

November 30, 2018

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Re: Building Code Analysis  
Lucky 8 Riding Arena  
23580 Tobiano Trail  
Routt County Colorado, CO

#### General

This proposed building will be used as a riding arena for horsemanship clinics. The building measures 220' long x 100' wide. The Code Analysis is per the 2015 IBC. The building is an IBC Type IIB construction.

#### Occupancy Classification & Accessibility

The Occupancy is Assembly A4 (**303.1**) and requires Accessibility including an Accessible Route and Restroom. (**1103**).

Two exits are required per **1006** as the maximum occupancy exceeds 49 people (**Table 1006.3.1**). The maximum exit access travel distance is 200' (**Table 1017.2**).

From **Chapter 5 General Building Heights and Areas**

The area of the arena is:

$$A = 220' \times 10' = 22,000 \text{ sq ft}$$

As a Type IIB the building is limited to 9500 sq ft, 1 story as A4. (**Table 506.2**). The building area exceeds the limitations for Group A4.

An area increase is permitted under **Section 506 Area Modifications**. **Section 506.2** allows a frontage increase for access to a public way when more than 25% of the building perimeter is on the public way or open space of 20' min width. The building meets this requirement due to the open space around the building. See site plan.

The perimeter of the building is:

$$P = 220' + 100' + 220' + 100' = 640 \text{ ft}$$

F, the building perimeter that fronts the open space is also equal to P the perimeter. And W, the width allowed to be used in the calculation, equals the 30', which is the maximum allowable (**506.3.2**). The frontage increase is (**Equation 5-5**):

$$I_f = [F/P - 0.25] \times [W/30] = [(640/640) - 0.25] \times [30/30] = \\ [1 - 0.25] \times 1 = 0.75 = 75\%$$

With the frontage increase and no sprinklers, the area limited by Table 505.2 may be increased to (**Equation 5-1**):

$$A_a = A_t + [A_t \times I_f] = 9500 + [9500 \times 0.75] = 16625 \text{ sq ft}$$

and the total area is less than the allowable:

$$A_{\text{total}} = 22,000 \text{ sq ft} > A_a = 16625 \text{ sq ft} \dots \text{NOT OK for Type IIB}$$

Per Section 507 Unlimited Area Buildings, sub section 507.4 Sprinklered, one-story buildings, the area of a Group A-4 building no more than one story above grade plane of other than Type V construction,...shall not be limited where the building is provided with an automatic sprinkler system throughout in accordance with Section 903.3.1.1 and is surrounded and adjoined by public ways or yards not less than 60 feet in width. Further Exception 2 states the automatic sprinkler system shall not be required in areas occupied for indoor participant sports such as... and equestrian activities in occupancies in Group 4, provided that both of the following criteria are met:

2.1. Exit doors directly to the outside are provided for occupants of the participant sports areas.

2.2. The building is equipped with a fire alarm system with manual fire alarm boxes installed in accordance with Section 907.

The installation of the fire alarm system per Section 907 and the 60 foot minimum yard surrounding the arena will allow a Type II construction, non-sprinklered A-4 building in excess of that allowed by Equation 5-1.

#### Occupancy Load

The maximum floor area allowed per occupant is 15 sq ft (**Table 1004.1.2**). Using the floor plan it can be determined that the area of the arena is 22,000 sq ft. For areas without fixed seating the number of occupants is (**1004.1.2**):

$$\text{Occupancy} = 22,000 \text{ sq ft} / 15 \text{ occ/sq ft} = \underline{1,467 \text{ occupants}} > 300$$

The occupancy load of this venue is limited by the SUP to 200

Per Section 1004.1.2 Areas without fixed seating, Exception: Where approved by the Building Official, the actual number of occupants for whom each occupied space, floor or

building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

We would request the Occupant Load for this building be set at 200 max.

The Occupant Load shall be posted in a conspicuous place near the main exit or exit access doorway. Posted signs shall be of an approved legible permanent design and shall be maintained by the owner or authorized agent. **(1004.3)**

**Section 1029 Assembly.** The Occupancy is less than 300. The exit requirements of 1029.2 and 1029.3 do not apply for this occupancy load. A minimum of two exits are required (**Table 1006.3.1**). Four man door exits are provided in addition to the overhead doors.

#### Fire Rated Requirements

There are no requirements for fire rating

#### Accessibility Notes

The arena shall be Accessible per ICC/ANSI A117.1 and Chapter 11 Accessibility

All main level doors shall be provided with accessible clearances and lever hardware. Accessible door thresholds shall be a maximum of 1/4" height or 1/2" when beveled at a 2:1 slope.

All operable parts of windows, electrical outlets, switches and equipment controls shall be mounted within reach between 15" and 48" above the floor or 46" behind a 24" deep counter. Exceptions include dedicated electrical receptacles, floor outlets, HVAC diffusers and redundant controls.

Operable parts shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be a maximum of 5 lbs.

The lavatories shall have a maximum of 34" height to top of rim and faucets shall have lever handles mounted 46" maximum above the floor. Knee clearance shall be 27" above the floor and 30" wide. Pipes under the lavatory shall be insulated with no sharp surfaces.

The mirror over the lavatory shall have a bottom edge a maximum of 40" above the floor.

The restroom shall have a 30" x 48" space outside of the door swing for a single occupant room.

The toilet shall be 18" from the side wall and have a height between 17" and 19" to the seat, with 3'-0" clear floor width to meet the requirements of Section 604.5.3 of the ICC/ANSI A117.1-2003 for swing up grab bars on each side.

Required sanitary facilities are provided in a portable lavatory trailer. This trailer houses (4) water closets and (2) lavatories in the Ladies section, (4) urinals, (2) water closets and (2) lavatories in the Men's section.

Per 2015 International Plumbing Code, Section 403.1, Minimum Plumbing Facilities the required number of water closets would be:

Men's  $100 / 75 = 1.33$  - (2) provided plus (4) urinals Ladies  $100/40 = 2.5$  - (4) provided

Required number of lavatories would be:

Men's  $100 / 200 = 0.5$  - (2) provided Ladies  $100 / 150 = 0.67$  - (2) provided

ADA sanitary facilities are provided in an accessible mobile facility. This structure is not connected to a sewer system.

Exit signs are required at all man doors per section 1013 and 1010.1.9.3.2.2.

Exit illumination is required per section 1008



FIRE & LIFE SAFETY