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## PAINT SPRAY BOOTH REGULATIONS AND USE

- This handout is intended only as a guide. It shall not be considered a complete set of requirements.
- Materials and installation must comply with the current Minnesota State Building Code and the manufacturers' installation specifications for each product.
- Fire permits are required for all paint spray booths.

### **BUILDING Permit Submittal shall include:**

- Building Permit Application**, completed in its entirety,
- A floor plan**, including the paint spray booth, all ventilation equipment, electrical criteria (amps, watts, phase, hazard-classification)
- A detail sheet** that shows that the electrical equipment is interlocked with the ventilation system so that equipment cannot operate unless the ventilation system is in operation.
- Exterior booths shall be provided with engineering** for both structural and lateral loads as required by the Building Code,
- Pre-engineered systems** must be provided with specifications and installation sheets.

### **Separate permits are required for the following:**

- Electrical,
- Mechanical (ventilation),
- Fire Suppression,
- Fire Alarm (if required).

Inspections **MUST** be scheduled during office hours **AT LEAST** two business days prior to inspection. If a specific date and time is required, additional notice may be needed. Failure to cancel a scheduled inspection may result in a reinspection fee.

- **Office Hours:** Monday - Friday • 8:00 a.m. - 4:30 p.m.
- **Phone:** (763) 331-7722

**Inspections:** (Refer to your inspection record included with your permit regarding project-specific inspections)

**NOTICE:** Construction or work for which a permit is required shall be subject to inspection by the Building Official, and such **construction or work shall remain accessible and exposed for inspection purposes until approved.** It is the responsibility of the permit applicant to be in attendance on site and provide access to the Building Official for all required inspections. If work is concealed and/or work is not complete at time of inspection, an additional inspection is required, and a **reinspection fee may apply.**

The following is a guideline to assist in compliance with the requirements of the MN State Code.

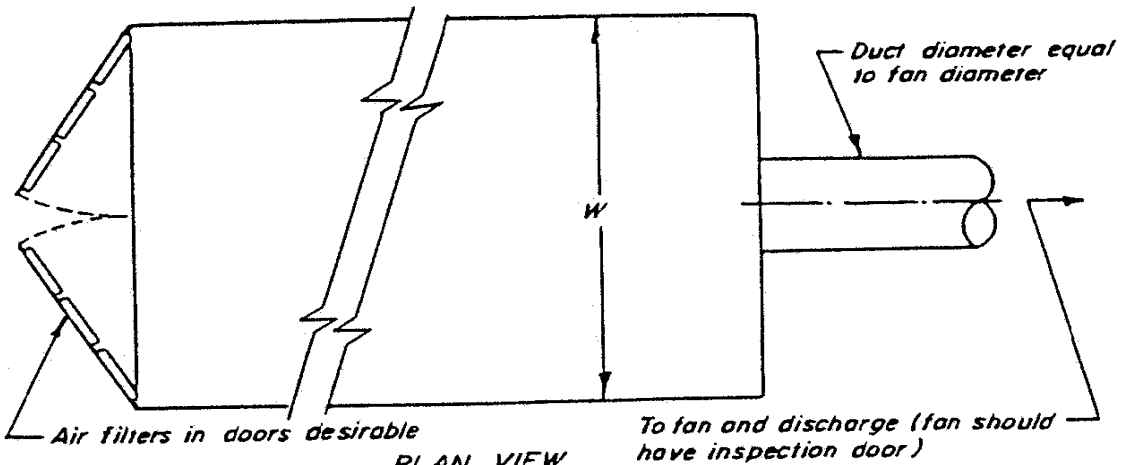
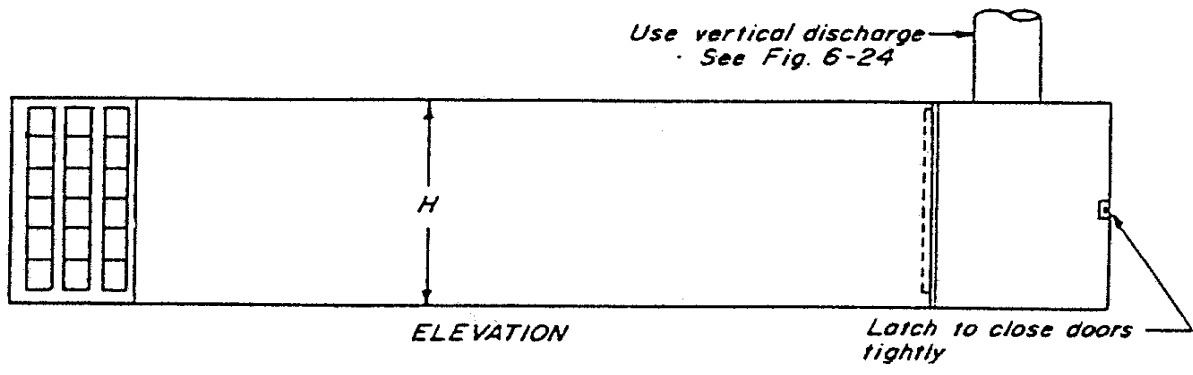
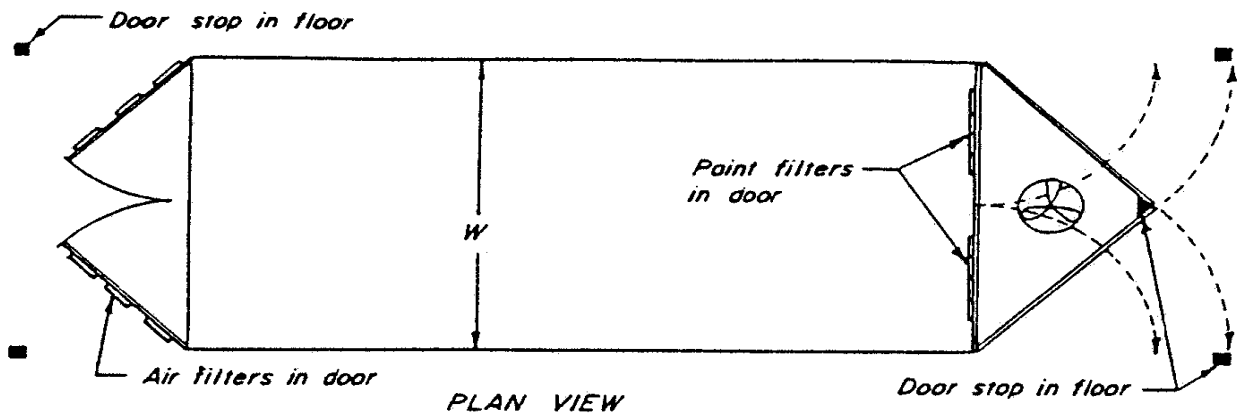
**Paint Spray Booths shall comply with Chapter 24 of the 2020 Minnesota State Fire Code and NFPA Standards 13 and 33, as follows:**

- Paint spray booths shall not exceed 1500 square feet nor 10% of the basic allowable area permitted for the major use of the building as allowed by the IBC.
- A paint spray booth's structure (walls, floors, ceiling) and exhaust duct work must be made of non-combustible material.
- Each booth must have an independent exhaust system discharging to the exterior.

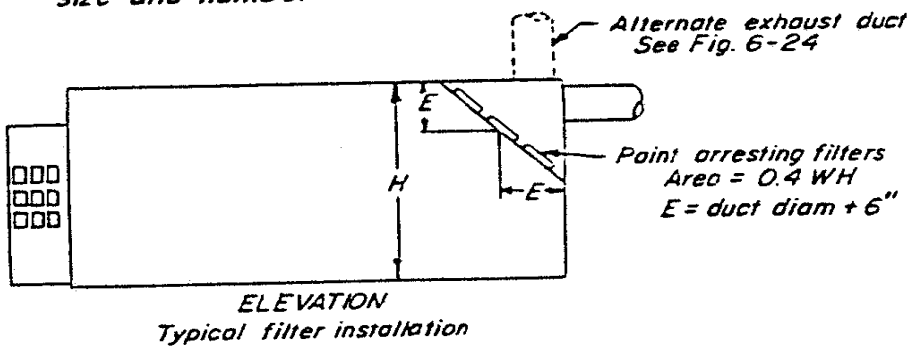
- Interior surfaces must be smooth and easy to clean.
- Special "explosion proof" electrical wiring is required for all wiring within the paint spray booth. Metal parts of paint spray booths, exhaust ducts, and piping systems conveying flammable or combustible liquids or aerated solids must be properly grounded. No spark- or flame-producing equipment is to be located within 20 feet of a paint spray booth.
- Paint spray booths must be protected by approved automatic fire sprinklers to be located in the booth and the exhaust duct for spray operations which use flammable or combustible chemicals.
- Each paint spray booth must be separated and have a clear space of not less than three (3) feet from walls and other operations.
- Exhaust ventilation must be provided to draw vapors and overspray out of the paint spray booth. Room temperature air must be supplied to replace the volume of air which goes out the spray booth exhaust.
- The termination point for exhaust ducts discharging to the atmosphere shall not be less than the following:
  - A. Ducts conveying explosive or flammable vapors, fumes or dusts: 30 feet from property line; 10 feet from openings into the building; Six feet from exterior walls or roofs; 30 feet from combustible walls or openings into the building which are in the direction of the exhaust discharge; 10 feet above adjoining ground level.
  - B. Other product-conveying outlets: 10 feet from property line; 3 feet from exterior wall or roof; 10 feet from openings into the building; 10 feet above adjoining ground level.
- Exhaust ducts must be of the following U.S. Standard Gage:
 

<u>Diameter</u>	<u>Gage</u>
8" or less	No. 24
8"+ to 18"	No. 22
18"+ to 30"	No. 20
Over 30"	No. 18
- Exhaust ducts must have 18 inches clearance to unprotected combustible construction. Unprotected combustible construction clearance may be reduced as follows:
 

<u>Construction Type</u>	<u>Reduced Clearance</u>
No. 28 gage metal on 1/4" insulating millboard.....	12"
No. 28 gage metal on 18" insulating millboard	
Spaced out 1" on non-combustible spacers.....	9"
No. 22 gage metal on 1" rock-wool with batts	
Reinforced with wire-mesh.....	3"
- Exhaust ducts must not be installed at an angle exceeding forty-five degrees.
- Exhaust ducts must be provided with a tight-fitting sliding or hinged door clean-out opening equal to or greater in thickness than the duct.
- Electrical motors for exhaust fans cannot be located inside the booths or ducts. All rotating elements must be non-ferrous or non-sparking.
- Paint spray booths must have mechanical ventilation adequate to accumulation of vapors, with a minimum of six air changes per hour (AC/HR).
- The average air velocity through the booth from end to end must not be less than 100 feet per minute (fpm). There must also be enough air going through the spray booth to dilute solvent vapor to at least 25 percent of the lower explosive limit (the regulation contains information needed to calculate ventilation requirements).
- A pressure gauge must be installed to show the pressure drop across the booth filters. The pressure gauge should be marked to indicate normal air flow, and to indicate when the filters will need replacement.
- Electrical equipment is interlocked with the ventilation system so that equipment cannot operate unless the ventilation system is in operation.



$Q = 100 \text{ cfm/sq ft of cross-sectional area}^*$   
 (When  $W \times H$  is greater than 150 sq ft,  $Q = 50 \text{ cfm/sq ft}$ )  
 Entry loss = 0.50 VP plus resistance of each filter bank when dirty  
 Duct velocity = 1000 - 3000 fpm  
 Air filters to be sized for 275 cfm/sq ft of filter  
 Paint filters: combustibility Class 2 or better; consult mfr for size and number



## **REQUIREMENTS FOR OPERATING A SPRAY BOOTH:**

Per NFPA 33 Standards:

1. A portable fire extinguisher is to be located near the spray area.
2. Chemicals such as paints, etc., kept near the paint spray booth must be limited to the amount needed for one shift.
3. Employees working at spray operations must stay upwind of the object being sprayed. If employees must be downwind of the object being sprayed, the employee must wear an appropriate respirator.
4. The employee must not be over exposed to chemicals/vapors from the spray operation. The material safety data sheet for the product being used should list chemicals to be concerned about and the exposure limits for each chemical.
5. Combustible residue must not be allowed to build up on the interior of the paint spray booth. Clean walls and floors regularly.
6. Rags and debris wet with flammable liquid must be disposed of in a covered metal trash container. The trash container must be emptied to an outdoor location once a day.
7. Transferring flammable or combustible liquid from one container to another requires providing an electrical bonding "strap" or wire between the two containers.
8. Spray equipment under air pressure must be provided with a visible pressure gauge and must have a relief valve.
9. A "NO SMOKING" sign is to be posted at all spraying areas and paint storage rooms.
10. A conspicuous welding warning sign is to be posted in the vicinity stating:

**NO WELDING.  
THE USE OF WELDING OR CUTTING  
EQUIPMENT IN OR NEAR THIS AREA  
IS DANGEROUS BECAUSE OF FIRE AND  
EXPLOSION HAZARDS. WELDING AND  
CUTTING SHALL BE DONE ONLY UNDER THE  
SUPERVISION OF THE PERSON IN CHARGE.**