

FAA Standard Specifications & Their Application to GA Airports

AC 150/5370-10 and 150/5100-13

Presented to: ACPTP GA Concrete Workshop

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Date: February 24, 2025



**Federal Aviation
Administration**

NPIAS Airports

Table 2: Activity and Development at NPIAS Airports

Airport Category	Number of Airports	Percentage of Airports	Percentage of Paved Runways	Percentage of 2021 Total Enplanements	Percentage of All Active GA Aircraft	Percentage of Total Operations	Percentage of NPIAS Cost
Large Hub	30	1	2	69	1	10	32.0
Medium Hub	35	1	2	18	2	5	14.9
Small Hub	80	2	4	9	5	7	9.7
Nonhub	238	7	9	3	10	10	12.2
Primary Subtotal	383	11	17	99	18	32	68.8
National	107	3	4		12	11	5.3
Regional	501	15	17		22	25	9.0
Local	1,179	36	34		20	23	10.3
Basic	904	28	23		3	7	6.0
Unclassified	213	7	5		1	2	0
Nonprimary Subtotal	2,904	89	83	0.07	58	68	30.6
Total NPIAS Airports	3,287	100	100	100	76	100	100

¹Based on active general aviation fleet 204,380 aircraft in 2020. The remaining aircraft are based at other, non-NPIAS airports.



Regulatory Authority for FAA Specifications

49 USC § 47105

(b) – An application for a project grant under this subchapter-

(3) May propose airport development only if the development complies with standards the Secretary prescribes or approves, including standards for site location, airport layout, site preparation, paving, lighting, and safety of approaches

- **AC 150/5370-10H is the Secretary approved standard for construction**
 - FAA has the authority to approve modifications to FAA standards which then become Secretary approved
 - **FAA Order 5300.1G *Modifications to Agency Airport Design, Construction, and Equipment Standards***



Regulatory Authority for FAA Specifications

49 USC § 47114 (d)

(5) – The Secretary shall use the highway specifications of a State for airfield pavement construction and improvement using funds made available under this subsection at nonprimary airports serving aircraft that do not exceed 60,000 pounds gross weight if-

(A) Such State requests the use of such specifications; and

(B) The Secretary determines that-

(i) Safety will not be negatively affected; and

(ii) The life of the pavement, with necessary maintenance and upkeep, will not be shorter than it would be if constructed using Administration standards.

- **AC 150/5300-13C Development of State Aviation Standards for Airport Construction**



Regulatory Authority for FAA Specifications

49 USC § 47105

(c) – State Standards for Airport Development-

*(1) 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.*

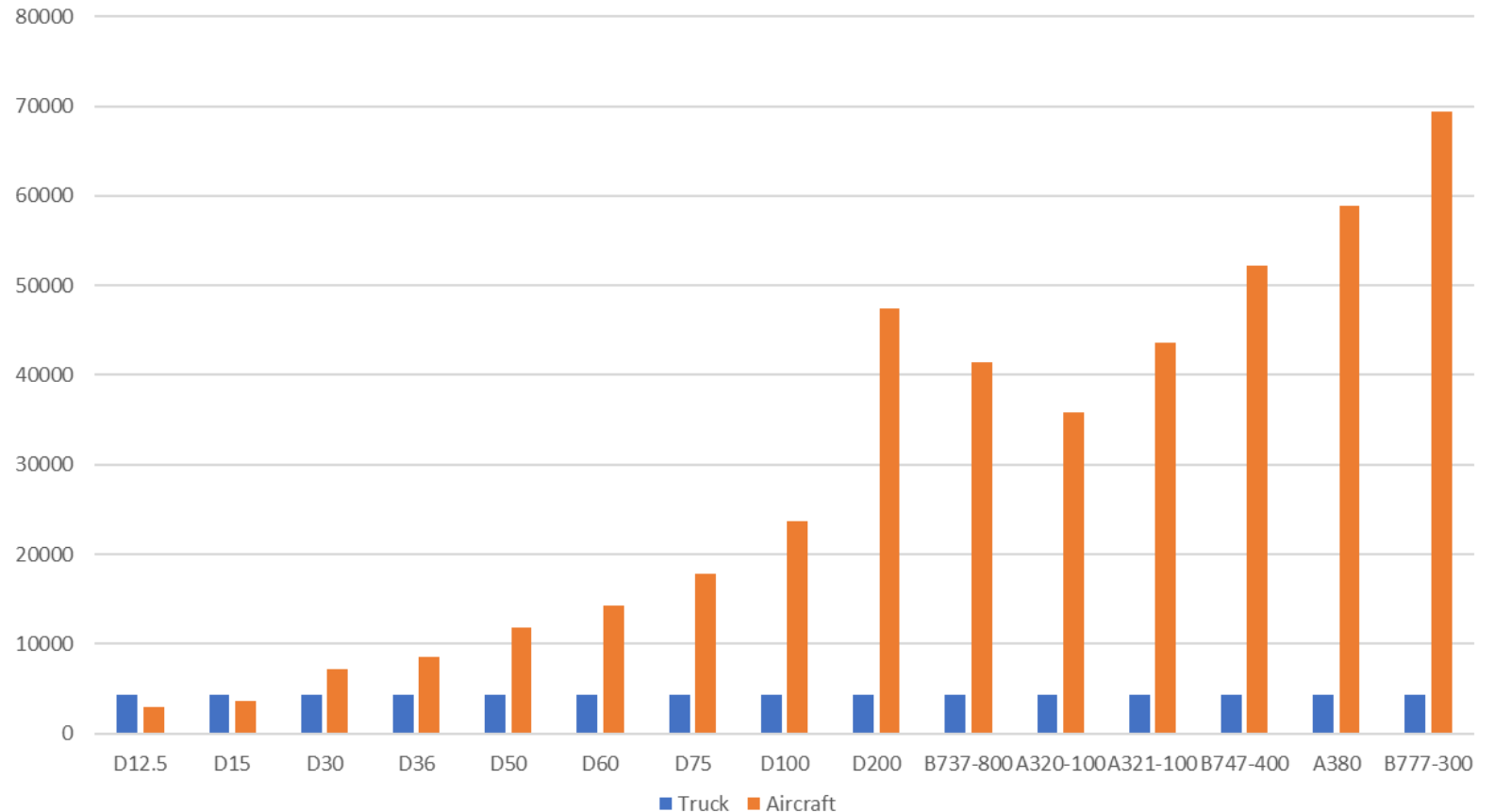
- **AC 150/5300-13C Development of State Aviation Standards for Airport Construction**



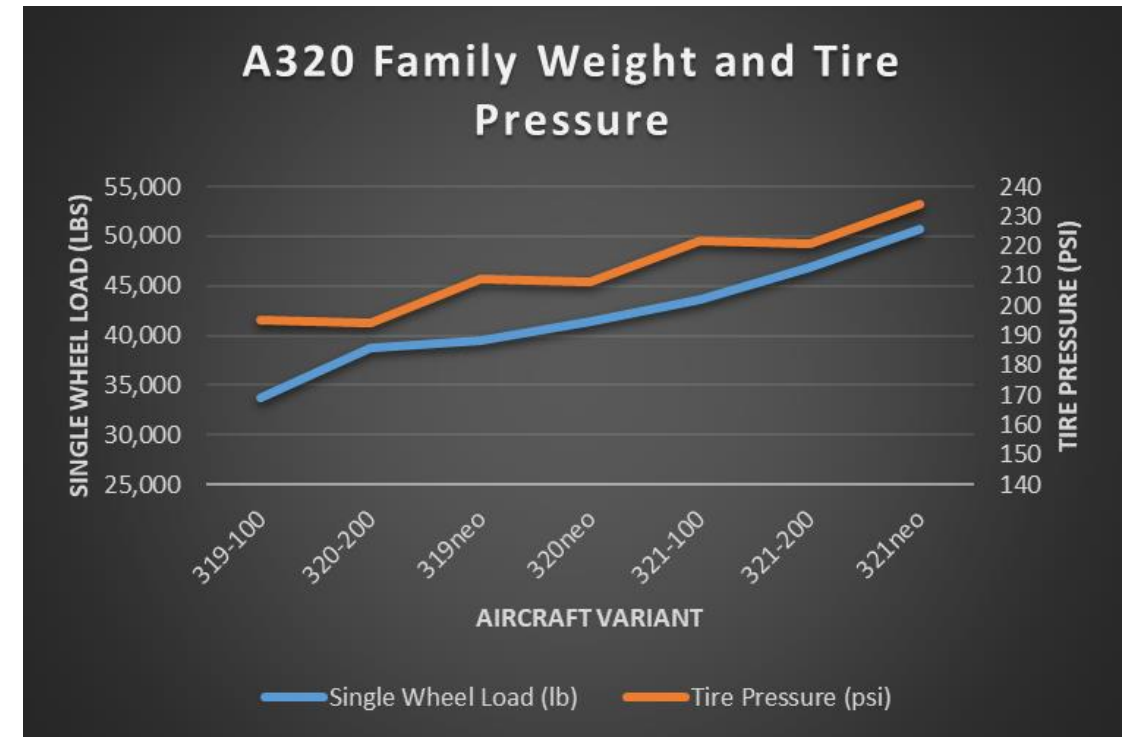
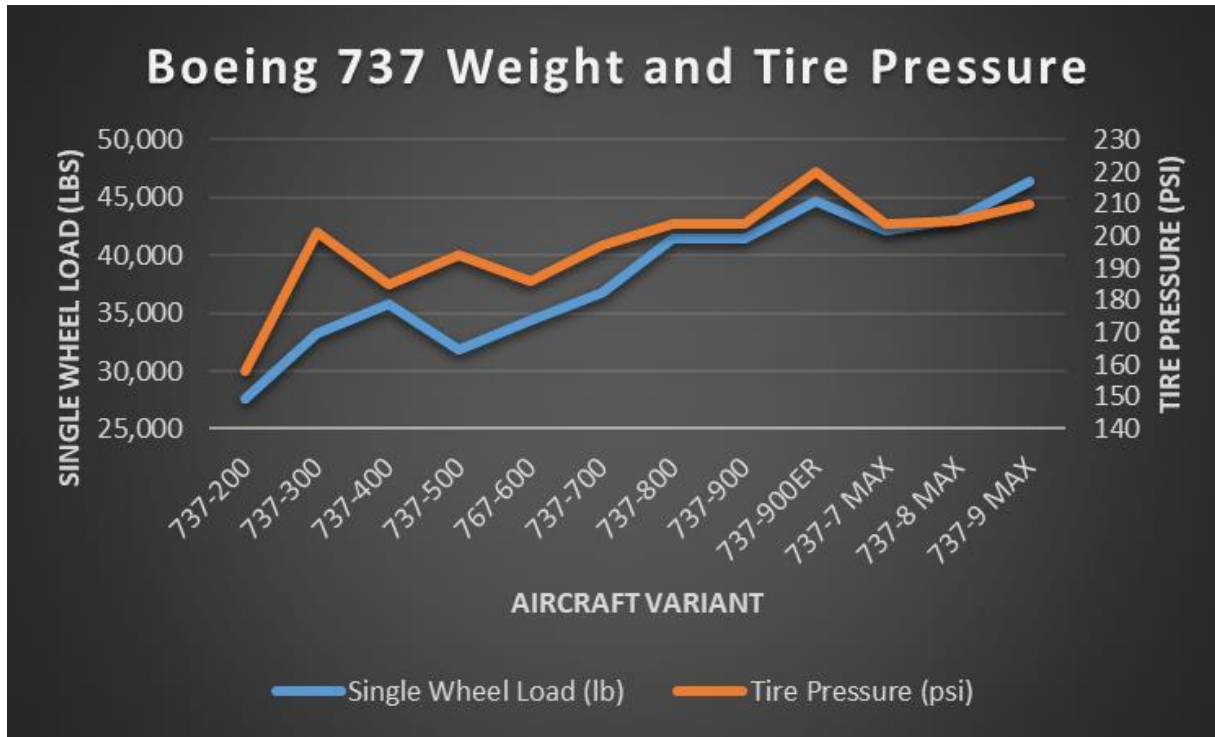
Airport vs. Highway Standards

- Highway materials are not engineered to withstand the loads and traffic airfield pavement experiences

Truck Tire Load vs Aircraft Tire Load



Aircraft Weights & Tire Pressure Trends



Weight Isn't Everything

Aircraft	Gross Weight (lbs)	Tire Pressure (PSI)
Learjet 35/36	18,000	171
Learjet 45/55	21,500	201
Cessna Citation X	36,000	189
Dassault Falcon 2000	35,000	197
Dassault Falcon 50	38,800	208
Gulfstream G-II	66,000	160



AC 150/5370-10H *Standard Specifications for Construction of Airports*

- Released 12/21/2018
- Last Errata Issued 8/19/2020
- *Currently under revision*
 - *Preparing for industry review*



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Standard Specifications for
Construction of Airports

Date: 12/21/2018

Initiated By: AAS-100

AC No: 150/5370-10H

Change:



Federal Aviation
Administration

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

- **Part 1 – General Contract Provisions**
- **Part 2 – General Construction Items**
- **Part 3 – Sitework**
- **Part 4 – Base Courses**
- **Part 5 – Stabilized Base Courses**
- **Part 6 – Flexible Pavements**
- **Part 7 – Rigid Pavement**
- **Part 8 – Surface Treatments**
- **Part 9 - Miscellaneous**
- **Part 10 – Fencing**
- **Part 11 – Drainage**
- **Part 12 – Turfing**
- **Part 13 – Lighting Installation**



Part 1 - General Contract Provisions

- **Section 10 – Definition of Terms**
- **Section 20 – Proposal Requirements and Conditions**
- **Section 30 – Award and Execution of Contract**
- **Section 40 – Scope of Work**
- **Section 50 – Control of Work**
- **Section 60 – Control of Materials**
- **Section 70 – Legal Regulations and Responsibility to Public**
- **Section 80 – Execution and Progress**
- **Section 90 – Measurement and Payment**



Part 2 - General Construction Items

- **Item C-100 Contractor Quality Control Program (CQCP)**
- **Item C-102 Temporary Air and Water Pollution, Soil Erosion and Siltation Control**
- **Item C-105 Mobilization**
- **Item C-110 Method of Estimating Percent of Material Within Specification Limits (PWL)**



Part 3 - Sitework

- **Item P-101 Preparation/Removal of Existing Pavement**
- **Item P-151 Clearing and Grubbing**
- **Item P-152 Excavation, Subgrade, and Embankment**
- **Item P-153 Controlled Low-Strength Materials (CLSM)**
- **Item P-154 Subbase Course**
- **Item P-155 Lime-Treated Subgrade**
- **Item P-156 Cement Treated Subgrade**
- **Item P-157 [Cement][Lime] Kiln Dust Treated Subgrade**
- **Item P-158 Fly Ash Treated Subgrade**



Part 4 – Base Courses

- **Item P-207 In-place Full Depth Reclamation (FDR) Recycled Asphalt Base Course**
- **Item P-208 Aggregate Base Course**
- **Item P-209 Crushed Aggregate Base Course**
- **Item P-210 Caliche Base Course**
- **Item P-211 Lime Rock Base Course**
- **Item P-212 Shell Base Course**
- **Item P-213 Sand-Clay Base Course**
- **Item P-217 Aggregate-Turf Runway/Taxiway**
- **Item P-219 Recycled Concrete Aggregate Base Course**
- **Item P-220 Cement Treated Soil Base Course**



Part 5 – Stabilized Base Courses

- **Item P-304 Cement-Treated Aggregate Base Course (CTB)**
- **Item P-306 Lean Concrete Base Course**
- **Item P-307 Cement Treated Permeable Base Course (CTPB)**



Part 7 – Rigid Pavement

- **Item P-501 Cement Concrete Pavement**



Part 9 – Miscellaneous

- **Item P-604 Compression Joint Seals for Concrete Pavement**
- **Item P-605 Joint Sealants for Pavements**
- **Item P-610 Concrete for Miscellaneous Structures**
- **Item P-620 Runway and Taxiway Marking**
- **Item P-621 Saw-Cut Grooves**



Specification- Notes to the Engineer

Engineers Read the Notes, even during construction!

Item P-501 Cement Concrete Pavement

This specification is to be used for the surface course for airfield rigid pavements subject to aircraft loadings greater than 30,000 pounds. For airfield pavement projects at non primary airports, serving aircraft less than 60,000 pounds (27216 kg), state highway specifications may be used in states where the state has requested and received FAA approval to use state highway specifications.

State highway department material specifications may be used for access roads, perimeter roads, and other pavements subject to aircraft loading less than or equal to 30,000 pounds.

When state highway material specifications are used, include all applicable/approved state specifications in the contract documents. State specifications must include the material requirements of paragraph 501-2.1 for reactivity.



Specification- Input from Engineer

501-3.3 Concrete Mix Proportions. Develop the mix using the procedures contained in Portland Cement Association (PCA) publication, "Design and Control of Concrete Mixtures." Concrete shall be proportioned to achieve a 28-day flexural strength that meets or exceeds the acceptance criteria contained in paragraph 501-6.6 for a flexural strength of [___] psi per ASTM C78.

The Engineer shall specify a minimum contractual acceptance flexural strength for airport pavements sufficient to assure that the pavement achieves the design flexural strength prior to being placed in service. Note the design strength used in FAARFIELD structural analysis is approximately 5% higher than the construction acceptance strength e.g. if structural design strength is 650 psi (4482 kPa), then the construction acceptance strength would be approximately 620 psi (4275 kPa).

If local materials utilized consistently produce above the design strength limit with the minimum amount of cementitious material, the Engineer may allow a reduction in the minimum amount of cementitious material with approval of the FAA.



AC 150/5300-13C *Development of State Aviation Standards for Airport Construction*

- Released 12/6/2019
- https://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.information/documentID/1036953



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: Development of State Aviation Standards for Airport Pavement Construction

Date: 12/6/2019

AC No: 150/5100-13C

Initiated By: AAS-100

Change:



**Federal Aviation
Administration**

State Aviation Standards for Airport Pavement Construction

1.2 Applicable Standards *State Aviation Standards may be developed for airport pavement and related construction specifications for: subgrade, sub-base, base, pavement surface and related materials, drainage, fencing and turf.*

- **1.2.1 Construction Standards** *relate primarily to preparation of project specifications including materials and methods employed in the construction of airport pavements where aircraft operate.*

The starting point for State Aviation Standards for Construction is AC 150/5370-10 Standard Specifications for Construction of Airports.



State Aviation Standards for Airport Pavement Construction

1.4 FAA Approval of State Aviation Standards for Construction

To request approval of use of State Aviation Standards:

1. *The State submits for approval a copy of the proposed State Aviation Standards to the FAA Airport District Office or Regional Office for those Regions without Airport District Offices. The State must assure to the Secretary that:
 - a) *Safety will not be negatively affected, and*
 - b) *The life of the airport pavement, with necessary maintenance and upkeep, will not be shorter than it would be if constructed using FAA Standards.**
2. *The FAA ADO forwards the request with recommended FAA action to RO.*
3. *The FAA RO forwards the request with recommended FAA action to AAS-1*
4. *The Director of the FAA Office of Airport Safety and Standards (AAS-1) will then issue an approval letter to the State. (if the standards are deemed acceptable to the FAA)*



State Aviation Standards for Airport Pavement Construction

1.5 Use of State Aviation Standards for Airport Pavement Construction

Once approved by AAS-1, State Aviation Standards for Airport Pavement Construction may be used at any nonprimary public-use airport in the State for which the State Aviation Standards were approved.

1.6 Revision of State Aviation Standards for Airport Pavement Construction

The State may submit revisions to approved State Aviation Standards for Construction when deemed necessary, per the process under paragraph 1.4.

1.7 Update of State Aviation Standards for Airport Pavement Construction

The State must submit any updates to State Aviation Standards for Construction to the FAA approval within one year of any proposed update to underlying specifications that the State Aviation Standard is based upon



State Aviation Standards for Airport Pavement Construction

- **Current states that have approved State Aviation Standards**
 - Wisconsin
 - Illinois
- **Several states have expressed interest in developing State Aviation Standards.**



Use of State Highway Material Specifications on Airports

2.1 General

2. *State Highway Material Specifications may be used at nonprimary public-use airports serving aircraft less than 60,000 pounds, if:*
 - a. *The State where the Airport project is located has requested and received FAA approval to use State Highway Material Specifications; or*
 - b. *An individual airport has an approved modification to standards to utilize State Highway Material Specifications in accordance with FAA Order 5300.1.*



Use of State Highway Material Specifications on Airports

Notes about using State Highway Material Specifications

- Individual State Highway Material specifications are often not compatible with FAA projects without some modification to address
 - Terminology
 - Materials
 - Quality Control
 - Quality Assurance
 - Measurement and payment
- It is recommended to follow the format of AC 150/5370-10 when editing the pavement specifications to utilize materials meeting State Highway Specifications.
- DO NOT just write a “spec” that references a State Highway Material Specification. At a minimum include a copy of the reference spec.
- State Highway Paving Specifications are rarely the only specs on a project.



Use of State Highway Material Specifications on Airports

- Approval, Revision, and update to State Highway Material Specifications follows the same process as State Aviation Standards.
- To date no State has received approval to use State Highway Material Specifications.
- Some individual airports and projects have received approved MOS's to use state highway specifications.





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