

Airports Engineering Highlights

Presented to: ASW Conference Attendees

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Date: November 15 & 16, 2016



Federal Aviation
Administration

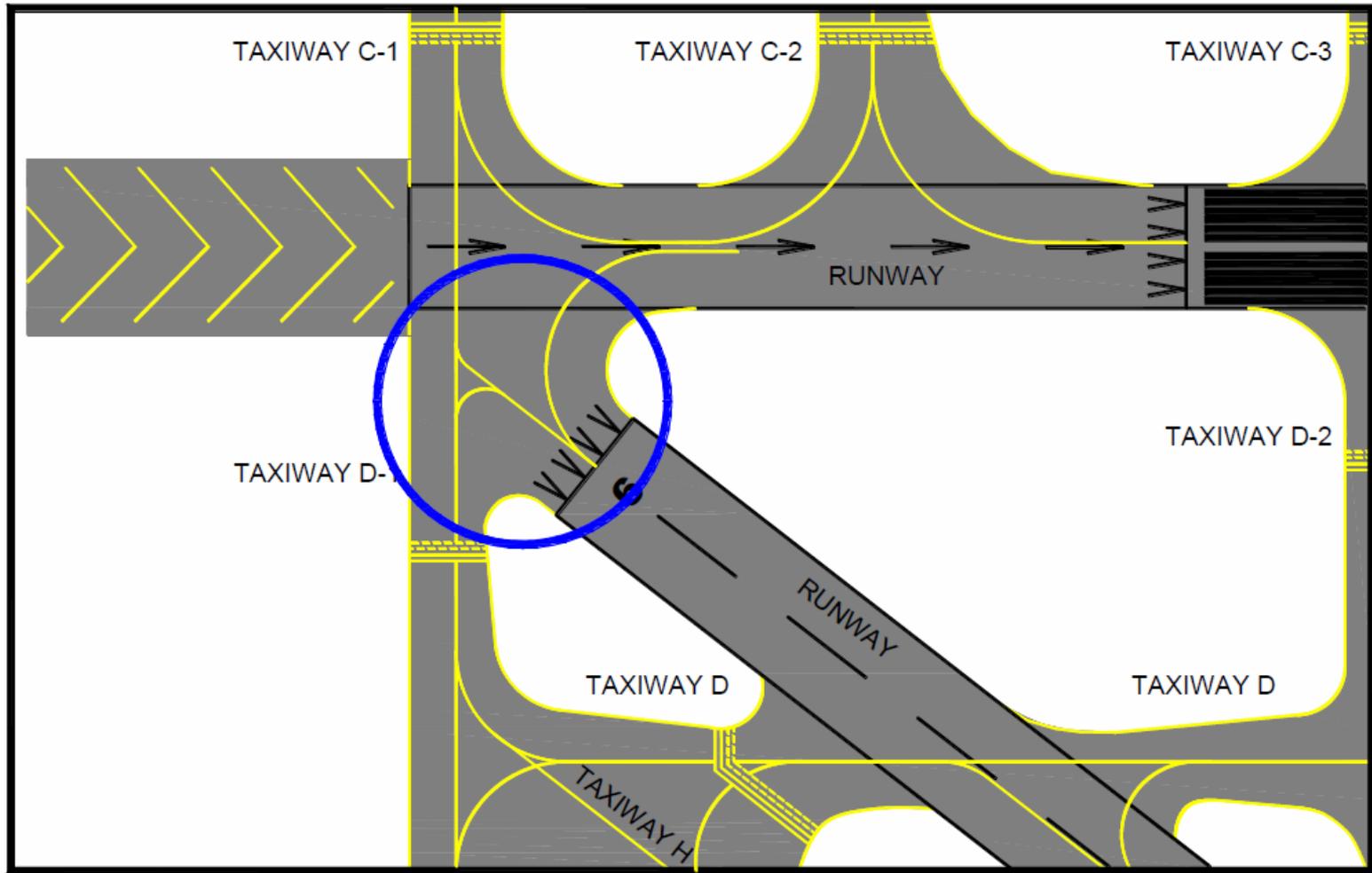


What Has Been Going On?

- Update of "Airport Design" AC 150/5300-13A
- Update of "Standards for Specifying Construction of Airports" AC 150/5370-10G"
- "Completion" of the Runway Safety Area (RSA) Program
- Implementation of the Runway Incursion Mitigation (RIM) Program
- Hiring of Engineering Specialists
- Implementation of Plan & Specification Review
- Modification of Standards
- Construction Safety & Phasing Plan (CSPP) SOP

FAA AC 150/5300-13A

- **Improve Safety Through Design**
 - Increase Situational Awareness
 - TW-RW Interface design principle: Use right angle for TW-RW intersections
 - Prohibited Use of Aligned TWs (dual purpose pavement)
 - Avoid direct access from Apron to RW
 - Improve Taxiway Geometry
 - “3-node” TW intersection design principle: Limit number of TWs intersecting in one spot
 - Improve Runway Geometry Guidance
 - RSAs should not overlap
 - Avoid wide expanses of pavement, especially at RW entry



(e) Aligned taxiway between two closely spaced runway ends

FAA AC 150/5300-13A

- **Other Stuff Introduced:**

- Taxiway Design Group (TDG) – 1 thru 7

- Determines Width of TW
- Fillet Geometry

- Runway Design Code (RDC)

- Three component code signifying the **DESIGN** standards for which the RW is (to be) built.

$$\text{RDC} = \text{AAC} + \text{ADG} + \text{Visibility Min}$$

New RDC Example: B-II-4000

Aircraft Approach Category

Approach Category	Approach Speed [knots]
A	Approach speed less than 91 knots
B	Approach speed 91 knots or more but less than 121 knots
C	Approach speed 121 knots or more but less than 141 knots
D	Approach speed 141 knots or more but less than 166 knots
E	Approach speed 166 knots or more

•Airplane Design Group

Group #	Tail Height [ft]	Wingspan [ft]
I	less than 20'	less than 49'
II	20' to less than 30'	49' to less than 79'
III	30' to less than 45'	79' to less than 118'
IV	45' to less than 60'	118' to less than 171'
V	60' to less than 66'	171' to less than 214'
VI	66' to less than 80'	214' to less than 262'

•Visibility Mins as RVR “Equivalent”

RVR [ft]	Flight Visibility Category [statute mile]
VIS	Visual
5000	Not lower than 1 mile (NPA \geq 1 mile)
4000	Lower than 1 mile but not lower than $\frac{3}{4}$ mile (APV $\geq \frac{3}{4}$ but < 1 mile)
2400	Lower than $\frac{3}{4}$ mile but not lower than $\frac{1}{2}$ mile (CAT-I PA)
1600	Lower than $\frac{1}{2}$ mile but not lower than $\frac{1}{4}$ mile (CAT-II PA)
1200	Lower than $\frac{1}{4}$ mile (CAT-III PA)

FAA AC 150/5370-10G

Changes – New Items

- GP Section 90-10, Construction Warranty
- GP Section 90-11, Project Closeout
- GP Section 105, Mobilization
- Item P-601, Fuel Resistant Hot Mix Asphalt (HMA) Pavement
- Item P-608, Emulsified Asphalt Seal Coat
- Item P-629, Thermoplastic Coal Tar Emulsion Surface Treatment
- Item F-164, Wildlife Exclusion Fence

FAA AC 150/5370-10G

Changes – Deleted Items

- GP Section 120, Nuclear Gauges
- Item P-402, Porous Friction Course
- Item T-907, Tilling
- Item L-102, Hazard Beacons

FAA AC 150/5370-10G

Significant P-Item Changes

- All straightedge testing went to 12' and defined how to take Smoothness measurements
- P-200's & 300's Base Courses
 - Added grade checking as pavement is built
 - Option for Engineer to Observe Contractor's Lab testing
- P-400's Hot Mix Asphalt
 - Option for Marshall & Gyratory Mix Design
- P-501 Portland Cement Pavement
 - Engineer can now select Compressive Strength for Acceptance

“Completed” RSA Program

- **59 Part 139 Airports and 125 Part 139 Runways**
 - AR: 6 airports and 10 runways
 - OK: 4 airports and 8 runways
 - LA: 9 airports and 18 runways
 - NM: 10 airports and 21 runways
 - TX: 30 airports and 68 runways

Runway Incursion Mitigation Program

RI = Incorrect presence of an aircraft, vehicle, or person on a surface designated for the landing and takeoff of aircraft.

- **Nationally, we have 117 RIM points**
 - 7,552 RI Events (2007 – 2015) geo-referenced to Problematic Taxiway Geometries (PTG)
 - Locations established by:
 - 3 or more RI in a given CY
 - Average of 1 or more RI per year over study period (8 cumulative)
 - Number of Wrong Runway Takeoff and Landings
 - Field validation of those locations
- **ASW has 28 RIM points - 4 mitigated**

Avoid Adjacent Thresholds



A/C 150/5335-5C, “Standardized Method of Reporting Airport Pavement Strength (PCN)”

- ACN-PCN method is an ICAO standard.
- FAA is responsible for certifying all commercial airports in U.S.

Airport Master Record (Form 5010)

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION		AIRPORT MASTER RECORD		PRINT DATE: 10/05/2009
1 ASSOC CITY: BALTIMORE		4 STATE: MD	LOC ID: B/W	FAA SITE NR: 08436-1A
2 AIRPORT NAME: BALTIMORE/WASHINGTON INTL THURGOOD MARSHAL		5 COUNTY: ANNE ARUNDEL MD	Form Approved OMB 2120-0015	
3 CRD TO AIRPORT (NM): 09.5		6 REGION/ADO: AEA/DCA	7 SECT AERO CRT: WASHINGTON	
RUNWAY DATA				
> 30 RUNWAY IDENT:		04/22	10/2	
> 31 LENGTH:		6,000	10,500	
> 32 WIDTH:		150	200	
> 33 SURF TYPE-COND:		ASPH-F	ASPH-F	ASPH-F ASPH-G
> 34 SURF TREATMENT:		GRVD	GRVD	GRVD GRVD
35 GROSS WT:	SW	100.0	100.0	30.0 100.0
36 (IN THSDS)	DW	220.0	220.0	60.0 220.0
37	DTW	500.0	500.0	500.0
38	DDTW	728.0	790.0	790.0
39 PCN:		65 /F/A/W/T	110 /F/A/W/T	26 /F/A/W/T 100 /F/A/W/T

Gross Weight data may transition.

PCN data request now part of all airport inspections

Engineering Specialists

- **Construction Safety and Phasing Plan Review**
- **Plans and Specifications Review**
- **Modification of Standards (MOS)**
- **Change Orders**
- **Technical Expertise**



Safety During Construction

- Responsibility of the Airport Operator (AO)
- Contractor must comply with AO plan for safety
- Airport tenants must comply with AO plan for safety
- Must establish a Construction Safety Phasing Plan
- AC 150/5370-2F - Operational Safety on Airports During Construction
- Review IAW SOP 1.00

What is a CSPP?

A comprehensive safety management strategy that helps to identify and thereby mitigate increased risk due to construction activity on an active airfield.

Establishes operation safety management strategies and coordination for *everyone* associated with the project:

- Contractor/Subcontractor
- Construction Inspector
- ARFF Personnel
- Airport Operations
- FBO/Airlines
- FAA ATCT
- FAA Technicians
- FAA Flight Procedures

Failure to Plan is a Plan to Fail!



CSPP Elements

- **Coordination**
- **Phasing**
- **Affected Areas**
- **Protection of NAVAIDs**
- **Contractor Access**
- **Wildlife Management**
- **FOD**
- **HAZMAT**
- **Notification**
- **Inspection**
- **Underground Utilities**
- **Penalties**
- **Special Conditions**
- **Runway/Taxiway Visuals**
- **Access Routes**
- **Marking and Lighting**
- **Protection**
- **Limits of Construction**

Why Emphasize a CSPP?

Construction Operations

- Disrupts normal environment
- Introduces risks
- Impacts operations

Safety Planning

- Balance construction and safety
- Identify risks
- Establish mitigating actions/controls

Consequences



Consequences



Plan & Specification Review

- **Memorandum** (dated December 8, 2014)
- **Regions Relying on Sponsor Certification**
 - ❖ Not Following FAA Standards
 - ❖ Modifications to FAA Construction Specifications
- **3 Levels of Review**
 - ❖ Sponsor Cert
 - ❖ General
 - ❖ Full
- **90% Design (at a minimum)**

P&S Review Objective

Incorporation and conformance with:

- Airport safety provisions

Conformance to:

- Approved SOW and AIP eligibility
- FAA design and construction standards

Incorporation of:

- Required federal provisions

What is an MOS?

“Modification of Standards” means any change to FAA Advisory Circular standards applicable to an airport design, construction, or equipment procurement project. Order 5300.1F provides guidance.

NOTE: Modifications to geometric standards must be noted in a table on the ALD/ALP with FAA MOS approval letter date and airspace review case number.

Modification of Standards Validity

When a MOS:

- results in lower costs,
- results in greater efficiency, or
- is necessary to accommodate an unusual local condition on a specific project, when adopted on a case-by-case basis.
- is necessary to make general provisions consistent with local laws and regulations. Must meet or exceed federal procurement requirements.

NOTE: Only Airport Sponsors can request an MOS.

MOSs must be submitted during DESIGN.

Editing 150/5370-10G vs MOS

- Paragraph 4 provides directions to the Engineer
- Entire paragraphs can be deleted, if not applicable to project.
- Additional sentences can be added, as long as language augments intent but does not alter the construction materials, methods, QC, or QA requirements.
- Changes to meet local procurement requirements must be approved as an MOS; however, changes cannot relieve Sponsor of following Federal Regulations
- No other changes unless MOS approval from the FAA
- Need to show ~~changes~~ **edits** with **track changes** on for P&S review submittal

Modification of Standards



**Following AC 150/5370-10
is ALWAYS* AIP ELIGIBLE!**

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

Resources

Airports Engineering

<https://www.faa.gov/airports/engineering/>

Advisory Circulars

https://www.faa.gov/regulations_policies/advisory_circulars/

Advisory Circulars Required for AIP/PFC Projects

<https://www.faa.gov/airports/aip/media/aip-pfc-checklist.pdf>

SOP's

<https://www.faa.gov/airports/resources/sops/>

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QUESTIONS?

