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February 14, 2022

VIA EMAIL TO: birvine@barrington.nh.gov
Town of Barrington
Barbara Irvine
Planning & Land Use Administrative Assistant
PO Box 660
333 Calef Highway
Barrington, NH 03825

Re: Fire Inspection Report for Case Number 220-54.16-GR-21-AMENDZBAVar

Good Afternoon Ms. Irvine,

This concerns the 2A Tactical rehearing scheduled for Wednesday, February 16, 2022 (Case Number 220-54.16-GR-21-AMENDZBAVar).

The Town Fire Department required Mr. Russell to have an independent inspection of the business at the Property for conformance to the Fire Code and Life Safety Code. For the Board's information, please find attached the result of that inspection.

Thank you,

Brendan O'Donnell

CC: Client
Attorney Puffer (mpuffer@preti.com)

DONAHUE, TUCKER & CIANDELLA, PLLC
16 Acadia Lane, P.O. Box 630, Exeter, NH 03833
111 Maplewood Avenue, Suite D, Portsmouth, NH 03801
Towle House, Unit 2, 164 NH Route 25, Meredith, NH 03253

January 31, 2022

Mr. Robert Russell
DBA 2A Tactical
99 Tolend Road
Barrington NH 03825

SUBJECT: 2A Tactical - 99 Tolend Road Barrington NH
REFERENCE: Fire Code Inspection

Dear Mr. Russell:

As requested, Engineering Planning and Management, Inc. (EPM) performed an inspection of the basement space at 99 Tolend Road in Barrington NH on Wednesday, January 26, 2022. The house at 99 Tolend Road is a single-family residence and the basement is temporarily being used for a gunsmith business with small retail area. The inspection was performed to determine compliance with applicable requirements of the NH Fire Code as directed by the Barrington NH Fire Chief per letter dated November 16, 2021.

The state of New Hampshire adopts the 2015 edition of NFPA 1 -*Fire Code* and the 2015 edition of NFPA 101 – *Life Safety Code*. The inspection included, but was not limited to, separation requirements between the business and the residence, occupant loads, aisle widths, firing range ventilation, use of temporary wiring, exits, travel distance to exits, and exit lighting. The findings of the inspection are documented below. EPM commentary is in *italic text* and referenced code sections are from 2015 edition of NFPA 101 unless otherwise noted.

1.0 Occupancy Classification

NFPA 101: Life Safety Code, 2015 Edition - Chapter 6
Classification of Occupancy and Hazard of Contents

The house at 99 Tolend Road is a single-family residence. A gunsmith business is temporarily being operated in the walk-out basement which patrons can access directly to/from exterior grade level.

The residence is classified as a One-Family Dwelling and the applicable requirements are found in NFPA 101: Life Safety Code, 2015 Edition - Chapter 24 *One- and Two-Family Dwellings*.

A portion of the basement business use is classified as a New Business Occupancy and the applicable requirements are found in NFPA 101: Life Safety Code, 2015 Edition - Chapter 39 *Existing Business Occupancies*.

A portion of the basement business use is classified as Mercantile Occupancy and the applicable requirements are found in NFPA 101: Life Safety Code, 2015 Edition - Chapter 37 *Existing Mercantile Occupancies*.

Section 65.9 of the NH Fire Code (NFPA 1-2015) states that the transportation, storage, sale and use of explosive materials shall comply with NFPA 495 Explosive Materials Code, 2013 edition.

The following are excerpts from NFPA 495 Explosive Materials Code, 2013 edition that are relevant to the building design and construction.

14.2 Small Arms Ammunition.

14.2.2 No quantity limitations shall be imposed on the storage of small arms ammunition in warehouses, retail stores, and other occupancies other than those imposed by the limitations of the storage facility and by public safety regulations.

Small Arms ammunition is displayed and stored in small quantities in compliance with this requirement. There have been many studies that have concluded that when small arms ammunition is exposed to fire, the lightweight brass or plastic cartridge may burst but there is no significant projectile hazard.

2.0 Separation Requirements

NFPA 101: Life Safety Code, 2015 Edition - Chapter 6
Classification of Occupancy and Hazard of Contents

Section 6.1.14.2 of NFPA 101 Life Safety Code-2015 defines the following terms:

6.1.14.2.1 Multiple Occupancy: A building or structure in which two or more classes of occupancy exist.

6.1.14.2.2 Mixed Occupancy: A multiple occupancy where the occupancies are intermingled.

6.1.14.2.3 Separated Occupancy: A multiple occupancy where the occupancies are separated by fire barriers.

Section 6.1.14.3 indicates that the Mixed Occupancy approach may be used, i.e., no separation is required if:

- Each portion of the building is classified as to its use in accordance with Section 6.1 and
- The building complies with the most restrictive requirements of the occupancies involved, unless separate safeguards are approved.

The applicable requirements for Mixed Occupancies in One- and Two-Family Dwellings are as follows:

24.1.3 Multiple occupancies shall be in accordance with 6.1.14.

24.1.3.2 No dwelling unit of a residential occupancy shall have its sole means of egress pass through any nonresidential occupancy in the same building, unless otherwise permitted by 24.1.3.2.1 or 24.1.3.2.2.

24.1.3.3 **Multiple dwelling** units of a residential occupancy shall be permitted to be located above a nonresidential occupancy only where **one of the following conditions exists**:

- (1) Where the dwelling unit of the residential occupancy and exits therefrom are separated from the nonresidential occupancy by construction having a minimum 1-hour fire resistance rating
- (2) Where the nonresidential occupancy is protected throughout by an approved, supervised automatic sprinkler system in accordance with Section 9.7
- (3) Where the nonresidential occupancy is protected by an **automatic fire detection system** in accordance with Section 9.6

This requirement is not applicable because it only applies to *multiple dwelling units* (two) above a nonresidential occupancy. However, it is worth noting that both the basement business and the residence are equipped with hard-wired smoke alarms that are interconnected such that they will all produce an audible signal upon any detection of smoke. The smoke alarms are also provided with battery backup and are tied into the home security system central station monitoring.

As demonstrated in later sections of this report, when considered a Mixed Occupancy building, i.e., applying the most restrictive building use requirements, the building is not required to be equipped with an automatic sprinkler system or a fire alarm system, and complies with applicable means of egress requirements. Therefore, fire-resistance-rated separation between the basement and the single family residence above is not required. This is logical and meets the code intent since such a fire-resistance rated separation would do nothing to enhance the life safety of the business/mercantile uses that are occupied by the public and employees.

3.0 Means of Egress

3.1 Number of Exits and Travel Distance

NFPA 101 39.2.4.3 (Business)

A single exit shall be permitted for a room or area with a total occupant load of less than 100 persons, provided that all of the following criteria are met:

- (1) The exit shall discharge directly to the outside at the level of exit discharge for the building.

- (2) The total distance of travel from any point, including travel within the exit, shall not exceed 100 ft (30 m).
- (3) The total distance of travel specified in 39.2.4.3(2) shall be on the same story, or, if traversing of stairs is necessary, such stairs shall not exceed 15 ft (4570 mm) in height, and both of the following also shall apply:
 - (a) Interior stairs shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein.
 - (b) A single outside stair in accordance with 7.2.2 shall be permitted to serve all stories permitted within the 15 ft (4570 mm) vertical travel limitation.

The occupant load of the basement business is less than 100, as demonstrated in Section 3.2 of this report. The total distance of travel from the most remote corner of the garage to the basement entrance/exit was measured to be less than 75 ft. The total distance of travel traverses stairs not exceeding 15 ft (4570 mm) in height, and the stairs are enclosed and separated them from any other part of the building, with no door openings other than those required for egress.

Additionally, the garage is allowed to have a single means of egress since it qualifies as an enclosed mezzanine with an occupant load is less than 10. The area of the garage is 432 sf and with a business occupant load of 100 sf/occ, the calculated occupant load of the garage is 5 persons:

39.2.4.5 A single means of egress shall be permitted from a mezzanine within a business occupancy, provided that the common path of travel does not exceed 75 ft.

8.6.10.3.1 All portions of a mezzanine, other than walls not more than 42 in. (1065 mm) high, columns, and posts, shall be open to and unobstructed from the room in which the mezzanine is located, unless the occupant load of the aggregate area of the enclosed space does not exceed 10.

NFPA 101 37.2.4.3 (Mercantile)

A single means of egress shall be permitted in a Class C mercantile occupancy, provided that the travel distance to the exit does not exceed 75 ft.

The basement qualifies as a Class C mercantile occupancy which is defined as one of not more than 3,000 sf gross area and used for sales purposes occupying one story only.

The retail portion of the basement that is classified mercantile (more restrictive travel distance) is directly adjacent to the basement entrance/exit and has a maximum travel distance of approximately 20 feet.

A single exit is therefore permitted for the business and mercantile uses.

3.2 Occupant Load

Section 7.3.1.2 requires that the occupant load of a business use (gunsmith) be calculated using an occupant load factor of 100 sf/person. The area of the basement gunsmith business is approximately 1,652 sf. This includes the upstairs garage even though public/patrons are not allowed in the space. The calculated occupant load of the business use is therefore 17 persons.

Section 7.3.1.2 requires that the occupant load of a mercantile use be calculated using an occupant load factor of 30 sf/person. The area of the basement gunsmith business is approximately 700 sf. The calculated occupant load of the space is therefore 24 persons.

The total calculated occupant load of the space of the business/mercantile use is 41 persons.

3.3 Aisle width

The following NFPA 101 requirements were reviewed:

7.5 Arrangement of Means of Egress.

7.5.1 General.

7.5.1.1 Exits shall be located, and exit access shall be arranged, so that exits are readily accessible at all times.

7.5.1.1.1 *

Where exits are not immediately accessible from an open floor area, continuous passageways, aisles, or corridors leading directly to every exit shall be maintained and shall be arranged to provide access for each occupant to not less than two exits by separate ways of travel, unless otherwise provided in 7.5.1.1.3 and 7.5.1.1.4.

7.5.1.1.2 Exit access corridors shall provide access to not less than two approved exits, unless otherwise provided in 7.5.1.1.3 and 7.5.1.1.4.

7.5.1.1.3

The requirements of 7.5.1.1.1 and 7.5.1.1.2 shall not apply where a single exit is permitted in Chapters 11 through 43.

7.5.1.1.4

Where common paths of travel are permitted for an occupancy in Chapters 11 through 43, such common paths of travel shall be permitted but shall not exceed the limit specified.

As indicated above, there are no applicable minimum aisle clear width requirements per 7.5.1.1.3 because a single exit is permitted, as demonstrated above. However, the means of egress was inspected for compliance with this general requirement:

7.1.10 Means of Egress Reliability.

7.1.10.1 * Maintenance.

Means of egress shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

All paths of egress in public areas were measured to be at least 32 inches in width. All paths of egress were maintained free of obstructions and impediments and were easily wide enough to allow employees and patrons to move freely around the public and employee areas.

3.4 Exit Lighting

The means of egress lighting appeared to be in compliance with section 7.8 of NFPA 101, i.e. light intensity measurement requirements were not taken, but all public and employee areas were observed to be very well illuminated.

The requirements for Emergency Lighting are as follows:

39.2.9 Emergency Lighting (Business)

39.2.9.1 Emergency lighting shall be provided in accordance with Section 7.9 in any building where any one of the following conditions exists:

- (1) The building is three or more stories in height.
- (2) The occupancy is subject to 100 or more occupants above or below the level of exit discharge.
- (3) The occupancy is subject to 1000 or more total occupants

None of these conditions exist such that emergency lighting is not required for the business use. However, emergency lighting is provided by emergency generator, even though not required.

37.2.9 Emergency Lighting.

Class A and Class B mercantile occupancies and mall structures shall have emergency lighting facilities in accordance with Section 7.9.

The building is a Class C mercantile occupancy as described in Section 1.0 of this report. As indicated above, emergency lighting is therefore not required, but is provided by emergency generator.

3.5 Exit Signage

7.10 Marking of Means of Egress.

7.10.1 General.

7.10.1.1 Where Required.

Means of egress shall be marked in accordance with Section 7.10 where required in Chapters 11 through 43.

7.10.1.2 Exits.

7.10.1.2.1 *

Exits, other than main exterior exit doors that obviously and clearly are identifiable as exits, shall be marked by an approved sign that is readily visible from any direction of exit access.

7.10.1.5 Exit Access.

7.10.1.5.1

Access to exits shall be marked by approved, readily visible signs in all cases where the exit or way to reach the exit is not readily apparent to the occupants.

As indicated above, the business/mercantile use is allowed to have a single exit based on occupant load and common path of travel. The single entrance/exit door is obviously and clearly identifiable as an exit. There are smaller rooms/areas for employees only that are only one door or door opening away from the public area entrance/exit. The way to reach the exit from these areas is apparent to the employees. The one exception is the upstairs garage area, which is for employees only. EPM recommends that an illuminated exit sign be installed in the garage to indicate the way to reach the exit, which would be for the benefit of new employees who are not already familiar with the layout of the space.

4.0 FIRE PROTECTION SYSTEMS

4.1 Automatic Sprinkler Systems

A sprinkler system is not required to protect the building as follows:

37.3.5 Extinguishment Requirements.

37.3.5.1 Mercantile occupancies, other than one-story buildings that meet the requirements of a street floor, as defined in 3.3.283, shall be protected by an approved automatic sprinkler system in accordance with 9.7.1.1(1) in any of the following specified locations:

- (1) Throughout all mercantile occupancies with a story over 15,000 ft² (1400 m²) in area
- (2) Throughout all mercantile occupancies exceeding 30,000 ft² (2800 m²) in gross area
- (3) Throughout stories below the level of exit discharge where such stories have an area exceeding 2500 ft² (232 m²) and are used for the sale, storage, or handling of combustible goods and merchandise
- (4) Throughout multiple occupancies protected as mixed occupancies in accordance with 6.1.14 where the conditions of 37.3.5.1(1), 37.3.5.1(2), or 37.3.5.1(3) apply to the mercantile occupancy

None of these conditions exist, therefore a sprinkler system is not required to protect the building as a Mixed occupancy containing a Mercantile use.

4.2 Fire Alarm and Detection

37.3.4 Detection, Alarm, and Communications Systems.

37.3.4.1 General.

Class A mercantile occupancies shall be provided with a fire alarm system in accordance with Section 9.6.

This condition does not exist, therefore a detection/alarm system is not required to protect the building as a Mixed occupancy containing a Mercantile use.

39.3.4 Detection, Alarm, and Communications Systems.

39.3.4.1 General.

A fire alarm system in accordance with Section 9.6 shall be provided in all business occupancies where any one of the following conditions exists:

- (1) The building is three or more stories in height.
- (2) The occupancy is subject to 100 or more occupants above or below the level of exit discharge.
- (3) The occupancy is subject to 1000 or more total occupants.

None of these conditions exist, therefore a detection/alarm system is not required to protect the building as a Mixed occupancy containing a Business use.

5.0 Firing Range Exhaust Requirements

The state of New Hampshire adopts the 2015 edition of The International Mechanical Code (IMC). IMC Section 502.19 contains the following requirement:

Indoor firing ranges. Ventilation shall be provided in an approved manner in areas utilized as indoor firing ranges. Ventilation shall be designed to protect employees and the public in accordance with DOL 29 CFR 1910.1025 where applicable.

The IMC commentary states: *This section requires a ventilation system to be designed to protect employees and the public by referencing the DOL standard. This DOL standard covers lead and air-borne particulate matter in the workplace and is applicable to this type of facility. The use of this standard along with guidance from the National Rifle Association will provide information to the design professional to help design and the code official to help approve a ventilation system for indoor firing ranges.*

The applicable DOL (OSHA) regulation 1910.1025 can be found at:

<https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1025>

The full regulation was reviewed and was considered for inclusion in this report but would have added 24 pages to this report.

The intent of the regulation is to exposure of lead contaminates for both employees and the public. The regulation states that lead concentrations must be consistently maintained below the “action level” of 30 micrograms per cubic meter (30ug/m³) but does not contain any guidance about what airflow rates or air velocities should be maintained to ensure this exposure limit is not exceeded.

Many online resources reference the NIOSH (National Institute for Occupational Safety and Health) design criteria guidelines for the ventilation of indoor ranges, i.e., to have airflow in the downrange direction of 50 to 75 feet per minute (fpm) past the shooter. NIOSH is a research agency that is complementary to the enforcement agency OSHA (under DOL).

The ventilation rates for the small test fire room were verified by Action Target (report attached) to far exceed the minimum airflow rates described above.

6.0 Electrical Fire Safety

The conditions that were observed during the inspection were generally in compliance with the applicable requirements except where specifically noted below.

11.1.1 General.

Section 11.1 shall apply to permanent and temporary electrical appliances, equipment, fixtures, and wiring.

11.1.3 Multiplug Adapters.

11.1.3.1 Multiplug adapters, such as multiplug extension cords, cube adapters, strip plugs, and other devices, shall be listed and used in accordance with their listing.

11.1.3.2 Multiplug adapters shall not be used as a substitute for permanent wiring or receptacles.

11.1.5 Extension Cords.

11.1.5.1 Extension cords shall be plugged directly into an approved receptacle, power tap, or multiplug adapter and shall, except for approved multiplug extension cords, serve only one portable appliance.

11.1.5.2 The ampacity of the extension cords shall not be less than the rated capacity of the portable appliance supplied by the cord.

The large appliances in use are the Encon Evaporator, Dewalt 60 gallon 2 Stage Compressor, Lyman Ultrasonic Cleaner and Delta Drill Press. All of these use their factory plugs and plug direct into their energy source without using any extension cords. Otherwise extension cords are only used for small appliances that draw low amperage.

11.1.5.3 The extension cords shall be maintained in good condition without splices, deterioration, or damage.

11.1.5.4 Extension cords shall be grounded when servicing grounded portable appliances.

11.1.5.5 Extension cords and flexible cords shall not be affixed to structures; extend through walls, ceilings, or floors, or under doors or floor coverings; or be subject to environmental or physical damage.

See discussion below.

11.1.5.6 Extension cords shall not be used as a substitute for permanent wiring.

During the inspection, some multiplug adapters and extension cords were observed as being affixed to the floor joists above and used as a substitute for permanent wiring/receptacles. NFPA 1, NFPA 70 and OSHA have similar requirements i.e., extension cords are not intended for prolonged, daily use (affixed to structures) and may degrade over time. EPM recommends corrective work to install some additional permanent wiring and outlets where multiplug adapters and extension cords are currently being used.



7.0 Fire Extinguishers

Several large fire extinguishers were observed in highly-visible, conspicuous locations. The extinguisher locations are well in excess of the minimum requirements for number and spacing per NFPA 10 as referenced by NFPA 1. The extinguisher inspection tags were found to be up to date with the exception of fire extinguisher #1 which was last inspected in September of 2021 according to the tag.



Prepared by:

Engineering Planning and Management, Inc.

Ronald B. Melucci, P.E.

Date



RBM

Report #F5088

Att:

APPENDIX – ACTION TARGET REPORT

The National Institute for Occupational Safety and Health (NIOSH) recommends an air flow velocity of 75 feet per minute (fpm) at the firing line, with a minimum acceptable velocity of 50 fpm. For 2A Tactical, located at 99 Tolend Rd, Barrington, NH 03825, to achieve an air velocity of 75 fpm in their testing room, an air flowrate of 2,273 cfm is required. Based on an inspection done on January 7, 2022, there are currently three fan drawing fresh air past the firing line and through the testing room. Information on these fans can be found in the table below.

2A Tactical Equipment				
Make	Model	Quantity	Flow Rate (cfm) ea.	Flow Rate (cfm) Total
Vortx Powerfans	S-1000	2	1,082	2,164
Vortx Powerfans	S-800	1	711	711
			Total Flow Rate (cfm)	2,875

With these fans in use, the testing room at 2A Tactical would have an estimated flow rate of 2,875 cfm. This exceeds the 75 fpm flow rate of 2,273 cfm by 602 cfm. This flow rate is more than 25% higher than the recommended NIOSH flow rate. When looking at the size of the testing room and the equipment being used at 2A Tactical, the air flow rate at the firing line meets/exceeds the flow rates recommended by NIOSH.



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3411 S Mountain Vista Pkwy Provo, UT 84606 801.377.8033 801.377.8096 ActionTarget.com