



Designation: F2507 – 15

# Standard Specification for Recreational Airpark Design<sup>1</sup>

This standard is issued under the fixed designation F2507; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers the minimum requirements for the design of a recreational airpark intended to service any aircraft with stall speeds ( $V_{S1}$ ) of 45 knots or less. These aircraft include but are not limited to, standard category aircraft, light sport aircraft, ultralights, microlights, and advanced ultralights

1.2 Recreational airparks are designed for daylight operations from 60 min before official sunrise to 60 min after official sunset.

1.3 Recreational Airparks may provide commercial services in support of the recreational operation of light sport aircraft, including, but not limited to: flight instruction, introductory flights, aircraft rental, glider towing, and maintenance services.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- D4814 Specification for Automotive Spark-Ignition Engine Fuel
- D6227 Specification for Unleaded Aviation Gasoline Containing a Non-hydrocarbon Component
- F2317/F2317M Specification for Design of Weight-Shift-Control Aircraft
- F2352 Specification for Design and Performance of Light Sport Gyroplane Aircraft
- F2244 Specification for Design and Performance Requirements for Powered Parachute Aircraft
- F2245 Specification for Design and Performance of a Light Sport Airplane

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F37 on Light Sport Aircraft and is the direct responsibility of Subcommittee F37.70 on Cross Cutting.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

### 2.2 FAA Documents:<sup>3</sup>

- FAA Form 7460-1 Notice of Proposed Construction or Alteration
- FAR Part 157 Notification of Construction, Alteration, Activation, and Deactivation of Airports
- AC 150-5300-13A Advisory Circular for Airport Design

### 2.3 NFPA Standard:<sup>4</sup>

- NFPA Standard No. 30 Flammable and Combustible Liquids Code

## 3. Terminology

### 3.1 Definitions:

3.1.1 *airport elevation*—highest point on the surface of an airport's usable runway.

3.1.2 *civil aviation authority (CAA)*—government which has regulatory oversight for aircraft operations/safety in the country which the airport is located; for example, United States → Federal Aviation Administration.

3.1.3 *NFPA*—National Fire Protection Association.

3.1.4 *runway protection zone (RPZ)*—area off the runway end to enhance the protection of people and property on the ground.

3.1.5 *runway safety area (RSA)*—defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot or excursion from the runway.

3.1.6 *taxiway (TW)*—defined path established for the taxiing of aircraft from one part of an airpark to another.

3.1.7 *taxiway safety area (TSA)*—defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft unintentionally departing the taxiway.

3.1.8 *threshold (TH)*—beginning of that portion of the runway available for landing.

## 4. Significance of Use

4.1 The purpose of this specification is to establish minimum standards for an airpark on which light aircraft designed

<sup>3</sup> Available from Federal Aviation Administration (FAA), 800 Independence Ave., SW, Washington, DC 20591.

<sup>4</sup> Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

in accordance with Specifications **F2317/F2317M**, **F2352**, **F2244**, **F2245**, and other similar aircraft may safely operate.

## 5. Site Requirements

5.1 *General*—An airpark site should take into consideration the need to ensure safe approaches and departures of aircraft.

5.1.1 Each facility shall have a means by which a person can contact an appropriate authority in case of an emergency. One example would be a public phone.

5.1.2 Each facility shall have a functioning wind sock.

5.1.3 The grading of the airport shall be such that all shoulders and slopes drain away from runways, taxiways, and all paved areas. Surfaces within the RSA and TSA shall be graded so as not to present a hazard to aircraft due to excursion from the runway or taxiway surfaces.

5.1.4 An airport should have smooth, well drained operational areas with sufficient stability to permit the safe movement of recreational aircraft.

5.1.5 *U.S. Federal Requirements*—Notification of the intent to establish an airpark is required under the provisions of FAR Part 157. FAA Form 7480-1, which is used to provide this notice (as well as guidance in its preparation), is available from any FAA Regional Airports Division or Airports District/Field Office.

5.1.6 *Local Requirements*—Most communities have established zoning laws, building codes, fire regulations, and other legal requirements to provide for the safety and comfort of the citizenry. A thorough study of these requirements should be made to determine their effect on the establishment and operation of an airpark.

## 6. Airpark Geometry

6.1 Runway location and orientation are important to airport safety, efficiency, economics, and environmental impact. The weight and degree of concern given to each of the following factors depend, in part, on: the meteorological conditions; the surrounding environment; topography; and the volume of air traffic expected at the airpark.

6.2 *Wind*—**Appendix X1** provides information on wind data analysis for airport planning and design. Such an analysis considers the wind velocity and direction as related to the existing and forecasted operations. It may also consider wind by time of day.

6.3 *Airspace Availability*—Check with the respective Civil Aviation Authority to ensure the airpark location will not interfere with existing and planned approach and departure procedures, control zones, special use airspace, restricted airspace, and traffic patterns currently established for other aviation facilities.

6.4 *Obstructions to Air Navigation*—An obstruction survey should identify those objects that may affect aircraft operations. Approaches free of obstructions are desirable and encouraged, but as a minimum, locate and orient runways to ensure that the approach areas associated with the ultimate development of the airport are clear of hazards to air navigation.

6.5 *Wildlife Hazards*—In orienting runways, consider the relative locations of bird sanctuaries, sanitary landfills, or other areas that may attract large numbers of birds or wildlife.

## 7. Runway Design and Marking

### 7.1 Runway Dimensions:

7.1.1 *Airparks Supporting Light Sport Airplanes, Weight-Shift, or Gyroplane Aircraft, or a Combination Thereof:*

7.1.1.1 Minimum length ( $L_R$ ) is to be twice the demonstrated or published minimum landing and takeoff distance requirements of the aircraft to be served or 275 m (902 ft) at sea level, whichever is greater. Runway lengths for airparks located at elevations above sea level should be increased as necessary to accommodate the landing and takeoff distance requirements of the aircraft to be served at the airport's elevation. In the absence of a more rational calculation, an increase of 25 m (82 ft) per 300 m (984 ft) of elevation may be used. Runway length is measured from the landing threshold to the threshold at the end of the landing distance available. See **Fig. 1**.

7.1.1.2 Width shall be a minimum of 10 m (33 ft) for unpaved runways and a minimum of 6 m (19.7 ft) for paved runways.

7.1.1.3 A minimum runway safety area (RSA) with a width of 32 m (104 ft) centered over the runway centerline and extending 75 m (246 ft) past each runway threshold shall be established. See **Fig. 2**.

7.1.1.4 Except for runway markings flush with the surface and frangible navigational markings (runway edge lights, etc.), no structure, trees, road, or designated vehicle or aircraft parking area shall be located within the runway safety area.

7.1.1.5 For approach end of runways, a runway protection zone (RPZ) shall be maintained clear of obstructions in accordance with the following description:

(1) No object shall penetrate the RPZ. The RPZ is an imaginary surface that starts at the runway landing threshold at the elevation of the runway centerline and slopes upward at a slope of 15 (horizontal) to 1 (vertical). See **Fig. 2**.

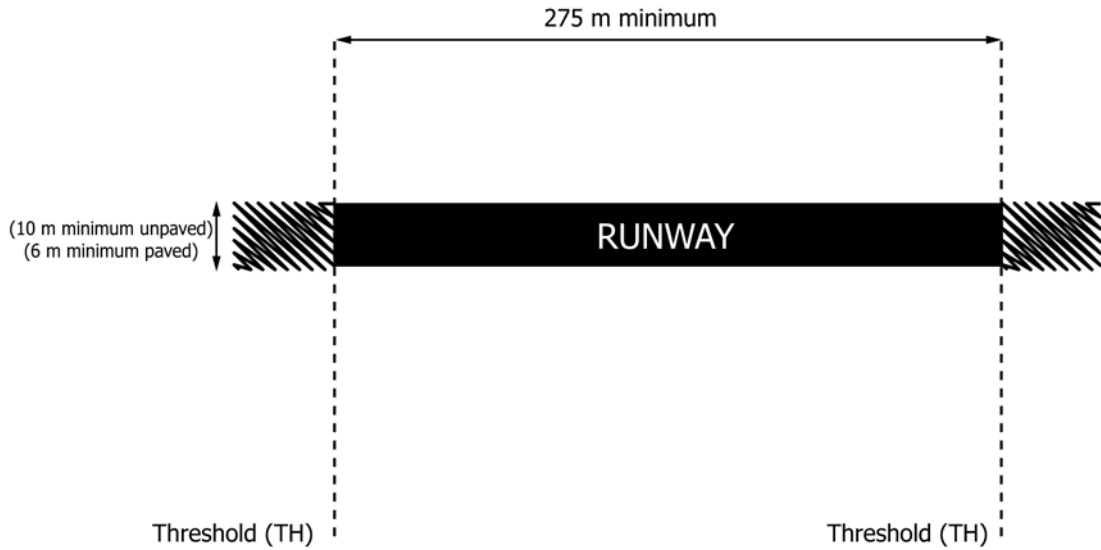
(2) In the plan view, the centerline of the RPZ extends 230 m (750 ft) along the extended runway centerline starting at the runway landing threshold. This surface extends laterally 16 m (52 ft) on each side of the runway centerline starting at the runway threshold and increases in width to 120 m (400 ft) at a point 230 m (750 ft) from the landing threshold at an elevation of 15 m (50 ft) above the elevation of the landing threshold. See **Fig. 2**.

(3) The RPZ is intended to protect the approach/departure ends of the runway from obstructions due to future potential land development – airpark owners should therefore strive to control the land below the RPZ by ownership or surface lease.

(4) For the purpose of establishing the RPZ, any vehicle or aircraft movement area including taxiways, aircraft run-up areas, cart paths, and roadways and highways shall be considered an obstruction equal to a height of 4.3 m (14 ft).

7.1.2 *Powered Parachute Designated Landing Area* (see **Fig. 3**):

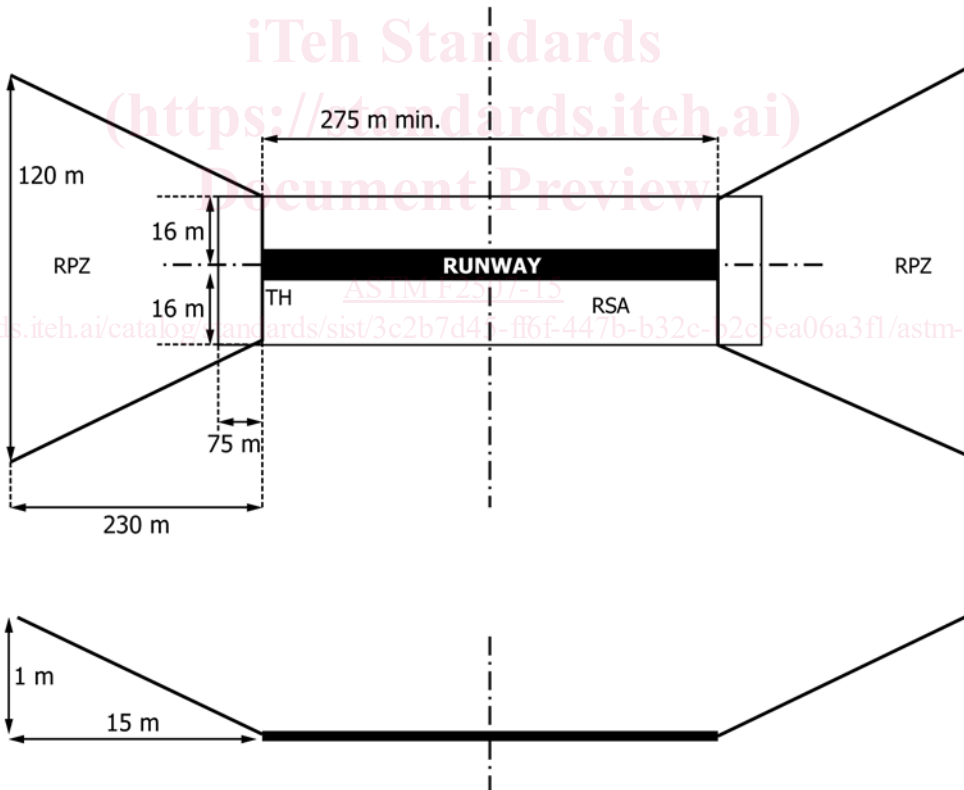
7.1.2.1 Airparks establishing a separate landing area for powered parachutes shall designate a circular landing area with a minimum radius of 45 m (147 ft). See **Fig. 3**.



**Overrun/Runway Safety Area**—The portion of surface behind a threshold that may be available for takeoff in either direction and landing from the opposite direction.

NOTE 1—Not to scale

FIG. 1 Runway Length—Threshold



NOTE 1—Not to scale

FIG. 2 Safety Areas

7.1.2.2 A safety area with a radius of a minimum of 76 m (249 ft) shall be established. See Fig. 3.

7.1.2.3 In cases where 95 % or greater of the daytime prevailing winds occur within a 60° arc or the inverse of that