



City of Madison Fire Department (MFD) High-Piled Combustible Storage Plan Review Requirements

You will not be able to apply for the High-Piled Storage - Special Hazard License until the plan review is completed and you have received the approval letter.

To have a complete high-piled combustible storage license application, each item listed below must be addressed in the permit application materials. If you believe any of the items specified below are not required by the codes or do not apply to the facility, then identify those items including the applicable code references to substantiate that the items are not required.

Incomplete high-piled combustible storage license application submittals will not be processed until the submitting party makes them complete.

Application requirements are based on IFC Chapter 32. Submit the [MFD Work Permit Application](#), three sets of plans and specifications for review and approval.

1. “Floor plan of the building showing locations and dimensions of high-piled storage areas.”

Explanation: The floor plan is used to illustrate the location and array of the high-piled combustible storage areas and fire protection features within the facility. Floor plans must be drawn to scale, with dimensions shown, more than one floor plan may be required to show all storage related information for the facility. Where applicable, the location of the following items must be shown on the floor plans:

- a. Areas open to the public.
- b. Fire department access doors.
- c. Fire department hose connections.
- d. Occupancy separations.
- e. Fire-resistance-rated fire barrier separations between different commodity classifications.
- f. All designated high-piled storage areas, and areas of different commodity classifications.
- g. Smoke and heat vents.
- h. Draft curtain system.
- i. Storage array: rack storage, shelf storage, solid-pile storage, bin box storage, palletized storage, and aisles.
- j. Square feet of facility and designated high-piled storage areas.
- k. Square feet of sprinkler system zones.
- l. Miscellaneous: truck docks, staging areas, and areas with different sprinkler system designs.

2. "Usable (maximum permitted) storage height for each storage area. (Consult with sprinkler contractor and the IFC.)"

Explanation: Elevation or section views drawn to scale, with dimensions shown, that show each different high-piled storage array and the high-piled storage area to illustrate the building heights, storage heights and the location of the commodity within the chosen array. Also, section views may be used to show the location of horizontal barriers, flue spaces, fire department hose connections, and rack storage sprinklers.

3. "Number of tiers within each rack, if applicable."

Explanation: See the explanation provide in 2.

4. "Commodity clearance between top of storage and the ceiling or sprinkler deflector for each storage arrangement. (Consult with sprinkler contractor and the IFC.)"

Explanation: See the explanation provided in 2.

5. "Aisles with dimensions between each storage array. (Consult with sprinkler contractor and the IFC.)"

Explanation: Both the IFC and NFPA 13 have rules regarding aisle widths; the plans must clearly identify all aisles located in high-piled combustible storage areas.

6. "Maximum pile volume for each storage array."

Explanation: When establishing the maximum pile volume the term pile applies to all the different types of storage arrays. Typically, walls or aisles are used to establish the boundary on the floor for a specific storage array. The maximum pile volume is determined by multiplying the length by the width by the height of the area used for storage. The IFC Table 3206.2 does limit the maximum pile volume.

7. "Location and classification of commodities in accordance with Section IFC 3203."

Explanation: Each commodity stored in the high-piled storage area must be classified as specified in the IFC and the location of each commodity must be identified. When making a determination of the classification of commodities it is important to remember that the container or packaging materials surrounding the product and the pallet are included as part of the commodity.

There are five commodity classifications specified in the IFC: Class I, Class II, Class III, Class IV, and high-hazard commodities. Unless the entire high-piled combustible storage area is designed for the highest hazard commodity, the location of all commodities must be evaluated and documented to ensure the fire protection features and storage array are in accordance with the IFC. Also, include a description and classification for types of plastic pallets used in the facility.

8. "Location of commodities, which are banded or encapsulated."

Explanation: It is very important for all parties involved in this permitting process to know if the commodity is banded or encapsulated in plastic, as this one aspect of packaging will make a difference in the fire protection design for the designated area.

9. "Location of required fire department access doors."

Explanation: Certain high-piled combustible storage facilities are required by the IFC to have additional outside doors provided for fire department access directly from the fire lane to the high-piled combustible storage area. Often, a shell building is constructed without anyone knowing how the building will be used, so no fire department access doors are provided at the time of construction. Part of the operational permit process is to verify that all required fire protection features are provided for the facility.

10. "Type of fire suppression and fire detection systems. (Consult with sprinkler contractor and the IFC.)"

Explanation: Provide a description of the types, operation and monitoring of the fire suppression systems and the fire detection system that has been provided in the high-piled combustible storage area. Provide the code references and Table numbers from the 2019 edition of NFPA 13, that were used to establish the design criteria for the fire sprinkler system, and sufficient information to determine the sprinkler system design matches the proposed hazard. (This may include complete hydraulic calculations, cut sheets and working plans of the automatic fire sprinkler system.)

11. "Location of valves controlling the water supply of ceiling and in-rack sprinklers."

Explanation: Identify the locations and elevations of sprinkler system control valves on the floor plans and/or elevation plans.

12. "Type, location and specifications of smoke removal and draft curtain systems."

Explanation: Identify the locations and dimensions of all smoke/heat vents and draft curtains on the floor plans. Additionally, submit manufacturer's cut sheets of the smoke/heat vents and specifications regarding the construction of the draft curtains.

13. "Dimension and location of transverse and longitudinal flue spaces. (Consult with sprinkler contractor and the IFC.)"

Explanation: Identify on the floor plans and the elevation plans the location and dimensions of each flue space.

14. "Additional information regarding required design features, commodities, storage arrangement and fire protection features within the high-piled storage area shall be provided."

Explanation: The final catch-all area of the form is for providing any applicable information that may not have been included in the list above, or that may be useful to clarify or to show IFC compliance.