NFPA No.

415

# AIRCRAFT FUELING RAMP DRAINAGE 1973


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Adopted Jan. 23, 1964: Revised Dec. 9, 1969. Where variances to these definitions are found, efforts to eliminate such conflicts are in process.

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Standard on

# Aircraft Fueling Ramp Drainage

NFPA No. 415 — 1973

## 1973 Edition of No. 415

This Standard is the work of the NFPA Sectional Committee on Aircraft Hangars and Airport Facilities which reports to the Association through the NFPA Committee on Aviation. This 1973 Edition was approved at the NFPA's 77th Annual Meeting held in St. Louis, Missouri, May 14–18, 1973. It supersedes the last previous edition dated 1966. The 1973 text separates the mandatory ("shall") provisions from other recommendations which have been placed in the Appendix.

## Origin and Development of No. 415

In 1960, the Committee secured Tentative Adoption of this Standard and Official Adoption followed in 1961. In compliance with NFPA Regulations Governing Technical Committees, the 1961 edition was reviewed by the Committee for reconfirmation in 1966, a five-year period having passed. In 1966 one paragraph was added and two of the diagrams were redrawn to improve legibility. This 1973 text contains the latest recommendations of the Association.

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*This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.*

## Standard on

# Aircraft Fueling Ramp Drainage

**NFPA No. 415 — 1973**

### 10. Definitions

**11.** An AIRCRAFT FUELING RAMP, as used herein, is any outdoor area at an airport, including aprons and hardstands, on which aircraft are normally fueled or defueled.

### 20. Scope

**21.** The requirements specified herein provide standards for the design of the water drainage system of an aircraft fueling ramp to control the flow of fuel which may be spilled on a ramp and to minimize the resultant possible danger therefrom. Such a drainage system is intended:

**a.** To limit spread of the fuel spill** to aircraft loading walkways†, structures†, passenger loading fingers†, or concourses which might result in the liquid or vapors therefrom reaching a source of ignition or might result in the accumulation of dangerous or toxic vapors therein.

**b.** To limit spread of the fuel spill** over large areas of the ramp surface and the transmission of vapors by the drainage system which may expose a number of aircraft or other equipment parked or operating on the ramp.

**c.** To limit continued exposure of the spilled liquids** to the air and the uncontrolled vaporization of the fuel on ramp surfaces which might result in the creation of serious fire hazard exposure conditions or the release of uncontrolled quantities of vapors creating potential hazards to life and property.

**d.** To provide for the safe disposal of fuel spillage** (see also Paragraph 33).

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**See also Standard on Aircraft Fueling on the Ground (NFPA No. 407; ANSI Z119.1).

†See also Standard on Construction and Protection of Aircraft Loading Walkways (NFPA No. 417); Standard on Aircraft Hangars (NFPA No. 409; ANSI B214.1; and Standard on Airport Terminal Buildings (NFPA No. 416; ANSI Z246.1).

## 30. Aircraft Fueling Ramp Slope and Drain Design

*31. Aircraft fueling ramps shall slope away from terminal building†, fingers†, aircraft hangars†, aircraft loading walkways†, or other structures, with a minimum grade of one percent (1:100) for the first 50 feet. Beyond this distance, the slope to drainage inlets may be reduced to a minimum of 0.5 percent (1:200). Drainage inlets, where provided, shall be a minimum of 50 feet from such structures.

*32. Effective aircraft fueling ramp drainage as specified herein may be accomplished by any one or a combination of the following methods:

**a.** Use of drain inlets with connected piping.

**b.** Use of open grate trenches as a collection means with connected piping.

**c.** Sloping of the ramp.

33. The water drainage system of any aircraft fueling ramp shall be so arranged that the fuel or its vapor cannot normally enter into the drainage system of: buildings, areas utilized for automobile parking, public or private streets, or the public side of airport terminal† or aircraft hangar† structures. In no case shall the design allow fuel to collect on the aircraft fueling ramp or adjacent ground surfaces where it may constitute a fire hazard, or result in a hazardous subsurface accumulation of such fuel.

*34. Aircraft loading walkways‡ shall not be located over any drainage inlet.

35. The final separator or interceptor for the entire airport drainage system shall be adequate to prevent disposal of combustible quantities of flammable liquids into adjoining properties or waterways.

36. Grates and drain covers shall be removable to facilitate cleaning and flushing.

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*Asterisk indicates additional information given in Appendix.

†See also Standard on Construction and Protection of Aircraft Loading Walkways (NFPA No. 417); Standard on Aircraft Hangars (NFPA No. 409; ANSI B214.1; and Standard on Airport Terminal Buildings (NFPA No. 416; ANSI Z246.1).

‡See Standard on Construction and Protection of Aircraft Loading Walkways (NFPA No. 417).

**37.** If open grate drainage trenches are used as a collection means, such open trenches, including branches, shall not be over 125 feet in length with a minimum interval of 6 feet between open trench sections to act as fire stops. Each 125-foot section shall be individually drained through underground piping. Open trenches shall not be used where they are in line of pedestrian or passenger traffic.

**38.** Underground piping and components used in drainage systems shall be noncombustible and inert to fuel.

### 40. Drain and Separator Maintenance

***41.** Periodic maintenance checks shall be conducted of all ramp drainage systems and interceptors to assure that they are clear of obstructions and function properly.

**42.** Large volume flushing with water shall be conducted through appropriate drainage elements after any large fuel spill on the aircraft fueling ramp enters the drainage system.

## Appendix

## Recommendations Applicable to Aircraft Fueling Ramp Drainage

(In Addition to the Provisions of Sections 30 and 40 of this Standard to Achieve the Purposes as Defined in Section 20.)

**A-31.** Consideration should be given to the hydraulic problem in disposal of surface water, safe disposal of fuel which might be spilled on the ramp, and the gradient to be overcome in the movement of aircraft. A ratio of 40,000 square feet per drainage inlet should not be exceeded with minimum flow distances to drains but with drain inlets located so as not to endanger aircraft placements within the ramp area so described.

**A-32.** The use of slopes alone on aircraft fueling ramps is the least desirable method. The use of slopes and open grate trenches as a collection means with connected piping to dispose of fuel spills is preferable to the use of slopes alone, but is not as desirable for major airports as the use of slopes and drain inlets with connected

*Asterisk indicates additional information given in Appendix.

piping. Figures 1 and 2 diagrammatically illustrate two possible fueling ramp drainage arrangements.

**A-34.** It is recommended that personnel responsible for locating the aircraft during fueling be informed on the purposes of the drainage system used and the importance of properly locating aircraft with respect to the drainage system provided.

**A-41.** It is suggested that maintenance checks be conducted at least four times a year and more often if climatic or other local conditions dictate. Observations made during rain storms may serve as a suitable check for satisfactory operation of the drainage system.

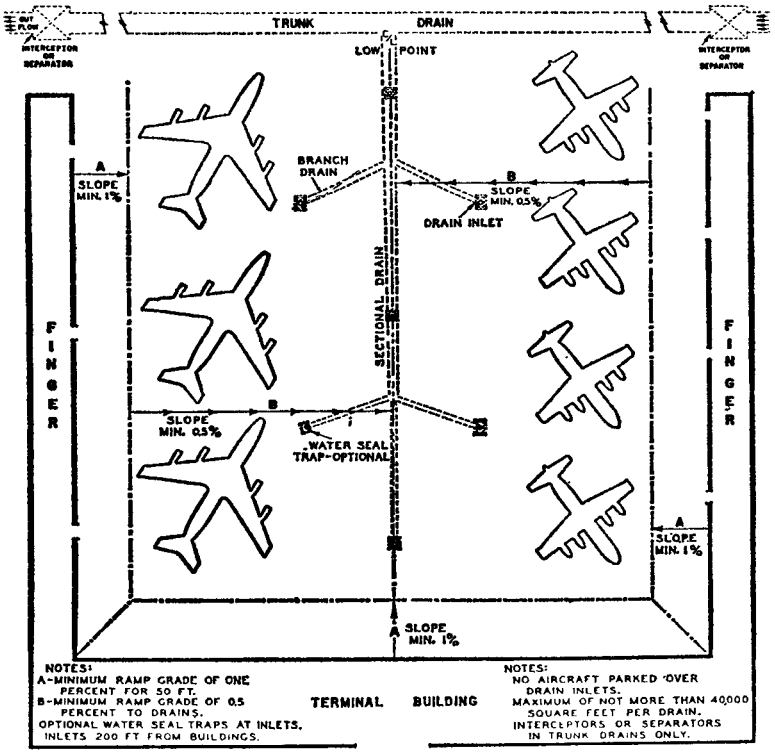


**Figure 1. One possible arrangement of an aircraft fueling ramp drainage system using the optional trapped drain inlets.**

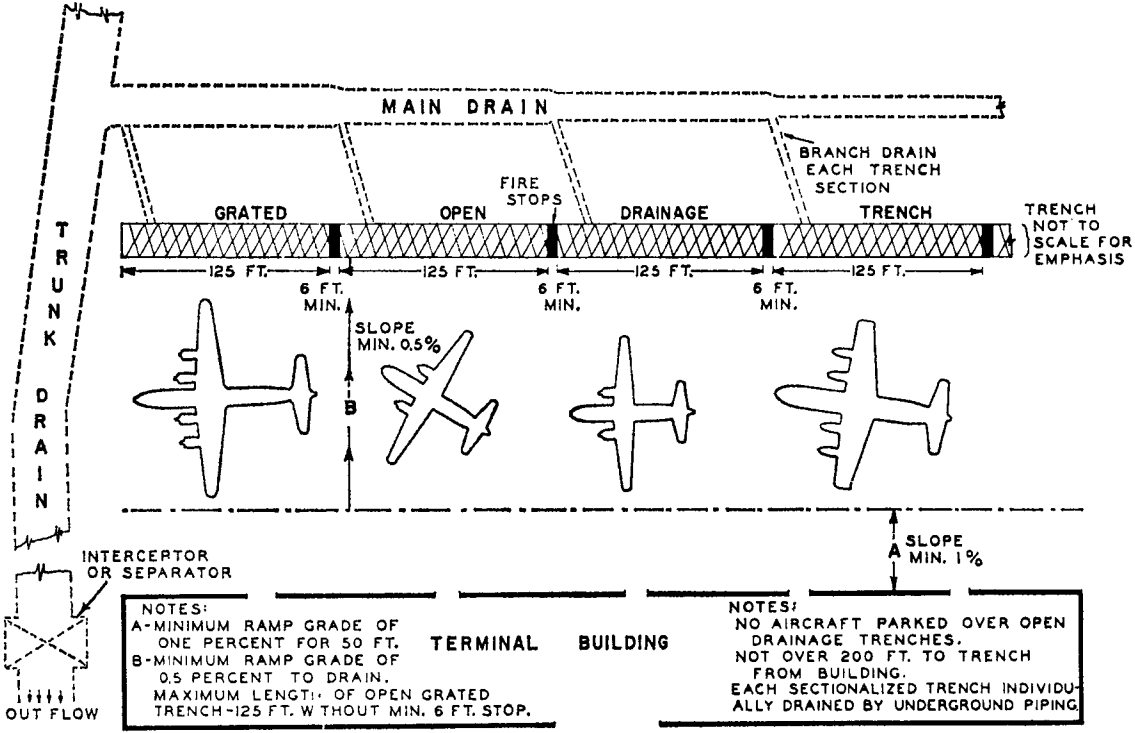


**Figure 2. Another possible arrangement of an aircraft fueling ramp drainage system using a grated open drainage trench.**