



Designation: **F2507–05 (Reapproved 2010) F2507 – 15**

Standard Specification for Recreational Airpark Design¹

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 (ϵ) 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:²

[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](#)

2.2 FAA Standards/Documents:³

[FAA Form 7480-17460-1 Notice of Landing Area Proposal/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:⁴

[NFPA Standard No. 30 Flammable and Combustible Liquids Code](#)

3. Terminology

3.1 Definitions:

3.1.1 *airport elevation*—highest point on an airport's 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 also know as a RPZ or runway protection zone.
~~runway.~~

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

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

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

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.

~~3.1.7.1 Discussion~~

~~Depressions such as swales are allowable.~~

~~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 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

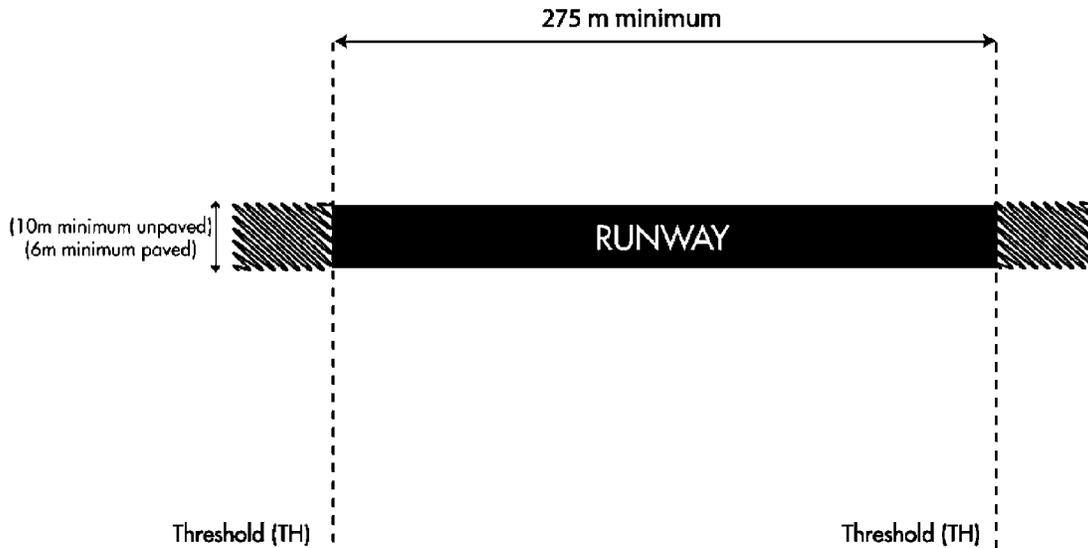
7.1 *Runway Dimensions:*

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 at a rate 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 airport elevation. elevation may be used. Runway length is measured from ~~threshold to threshold. 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 ~~10 m (33 ft) each side of the centerline extended (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**.



 **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

iTeh Standards

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

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

(1) No object should penetrate a surface that starts at the edge of the threshold and at the elevation of the runway centerline at the threshold and slopes upward at a slope 15 (horizontal) to 1 (vertical). See Fig. 2.

7.1.1.5 In the plan view, the centerline of this surface extends 1000 m (3280 ft) along the extended runway centerline starting at the end of the runway. This surface extends laterally 16 m (52 ft) on each side of the runway centerline starting at the end of runway and increases in width to 45 m (147 ft) at a point 1000 m (3280 ft) from the end of the runway. See For approach end of runways, a runway protection zone (RPZ) shall be maintained clear of obstructions in accordance with the following description: Fig. 2.

(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).

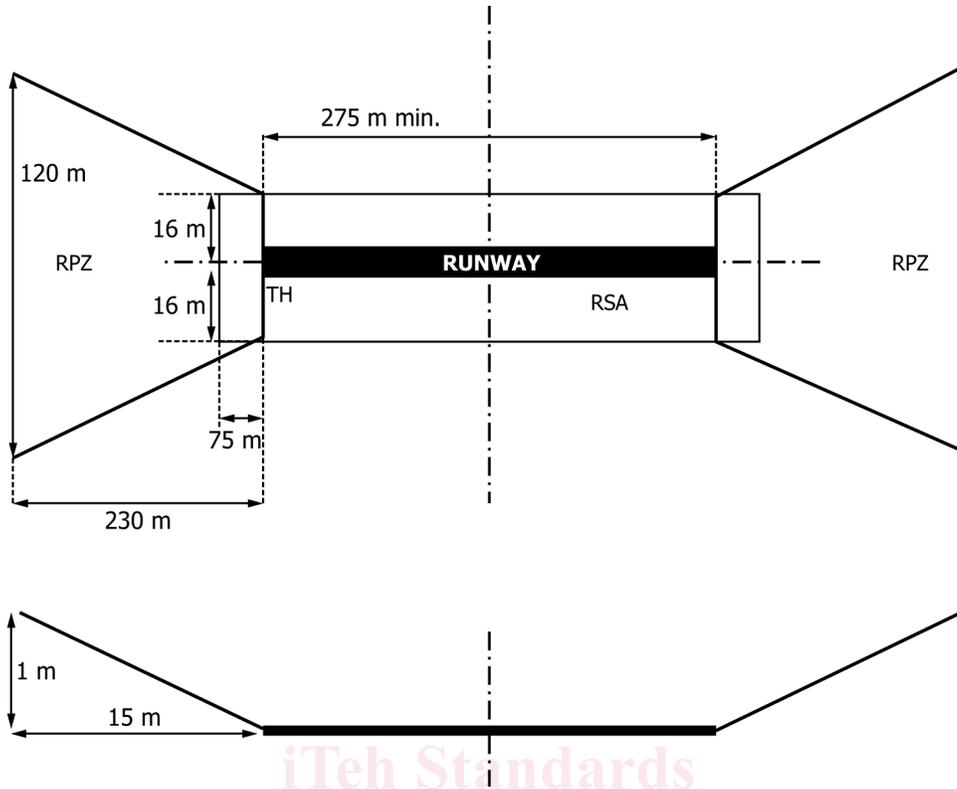
7.1.2 Powered Parachute Designated Landing Area (see Fig. 3):

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.

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 degree 60° arc or the inverse of that arc, or both, the crosswind segment of both the landing area and safety area may be reduced. The reduced width is measured as a width either side of a straight line drawn in the center of the 60 degree 60° arc of 26 m (85 ft) for the landing area and 44 m (144 ft) for the safety area. See Fig. 4.

7.1.2.4 Except for runway and navigational marking, no structure, trees, road, or designated aircraft parking area should be located within the runway safety area.



NOTE 1—Not to scale

FIG. 2 Safety Areas

7.1.2.5 The designated landing area for powered parachutes may overlap a runway as described in 7.1, where an airpark operator wishes to support both types of aircraft on the same landing surfaces.

7.1.2.6 If prevailing winds allow and an airpark owner so designates, the airpark may support powered parachute landing traffic on a runway in place of a powered parachute landing area.

7.2 Runways should be marked with white paint or white colored break-off markers such as plastic highway cones, or both.

7.3 Runways shall be clear and graded and have no potentially hazardous ruts, humps, depressions, or other abrupt surface variations.

7.4 Runways shall be graded to divert surface water runoff off the runway and into a drainage system.

8. Taxiway Design and Marking

8.1 *General*—An airpark is not required to have taxiways. If taxiways are established, then the following minimum standards shall be met.

8.1.1 Each taxiway shall be at least 3 m (10 ft) wide.

8.2 Each taxiway shall have a taxiway safety area of 10 m (33 ft) each side of the center line, with a width of 15 m (50 ft) centered over the taxiway centerline. The TSA shall not overlap the RSA.

8.3 Except for taxiway and navigational marking, no structure, trees, or designated aircraft parking area should be located within the taxiway safety area.

8.4 Taxiway edges should be marked with blue colored markers such as plastic highway cones or break-off markers.

9. Threshold Sighting/Siting

9.1 *General*—The ~~threshold~~ thresholds should be located at the beginning of the marked runway surface. However, displacement of the landing threshold may be required when an object that obstructs the airspace required for landing approaching aircraft is beyond the airport owner's power to remove, relocate, or lower. Thresholds may also be displaced for environmental considerations, such as noise abatement.

9.1.1 ~~Displacement of a threshold reduces the length of runway available for landings. Depending on the reason for displacement of the threshold, the portion of the runway behind a displaced threshold may be available for takeoffs in either direction or landings from the opposite direction.~~ Runway landing thresholds shall be placed so that no obstruction shall penetrate