



GALENA FIRE DEPARTMENT
Standard Operating Guideline
VENTILATION

Randy L. Beadle
Fire Chief Signature

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Page: 1 of 3

Purpose: To understand the principles of ventilation, and to provide guidance for fire attack and ventilation at structure fires with an emphasis on firefighter safety.

Ventilation is the systematic removal of heated air, smoke and gases from a structure and the replacement of these fire and smoke products with cooler and cleaner air. Rapid and effective ventilation is critical to the survival of both firefighting forces and exposed civilian occupants of an involved structure. It is the position of the GFD that effective ventilation shall be established in all offensive structural firefighting operations.

Advantages

- Releases heat, smoke and gases
- Increases visibility
- Decreases danger to trapped occupants and speeds rescue efforts
- Helps to contain spread of fire within a structure
- Reduces danger of flashover or backdraft situations
- Assists in property salvage and overhaul operations.

Procedure

- All Firefighters performing ventilation must wear full turnout gear and an SCBA.
- A charged hose line must be in place at ventilation location.
- Vertical Ventilation- If fire has not already burned through roof of structure, use vertical ventilation.
- Select portion of roof to be opened directly above main fire source.
- Observe wind direction and work with wind at your back.
- Required tools on the roof include:
 - Extension ladder five (5) rungs above roof line
 - Roof ladder with prongs hooked over top of roof
 - Pick axe
 - Long pike pole
 - Ventilation saw-Start saw on ground and turn off before hoisting
 - Portable radio

Safety

- Watch for overhead power lines when lifting ladders or swinging axe
- For sharp pitched roofs use lifelines and stay on roof ladder
- Always “sound” the roof before stepping on it.
- Watch for engineered roof trusses, melting tar/asphalt and “spongy” roofs
- Work in teams of two with a minimum of Firefighters on roof

Cutting a roof opening

- Cut one large opening at least **4 by 4 ft.** above seat of fire
- Work from upwind side on roof ladder
- Mark location of cut by sounding with axe to locate roof trusses/joists
- Remove built-up material/shingles with axe pick head
- Saw or cut along rafters-Do not cut through roof truss or rafter



VENTILATION

- Make far cut first, then bottom cut, then top cut and finally near cut
- Clear sheathing boards from vent hole staying clear of fast venting gases and flames
- Use long pike pole to push down through ceiling to fully open vent hole
- Stay back from fast venting gases or flames.

For a long, narrow structure, a 4 ft wide continuous trench or strip ventilation (a series of 4 by 4 ft. holes) may be cut well ahead of an advancing fire as a defense to save a portion of the structure.

A hole in the floor can be cut to vent a basement fire, if venting via a stairwell or other shaft way this does not work.

Horizontal Ventilation

Horizontal ventilation shall be provided with interior operations. The establishment of horizontal ventilation flow is through the use of prevailing winds with selective doors and windows of a structure.

Horizontal ventilation can be accomplished by the use of natural air movement through openings, hose lines, or mechanical equipment.

Vertical Ventilation

Vertical ventilation is the establishment of vertical airflow through the roof of a structure using natural openings and /or openings created through roof cutting operations.

The number of firefighters on a roof will be kept to the minimum necessary to accomplish the task and full PPE including SCBA shall be worn.

The roof must be sounded continuously in the direction of travel and over any area in which the company will/may be working.

The Company Officer must constantly perform situation assessments to determine if it is safe to continue roof operations.

Ventilation should be established between the fire and the unburned areas as close to the fire as safety permits. Do not vent directly over the fire.

Pitched-roof vertical ventilation shall be established through a 3' X 8' hole parallel to the roof ladder (preferred minimum dimensions).

Flat-roof vertical ventilation shall be established through a 6' X 8' or larger hole.

Standard tools for vertical ventilation shall be a pick-head axe, pike pole, saws, and other equipment as necessary.

Strip or trench cuts may be utilized where applicable.

When roof ventilation operations are complete, all firefighters will exit the roof.



VENTILATION

Fire hose water streams

Roof ventilation holes are for venting fire, gases and smoke

Spraying hose streams down the vent hole defeats the venting process and endangers interior crews.

Therefore, do not direct a hose stream down a vent hole.

Hydraulic venting

- Use a fog stream from within a room to clear the room after initial fire knockdown.
- Use a wide fog pattern 85% to 90% of window or door opening
- Nozzle tip should be at least two (2) ft. back from opening