

FAA Partnership Conference Fort Worth TX March 2005

Session C Airport Engineering Paint – Getting It On & Taking It Off

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Objectives of Presentation

- ✈ Provide Federal Aviation Administration (FAA) References
 - ✈ FAA Advisory Circulars (ACs)
 - ✈ Overview of FAA Headquarters and FAA Region Roles
- ✈ Overview of Air Force Engineering Technical Letter Guidance—Perhaps the best available guidance on removal of paint and rubber
- ✈ Questions / Dialog / Interaction



What is the Problem?

- ✈ Paint is discoloring, chipping, or peeling at an early age.
- ✈ Paints and markings degrade with the effects of traffic and weather.
- ✈ When is the best time to replace markings?
 - ➔ Too soon increases maintenance costs.
 - ➔ Too late has the potential to compromise safety and pilot comfort.



FAA Guidance

- ✈ AC 150/5340-1H Standards For Airport Markings
- ✈ AC 150/5370-10A Standards For Specifying Construction of Airports
 - ➔ Item P-620



Standards For Airport Markings

✈ In 8/99, the marking AC requires obliteration of markings no longer needed.

Subject: STANDARDS FOR AIRPORT MARKINGS

Date: 8/31/99

AC No: 150/5340-1H

Initiated by: AAS-300 **Change:**

d. Removal of Markings. Pavement markings that are no longer needed should be physically removed by sand blasting, chemical removal or other means, not painted over. Painting over the old markings merely preserves the old marking, will require additional maintenance, and in certain conditions, can be misleading to pilots.



Standards For Airport Markings

✈ In 12/00, the marking AC clearly requires obliteration of markings no longer needed.

Subject: Change 1 to Advisory Circular (AC) 150/5340-1H,
STANDARDS FOR AIRPORT MARKINGS

Date: 12/100

Initiated by: AAS-310

AC No: 150/5340-1H

Change: 1

d. Removal of Markings. Physically remove pavement markings that are no longer needed by sand blasting, chemical removal or other means, not by painting over them. Painting over the old markings merely preserves the old marking, will require additional maintenance, and in certain conditions, can be misleading to pilots.



Item P-620 Marking Specifications

✈ Latest Revision 11/26/04.



U.S. Department
of Transportation

**Federal Aviation
Administration**

Advisory Circular

Subject: Change 14 to STANDARDS FOR SPECIFYING
CONSTRUCTION OF AIRPORTS

Date: 11/26/04

Initiated by: AAS-100

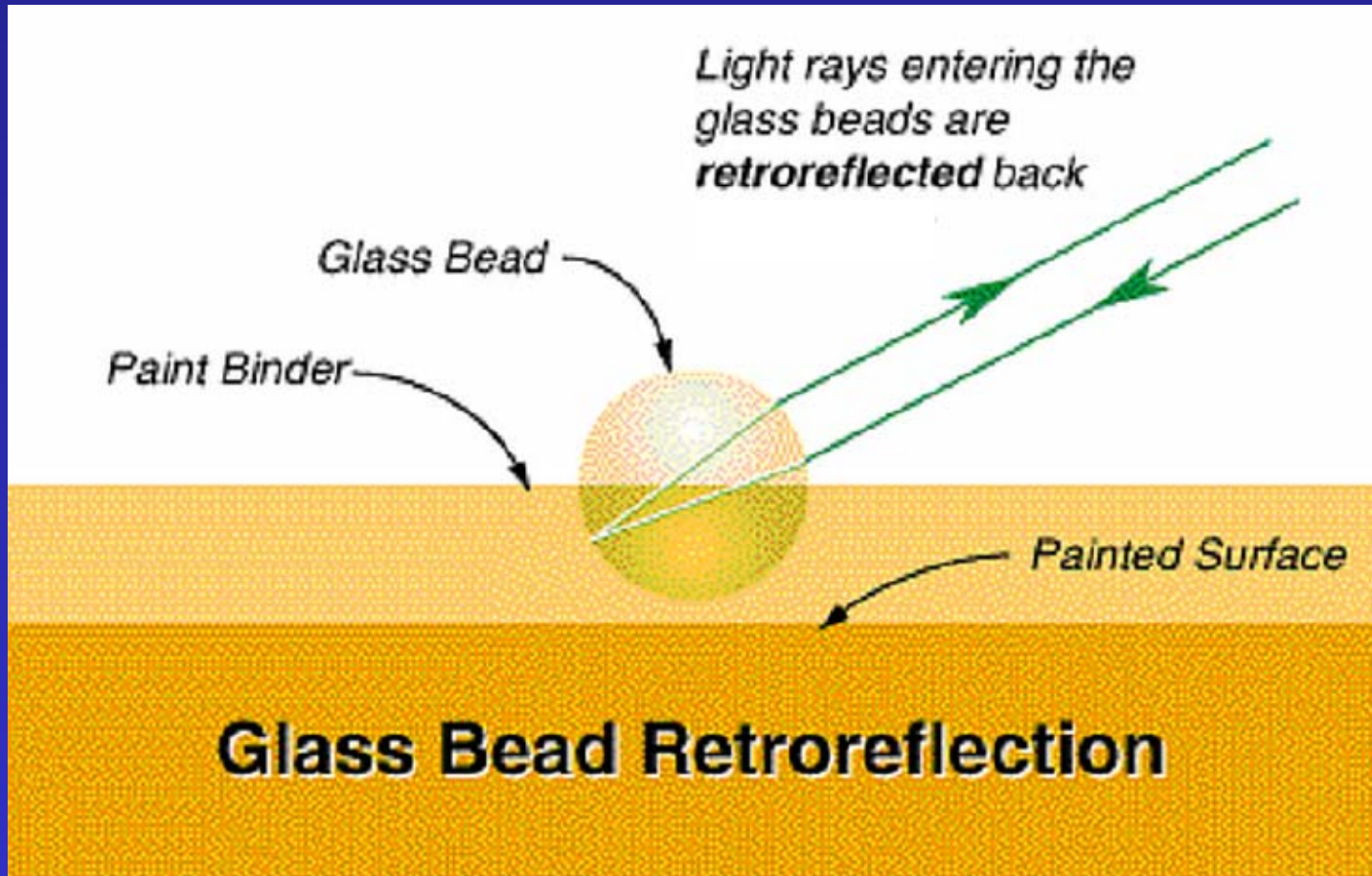
AC No: 150/5370-10A

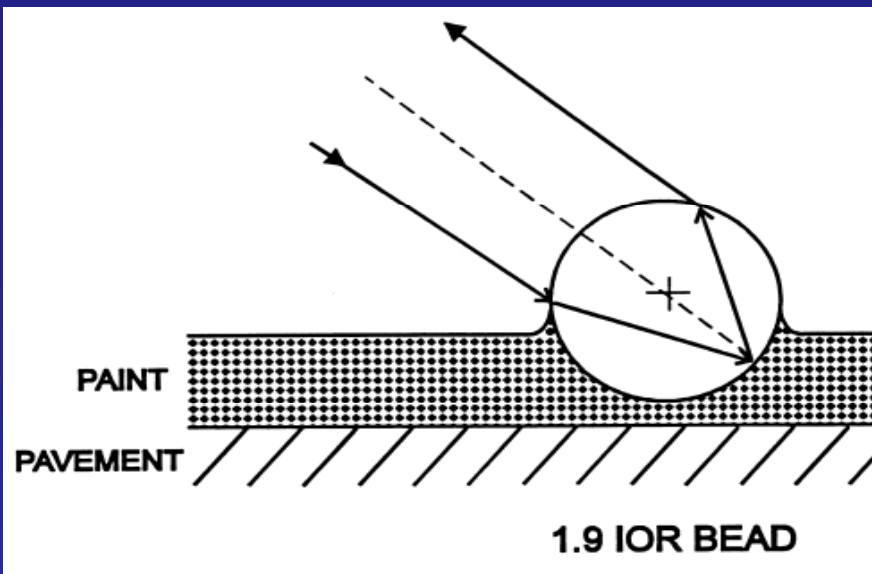
Change: 14



Item P-620 Marking Specifications

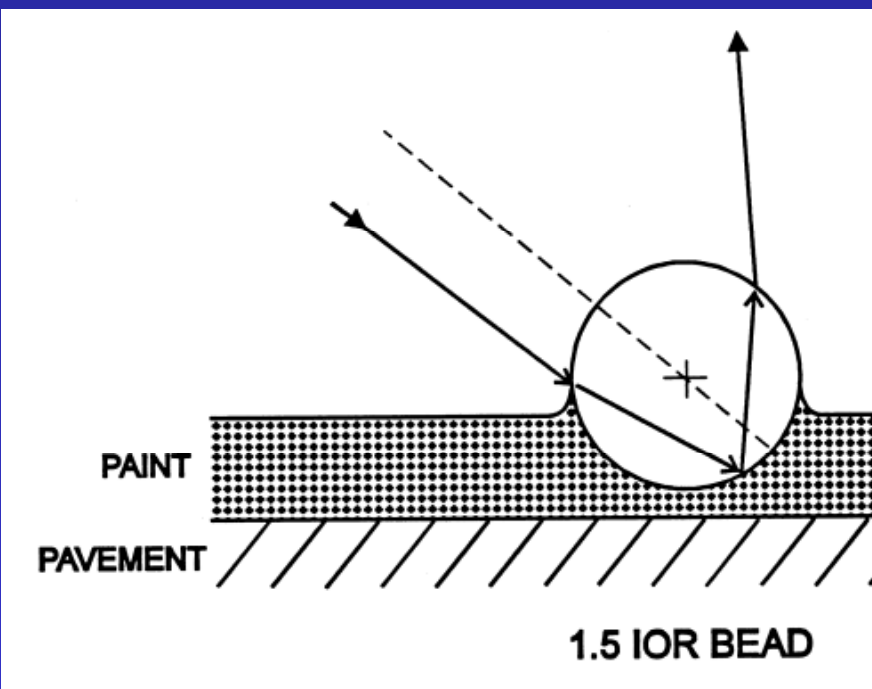
- ✈ Requires reflective glass beads in markings.





Airport grade Bead

- ✈️ Type III, “High Index Bead” made from high density glass.



Highway grade bead

- ✈️ Type I, “Low Index Bead” made from reclaimed scrap glass.
- ✈️ Type IV, “Low Index Bead” made from glass with fewer air bubbles.

FRICION CHARACTERISTICS

K.J. Law Friction Tester Classification (after AC 150/5320-12C)

40mph 0.50(min.), 0.60(maint.), 0.82(new)

60mph 0.41(min.), 0.54(maint.), 0.72(new)

| Material (from FAA R&D) | Paint Only 40mph | Beaded Paint 40mph | Pavement 40mph |
|--|---------------------------------|-----------------------------------|---------------------------|
| Type I (New) | ~0.43 | 0.64 | 0.85 |
| Type III (New) | ~0.43 | 0.63 | 0.84 |
| Type I (Plowed) | ~0.43 | 0.45 | 0.81 |
| Type III (Plowed) | ~0.43 | 0.58 | 0.84 |



FAA Guidance

✈ Waterborne Paint

→ Meet TT-P-1952D

✈ Solvent-Based Paint (Local Environmental Rules apply)

✈ Methacrylate

✈ Epoxy



Item P-620 Reflective Media

✈ REFLECTIVE MEDIA. Glass beads shall meet the requirements for [specify type]. Glass beads shall be treated with adhesion promoting and/or flotation coatings as specified by the manufacturer.

✈ The Engineer inserts all that will be used in the project. When more than one bead type is specified, the plans should indicate the bead type for each marking.

[TT-B-1325C, Type I, gradation A] smallest bead

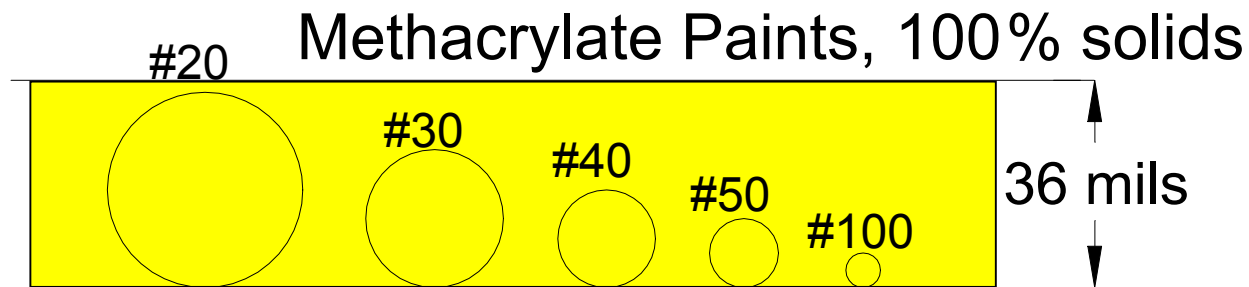
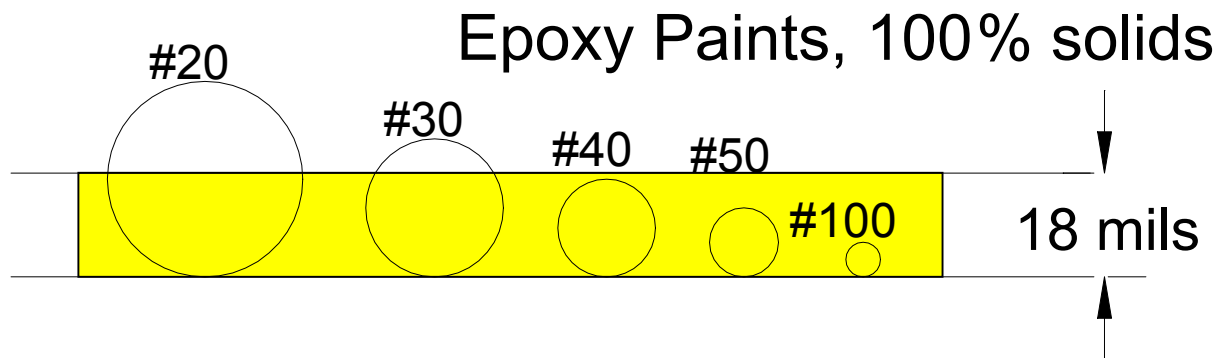
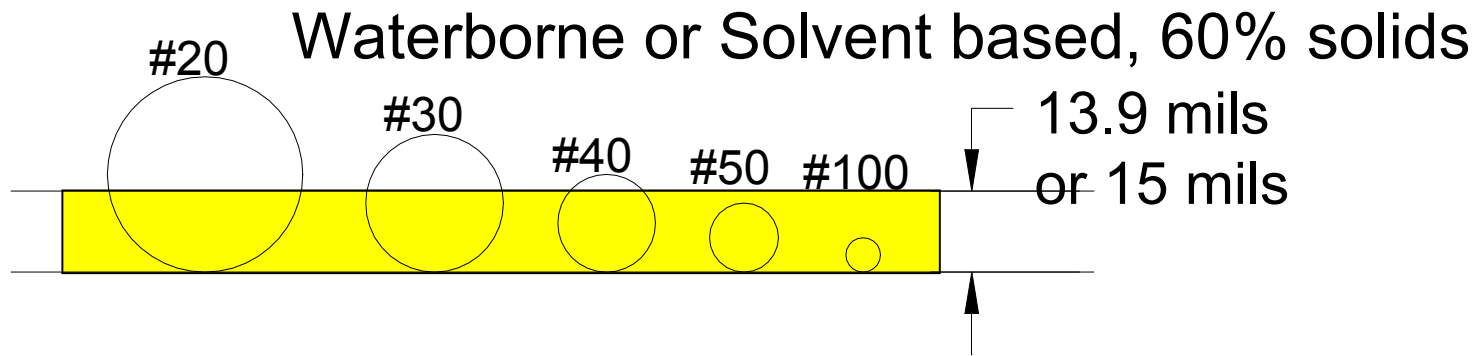
[TT-B-1325C, Type III] larger bead

[TYPE IV] largest bead-more paint per square foot

✈ The Engineer should consult with the paint and bead manufacturer on the use of adhesion, flow promoting, and/or flotation additives.



Wet Film Thickness (Dry Film = Wet film × %Solids)



Hand-Held Retroreflectometer

- ✈ These devices can spot check the condition of selected retroreflective pavement markings.
- ✈ Not Required in specification—FAA researchers use to evaluate marking materials.



Item P-620 Marking Specifications

✦ WEATHER LIMITATIONS. The painting shall be performed only when the surface is dry and when the surface temperature is at least 45 degrees F (7 degrees C) and rising and the pavement surface temperature is at least 5 degrees F (2.7 degrees C) above the dew point. [Painting operations shall be discontinued when the surface temperature exceeds [] degrees F ([] degrees C.)]



Item P-620 Marking Specifications

- ✦ PREPARATION OF SURFACE. The surface shall be dry and free material that would reduce the bond between the paint and the pavement. The area shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials. [Paint shall not be applied to Portland cement concrete pavement until the areas to be painted are clean of curing material. Sandblasting or high-pressure water shall be used to remove curing materials.]
- ✦ The Engineer should specify any additional surface preparation required and should specify the type of surface preparation to be used when existing markings interfere with or would cause adhesion problems with new markings.



Item P-620 Marking Specifications

✦ PROTECTION. After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings of paint.



Air Force Guidance—Best Available

- ✈ Engineering Technical Letter (ETL) 97-17: Guide Specification – Paint and Rubber Removal from Roadway and Airfield Pavements
- ✈ Point Of Contact. Mr. Michael D. Ates, HQ AFCESA/CESC, DSN 523-6351, commercial (850) 283-6351, Internet atesm@afcesa.af.mil.



Air Force Guidance—Best Available

✦ Description of Work. Required to remove 85 percent of the paint buildup from 100 percent of the painted area within a designated area of (runway, taxiway, apron, (and) roadway) pavement. The removal is to be completed without damage to the pavement surface, joints, and joint and crack seals, or any other property. The term "paint" used herein may include obsolete paint markings and/or loose and poorly bonded paint



Air Force Guidance—Best Available

- ★ Pavement Damage Survey. The Engineer and the Contractor shall jointly inspect the work area before work commences. Any existing damage to the pavement systems shall be documented at that time. The Contractor shall repair damage incurred during the contracted operations.



Air Force Guidance—Best Available

- ✦ Test Strip Demonstration. The Contractor shall test all equipment and demonstrate on the designated pavement work areas the proposed method to be used to remove paint.



Air Force Guidance—Best Available

- ✦ The test strip is as wide as the full operating width of the equipment and at least 15 meters (50 feet) long. The test strip is long enough to determine the operating parameters of the vehicle(s) and equipment to be used for the work. The test strip is used to demonstrate the effectiveness of the Contractor's methods and equipment to satisfactorily remove paint deposits from the pavement surfaces at the specified removal rate without damaging the pavement surface. The Engineer and/or Owners representative(s) is present at the test area to examine the pavement texture obtained on the test strip. The test strip is the measure of performance required of the Contractor for the paint removal project.



Air Force Guidance—Best Available

★ Compliance with Regulations. The Contractor shall ensure that any paint removal process is conducted in strict compliance with all local, state, and Federal environmental statutes and regulations, including, but not limited to, regulations promulgated under the Resource Conservation Recovery Act, 42 U.S.C. 6901, et seq., and the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601, et seq.



Air Force Guidance—Best Available

✦ Paint Removal. Removed by high pressure water and/or grinding. Inject sand as an abrasive into the high pressure water system. The use of environmentally acceptable chemical agents or high velocity impact removal shall be considered on a case-by-case basis. Use of any chemicals or impact abrasive in the removal process must be approved in advance by the Engineer. The Engineer specifically reserves the right to reject the use of any paint removal process which may pose unnecessary risks to aircraft due to foreign object damage (FOD) potential, human health, or the environment, as a result of its use, storage, or disposal. Painted markings equal to or greater than one three feet wide shall be removed at a minimum rate of 1,000 square feet per hour.



Air Force Guidance—Best Available

✈ Cleanup. The Contractor shall remove from the airfield all debris, waste, and by-products generated by the paint removal operations and shall dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations, including, but not limited to, regulations promulgated under the Resource Conservation Recovery Act, 42 U.S.C. 6901, et seq., the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. 9601, et seq., and the Hazardous Materials Transportation Act, 49 U.S.C. 1801, et seq.



FAA Role

✈ Headquarters Offices

- Issue Guidance
- Request Research
- Region Offices
- Administer Guidance



Questions / Dialog / Interaction

- ✈ What Problems are you experiencing?
- ✈ There are new high-build polymer resins that may help with discoloration and bead loss.

