



Federal Aviation
Administration

Federal Aviation Administration

Airports Safety & Standards

Prepared for: Review Committee of GREPECAS (PPRC/3)
Mexico City, Mexico

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Runway Excursions

- **Runway excursions are still a top safety risk where the likelihood and severity can be mitigated through proactive action. This presentation will discuss:**

- **Some contributing factors of Runway Excursions:**

- Rubber accumulation**

- Runway longitudinal grade issues**

- Lack of Runway Distance Remaining Signs**

- Runway Grooving**

- Insufficient Runway Safety Areas**

- **Recommended solutions**

Runway Excursions - Latest SFO Incident



Contributing Factor Gradual Rubber Accumulation



Heavy Rubber Build-Up



Solutions: Rubber Removal Techniques



U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: MEASUREMENT, CONSTRUCTION, AND MAINTENANCE OF SKID-RESISTANT AIRPORT PAVEMENT SURFACES

Date: 3/18/97

AC No: 150/5320-12C

Initiated by: AAS-100

Change:

1. PURPOSE. This advisory circular (AC) contains guidelines and procedures for the design and construction of skid-resistant pavement, pavement evaluation with friction measuring equipment, and maintenance of high skid-resistant pavements.

2. CANCELLATION. AC 150/5320-12B, *Measurement, Construction, and Maintenance of Skid-Resistant Airport Pavement Surfaces*, dated November 12, 1991, is canceled.

3. RELATED READING MATERIAL. Appendix 2 contains a listing of documents containing supplemental material relating to the subject. Information on ordering these documents is also provided.

4. APPLICATION. The guidelines and standards contained herein are recommended by the Federal Aviation Administration (FAA) for applications involving runway friction measurement, construction, and maintenance. For airport projects funded under Federal grant assistance programs, the standards identified by **BOLDFACE CAPITALS** in chapter 2, section 4, paragraphs 2-21 and 2-22 and those in appendix 3 are mandatory.

5. BACKGROUND. With the introduction of turbojet aircraft, braking performance on pavement surfaces has become more critical. Under certain conditions, hydroplaning or unacceptable loss of traction can occur, resulting in poor braking performance and possible loss of directional control. To address this concern, a number of research projects were conducted by the National Aeronautics and Space Administration (NASA), FAA, United States Air Force (USAF), and various foreign governments. These efforts concentrated in two major areas: (a) high skid-resistant pavement surface design and evaluation and (b) application of proper maintenance techniques and procedures. In this circular, guidelines are provided to airport operators on how to locate and restore areas on the pavement surface where friction has deteriorated below acceptable levels for aircraft braking performance. The material contained in this circular summarizes the findings of these research efforts.

6. METRIC UNITS. To promote an orderly transition to metric (SI) units, this circular contains both English and metric dimensions. The metric conversions may not be exact equivalents and, until there is an official changeover to the metric system, the English dimensions will govern.

ACRP SYNTHESIS 11

Impact of Airport Rubber Removal Techniques on Runways



A Synthesis of Airport Practice

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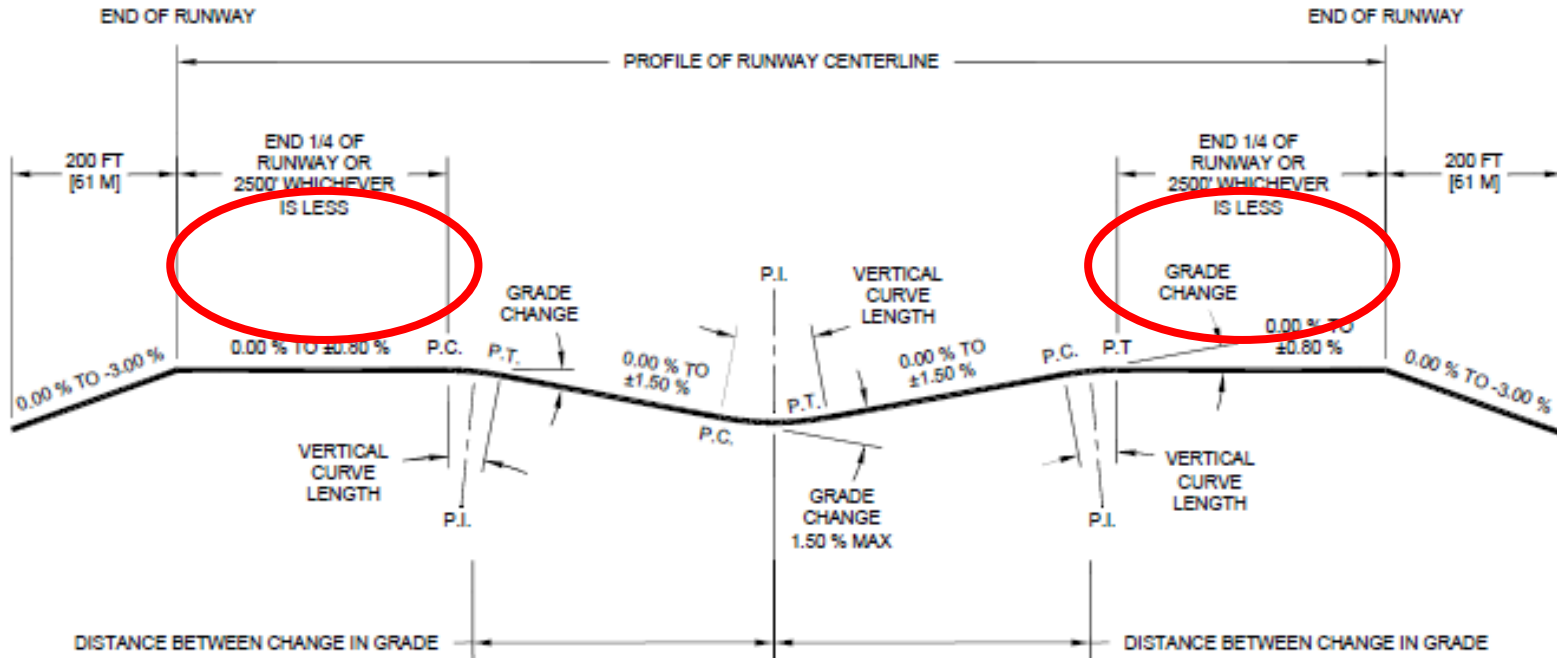
Rubber Removal from Runway Surface



Contributing Factor: Excessive Runway Longitudinal Grade



Solution: Criteria for Runway Longitudinal Grades



First and Last Runway

Quarter or 2500 feet – whichever is less

FAA Aircraft Approach Category C, D, E

FAA Airport Design Advisory Circular AC 150/5300-13

Solution: Distance Remaining Signs



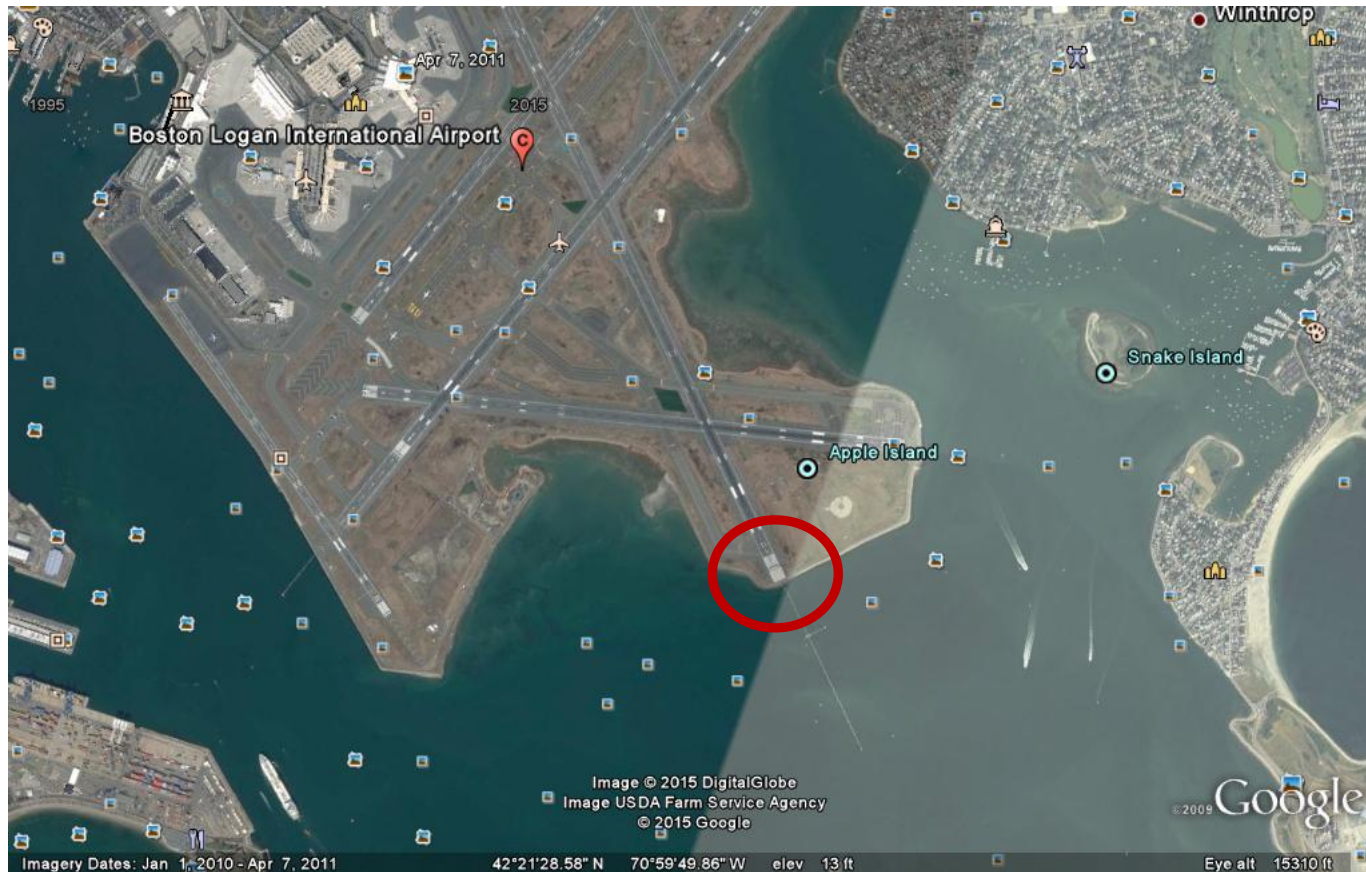
- FAA AC 150/5340-18
- Not found in Annex 14 Vol 1

Solution: Runway Grooving



- The FAA's Technical Center includes a Runway Pavement Testing Facility.
- AC-150/5320-12

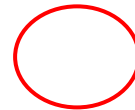
Contributing Factor: Insufficient Runway End Safety Area



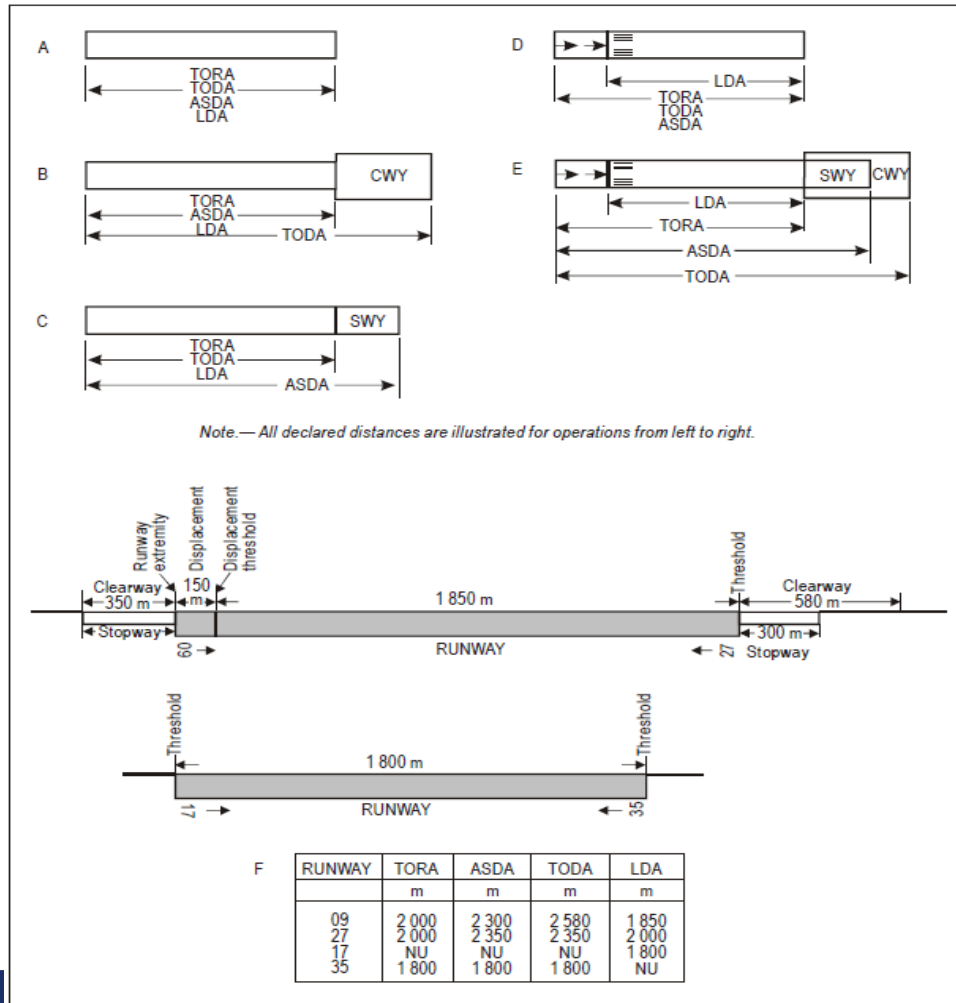
Solution: Runway Safety Area Improvements

There primary methods used for RSA improvement:

1. Construct a standard RSA when able. When inadequate:
 2. Relocate or shift a runway to establish the proper RSA dimension off the ends of runways. If the runways can not be moved:
 3. Manipulate declared distances, or
 4. Install arresting bed systems at the ends of runways.
- FAA AC-150/5220-22, *Engineered Material Arresting Systems (EMAS) for Aircraft Overruns*

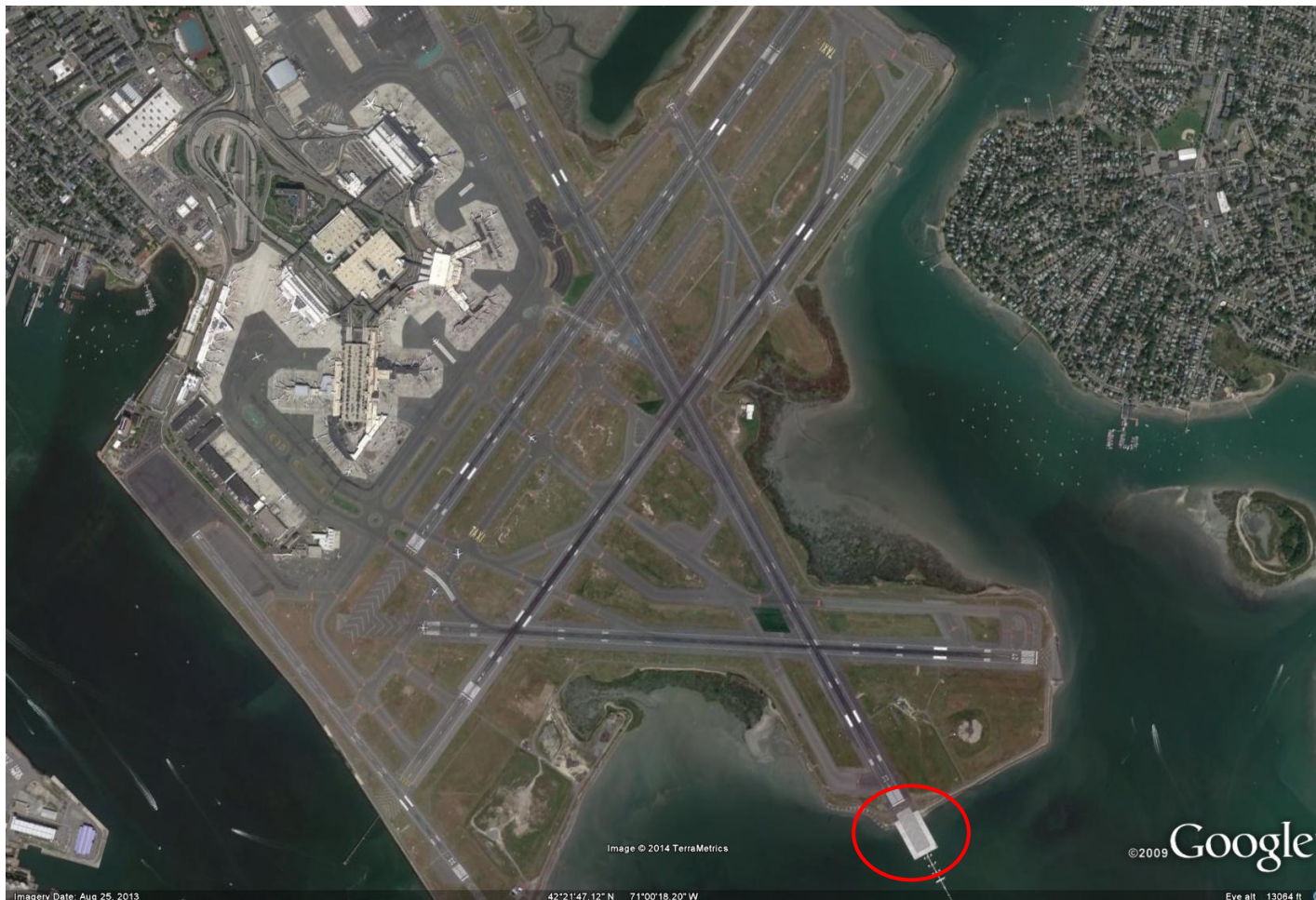


Solution: Application of Declared Distances



- Adjust Lengths of:
 - LDA
 - ASDA
- Annex 14 Vol I

Solution: Install Arrestor Bed System Boston EMAS Installation



Solution: Successful Capture by Arrestor Bed Systems



Thank you!

Questions?



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