ESTIMATING HOSE STRETCHES

Hose Stretch Size-Up

Following size-up upon arrival, the engine company officer and crew must begin to size-up the hose stretch. When sizing up the stretch, there are many things to consider. In order to correctly estimate the amount of hose needed consider the following:

D.O.S.E.

D istance

- Distance from the apparatus to the entrance.
- Distance from the entrance to the fire area.
- Amount of hose needed to cover the fire area.

O bstacles

- Factor in any obstacles that may be encountered, such as: cars, trees, fences, shrubs, doorways.

S tairways / Stairwells

- A separate estimate should be made when dealing with stairways. The amount of hose needed will depend upon the type of stairway that is present.

E levation

- An elevation estimate will be needed when a fire is on an upper floor.

Putting Estimations to Work:

- When stretching a hand line, a rapid estimation of the number of lengths required to reach the seat of the fire is in order. The general rule for estimating the number of lengths in the fire building is:
  - 1 length per floor + 1 length for the fire floor.
    - Example: 5 story multi-dwelling, fire on the 4th floor would require 5 lengths (4+1=5). ***(see Fig.1)***

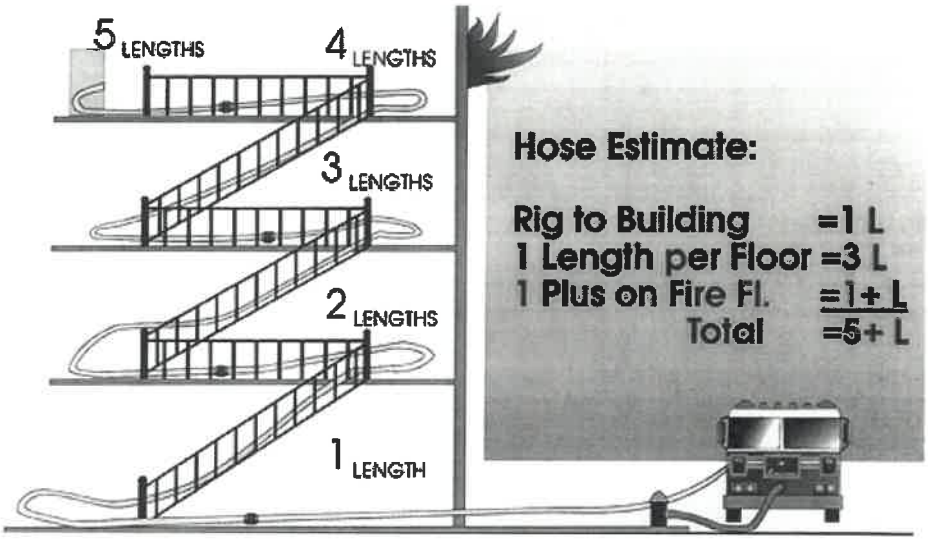


Fig. 1

- This rule assumes that the engine has stopped at the fire building from a forward lay or the required lengths are removed prior to repositioning the apparatus at a hydrant in a reverse lay.

For large buildings hose estimations must consider the distance from the Engine to the entrance door. In some cases several lengths of hose might be required to reach the entrance door. The distance from the entrance door to the base of the stairway must also be considered. This is in addition to the required one length per floor plus one for the fire floor. Some buildings may require two lengths for the fire floor.

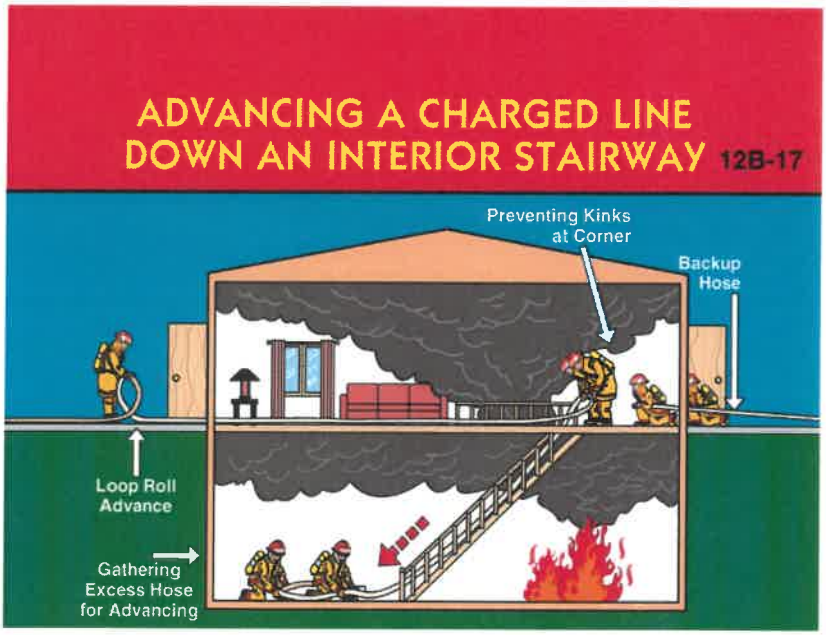
- If the engine apparatus is positioned at a hydrant before reaching the fire building or has to pass the fire building, the additional distance must be taken into account in estimating the number of lengths required to reach the seat of the fire. The building frontage can be used to estimate the required number of additional lengths.
- Use the apparatus for as much of the stretching as possible. Hose stretched at fires should be laid as close to the side of the street as possible and on the same side as the hydrant or pumper. If it is necessary for hoselines to cross the street, the lines should cross in front of the fire building. This allows as much room as possible for the maneuvering of apparatus.

Private Dwelling Notes:

Normally 50 feet of hose will get an Engine Company enough hose to cover a floor in a "normal sized" single family dwelling from the entrance point. For larger dwelling, estimates of 100 feet of hose should be considered per fire floor.

Rules of Thumb:

- Amount of hose from apparatus to entrance
- Amount of hose to cover the entire fire area
- One additional section (50 feet)



BELOW GRADE OPERATIONS IN PRIVATE DWELLINGS

- **SPEED** is critical
- Generally advance charged lines because of the upward movement of heat and fire.
- Use uncharged hose only when there is no fire or a very minor fire because descent is considerably easier with an uncharged hose.
- Always have a backup hose in place (preferably near the top of the stairs to protect means of egress).
- Position firefighters at corners and obstacles to prevent the hose from kinking and to avoid sharp bends.

If you can position before the house on fire or after the house on fire and be in front of those adjacent properties in normal neighborhood layouts – your 250' pre-connect 1-3/4" fire line will reach all areas of the involved house.

Notes:

- This doesn't work for large set-back yards or above average distances between houses (normal 20-30')
- When positioning - take into consideration actions at the fire (offensive or defensive) and unless master streams are immediately needed – LEAVE ROOM FOR THE TRUCK.
- Pulling past allows you to see 3-sides of the building to assist in determining the amount of hose needed based on conditions.

Multiple Dwelling Notes:

Multiple dwellings often prove to be more difficult than the private dwelling because of the multiple variables, such as: stairways, hallways, courtyards, self closing doors, and other obstacles.

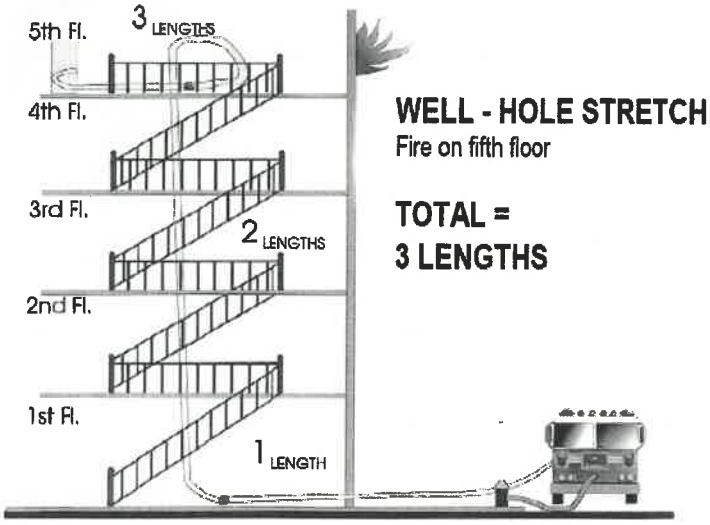
Stairs:

There are many types of stairs found in multiple dwellings. Some of the common types are scissor stairs, return stairs, wing, transverse, and isolated stairs. Determining what type of stair is present is the priority of the Engine Company Officer.

Wrap around stairs are probably the most difficult for Engine Companies to overcome. Typically, these stairs wrap around an elevator shaft, service shaft, etc. and make stretching hose extremely difficult. In known buildings such as these, fire companies should consider exterior or fire escape stretches to speed up fire attack efforts.

Well-Hole Stretch:

- The use of a well-hole for stretching the hoseline allows for more rapid positioning of the line and reduces the number of lengths required. The rule of thumb is that a 5 story stretch up a well-hole requires about one length of hose.
- The engine officer should communicate to the members stretching, the presence of a well-hole, as soon as possible. The officer should look up the well to see if it goes up the entire stairway. In certain stair configurations, a well exists between the 1st and 2nd floor, but the rest of the stairway does not have sufficient space to accept a charged hoseline.



- The stretch is accomplished as follows:

A. The nozzle firefighter has two options depending on the size and configuration of the well-hole.

- *Narrow well-hole* - nozzle firefighter drops his/her folds at the base of the stairway, securely grasps the nozzle and proceeds up the stairway pulling hose up through the well-hole.
- *Wide well-hole* - nozzle firefighter carries nozzle and lead length in well.

B. If conditions on the fire floor are favorable, and the door to the fire area is controlled, sufficient hose must be pulled up and flaked out on the fire floor.

C. If the fire has extended into the public hallway, sufficient line must be pulled up and flaked out on the floor below.

D. When sufficient line has been pulled up the well-hole, **the line must be secured with a hose strap.**

E. The backup firefighter initially feeds line to the nozzle firefighter from the base of the stairway, then proceeds up the stairway pulling line up the well-hole.

F. The backup firefighter lightens up on the line and proceeds up the stairway pulling line up the well-hole.

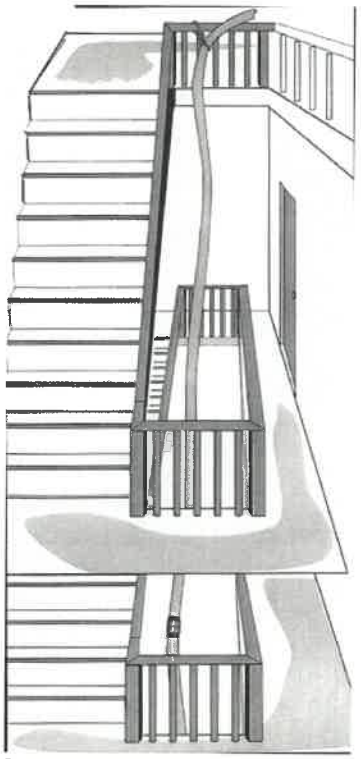
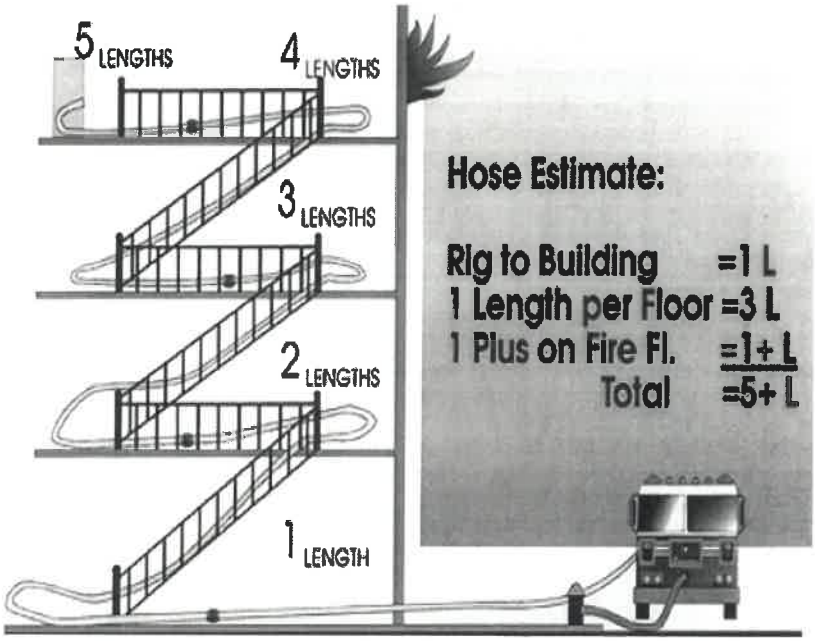


Fig. 8-4A

G. A firefighter will remain at the base of the stairway until notified by the officer that sufficient hose has been stretched. Any remaining hose on the first floor should be flaked out and checked for kinks, once the line is charged.

- When a second hoseline is stretched up a well-hole, caution must be exercised to ensure the first and second lines do not become entangled. A handy line rope can also be used if the well-hole is large enough to accommodate its use.

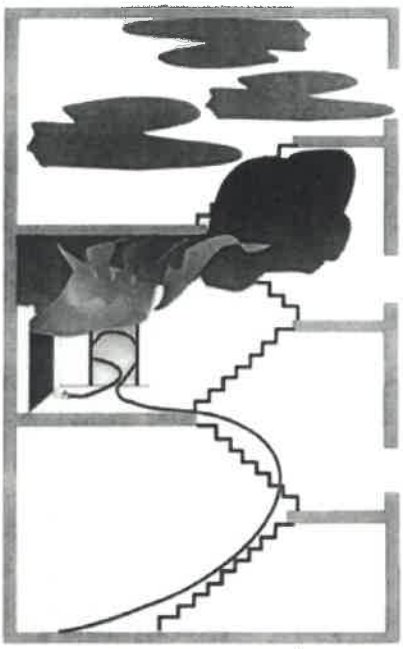
Stairs without well-holes are much more difficult. They have to have hose stretched around each floor level and can take a considerable amount of time. Estimate 1 section of hose per floor in these stretches.



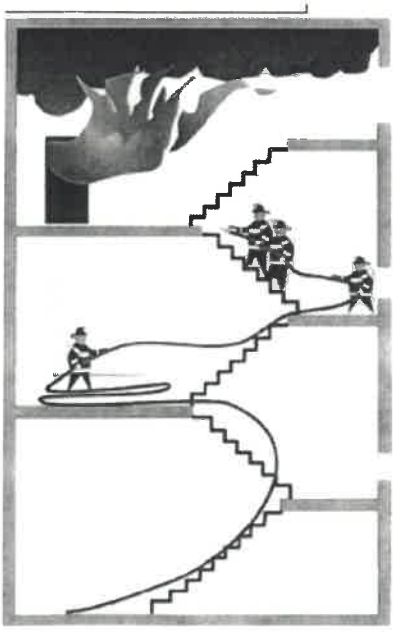
Hose should be kept to the outside of steps to eliminate tripping hazards and kinks.

Be cautious when stretching more than 2 hoses in one stairway to avoid making the stairs congested and limiting movement.

Moving Hose on Stairs:



Sometimes in order to rapidly get into a fire area, an adjacent apartment can be forced open to allow extra hose to be stretched into that area to provide enough hose to make all points of the apartment. This becomes necessary in narrow stairways.



In larger stairways, fire fighters should space out on the stairs and extra hose should be flaked on the floor below the fire to allow enough hose to make the estimated stretch into the fire area.

Other than stairs, personnel have to consider long interior hallways and courtyards when stretching hose into multi-dwelling structures. Courtyards can make stretches excess the maximum allowable length of 1-3/4" hose. In this case, 1-3/4" hose should be preceeded by 2-1/2" hose with a gated wye.

Commercial Notes:

2-1/2" hose is recommended for commercial applications due to size of the building, fire load and lead time. Hose should be selected, flaked by the entrance and advanced by at least (2) engine companies to provide for fast and mobile advance.

Defensive Notes:

- 2-1/2" hose should be used.
- Estimate enough hose to cover exposure, reach rear yards.
- Estimate enough hose to avoid stretching between exposures and the fire building and in potential collapse zones.

#1 Hose Stretching Rule

WORK TOGETHER TO GET THE FIRST LINE IN OPERATION ON THE FIRE

It doesn't do the building, the potential trapped occupants or the other fire fighters (truckers without hose line protection) any good if the first (2) or (3) Engine companies are fighting to get first water on the fire, crowding stairs and halls and in effect slowing the overall stretch and advance on the fire. The fastest water will get on the fire if the second due company takes a second to evaluate the effectiveness of the 1st engines stretch and then assist IF NEEDED or advance a second line if they don't need assistance.

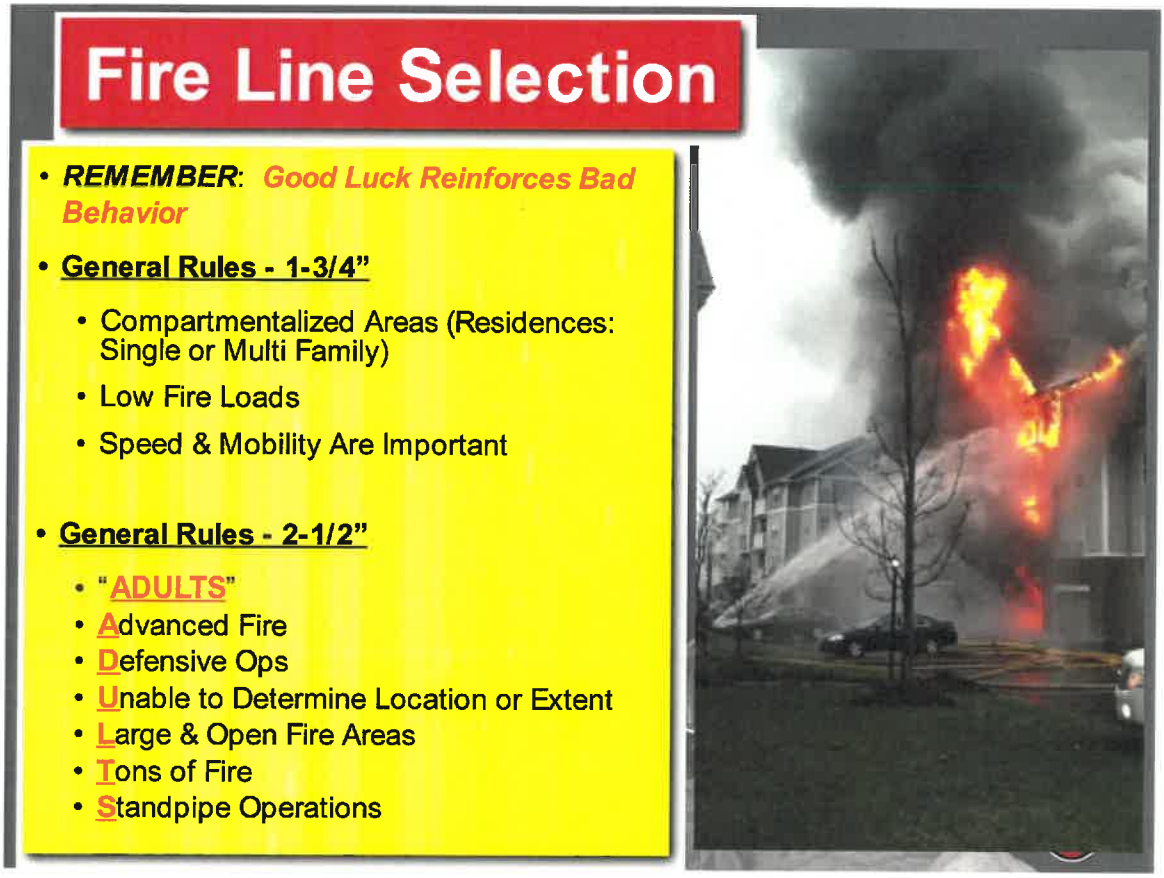
Stretching Notes:

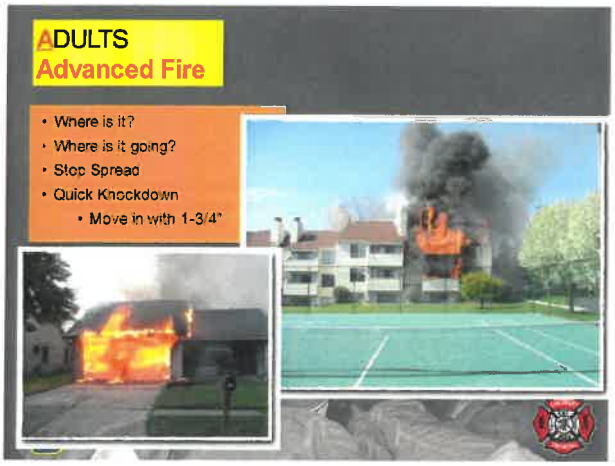
- Try to take the shortest route. Avoid stretching around cars, trees, fences, etc. Try to go over these obstacles if possible.
- Avoid making unnecessary turns in the hose. The more turns, the more chance of kinking.
- Always carry at least one length of hose to the door of the fire area.
- Avoid getting tunnel vision. Focus on the job of getting the hose line in service.
- Know where you want to go and know how you what to get there.
- Any door you pass through with a charged line must be chocked open. A door closed on an uncharged line when charged will impede flow or stop flow.
- Don't stretch too much hose
    - When taking too much hose into tight areas, it will make be difficult to flake.
    - Increases the chance of more kinks and reduces GPM.
    - Increases engine pressure required to overcome the friction loss.
    - Increases the chance of hose getting caught on anything between the engine and the fire area.
    - Too much hose in stairs and halls make movement difficult.

If you're the fire fighter at the door flaking and pulling hose, consider placing a small bend in the door so you can see when the nozzle team is advancing. A 10 foot bend will make it easier for the nozzle team to advance and reduce their need to call for more hose.

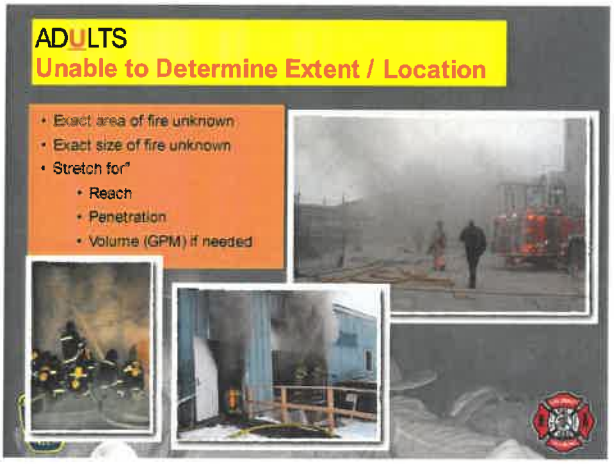
When calling for more hose, give an estimate (5 feet, 10 feet, etc). Avoid the "more hose", "more hose" request to avoid getting too much or not enough.

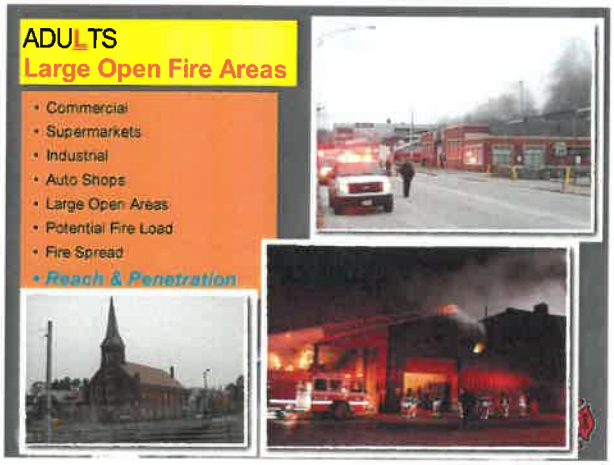
FIRE LINE SELECTION




ADULTS
Advanced Fire
• Where is it?
• Where is it going?
• Stop Spread
• Quick Knockdown
• Move in with 1-3/4"


ADULTS
Defensive Operations
• Exposure Protection
• Water on Exposure
• Defensive Fire Control

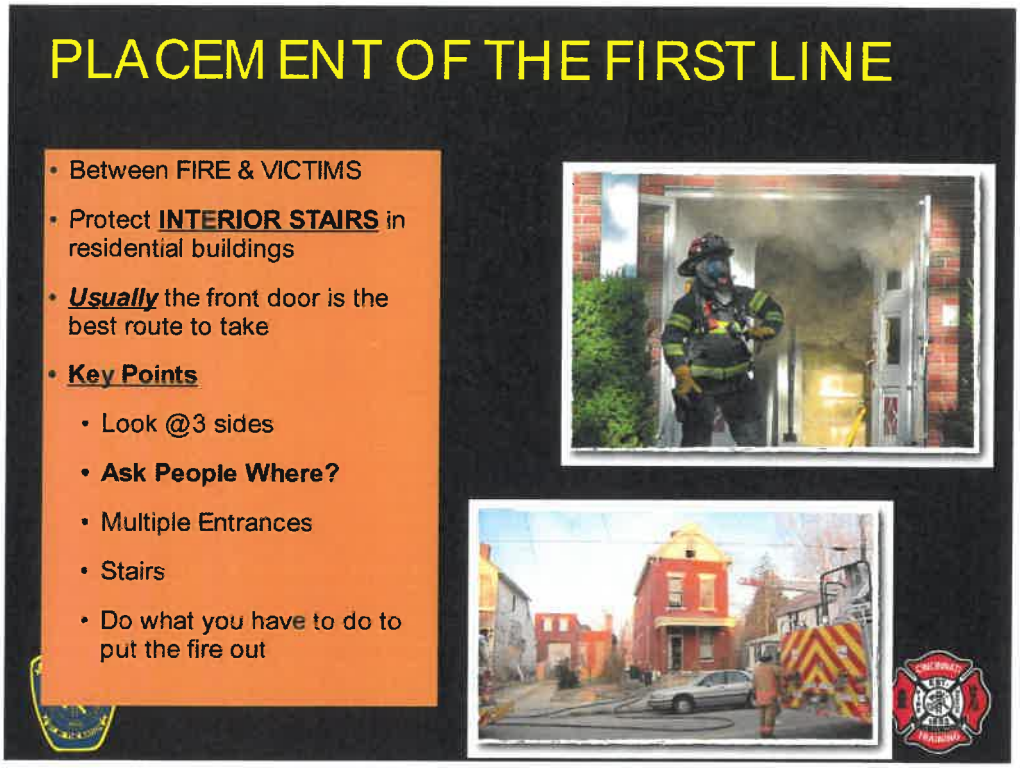

ADULTS
Unable to Determine Extent / Location
• Exact area of fire unknown
• Exact size of fire unknown
• Stretch for"
• Reach
• Penetration
• Volume (GPM) if needed

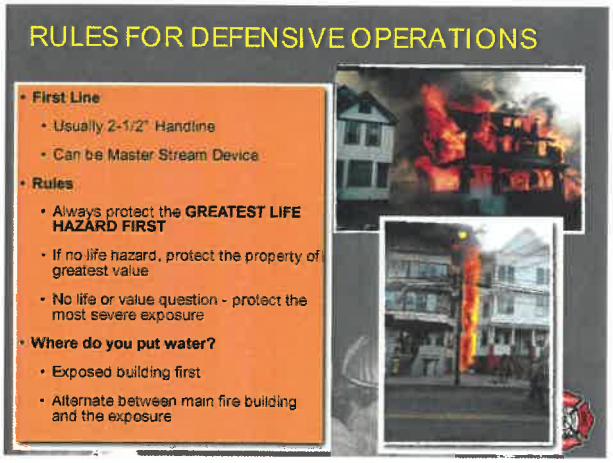

ADULTS
Large Open Fire Areas
• Commercial
• Supermarkets
• Industrial
• Auto Shops
• Large Open Areas
• Potential Fire Load
• Fire Spread
• Reach & Penetration

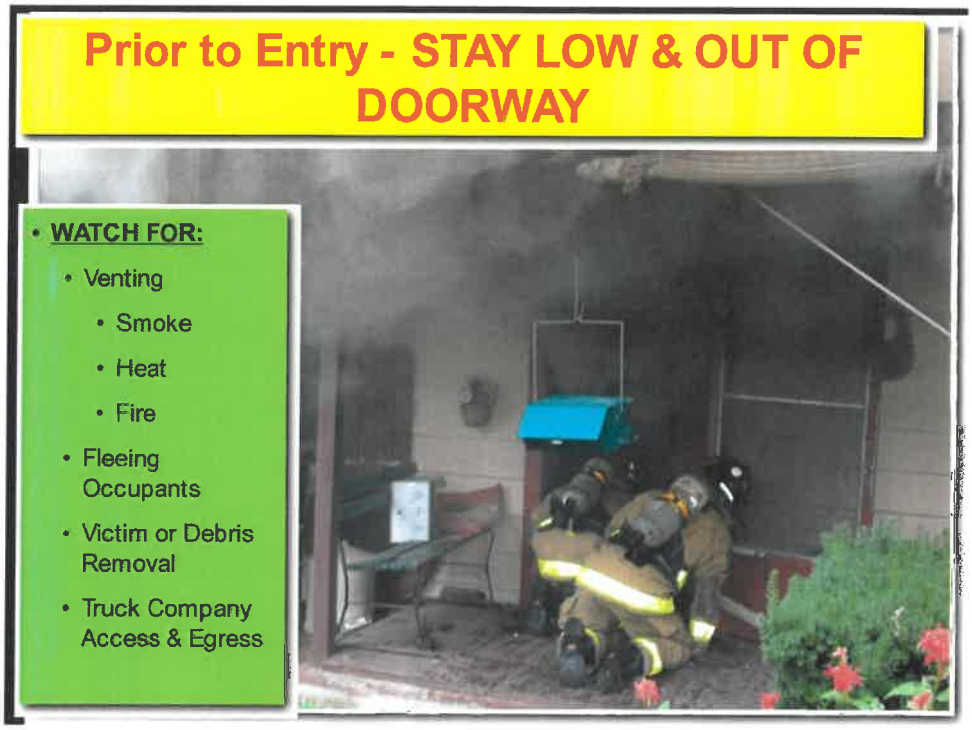

ADULTS
Tons of Fire
• Total Involvement
• 2-1/2"
• Master Streams
• Exposures
• Reach & Volume

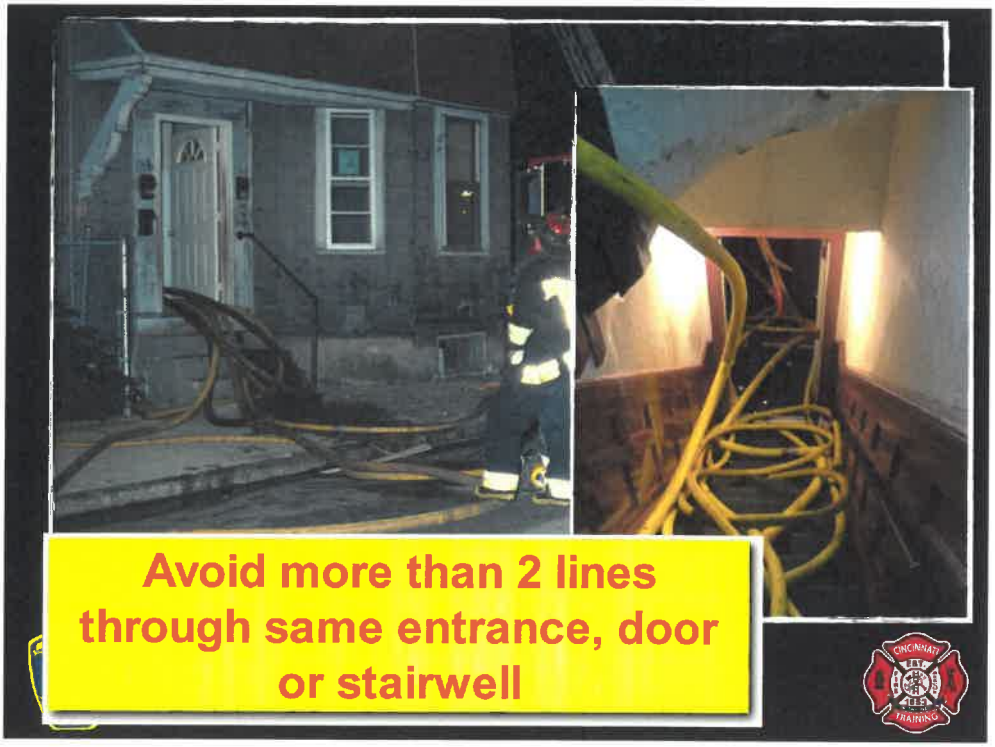

ADULTS
Standpipe Operations
• Pressure in System
• 65 psi prior to 1993
• Pressure Reducing / Restricting
• Improperly Set / Used
• Reflex Time
• Wind
• Large Open Areas
• High BTU Loads
• Flaws in system piping

PLACEMENT OF FIRE LINES






Prior to Entry - STAY LOW & OUT OF DOORWAY
• WATCH FOR:
• Venting
• Smoke
• Heat
• Fire
• Fleeing Occupants
• Victim or Debris Removal
• Truck Company Access & Egress


Avoid more than 2 lines through same entrance, door or stairwell