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Re: Fire Safety Analysis - Updated  
Industrial & Storage Building  
Truckee Tahoe Airport  
12116 Chandelle Way  
Truckee, CA

Mr. Warren:

I have performed a revised fire safety and fire sprinkler feasibility evaluation of the existing unsprinklered building at 12116 Chandelle Way. My evaluation is based on E.F.S. Inspector Rob Arnett's visual inspection of the facility on 3/23/22, tenant changes since the 4/22/2022 report, and updated codes.

Please note that I have referenced the following codes and standards and listed the relevant code sections after many of the individual items that I cover.

2022 California Building Code (CBC)  
2022 California Fire Code (CFC)  
2022 Standard for the Installation of Sprinkler Systems (NFPA 13)

My evaluation reflects these current codes that are presently in effect in California. Please refer to the end of this report for definitions of various technical terms used.

### **Existing Conditions**

The existing building is approximately 30,000 square feet in area. It is of steel beam and girder construction with roof heights of 19 feet at the peak and 16 feet at the eaves. The building has been divided by full-height walls into seven separate tenant spaces (Suites A, B, C, D-1, D-2, E-1, and E-2/ E-3). B, F and S Occupancies are present in this building. The building is equipped with a fire alarm system employing heat and/or smoke detectors at the ceilings.

Mountain Home Center Suite A (A-1 to A-3) (5,800 sq.ft.): Commodities are stored in cardboard boxes on wooden pallets on racks with open shelves to 17 feet top of storage. Minimum aisle width allowed by code is 4 feet. However, products have encroached into most aisles. This space contains boxed stoves and furnishing items on wood pallets stacked on top of each other to approximately 14'. Some of the packaging is encapsulated. Most of these items are considered Group A plastics / high-hazard commodities. Two small offices are in the space.

Design Bar Suite B (4,000 sq.ft.): This space is used for the storage of home furnishings. It contains rack storage with solid shelves to 17' with some encapsulated plastic furnishings, boxed furnishings, and miscellaneous home decorative furnishings. There are tires stored to 10 feet high. This space has an approximately 200 ft<sup>2</sup> storage/office area accessed by a ladder. The items stored would generally be considered Class IV commodities with the exception of the tires. Tires stored on the floor stacked from 5' to 12' are considered an Extra Hazard Group 1 occupancy per NFPA 13.

Mountain Home Center Suite C (6,000 sq.ft.): Commodities are stored in cardboard boxes or exposed on wooden pallets on racks with solid and open shelves to 17 feet top of storage. Most of the stored items are outdoor furniture made of teak wood, plastic, or aluminum. Miscellaneous items are stored above and below a +/- 700 square-foot mezzanine. In addition, there are spas and spa covers wrapped in plastic. Spa covers may have a foam material base. Spas are stacked to 12'. There are tires stored to 12' high. Aisle widths are mostly 4 feet wide but are encroached by product. As is the case in Suite A, many of the items are considered Group A plastics / high hazard commodities. An office is also included in the space.

Tahoe Food Hub Suite D-1 (4,000 sq. ft.): This space is used as a limited product retail market and limited storage warehouse. There is no rack storage and small quantities of commercially packaged grocery products. There is approximately 1000 sq. ft. of walk-in refrigeration. Product and combustible storage is limited. This area, as presently used, is considered an Ordinary Hazard Group 2 Occupancy.

Sierra Community House Suite D-2 (4000 sq. ft) : This space is used as a food storage and office space. It contains open-shelved rack storage up to 17 feet high. Storage is palletized plastic pre-packaged food items. There are three walk-in cooler boxes. There is an approximately 400 square-foot mezzanine which contains mechanical equipment and miscellaneous storage items. Aisle widths and exiting are compliant. The items stored would generally be considered Class IV commodities.

Truckee Round House and Makers Space Suites E-1, E-2 & E-3 (5,800 sq. ft. total : Truckee Round House and Makers Space intend to move their metal shop into the Suite E-1 space from Suites E2 and E-3. The woodworking and ceramics equipment will stay in spaces E-2 and E-3.

These spaces are best described as workshops used for metal, wood and ceramic projects created by community members. These spaces provide classes for the public to instruct them on the previously listed crafts. Suite E-1 is approximately 1,100 sq. ft. and will contain portable welding equipment including compressed argon and oxygen gas. Compressed gas was limited to three approximately 100 ft<sup>3</sup> individual canisters. Suites E-2 and E-3 contain a kiln, pottery and ceramic

products and wood working equipment. Stationary wood working machinery is connected to a dust collection system located on the exterior of the building. The collection of dust in this space was low at the time of the original inspection. There are four pedestrian exits from these combined suites, front, rear, and side exits.

The classification of these spaces is dependent upon the type of activities anticipated. Wood and metal machining and product assembly are considered Ordinary Hazard Group 2 Occupancies. However, if combustible dust is present or combustibility of the contents are high, the space would qualify as an Extra Hazard Group 1 Occupancy. Flammable liquids spraying would dictate an Extra Hazard Group 2 Occupancy.

### **Water Supply**

12" underground water lines run approximately 115 feet from west end of the warehouse. The proposed underground lateral supply for the proposed fire sprinkler system would connect to this 12" line and run into the building at Suite C. The size of the lateral would be determined by the demand of the overhead fire sprinkler system (See Options 1 through 4 below).

Water flow data modeling was recently performed by Auerbach Engineering (AEC). Refer to the Fire Flow Analysis by AEC and Flow Test Data Sheets by Overhead Fire Protection dated 7/1/25. Although flow requirements were calculated, pressure requirements specifically for this building's fire sprinkler system were not conducted. Additional modeling runs should be conducted to meet the new fire sprinkler system demand.

### **Fire Sprinkler Options**

Below are four fire sprinkler options. All four options employ a dry-pipe fire sprinkler system. It is assumed that temperatures inside the building cannot reliably be maintained above 40°F at all times, year around.

#### **Fire Sprinkler System Design Option 1**

Ordinary Hazard Group 2: 0.20 gpm / sq.ft. / 1,950 sq. ft + 250 gpm hose allowance

This option, although the least costly, will severely limit the storage options in the warehouse. Miscellaneous storage of Class I to III commodities will be limited to 12 feet high, Class IV commodities to 10 feet high. Plastics and tires are allowed to be stacked to a maximum 5 feet high (NFPA 13 Table 4.3.1.7.1.1.) Idle wood pallets may be stored on the floor (not in racks) to a maximum 6 feet high (NFPA 13, §20.17.1.2(4)). **The present storage configurations in all the suites exceeds these limitations.**

A minimum 6" underground supply lateral is recommended to the base of the riser, 6" above the floor.

#### **Fire Sprinkler System Design Option 2**

Extra Hazard Group 1: 0.30 gpm/ sq. ft. / 2,600 sq. ft. + 500 gpm hose allowance.

This option would increase solid pile and rack storage of Class IV commodities to 12 feet high. Plastics are limited to 12 feet high. Tires may be stacked on the floor or single-row racks to 12 feet high. (NFPA 13, Table 4.3.1.7.1.1). Idle wood pallets may be stored on the floor (not in racks) to a maximum 6 feet high (NFPA 13, §20.17.1.2(4)).

A minimum 8" underground supply lateral is recommended to the base of the riser, 6" above the floor.

### **Fire Sprinkler System Design Option 3**

High-piled Storage Design Density: 0.45 gpm/ sq. ft. / 2600 sq. ft. + 500 gpm hose allowance.

Rack or solid-pile storage of plastics is allowed to 15 feet high (NFPA 13, Table 21.5.1.1). Storage of Class I to IV commodities would be allowed to 15 feet high. Tire storage on the floor or in single row racks would be allowed to 12 feet high. This option would also increase the type of activities allowed in Suites E-1, E-2, and E-3.

A minimum 8" underground supply lateral is recommended to the base of the riser, 6" above the floor.

### **Fire Sprinkler System Design Option 4**

High-piled Storage Design Density: .60 gpm / sq. ft. / 2600 sq. ft. + 500 gpm hose allowance.

This option would allow the storage heights now present in the facility (NFPA 13, Tables 21.4.1.2.1.1(b) & 21.5.1.1). However, the plastic stretch wrap or sheeting on top of the pallet loads (encapsulated) would have to be removed and all solid rack shelves must be converted to open shelving. Top of storage shall be a minimum 18" below the ceiling sprinklers.

A minimum 10" underground supply lateral is recommended to the base of the riser, 6" above the floor.

### **Other Fire Sprinkler System Design Options**

The use of Early Suppression Fast Response (ESFR) Sprinklers or Control Mode Special Application (CMSA) Sprinklers is not practical. Both these sprinklers require a minimum 36" clearance between the sprinkler and top of storage (NFPA 13, 14.2.12 & 13.2.9). With the ceiling heights at 16 feet to 19 feet, storage would be limited, and the expense would not be justified.

### **Offices, Cooler Boxes and Mezzanines**

Fire sprinklers shall be installed in all offices per Light Hazard Occupancy. Fire sprinklers installed under storage mezzanines shall be designed per Ordinary Group 2 Occupancy. Sprinklers are required in walk-in cooler boxes.

## **Fire Extinguishers**

Portable fire extinguishers shall be installed throughout the tenant spaces. They shall be placed in accessible locations with the travel distance to an extinguisher being no greater than 75 feet (CBC Section 906)

## **Exits and Path of Egress**

Spaces where the occupancy load is less than 30 in S Occupancies and less than 50 in F Occupancies require only one exit. However, the common path of egress shall be no more than 100 feet in a sprinklered building. That path of egress is reduced to 75 feet in an unsprinklered building of S occupancy and an occupancy load of less than 30. (CBC Table 1006.2.1)

## **Conclusions and Recommendations**

The warehouse facility as presently configured creates a significant fire hazard with potential loss of life and property. I would recommend installing a fire sprinkler system as outlined in Option 4. Current code would be met without altering the present storage use and activities in the building. **However, solid shelving in storage racks would have to be replaced with open shelving. If solid shelves remain, in rack fire sprinklers would be required.** Also, encapsulation of pallet loads with plastic would be required to be removed. Plastic sheeting around the sides of the loads, but not on top, is acceptable.

Option 4 would be the most costly of the options. A fire booster pump may be needed if the existing water supply is not adequate. Note that installing one of the other options but leaving the present storage as-is in the building would not be approved by the Truckee Fire Department.

In Suite E-3, high or extra-high temperature rated sprinklers should be installed in the area close to the kiln. The exact temperature rating would be determined by the maximum ceiling temperature anticipated.

It is recommended that additional exits be incorporated to meet current CBC and CFC code. Aisles should remain clear and unblocked.

Feel free to forward this analysis to your fire sprinkler contractor for bidding purposes or comments.

## **Definitions**

The following definitions shall apply to the terms used in this report:

### Occupancies per CBC and CFC:

Group B: Business

Group F: Assembly, Manufacturing

Group S1: Moderate hazard storage (clothing, furniture, paper products)

Group S2: Low hazard storage (metal, glass, food product, pottery)

Classification of Storage Commodities CFC and NFPA 13:

Class I Commodities: Noncombustible products placed directly on wooden pallets

Class III Commodities: Products fashioned from wood, paper, natural fibers containing 5% or less of Group A plastics by weight or volume

Class IV Commodities: Products and packaging that contain 5% to 15% by weight, or 5% to 25% by volume of Group A plastics; Level 2 Aerosols, synthetic clothing, beverages 20% to 80% alcohol

High-hazard Commodities: Products and packaging that contain more than 15% by weight or 25% by volume of Group A plastics; Level 3 Aerosols; beverages more than 80% alcohol; flammable solids

Fire Sprinkler System Design per NFPA 13:

Light Hazard Occupancy: Quantity and combustibility of contents are low; no stockpile of contents allowed (e.g., offices).

Ordinary Hazard Group 1 Occupancy: Combustibility is low, quantity of combustibles is moderate; stockpiles of contents do not exceed 8 feet.

Ordinary Hazard Group 2 Occupancy: Quantity and combustibility of contents are moderate to high; stockpiles of contents do not exceed 12 feet, plastics do not exceed 5 feet.

Extra Hazard Group 1 Occupancy: Quantity and combustibility of contents are very high and dust, lint or other materials are present

Extra Hazard Group 2 Occupancy: Moderate or substantial amounts of flammable or combustible liquids are present

High-piled storage: Solid-piled, palletized, rack, bin box and shelf storage over 12 feet high

Encapsulated: A method of packaging consisting of plastic sheeting enclosing the sides and top of a pallet load

gpm/ sq.ft.: water flow in gallons per minute per square foot that the fire sprinkler system is designed to deliver

psi: water pressure in pounds per square inch

Dry Pipe Fire Sprinkler System: A system employing sprinklers attached to piping containing air under pressure. Upon the opening of a sprinkler, the release of air pressure permits the water pressure to open a valve and water then flows in the piping system.

Wet Piping System: A system employing sprinklers attached to piping containing water.

If you have any questions or comments, please do not hesitate to call me at (530) 274-9400 x 206.

Sincerely,

*Daniel Thacker*

Daniel Thacker

Senior Plan Reviewer

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