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## **Supporting Statement Appeal Application 16 Nason Lane, Sherborn**

This Supporting Statement will document technical support for reversing the interpretation of the local building official or for a variance relative to requirements of the Ninth Edition of the Massachusetts State Building Code for sprinkler protection throughout the Wildstar Farm arena and stable building proposed for 16 Nason Lane in Sherborn. A requirement for sprinkler protection throughout the building was documented in the letter from Christopher Canney, Building Commissioner for the Town of Sherborn, to Mike Newman of Wildstar Farm dated April 4, 2018.

### **Existing Physical and Occupancy Characteristics**

The primary characteristics of the existing barn for purposes of this report may be summarized as follows:

- The construction type is Type VB (unprotected, wood-framed).
- The building has two levels including the First Floor stables and the Second Floor hay loft.
- The building is approximately 14'-7" high above average grade measured to the mid-point of the mid-point of the existing barn roof.
- The building area is approximately 900 sf measured inside the exterior walls.
- The single occupancy classification is Use Group U (utility).
- Automatic sprinkler protection is not provided in the building.
- Fire standpipes are not provided in the building.
- A heat detection system is provided in the building that is connected to a central station and sounds an alarm in the main house on the site. It does not sound alarms within the barn.
- Means of egress is based on exit access aisles leading exit doors to the exterior on the First Floor and one unenclosed interior stair from the Second Floor.

### **Proposed Work**

Conceptually, the proposed project will expand the existing 900 sf barn by the addition of a 4,000 sf stable area and a 15,000 sf riding arena. On the upper level of the new

portion of the stable, there is proposed to be a barn manager's apartment. The upper level of the stable will be considered a mezzanine of the riding arena, allowing the building as a whole to be considered a single story with mezzanine building.

The stable portion of the addition will be of wood framed construction. The riding arena will be a membrane structure with a steel frame and fabric roof.

The characteristics of the expanded building may be summarized as follows:

- The construction type will remain Type VB (unprotected, wood-framed).
- The building will have one story plus a mezzanine.
- The building will be approximately 26' – 0" high above average grade measured to the mid-point of the new barn hip roof.
- The building area will be approximately 19,900 sf measured inside the exterior walls.
- The occupancy classification will be Use Group U (utility) with an accessory Use Group R-3 apartment.
- The Mezzanine apartment will be separated from adjacent portions of the stable and arena by two-hour fire rated wall and floor assemblies.
- Automatic sprinkler protection will not be provided in the building except within the apartment when an NFPA 13D sprinkler system will be installed..
- Fire standpipes will not be provided in the building.
- The heat detection system will be expanded to include the new stable building but not the arena.
- The fire alarm system will continue to be connected to a central station and will sound alarms in the main house and in the apartment and tack room of the stable.
- The system will not sound alarms within the arena or the livestock portions of the stable.
- Means of egress will be based on exit access aisles leading to exit doors to the exterior on the First Floor and one exterior exit access deck and stair and one interior exit stair from the mezzanine.

### **Interpretation of Sprinkler Requirements for Accessory Uses**

The provisions of the MSBC9 concerning accessory uses are provided in Section 508.2 and are the following:

508.2 Accessory occupancies. Accessory occupancies are those occupancies that are ancillary to the main occupancy of the building or portion thereof. Accessory occupancies shall comply with the provisions of Sections 508.2.1 through 508.2.4.

508.2.1 Occupancy classification. Accessory occupancies

shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space.

508.2.2 Allowable building height. The allowable height and number of stories of the building containing accessory occupancies shall be in accordance with Section 504 for the main occupancy of the building.

508.2.3 Allowable building area. The allowable area of the building shall be based on the applicable provisions of Section 506 for the main occupancy of the building.

Aggregate accessory occupancies shall not occupy more than 10 percent of the floor area of the story in which they are located and shall not exceed the tabular values for nonsprinklered buildings in Table 506.2 for each such accessory occupancy.

508.2.4 Separation of occupancies. No separation is required between accessory occupancies and the main occupancy.

Exceptions:

1. Group H-2, H-3, H-4 and H-5 occupancies shall be separated from all other occupancies in accordance with Section 508.4.
2. Group I-1, R-1, R-2 and R-3 dwelling units and sleeping units shall be separated from other dwelling or sleeping units and from accessory occupancies contiguous to them in accordance with the requirements of Section 420.

These provisions of Section 508.2 are not modified by the Massachusetts amendments of the IBC-15.

A primary characteristic of an accessory occupancy is that the accessory occupancy is ancillary to the primary occupancy of the building. As the apartment is to be utilized only by the barn manager, that requirement is satisfied. In fact, the Zoning Board of Appeal approval of the Stable and Arena Building explicitly restricts the apartment to use by a barn manager, thus insuring it remains an accessory use of the building.

The MSBC9 provisions concerning non-separated and separated mixed uses include the following requirements concerning application of the code to those uses when they are principle or primary uses rather than accessory or incidental uses of a building:

508.3.1 Occupancy classification. Nonseparated occupancies shall be individually classified in accordance with Section 302.1. The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space. In addition, the most restrictive provisions of Chapter 9 that apply to the nonseparated occupancies shall apply to the total nonseparated occupancy area. Where nonseparated occupancies occur in a high-rise building, the most restrictive requirements of Section 403 that apply to the nonseparated occupancies shall apply throughout the high-rise building.

508.4.1 Occupancy classification. Separated occupancies shall be individually classified in accordance with Section 302.1. Each separated space shall comply with this code based on the occupancy classification of that portion of the building.

The underlined sentences of the code excerpts above address the extent to which occupancy based requirements of the code are to be applied. For both accessory uses (even without separation from a main use) and for separated mixed uses, the code requirements are applicable on a space-by-space basis. The non-separated mixed-use provisions are explicit with their requirement that fire protection requirements of Chapter 9 are applicable throughout the building. That distinction suggests the mixed-use provisions of Section 508 would require sprinklers in the apartment that is separated from the remainder of the building by fire rated construction as a space of Use Group R but would allow the remainder of the building to be unsprinklered.

Building Inspector Canney also reviewed the requirements of MSBC9 Section 903 concerning sprinkler requirements that are the IBC Section 903 provisions heavily modified by Massachusetts amendments. Those requirements are concentrated in Table 903 in which the left hand column is headed “Buildings Having Occupancy” and lists the various occupancies of the building code. The heading of the Table 903 columns containing area, occupant load or height thresholds indicates:

Provide automatic fire sprinkler system throughout building if one of the following conditions will exist (see Note a):

Note a does not directly speak to the “where required” basis for providing sprinklers at 16 Nason Lane but rather identifies the “how to” basis for providing sprinklers (NFPA 13, 13R, 13D).

As Table 903 does not include a listing for Use Group U, it is concluded that a building with Use Group U as its primary occupancy would not be required to be sprinklered.

The base requirement of MSBC9 Table 903 is that sprinklers shall be provided in "buildings having occupancy" of Use Group R occupancy based on an area threshold of zero square feet.

The question of the extent of sprinkler requirements for the arena building may be based on the distinction between the accessory and primary uses of the building. On the basis of the provisions of Sections 508.2, 508.3 and 508.4 discussed above, it is concluded that the primary occupancy of the building is Use Group U and that the fire protection requirements are driven by that occupancy rather than the accessory Use Group R-3 occupancy.

The sentence "The requirements of this code shall apply to each portion of the building based on the occupancy classification of that space" in the accessory use section indicates the sprinkler requirement would be limited to the spaces of Use Group R. If that section had included a reference to the requirements of Chapter 9, as the non-separated mixed-use section does, then we would have to apply the sprinkler requirement would be applicable throughout the building.

NFPA 13R and 13D both require sprinklers of limited capability (number of operating sprinklers) and limited coverage (no coverage of concealed spaces, the protection provides by such systems is primarily for life safety, especially of sleeping occupants, rather than property protection).

### Summary

The MSBC9 does not require application of the fire protection requirements of Chapter 9 that are applicable to an accessory occupancy to the entire building. That limitation permits the limitation of sprinkler protection of the stable and arena building to the accessory use apartment.

### **Variance from Sprinkler Requirements**

In the event that it is interpreted that the requirement for sprinklers in the accessory apartment also requires sprinklers throughout the building, a variance from that requirement is requested in these proceedings.

Features of the building that contribute to the overall safety of the occupants of the proposed apartment include the following::

- Separation of the apartment from the remainder of the building by two-hour rated wall and floor assemblies
- Sprinkler protection with an NFPA 13D sprinkler system within the apartment.

- Multiple station smoke alarms within the apartment
- System connected heat detection throughout the stable area surrounding the apartment.
- System connected alarms within the apartment and tack room.
- One means of egress from the apartment directly to an exterior deck and an exterior stair to grade
- A second means of egress from the apartment to a half-flight interior stair down to a door to an exterior landing and stair to grade

A significant hardship related installation of a sprinkler system in the building is the lack of a municipal or private water supply with the capability to adequately supply a sprinkler system. The site is dependent upon a well water supply that does not have the capacity to supply sprinkler demand.

### Summary

On the basis of the characteristics of the means of egress and fire alarm system features discussed above and the hardship related to the site water supply discussed above, it is requested that a variance be granted from the requirement for sprinkler protection throughout the stable and arena.

### **Conclusions**

The above review of the proposed conditions in the building and of relevant MSBC9 provisions leads to the following conclusions:

- The barn manager's apartment is an accessory use of the Stable and Arena Building.
- The MSBC9 provisions concerning accessory uses do not impose code requirements for the accessory use on the remainder of the building.
- The accessory use apartment is required by Section 420 to be separated from the remainder of the building by one-hour rated vertical and horizontal assemblies. That separation is proposed but with a two-hour fire rating.
- Sprinkler protection is required for the Use Group R-3 apartment installed in accordance with NFPA 13R or 13D.
- Sprinkler protection is not required in the remainder of the building based on its primary Use Group U occupancy.