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Terminology and Recommendations for Freestall Dairy Housing, Freestalls, Feed Bunks, and Feeding Fences

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Developed by the ASAE Dairy Housing Committee; approved by the ASAE Structures and Environment Division Standards Committee; adopted by ASAE March 1984; reconfirmed December 1988, December 1989, December 1990, December 1991; reaffirmed December 1996, December 1997, December 1998; revised December 1999; reaffirmed February 2005; revised editorially February 2005; reaffirmed January 2010; reaffirmation date extended for two years December 2014; reaffirmed October 2016.

Keywords: Dairy, Feed, Stalls, Terminology

1 Purpose and Scope

1.1 The purpose of this Engineering Practice is to provide persons planning freestall dairy facilities with rationale, terminology, and design recommendations. The recommendations cover freestalls, feed bunks, and feeding fences for mature cows.

1.2 This Engineering Practice presents a range of good practice recommendations and is not intended to dictate specific designs to manufacturers or inhibit new design innovations. Designs outside the range may be desired in some specific cases. Reference is made to existing ASAE Standards and Engineering Practices wherever applicable.

2 Resting area

2.1 A **dairy cow freestall (cubicle)** is an individual resting place which the cow is free to enter and leave at will. Cows should be able to enter and leave the stall easily, lie down comfortably, and rise without interference. Additional considerations are minimum potential for injury, stall cleanliness, bedding requirements, labor, durability, and ease of removing cows unable or unwilling to leave of their own accord. Figure 1 shows the space needs of a cow with respect to rising and lying. The needs are:

— her body space, from the rear of the cow to the front of her knees;

— head space, the space ahead of the cow's body occupied by her head while lying; and

— lunge space, the additional space necessary for the thrust of the cow's head as she lunges forward during rising.

2.1.1 **Dimensions** of a freestall must satisfy requirements of both cow comfort and cow cleanliness. The freestall must be wide enough for the cow to lie comfortably, but narrow enough to keep the cow from turning around. The freestall must be long enough to allow the cow to rest comfortably on the platform without injury, yet short enough that manure and urine are deposited in the alley.

2.1.2 The **rising action** of the cow requires space for the thrust of the head during the cow's natural lunge as she transfers her weight forward upon rising from a resting position (Figure 1). Options include:

— closed front stall (CF), which requires a longer stall length that allows the cow to thrust her head forward within the stall envelope;

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— open front stall (OF), which leaves sufficient opening in the stall front to allow cows to lunge forward into an open space beyond (an opposite stall or an open barn wall); or

— side lunge stall (SL), which relies upon a partition designed to allow the cow to thrust her head to the side into the adjacent stall space.

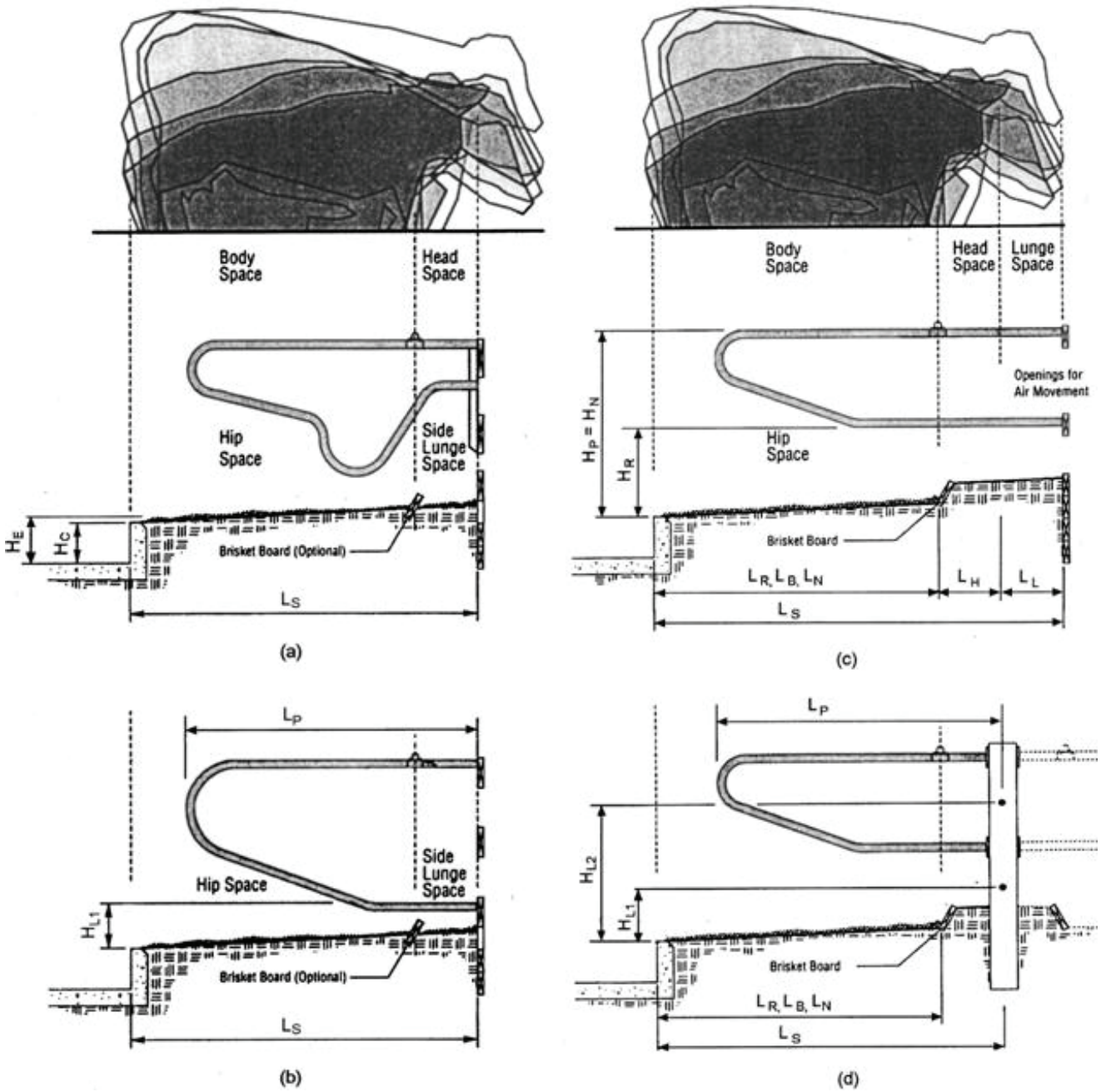

Figure 1 – (a) A side lunge freestall (SL). The cow thrusts her head into the adjacent stall space using the space provided under the lower rail of the partition. (b) A side lunge freestall (SL). The cow thrusts her head just over the partition's lower rail which is no more than (H_{L1}) above the top of the curb. (c) A closed front forward lunge freestall (CF). A longer still platform allows the cow to thrust her head forward. (d) An open front forward lunge freestall (OF). Partitions for head-to-head freestalls are mounted on posts and the cow thrusts her head forward using the space left open between facing stalls. (Figure courtesy of the Midwest Plan Service.)

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