

<i>Laconia Fire Department Standard Operating Procedure</i>		
Effective Date: Sept. 29, 2014	SOP Category & General Identification Number: Emergency Operations 207	Revision:
SOP Title & Number: Below-grade residential fire attack 207.24		
Approved by: Kenneth L. Erickson, Fire Chief	Re-evaluation Date:	Number of Pages: 2

Purpose

The purpose of this standard operating procedure is to establish the basic tactical guidelines for incidents involving working fire situations that are below-grade in residential occupancies. Fires in windowless below grade areas present significant hazards such that there is no emergency exit, poor ventilation, and difficult fire attack.

Scope

This guideline shall be followed by all personnel of this department. It shall be considered operational guidelines to follow in situations that require the active fighting of fire in structural areas below-grade.

DEFINITIONS

Residential occupancies: generally considered one and two family homes, including townhouse style condominiums.

Below-grade: any structure or portion of a structure located underground or below the surface grade of the surrounding land, also known as a basement or cellar.

Basement: a basement is generally ½ below grade and ½ above grade. Basements may have walk-out doors on the rear of the structure.

Cellar: a cellar is below grade. A cellar may have small windows generally located in line with the sill plate.

GUIDELINES

General

Size up at a below-grade/basement fire is critical to the success of the operation and the safety of our firefighters. A 360 degree survey of the involved structure is an important element of a proper size up and is critical in a below-grade fire situation.

If the fire is known to be below-grade, the officer must quickly determine if an exterior access to the area is present.

Exterior access is rarely on the A side of a structure, but rather, most likely to be found on the C side.

The primary goal is to get water on the fire in the quickest and safest manner possible. Use windows and doors prior to entry to cool down the fire and atmosphere.

General

The size up should continue beyond the 360 degree survey and include:

- assessment of the structure and type of construction,
 - Is it balloon frame or lightweight structure?
 - Assign a crew to open the ceiling on the first floor to identify type of construction
- the fire and smoke conditions observed,
- the ventilation profile of the structure,

- the victim survivability should there be a probability of occupants remaining in the structure
- risk analysis made by the officer

Two key issues / questions guide below-grade strategic decision-making:

1. Is there an exterior entrance?
2. Is the building safe to enter?

Exterior Entrance Exists and It is Safe to Enter

If there is an exterior access AND the building is safe to enter,

The preferred point of attack is the exterior door that leads directly into the basement. The first attack hose line shall be stretched to the exterior doorway for attack.

As soon as practically possible a *back-up* hose line shall be positioned to protect and support the initial attack team. The back-up or second line shall be equal to or of greater GPM flow than the initial attack hose line.

Principal exposures to below grade fires are the entire upper floors of the building. The floor above is the number one priority exposure and the top floor is the number two priority exposure and then any remaining floors in between.

Remember smoke is fuel and heated gases will rise to until they reach a barrier.

A third attack hose line above the fire should be based upon ability to operate this line from a reasonably protected position. A “protected position”, envisioned under this SOP, is one in which firefighters are protected by elements of construction (i.e. closed doors), other barriers to smoke and heat, sound flooring and in a location that is not in the ventilation path for the below grade fire. In some structures or situations, the only “protected position” for a below grade fire is outside near a door, front or rear. The third line is in place to prevent fire from burning through the below-grade door, prevent extension, and protect means of egress.

As extinguishment is established and proceeds, a calculated check for extension to those areas above the fire should be made as soon as safely possible, with the protection of a hose line. The considerations for safety of such operations are based on a risk analysis that includes victim survivability, the changing ventilation profile of the structure, structural integrity and developing conditions. Areas to be checked first should be those areas with open communication to the below-grade area, most likely a set of unprotected stairs.

NO Exterior Entrance

If the building has no exterior access but is determined to be safe to enter,

An attempt to locate fire looking through basement windows shall be completed. If present, strategic removal of basement windows shall be completed. If tactically appropriate, attempt to knock-down the fire with an attack hose line through the windows prior to considering interior entry down a basement stairway. Use a thermal imaging camera to aid in locating the fire.

Is the Building Safe to Enter?

Should it be determined that the building is safe to enter and the risk is reasonably calculated to produce good results, the officer should determine whether an approach down the stairs into the involved space will be made or whether an opening of the floor above the fire area will be made.

The interior basement stairs are normally located under the stairs to the second floor and face the rear of the structure. In single floor homes the below-grade stairs can be located via the garage, off the kitchen, or anywhere convenient to the builder.

The advancement of lines for an interior attack of a basement fire must be coordinated with aggressive ventilation of the basement and floors above. Ventilate the basement or below-grade space opposite the entry point for the attack team. Make it easier for the fire to “breathe” from that direction than in the direction of hose entry. Caution must be taken to protect crews from wind-driven fires and to stay out of the flow path.

Assign a firefighter to stand fast at the bottom or top of the basement/cellar stairs as a guide and hose control person.

Place large capacity flashlights at both points as well as guide beacons.

A back-up line with equal to or greater GPM flow than the initial attack hose line should be in place as soon as practical upon making entry. Use the thermal imaging camera. Good judgment must be exercised in deciding if it is safe to proceed down the stairs.

If the approach for extinguishment is through the floor above the fire then a hole must be cut for the insertion of a distributor nozzle. The hole should be slightly larger than the nozzle (1’ x 1’). A secondary vent hole is also advised away

from where the nozzle is being applied. The vent should be made in line with a window. It may be advisable to use PPV to keep the area around the distributor application clear of smoke and heat. Use the fan in low speed.

Not Safe to Enter - No Interior Operations

If it is determined that there is no SAFE exterior access and that it is NOT SAFE to enter the structure from a stair way access or an above-the-fire cut and cellar nozzle operation, there will be no interior operations. Prepare large streams for defensive operations.

Rapid Intervention

During interior below-grade attacks it is critical to firefighter safety to have dedicated RIT available, preferably at each entry point. If no RIT is available then access should be controlled so no firefighters advance deep into a below-grade space.

Ventilation

Ventilation must be coordinated with the Incident Commander and the interior hose crews. Door control is critical to control fire growth. Opening doors will create a flow path and increase temperatures in the building. Ventilation should only be conducted after the hose is in the correct place to apply a good stream.

After the hose is operating ventilation can be increased starting as close to the source of the fire as possible. Never vent behind the hose team. It may be necessary to cut the first floor to vent the below-grade fire. If the floor is deemed safe a crew can cut the floor in line with a window. Make the hole at least 4x4. Do not cut the hole in front of a door. All personnel must be aware of the vent hole.

If the building is unsafe to enter then the only option is to remove all windows starting on the lowest floor. If this does not relieve the pressure then the next option is to cut the roof. If unsafe wait for the fire to burn through the floor or roof.

In serious below-grade fires it will probably be necessary to cut the roof. However, this is not an early operation. When cutting roofs for below-grade fires the vent must be at least 6x6.