA Laboratory ‘shall be accredited’
- **Shall Meet:** Equipment calibrated, appropriate facilities and supplies
- **Shall be accredited:** Testing organization must have accreditation from a national authority
  - Currently only 3: AASHTO, CMEC or ANAB
- **QC and QA by separate personnel on separate equipment**



# Pavement Specifications 'P Specs'

Table 1-1. Typical Pavement Specifications for Pavement Layers<sup>1</sup>

Pavement Layer	Flexible Pavement	Rigid Pavement
Surface Course	P-401/P-403 <sup>2</sup>	P-501
Stabilized Base Course	P-401/403 P-304 <sup>3</sup> P-306 <sup>3</sup>	P-401/403 P-304 <sup>3</sup> P-306 <sup>3</sup>
Base Course	P-209 <sup>4</sup> P-208 <sup>5</sup> P-211	P-209 <sup>4</sup> P-208 <sup>5</sup> P-211
Subbase Course	P-154 P-213 <sup>6</sup> P-219 <sup>7</sup>	P-154 P-301 <sup>6</sup> P-219 <sup>7</sup>
Subgrade	P-152 P-155 P-157 P-158	P-152 P-155 P-157 P-158



# Pavement Specifications 'P Specs'

## Notes:

1. Refer to AC 150/5370-10, *Standards for Specifying Construction of Airports*, for the individual specifications.
2. P-601 may be used for locations that need a fuel resistant surface.
3. P-304 and P-306 should be used with caution because it is susceptible to reflective cracking.
4. P-209, Crushed Aggregate Base Course, used as a base course is limited to pavements designed for gross loads of 100,000 pounds (45 360 kg) or less.
5. P-208, Aggregate Base Course, used as base course is limited to pavements designed for gross loads of 60,000 pounds (27 200 kg) or less.
6. Use of P-213 and P-301 as subbase course is not recommended where frost penetration into the subbase is anticipated.
7. P-219, Recycled Concrete Aggregate Base Course, may be used as base depending on quality of materials and gradation.



# Pavement Specifications 'P Specs'

- **P401/P403**
  - Either Marshall or Gyratory (must select one)
  - Starting point common interstate binder grade
    - +1 bump  $>12.5$  and  $< 100$ ,
    - +2  $> 100$
- **RAP ok in base, shoulders,**
- **No RAS**
- **No RAP in Surface**
  - FAA currently doing research on RAP & WMA at NAPMRC
  - Anticipate Preliminary Results FY 18



# P401 Hot Mix Asphalt (HMA)

- **Avoid thin lifts....Durability Issues**
- **Thicker lifts hold temperature longer easier to obtain compaction prior to cooling**

\*\*\*\*\*

The aggregate gradation shall be specified by the Engineer from the gradations shown in this note. The gradation shall be inserted into Table 3. Asterisks denote insert points. *The aggregate size should be no greater than 1/4 the lift thickness to be constructed. (language w/ 7/15)*

FAA HQ recommended minimum lift thickness are: 3 in for Gradation 1; 2 in for Gradation 2; 1.5 in for gradation 3 (only for leveling, shoulders).

Per 401-3.2 Job Mix formula – in accordance w/ Asphalt Institute MS-2.



# P401 / P403

- MTV Required on RW & TW for >100K
- At smaller airports need to make sure pavement structure can accommodate construction equipment
  - Trucks,
  - Milling machine,
  - Paving Machine



# P401 / P403

- **P401-4.13 Joints/403-4.12 Joints**

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C); or are irregular, damaged, uncompacted or otherwise defective shall be cut back 3 inches (75 mm) to 6 inches (150 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material shall be removed from the project.



# Future AC Updates

**AC 150/5370-10H FY 18**



Federal Aviation  
Administration



# Questions

**Doug Johnson, P.E.**

**[Doug.johnson@faa.gov](mailto:Doug.johnson@faa.gov)**

**(202) 267-4689**

**Greg Cline, P.E.**

**[Gregory.cline@faa.gov](mailto:Gregory.cline@faa.gov)**

**(202) 267-8814**



**Federal Aviation  
Administration**