



Standard Specification for Pole Vault Landing Systems¹

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1. Scope

1.1 This specification covers minimum requirements of size, physical characteristics of materials, standard testing procedures, labeling and identification of pole vault landing pads intended for users up to 19 ft (5.74 m).

1.2 The values as stated in inch-pound units are to be regarded as the standard. The values in parentheses are given for information only.

1.3 The following safety hazards caveat pertains only to the test methods portion, Section 8, of this specification: *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. Terminology

2.1 Definitions

2.1.1 *base unit sections, n*—those components of the primary landing system that provide the majority of the padding behind the planting box. In most pole vault landing systems, they are several large rectangular-shaped sections that compose the vast majority of this portion of the landing system. Base unit sections should be covered by a common top cover. (See Fig. 2.)

2.1.2 *box collar, n*—two to four inches of secondary (supplementary) padding around the sides and rear of the planting box that eliminates any and all hard surfaces between the front buns and the edges of the planting box. (See Fig. 3.)

2.1.3 *coaches box, n*—a painted or sewn contrasting rectangle on the common top pad, 8 ft (2.68 m) deep and 10 ft (3.05 m) wide, beginning 3.5 ft (1.06 m) behind the zero line. (See Fig. 1.)

2.1.4 *common top cover, n*—the top surface of the primary pole vault landing system. It is designated initial landing point. It may function both as padding and as a binder to help hold the base units and front bun sections in place during use, and it also provides a smooth safe surface upon which to land. (See Fig. 2.)

2.1.5 *front bun sections, n*—those components of the primary landing system that pad the areas between the standard bases and around the planting box. They should be bound together with straps to each other and to the base unit sections and to the common top pad to provide one continuous landing system. (See Fig. 2.)

2.1.6 *multi-component landing system, n*—consists of several component parts or sections that form an integrated system and provide a safe, efficient landing environment.

2.1.7 *pole vault landing pad, n*—a device used to decelerate a free-falling human body while pole vaulting.

2.1.8 *primary landing system, n*—that portion of a multi-component landing system where the pole vaulter intends to land. It consists of several components (sections) held together with binders so that a continuous safe landing surface is provided.

2.1.9 *secondary (supplementary) padding, n*—padding beyond the primary system landing areas that does not have to be covered by a common top pad. Box collars, standard base pads, and additional perimeter padding all fall into this category.

3. Minimum Overall Dimensions of Pole Vault Landing Systems

3.1 Overall dimensions must be based on the kinematics of the human body and the shock-absorbing quality of the material. They must also be based on the comfort and safety of the user.

3.2 If the human body impacts with a 100 % vertical force, the dimension must exceed the length and width of the body.

3.3 If the human body impacts with the horizontal component, the length and width of the landing surface must be derived mathematically based upon the kinematic variables involved in the performance.

NOTE 1—Several studies of pole vaulters indicate the following assumptions that were used to determine the pit dimensions. A vaulter reaching 19 ft (5.80 m) would have a push off horizontal velocity of 4 ft/s (1.2 m/s). This velocity plus the length of the body would not exceed the 16 ft 5 in. (5.0-m) pit length. Less skilled vaulters reaching 10 ft (3 m) may have a push off horizontal velocity of 8 ft/s (2.4 m/s). This velocity plus the length of the body would not exceed the 16 ft 5 in. (5.0-m) pit length.

3.4 The minimum pole vault landing system dimensions stated within this document are based upon the investigation of the reported catastrophic pole vaulting accidents over the past 20 years.

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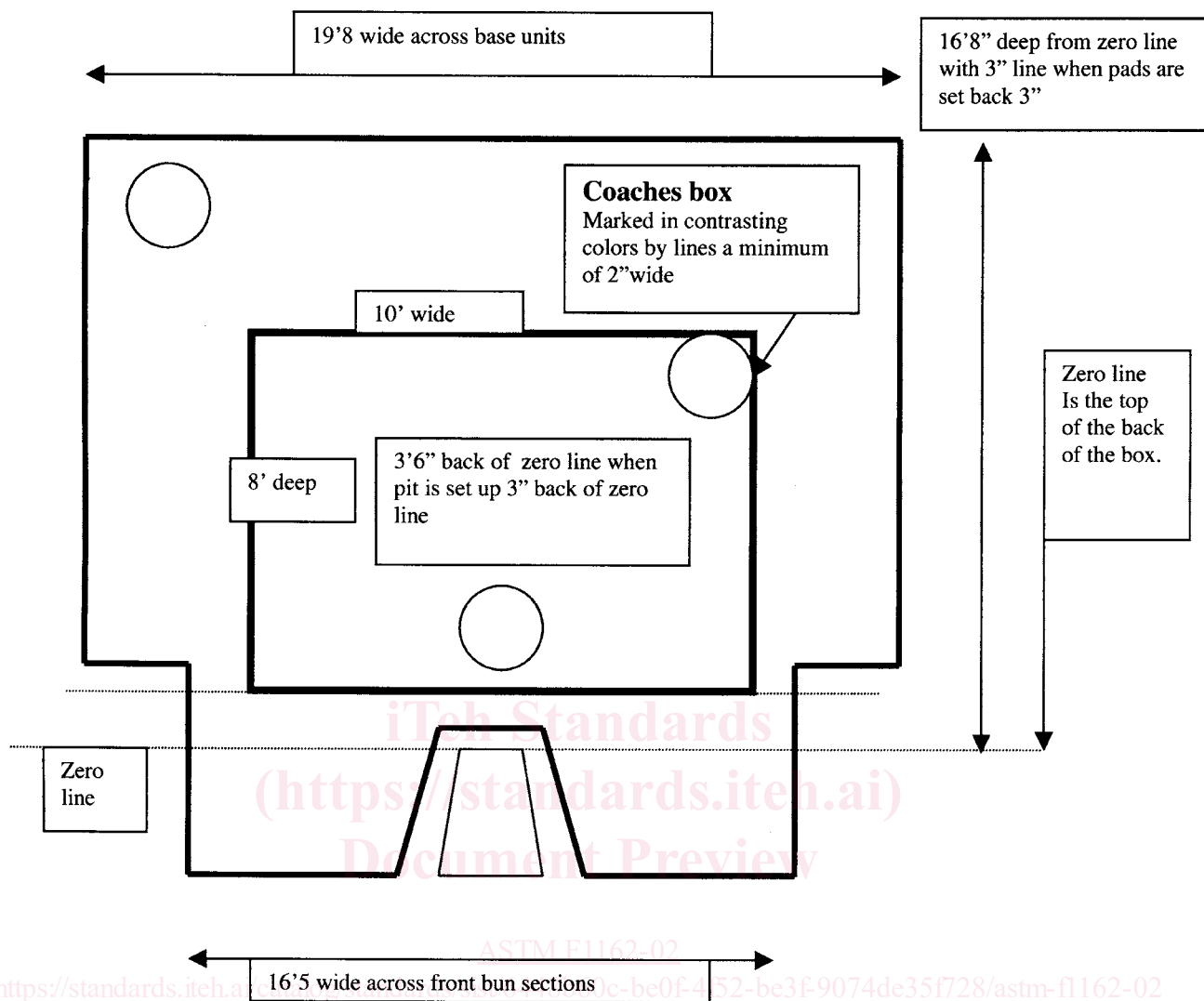


FIG. 1 Suggested Coaches Box and Testing Points

3.5 The minimum size and design specifications for pole vault landing pads are as follows: 19 ft 8 in. (6.00 m) wide across the base unit sections by 16 ft 5 in. (5.00 m) deep, when set in the most preferred position 3 in. (0.076 m) behind the vertical plane of the stop board with a uniformly high landing surface with a minimum height of 26 in. (0.66 m). The front portions of the pit that surrounds the planting box (the front buns) shall be 16 ft 5 in. (5.00 m) wide and extend at least 45 in. (1.14 m) from that portion of the front buns where the padding begins behind the back of the planting box. Thus the front of the front bun sections cover the entire area between the planting box and the inside edge of the base of the standard base rails to the front edge of the planting box when the pads are placed 3 in. (0.76 m) behind the back of the planting box. The minimum overall pit size is 19 ft 8 in. (6.00 m) wide by 20 ft 2 in. (6.14 m) long from the front of the front buns to the rear-most portion of the landing area. (See Fig. 2.) The height of the front units may taper down in 15 in. (0.381 m) at the front in order to give the vaulter a clearer approach to the vaulting box. In addition, the front buns should taper into the

planting box area so that they provide protection yet allow the vaulting pole to bend and rotate undisturbed with the primary landing system a minimal distance behind the back of the planting box. (See Fig. 2.)

3.6 In those special cases where a rectangular minimum size landing system will not fit into a facility, the rear half of the base unit sections may be rounded slightly along the outside edges to accommodate the shape of the running track or other obstruction alongside or behind it. In these special cases, the side and rear padding may be curved based upon a radius the length of the width of the base unit area of the system, from a point of origin halfway back on the side of the landing system (See Fig. 2 and Fig. 4).

3.7 Upgrades and additional supplementary padding may be used to increase the size of existing landing systems that no longer meet the new minimum specifications of this specification. Supplementary sections of padding should be attached in some way to the existing (primary) landing system to keep them from separating away from the primary landing system or each other. However, a common top cover need only cover the

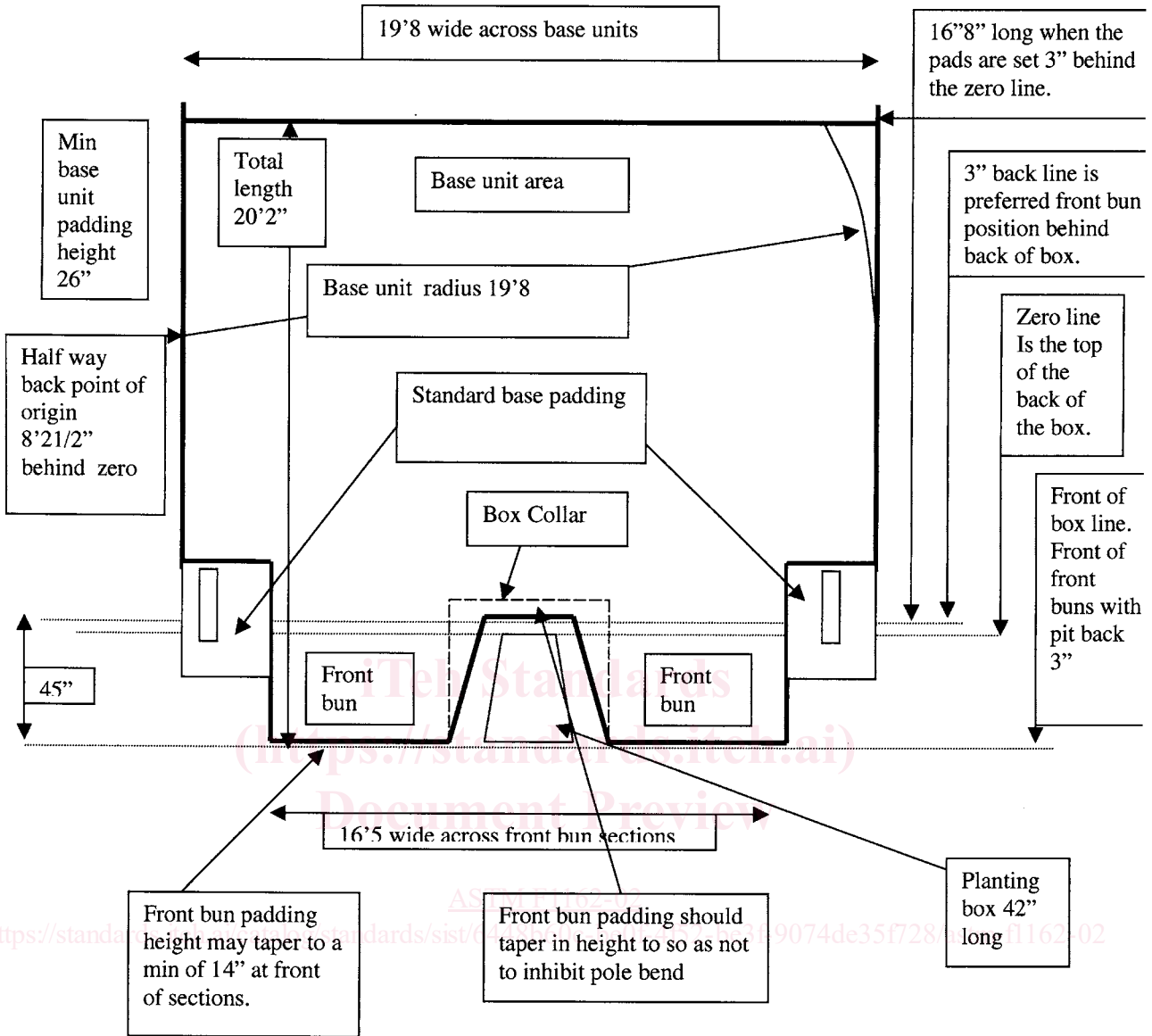


FIG. 2 Minimum Pole Vault Landing Systems Footprint

Minimum Landing Pad Dimensions: Overall minimum size: 19 ft. 8 in. (6.00 m) (wide across base unit sections behind standards) by 20 ft 2 in. (6.14 m) (from front of front buns to rear of pit). Primary landing areas shall be a minimum of 26 in. in depth. Front buns may taper to a minimum of 14 in. at their frontmost portions. Front buns should extend to a minimum of the front edge of the planting box so that pad is in its most appropriate position. For most pads with tapered front bun sections, this position is 3 in. back of zero.

primary portion of the pit and not the secondary (supplementary) padding beyond the primary landing system. Secondary (supplementary) padding may also take the form of protection on the standard bases and around the planting box. (See Fig. 4.)

3.8 Standard base padding is considered supplementary (secondary) padding. Standard base pads should be designed so that the uprights move freely both forward and back for efficient, accurate standard adjustments. Standard base padding systems should be approximately the same height as the front of the front buns for which they are built. However, standard base padding should not exceed the height of the front bun sections that they sit next to. Standard base padding should be a minimum of 20 in. (0.51 m) wide so that they minimally

extend from the sides of the front bun sections to the outside edges of the base unit sections. The openings for the uprights should not be more than 8 in. (0.20 m) wide. For solid foam systems, a minimum of 14 in. of padding should cover all hard standard base and underlayment hard surfaces. For plywood standard base type systems, a minimum of 8 in. of padding should be present. In both systems the padding should cover the entire area of the standard bases and all hard surfaces on which they rest. They should also minimally pad the entire area between the front buns and the adjacent base unit sections. Standard base protectors do not need to be covered with the common top pad or attached to the rest of the landing system. (See Figs. 5-7.)

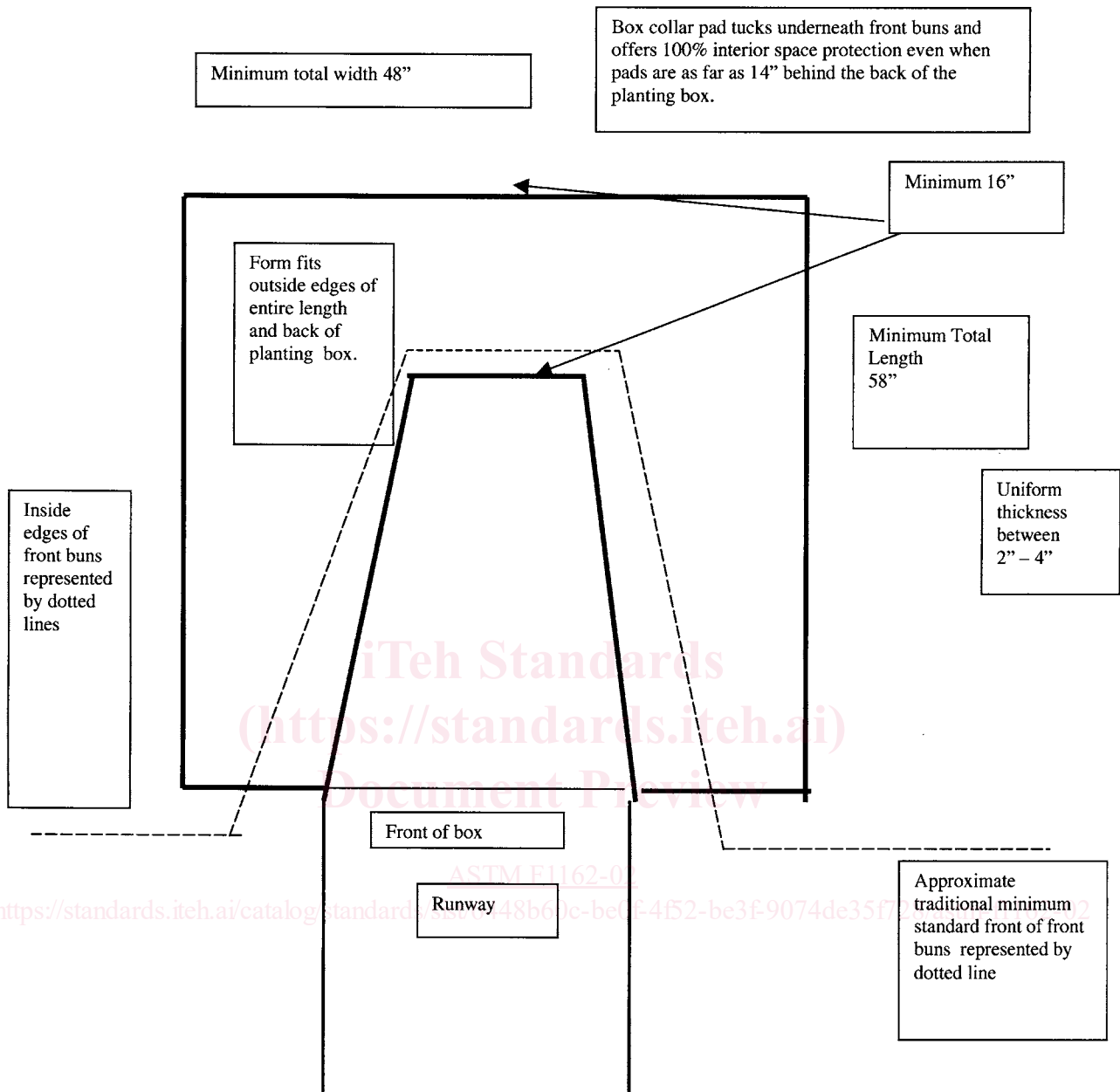


FIG. 3 Pole Vault Box Collar Minimum Specifications

The pole vault box collar is a secondary (supplementary) type of protection designed to eliminate all hard surfaces and edges between the pole vault box and the inside edges of the front bun padding around it.

1. Pole vault box collars shall be a minimum of 2 in. (0.07 m) thick but not more than 4 in. (0.10 m) thick. So that it offers protection yet allows the vaulting pole to bend and roll in an undisturbed manner and does not disturb the setting of the front buns.
2. It shall be made of dense foam padding with a vinyl covering or a material similar to a wrestling mat.
3. It shall form fit the entire length and width of the planting box so that when placed in proper position all hard surfaces are padded, even if the front buns are slid back to the national HS minimum of 14 in. (0.35 m).
4. Box collar padding shall be long enough and wide enough to extend under all inside edges of the front buns so that the weight of the front buns will hold it in a secure position.

3.9 Box collars are considered secondary (supplementary) padding. They are designed to pad the area between the outside edges of the vaulting box and the inside edges of the front buns. Box collars do not need to be covered with a common top

cover. However, they should form fit exactly to the top of the outside edges of the planting box and extend beneath the