

SHELBYVILLE FIRE & RESCUE STANDARD OPERATING PROCEDURES

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|  | SECTION: Operations | S.O.P: 109.16 |
| | SUBJECT: PPV/PPA | PAGE: 1 of 3 |
| | Approved By: | Effective Date: December 1, 2012 |
| | | Revision Date: |

Purpose:

This guideline identifies the tactical application of positive pressure ventilation during structural fire operations and other techniques for use.

Procedure:

I. Benefits

1. PPV rapidly removes heat and smoke from the building, thus reducing the fires ability to propagate and advance.
2. PPV causes an improving atmosphere – thus improving patient survivability profiles.
3. Rapid removal of smoke improves firefighter ability to conduct search and rescue operations as well as effective loss control operations.
4. The improved atmosphere and visibility increases the firefighter’s ability to conduct at attack / extinguishment operations.
5. The improved atmosphere reduces firefighter heat stress.
6. PPV reduces loss caused by smoke and fire damage to the structure.
7. PPV can reduce the need and risk of roof ventilation at many fires.

II. Application

Command should order PPV where appropriate and as early as possible in the operations.

III. Placement of Fans

1. A positive pressure fan should be placed at the point of entry(s).
2. Fans should be positioned 7 to 10 feet back from the entry point. The object is to create a pressure “cone” effect around the door. This position will also allow access for crews to enter the building.
3. Where additional fans are required, placing two or more fans in “tandem” – one behind the other is more effective than side by side.

IV. Required Tactical Considerations

1. A hoseline of at least 1 ¾ in diameter shall be charged with an entry team on standby at the point of egress.
2. An “adequate exit” for the pressurized air must be provided and must be located in or near the fire area. This is generally a window, door or other opening.
3. Positive pressure ventilation must be injected at the point of entry of the structure.
4. It will be the Company Officers responsibility to ensure that these three requirements are completed prior to injecting positive pressure into the structure.

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V. Controlling Air Flow

Air flow from PPV must be controlled throughout the operation. Too many openings or exit points reduce the effectiveness of PPV. In some cases, windows and doors that are already open may need to be closed to direct the air flow into the fire area, or the most densely affected smoke area. As one area is cleared of smoke; that area may need to be sealed off and another exit created in another area of the structure to direct the air flow into the next area to clear.

VI. Attic Fires

1. Isolated attic fires can benefit from PPV. During initial attack, fire crews should use small openings in the ceiling for water application. This will prevent the clear environment below the ceiling from rapidly filling with smoke. Moving from one room to another and “punching” the nozzle through the ceiling and using a fog application is very effective. Use of penetrating nozzles is also recommended. Loss control measures should be initiated simultaneously with the fire attack.
2. An “exit” for PPV in the attic must be in place. Most roofs/attics have pre-existing vents typically at the end of the attic space in a vertical wall. These are often adequate for an ”exit”
3. Once PPV is in place, large sections of ceiling can be pulled. PPV will keep the environment below the ceiling clear. Salvage covers or black plastic should be used before pulling the ceiling.

VII. Positive Pressure for Exposure Control

1. In some cases, PPV can be used for exposure control. This is most effective with common attics (strip shopping center, apartment complexes) or where separate walls may have been breached (plumbing, cracks).
2. The objective is to introduce PPV ahead of a moving fire and force it back into the fire area.
3. An exit point in the fire area is needed in most cases.
4. For exposure control, the fan(s) would be placed at an entry point at most severe exposure first. If a heavy smoke condition exists, it may be beneficial to create a temporary opening (door, window) to allow an exit for the pressure and the smoke. Once the smoke has cleared, the exit should be closed, the building sealed, so that it will “over pressurized” the exposure. An opening in the ceiling will be required to pressurize the attic area. Over pressurized air will force hot gases back across the beaches, or back down common attic spaces towards the fire area. This can prevent the fire spread extension.
5. The second most critical exposure would then receive PPV in a similar manner.
6. The next priority would be the fire occupancy.

VIII. Large Buildings

Buildings with a large square footage may require multiple fans, perhaps at more than one location to effectively remove the smoke. These situations are more complex and required close coordination of PPV with all sector officers. Command should consider a Ventilation Sector to coordinate all ventilation operations in large buildings.

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IX. Precautions

Positive pressure ventilation can create problems if not effectively managed, monitored and coordinated. Be aware of the problems listed below and take appropriate corrective action.

1. An adequate exhaust opening must be made or the fire may be pushed into unaffected areas.
2. Because of positive pressure, a “blow-torch” effect of fire blowing far out of the exit may occur. This is normal and predictable; adjacent exposures may need to be protected.
3. Do not direct a fire stream into an operating PPV exit point.
4. All concealed spaces need to be checked for extension.
5. Company Officers or Sector Officers will be responsible for monitoring and coordinating the application of PPV.
6. Since gas powered fans produce carbon monoxide, breathing apparatus may be required when PPV is used during overhaul operations.
7. Because of the sudden rise in BTU’s and the initial growth of the fire, PPV/PPA when used simultaneously with fire suppression shall be allowed adequate time to create and have a positive effect on the interior atmosphere.