



# Idaho Surveying & Rating Bureau, Inc.

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**Martin J Fewkes, CPCU**  
Field Rating Representative

Subject: Requirements for Construction and Installation of Spray Painting Booths and Rooms

The Idaho Surveying and Rating Bureau, Inc. in establishing of advisory property insurance rates, uses N.F.P.A. Standard No. 33 as the basis for evaluating spray painting operations.

The property insurance loss costs are established using the Specific Commercial Property Evaluation Schedule developed by the Insurance Service Office, Inc. As with any rating schedule, it is impossible to design an evaluation system that will recognize all items covered by N.F.P.A. No. 33.

The Specific Commercial Evaluation Schedule evaluates spray painting based on specific features of the room, booth or enclosure. The determination that spray painting is done in an acceptable room, booth or enclosure, results in the lowest possible occupancy hazard charge. If certain minimum features are absent, a higher charge is applicable. The following items marked with an asterisk (\*) are the minimum features required. If any of the minimum features are omitted, the painting operation will be charged as if it were "in the open".

In situations where spraying flammable liquids is done without some type of enclosure, the property may be subject to additional charges for electrical equipment and or heat producing devices in a hazardous location.

The attached sheets are this Bureau's interpretation of the schedule standards. This standard is applicable only to the advisory property insurance loss costs in Idaho. This does not necessarily meet or exceed federal, state, or local building or life safety codes, laws, ordinances, regulation or rules.

If you have any questions please contact our office.

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## REQUIREMENTS FOR CONSTRUCTION AND INSTALLATION OF SPRAY APPLICATION BOOTHS OR ROOMS

An acceptable Spray Booth shall be constructed, equipped and installed according to the requirements of N.P.F.A. #33.

### 1. ACCEPTABLE SPRAY BOOTH

The following are the minimum requirements of an acceptable spray booth or room.

**\*A.** Walls and ceilings which make up spray area shall be constructed of steel, concrete masonry or other noncombustible material with at least a one-hour fire resistance rating and shall be securely and rigidly supported.

Note: Wood studs and sheetrock are not considered non-combustible for this application.

**\*B.** The interior surfaces of the spray area shall be smooth and designed to prevent pocketing of residues and to facilitate ventilation, cleaning and washing.

**C.** The floor construction of the spray areas, if combustible, shall be covered by non-combustible material. Examples of these coverings are concrete caps, ceramic tile, brick or cobble stone, or other like materials.

**D.** Where conveyor openings are arranged to carry work into or out of the spray areas, the openings shall be as small as practical.

**E.** Spray booths or rooms shall be separated for other operations by not less than three (3) feet or by a partition or a wall having a one-hour fire resistance rating.

**F.** Spray booths shall be installed so that all portions are readily accessible for cleaning. A clear space of not less than three (3) feet on all sides shall be kept free from storage or combustible construction. This does not preclude the installation of a spray booth against partitions or walls having a one-hour fire resistance rating providing the booth can be maintained and cleaned.

**\*G.** When spray area is illuminated through glass panels or other non-combustible transparent material, fixed lighting units shall be used as a source of illumination. Panels shall effectively isolate the spray area from the area in which the lighting unit is located, and shall be of noncombustible materials designed so breakage is unlikely. Panels shall be so arranged that normal accumulations of residue on the exposed surface of the panel will not be raised to a dangerous temperature by the lighting unit. Panels shall be so installed that they may be easily cleaned.

**H.** Spray booths or rooms shall be protected by an automatic fire suppression system.

**I.** No more than 60 gallons of flammable liquids may be stored in the spray area.



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## 2. ELECTRICAL EQUIPMENT

A. All electrical equipment shall be approved for the purpose and location for which the spray booth is intended and shall otherwise be in accordance with N.F.P.A. #70.

\* (1) All electrical equipment within the spray booth or room shall be explosion proof type connections. All wiring shall be in rigid metal conduit or Type MI cable or in metal boxes or fittings containing no taps, splices, or terminal connections and shall be kept free from deposits or combustible residue.

\* (2) All lighting shall be sealed so as not to allow vapors to come in contact with any electrical connections. Lights shall be located so that they are protected from any mechanical injury or breakage. All lighting equipment and fixtures shall be kept free from deposits of combustible residue. Portable electric lamps shall not be used in any spray area during spraying operations.

Exception: Where portable electric lamps are required for operation in spaces not readily illuminated by fixed lighting within the spray area, they shall be of the type approved for use in such areas where flammable vapors or gases are present under normal operating conditions.

\* (3) All electric ventilation fan motors shall be located outside the spray area, unless they are a sealed explosion proof type motor approved for operation in such areas, and protected from the accumulation of combustible deposits or residue.

## 3. VENTILATION SYSTEMS

A. Ventilation and exhaust systems shall be in accordance with N.F.P.A. #91 where applicable and shall also be in accordance with N.F.P.A. #33.

(1) The ventilation system shall be constructed of noncombustible material and of adequate capacity to properly perform the functions required.

(2) The ventilation system shall be designed to adequately remove all vapor mists or suspended residue during spraying operations.

(3) The ventilation system shall lead directly as possible to the outside of the building. Exhaust outlets to the atmosphere shall extend above or away from surrounding structures to prevent accumulation of combustible residue on such structures.

(4) Electric ventilation fan motors shall be located outside and away from the path of combustible vapors or residue unless they are a sealed explosion type motor approved for operation in such areas.



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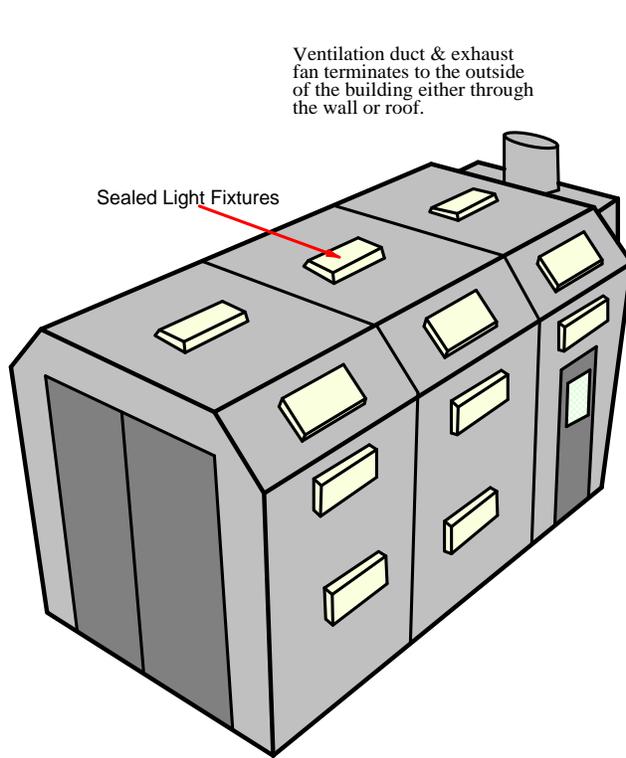
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## **THREE SIDED OR OPEN FACED BOOTHS AND ENCLOSURES**

Three sided or open faced booths and enclosures shall conform to NFPA # 33. In addition to Item 3. A. (1 – 4) above, the following items are required for three sided or open faced booths.

- (1) A draft curtain of no less than 6” shall be installed across the opening.
- (2) Any sources of ignition, i.e. unit heaters, electrical equipment, metal working etc., shall not be within 20 feet of the opening of the booth.
- (3) The area within 25 ft. of the opening shall be kept clean and free of debris, flammable materials or liquids.

## EXAMPLE OF AN EFFECTIVE ENCLOSED PAINT BOOTH



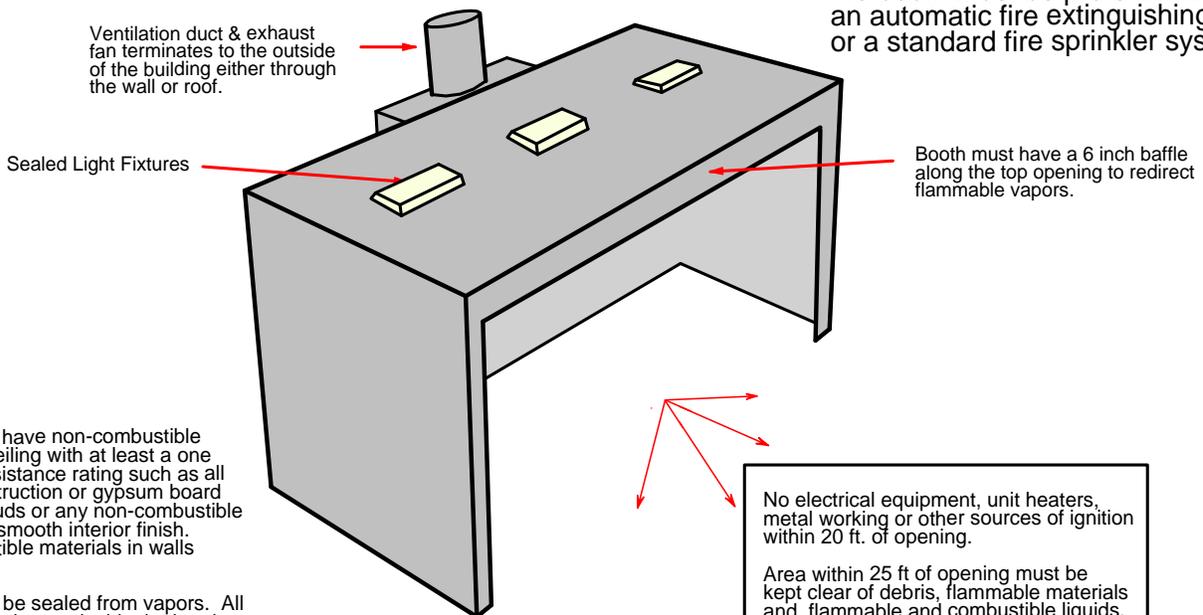
To be considered a Standard Booth, the booth must be protected inside by an automatic fire extinguishing system or a standard fire sprinkler system.

Booth must have non-combustible walls and ceiling with at least a one hour fire resistance rating such as all metal construction or gypsum board on metal studs or any non-combustible liner with a smooth interior finish. No combustible materials in walls or ceiling.

Lights must be sealed from vapors. All electrical equipment inside the booth must have explosion proof.

For complete requirements refer to NFPA 33

## EXAMPLE OF AN EFFECTIVE 3 - SIDED/ OPEN PAINT BOOTH

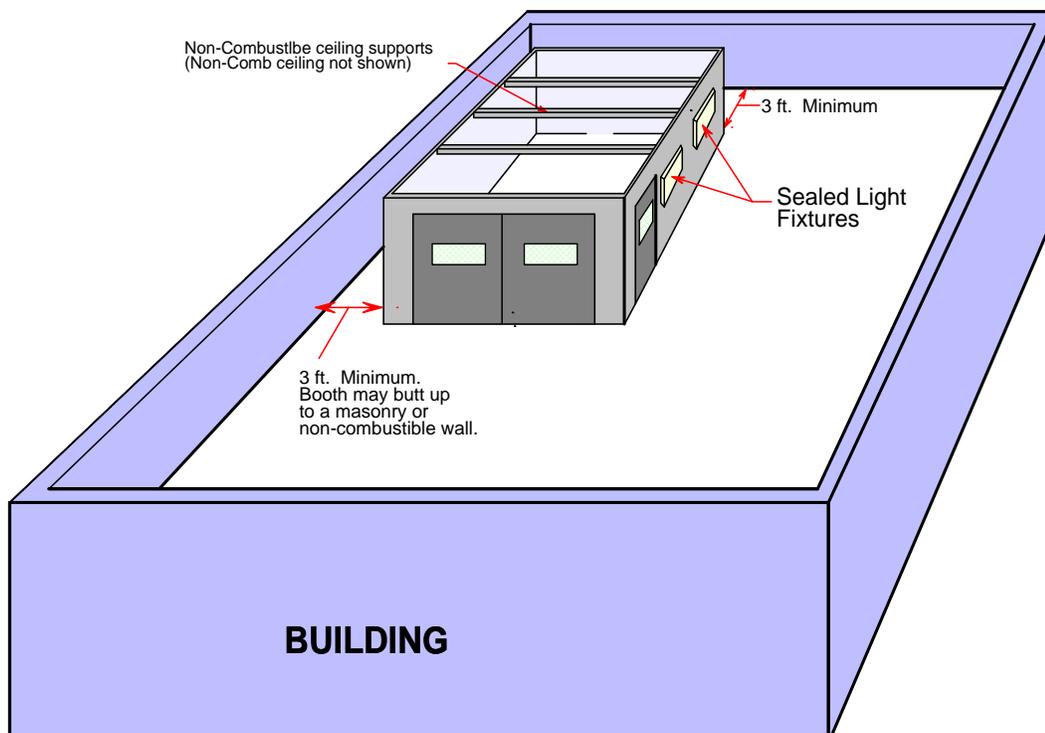


To be considered a Standard Booth, the booth must be protected inside by an automatic fire extinguishing system or a standard fire sprinkler system.

For complete requirements refer to NFPA 33

## EXAMPLE OF AN EFFECTIVE BOOTH INSIDE A BUILDING

To be considered a Standard Booth, the booth must be protected inside by an automatic fire extinguishing system or a standard fire sprinkler system.



Booth must have non-combustible walls and ceiling (including non-combustible ceiling supports) with at least a one hour fire resistance rating such as concrete, or concrete block with a smooth interior finish or metal studs. Metal studs may be covered with 5/8 inch gypsum board or sheet metal.

Electrical equipment in the booth must be sealed from vapors and or explosion proof fixtures.

Ventilation duct & exhaust fan terminates to the outside of the building either through wall or roof.

No storage of materials or flammable liquids in the booth.

For complete requirements refer to NFPA 33

# EXAMPLE OF AN EFFECTIVE 3 SIDED / OPEN BOOTH INSIDE A BUILDING

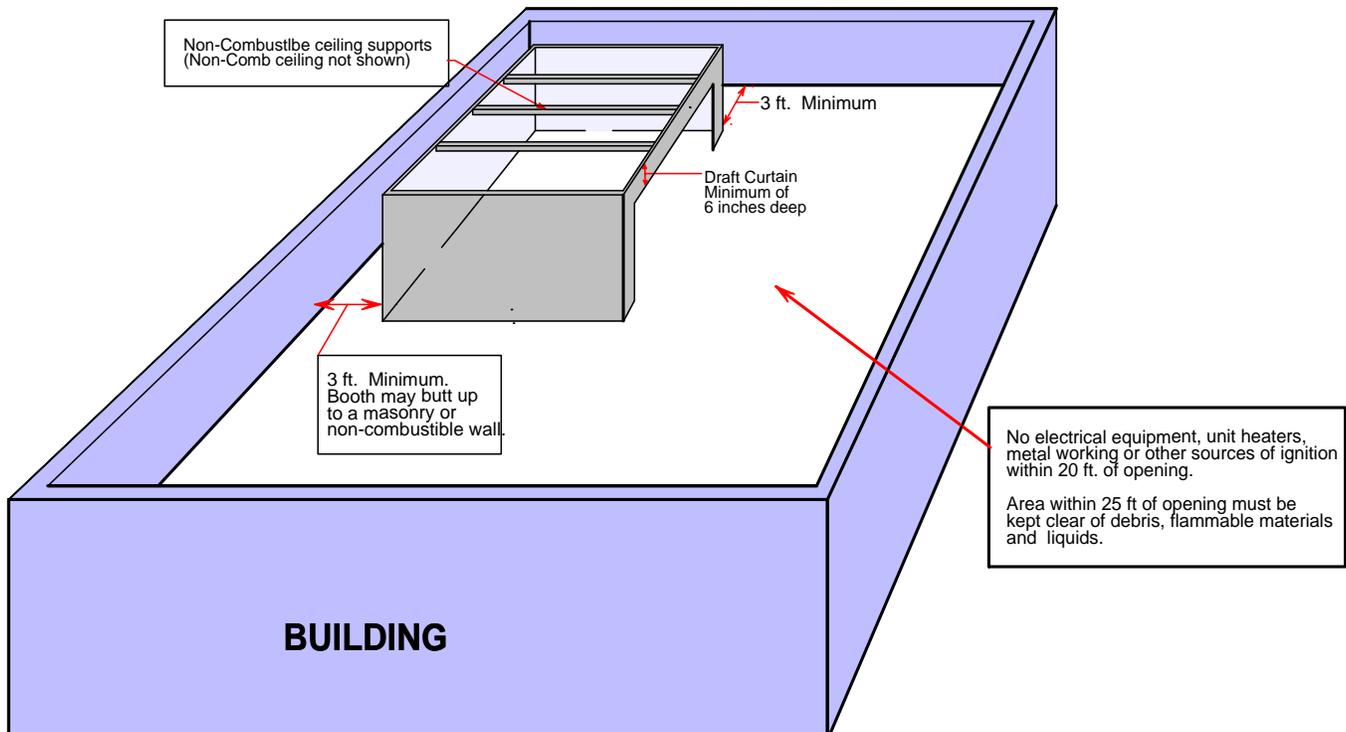
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No storage of materials or flammable liquids in the booth.



For complete requirements refer to NFPA 33