

# Operational Safety

## Construction activities on Airports

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## Construction activities on airports: an unavoidable situation

- **Planning and design of airports to satisfy traffic demands**
- **All airport facilities (runway, taxiway, aprons etc..) deteriorate with time**
- **Construction activities take place while aircraft operations continue**
- **Most contractors are not familiar with aircraft/vehicular movement on airports**



## Who are affected?

- All types of aircraft operations: air carriers, GA, cargo etc..
- Air Traffic controllers: needs to move aircraft on reduced area
- Airport Operations: Need to keep airport safe
- FAA Tech Ops, needs to control NAVAIDs and VISAIDs
- FAA Airports Division: Cert Inspectors and ADO



## Four potential studies/actions the FAA may conduct/take

- FAR Part 77-Pottection of Navigable airspace. Requires notification to FAA when proposal is on public use airport: cases known as NRA
- AIP Handbook: Requires FAA approval of Construction Safety and Phasing Plan of projects funded with AIP or PFC. AC 150/5370-2 must be used.



## Two more potential studies

- **Safety Risk Assessment as part of SMS implementation: required on Large Hub airports (In June 2015 for Medium/small hub airports). This activity may require assembly of a panel**
- **FAR Part 139.341: Applicable certificated airports. Regulation does not require notification to FAA but “compliance” on protections of utilities and marking closed areas used by air carrier**



## Today's presentations

- **Construction Safety –Airports, Construction Advisory Council: Davis Siewert ; Robert Berclucchi.**
- **Marking and lighting temporary partial runway closure and displaced threshold. To inform you recently discovered problems for construction activities on runways and how we are solving them**



## Marking and lighting:

- 1) Temporary partial runway closure: runway shortened. Closed area could be used for aircraft taxiing.
- 2) Displaced threshold: Restriction on landing on affected runway only



## Dilemmas

- **Criteria to decide to leave runway in operation. Closed runway prefer alternative**
- **How effective is the message to users of runway status so they do not land or take off on/from the wrong location. AC 150/5370-2F guidance.**
- **How to minimize paint removal of existing paints. No matter how good paint is removed there is always some scarf in the pavement. Pavement condition**
- **How to minimize temporary markings (paint) that needs to be remove after the construction activities**



## Another question; How short is temporary?

- Airports with large operations of air carriers including international and cargo
- Airports with small air carrier operations including or not international
- Large GA operations
- No too congested airports
- Temporary measured in: days, weeks, months...



## Standards: How to convey messages

- AC 150/5340-1: Standards for airport markings. Table 2-1 establish needed marking in function of published minimums
- AC 150/5340-30: Design and installation of airports visual aid. Edge and centerline lights standards
- AC 150/5340-18: Standard for airports sign systems
- AC 150/5370-2: Safety during construction



## From AC 150/5370-2 paragraph 218

- **Partially Closed Runways and Displaced Thresholds.** When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 207.a(1) above for the difference between partially closed runways and runways with displaced thresholds.
- **(i) Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see AC 150/5340-1).
- **(ii) Displaced Thresholds.** Pavement markings for a displaced threshold consist of a runway threshold bar and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See AC 150/5340-1.



Table 2-1. Minimum Required Runway Surface Marking Schemes for Paved Runways

Runway Surface Marking Scheme	Threshold Approach Category		
	Visual Approach	Non-precision Approach (Approaches with vertical guidance not lower than ¼ -statute mile visibility)	Precision Approach (Approaches with vertical guidance lower than ¼ -statute mile visibility)
Landing Designator (par. 2.3)	X	X	X
Centerline (par. 2.4)	X	X	X
Threshold (par. 2.5)	Note 1	X	X
Aiming Point (par. 2.6)	Note 2	Note 3	X
Touchdown Zone (par. 2.7)			X
Side Stripes (par. 2.8)	Note 4	Note 4	X

# Temporary markings



# Different patterns







## Most Common Practice

### Temporary partial runway closure:

- a) Markings: paint threshold bar “only”
- b) Cover markings on closed area
- c) Obscure lights before threshold
- d) Reset colors of lights (edge or centerline lights)
- e) Install temporary threshold lights (inboard or outboard)
- f) Reset distance to go signs
- g) Issue appropriate NOTAMS



## Most common practice

### Threshold Displacement:

- a) Paint threshold bar “only”
- b) Reset runway edge and/or centerline lights colors (red is displaced area)
- c) Issue appropriate NOTAMS



## Where is the Airports Division with this effort

- Team with regional representations formed: Some regions have submitted proposals. There is not need to reinvent the wheel, practical experience taken in consideration
- Future – Coordinate with
  - a) Users: perhaps via Flight Standards Division
  - b) Air Traffic Controllers including construction council
  - c) Airport Operators



**If you think you can help in improving this issue, please send me an E-mail at**

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# Questions?



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