

Training Announcement

VOLUME XV • ISSUE 9



VENTILATION: FLAT ROOF OPERATIONS

Ventilation on the fireground is one of those skills that's critical to success. There are times that you can advance and extinguish the fire without adequate ventilation, but the interior crews take a beating and there's more damage done to the structure — not to mention the toll on any civilians who may still be in the structure. In basic order of priority, ventilation should be opposite the fire, horizontal, and then vertical.

When it comes to vertical ventilation there are two main structural types we deal with: flat-roof and peaked-roof structures, peaked-roof ventilation will be left for another day. As with any type of vertical ventilation there has to be a *real* need to perform it. Basically, if there's fire impinging on the underside of the roof structure then it needs to be opened. If there's only smoke, and there are other ways of venting or removing it (windows, gable vents, cockloft vents, etc.), then less-aggressive ventilation efforts should be used. Don't cut the roof if you don't need to — *knowing when to cut and when not to cut* is usually the tell-tale sign of a company that knows their job!

When it comes to venting flat roofs take this approach: vent any horizontal openings to the underside of the roof first (could be top floor windows, cockloft or soffit-type vents, etc.). On the top side, vent any bulkhead doors that are on the roof, vent any man-made openings (ventilator caps, skylights, scuttle hatches, or anything else leading to the area below), and then vent the roof if the other openings didn't get the job done.

This session will review the basics of flat roofs—construction (structure, decking, covering), man-made openings usually found on flat roofs, methods of accessing flat roofs, methods of venting flat roofs, tools for venting flat roofs, and finally techniques. After a brief review the hands-on stations will reinforce things by letting students become proficient at both flat-roof ventilation skills and overall operations.

Date: _____

Time: _____

Trainer: _____

Location: _____



Ventilation: Flat Roof Operations

I. Reasons for Fireground Ventilation

- A. Venting for Fire
 - 1. Done to make it easier to put the fire out
 - 2. To allow firefighters to work
 - 3. To facilitate the advance of the engine company
 - 4. To stop the build-up of smoke/heat that is degrading conditions inside
 - 5. Usually done in coordination with the attack team
- B. Venting for Life
 - 1. Done to make it easier to find, or reach, trapped civilians
 - 2. To allow searching firefighters to continue the search
 - 3. To allow civilians to hold on a bit longer
 - 4. Usually done without coordinating with the attack team
 - 5. May drastically change fire conditions — must anticipate effect

II. Basic Types of Fireground Ventilation

- A. Horizontal
 - 1. Done initially and when fire isn't in the attic / cockloft space
 - 2. Should be first choice
 - 3. May only involve opening doors / windows
- B. Vertical
 - 1. When the fire has reached the attic / cockloft space
 - 2. When the fire is mushrooming down and no horizontal ventilation can be accomplished
 - 3. Usually done in conjunction with or after horizontal ventilation is accomplished
 - 4. A priority in certain building types
 - a. single-story flat-roof buildings
 - b. top-floor fires in flat-roof buildings
 - c. when stairway access runs to roof

III. Building Construction and Flat Roofs

- A. Construction Types
 - 1. Older construction usually with wood
 - 2. Newer construction usually with lightweight metal/truss
- B. Construction Components
 - 1. Structure
 - a. dimensional wood joist/rafter
 - b. lightweight wood truss (parallel chord)
 - c. lightweight bar-joist truss
 - d. other
 - 2. Decking
 - a. plywood / OSB
 - b. wood plank
 - c. Q-deck metal
 - d. other (concrete, gypsum plank...)
 - 3. Covering (may actually accelerate fire from above)



- a. built-up tar and gravel
 - b. roll-down roofing (shingle-type)
 - c. rubber-membrane
 - d. other
- C. Roof-Mounted Structures / Components
1. Stairway access — bulkhead door
 2. Skylights
 3. Scuttle hatches
 4. Ventilation — caps, covers, vents...
 5. Other (both active with openings inside and static storage)
- IV. Accessing Flat Roof Structures**
- A. From Rooftop of Adjoining Building
1. Through interior stairs
 2. Over ladder placed to building
- B. Over Ladder Placed to Actual Building
- C. Fire Escapes – if present and SAFE
- D. DON'T Use From Stairs of Actual Building
- V. Ventilating Flat Roofs**
- A. Tools
1. Power Saws (rotary saw is first choice / chain saw will work)
 2. Hand Tools (axe and halligan, roof hook)
- B. Operations
1. Access Roof
 2. Perform Roof Survey
 - a. check over rear of structure for civilians
 - b. locate fire location and report
 3. Vent Man-Made Openings
 - a. open roof-top doors
 - b. ventilate skylights (usually over stairs/hallways)
 - c. open scuttle hatches
 - d. open any ventilator ducts/shafts
 4. Make Sure Horizontal Ventilation is Taking Place
 - a. may have to perform window venting from roof-top
 - b. other crews may be performing from below
 4. Ventilate Roof
 - a. determine best location — visible signs on roof / communication with interior companies / narrow down to a quadrant (as a last resort)
 - b. ensure direct-route to exit
 - c. remove membrane (if needed)
 - d. perform coffin-cut — DON'T PULL UNTIL READY
- VI. Flat Roof Ventilation Hazards**
- A. Ensure Stability of Structure
- B. Beware of Renovations (covered shafts, weakened areas, holes...)
- C. Be Aware of Disorientation In Smoke (don't walk too close to edges)

Ventilation: Flat Roof Operations – Test



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STUDENT NAME: _____ INSTRUCTOR NAME: _____ DATE: _____

1. **Fireground ventilation done to facilitate the advance is referred to as:**
 - A. Venting for Effect
 - B. Venting for Life
 - C. Venting for Fire
 - D. None of the Above
2. **Fireground ventilation done to increase victim survivability is referred to as:**
 - A. Venting for Effect
 - B. Venting for Life
 - C. Venting for Fire
 - D. None of the Above
3. **In terms of priority, _____ ventilation should be done first.**
 - A. Vertical
 - B. Horizontal
 - C. Seasonal
 - D. None of the above
4. **The structural components of older flat-roof buildings were usually made out of?**
 - A. Parallel chord trusses
 - B. Dimensional lumber
 - C. Steel bar-joist trusses
 - D. All of the above
5. **When accessing a flat roof structure you should not use:**
 - A. Fire escapes
 - B. Adjoining roof-tops
 - C. The interior stairs of the actual building
 - D. None of the above
6. **When performing roof cut operations the decking should be pulled:**
 - A. As it is cut
 - B. When the cutting is complete
 - C. Timing doesn't matter
 - D. All of the above
7. **Flat-roof hazards that must be anticipated during ventilation operations include:**
 - A. Disorientation due to smoke
 - B. Weakened structure
 - C. Covered-over renovations
 - D. All of the above
8. **In terms of ventilating man-made openings on a flat roof, the _____ should be opened first:**
 - A. Skylight
 - B. Bulkhead door
 - C. Scuttle hatch
 - D. None of the above