	Cincinnati Fire Department Fire Training Supplement DRILL BOOK	**SECTION #3** Engine Company Operations
Date: May 2018	**TOPIC TITLE:** Standpipe Operations	Total # of Pages: 14
Section #: 3		Topic #: 34

TOPIC #34 – STANDPIPE OPERATIONS

The initial key to operating in a high rise or standpipe equipped building is **Never Take Elevator to Fire Floor**

Standpipe Operations Issues

- Reflex Time – is the time needed to move fire fighters and equipment from the base level of the building to the fire floor and begin fire attack operations. While this may take only a couple of minutes in a single family dwelling, it may take 10, 20 or 30 minutes in a high rise. As fire fighters we need to understand that little or no fire showing upon arrival may be a huge fire by the time crews and fire lines are in operation.
- Fuel Loads and Fire Areas – generally in a residential high rise you can expect similar fuel loads as you would encounter in a single or multi-family residence. In addition, these residential high-rise structures are generally compartmentalized like a standard residential fire. However, in a commercial high rise, fuel loads can be very large and the size of the fire area can be many thousand square feet in size, requiring a great deal of GPM flow to overcome a well advanced fire.
    - Note: Fires driven by wind will be extremely more intense than a standard fire. If crews cannot make any progress from a stairwell and are being driven back by jet engine like flames, a wind-driven fire should be suspected and alternative strategies implemented for attack.
- Standpipe Pressures – as fire fighters we can expect to get between 65 and 100 psi from most standpipe outlets. Often these systems are old and have years of sediment and corrosion build-up in the piping, which reduces flow. It would not be uncommon to expect no more than 40-60 psi from a standard outlet on an upper floor of a high rise. As discussed in Section 3, Topic 32, Standpipe Risers are often equipped with pressure regulating devices, which can hamper fire flow. Due to low pressures, the use of 2-1/2" fire lines is imperative.
    - It is important to ensure the following to know about and combat standpipe pressure issues:
        - Use the in-line pressure gauge in your standpipe kit every time you hook to a system
        - Always make sure the fire pump is running during fire operations
        - Always supplement the system through the FDC, if you cannot do this and the building doesn't have a PRV on a lower floor, supply the system through the 1st or 2nd floor standpipe valves

Water Supply

Water Supply – TO FDC

- FAO's of the first alarm engine companies should work together to ensure the proper standpipe FDC is supplied with proper hose and pressure. This is extremely important on a dry standpipe system, as the interior FF's will not have water until you supply the FDC.
    - 2-1/2" FDC connections should be supplied with 2-1/2" hose. 5" Stortz connections should be supplied with 5" hose, unless the pressure requirements exceed the test pressure of the 5" hose (see pump chart below based on height in the building).
    - When pumping at high pressures, it might be advisable to tie off the hose to the FDC and engine in the event of a coupling failure.

- For upper floors, it is advisable to pump engines in tandem to allow for easier pumping of 300 to 350 psi required for fires above the 30th floor.
  - Engine Co. A has its own water supply and pumps in the system at 150 psi
  - Engine Co. B has it own water supply and pumps into the intake of Engine Co A at 150 psi, the outlet pressure should be 300 psi from Engine Co. A into the FDC while allowing each Engine Company work at lower RPM's.
- It is acceptable to start supplying 1 side of the FDC before you start supplying the other side to speed up this process.
  - Ensure there are clapper valves inside the FDC for this to work
- Supply the correct pressure to the FDC

FIRE FLOOR(S)	ENGINE PRESSURE
FLRS 1 - 10	150 PSI
FLRS 11 - 20	200 PSI
FLRS 21 - 30	250 PSI
FLRS 31 - 40	300 PSI
FLRS 41 - 50	350 PSI

- You can pump additional water into the system from the lower floor standpipe valves provided they aren't equipped with a non-adjustable PRV. (See Section 3, Topic #35)
- Ensure the fire pump is running

Elevators

- Elevators should only be used in Fire Department Service
- Never take an elevator to the fire floor. Stop 2 floors below the fire. CFD procedures indicated to use the stairs on fires below the 4th floor. You can ascend pretty rapidly from 0 to 8 floors if you can get into the stairwell immediately upon arrival.
- Periodically stop or use the call cancel when ascending to ensure you have control of the elevator
- Look into the elevator shaft through the crack at the door when entering to see if there is fire or smoke in the shaft overhead
- Always have PPE, SCBA and forcible entry tools in an elevator
- Don't overload the elevator
- Some buildings have elevators in "banks" that serve high and low zones. If you have a fire on the 35th floor and the elevator bank services floors 1 to 25 and then a bank services 26 to 40, then its is advisable to use the elevators that have no chance of going to the fire floor to ferry equipment and personnel to a location that is extremely closer to the fire.

Communications

- Most high-rise buildings have a communications system tied into the fire alarm system. This can be used to direct personnel to an exit stairwell, to shelter in place, etc.
- If your portable radios aren't working and the building is equipped with a repeater system, it may be necessary to turn on the repeater and switch to either the repeater or simplex channel in the zone you are operating within.

Where to Hook Up – Fire Floor, Floor Below, Hallway or Stairwell Risers

- The question of where to hook up the fire line seems to always be debated. The safest place to hook up is on the floor below the fire, either in the stairwell connection or the hallway connection.
- It is advisable to never hook up on the fire floor from the stairwell connection because you have to do something with the 200' of 2-1/2" hose that you are going to charge from the riser, the best place to flake excess hose is on the floor below.
- Hooking up the floor below on a standard riser provides the following:
  - A safe place for the valve operator to open, close and adjust the valve. In a fire situation, the valve operator would be in the direct chimney for all heat and by-products of combustion and extinguishment as they are taking the path of least resistance up the stairwell through the open door.
  - Room to flake the hose, make connections and plan your attack without being in harms way on the fire floor or overtaken by a wind driven fire event.
  - A safe pathway to retreat in the event of hostile fire conditions forcing an evacuation
- Hooking up on the floor below on a hallway riser outlet provides the following:
  - Provides all the same benefits as listed above in the standard stairwell riser, with the following benefit:
    - It provides a clear pathway to the exit. If you were using the hallway connection on the fire floor and you were forced to retreat in an urgent fashion, you could easily get lost and disoriented and not be able to find the stairwell since your hose doesn't lead to a safe exit.
    - ***NOTE***: When a building is equipped with risers in the hallways, you will more than likely need more hose to complete your stretch from the floor below. If you know this initially, take more hose, if not, coordinate with the 2nd arriving engine company and ensure you work together to get the first line into service.

Distance from a hallway outlet to the stairwell can be a great distance – making it extremely important to hook up on the floor below to give you a clear pathway to exit

Beginning Your Attack

- Determine **ATTACK** stairwell and notify other units of the same. Ideally there should only be one attack stairwell and one evacuation stairwell. Companies should work together to get the first line into service and not fight or race each other from opposing stairwells as this does more harm for occupants or fire fighters above the fire floor.
    - The attack stairwell will be charged with smoke and heat from the fact that it's the path of least resistance when you have the left door open as the charged hose lines is advanced through the doorway
    - The evacuation stairwell will only have doors opened briefly as personnel enter floors from occupant spaces or occupants exit to the stairwell. Pressurization should be maintained in this stairwell for life safety purposes.
- **Flush the system and make sure you get water before hooking hoses to the valve**
    - This flushes out debris, ensures good flow and expels air in a dry system

Flush The System – to expel debris

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Flush The System – to expel debris

- ***NEVER*** use the valve on the fire floor if the valve is in the hallway. It is not recommended to use the fire floor valve from the stairwell outlet as mentioned above
- If an alarm indicates a particular unit, suite or apartment of origin, check the floor below for layout and length of hose needed prior to commencing attack
- Determine if you are going to charge your line and initiate your attack from the stairwell door or the door to the apartment or area of origin.

- If there is moderate to heavy smoke in the hallway or outside the fire floor stairwell door, it is advisable to charge your line there. ***SEE FIRE FLOOR STAIRWELL STRETCH BELOW***
- If the fire is contained in an apartment or other space by a fire door, you can stretch your fire line to this space and then charge it preparing for attack (this is the easiest method). ***SEE APARTMENT STRETCH BELOW***

Fire Floor Stairwell Stretch

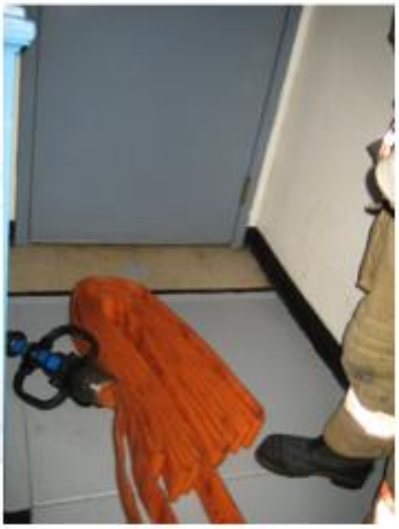
- Determined when there Smoke or Fire present from Stairwell on the fire floor and you want a charged hose line as you enter the fire floor – for this stretch you will lay everything out and stretch and advance from stairwell with charged hose line
- Carry equipment and hose to the floor below and stage outside the stairwell door in the common area on the floor below to give yourself room to make all connections
- Officer evaluates the floor above rapidly while crew hooks together all 4 sections of 2-1/2" standpipe hose
  - **IMPORTANT** – keep them in the bundles as you connect the hoses so you can take the lead section of hose with the nozzle to the fire floor as a bundle for rapid deployment

IDEALLY CARRY ON SCBA FOR HANDS FREE CLIMB AND TO DISTRIBUTE LOAD OVER SCBA HARNESS "OR" CARRY OVER SHOULDER IF NEEDED

- Hook-Up on the floor below – valve control FF flushes the valve, attached elbow and in-line pressure gauge (*gauge is the most important accessory*)
- Nozzle FF takes the lead section of hose and goes to the landing on the fire floor and drops at the door in the stairwell on the landing. THIS IS DROP POINT #1 (the only drop point for this stretch)
- Valve Control FF flakes remainder of hose on floor below and listens for crew on fire floor to feed more hose or take up slack
  - ***RESPONSIBILITES OF THE VALVE CONTROL FF***
    - Flush Valve
    - Flake Hose Not Used on Floor Below
    - Be Ready to Flake Hose Up/Down Stairs
    - Turn On Water from the Valve When Called For
    - Move Hose up the stairs to assist in the advance. Do this ½ landing at a time by getting under the hose, putting it on your shoulder and walking up the stairs. This is where it is vitally important for the 1st two engine companies to have a plan and work together
    - Adjust Pressure at the valve. Should be between 65 and 100 psi, 100 psi is optimal for 4 sections of 2-1/2".
    - YOU ARE "Pump Operator" and must be able to monitor and control the fire line from the standpipe riser valve.
- Nozzle FF flakes hose up the stairwell to the ½ landing ensuring he doesn't turn the corner to avoid a catch point / kink at the stair rail when making the advance on the fire floor. This will provide 15-30 feet (depending on size of stairs) of hose for the initial push and gravity will assist in the initial advance.
- When flaking the hose, take the middle loop from the horseshoe as its sitting flat on the ground and walk away (up the stairs), it will flake out nicely if you do this. (see image)

Lay Out Floor Below – Connect Hose Lines – Nozzle FF Takes Lead Section with Nozzle to Fire Floor Landing in Stairwell

FF Takes Lead Section & Sets Down At Door



Grab Middle & Walk Up Steps Flakes Automatically

No Further Than 1st Landing & Have Others Flake Down

NOTES:

- Teamwork is critical to the success of this operation
- Expect high heat and heavy fire in a well involved fire floor or wind driven fire when this door is opened
- Don't open the door under heavy fire conditions until you are ready
- The use of 2 engine companies will speed the movement of this fire line during advance from the hose staging on the floor below. Ideally there should be 1 FF per ½ flight of stairs to move hose on the stairs and then a FF at the stairwell door and every corner thereafter.

Apartment Stretch

- Determined when there is NO Smoke or Fire present from Stairwell and on the fire floor and you want to lay the uncharged fire line to the apartment door prior to charging – for this stretch you will lay everything out and stretch and advance from apartment door with charged hose line
- Carry equipment and hose to the floor below and stage outside the stairwell door in the common area on the floor below to give yourself room to make all connections
- Officer evaluates the floor above rapidly while crew hooks together all 4 sections of 2-1/2" standpipe hose
    - Note – if given a particular unit, assess the floor below to determine distance and floor layout if needed
    - **IMPORTANT** – keep them in the bundles as you connect the hoses so you can take the lead section of hose with the nozzle to the fire floor as a bundle for rapid deployment
- Hook-Up on the floor below – valve control FF flushes the valve, attached elbow and in-line pressure gauge (*gauge is the most important accessory*)
- The Nozzle FF and Officer will be needed for this portion of the stretch
- Nozzle FF takes the lead section of hose and don't let it go until you reach the apartment door. The officer takes the next section of hose goes to the landing on the fire floor and drops just outside the door in the stairwell on the landing. THIS IS DROP POINT #1 the hose will flake out from DROP POINT #1 as you advance with the hose towards the apartment.
- Valve Control FF flakes remainder of hose on floor below and listens for crew on fire floor to feed more hose or take up slack
    - ***RESPONSIBILITES OF THE VALVE CONTROL FF***
        - Flush Valve
        - Flake Hose Not Used on Floor Below
        - Be Ready to Flake Hose Up/Down Stairs
        - Turn On Water from the Valve When Called For
        - Move Hose up the stairs to assist in the advance. Do this ½ landing at a time by getting under the hose, putting it on your shoulder and walking up the stairs. This is where it is vitally important for the 1st two engine companies to have a plan and work together
        - Adjust Pressure at the valve. Should be between 65 and 100 psi, 100 psi is optimal for 4 sections of 2-1/2".
        - YOU ARE "Pump Operator" and must be able to monitor and control the fire line from the standpipe riser valve.
- When the Nozzle FF gets to the door, he will sit down the pack on its side. The Nozzle FF will then grab the middle of the middle loop of hose in the horseshoe and flake it towards the direction of the hinge on the door to allow easy advance and to cover the most fire area when advancing into the apartment.

Take Lead Bundle and 2nd Bundle to Fire Floor

Drop 2nd Bundle at Fire Floor Door in Hall and Take Lead Bundle To Apartment Door

Grab Center and Flake Hose

Position to Apply Water When Door Is Forced

- Charge Hose
- Bleed Hose and ensure "GOOD" flow
- Control Door
- May have to slightly open door and spray
- Be prepared for intense fire condition

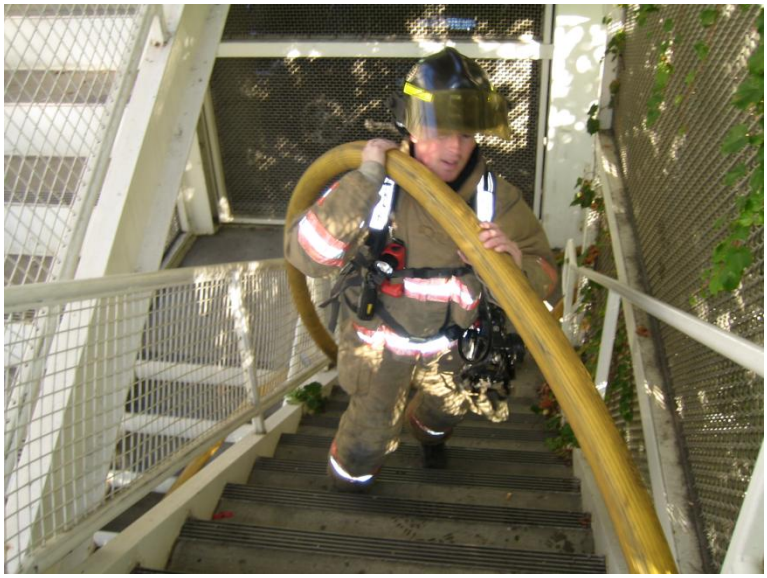
NOTES:

- Teamwork is critical to the success of this operation
- Expect high heat and heavy fire in a well involved apartment space or wind driven fire when this door is opened
- Don't open the door under heavy fire conditions until you are ready and control the door as it will swing away from you.
- The use of 2 engine companies will speed the movement of this fire line during advance from the hose staging on the floor below. Ideally there should be 1 FF per ½ flight of stairs to move hose on the stairs and then a FF at the stairwell door and every corner thereafter.
- If you suspect a wind driven fire you can drive the pike end of your halligan bar through the peephole or door to ascertain if there is an intense pressurized flame present. If a wind driven fire is suspected, then its advisable to seek another method to attack the fire and keep the door intact. Either the fire will need to burn out or attack from an adjacent apartment through a small hole in the wall.

Handling and Moving Hose off the Standpipe Riser

In order to move the hose from the floor below when its charged FF's will need to position themselves according to the picture below to assist in moving the hose up the stairs.

1. Ideally, position one fire fighter per every ½ flight of stairs.
2. Fire fighters pick up the hose and place it on their shoulder and walk up the stairs to the next landing together. This will move about 25-40 feet of hose each time.
3. Walk back down and repeat as needed.
4. This method uses your leg muscles instead of your upper body. Trying to pull the hose up the steps from above is very labor intensive or impossible.



Flowing Water and the Back –Up FF

Back-Up FF
Most Important Person
Push hose to ground behind Nozzle FF and place knee on hose
Lean into or support Nozzle FF
Hose against ground takes all the reaction force into the ground and keeps the nozzle in a manner to where it can easily be pointed upwards

Nozzle FF
Closest Knee Up, Hose Rests on Knee Close to Body
Rear Hand around hose
Front Hand controls shut-off
Hose about 2' out in front of you just where your closest hand can reach the shut-off
This allows increased movement of nozzle to Left, Right, Up and Down

With the backup FF holding the hose against the ground and the hose resting on the nozzle FF knee, the nozzle FF has very little reaction force to deal with, enough so he can let go of the hose to demonstrate.