

Santa Barbara City Fire Department - Standard Operating Procedures Training Operations	Code: T-III-5
Ventilation Practices	
Chpt: III Structure fires	Revised: 8/14/03 Pages: 3

I. PRINCIPLES OF VENTILATION

A. Ventilation ---- the planned and systematic removal of heat, smoke and toxic gases from an area and the replacement of these products with cooler fresh air

B. Effects of proper ventilation

1. Better visibility
2. Reduced temperature levels
3. Reduced possibility of backdraft or flashover
4. Easier to locate seat of fire or victim
5. Reduced smoke damage to property

C. Advantages of ventilation toward fire suppression operations

1. Assists with rescue of victims
2. Increases fire attack
3. Reduces possibility of backdraft/flashover
4. Aids in property conservation

II. SAFETY PRECAUTIONS

A. When ventilating a structure, firefighters should wear full protective equipment and SCBA

B. Always vent at the highest point if possible

C. Fire Attack hose lines should be in place and ready

D. Always work with the wind at your back or side when cutting vent holes or venting windows

E. Never place a hose line or elevated fire stream into a ventilation opening when in an Offensive Fire Attack

F. Check the stability of the roof before starting ventilation operations

Ventilation Practices

- G. Restrict number of personnel working on roof to minimum to accomplish task.
- H. Always work from a roof ladder when cutting hole on a pitched roof
- I. Watch out for overhead power lines
- J. Have a secondary escape route from roof
- K. Check power tools on the ground to make sure they will start before taking them to the roof.
- L. Be careful not to cut main structural supports
- M. Watch out for signs of unsafe roof conditions
- N. Maintain communications capability with ventilation crew
- O. Remove crew from roof after ventilation hole is completed

III. TYPES OF VENTILATION

A. Horizontal Ventilation

1. Use of doors and windows to ventilate across the floor of a building
2. Open leeward side windows first, at top
3. Open windward side windows next, at bottom
4. Keep ventilation openings clear from all obstructions

B. Vertical Ventilation

1. Opening made above the fire to relieve heat and gases due to mushrooming
2. Ventilation opening should be made directly over fire and at the highest point
3. Utilize any natural openings that are already in place such as skylights, scuttle holes, exhaust fans, etc.
4. Ventilation openings should be large enough (minimum of 4' x 4')
5. Openings cut on pitched roofs should be on leeward side and as high as possible
6. Make sure opening is clear from any material or obstruction

C. Trench Ventilation

Ventilation Practices

1. Used in buildings with large attic areas to stop horizontal spread of fire
2. Four foot wide opening cut in roof from outside wall to outside wall
3. Opening must be far enough away from fire to allow it to be completed before fire gets there
4. Tactic used to save rest of structure by cutting firebreak in roof

D. Hydraulic Ventilation

1. Use of interior fog stream to move smoke and gases through window or door
2. Wide fog pattern utilized approximately two foot from opening.
3. Fog pattern must cover 90% of opening for maximum effect.
4. Will move more air than smoke ejector
5. Quick way for attack crew to start ventilation process
6. Will increase water damage

E. Mechanical Ventilation

1. Negative Pressure (Use of smoke ejectors)
 - a) Placement of ejector for maximum effect (highest point in opening)
 - b) Reduce “churning”
 - c) Remove items such as drapes, blinds, screens, etc. which might block air flow
 - d) Provide and maintain unobstructed replacement air opening
2. Positive Pressure (Use of PPV fans)
 - a) Placement of PPV fan for maximum effect (outside -ground level)
 - b) Cone of air to completely cover door opening
 - c) Eject smoke from opening on opposite side of building
 - d) May pressurize one room at a time by closing interior doors