

FEDERAL FIRE SAN DIEGO

ENGINE COMPANY STANDARD OPERATING GUIDELINES



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INTRODUCTION

The purpose of the Engine Company Standard Operating Guide is to introduce and describe the different types of equipment and hose lines that are standard equipment on our Engine Companies. Secondly, this guide will describe the tasks and skills required of firefighters assigned to an Engine Company. Combined with hands on practice, firefighters will become proficient in placing all hose lines and equipment carried on our Pumpers into operation. The Standard Operating Guide will describe how to stay safe on the drill and fire ground. Following these practices will keep you and your crew safe in what can be a very hostile environment. The "Fire Ground Operations" section of the S.O.G. describes special operating procedures not covered earlier in the guide that are common to all Engine Companies within our Department. Every officer is ultimately responsible for how they use their personnel at an emergency. With that said, there are certain Standard Operating Procedures that should be followed and will be covered in this section.

FIREFIGHTER ASSIGNMENTS

The Number Four #4 position also known as Drop off, rides seated behind the captain. This name comes from the command given by the captain to initiate Engine Company activities at an emergency. To “drop off” is to start an action that will eventually bring water to the pump, or initiate a series of events needed to mitigate an emergency situation. Each firefighter position on the apparatus is given an Accountability Number (designation). Drop Off's number is Four.

Drop Off's responsibilities vary depending on the scenario. If the apparatus needs water it is usually #4 who is responsible for initiating the action that will meet that need. If the apparatus does not need water right away, #4 will perform other tasks. It is very important to listen to the entire order given by the officer. REPEAT THE ORDER OUT LOUD back to the officer or engineer to ensure that the instructions were heard and understood. If there are any questions regarding the instructions, ask immediately. When all of the pumper's water supply issues have been addressed and secured, Drop Off #4 will typically be given an order to back up their partner. Drop Off #4 will be given a series of orders which when complete will place them in direct support of the actions being taken on by Line Breaker #3. For this reason, another name given to Drop Off #4 is support. Drop Off, #4 and Support refer to the same firefighter.

The Number Three #3 position, also known as Line Breaker #3, rides seated behind the engineer. Their accountability designation is number Three. Just like Drop Off, Line Breaker #3 has different responsibilities depending on the scenario. Line Breaker #3 will be responsible for securing the initial attack and/or supply line. Line Breaker #3 will also take on the role of Nozzle Person. Nozzle Person will be responsible for calling for water on the hose line, and advancing the attack line into the structure. Line Breaker, #3 and Nozzle Person will all refer to the same firefighter.

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DEFINITIONS:

ATTACK LINE

The term "Attack Line" is used to describe a hose line that is being secured with a breakaway and nozzle. The intent is to use this hose line to put water on the fire or protect exposures.

DONNING

The term "Donning" BA, refers to the entire procedure of placing a SCBA on the Firefighter and breathing air.

DOFFING

The term "Doffing" BA refers to taking the BA off of the Firefighter and securing it on the apparatus.

HAND JACKING (HAND LAY)

For larger more complex fire ground operations, a constant and ample water source must be secured. We secure that source of water by laying 4" or 3" supply lines from a fire hydrant to the pumper. Supply lines can be secured by hand or apparatus. A firefighter can be expected to hand lay a 3" supply line at least two hundred feet back to a hydrant. That same firefighter should not be expected to hand lay a 4" supply line further than one hundred twenty-five feet.

LAYING A LINE

It is the process by which a 4" supply line is laid from a fire hydrant to the fire using the apparatus to lay out the hose. That supply line will then be connected to the pump's 4" intake.

FORWARD LAY

The most common method to secure a constant water source is to lay a supply line from a fire hydrant to the fire. This method is called a Forward Lay, and it takes a coordinated effort from everyone on the team to complete this operation. The apparatus stops at a hydrant where Drop Off #4 secures the 4" female coupling and wraps the hydrant. The pumper then repositions in front of the fire, where the engineer and Line Breaker #3 work together to complete the supply line operation to their pump.

MASK UP

The term "Mask up" refers to the act of placing the SCBA mask on the users face and breathing air.

OFF THE TANK

Supplying the pump with water can be accomplished in several ways. The pump can be supplied from the water tank carried on the apparatus. This is generally referred to as going "Off the Tank." Going off the tank is the quickest and simplest method of securing a water source for fire ground operations. Line Breaker #3 and Drop Off #4 don the appropriate P.P.E. The engineer places the apparatus into pump gear and then "Dumps the tank." The officer sizes up the fire emergency. Depending on the scenario, the crew will work together to secure attack, exposure and/or back-up lines. The nozzle person (typically

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Line Breaker #3) advances the hose line while Drop Off #4 supports them. Again, depending on the scenario, Drop Off #4 may be responsible for pulling additional hose in direct support of the nozzle person. Drop Off #4 will be responsible for securing forcible entry tools to gain access into structures and/or vehicles, etc.

REVERSE LAY

When the fire or assigned fitting is approached prior to the fire hydrant, a "Reverse Lay" can be used to supply the operation. A 4" or 3" supply line will be laid from the fire area or assigned fitting to the fire hydrant.

SPECIFIED LAY

A specified pull of hose is performed when a known amount of hose is to be secured (the officer calls for one hundred-fifty feet of 3" hose), this would be use of the "Specified" method

SPOTTING A HYDRANT

When the fire emergency is in close proximity to a fire hydrant, the Spot the hydrant evolution can be used. The officer spots the pumper on a hydrant (within fifty feet). The engineer and Drop Off #4 work together to secure water from the hydrant to the pump. In Operations, this hose lay is typically accomplished by the engineer alone. The two firefighters don the appropriate P.P.E. while the officer sizes up their options. Orders are issued and the two firefighters conduct fire ground operations. As with any task however, help usually makes accomplishing the task go quicker and easier. If the officer advises, or the engineer asks, Drop Off #4 will assist the engineer with the Spot the Pump operations as described previously in this guide.

STAND BY POSITION

The term "Stand by Position" refers to the act of placing the SCBA on the users back but not placing the mask on the users face.

SUPPLYING THE PUMP

A hose lay is an evolution where a team of firefighters on a pumper (Engine Company) work together to achieve a final goal. Within that hose lay are several smaller goals (tasks) that need to be met in order to reach the final goal (fire extinguishment). An Engine Company's initial task, other than rescue when appropriate, is to provide the pump with an adequate water supply to handle the fire emergency.

SUPPLY LINE

A "Supply Line" is not going to be used to apply water directly to the fire. It does not have a nozzle or the 100 feet of working line (the exception would be a supply line to a portable monitor). The breakaway will stay on the line however for water control at the assigned fitting.

UNSPECIFIED LAY

An unspecified pull is performed when an unknown amount of hose is to be pulled (the officer simply calls for a 3" line) use the "Unspecified" method to secure the 3" hose.

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SAFETY CONCERNS

Safety is always the major concern and must be your number one priority. When riding on any fire apparatus, always remain seated with your seat belt fastened. When stepping off the apparatus use the handrails for support, watch where you step and always check for vehicle traffic calling out "**clear traffic.**"

Never work or stand directly below windows, roof edges, and/or landings where work is being performed above. When lowering equipment from upper floors or the roof of a building, always look below and call out "**clear - look out below.**"

Always have gloves on while performing any drills. Structure Gloves will be worn during all fire scenarios. Leather work gloves may be worn while securing hose and equipment at the end of the drill scenario.

Look for and call out hazards while manipulating ground ladders i.e. "**no overhead obstructions or hazards**" or "**clear, ladder coming through**" when moving the ladder. Always have the ladder properly footed, with four points of contact, prior to climbing.

When calling for water, get an acknowledgment from the engineer or firefighter you signaled and be specific as to the exact line you want charged. Only shut down the hydrant after the engineer advises you to do so.

Hose couplings brought back to the apparatus not immediately going back into the hose bed will be folded back upon themselves and secured safely under the tailboard or running board. Make every attempt to place all of the hose associated with that coupling under the tailboard or running board.

Inform the engineer every time a piece of equipment is removed from their apparatus. Return and secure equipment properly.

All equipment returned to the apparatus that is not immediately placed back into a compartment or onto a bracket, must be placed completely under the tailboard or running board. When equipment is returned to the apparatus it will be inspected, cleaned if necessary, and secured in the correct location and manner.

Equipment and tools carried on your person must be secured from falling. Any equipment that will fit in your pocket (gloves, pocket spanner) should not be laid on the ground.

Forcible entry tools, nozzles or any other equipment placed at buildings must be laid flat on the ground and in contact with the wall of the building. Lay this equipment parallel to the wall so it does not stick out from the wall causing a trip hazard (two points of contact with the building).

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ACCOUNTABILITY TAGS

The use of accountability tags is one way to keep track of firefighting personnel at an incident. Each position on the fire apparatus is assigned a tag. The tags are kept on every B.A. The firefighter responsible for keeping track of the tags at an emergency is the Accountability Officer (A.O.). In Operations, the Accountability Officer attaches each firefighter's accountability tag to an orange box. From that box, the A.O. can keep track of every firefighter entering and/or leaving the structure.

During Training the Accountability Officer (A.O.) will be the driver of your apparatus, unless multi-company operations are underway. On those occasions, the Accountability Officer may be the driver from the first in pumper. Anytime the scenario indicates that a B.A. must be worn to enter a structure, either turn the accountability tag over to the driver, or place your tag on the appropriate ring provided for accountability tags which is located on the driver's side pump panel. When exiting the structure, it will be the firefighter's responsibility to check in with the driver and secure their accountability tag. It is very important that all firefighters do their best to maintain accountability tag integrity.

PLANNING

Every firefighter is responsible for making a brief size-up. There are always a few moments available to look at the structure. Get a good idea of where the fire is. Is the assignment to the rear of the structure or the second story? Is there a window or balcony to use in an emergency? Identify alternative ways to get out of the structure. The entry point may not end up being the way to get out in an emergency. Identify the type of construction. Is an axe, or a sledge hammer the tool to have if forcible egress is necessary? Get an idea of where other firefighters will be working. Know where to find help.

No one is expecting a firefighter to learn every building in the area, but get to know the large complicated ones. Every station has pre-fire plans on occupancies. These are generally the larger more complex buildings. Take the time to go over those and look at the diagrams before the call comes in. Even small single-family dwellings can get firefighters lost or killed. Do not get complacent on small structure fires.

EXPERIENCE

Knowing what to do from acquired experience is key to firefighter survival. Know and understand the danger signs. Recognize the signs of personnel confusion, exhaustion, and building fatigue. Neither the building nor the firefighter can withstand the stress from a fire indefinitely. Recognition and reaction to early warning signs are what experience is all about.

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LIVE BY THESE RULES:

“Get in - get out / get on - get off.” Carry out the assignment, get reassigned or leave the structure. Air is cheap, lungs aren’t. Use your breathing apparatus during interior fire ground operations, including overhaul.

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SECURE

The word "Secure" is used extensively in this manual. In this manual, "secure" refers to taking from, or replacing back onto the apparatus any piece of equipment or hose. The word "secure" is also used to describe placing or advancing a piece of equipment, nozzle, coupling or hose section anywhere on the fire ground in a prescribed safe location and/or condition. "Safe condition" means, in a location, or condition that will not create a hazard for other firefighters, or cause damage to that piece of equipment.

All hose lines should have a way of controlling the flow of water at the nozzle or end of the line. Breakaways are placed on all hose lines except 4" diameter hose. Breakaways come in three sizes: 1", 1½" and 2½". Our quick acting breakaways are designed to be placed on the hose so the male threads point toward the fire. When the breakaway is placed on the hose properly the flow of water will be stopped when the handle (bale) of the breakaway is pushed forward (toward the fire, or male threads). Pulling the handle (bale) towards oneself (the female fitting of the breakaway) will allow water to flow. The breakaway does not need to be fully opened to flow water. At times, the handle may be partially closed in order to obtain the desired flow or stream. Partially closing the breakaway will reduce nozzle reaction, stream reach and gallons per minute (GPM). Wildland nozzles and water thieves use a different type of water flow control. The wildland breakaway and water thief use a gate valve that is controlled using an oval knob instead of a quick acting bale. Turn the knob to the left to open the flow of water on the water thief. The knob on the breakaway is shaped like an arrow. A quarter turn of the knob fully opens or closes the valve depending on which way the arrow is pointed.

4.1 NOZZLE CHECKS

PRIOR TO CALLING FOR WATER, perform and call out the proper nozzle checks:

"Tight - Butt shut - nozzle tight - 150 GPM - full fog."

1. Ensure that the breakaway is attached tightly to the hose line.
2. Ensure that the handle on the breakaway is pushed forward to the closed position.
3. Ensure that the nozzle is attached to the breakaway tightly. Nozzles work their way loose over time. Nozzles can come off the breakaway when adjusting the stream pattern collar if the nozzle is not attached to the breakaway tightly.
4. The GPM adjusting ring will be set to the 150 GPM flow by turning the ring to the left. Lower GPM flows mean lower nozzle reaction. Less nozzle reaction makes control of the hose line easier. If the fire conditions dictate higher water flows, do so after gaining control of the
5. nozzle.

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- Ensure that the nozzle stream adjusting collar is set on full fog. Once again, the concern is hose control when opening a nozzle. A wide fog hose stream creates less nozzle reaction. During exterior applications, wide fog also offers protection from the radiant heat of the fire.

4.2 CALLING FOR WATER ON AN ATTACK LINE

Prior to calling for water, the firefighter will be in full personal protective equipment (P.P.E.). Full P.P.E. will be dictated by the scenario.

P.P.E.:

- ✓ Bunker pants and Turnout coat
- ✓ Hood and Helmet.
- ✓ Structure gloves.
- ✓ Breathing Apparatus if required:
 - Depending on the incident and officer's orders, the S.C.B.A. donned in the "Standby" or "Mask up" position with the regulator secured properly on the waist band.

Call for water verbally and by hand and arm signal. At times a portable radio may be needed. These signals or transmissions are usually directed to the engineer. Always get an acknowledgment that the call for water has been received.

When calling for water, direct your call to the apparatus (Engine number) and the specific hose line, i.e. "Engine Two, water on the 200' crosslay" or "Engine One, charge the 2½" attack line."

Prior to performing nozzle checks or calling for water, the hose line around the nozzle or fitting needs to be flaked out properly. Flaking out the hose line around a fitting or nozzle will prevent kinks in the line. A kink occurs in a charged hose line when there is a severe bend in the hose. Kinks must be removed from all hose lines. Removing kinks allows the water to flow freely and unimpeded through that hose line. Think ahead, prevention is usually easier than the cure. To remove a kink the hose needs to be moved into a different position. An easy mistake to make while attempting to remove a kink from the hose line is to step or walk backwards. This is a dangerous act and is considered a safety violation. To remove a kink, move forward with the hose. If you are pulling the hose, you are probably moving backwards. Always use safe lifting procedures when moving charged hose lines. Always lift with your legs not your back, and keep your head up (eyes on the horizon when lifting).

4.3 MAKING AND BREAKING COUPLINGS

Never make or break a coupling directly behind the apparatus during fire ground operations. Keep this area clear for other firefighting operations. Exception: while reloading the hose bed using two firefighters.

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A "clear and safe area" working around a pumper will be at least two steps away from either rear corner of the tailboard area. **Always check for vehicle traffic when moving into this area and away from the protection offered by the apparatus.**

When making and/or breaking a coupling or fitting, the turning force is directed upon the female swivel or fitting while the male fitting or coupling is held stationary. All couplings, fittings and nozzles being attached to each other and/or the pump, will be made hand tight. If there is a leak after the line is charged, fix it using a pocket spanner or hydrant wrench.

EXCEPTION: Any coupling or fitting attached to an appliance, portable monitor, or fire protection system, will be made spanner tight - PRIOR - to charging the line.

When making and breaking 3" and 4" couplings by yourself, do so with the coupling on the ground. Take a wide stance, placing either foot on the hose directly behind the male coupling. Securing the coupling in this manner prevents movement of the coupling, and props it up making the procedure easier. Bend at the waist and knees, and turn the female swivel or fitting to the left to loosen, or to the right to tighten.

Making and breaking smaller dimension couplings or fittings (1" or 1¾") can be performed standing upright. Working together, two firefighters can make or break any dimension couplings standing upright. When two firefighters are joining two couplings together, one firefighter presents and secures the male coupling while looking away, as the other firefighter checks for a gasket and attaches the female swivel.

If the coupling will not come loose in an attempt to break it, prop the male coupling up on the hose directly behind the coupling. This will place the female coupling on top. Kneel on a folded section of hose coming directly out of the female coupling. This action will compress the gasket and may help loosen the coupling. If that doesn't work, try a pocket spanner using the same technique.

GASKET CHECK

A rubber gasket is placed within every female coupling and/or fitting to prevent leaks. It is imperative that the presence and condition of the gasket is checked every time a fitting, nozzle or coupling is attached to another. Leaks can cause unnecessary water damage within structures. Severe leaks on a hose lay can drastically reduce the flow of water.

Gaskets will be checked both visually and physically. Visually check to see that a gasket is present within the fitting. Physically manipulate the gasket with either the thumb or index finger to ensure its condition. The gasket should be pliable (flexible) and soft to the touch. If the gasket is stiff or hard it may not work, and should be replaced as soon as possible.

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4.4 LEAKS

A leak is any amount of water coming from a joined coupling or fitting. A continuous spray of water coming from a coupling or fitting is a leak that must be fixed.

NOTE: A properly maintained and attached coupling and/or fitting will not leak. New gaskets and lubricant can be found in the engineer's compartment tool box and/or engine cache. Spray lubricant on a rag, and then wipe the male threads on the couplings and fittings. Remove the gasket and then direct a spray of lubricant or powdered graphite into any coupling or fitting with a female swivel. Lastly, tighten the coupling or fitting sufficiently to prevent leaks. Proper maintenance and a good hard twist is a good way to prevent leaks

STOPPING LEAKS

Once a hose line has been charged and is found to be leaking (a continuous spray of water) the following steps will be made to stop or diminish the leak:

HOSE LYING ON THE GROUND:

The coupling must be off the ground to tighten the swivel. Pick up the hose and place it on top of a foot. Secure the male coupling with one hand. With a pocket spanner, apply the correct turning force to the female swivel until the leak stops or diminishes. Lift the coupling up and off of the foot and then place the coupling back onto the ground. Do not drop the coupling back onto the ground.

HOSE LINE CONNECTED TO A HYDRANT:

These leaks will be stopped utilizing the hydrant wrench. As you face the hydrant turn the female swivel to the right to tighten it and stop the leak. Do not straddle the hose line, stand to the side. Use two hands to control your effort on the wrench.

HOSE LINE CONNECTED TO THE APPARATUS OR ANOTHER APPLIANCE:

These leaks may require the use of one or two spanners depending on the fittings used. A leak at the 4" intake may require the use of two spanners if the intake utilizes a double female fitting.

FITTINGS THAT HAVE OVERSIZED HANDLES FOR LUGS:

This type of fitting is found on the 4" intakes on most pumpers. To fix a leak at this fitting, use a rubber mallet and the spare hydrant wrench. Secure the male coupling from movement using the hydrant spanner. Strike the female swivel's large handle with the rubber mallet to stop the leak.

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DEPLOYING ROLLED HOSE

For quick and easy deployment, hose carried on our apparatus is generally loaded into hose beds. There are however several sections of hose stored in compartments. Various amounts of 1" - 1¾" hose are often rolled up and secured into compartments. The two short sections of 4" hose are stored on the apparatus. The highrise and wildland hose packs are usually secured in a compartment.

5.1 ROLLED HOSE

When hose is rolled and placed into a compartment, it is rolled in one of three methods: the single/straight roll, double roll, or the donut roll. Typically, 1", 1¾" or 2½" hose is stored in a compartment by means of the single (straight) roll, or the double roll.

SINGLE (STRAIGHT) ROLLED HOSE

The straight roll is usually used to secure 2 ½" - 4" hose sections that are stored in compartments. Lay the hose out straight and flat, with no twists.

1. Begin with the male coupling and roll the hose toward the female coupling. When complete the hose should be straight and neat with the female coupling on the outside of the roll.
2. Lay the bundle on its side and step on it to straighten the bundle out if necessary.
3. If necessary, use a short piece of sash cord to secure the hose roll.
4. Damaged hose is rolled in this manner only with the female coupling in the middle and the knotted male coupling exposed.

DEPLOYING SINGLE ROLLED HOSE

1. Hold the hose in such a manner as to have the female coupling facing the direction of the roll.
2. Secure the hose just behind the female coupling, by your thumb and index finger.
3. Lift the remaining hose with your other fingers.
4. Check for and call out "**clear**" then roll the hose out. When rolling out the hose **do not let go** of the section of hose that is being held by the thumb and index finger. The idea is to keep the female coupling in your hands as the hose rolls out.

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DOUBLE ROLLED HOSE

The double roll is typically used to secure 1" hose in a compartment for deployment at vegetation fires.

1. Lay the hose out straight and flat, with no twists.

Bring both couplings back together, placing them alongside each other. Before rolling, arrange the hose so the two lengths are lying close to one another.

5.2 RELOADING HOSE

After completing hose evolutions, the hose lines need to be drained and reloaded properly back into the appropriate hose bed or compartment. All equipment used during the evolution will be picked up and secured back onto the apparatus prior to securing any hose. Small diameter hose should be picked up before large diameter hose. All hose should be returned to the area of the apparatus prior to reloading any hose unless otherwise directed.

The best way to secure either one of the short sections of hose is to drain the hose first. Lay out the section of hose so it is flat and straight. Pick up the hose near the female coupling while leaving the female coupling on the ground. Drain the hose by walking it toward the male coupling. When you have made it to the male coupling the water will have been drained from the hose section. Bring the male coupling back to the female coupling laying it on top of the female's hose along the way

The best way to drain all the other sections of hose that we carry is to shoulder load the hose. If at all possible start the shoulder load from the uphill side at the male coupling. If there is no discernible uphill side, begin at the coupling farthest away from the apparatus (usually the male). Break all the couplings on the hose line so they can begin to drain. Straighten out the section of hose and ensure that it is all lying flat (same side of the hose up). Pick up a coupling (male if possible) and place it on the chest. Using a hand-over-hand motion, load the hose onto a shoulder going from the front up and over the shoulder to the back. Do not let any of the loops in the front or back go below the knee level. This action will drain the hose and create a neat bundle that can be laid down at the apparatus in an orderly fashion. 3" and 4" hose is brought to the back of the apparatus and laid down approximately eight to ten feet behind the tailboard. Leaving this area clear of hose behind the tailboard will allow a safe area from which to conduct hose loading operations. 1¾" hose is brought to the non-traffic side of the apparatus and laid down in the same manner. Lay the hose down neatly and carefully without damaging any couplings.

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REAR HOSE BED - 3" AND 4" HOSE

3" and 4" supply/attack hose is loaded in the rear of the apparatus (rear hose bed). The hose bed is split, separating the 3" hose from the 4" hose. In Operations, the engines are loaded with 750 feet of 3" hose. 3" hose lines are used to supply water to other apparatus, fire protection systems, portable monitors and hand-held attack lines. 2½" nozzles capable of flowing up to 250 gallons of water per minute (GPM) are commonly attached to 2½" hose lines. Charged 2½" attack lines are not easily moved from one point to another. For that reason, they are not typically taken into structures for direct fire attack. They can however, be very useful on the exterior of the structure for direct fire attack and/or exposure protection. 2½" lines can also be laid out to supply single or multiple 1¾" attack lines using a reducer or gated wye ("Condo-Lay / Pier-Lay").

The 4" hose bed is loaded using the "Flat" load. In Operations the pumpers carry 700 - 900 feet of 4" hose. 4" hose is considered "supply line" and is loaded with the female coupling pointing toward the tailboard so it will be the first to leave the hose bed when deployed. The first male coupling to be loaded into the hose bed will be placed all the way forward and to the left side

4" HOSE BED

The 4" hose bed is loaded using the flat method. This method allows for quick and simple loading and removing of hose. Working together, two to three firefighters can easily load the 4" hose bed. The flat load also makes it easier for one firefighter to secure 4" hose from the hose bed. Additionally, when laying a 4" supply line from a hydrant to the fire, the hose comes out of the hose bed easier, lessening the chances of damaging the apparatus and/or hose.

LOADING THE 4" HOSE BED

1. Place the male coupling all the way forward (toward the cab) and to the left side of the hose bed. Lay the hose flat in the hose bed.
2. Start to lay the hose out toward the rear (tailboard) of the hose bed. Make a fold in the hose when it reaches the edge of the hose bed at the tailboard. These folds will be straight across the edge of the hose bed on the first layer of hose. The second layer will be staggered back from the one below approximately six to eight inches.
3. Bring the hose back to the front of the hose bed and slightly to the right of the first section of hose.
4. When you get to the front of the hose bed, make a fold and start working your way back to the tailboard edge laying that portion of hose just to the right of the last one.

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- Continue this action until you reach the far edge of the hose bed. At that point double, the hose layer ultimately creating two folds at the hose bed's edge. Lay the top section of hose directly on top of the one just laid down with the fold placed about six inches back. We double layer on each side of the hose bed before we start back the other way to keep the hose bed neat and even.

When you come to a coupling during this operation, lay it out so the female swivel will always face the rear of the apparatus.

When you come to a coupling while loading the 4" hose bed, lay it in the hose bed so the female coupling is facing the rear of the apparatus. This is done for safety reasons so the hose does not have to flip over as it leaves the hose bed. Couplings that need to be flipped over prior to leaving the hose bed can get hung up and cause damage to the hose, apparatus, or injury to personnel. To facilitate the correct female coupling placement in the 4" hose bed, a "Shorty" or "Dutchmen" will be made in the hose line so the female coupling **ALWAYS** faces the tailboard.

The third layer of hose should be even with the first layer. The second layer of hose which is six to eight inches in from the first will be even with the fourth, and so on. The staggered layers of hose not only help make the hose bed neat, they allow for quick assessment as to which direction the hose is going in the hose bed. This is important when deploying hose by hand. You will be able to tell which fold of hose to secure when clearing additional hose from the hose bed.

Stagger the forward hose bed layers as well to prevent bowing in the hose bed. Continue this layering and staggering process until the last female coupling is in the hose bed. That coupling will be connected to the 2½" to 4" increaser. Fasten the hose controlling strap to the hose just behind the last female coupling. One disadvantage of the flat load is that the hose in fact does come out of the hose bed very easily. If the hose is not secured in the hose bed by a restraining device it can fall out inadvertently while responding to an emergency. Fold the increaser back over the hose where it is connected to the retaining strap and lay it a couple of feet back into the hose bed.

3" HOSE BED

With all the potential uses of 3" hose, the hose bed needs to be loaded in a manner which allows for easy deployment. The "the "Flat" load is the way FFSDS loads 3" hose to fulfill these demands.

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LOADING THE 3" HOSE BED

FLAT LOAD

1. Place the female coupling all the way forward (toward the cab) and to the left side of the hose bed. Lay the hose flat in the hose bed.
2. Start to lay the hose out toward the rear (tailboard) of the hose bed. Make a fold in the hose when it reaches the edge of the hose bed at the tailboard. These folds will be straight across the edge of the hose bed on the first layer of hose. The second layer will be staggered back from the one below approximately six to eight inches.
3. Bring the hose back to the front of the hose bed and slightly to the right of the first section of hose.
4. When you get to the front of the hose bed, make a fold and start working your way back to the tailboard edge laying that portion of hose just to the right of the last one.
5. Continue this action until you reach the far edge of the hose bed. At that point double, the hose layer ultimately creating two folds at the hose bed's edge. Lay the top section of hose directly on top of the one just laid down with the fold placed about six inches back. We double layer on each side of the hose bed before we start back the other way to keep the hose bed neat and even.
6. When you come to a coupling during this operation, lay it out so the male coupling will always face the rear of the apparatus.

When you come to a coupling while loading the 3" hose bed, lay it in the hose bed so the male coupling is facing the rear of the apparatus. This is done for safety reasons so the hose does not have to flip over as it leaves the hose bed. Couplings that need to be flipped over prior to leaving the hose bed can get hung up and cause damage to the hose, apparatus, or injury to personnel.

To facilitate the correct male coupling placement in the 3" hose bed, a "Shorty" or "Dutchmen" will be made in the hose line so the male coupling **ALWAYS** faces the tailboard for 3" hose.

The third layer of hose should be even with the first layer. The second layer of hose which is six to eight inches in from the first will be even with the fourth, and so on. The staggered layers of hose not only help make the hose bed neat, they allow for quick assessment as to which direction the hose is going in the hose bed. This is important when deploying hose by hand. You will be able to tell which fold of hose to secure when clearing additional hose from the hose bed.

Stagger the forward hose bed layers as well to prevent bowing in the hose bed. Continue this layering and staggering process until the last male coupling is in the hose bed. That coupling will be connected to the 2½" gated wye or the 2 ½" Select-O-Flow nozzle. One disadvantage of the flat load is that the hose in fact does come out of the hose bed very easily. Secure the hose by folding the 2½" gated wye or the 2 ½" Select-O-Flow nozzle on top of the last layer of hose and lay it a couple of feet back into the hose bed. If the hose is not secured in the hose bed it can fall out inadvertently while responding to an emergency.

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3" SUPPLEMENTAL REAR HOSE BED

Over the years we have purchased several different types of apparatus to sustain our pumper fleet. The rear hose beds from these different manufacturers are configured differently. Some allow for a supplemental hose bed. Due to these variations in Engine apparatus manufacturers, you will see many different configurations of the 3" supplemental rear hose bed out in the ranks. It is your responsibility to know and understand the proper deployment methods when working off these apparatuses!

Below are just a few of the many types of configurations that you may encounter with San Diego Federal Fire Department Engine Companies

- 150' of 2 ½" Hose, Flat loaded with a 2 ½" SOF nozzle attached for a quick attack/exposure line (this is the most common).
- 200' of 3" Hose, Flat loaded with the female coupling coming off first. This may be used for a quick 3" supply line to a hydrant or other engine company supplies you with water.
- 200' of 3" Hose, Flat loaded with a 2 ½" to 1 ½" gated-wye attached to the male coupling coming off the hose bed first. This is used for a fast Condo lay
- 200' of 3" Hose, Flat loaded with a 2 ½" SOF nozzle attached for a quick attack/exposure line.

LOADING THE 1¾" HOSE BED

1¾"-2 ½" HOSE BED CROSSLAYS

1¾"- 2 ½" hose is carried pre-connected in hose beds that run across (side to side) the apparatus. This hose bed is called a "Crosslay" "Mattydale" or "Pre-connect." These hose lines are pre-connected to the pump for quick deployment. The crosslay nearest the top of the apparatus carries 150' of 2 ½" hose with a SOF nozzle attached. The middle crosslay carries 200' of 1¾" hose with a SOF nozzle. The lowest crosslay on the apparatus carries 200' of 1¾" hose with a SOF nozzle. All crosslays incorporate a short section of hose called a "whip." The whip is attached to a discharge port located just under the hose bed and then to the first female coupling on the hose line. The whip's purpose is to enable quick and easy disconnect of the crosslay hose line. Firefighters disconnect the whip to remove and shoulder load hose beds for progressive hose lays. These whips are also used to disconnect the pump from deployed hose lines at vegetation fires. When the pump runs out of water, the engineer can disconnect the deployed hose line at the whip. They will go fill their water tank and then return to resume operations without worrying about re-deploying the original hose lines.

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NOTE: When the 1¾" hose line is broken at the whip, the whip will be placed back into its hose bed.

All three pre-connects have large 12"-18" pull down loops placed at the third and fifth loop of their hose bed. These loops are used to pull the hose out from the hose bed. When the hose is being pulled from the hose bed, the nozzle must be secured. On a shoulder load, if the whole bundle is not being secured to the shoulder, use these loops to clear the remaining 1¾" hose from the hose bed prior to leaving the apparatus. No part of the whip should be included in the runs of hose that make up the pull down loops.

LOADING THE 1¾" HOSE BED

As described in the section that dealt with reloading 2½" hose, 1¾" hose must be drained, shoulder loaded and brought to the non-traffic side of the apparatus. If the hose is dirty from fire ground operations, lay it out flat and wash it in the street with another hose line under pressure prior to loading.

Three firefighters should work together to load the hose bed. Two firefighters stand in the street, one on either side of the hose bed. These firefighters are responsible for maintaining the turns of hose at the edges of the hose bed. They will also connect the new sections of hose together as they are added. Always check for the presence and condition of the gasket prior to connecting any hose lines together. All the firefighters involved, count and call out the couplings as they pass up into the hose bed to ensure proper loading. One firefighter stands upright in the hose bed. They are responsible for pulling the hose up and laying it back and forth into the hose bed neatly. They are responsible for calling out the pull-down loops and turns at the edges of the hose bed. Finally, the firefighter on top is responsible for securing the nozzle properly.

They need to check and see that the breakaway and nozzle are tightly attached to the hose line. Check the nozzle to ensure that it is set to full fog and 150 GPM. Finally lay the nozzle down in the middle of the hose bed.

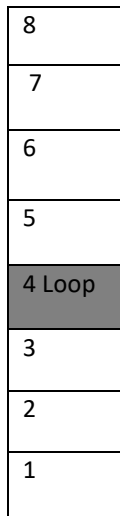
All the 1¾" hose beds are to be loaded using the "flat" method. To begin loading the crosslay bed, lay the whip into the hose bed back and forth, from edge to edge. The whip will not be part of any pull-down loop. If the whip were part of the pull-down loop, the hose would not clear the hose bed properly during shoulder loading procedures. Once the whip is secured within the confines of the hose bed, the first section of 1¾" hose is laid into the hose bed. Depending on the hose bed, one, two or three courses of hose can lay across the bottom. Connect the female coupling to the Whip male fitting. Start the load by placing the hose against the rear compartment. Fold the hose at each end of the compartment. If a coupling is positioned at the end a "Dutchman" will be needed. Continue loading hose bringing folds to the edge of the compartment putting 12"-18" loops where appropriate. 12"-18" loops are installed on 3/5/7 folds on apparatus with beds three stacks wide and on 3/5 on apparatus with two stacks wide. Vehicles with one stack wide will place one loop at the 100' mark. Attach the breakaway and proper nozzle then perform the required checks (breakaway closed,

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Fog stream and make sure that all fittings are tight). Lay the nozzle in the middle of the hose bed, it doesn't matter which way it is facing.

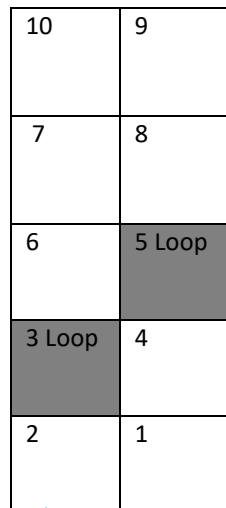
Over the years we have purchased several different types of apparatus to sustain our pumper fleet. The crosslay beds from these different manufacturers are configured differently. Due to these variations in Engine apparatus manufacturers, you will see many different configurations of the crosslay hose bed out in the ranks. It is your responsibility to know and understand the proper deployment methods when working off these apparatuses! Below are the configurations that you will encounter with San Diego Federal Fire Department Engine Companies

PIERCE SABER (SHORT)



Center

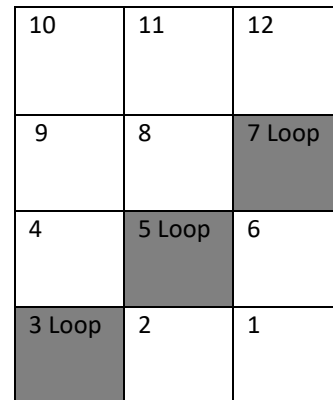
PIERCE SABER (STANDARD)





Front Rear

PIERCE CONTENDER

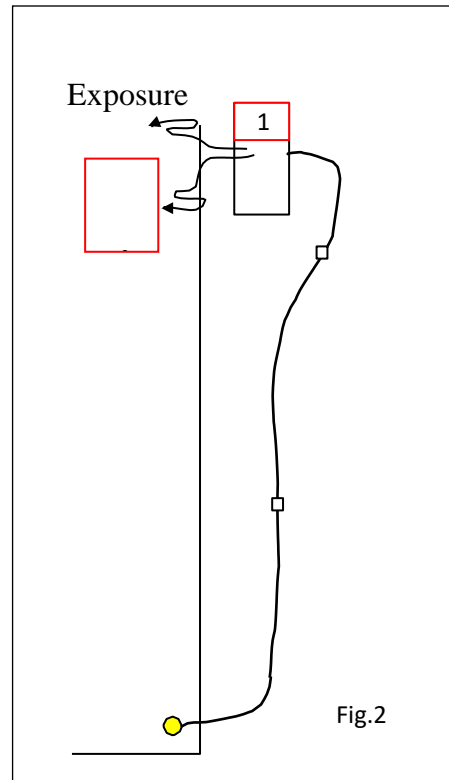
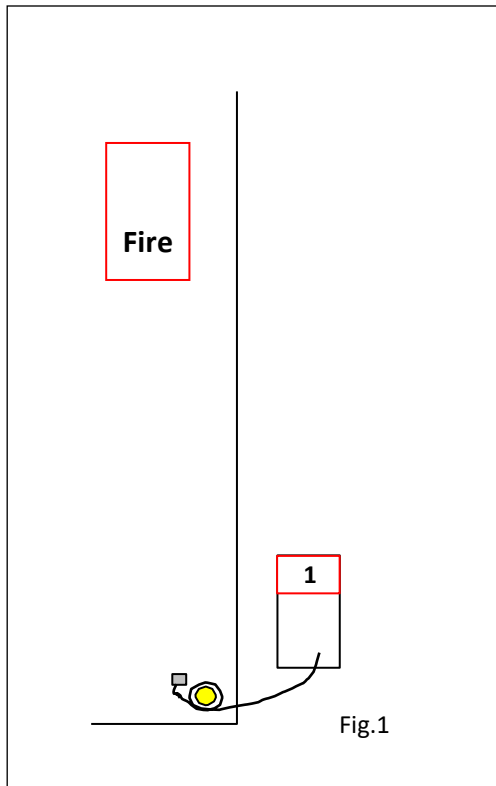




Front Rear

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6.1--FIRE HYDRANT APPROACHED PRIOR TO REACHING THE FIRE



1. The fire hydrant has been approached prior to reaching the fire.
2. Typically, the officer observes smoke and/or fire from the hydrant before approaching the dispatched structure.
3. The officer calls "Drop off" (fig. 1).
4. A 4" supply is laid from the hydrant to the structure involved.
5. The 4" supply line will now supply Engine 1 with water from the hydrant (fig. 2).
6. Engine 1 now becomes a "Manifold" for deploying attack and/or exposure lines

DEPLOYING 4" HOSE

There are several situations that call for the deployment of 4" hose from the rear of the apparatus. 4" hose is typically used to supply the pump with water from a fire hydrant. 4" hose is also used to supply water from one pump to another and from a pumper to a truck company for ladder pipe operations. 4" hose can also be used to supply portable monitor operations.

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"LAYING A LINE"

This task is the first half of the "**Forward Lay**". It is the process by which a 4" supply line is laid from a fire hydrant to the fire using the apparatus to lay out the hose. That supply line will then be connected to the pump's 4" intake. Once that has been accomplished, the firefighter at the hydrant (Drop Off #4) will be advised by the engineer to charge the 4" supply line. Now the pump has a continuous supply of water.

6.2--#4 (DROP OFF)

1. On the call "**Forward - Drop off**" the #4 firefighter (Drop Off) will secure the portable radio ensuring that it is on the proper tac channel and then repeat the order; Forward Lay drop off.
2. Check for traffic before dismounting the apparatus and then proceed to the tailboard.
3. Call out to #3 if the fire hydrant is on your side of the apparatus.
4. Step up onto the tailboard and remove the hose retaining device.
5. From the tailboard, face the hydrant and then step down with the 4" hose and hydrant pack using the handrail for support.
6. You should be facing the hydrant with the hydrant pack at arm's length in front of your body.
7. Secure the hydrant pack.
8. Reach back up the hose line with the inside hand and control approximately five feet of hose.
9. Check and call out "**clear**" then proceed to the hydrant.

Move out in the direction of the fire hydrant. Approach the hydrant so the hand holding the hose will be on the inside as the hydrant is circled. Proceed to the backside of the hydrant (the side away from the apparatus). At the base of the hydrant, lay the hose down where the five feet of hose was being held. From that position, walk the hose around the hydrant until it has completely encircled the base.

Step on the hose where it crosses itself on the backside of the hydrant. You should be facing the apparatus now from behind the hydrant. Anchoring the supply line in such a manner prevents the hose line from being pulled away from the hydrant as the apparatus moves to the fire and will allow you to watch the hose come out of the hose bed.

When the hose is properly anchored, Drop Off #4 signals their Engineer to "**take it away.**" Do not unwrap the hydrant until the first coupling coming from the hose bed has hit the ground, or the apparatus Air brake has set. Watch the hose coming out of the hose bed as the apparatus drives down the street. If a coupling gets hung up in the hose bed, the hose lying on the street will get pulled toward the apparatus. If this happens, quickly move away from the hydrant and apparatus. If the coupling in the hose bed does not come clear, the loose female coupling at the hydrant will get pulled from around the hydrant with the potential of causing serious injury to any personnel in the area.

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CONNECTING A 4" SUPPLY LINE TO THE HYDRANT

Whenever possible the 4" discharge will be used on the hydrant to supply the pump. The 2½" to 4" increaser is left on the hose because not all hydrants have 4" discharges. Once the presence and condition of the 4" discharge is verified, the increaser is removed from the hose line and eventually taken back to the apparatus.

THE APPARATUS IS AT SCENE (AIR BRAKE), OR THE FIRST COUPLING HAS HIT THE STREET

1. With the hydrant wrench still in your hand, pick up the increaser and walk it back around the hydrant (un-wrap the hydrant).
 2. Lay the increaser back onto the ground on the pumper side of the hydrant (good safety habit).
 3. Use the hydrant wrench to check whether the 4" discharge cap can be removed. If there is no 4" discharge, check the 2½" discharge cap most nearly facing the pumper.
 4. Once ensured that the discharge cap can be removed, place the hydrant wrench on the proper discharge stem with the handle of the wrench pointing straight downward.
 5. Completely remove the discharge cap. If it comes completely off because there is no chain to hold it onto the hydrant, place it up against the hydrant in a clear and safe area. The female part of the cap will be placed downward.
 6. If there is a 4" discharge, step over to the increaser and remove it from the hose placing the increaser up against the hydrant with the female swivel down. If there is no 4" discharge, take the increaser and hose line over to the proper 2½" discharge.
 7. Check for a gasket in the female swivel of the increaser, or the 4" female coupling and attach it tightly to the appropriate discharge.
 8. Gather some slack in the hose near the coupling and fold it onto itself. Use this extra bit of hose to "put a knee into it" and properly tighten the hose line to the hydrant. If the increaser was used on the hydrant, you need to do this twice, once for the 2½" female coupling attached to the hydrant and once for the 4" hose attached to the increaser.
 9. For safety sake, do not straddle the hose when making any connections to the hydrant.
 10. Flake out any slack in the hose line lying in the street near the hydrant.
 11. Wait for the call from the engineer to charge the supply line.
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6.3--OPENING THE HYDRANT

The hydrant supply line to the pump will not be opened (charged) until the engineer calls or signals for water. The hydrant must be opened slowly at first to prevent whipping of the hose, which can cause injury to personnel and/or damage to the pump. When charging the hose line, allow water to fill the hose at a fast walking pace. If you can, alert personnel standing by the hose line about the line getting charged. Once the line is filled with water and has stopped moving, increase the opening pace. The hydrant wrench has already been placed on the discharge stem of the port being used.

1. From the discharge stem side of the hydrant, use the wrench to open the valve (charge the supply line).
2. Using two hands for this operation turn the handle counter-clockwise as you face the hydrant.

Do not stand directly behind hydrant stem while opening valve in case of stem failure

Hand position on the wrench is critical to prevent the wrench from coming off the stem. When opening the hydrant, one hand will rotate counterclockwise holding onto the handle of the wrench. This hand will rotate with the handle so as not to lose contact. The palm of the other hand will be used to keep the wrench on the stem. As the wrench rotates through its turn, the free hand must be removed from the stem momentarily. As the wrench passes through, set your palm on the hydrant wrench at the stem once again setting the wrench onto the stem.

3. Continue this method until the hydrant is completely opened and the supply line is charged.
4. If the hydrant wrench handle is not pointing downward, turn the handle back clock-wise until it is pointing downward. The handle is left in this position when it is on the hydrant to prevent injury to personnel.

SECURING THE HYDRANT AREA

With the supply line charged, it is time to leave the hydrant area and report to the apparatus.

1. Check for any leaks or kinks around the hydrant area that could affect the flow of water down the supply line.
2. Push kinks in the supply line out. Squat down and face the direction you want to move the hose. Grab the hose with two hands and push the hose into a better position. Do not use your back to lift the hose. Do not pull hose into a different position.
3. If the female coupling or increaser is leaking at the hydrant, use the hydrant wrench to stop the leak. Leave the hydrant wrench on the discharge stem with the handle pointing downward.
4. If the increaser was not used on the hydrant, pick it up and return it to the nozzle and fitting compartment of your apparatus informing the engineer as to its status. If the increaser was used, tell the engineer that you had to hook up to a 2½" discharge and the increaser is at the hydrant.

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- On the way back to the apparatus, follow the 4" supply line quickly checking for any leaks and/or kinks that would affect the flow of water. Push the kinks out, use a pocket spanner on any leaks. If you have the increaser with you when you are attempting to fix any of these problems, lay it down in a clear and safe area with the female swivel down. You can clean dirt out of the swivel on the fire ground but you can't fix damaged male threads.

Count the sections of hose on the ground so you can tell the engineer how long the supply line is from the hydrant.

FOLLOWING LINES - CHECKING FOR HAZARDS EXAMPLES OF HAZARDS:

The hydrant spanner left on the ground or not pointing straight down from the hydrant is a hazard. Hose or couplings left where they can be damaged (oily or fuel area, glass, heat) is a hazard.

It is very important for obvious reasons to check hose lines for leaks, kinks and hazards. Many small leaks or several large ones can cause enough loss in pressure as to make the flow of water ineffective. A major kink can cause severe water flow loss. With 1¾" attack lines, kinks are killers. Hazards associated with the hose are generally heat or embers from fire and exhaust from the apparatus. Other hazards include mechanical, chemical, and trip hazards from improperly placed hose lines.

There are other equally important reasons to check the hose line for leaks, kinks and hazards. It teaches the firefighter to follow the correct hose line (when there are multiple hose lines out) all the way to the proper location. At night or in structures where visibility is poor, following the correct hose line is very important. The firefighter is expected to eventually arrive at the correct location. Following the proper hose line will ensure that the firefighter will ultimately end up where they belong.

DROP OFF #4 AT THE APPARATUS

Follow the supply line up to the pump intake panel where you will more than likely find the engineer. Report all details concerning the supply line i.e. leaks or kinks that you could not fix, having to use the 2½" discharge etc. Tell the engineer the length of the supply line and ask them what the pump intake pressure is. Return the increaser to the nozzle/fitting compartment if you brought it back to the pumper. Ask the engineer for any additional instructions. The officer will have forwarded instructions to the engineer. The engineer will pass along to Drop Off # 4 the tasks required for the operation.

<p>* The Forward Lay" is a means of supplying the pump with water. Once that task is complete the "Forward Lay" is over. Other tasks associated with Engine Company responsibilities will now typically be performed. At a real incident, it is common for Engine Company personnel to be assigned Truck Company tasks. There are usually more "Pumpers" available at fires than "Truckers."</p>
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CLOSING DOWN THE HYDRANT

Close the hydrant down only after obtaining permission from the engineer. Ensure that the hydrant discharge valve is completely turned off (turned fully clockwise). Use the same method to close the hydrant as was used to open it (two hands). Wait for pressure to be relieved from the hose by the Engineer, then, remove the coupling from the hydrant. Replace the discharge cap back onto the discharge. Return the hydrant wrench to the apparatus.

6.4--#3 POSITION (LINE BREAKER #3) AT THE HYDRANT

On the call "**Forward Lay**" - **drop off**" repeat the order out loud.

1. Check for traffic and then safely dismount the apparatus.
2. On your way back to the tailboard call out to your partner if the fire hydrant is on your side.
3. Report to the tailboard and give assistance if necessary to Drop Off #4 as they move toward the hydrant.
4. If the fire hydrant is on the captain's side of the apparatus, stop at the near corner of the tailboard and offer assistance as needed. You want to be able to push hose toward the hydrant rather than pull hose through your position if #4 needs help. If the hydrant is on your side of the apparatus, call out "**hydrant on my side**" and continue around the back of the pump taking up position on the captain's side tailboard corner. This position will once again allow you to be in a better position to help if needed.
5. When Drop Off #4 has made it to the hydrant return to your corner of the tailboard if you are not already there and wait for your partner to tell you to take it away.

When Drop Off #4 advises you to "**take it away**" go back to your seat and buckle up. Once safely fastened into your seat, signal the engineer to "**take it away.**" A verbal command and hitting the engine cowling or crew compartment roof once will suffice.

COMPLETING THE SUPPLY LINE OPERATION INTO YOUR PUMP'S INTAKE (#3)

The 4" supply line will be laid down the street to the fire. The supply line from the hydrant needs to be attached to your pump's 4" intake. The captain's side 4" intake is the proper intake to use. On most apparatus it is the safest intake for the engineer to work from.

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APPARATUS AT SCENE (#3)

When the apparatus comes to a stop an air release will be heard coming from the apparatus. This is the parking brake being set and the signal that Line breaker #3 may leave their seat to complete the 4" supply line operation. Before leaving your seat, make sure that there are no further instructions from the officer i.e. "supply the 1st In Pump or Ladder Pipe Operation." *These instructions would have been passed along to you by the officer on the way to the fire scene.* On a Forward Lay for your pumper, there will be no further instructions regarding the Forward Lay from your officer once at scene.

When a supply line is needed to accomplish extinguishment of a fire, the supply line has top priority. The reason for this is simple: It is better to know you have a sufficient water supply than to hope you'll get one in time. Another reason for obtaining a water supply prior to entering a structure is; the hazards associated with a "changeover" are eliminated. A "changeover" is when the engineer changes from water tank supply to hydrant supply. There are flow and pressure changes that take place. If the nozzle person is in a delicate position within the structure, problems can arise during this operation.

Drop Off #4 is back at the hydrant waiting for the supply line to get connected to the pump. The 4" supply line needs to be broken from the hose bed and connected to your pump's intake. This will be Line Breaker #3 and the engineer's responsibility. Line Breaker #3 needs to determine the length of hose necessary to reach their pump's intake from the last 4" coupling lying in the street.

THERE ARE (3) CHOICES TO MAKE CONCERNING - COMPLETING PUMP SUPPLY OPERATIONS:

1. If the last coupling lying in the street is within twenty-five feet of the captain's side 4" pump intake, call for and use the twenty-five-foot section of 4" rolled hose to reach the intake.
 2. If the coupling is more than twenty-five feet but less than fifty feet away from the proper intake, the fifty-foot section of 4" rolled hose will be used.
 3. If the last coupling on the ground is farther away than fifty feet from the proper intake, the next coupling in the hose bed needs to be cleared. When that coupling is cleared and broken, determine if it will reach the intake. Usually that broken coupling's male end will reach the intake. If it is determined that more hose is needed after breaking the cleared coupling, call for and add the twenty-five-foot section of rolled hose.
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COMPLETING 4" SUPPLY LINE OPERATIONS (#3) APPARATUS AT SCENE

The Parking brake has been set, and you are sure that there are no last-minute orders from your officer.

1. Unfasten your seat belt and safely dismount from the apparatus after checking for vehicle traffic.
2. Proceed to the tailboard area and make a decision as to what needs to be done to complete the supply line operation.
3. Call out to the engineer your decision so they can help you once their immediate pump needs have been completed i.e. "engineer I need the twenty-five-footer" or "engineer I'm securing additional hose."

LAST COUPLING IS WITHIN FIFTY FEET OF THE CAPTAIN'S SIDE PUMP INTAKE

The last coupling lying in the street is within 50' of the captain's side pump intake.

Properly carry the coupling away from directly behind the apparatus towards the captain's side of the street. The coupling should be laid down so that it is on the captain's side of the apparatus and further than six to eight feet away from any part of the apparatus.

* Anytime you move away from the protection of the apparatus, always check for vehicle traffic.

1. Properly break the coupling by stepping on the hose directly behind the male coupling and applying the turning force to the female swivel.

When the decision was made to add the 25' or 50' section of hose, that meant that the last male coupling would stay in the street and the short section of hose would be added to it. With that decision made, break and separate the two couplings. Leave the male coupling lying in the street folded back on itself to protect it from damage.

2. Return the female coupling to the tailboard. Place as much of the remaining hose as possible under the tailboard. Leave the female coupling folded back over itself completely under the tailboard to prevent a trip hazard.

The engineer will complete their immediate tasks concerning the apparatus. They will then respond to your directions.

3. Secure the proper section of 4" hose (25' or 50') and take it to the intake on the captain's side of the apparatus and place it on the ground.
4. Hand the male coupling to the engineer if present or place the male coupling on the ground underneath the running board with the male coupling folded back on the hose.
5. Pick up the female coupling and call "clear" prior to moving the hose. Move away from the pump panel slowly so as not to jerk the hose out of the engineer's hand.
6. The female coupling does not need to be folded back on itself and slung over the shoulder for the short pull back to the male coupling. Just move out slowly so you don't injure anyone while the

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hose is being moved.

7. As you are moving toward the male coupling check for a gasket in the female swivel.
8. Secure the male coupling properly and connect both couplings tightly.
9. Flake out the short section of hose if necessary to remove any kinks or twists leading up to the pump intake.
10. Call out to the engineer when the "supply line is ready for water."

That completes (Firefighter#3/Line Breaker #3's) responsibilities for the "Forward Lay." Be listening for additional orders from the captain. The officer will direct Line Breaker #3 to perform tasks typically associated with Engine Company responsibilities sometime during the pump supply operations.

LAST COUPLING IS FURTHER THAN FIFTY FEET FROM THE PROPER INTAKE

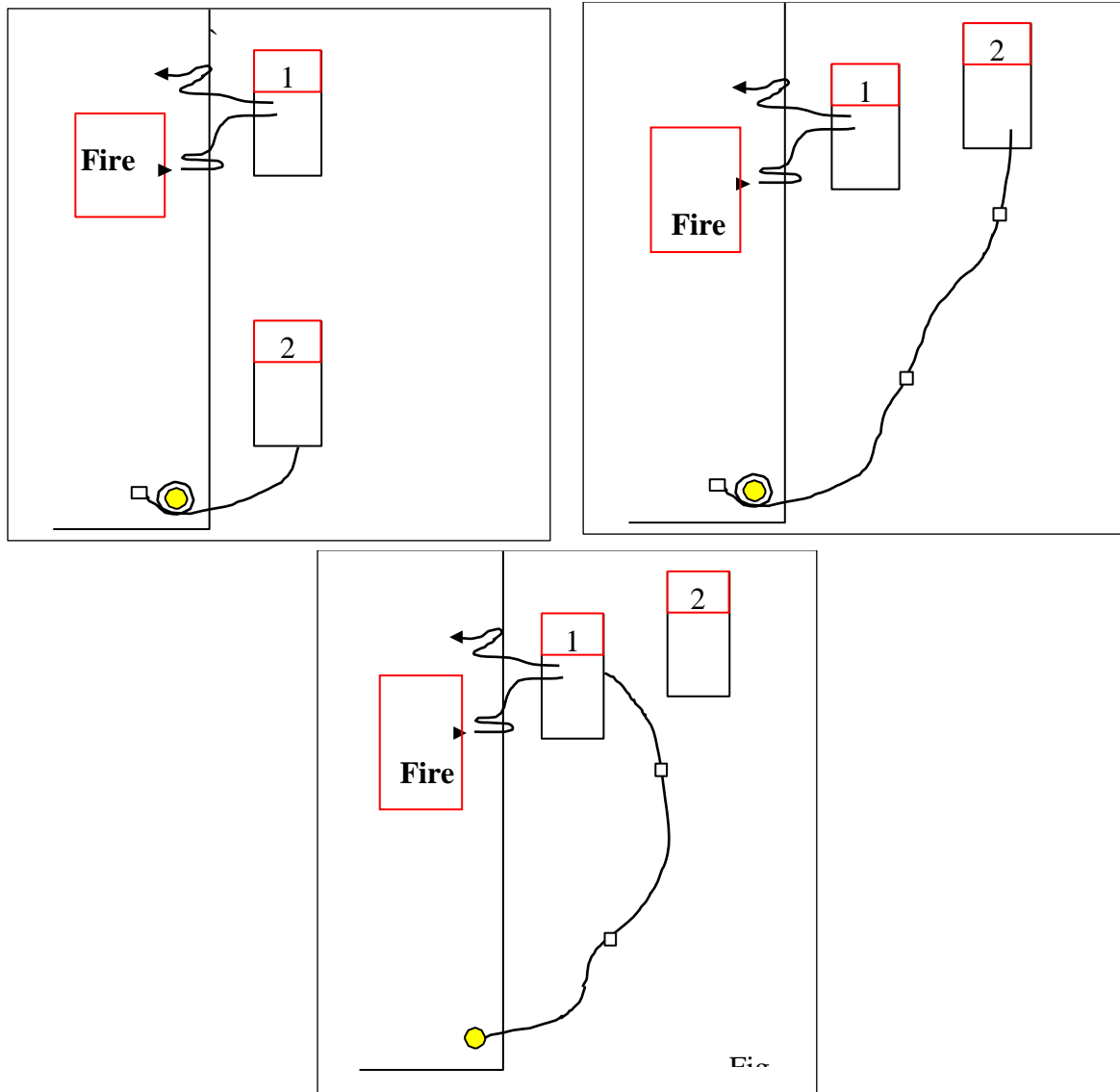
From the rear of the apparatus, (Firefighter#3/Line Breaker #3) has determined that the last coupling to leave the hose bed is further away from the captain's intake than fifty feet (none of the short sections alone will reach the pump's proper intake). Call out to the engineer that you will be securing additional hose.

1. Step up onto the tailboard and make an attempt to determine which 4" fold or section of hose, when pulled will clear the next coupling. If it takes more than one pull away from the apparatus, it's OK.
2. Face away from the hose bed and place the fold of hose over a shoulder.
3. Hold the folded section of hose on your chest with both hands much like you would if you were holding a sandwich. All of your fingers are on the outside of the hose; no fingers are inside the loop. Check and call out "**clear**" then step off the tailboard.
4. Move away from the tailboard and toward the captain's side of the apparatus. This action will cause the hose to flake out toward the proper pump intake. If you have chosen the correct fold of hose, one pull away from the apparatus will probably be enough. If not, make one more pull away from the rig flaking that pull further toward the captain's side of the apparatus.

When the next coupling hits the ground, drop the loop from your shoulder and return to the rear of the apparatus where the coupling is on the ground. If the engineer is not breaking that coupling, (Firefighter#3/Line Breaker #3) must do it in the proper location (away from directly behind the tailboard). Hand the male coupling to the engineer and then properly secure the female coupling. Line Breaker #3 is responsible for placing the remainder of the 4" female coupling and hose under the tailboard. Flake out any excess supply line on the ground to eliminate any kinks or hazards in the supply line. When ready, inform the engineer that their supply line is ready for water. With that done, the "Forward Lay" is complete as far as (Firefighter#3/ Line Breaker #3) is concerned. Listen for and respond to any additional orders coming from the officer or engineer.

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6.5--FIRE HYDRANT APPROACHED PRIOR TO REACHING THE "FIRST IN PUMP"



1. Engine 2 has been given orders to supply the "First In Pump."
2. A fire hydrant is approached prior to reaching the "First In Pump."
3. The officer on Engine 2 calls **"Forward Lay – Drop off"** (fig. 1).
4. A 4" supply line is laid from the hydrant to an area near the "First In Pump" (fig. 2).
5. Engine 2 will spot their apparatus somewhere near Engine 1 (should be past Engine 1).
6. The officer on Engine 2 will say **"Forward lay– To Engine 1."**
7. Line Breaker #3 determines how to supply Engine 1 with the 4" supply line in the street (fig. 3).

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8. From the last coupling to leave their hose bed, Line Breaker #3 will either:
 - Break that coupling and secure the 25' or 50' section of rolled 4" hose.
 - Pull additional 4" hose from their hose bed, properly breaking the next coupling.
9. Secure rolled hose from the male coupling lying in the street to the "First In Pump's proper intake."
10. Take the 4" male coupling from either of the methods to the "First In Pump's proper intake."
11. When the supply line operation is complete, (Firefighter#3/ Line Breaker #3) informs the engineer on Engine 1, that their supply line is ready for water.
12. Engine 1 now becomes the "Attack Pumper" for attack and/or exposure lines.

6.6--HAND LAYING A 4" SUPPLY LINE BACK TO THE HYDRANT

There will be times due to changing conditions that a 4" supply line will need to be hand laid to a nearby hydrant. Typically, this is a one firefighter operation at distances up to one hundred-fifty feet. The following scenario is one involving a fire hydrant located directly behind the apparatus. Anytime an order is given, repeat it and inform the engineer of your intentions when it concerns removing equipment or hose from their apparatus.

1. From the tailboard of the apparatus remove the hose retaining strap from the hose.
2. Turn away from the apparatus and place the hose line over your shoulder so the increaser comes to rest in the chest area. Hold onto the increaser with one hand so the fitting doesn't bounce around on your chest.
3. Check and call "**clear traffic**" then step off the tailboard onto the street.
4. Reach back and secure the hydrant wrench holding it in your free hand.
5. Tell the engineer to break the supply line when advised (when you reach the hydrant).
6. Check the area and call "**clear traffic,**" then proceed toward the hydrant at a pace that will maintain momentum as the hose pays out of the hose bed. Never run away from the apparatus with hose at such a pace that would cause injury if the hose were to get hung up on an obstacle.

* When moving away from the protection of the apparatus, always check for traffic before moving.

7. When the hydrant has been reached, call back to the engineer to "break the supply line." There is no need to wrap the hydrant because the apparatus will not be moving.
8. Lay the increaser and hose line down near the hydrant in a clear and safe location.
9. Check the 4" discharge cap with the hydrant wrench. If there is no 4" discharge, check the 2½" discharge cap facing the pumper.
10. Once assured that the cap will come off, place the hydrant wrench on the proper discharge stem with the handle facing downward and then go back and completely remove the cap.
11. Remove the increaser from the hose line if there is a 4" discharge and place it up against the

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hydrant with the female swivel on the ground. If there is no 4" discharge, leave the increaser on the hose line. In either case, check for a gasket prior to fastening the female swivel to the hydrant, and then tighten the coupling properly.

12. Wait for the call for water from the engineer and then properly open the hydrant. Leave the hydrant wrench on the discharge stem with the handle pointing downward.
13. Check the hydrant area for leaks and/or kinks that could hamper the flow of water.
14. Pick up the increaser if it wasn't used on the hydrant and follow the supply line back to the pump.
15. Fix any leaks and/or kinks that could hamper the flow of water.
16. Return the increaser to the Engineers compartment then report to the engineer. Offer supply line information, ask for additional instructions and what the pump intake pressure is.

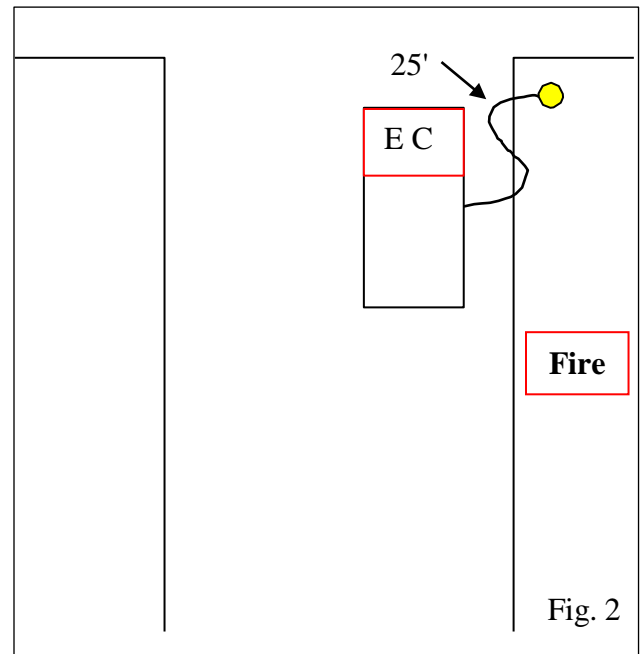
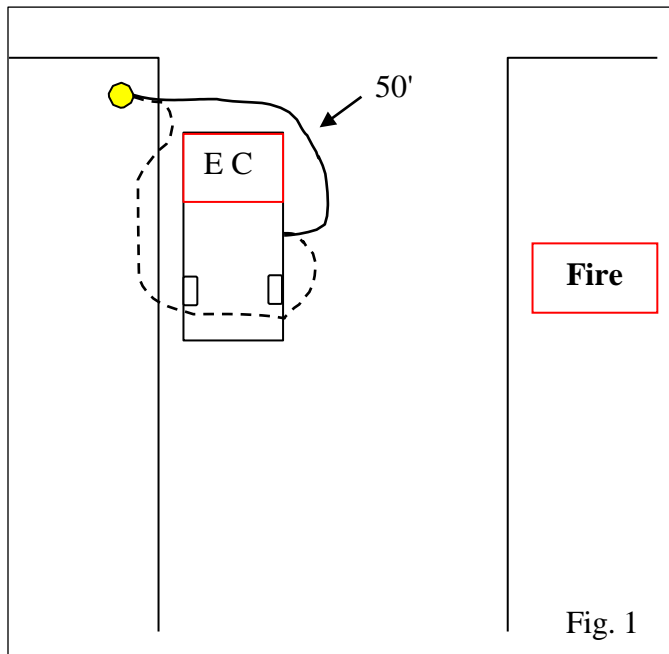
If the hydrant is located forward of the apparatus, hose needs to be flaked out prior to leaving the apparatus.

1. Remove the increaser and hose from the hose bed and place it under the corner of the tailboard.
2. From the tailboard, secure the second fold over from the line going down to the street.
3. Place that fold over either shoulder and step down to the street.
4. Call "**clear**" and flake the hose out of the hose bed with the first pull being exaggerated toward the side of the advance. Make additional pulls as needed back toward the tailboard, fanning hose out away from the hydrant. When enough hose is on the ground, advance to the hydrant properly.

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USED WHEN A FIRE HYDRANT IS LOCATED IN CLOSE PROXIMITY TO THE FIRE

1. The officer has determined that the nearby hydrant is close enough to the fire to enable the pumper to spot on that hydrant and at the same time deploy attack and/or exposure lines.
2. The officer has the apparatus spot within 50' of a hydrant.
3. The officer calls out "Spot the Hydrant - Drop off."
4. The order "Spot the Hydrant" is directed to the engineer and Drop Off #4 who will work together to supply the Pump with water from the hydrant (fig. 1).
5. Additional orders are given to Line Breaker #3 independent of the "Spot the Hydrant" operation.



6. Hydrant on the engineer's side of the apparatus, use the 50' section of rolled hose, going around the front of the pumper whenever possible (fig. 1). If you must go around the back of the pump to reach the hydrant (dashed line in fig. 1) lay the hose out so it passes under the tailboard and not in an area that will pose a trip hazard during other fire ground operations.
7. Hydrant on the captain's side of the apparatus, use the 25' section of rolled hose (fig. 2).
8. There are also front 4" intakes on some apparatus that can be taken advantage of for these evolutions.

The "Spot the Hydrant" operation will be used when performing a "Reverse Lay" to supply a Truck

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SPOT THE HYDRANT

The "Spot the Hydrant" evolution is used when the fire emergency is in close proximity to a fire hydrant. The apparatus spots near the hydrant so that a short section of 4" rolled hose can be used to supply the pump with a constant source of water. Hose lines are then secured from the pumper for fire ground activities.

DROP OFF #4

Drop Off #4 is typically assigned to help the engineer with any pump supply evolutions. Upon hearing the command: "Spot the Hydrant - drop off" check to see which side of the apparatus the hydrant is located. Whenever possible, large diameter intake lines will be attached to the captain's side intake. If the hydrant is located on the captain's side of the apparatus, the 25' section of 4" rolled hose will most likely be used. If the hydrant is located on the engineer's side of the apparatus, the 50' section of 4" rolled hose will most likely be used. There is apparatus in Operations that have front intakes. In either case be guided by any instructions offered by the engineer.

1. Secure the portable radio and check for vehicle traffic prior to leaving your seat.
2. Call out which section of hose you intend to use to complete the operation.
3. Secure the hydrant wrench.
4. Take the rolled section of 4" hose you called out to the captain's side intake.
5. Lay the roll down and either secure the male coupling under the running board or hand it to the engineer.
6. Carefully advance the female coupling to the hydrant. If the hydrant is located on the engineer's side of the apparatus, take the female coupling around the front of the apparatus. This will leave the tailboard area clear of the charged 4" supply line which makes for safer fire ground operations.
7. At the hydrant lay the female coupling down and check the 4" discharge cap with the hydrant wrench for ease of removal.
8. Once ensured that the cap will come off, place the hydrant wrench on the appropriate discharge valve stem properly (handle pointing downward).
9. Check for a gasket in the female coupling and then properly attach it to the hydrant.
10. Flake out any unused hose to ensure that there will be no problems as the supply line gets charged. If you have gone around the front of the apparatus, make sure the hose has not been pulled under the captain's side front tire, which would hinder water flow.
11. When the call for water comes from the engineer, charge the supply line slowly and completely.
12. Check the hydrant area for leaks and/or kinks that could affect the flow of water and then follow the line to the intake.
13. Check with the engineer for additional instructions.

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If the hydrant used for this operation did not have any 4" discharge ports, the 2½" to 4" increaser would need to be secured. Call out to the engineer that you are securing the increaser. Check for a gasket in the 2½" female swivel on the increaser. Remove the appropriate discharge cap. Attach the increaser to the hydrant tightly. Check for a gasket in the 4" female coupling of the rolled hose section that was secured. Tightly attach the hose line to the increaser. Take up some folds on the hose next to the female coupling and then lean into the hydrant. Tighten each swivel once again

LINE BREAKER #3

Line Breaker #3 will listen for additional orders from the officer as they pertain to fire ground operations.

6.8--REVERSE LAY

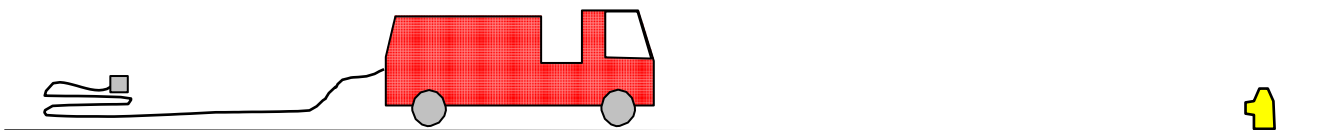
DROP OFF #4 POSITION

When the fire or assigned fitting is approached prior to the fire hydrant, a "Reverse Lay" can be used to supply the operation. A 4" supply line will be laid from the fire area to the fire hydrant. Some hydrants cannot supply large volumes of water through long supply lines. With a pumper now "spotted" on the hydrant, the pump can be used to push large volumes of water through the supply line. The "Reverse Lay" can be used to supply water to fire department connections, other pumpers and/or truck companies for ladder pipe operations.

The apparatus will spot near the fire area or assigned fitting. A command will be given "4" Reverse Lay - Supply the Truck/Engine, drop off."

Typically Drop Off #4 will secure the 4" female coupling from the hose bed.

1. Take the female coupling and increaser toward the assigned fitting to ensure that enough hose has been cleared from the hose bed to reach the fitting.
2. Once enough hose has been removed from the hose bed to reach the assigned fitting, bring the female coupling and hose over to the engineer's side of the apparatus if it is not already on that side. Set up the anchor position so the engineer can see the firefighter in their side view mirror.
3. Make several folds in the hose line laying each fold on top of the prior one. The female coupling will then be placed on top of the hose bundle with the coupling facing the tailboard of the apparatus. This bundle of hose will create an anchor point for the firefighter who will be staying at the fire (Typically Firefighter#3 /Line Breaker #3).



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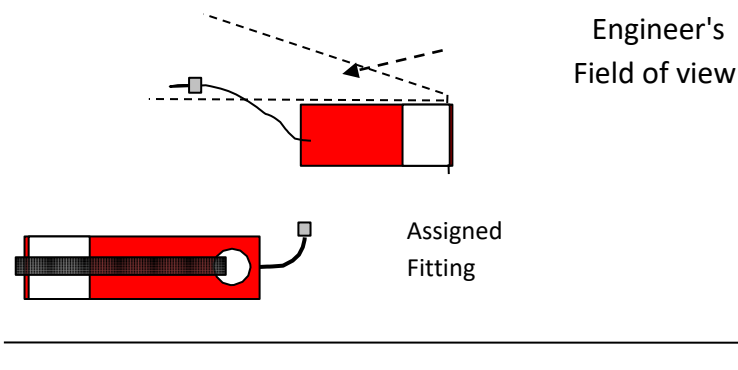
4. Once the anchor is set up, the increaser is removed if it is not needed at the assigned fitting.
5. Check with the officer for any additional instructions. If there are none, return the increaser to the nozzle and fitting compartment.
6. Stand-by at the corner of the tailboard on Drop Offs side of the pumper. From there, signal the Engineer to "take it away"

LINE BREAKER #3 #3 POSITION

The other firefighter (Line Breaker #3 typically) will secure the primary piece of equipment needed to complete the supply line operation (4" or 2½" double male). Along with the officer, Line Breaker #3 will also secure any additional fire ground equipment i.e. S.C.B.A., forcible entry tools, hose packs etc.

Line Breaker #3 will be responsible for anchoring the hose line as the apparatus drives to the fire hydrant.

1. Secure any supplemental equipment as directed by the officer placing it away from any hazards.
2. Make sure the anchor position is in view of the engineer as they sit in their seat.



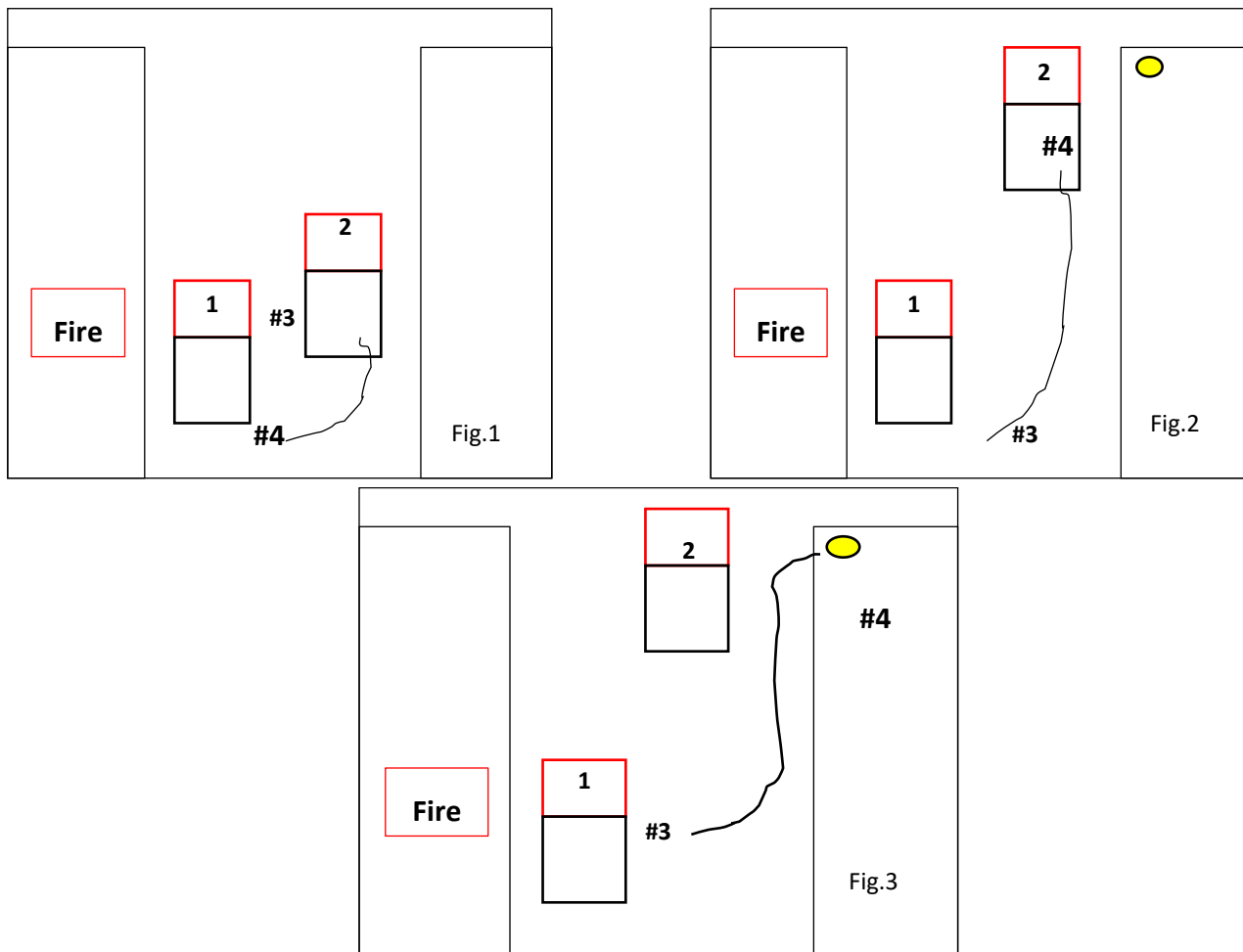
3. Kneel on the end of the folded hose bundle (near the folds) so that most of the bundle is between you and the apparatus.
4. Pick up the hose just behind the coupling with both hands so that you are facing the apparatus and looking at the engineer in their side view mirror.
5. Signal your partner (#4) to **"take it away."**
6. As the apparatus moves away, keep an eye on the hose coming out of the hose bed. If there are any indications that the hose may get hung up, let go of the coupling then step back and away from the hose bundle.
7. Under normal conditions secure from the anchor position when either the first coupling has hit the street or the parking brake sets.

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8. Bring the hose line and double male to the assigned fitting and complete the operation. It doesn't matter which way you attach the double male to the female swivel. Check for gaskets in all female fittings and make connections to appliances or Truck Companies spanner tight. If you are doing a Reverse Lay supply line for a pumper, does not spanner tighten any female connections on the pump unless they are leaking after being charged.
9. Flake out the hose line as needed.
10. Inform the engineer whose apparatus you are supplying that their supply line is ready.

REVERSE LAY: SUPPLY THE PUMP

USED WHEN THE FIRST IN PUMP IS APPROACHED PRIOR TO REACHING A HYDRANT



1. Engine 2 has been given an order to provide a 4" supply line to the "First in Pump" (Engine 1).
2. Engine 2 has approached Engine 1 prior to reaching the nearest fire hydrant.
3. The officer on Engine 2 calls "**Reverse Lay - 4"** supplies line to Engine 1."
4. Drop Off #4 will properly secure the 4" supply line, Line Breaker #3 will secure additional equipment

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(fig. 1).

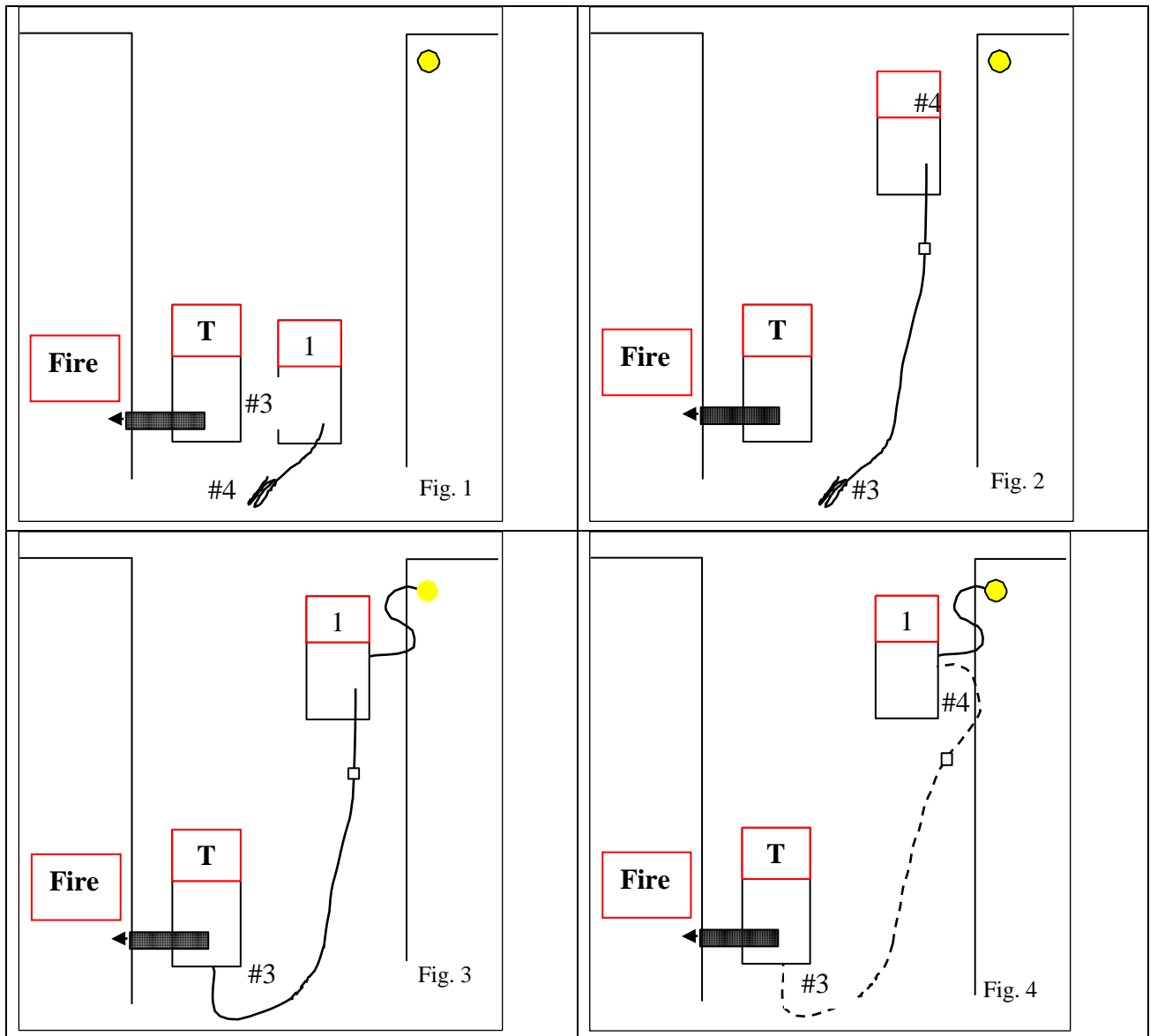
5. Engine 2 will proceed down the street to the fire hydrant. Drop Off #4 goes to the hydrant with the pump to assist the engineer while Line Breaker #3 anchors the supply line (fig. 2).
6. At the hydrant, #4 determines the best way to get the 4" supply line lying in the street connected directly to the hydrant (fig. 3).
7. The laid-out supply line does not have to go through Engine 2
8. #4 and the engineer work together to complete the supply line operation
9. Back at Engine 1, the Line Breaker #3 from Engine 2 will complete the supply line operation into Engine 1 4" double in the female hydrant.

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REVERSE LAY: SUPPLY THE TRUCK

USED WHEN THE TRUCK IS APPROACHED PRIOR TO REACHING A HYDRANT

1. Engine 1 has received orders to supply the Truck with a 4" supply line.
2. Engine 1 has approached the Truck prior to passing the nearest fire hydrant.
3. The officer on Engine 1 calls "Reverse Lay – 4" supplies line to the Truck" (fig. 1).
4. Drop Off #4 will properly secure the 4" supply line; Line Breaker #3 will secure additional equipment and eventually anchor the supply line in the street.
5. Engine 1 and Drop Off #4 will proceed down the street to the fire hydrant (fig. 2).



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6. At the appropriate time, Line Breaker #3 will complete the supply line operation to the Truck.
7. At the hydrant, Engine 1 performs the "Spot the hydrant" evolution (fig. 3). The supply line to the truck must go through a Pumper.
8. After the "Spot the hydrant" operation, Drop Off #4 and the engineer complete the 4" supply line operation to the Truck (fig. 4)

FITTINGS:

Male at the Truck valve 4" double female on Engine 1's 4"

DROP OFF #4 AT THE HYDRANT

There are two options at the hydrant:

1. Your pump is being used to perform a Reverse Lay to supply another pumper back at the fire.
2. Your pump is being used to perform a Reverse Lay to supply a fitting that does not have its own pumping ability (Truck Company, FDC. or portable monitor).

REVERSE LAY - SUPPLY THE 1ST IN PUMP

Under normal circumstances there is no need to have more than one pump along a supply line. On a Forward Lay, the pump is at the fire. The hydrant supplies water to the pump under hydrant pressure and then the pumper increases pump discharge pressure for its hose lines. When asked to use a Reverse Lay to supply another pump, the same rule applies normally. Your pumper is being used as a means to lay 4" hose from the fire (the first in pump) to the hydrant. The supply line that your company has laid out can be attached directly to the hydrant, creating in sorts a forward Lay only reversed. The engineer and Drop Off #4 will work together at the hydrant to complete the Reverse Lay supply line.

1. When the parking brake sets, secure the portable radio and listen for any additional instructions from the engineer.
 2. If there are no additional instructions, check for traffic and dismount the pumper safely.
 3. Find out where the hydrant is and from the tailboard area, determine how best to get the supply line lying in the street connected directly to the hydrant.
 4. Locate the last 4" coupling to leave the hose bed and determine whether the 25' or 50' section of 4" hose can make it to the hydrant from there. If not, you will need to pull additional hose out of the hose bed.
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USING THE 25' OR 50' SECTION OF HOSE

1. Call out to the engineer that you will be using one of the short sections of 4" hose.
2. Go to the coupling in the street and move it over to the same side of the apparatus as the hydrant (always pushing hose, don't pull it).
3. Break the couplings and fold the male back over itself. Return the female coupling and any additional hose back to the tailboard placing the coupling and hose underneath.
4. Secure the appropriate section of rolled hose and take it to the fire hydrant. The engineer will be there with the appropriate fittings (4" or 2½" double female) and the hydrant wrench.
5. Lay the rolled section of hose down near the hydrant in a clear and safe area.
6. Check and call out "clear" then take the female coupling back to the male coupling in the street.
7. Check for a gasket in the female swivel then properly attach it to the male coupling.
8. Flake out any hose that wasn't completely stretched out from the hydrant and inform your engineer that the supply line is ready for water.

The engineer will secure the hydrant by removing the 4" discharge cap and attaching the 4" double female. If there isn't a 4" discharge, they can use the increaser in conjunction with the 4" double female, or a 2½" double female attached to the hydrant and the 4" to 2½" reducer attached to the hose line. The engineer can call the 1st in pump on the radio to find out if they are ready for water in the supply line. Either the engineer or the firefighter can charge the supply line when called for.

REVERSE LAY - SUPPLY THE 1ST IN PUMP / TRUCK COMPANY PULLING ADDITIONAL HOSE

If the last coupling to leave the hose bed is further than fifty feet from the hydrant, Drop Off #4 will need to secure additional hose from the hose bed.

1. Call out your intentions to the engineer.
 2. From the tailboard make an attempt to determine which fold to pull that would enable the next coupling to clear the hose bed. Sometimes it is the next fold, you never know and on some apparatus especially at night you can't see into the hose bed. Do the best you can to limit the amount of pulls from the hose bed. Make your pulls from the hose bed toward the side of the apparatus that the hydrant is on, flaking hose toward the hydrant.
 3. When the next coupling clears the hose bed, take it to the side of the apparatus that the hydrant is on and properly break it.
 4. Secure the female coupling in one hand and the male coupling in the other and go to the tailboard.
 5. Place the female coupling and any extra hose under the tailboard.
 6. Take the male coupling to the hydrant and either hand it to the engineer or connect it to the 4" double female that is already attached to the hydrant.
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7. Coordinate your efforts at the hydrant with the engineer to charge the supply line safely.

There is an occasion on a Reverse Lay to the 1st In Pump when the pump at the hydrant might be needed to boost pressure in the supply line. If the Reverse Lay supply line is exceptionally long (800' - 1,000') and the hydrant had no 4" discharge port, the engineer would more than likely call for a *Spot the Hydrant* evolution. The Spot the Hydrant evolution would enable the pump at the hydrant to boost pressure in the supply line for the apparatus at the fire.

Anytime it has been decided to use the Spot the Hydrant evolution at the hydrant during a Reverse Lay operation, the pumper at the hydrant should be supplied first for consistency purposes if nothing else. Whether the Spot the Hydrant evolution is being used because there is no 4" discharge and you have just laid out your hose bed from the 1st In Pumper, or you are supplying a ladder pipe operation, supply your pump first from the hydrant, then complete the supply line operation to the apparatus at the fire.

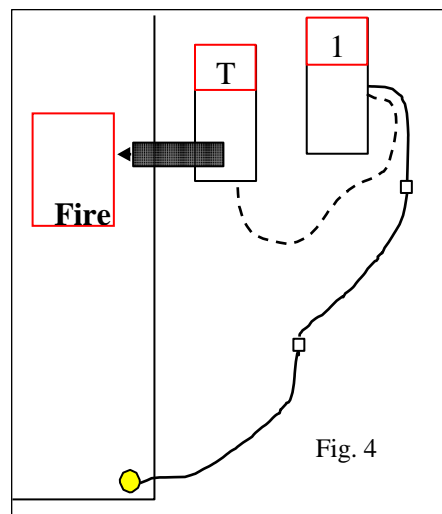
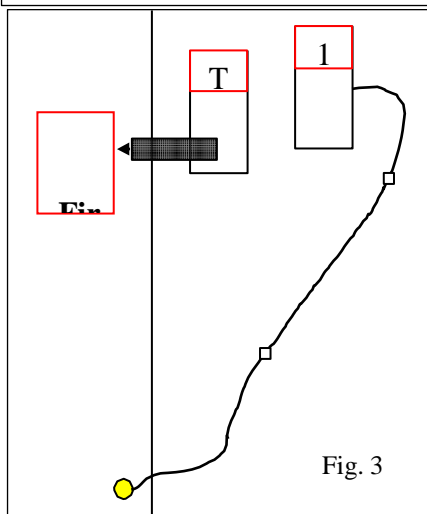
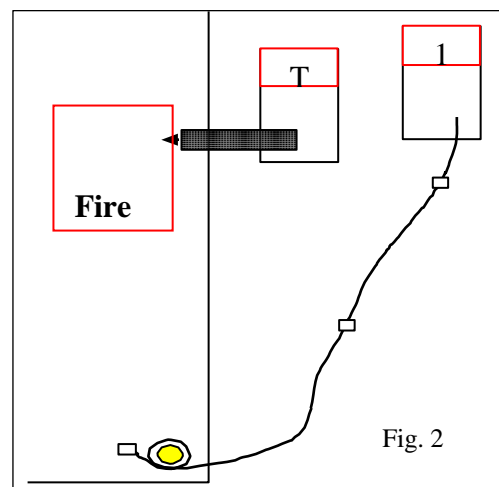
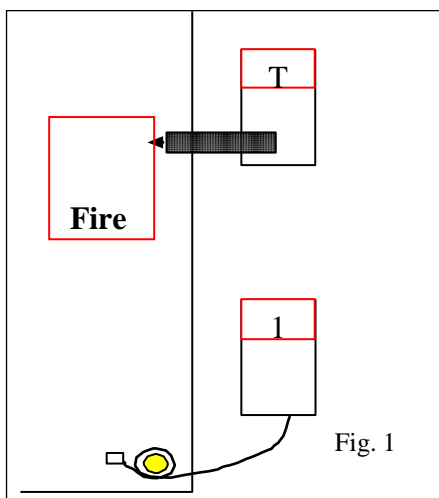
Perform the Spot the Hydrant evolution the same way as it was described on Subchapter 6.7. Once your pump is supplied with water, work with the engineer to complete the supply line operation for the apparatus at the fire.

1. Go to the tailboard and determine how best to get the supply line lying in the street connected to the proper 4" discharge. On all of our pumpers there is one 4" discharge on the captain's side pump panel. On some of our pumpers, there is a rear 4" discharge. Be guided by the engineer's directions as to which discharge to use.
2. The engineer is going to be securing the 4" double female and attach it to the specified discharge. You need to either properly move and break the coupling in the street in order to add a short section of 4" hose, or you need to secure additional 4" hose from the hose bed.
3. Perform either one of the options as previously described moving the coupling or flaking the hose toward the specified discharge. Once again, your destination is the specified discharge, not the hydrant or 4" intake on the captain's side
4. Take the appropriate male coupling to the specified discharge and hand it to the engineer if they are there, then flake out the supply line if needed informing your engineer when the line is ready for water.

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FORWARD LAY USED TO SUPPLY A LADDER PIPE OPERATION

1. Engine 1 has been given orders to supply the Truck for Ladder Pipe Operations
2. A fire hydrant is approached prior to reaching the Truck
3. The officer calls "Forward Lay – Drop off" (fig. 1)
4. Laid from the hydrant to an area near the Truck (fig. 2)
5. The 4" supply line from the hydrant supplies Engine 1 (fig. 3)
6. Line Breaker #3 decides how best to complete the supply line from the last coupling to leave their hose bed to their Pump's intake
7. Once Engine 1 is supplied with water from the hydrant via the "Forward Lay," a separate 4" supply line is secured to the Truck for the Ladder Pipe Operation (fig. 4)



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6.9--SECURING 4" SUPPLEMENTAL SUPPLY LINE 25' & 50' JUMPER

If either one of the short 4" sections of rolled hose are available and will reach the assigned fitting they should be considered. They are easier and quicker to deploy. Simply lay the hose bundle down underneath the proper discharge and then extend the male coupling to the assigned fitting. If the short 4" sections of hose are not available, additional 4" hose needs to be secured from the 4" hose bed.

There are two methods for removing hose in an orderly manner from the rear 4" or 2½" hose bed. They are the "SPECIFIED" and "UNSPECIFIED" method. A *specified* pull of hose is performed when a known amount of hose is to be secured i.e., the officer has called for one hundred feet of 4" hose. In this case the hose is secured in such a manner as to enable the male coupling to be advanced to the fire. Advancing the male coupling to the fire is advantageous because fewer fittings are required to accomplish the hose lay. The officer wants all of the hose they called for secured from the hose bed and lying in the street unattached to any hose from the hose bed. They want the female coupling placed under the corner of the tailboard that is furthest from the fire. They want the male coupling ready to be advanced from the side of the apparatus that is closest to the fire or assigned fitting. Specified pull = male coupling to the fire, female coupling stays at the pumper.

An *unspecified* pull is performed when an unknown amount of hose is to be pulled i.e., the officer calls for a 4" supply line to be hand laid to the truck. In this case the female coupling will be advanced to the fire or fitting. At some point a 4" double male and double female fitting will need to be added to this hose line. If the tailboard is facing the assigned fitting, the unspecified pull is quicker and more efficient than the specified pull. A team of firefighters can advance an unspecified amount of hose anywhere quicker than a specified amount. An unspecified evolution takes advantage of personnel available and the direction of the assigned fitting. Unspecified pull = female coupling to the fire, male coupling stays at the pumper. Unspecified pull = double male to the fire, double female at the pump.

6.10--4" SPECIFIED SUPPLY LINE

The officer has directed you to secure 100' of 4" hose to supply a truck company. When you are directed to secure 4" hose from the hose bed as a supply line, you will find the hose bed in one of two conditions:

1. The hose bed may be untouched and still loaded as it was in the station. The hose is secured in the hose bed with a retaining strap, and the increaser is still attached to the female coupling.
2. The 4" hose and the female coupling are out of the hose bed and lying underneath the tailboard. This condition is common following a Forward Lay.

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FEMALE COUPLING FOUND IN THE HOSE BED:

From the tailboard, remove the hose retaining strap from the hose and bring the female coupling and increaser down to street level. The firefighter should leave the increaser on the hose while they move away from the tailboard and let the engineer remove it at a later time. Step away from the tailboard and face the direction of travel. Place the hose line over any shoulder so the female coupling and increaser come to rest in the chest area.

FEMALE COUPLING FOUND UNDER THE TAILBOARD:

Pick the female coupling up from under the tailboard and fold it back on its self-12" to 15". Place the fold on any shoulder so the coupling comes to rest on the back of the shoulder with the coupling on top of the hose coming from the hose bed.

1. Check and call "**clear**" then move away from the back of the apparatus at a slight angle away from the fire.
2. After going out approximately fifty feet, turn away from the direction of the fire and return to the apparatus while keeping the hose on your shoulder.
3. At the tailboard place the female coupling and/or increaser under the corner of the tailboard away from the fire calling out its location, or hand it to the engineer. *The engineer will remove the increaser and attach the female coupling to the proper discharge.*
4. Step up onto the tailboard and grab a fold of hose which when pulled out from the apparatus approximately twenty-five feet, will allow the one hundred foot coupling to fall to the ground.
5. Turn and place the fold of hose over a shoulder and then step down off the tailboard.
6. Check and call "**clear**" then move out away from the apparatus flaking the hose out toward the fire.
7. The turn of hose lying in the street should represent approximately 50' of hose. If you have chosen the correct fold of hose from the hose bed, when you make it to that turn you should have cleared the next coupling and the 100' of hose directed by the officer. Do not go past the turn of hose in the street without stopping and looking back to see where the next coupling is. If you need to pull a little more hose out of the bed, do so without walking backward. If the coupling is on the street, stop pulling and drop the fold of hose from your shoulder calling out "**100 feet.**"
8. Return to the 100' coupling just cleared from the hose bed and move it off to the side of the apparatus. Pick up the coupling and walk forward towards the fire or assigned fitting.
9. The area directly behind the tailboard needs to be kept clear. The coupling can be laid down off the corner of the apparatus approximately eight feet (two steps). Always check for vehicle traffic anytime you move away from the protection of the apparatus.
10. With the coupling placed down in a clear and safe area, properly break the couplings and then return both couplings to the tailboard.
11. Lay the female coupling and any remaining hose completely under the tailboard.

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12. Fold the male coupling back over itself approximately twelve to fifteen inches. Place the folded section of hose over either shoulder with the coupling coming to lie on the upper back area.
13. Check for traffic and call out "**clear**" then move out toward the fire or assigned fitting. Move at a good pace to keep momentum going toward the fitting, but resist the urge to run faster than a trot. If the hose gets hung up on something or under someone, injury could result.
14. At the assigned fitting, stop and check for a gasket in the female swivel.
15. Tightly connect the male coupling to the female fitting. If the supply line is to a pumper, hand tightening is good enough. If after charging the supply line the fitting leaks, use a pocket spanner to tighten. If the supply line is for an appliance or ladder pipe fitting, spanner tightens the couplings before the lines get charged.
16. Once the supply line is connected to the assigned fitting flake it out if necessary. When the supply line is ready for water, tell the engineer on that apparatus that their supply line is ready for water. If the supply line is for a portable monitor, you can call for water yourself when ready

6.11--4" UNSPECIFIED SUPPLY LINE

Depending on the situation and how the apparatus is spotted in relation to the assigned fitting, unspecified pulls can be performed very easily. Typically, there will be other firefighters to assist with flaking additional hose out of the hose bed while the firefighter directed to secure the hose line advances to the assigned fitting. If the apparatus tailboard is facing the direction of the advance, this method for securing hose is made even easier. If there are no firefighters available to help and the direction of the advance is to the front or side of the apparatus, the firefighter responsible for the pull must first flake out sufficient hose as to reach the assigned fitting. In this case the initial flake of hose must be exaggerated toward the side of the designated fitting.

The 4" hose configuration found at the tailboard will be one of the following; the hose will either be found in the hose bed with the increaser still attached, or an amount of hose with the female coupling only will be found under the tailboard as it would be following a Forward Lay. In either case, the sooner the supply line can be made ready to advance the sooner the crew can take advantage of the "Unspecified" hose lay. With an unspecified lay the female coupling will get advanced to the fire or assigned fitting. If a female coupling is going to be advanced to the fire, a double male need to be attached to that female coupling prior to the advance.

HOSE AND INCREASER ARE FOUND IN THE HOSE BED

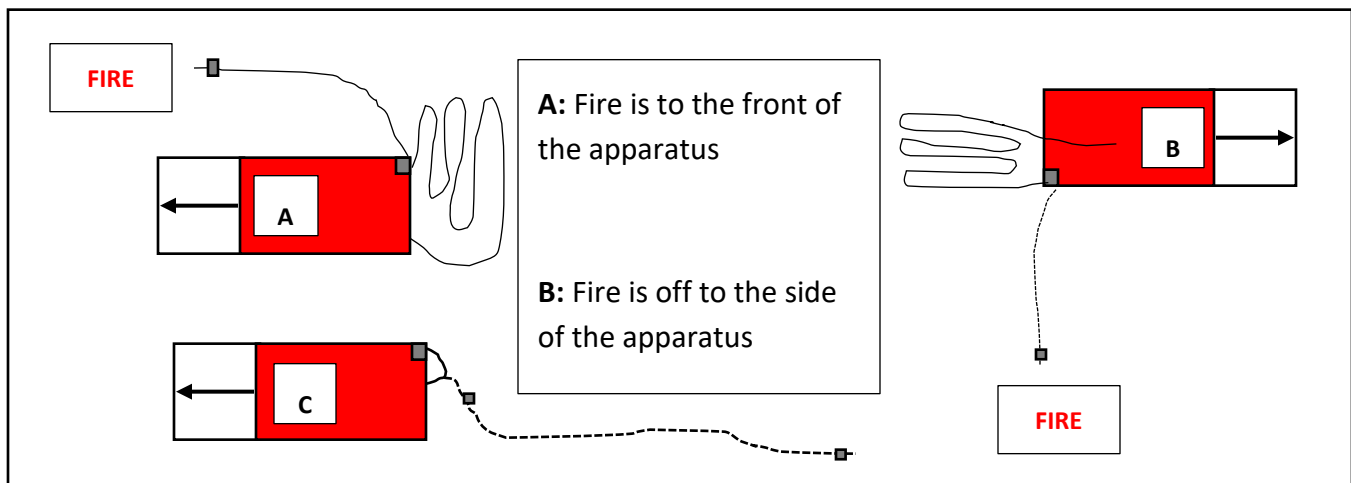
If the female coupling is found in the hose bed with the increaser still attached, remove the hose retaining strap from the hose. Safely take the increaser and hose out from the tailboard and toward the direction of the advance a safe distance (a couple of steps off the corner of the tailboard).

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1. Remove the increaser from the hose and bring both back to the tailboard area.
2. Place the female coupling under the tailboard and then take the increaser to the nozzle and fitting compartment.
3. Secure the 4" double male calling out that action to the engineer.
4. Return to the female coupling under the tailboard and take it back out toward the advance. Check for traffic any time you leave the protection of the apparatus.
5. Check for a gasket in the female coupling's swivel and then properly attach the double male.

At this point the supply line is ready to advance if the assigned fitting is off the back of the apparatus or if there is another firefighter available to flake out additional hose as needed ("C" below). If the pull is going to be made forward or to the side of the apparatus ("A" or "B" below) and no firefighter is available to help, place the double male and hose back under the corner of the tailboard. Now additional hose needs to be flaked out behind the apparatus until either enough hose has been laid out to reach the assigned fitting or help arrives to flake out additional hose.

1. Step up onto the tailboard and secure the second fold over from the section of hose going down to the street.
2. Turn away from the hose bed and place that fold over either shoulder.
3. Call "**clear**" and step down off of the tailboard.
4. Take that first fold out from the tailboard and in the direction of the advance. If you need to go forward of the apparatus, you need to exaggerate that first flake out to the side so the rest of the flakes can start lining up (fanning out) behind it. When you advance to the fire, the flaked out hose will not get hung up on the tires if the hose has been flaked out properly. Take that first fold of hose out far enough so the inside turn of hose will clear the rear tires when you advance to the fire.
5. Drop the fold from your shoulder and look back on the ground.



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Each time you flake out a fold of hose behind the apparatus during an "Unspecified" hose evolution, drop the fold and ask yourself three questions:

1. Do I have enough hose on the street laid out properly to advance the double male to the assigned fitting?
2. Am I strong enough to pull any additional hose that I may need to the assigned fitting?
3. Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to any of those questions is yes, you are ready to pick up the double male and advance to the assigned fitting (see #10 below). If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose

1. From the tailboard take the next fold over that will clear the most hose and still allow the inside turn to clear the rear tires. That fold will usually be the next fold over, but sometimes you may have to go over two folds depending on how the hose is laying in the bed.
2. Turn away from the hose bed and place that fold of hose over your shoulder, check for and call "**clear**" then step down off of the tailboard.
3. Continue flaking out folds of hose behind or to the side of the apparatus fanning the flakes out as best you can. Fanning out the flakes isn't always easy but will help prevent the hose from getting tangled up with itself as you advance to the fire.
4. With "Unspecified" pulls of hose from the hose bed (female coupling going to the fire) the first flake of hose is toward the fire and the next flakes are away. Work the flakes of hose back toward the hose bed, or away from the fire. These pulls of hose rarely need to be taken further than twelve to fifteen feet from the tailboard. Keep flaking hose until you can answer yes to one of the above mentioned questions.

When either the 3" or 4" hose line you are advancing is coming directly from the hose bed, you need to tell the engineer to break the line when you advise them to. When you have advanced the hose line to the assigned fitting or fire, you will call back to the engineer "**break my line.**"

Advise the engineer twice about the need to break your line anytime you are going to advance an "Unspecified" hose line. Tell the engineer once at the tailboard before you leave, and once at the fitting or fire.

5. Pick up the double male fitting and hose from under the tailboard. Face the assigned fitting or fire and place the double male over either shoulder so the hose line is coming from the back and the double male is resting on your chest.
6. Use at least one of your hands to secure the double male fitting up against your chest. Remind the engineer that they need to break the line when you advise them to "**engineer, break my line when I call back.**"
7. Check for traffic and personnel, then call "**clear**" and start your advance to the fitting.

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8. As soon as you get to the fitting, look back at your apparatus and call out to the engineer "**break my line.**"
9. Check for a gasket in the fitting's female swivel.
10. Tighten the double male into the female swivel hand tight if the fitting is an intake on a pump. Spanner tightens the coupling if it is for a ladder pipe or portable monitor.
11. Flake out the hose line if necessary and then tell the engineer that their line is ready for water. If the supply line is for a portable monitor, call for water after the line is flaked out and ready.

SECURING AN UNSPECIFIED SUPPLY LINE WHEN THE HOSE IS FOUND UNDER THE TAILBOARD

You are never going to supply a 4" supply line with water from your tank alone. Your officer will make sure that your pump is being supplied by a fire hydrant through a "Spot the hydrant" or "Forward Lay" evolution more than likely. If the Spot the Hydrant-evolution is being used, chances are that the female coupling is still in the hose bed with the increaser attached. The only reason it wouldn't be, is if the hydrant didn't have a 4" discharge and your partner had taken the increaser to complete hydrant operations using one of the 2½" discharges. If your company had just completed a Forward Lay to supply your pump, the female coupling will be found under the tailboard where Line Breaker #3 just placed it.

1. When the female coupling is found under the tailboard and you are given a 4" unspecified supply line order, go directly to the nozzle and fitting compartment and secure the 4" double male. The sooner the line is made ready to advance (by placing the double male on the female coupling) the sooner your company can take advantage of the unspecified evolution. Call out to the engineer that you will be taking the 4" double male.
2. Take the female coupling and the double male from under the tailboard to a clear and safe location off the back of the apparatus. This location will be to the fire (assigned fitting) side of the apparatus. Anytime you move from the protection of the apparatus out into an area where you could be hit by a vehicle, you must check for traffic.
3. Check for a gasket in the female swivel and then properly attach the double male to the coupling.

As previously covered, at this point if you have help at the tailboard to pull additional hose, or you have the ability to pull the additional hose out of the hose bed yourself, you are ready to advance. Tell the engineer that they will need to break the line when advised, check for traffic, call "**clear**" and advance the line to the fire. If there is no help and you cannot pull the needed additional hose out of the hose bed because of the direction that you will be advancing, return the double male and hose back under the corner of the tailboard nearest the fire (assigned fitting).

Follow the procedures previously covered regarding securing additional 4" hose out of the hose bed. Flake the pulls away from the assigned fitting, creating a fan of flaked out hose if possible. Each time you take a fold of hose out twelve to fifteen feet from the tailboard and drop it, ask yourself those three

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questions:

1. Do I have enough hose on the street laid out properly to advance the double male to the assigned fitting?
2. Am I strong enough to pull any additional hose that I may need to the assigned fitting?
3. Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to any of those questions is yes, you are ready to pick up the double male and advance to the assigned fitting. If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose. Once you can answer yes to any of the three questions, secure the double male and hose line properly. Remind the engineer that they will need to be ready to break your line when you call back, and then safely advance. Always check for personnel that might be affected by your moving hose line. Always check for vehicle traffic prior to moving away from the apparatus with any hose line. Call out "clear" then move away from the apparatus at a good steady pace which will allow you to reach the assigned fitting.

6.12--MASTER STREAMS – MONITOR NOZZLES

Master streams are delivered through large flow monitor nozzles. These monitor nozzles are attached to the pumper and can flow water directly from the pump. If need be they can be removed from the apparatus and deployed to a remote area (portable monitor nozzle). Due to the large flows anticipated, master streams are typically supplied by a 3" supply line. The pumper will gain a water supply from a hydrant. Subsequently the monitor is either supplied directly from the pump (monitor attached to the pumper), or through a hand laid 3" supply line (portable monitor).

MONITOR NOZZLE LEFT ON THE PUMPER

By whatever means directed by the officer, the pump is supplied with an adequate water supply. The engineer will directly control the supply of water to the monitor while a firefighter controls the monitor from on top of the apparatus. Start off flowing water at a lower GPM setting until assured of adequate supply. Not every monitor we have comes from the same manufacturer. There are some slight differences among the manufacturers, but for the most part their operating functions are similar.

Vertical movement is typically handled through a wheel device which when turned moves the nozzle either up or down. The monitor will have a detent device to prevent the nozzle from being lowered below a certain level. They also typically have large knobs which when loosened control the horizontal movement. The firefighter will move the nozzle direction from left to right by simply grabbing a hold of the monitor and turning it to the left or right once the tension knobs are loose.

6.13--3" PORTABLE MONITOR NOZZLE

The pump needs to obtain an adequate water supply by whatever means directed by the officer. Next the Engine Company works together to remove the monitor nozzle from the apparatus relocate it to the directed area and then secure supply lines for the portable monitor nozzle. The monitor has a portable

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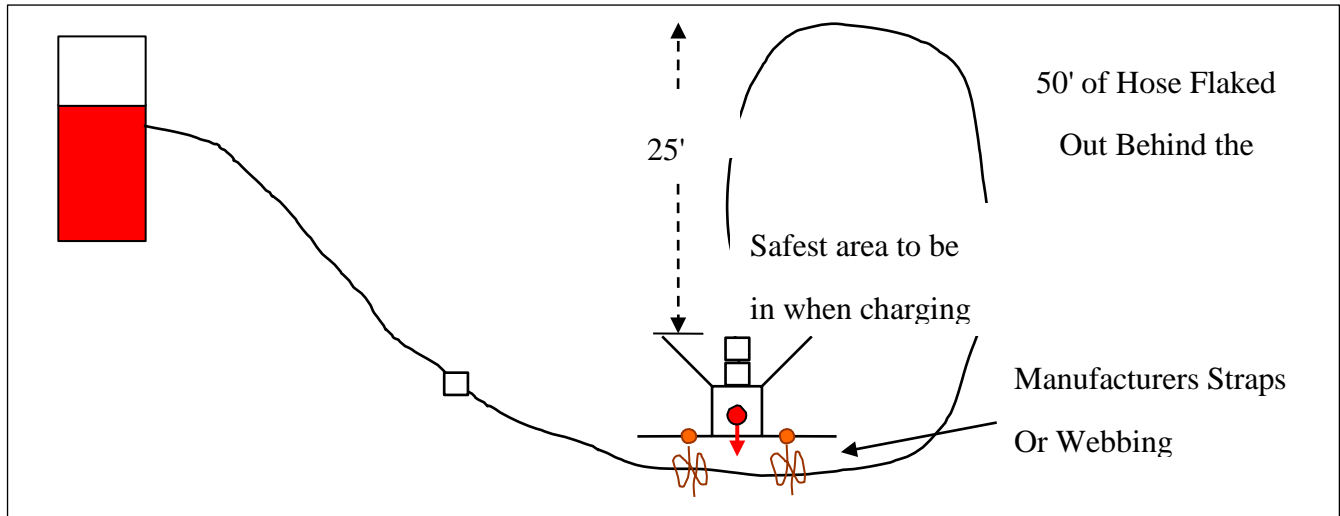
stand that needs to be set up in the directed area. The monitor needs to be properly attached to the stand. A 3" supply line needs to be secured to the portable monitor nozzle. The manufacturer will have recommendations for properly supplying the monitor nozzle in the portable mode. It is very important that the firefighter follows those recommendations. Typically, the 3" supply line is made into a large oval around the portable monitor stand. The supply line is then brought up the middle to the monitor and attached. Using the manufacturer straps/chain that are supplied, or our webbings, the portable stand is then tied off to the hose line. The portable monitor stand is designed to absorb the nozzle reaction from the flowing water. San Diego Federal Fire has adopted additional safety procedures to ensure safe operation of the portable monitor stand in the unlikely event that something should go wrong.

Whenever we place a 3" portable monitor into operation we are going to "Q" the hose control to the portable monitor stand. We want to have the ability to "tie" the stand down to the hose line so if something were to cause the monitor stand to fail, the nozzle would not become a tumbling force hazard. A minimum of fifty feet of additional hose will be secured with the original supply line to the portable monitor stand. The stand will be encircled by the extra fifty feet of hose with approximately twenty-five feet of it stretching straight back from the stand to absorb direct nozzle reaction. The portion of hose passing to the front of the stand will be strapped or tied down with manufactures equipment or our webbings. Only then will we call for water and have the nozzle charged.

3" SUPPLY LINE TO A 3" PORTABLE MONITOR

1. Secure fifty feet of additional 3" hose along with the male or female coupling depending on whether a "Specified" or "Unspecified" hose evolution was called for. Prior to leaving the tailboard area of your apparatus, you will need to pick up a fold of hose that represents approximately fifty feet of hose (working line). Place the fold over either shoulder so the fold comes to rest on the upper chest area and the hose pays off your back. Grab that fold like you would a sandwich, and with your other hand secure the male coupling or female coupling with a double male as previously described over the other shoulder.
2. Properly advance the hose line to the directed location.
3. At the stand or directed area, lay out your hose line so the stand will have a portion of the hose passing just in front of it with approximately twenty-five feet of hose paying out straight behind.

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4. Use a webbing to tie a larks foot to the monitor's stand. Take the other end of the strap and loosely tie a clove hitch and safety (over hand knot) around the hose line. Use two straps when possible to capture two arms of the stand.
- 4a. If there is a chain or manufacturer's hose straps, ensure that they are fastened properly to the hose line.
5. All hose and fitting connections at the portable monitor are to be made "spanner tight."
6. Ensure that the nozzle to stand pins are in place, or that the nozzle has snapped and set properly into place.
7. Check that the nozzle is set on low GPM and full fog or that the correct tip size is in place
8. The stand has pins that can be driven into the street with a sledge hammer if a crack or seam in the street was not available from the onset. Use a sledge hammer to drive the pins into the ground. Make sure you have eye protection on before using the sledge hammer.
9. The hose line and portable monitor will want to move forward and outward when the line gets charged, ensure that all personnel are clear and that you are within the oval created by the "Q" hose control before calling for water.
10. Call for water. When the water comes up the line, be ready for hose and stand movements.
11. Once the supply line has stopped moving, ensure that the webbing or manufacturer's straps are snug.
12. Do not lower the stream below the detent spring pin, and make left to right nozzle movements slowly.

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1¾" ATTACK LINE OPERATIONS

7.1--1¾" HOSE "DROP AND GO"

The "Drop and Go" method of securing 1¾" hose from the apparatus can be used when there are no obstructions between the apparatus and the fire. Vehicle, vegetation and rubbish fires are a few scenarios where the "Drop and Go" method works well. At structure fires, if the apparatus has spotted where there will be a limited amount of turns and/or obstructions between the apparatus and the fire, the "Drop and Go" method can also be used. The following deployment example describes how a firefighter would secure an entire 200' crosslay hose bed. This method can also be used to secure a part of one of the hose beds also. In that case you would not start the evolution by pulling out the pull-down loops as you will in the following example.

Make sure the area where the 1¾" hose will be laid down is clear of personnel and safe from traffic.

1. Call out your intentions to the engineer.
2. Call "**clear**" and using the pull-down loops, begin to pull the hose from the hose bed. When the nozzle begins to clear itself from the hose bed, stop pulling. Reach up with either hand and grab hold of the nozzle so that it doesn't fall to the ground or hit you in the face.
3. Now you want to set up for the eventual advance, and prevent walking backwards while you pull the rest of the hose out of the hose bed. Face the direction that you intend to advance the hose. You should be standing so you have an inside shoulder and hand that is nearest to the hose bed (inside hand), and a shoulder and hand that is on the outside (furthest from the hose bed).
4. Use the outside hand to maintain control of the nozzle while you reach under the bundle of hose with the inside arm. Cradle the hose bundle from below and hold onto as much hose as you can from the top and then move away from the hose bed in the direction of the advance. This action will cause you to walk sideways not backwards, and it will allow the hose and nozzle to be removed from the hose bed properly.
5. After a few steps the hose will begin to fall from the hose bed. Bend at the waist slightly and allow the hose that is leaving the hose bed to hit the ground first. Keep moving in the direction of the advance until all of the hose has come out of the hose bed, or the whip has stopped your advance. This action will allow the bundle of hose to come to rest on the ground very neatly. When the hose bundle is on the ground, lay the sections of hose that you were cradling and the nozzle down.
6. Go back to the hose bed and ensure that all of the hose including the free part of the whip section has been cleared from the hose bed. A good way to do this is to reach up, look into the hose bed and give a pull on the section of hose that was last to leave the hose bed (the whip). Call out that the hose bed is clear and then return to the nozzle.

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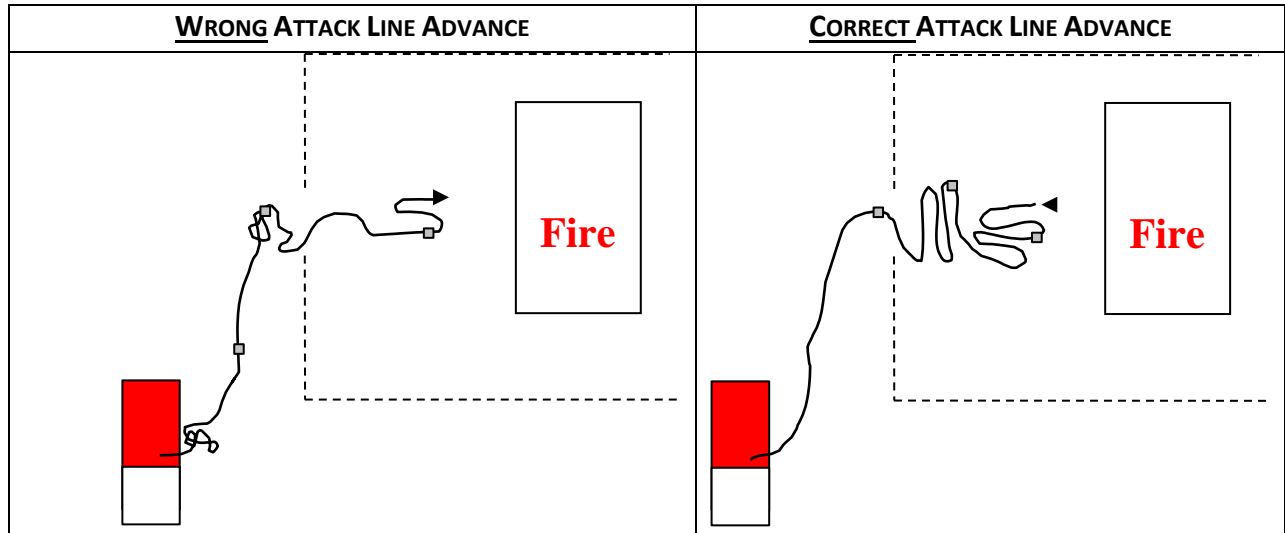
7. Pick up the nozzle with one hand. Slide the other hand down the hose leading from the nozzle. Check to see that the area is clear calling out "**clear**" and toss the hose in the direction of travel. Do this a few times to clear the next coupling. This clears the 100' of working line from the rest of the hose bundle. As with 2½" attack lines, there needs to be one hundred feet of 1¾" working line flaked out and brought to the fire's location or entry point.

Secure the 100' coupling the same way as the 2½" working line coupling. Take a fold on the hose section coming from the nozzle approximately fifteen inches up from the female coupling. Place that folded section of hose over the shoulder not being used to secure the nozzle. The coupling should come to rest on top of the hose and on the upper back.

1. Secure the nozzle over the other shoulder with one hand, and the fold of the 1¾" hose with the other hand.
2. Check for vehicle traffic and personnel, call "clear" then advance toward the fire.
3. Stop at a safe distance from the fire or when the slack in the line coming from your shoulder is all stretched out.
4. Look back at the pumper to determine how best to lay down the 100' coupling so that flaking out the working line will be made easier.
5. Lay the working lines coupling on the ground (do not drop or throw the coupling to the ground).
6. If your partner is behind you and flaking out the working line, you can check your nozzle and prepare to call for water. If you don't have a partner helping, you will have to flake out your working line.
7. Lay the nozzle down and go to the turn in the hose. Do what it takes to line up approximately twenty-five feet of working line straight back from the nozzle and in line with the advance or anticipated water flow.
8. Back at the nozzle, do your nozzle checks and call for water when you are ready.

When deploying hose using the "Drop and Go" method, it is important to advance all of the hose to the fire area. A common mistake is to leave a pile of hose back at the pumper. The nozzle person will be at the door with fifty feet of flaked out working line. While advancing into the structure, the line comes up short. Most of the time it is because there is still hose laying on the street back at the pumper instead of in front of the building where it belongs. Pull as much slack out of the line as possible while advancing to the fire. Back-up and/or support personnel should never walk past a pile of hose on the way to the fire. Pick up a section of hose (by the coupling if possible) and stretch it to the fire. Get all the hose line up to the structure, flake it out as necessary to prevent kinks, and then feed it in as needed. Once the line gets charged, pulling hose becomes much more difficult

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7.2--1¾" SHOULDER LOAD / FLIP METHOD

The Shoulder load method of securing 1¾" hose is used when stairs, obstacles or several turns will be encountered on the way to the fire. Load what you need onto your shoulder, clear the rest from the hose bed and go to the fire. More hose means more difficulty controlling it coming off the shoulder, but it will be easier than trying to pull hose around several turns. If the first obstacle (major turn) in your path to the fire is fifty feet away and you are told to secure a 200' crosslay, you don't necessarily need to shoulder load the entire 200' hose bed. You can shoulder load 100' of it and then pull the rest out of the bed using the pull-down loops. In that case you would not let any hose come off your shoulder until all of the slack at the pumper has been stretched out toward the fire. The other option, is to shoulder load the entire hose bed which is what the following example describes.

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SECURING THE ENTIRE HOSE BED

Make sure the area around the hose bed is clear of personnel and safe from traffic.

1. Call out your intentions to the engineer.
2. Call **"clear"** and using the pull-down loops, begin to pull the hose from the hose bed. When the nozzle begins to clear itself from the hose bed, stop pulling. Reach up with either hand and grab hold of the nozzle so that it doesn't fall to the ground or hit you in the face.
3. You might have to step up onto the running board to set up the next move, but you want to be on the ground when you go to flip or roll the hose onto your shoulder. Position the nozzle so that it is facing you and about two to three feet from the pull-down loops.
4. Gather all of the hose (from the pull-down loops up, not the whip) together in your hands as if you were grabbing a very large sandwich, only have your thumbs up and your fingers down (the opposite of how you would normally hold a sandwich). Make every attempt to squeeze the hose tightly so you can include the nozzle in your grip. If you can't control all of the hose and the nozzle that way, control the nozzle by positioning your thumb on the hose just behind it.

It's called the *"Flip method"* because the hose needs to get flipped over as it comes to rest on your shoulder. If you were to just slide the hose out of the hose bed and onto your shoulder, the hose would pay off the bottom of the pack, not the top where you want it to. In order to advance away from the pumper keeping as much hose on your shoulder as possible, the hose needs to pay off the top of the bundle. Some firefighters prefer to roll the bundle of hose onto their shoulder. However, you do it, the bottom hose from the hose bed needs to end up on top as the bundle is placed on your shoulder.

5. As you bring the bundle of hose outward lift up on it a little so you can "flip" or roll the bundle of hose onto your shoulder. Your thumbs should start on top of the bundle and your fingers are on the bottom (the opposite of how you would hold onto a sandwich). As you move the hose bundle toward your position rotate your hand position so your thumbs end up on the bottom of the bundle and your fingers end up on top. This is where the flip concept comes from. You are going to flip the hose bundle over as it moves from the hose bed to your shoulder.
6. The hose bundle is now ready to advance to the fire so the hose from the hose bed is coming from the top of the bundle on your shoulder. The nozzle is now resting on your upper chest area.

Move away from the hose bed a couple of steps to adjust and set the hose bundle on your shoulder. Turn back to the hose bed and ensure that all of the hose is out of the hose bed.

1. You are now ready to advance to the fire. Control the hose coming off of your shoulder by holding pressure on the bundle with your arm. Use your free arm to open doors or gates and clear the way.
2. Check for traffic and personnel, call **"clear"** and advance to the fire.

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3. To control the slack in the line keep pressure on the bundle of hose using your arm. As you need to let hose pay out, loosen the grip on the hose.
4. At the fire or 100' coupling drop the hose off your shoulder while maintaining control of the nozzle.
5. Set the nozzle down and flake out the working line if your partner is not there to help.
6. Check your nozzle settings and prepare to call for water.

As described earlier, you do not always have to shoulder load all of the hose called for. If the first obstacle or major turn is fifty feet away from the pumper, there is no need to shoulder load the whole hose bed. Pull the hose out as before. Instead of trying to gather the whole hose bed in your hands, leave the bottom fifty feet or so in the hose bed. Try to determine where to drive your hands into the bundle of hose so you only have what you need on your shoulders. Once you have flipped that hose onto your shoulder, go back to the hose bed and use the pull down loops to clear the remaining hose from the hose bed. Now when you advance, maintain pressure on the hose bundle until all the hose lying in the street at the pumper has been advanced to the first turn. If it doesn't all get laid out going to the turn, reach back and pull it through the turn as you continue your advance to the fire.

SHOULDER LOAD ADVANCE - 1¾" ATTACK LINE UP STAIRS

When 1¾" attack line is going to be advanced upstairs, a shoulder load should be used. Sharp and continuous turns associated with stairwells makes pulling hose upstairs very difficult. The officer will call out the fire floor number and location. Ensure that all of the 1¾" hose is stretched to the stairwell opening and that no slack is left behind. Make one last check of the line before entering the building by looking back at the pumper if possible.

CLOSED STAIRWELL - DRY LINE ADVANCE

While ascending the stairs, call out each floor's landing number. Keep the hose along the outside rail of the stairwell. At each landing, turn back and pull the slack out of the hose coming up the stairwell. At the fire floor or landing just below depending on fire conditions, lay the remaining hose bundle and nozzle down in a safe and clear area. There is nothing easy about an interior stairwell advance. The more firefighters involved the easier it gets but in a dark and/or smoky stairwell it will never be easy or completely safe. Even in a wide-open stairwell multiple hazards exist. Each firefighter involved in fire ground operations within that stairwell will need to understand the hazards involved. It will be impossible to eliminate all the trip hazards especially once the line gets charged. Always use a hand rail for support as you move about in the stairwell. If it's hot and smoky, get down low and crawl along the stairwell. Visibility will be better down low and there is less chance of breaking a leg or your neck from tripping and falling.

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Flake the hose out to make advancement easier once the hose line is charged and to prevent kinks. If there is an option to flake the working line and extra hose up the stairwell consider it, if fire conditions and building design allow. It is easier to pull charged line down stairs than up. The other thing to consider is that smoke and heat moves in an upward direction typically. If your working line (and Escape path along it) might be compromised when the door to the fire area is opened, do not flake hose up the stairs. It may be more difficult to pull charged line upstairs, but flaking the working line and extra hose back down the stairs is always going to be the safest way to lay out the attack line.

TYING OFF THE HOSE LINE

At some point a firefighter needs to tie off the last section of hose coming up the stairs. When the line gets charged, gravity will tend to pull the hose back down the stairs. The last section of hose going up the stairs needs to be secured to a fixed object if possible prior to getting charged. If there is no readily available fixed object nearby, do the best you can to prevent the line from sliding back down the stairs by flaking more hose onto the landing areas.

The firefighter should begin to flake out the hose line from the highest point in the stairwell that the hose line has reached when the flakes are going to be made back down the stairwell. If you are going to be flaking hose upstairs, tie off the hose line at the fire floor landing. Pull all of the slack out of the line coming up to either point. Along that last section of hose line going up the stairs, tie a "Larks foot" with webbing. Take the rest of the Webbing and tie a "clove hitch" and "overhand safety" around a fixed object. If there is a coupling along that last run of hose going up the stairs, tie it off using the same knots. Tie the larks foot knot just down from the male coupling. When possible you should take the pressure off the coupling by tying the larks foot on the pumper side of the coupling. Fig. 1 shows a fire on the 3rd floor with smoke going to the 4th. The hose is taken to the landing below the fire floor and tied off there. The nozzle is then advanced to the fire floor. Fig. 2 shows a fire on the 3rd floor but because of favorable conditions, the hose line and nozzle were brought to the fire floor. The coupling was then tied off to a fixed object on the fire floor landing.

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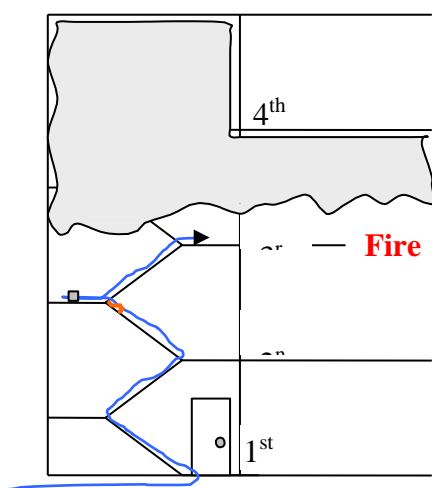


Fig. 1

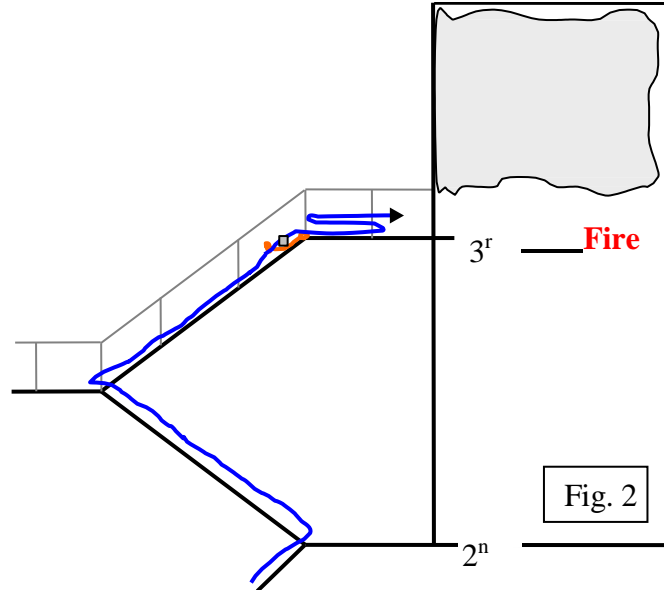
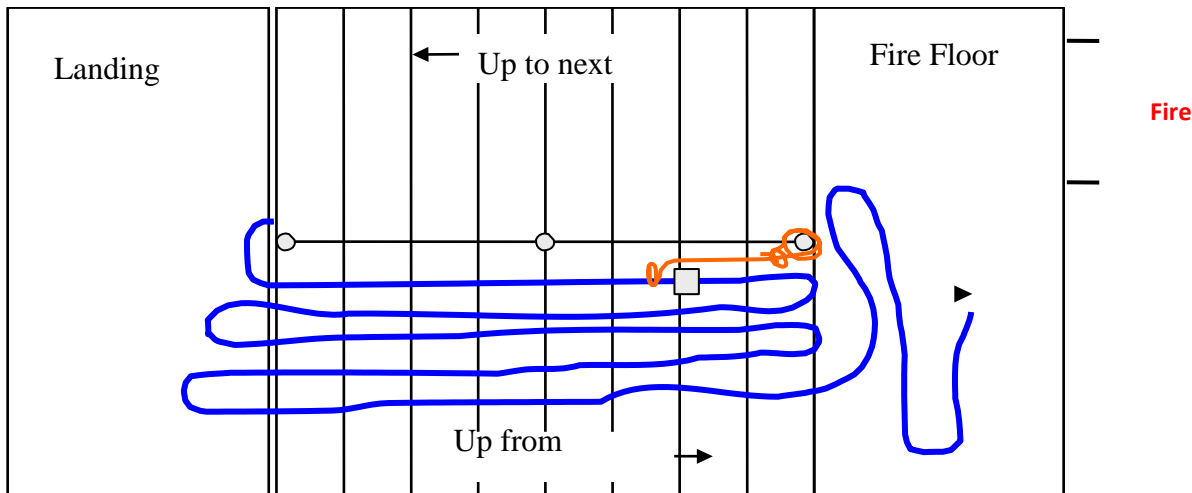


Fig. 2



If after pulling up all of the slack in the hose line, a coupling ends up lying on the last run of stairs leading up to the fire, it should be tied off. If there is no coupling lying on that run of steps, tie off the hose line. The hose line needs to be secured first, tying it off to a fixed object before you begin to flake hose out. After you have tied off the coupling or the hose line, start flaking the hose out. Two or three firefighters can work together on this evolution to speed things up. One can tie off the hose line, while another flakes the hose. This will free up the nozzle person to check their nozzle.

When the hose line is lying on the stair treads, the pressure on the couplings is not all that great. When hose lines are being suspended in air because they have been brought up the sides of buildings, or while taking advantage of open stairwells, the pressure being exerted on the couplings can cause failure of the hose line. All suspended couplings should be secured as soon as possible or when directed to do so by the officer. A support firefighter can tie a coupling off on their way up the stairs.

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OPEN STAIRWELL

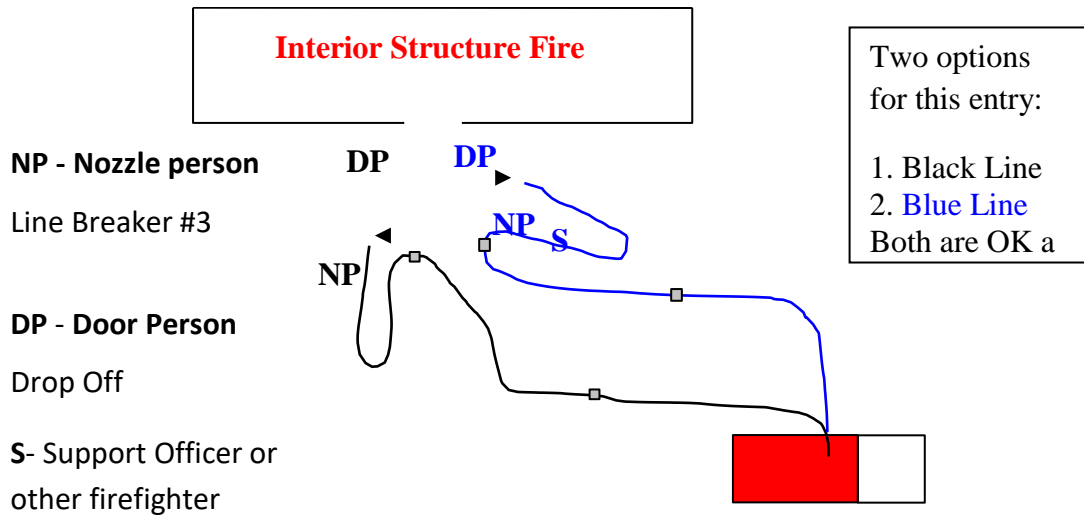
Some stairwells are not closed, meaning they are open from floor to floor. Take advantage of this stairwell design when possible. Instead of wasting valuable time and hose laying a line along the floor in the stairwell, go up through the stairwell. Keep the hose on your shoulder as you ascend the stairs. Use your free hand to move the hose over the handrail so it pays out into the opening. Maintain good control of the hose because the weight of the suspended hose will begin to pull hose off your shoulder. You'll notice that very little hose is needed to get from floor to floor. This method takes about ten feet of hose per floor instead of over twenty feet if you were to lay the hose along the steps. Go to the proper floor or landing and lay the hose bundle and nozzle down in a safe and clear area. Pull any slack in the hose line straight up the opening in the stairwell. You will need to step or kneel on the hose line to keep it from falling back over the rail. Use a Webbing to tie off the hose line to a fixed object as near to where you are as possible. When the hose is tied off, start flaking out the line so it can be charged. Start flaking out at the point where the hose is tied off to the fixed object. Start laying the hose back and forth across the landing, or up and down the stairs. Make every attempt to limit the amount of times hose is laid on top of other hose during the flaking process.

ENTRY RESPONSIBILITIES: LINE BREAKER #3 / NOZZLE PERSON

The two in two out policy mandates that a team of at least two firefighters will make entry into any building on fire. One way to ensure a well-coordinated fire attack is to follow certain standard operating guidelines. Throughout our department it is assumed that Line Breaker #3 will be the nozzle person (NP) on all fires unless otherwise directed by their officer. The nozzle person is responsible for initially securing and advancing the attack line to the fire entry area. The nozzle person is responsible for flaking out their working line, checking the nozzle settings, and calling for water. This doesn't preclude other firefighters from helping with the hose line; it just means that Line Breaker #3 is responsible.

In a safe location in relationship to the fire entry area, the nozzle person checks their nozzle to ensure that it is set on the proper settings. A typical "Safe location" would be several yards away and to the side of the entry door or access point. You want to leave room for other firefighters who need to move in or out of the area. You want to be away from the door for safety. From this position you are ready to protect your partner (door person - DP) if they need to secure the entry door.

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When the attack line is properly flaked out the nozzle person will make the proper checks on their nozzle and call for water. Once the line is charged, check the working line for any major kinks that would affect the water stream. The nozzle person then prepares the nozzle for entry. The best overall method of controlling any fire situation within the structure is to use a straight stream of water directed at the fire itself. This method will have less adverse effects on the thermal balance, thus making conditions within the structure more manageable for all firefighting teams. For that reason, the nozzle person performs a "**Pressure / Pattern**" test on the nozzle and hose stream prior to making entry. This test is performed only when a hose line will be advanced into a structure. We do not perform a pressure/pattern test on a hose line when it is going to be deployed on the outside of a structure. We simply call for water, open the line and adjust the stream to control the fire.

The **pressure / pattern test** is performed near the entry area but not in such a way as to adversely affect fire ground operations around that area.

1. Take a wide stance and bring the hose line over one of your bent legs.
2. Point the nozzle downward and away from the structure and/or other personnel.
3. Open the nozzle slowly.
4. When fully opened, move the stream collar to the straight stream position.
5. Shut the nozzle down slowly using the breakaway and then prepare to make entry.

After the pressure / pattern test the nozzle person will complete donning of all P.P.E. (click in). They are now ready to make entry. If the door leading to the fire area is open, Line Breaker #3 will safely lead the team to the fire. If the door is closed, Line Breaker #3 will take up a position to safely protect their partner Drop Off #4 as they go to secure the door. This position will be a safe distance from the door and off to

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the side when possible. The nozzle person needs to be close enough to effectively protect their partner at the door, but not be too close as to become part of the problem should something go wrong. When the nozzle person is set (crouched low with the nozzle pointing at the door) they will signal their partner to go to the door.

ENTRY RESPONSIBILITIES: DROP OFF #4/ DOOR PERSON / SUPPORT

Drop Off #4 acts in direct support of Line Breaker #3 once pump supply operations are complete, unless otherwise directed by their officer. It will be assumed therefore that when possible, Drop Off #4 will assist in advancing and flaking out additional needed hose in support of Line Breaker #3. When Drop Off #4 is going to help advance the attack line, they should properly secure the next coupling back from the one Line Breaker #3 has on their shoulder. At the entry area, flake out whatever hose is left from the advance, working away from the hose Line Breaker #3 is flaking out. Drop Off #4 will then assist with the working line as soon as possible so Line Breaker #3 can check their nozzle and call for water quicker.

Drop Off #4 will also be responsible for securing a suitable forcible entry tool for the structure involved. They need to quickly look at the structure and determine what if any forcible entry problems exist. Secure the right tool for the job and inform the engineer as to the equipment taken. In essence they will clear the way for Line Breaker #3 whether it is through a locked chain link fence or through a locked door leading into the building.

In full P.P.E. Drop Off #4 will prepare to make entry. If the door leading into the structure is open, Drop Off #4 will take up position behind the nozzle person and act in a supporting role during the advance. If the door is locked, Drop Off #4 will be the door person, and when advised, moves to the door.

DOOR CHECKS

When the nozzle person is ready to protect the firefighter going to the door, they will signal the door person Drop Off #4 to secure the entry. Before entry is made, a proper door check must be performed. This operation will be conducted in full P.P.E. The breathing apparatus will be fully donned (masked up and clicked in). If interior fire conditions aren't obvious at the entry door, check the door for heat. With the back of a partially ungloved hand and using the Thermal Imaging Camera, check if the door is hot (from bottom to top). Next with a gloved hand check to see if the door is locked. If forcible entry needs to be made, Drop Off #4 will safely do so. If help is needed at the door, use other support personnel or a Trucker. Resist the urge to use the nozzle person whose primary responsibility is to protect the firefighters at the door.

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TWO FIREFIGHTER ENTRY - DOOR OPEN

Drop Off #4 will act as the primary support firefighter setting up behind Line Breaker #3 (nozzle person) about eight to ten feet. As Line Breaker #3 moves toward the door, Drop Off #4 takes their forcible entry tool and pulls the working line toward the door. The nozzle person moves to the door and while staying low, enters the fire area with the nozzle. Drop Off #4 moves to the doorway, sets their forcible entry tool down in a clear and safe area, and then pulls the hose line into the structure with two hands. If the door swings outward (commercial) stays on the outside of the structure so you can use your body to keep the door open. If the door swings inward (residential) move to the inside of the structure and use a foot to keep the door open as you pull hose in.

TWO FIREFIGHTER ENTRY - DOOR CLOSED

As described earlier, Line Breaker #3 will be positioned to protect Drop Off #4 as they move to the door. Drop Off #4 will move to the door as the door person. Drop Off #4 will communicate their intentions to Line Breaker #3. Drop Off #4 will safely open the door after performing a five second flashover and back draft test. Their forcible entry tool is used to prop the door open during the test but removed and replaced with a door wedge during entry. After the door is opened, Drop Off #4 will secure the door with a door wedge quickly and then takes up the proper position depending on the door swing. They will let the nozzle person pass by with the hose line and then use two hands to pull in the required hose. Keep the forcible entry tool nearby but in a clear and safe area.

NOTE:

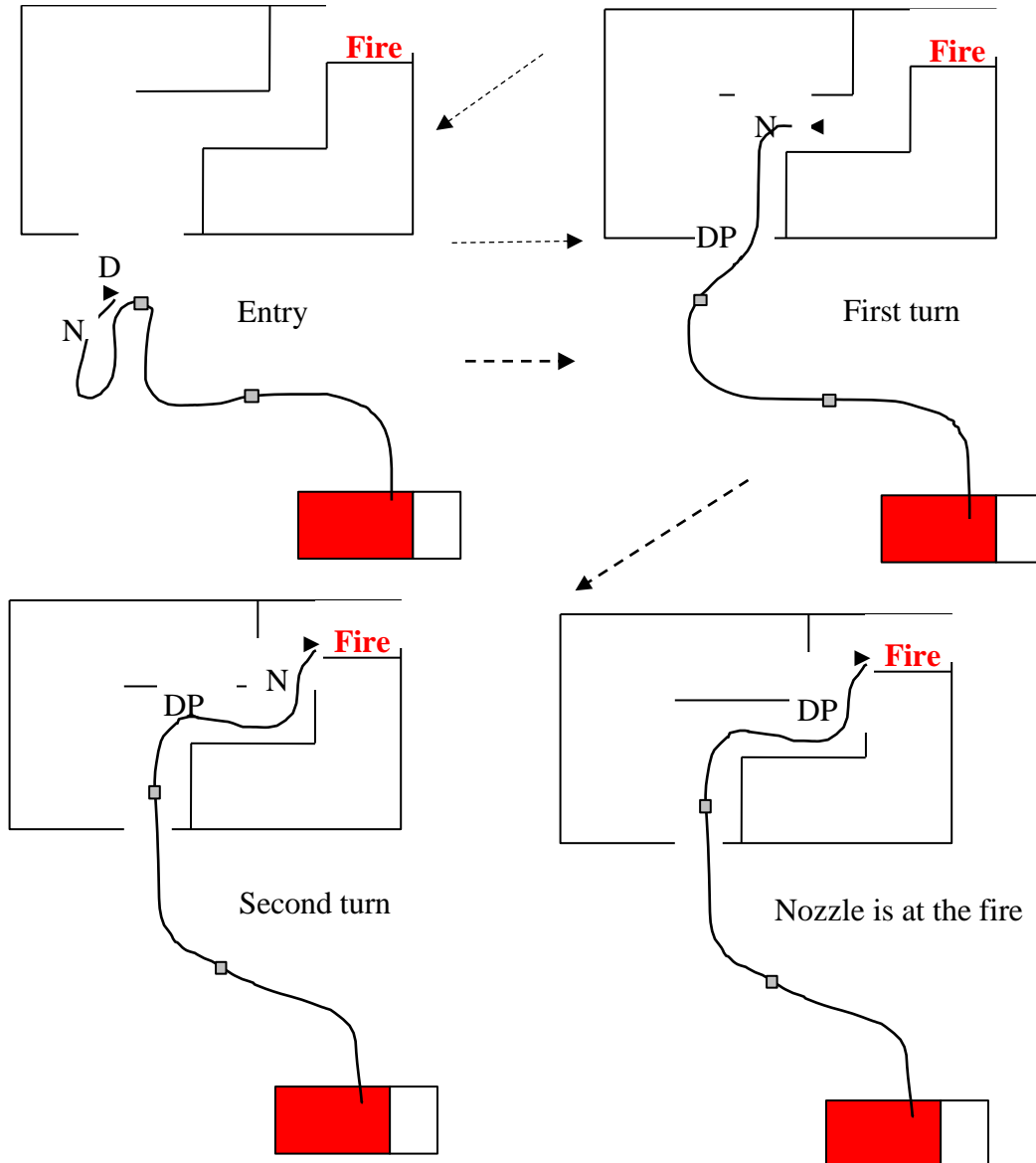
“Assisting” and “backing up” are two different terms frequently used together but have different meanings. In the proper context, to back up a firefighter is to offer assistance to that firefighter. On a typical two firefighter attack team, one firefighter “backs up” the other by “assisting” them in advancing the hose line. This could mean pushing and/or pulling the slack out of the hose line, or forcing entry into an area.

When a team of firefighters is tasked with “backing up” a crew that is already inside the structure, they are to pull and advance another interior attack line. This line is used to “back up” the crew that is inside. The “back up” line is then placed in a position to assist and protect the initial attack team if needed.

The following diagram depicts a two-firefighter team attack line advance. The entry door was closed prior to the advance. Drop Off #4 will assume door person (DP) responsibilities until called up the line by the nozzle person (NP). The diagram shows "DP" moving up the line for clarity purposes. In fact; Drop Off #4 assumes a support role once they move away from the door and could be referred to as primary support from that point on. The nozzle person can stop and pull hose at the first turn, or they can call Drop Off #4 up the line to the first turn. Nozzle person can then advance the nozzle to the fire as Drop Off #4 stays at the

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first turn and pulls hose into the structure from that position. At the second turn the nozzle person needs to decide whether Drop Off #4 is more needed where they are, or should they be moved up. Both firefighters can stay at their positions and pull hose. When the nozzle person feels that they have enough hose, they can move Drop Off #4 up the line and advance the nozzle to the fire.



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7.3--ADVANCING INTERIOR ATTACK LINES

Advancing interior attack lines in a fully charged structure is very difficult. The goal is to get as close to the fire as possible so water can be applied to the seat of the fire. Lack of visibility, obstructions and sharp turns make advancement more difficult. The "Two in - Two out" policy ensures that help will be available with this task.

NOZZLE PERSON

The nozzle person needs to stay low while they drag the hose line toward the fire. Staying low helps in several ways: there is better visibility, less heat, and the danger of stumbling over obstacles is less. There is another reason to stay low. When you are low you are usually wider. With one hand on the hose line and the other reaching out along the floor trying to find your way to the fire, you just might find a victim.

If the nozzle person can no longer pull the line, they will call out to the support firefighters for help. If necessary, follow the line back to the obstruction or turn and attempt to pull the hose through the problem area. If you have to go back to an obstruction or turn, bring the nozzle with you. Everyone along the line and in the structure, is depending on you to be ready to put water on the fire when it shows. Make sure the nozzle is in your hand or very nearby at all times.

To pull hose through an obstacle whether you just came across it during your advance, or had to go back to it because you were hung up, lay the nozzle down at the turn or obstacle. If you can, lay the nozzle down with the nozzle facing the direction of the advance (fire). If the fire should suddenly appear, your nozzle is pointed in the right direction for immediate extinguishment and/or control. Place a foot or knee on the section of hose just behind the breakaway. Now you can use two hands to pull the hose through the area without having the nozzle move away from your position.

When enough hose has been secured through the area, pick up the nozzle. Before you resume your advance, check the nozzle stream collar and ensure that the nozzle is still set to the straight stream position. Remember, if the stream collar is moved all the way to the right the nozzle will not flow water when the breakaway is opened. This is a very dangerous situation that usually causes panic and/or injury.

As the nozzle person advances to the fire they should also be looking for fire victims. If visibility is bad, use a helmet light and the light from the fire to search the area on the way to the fire. Call out "**fire department, anyone in here?**" as the team advances to the fire. Don't delay your advance too much looking for victims who aren't along your path; that will be another team's job. Get to the fire and put it out unless you happen to find a victim. If you do find a victim, ensure that your crew is protected from the fire or extinguish it quickly. Call your crew up the line for assistance. Leave the nozzle in place and make a call to your officer

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notifying them of the situation. Work with your partner to rescue the victim. Another team will advance up your line and take care of the fire.

7.4--NOZZLE PERSON'S ACTIONS AT THE FIRE

There are four actions that should be taken when the nozzle person reaches the fire, and three things to do after the fire is knocked down.

AT THE FIRE:

1. Call back to your partner that you are at the fire and that they can come up the line staying low.
2. Use the light of the fire to see if there are any fire victims lying nearby.
3. Call out to any firefighters nearby that you are going to be putting water on the fire **"get down."**
4. Check the stream pattern collar on the nozzle to ensure that it is set on straight stream.

Apply a straight stream of water onto the base of the fire until it is completely out and the area is cooled below the remaining contents ignition temperature.

THE FIRE IS OUT:

1. Check for fire extension above, around and behind the area of involvement before setting the nozzle down and entering the area further. If you are in a hallway and the fire was in an adjoining room, take the nozzle into the room and check above the doorway and behind the door for extension.
2. Check one more time for fire victims in the area with a hand light and/or tool (keep a foot in contact with the nozzle). If you feel it is necessary, place the nozzle up against the wall or doorway and perform a wall or tag line search.
3. Check in with your officer via the radio, or by face to face informing them of the actions taken ("fire is out, no extension and no victims around the area of the fire).

The firefighter can assume that once the fire is out they should perform a primary search of the immediate area. Once they have determined that there are no fire victims at the fire, they need to start heading out of the building if directed to do so by their officer. Leave the nozzle and follow the hose line out. Perform a primary search along the hose line. If there are any windows in the area that can be opened that will not hinder positive pressure ventilation, open them on the way out. Look for fire victims using a flash light and calling out **"fire department, anyone in here?"** Search off the hose line, left and right. Move the hose line if necessary to reach a victim or go into an adjacent room. Tag off the hose line with a drop bag or webbing if and or when a room is encountered and the exit out of the building is not visible. The thing to remember is; if you used the hose line to advance into the structure as you should have, you should use it to exit. Resist the urge to leave your hose line and venture off into

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unknown areas. You can use your partner to hold the door while you enter a room. You can perform a quick search of the area and return to your partner.

7.5--DROP OFF#4 RESPONSIBILITIES DURING THE ADVANCE

Drop Off #4 stays at the entry point until all the needed hose is in the structure or Line Breaker #3 calls them up the line. When moving up the line, bring the forcible entry tool and get a flashlight out to search for victims. If you're not pulling hose, you should be looking for victims as you advance up the line. Be guided by the nozzle person's directions. You may be asked to stay at a turn and pull hose, or you may be directed to come all the way up the line. At the fire, once again be guided by your partner's directions. Secure the area by ensuring that there is no fire extension and no fire victims nearby.

PULLING HOSE THROUGH A TURN

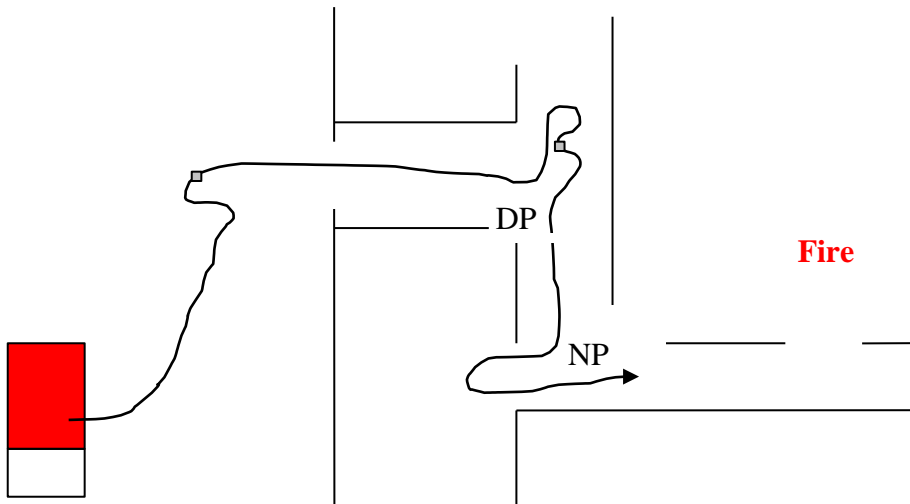
When the nozzle person comes to a turn and /or obstruction in the structure during their advance to the fire they need to make a decision based on fire conditions, available personnel, and knowledge gained prior to entry. From the outside of the building every firefighter needs to perform a quick size up. Look for type of building construction, and fire location in relationship to entry, secondary exits, and windows. Take a second to understand the potential rate and direction of fire spread, and finally know how many firefighters are going to be available for your assigned task.

With that information, the nozzle person can now make the proper decision at each turn they come to. If they have three or four firefighters on the attack line advance, they can usually place a firefighter at every turn along the way to the fire. That is the best and safest way to advance an attack line within a structure. Every firefighter is positioned low at each turn. They pull hose through their turn, passing it on to the next firefighter's position as they pull hose. The nozzle person only needs to worry about advancing the nozzle to the fire. If on the other hand the nozzle person only has their partner Drop Off #4 they have an entirely different advance problem. Additional hose will need to be secured to their position before moving on to the next turn.

When the nozzle person comes to the first turn, he or she may either stay there and pull hose or call the door person Drop Off #4 to that position. If that turn is straight in from the front door, the door person can probably pull hose from the turn just as easy from the front door. If that is the case, the nozzle person should call up the door person. Now you have the Door person (DP) at the first turn and the nozzle person (NP) advancing the nozzle to the fire. NP now comes to another turn. They are now out of personnel to move up the line. The nozzle person lays the nozzle down and either kneels on the hose just behind the breakaway, or places a foot on it. Stay as low as possible and pull additional hose to your position. You need to keep the nozzle within immediate reach in case the fire suddenly appears. As you pull hose it will begin to gather around your area. Try to either coil it in manageable circles, or pass it into

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another area which will not hinder the advance. Drop Off #4 can be doing the same thing from their position. Eventually other firefighters may come to your aid and your team will be able to resume the advance. If not, continue to coil additional hose at your position until you believe there is enough line to make it around any other turns and to the fire.



NP calls DP to 1st turn.

DP moves up to the 1st turn pulling and coiling additional hose.

NP moves to next turn, pulls and coils additional hose to reach the fire.

With enough hose coiled both firefighters can move one more time if necessary.

7.6--THREE FIREFIGHTER ENTRY - DOOR OPEN

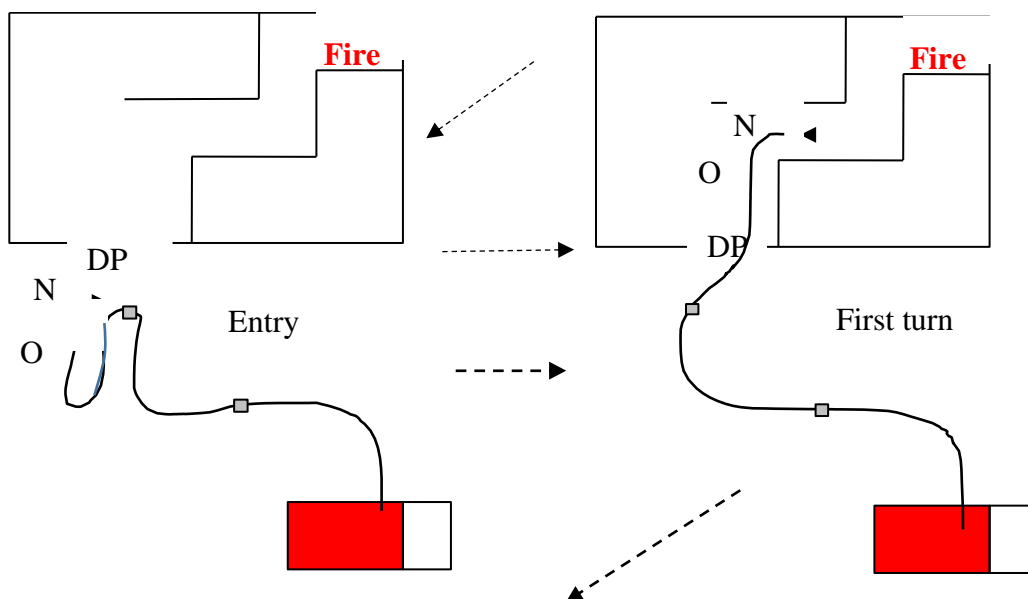
Line Breaker #3 is nozzle person (NP) as usual. Drop Off #4 (DP) will once again act as support only this time they will drop to the back of the line. Their job will be to stop at the doorway, lay their tool down in a safe area and pull all the required hose into the structure. Drop Off #4 will move up the line when told to do so, or when all of the hose has been advanced into the structure. The third firefighter is usually the officer (O) and is the primary support person positioned behind Line Breaker #3 as they advance to the fire. The third firefighter should take up position about eight to ten feet back from the nozzle person. You don't want to crowd the nozzle person. Secondly the primary support firefighter needs to be pulling hose for the nozzle person. If the third firefighter is not actively pulling hose, they should be searching for fire victims with their flash light and/or Thermal Imaging Camera along the advance. The third firefighter can also be responsible for making all communications to I.C. during the advance.

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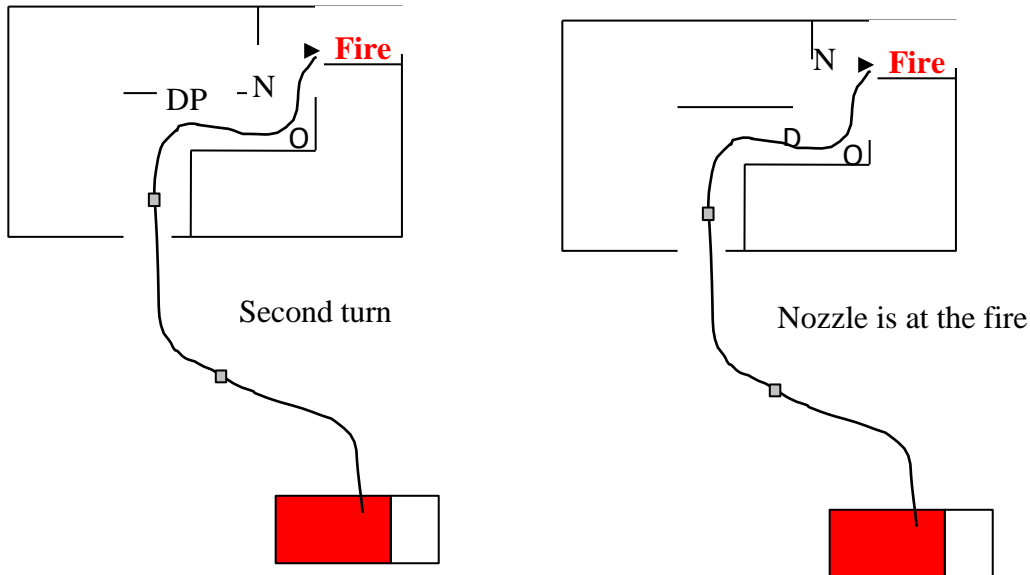
7.7--THREE FIREFIGHTER ENTRY - DOOR CLOSED

Line Breaker #3 will protect Drop Off #4 with the charged line as Drop Off #4 goes to the door. Drop Off #4 will move to the door and when safe, secure it. The officer or third firefighter will take up position behind the nozzle person and advance into the structure with them. Drop Off #4 will secure the doorway and move to the side as the nozzle person and officer/third firefighter advance into the structure. From a safe position, Drop Off #4 will continue to pull hose into the structure until advised otherwise, or until all the needed hose has been advanced to the fire. When Drop Off #4 moves up the line, they will bring their forcible entry tool with them. If they are no longer pulling hose, they should be using their flash light to search for fire victims off the hose line.

The diagram on the following page depicts a team of three firefighters advancing an interior attack line to the fire. NP is the nozzle person (Line Breaker #3), DP is the door person (Drop Off) and "O" is the officer who will be the primary support firefighter. Although the officer is part of the team, Line Breaker #3 leads the advance and directs the rest of the team on how best to assist in the advance. This is not taking any authority away from the officer; they are still in charge of the operation. It only establishes that the best person to give directions concerning the advance is the person leading it. They know what they need and what it will take to get the nozzle to the fire once the team is inside the structure.



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This scenario depicts a three firefighter advance into a structure which had a closed entry that needed to be secured. If the door would have been open prior to entry, the door person (Drop Off #4 / DP) would have been positioned behind the officer (O). When the team advanced to the door, Drop Off #4 would stop at the door and pull hose from that position until advised otherwise. Working together, the team spreads out and pulls hose into the structure. The support firefighters need to resist the urge to move toward the nozzle prior to being called forward. Support firefighters need to stay in place and pull hose. This is the best way to get the nozzle to the fire. Don't move up until the nozzle person calls for the move. When moving stay low because the thermal balance may change. Use a flashlight to search the immediate area for fire victims. If a victim is found, stop the advance and make an attempt to either extinguish or control the fire from that point. Leave the hose line in place and remove the victim, three in - three out. Advise I.C. that you have found a victim and are attempting rescue. I.C. will move the "Backup line" crew into position to take over control and extinguishment of the fire.

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7.8--PROGRESSIVE HOSE LAYS

Progressive hose lays are used when the original hose line cannot reach the fire. The fire is or will soon be too far away to be controlled by any of the pre-connects, or at least the one that was secured.

Progressive hose lays call for a coordinated effort to secure and add additional hose lines to the original line.

The officer will direct a certain diameter and amount of hose be added to the original line. A safety circle is made around the area where the change-over will occur. On a vegetation fire, wet the area around the extended line to ensure that the area cannot be overrun by fire during the change-over. Within the confines of a structure fire, locate a sanctuary of sorts where personnel involved will be protected from the fire during the change-over. In a structure fire because of visibility and the stress of the situation, it will take longer to complete the change-over. Take that into consideration when determining the location and timing of the change-over. It is not always required or possible, but if a breakaway and nozzle are brought with the additional (progressive) hose line already attached, the change-over is easier and quicker, and therefore safer.

PROGRESSIVE HOSE LAY - STRUCTURE FIRE

Within the confines of a structure fire the progressive hose lay becomes more difficult. It is dark, hot and smoky, communication is bad and visibility is usually worse. The area is probably confined and crowded. Properly flaking out hose is difficult at best.

Interior attack lines typically consist of either 2½" or 1¾" hose. The officer will more than likely direct that a certain amount of 1¾" hose be added to the original hose line. If the original attack line was a 2½" attack line with the 2½" select-o-flow nozzle, the firefighter can add a 1¾" progressive line right to it. The 2½" select-o-flow nozzle has a 2½" breakaway and a 2½" to 1½" reducer attached as part of the nozzle. There is no need to bring a reducer to add 1¾" hose to a 2½" attack line with a select-o-flow nozzle. Simply remove the nozzle from the reducer and extend the new 1¾" hose line.

Once again, make every attempt to bring another breakaway and nozzle with the new line anytime you do a progressive hose lay, especially during an interior attack.

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SHOULDER LOAD

The officer has called for one hundred feet or less, of additional 1¾" hose to be added to the original attack line. There are a couple of options available. One way is to secure hose from one of the remaining crosslays. Shoulder load the directed amount of hose leaving the breakaway and nozzle attached. This shoulder load does not have to be flipped onto your shoulder. You will not be paying it out from the apparatus on the way to the fire. Get some help breaking the appropriate coupling to separate the hose bundle from the hose bed. As you approach the fire area (typically the one-hundred-foot coupling) drop the bundle off your shoulder while maintaining control of the female coupling and the nozzle. Now as you continue toward the original nozzle with the new female coupling and nozzle in your hands or over your shoulder, the hose you dumped onto the ground will flake out. This maneuver is not always possible or practical on an interior progressive lay, but works quite well outside. If you are attempting this during interior operations, you will more than likely be crawling on the floor. Expect the hose line not to flake out as well as it would on the outside. As you approach the nozzle person, call out "**hose**." That will be their signal to shut down and remove their nozzle. The call "**hose**" should be made at the one hundred foot coupling whenever possible.

When you have made it to the original nozzle, hand the new nozzle and hose line to the nozzle person and take the male coupling (breakaway) they should be handing you. The original nozzle person would have removed their nozzle when they heard you approaching (on the call "**hose**"). Attach the new female coupling from the hose line that you brought to the original breakaway just handed to you, and then standby for the call for water. Make every attempt to flake out the new hose line to prevent kinks, understanding that this will be difficult during interior operations. The call for water should come quick because you brought a hose line with the nozzle already attached. If the nozzle person is directed to add the original nozzle to the progressive hose line, the call may be delayed. This will give you time to go back and flake out the hose line. When the call for water comes, charge the line slowly to prevent injury to personnel, and take up the appropriate support position. Assist the nozzle person in advancing the new line to the fire.

HIGHRISE HOSE PACKS

A second option is to secure one of the high-rise hose packs. If the progressive lay is going to be made off a 2½" attack line, securing hose pack "A" offers more options to the officer. Hose pack "A" has a 2½" to 1½" gated wye and one hundred feet of 1¾" hose with a breakaway and a 200 GPM select-o-flow nozzle. Placed between the breakaway and the select-o-flow nozzle is a 7/8-15/16" smooth bore nozzle. The gated wye can be used to supply two progressive lines, one for attack and one for backup if needed. A backup line should be advanced in support of the original attack line on all interior fire ground operations. Other options available to the officer when using hose pack "A" will be described when

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the "Condo" lay is introduced later in this guide. When adding hose pack "A" to a 2½" attack line, shut the line down with the 2½" breakaway. Remove the reducer and nozzle from the 2½" hose line. Attach the gated wye from the hose pack ensuring that both gate valves on the wye are in the closed position.

The officer could have directed the firefighter to secure hose pack "B." If the progressive line is going to be attached to one of the 1¾" pre-connects during interior operations, secure highrise hose pack "B" This pack has a 2½" to 1½" reducer on the loose female coupling, with one hundred feet of light weight hose. Both packs come with a breakaway and a 200 GPM select-o-flow nozzle. If you already know that you can only add to a 1¾" line, there is no need to bring the "A" pack. At the original nozzle, remove and secure the reducer and then attach the loose female coupling to the original breakaway.

The highrise hose packs are rolled in such a way as to self-flake when charged. They can be laid down right at the nozzle person and added to the original line. With the correct pressure, the charged coil unrolls and the nozzle person can advance on the fire with a good attack stream. This roll is called the "Cleveland roll" and a variation of it is also used for the wildland hose pack.

DEPLOYING THE HIGHRISE HOSE PACK - INTERIOR OPERATIONS

Secure the highrise hose pack that the officer asked for (hose pack "B") informing the engineer of the equipment taken. This pack can be carried over the shoulder leaving one hand free to clear the way. When you get to the structure, fire conditions will probably force you to your knees. Advancing along the floor offers better visibility and a reduction in heat, not to mention lessening the chance of falling or tripping. Once inside the hose pack can be dragged to the nozzle person. The nozzle person will be expecting you but you still need to announce to them that you are nearby so they can begin to break down their nozzle. Lay the pack down near the nozzle person, usually just forward of the original nozzle position (toward the fire). Remove the retaining strap and then move back to the original hose line. Bring the retaining strap and loose female coupling from the hose pack. Remove the reducer from the coupling and attach the loose 1½" female coupling from the hose pack to the breakaway from the original attack line.

When the nozzle person hears that the hose pack is near, they will close the breakaway if they are flowing water. The nozzle person will then remove the original nozzle from the hose line and secure it properly. Nozzle person should move forward of the original line and prepare to accept the hose pack. When the hose pack is brought up and laid down, the nozzle person will assist in removing the retaining strap. The two firefighters will work together to make the pack into a circle leaving the nozzle in place. The nozzle needs to be left alone until the loose female coupling is taken back to the "supply" line breakaway. If the nozzle is removed from the inside of the circle, it will get tangled with the female coupling's hose line going back to the supply male. When the firefighter has the hose pack's female

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coupling at the supply breakaway, they should let the nozzle person know that it is **"your nozzle"** or something along those lines. The nozzle person is now able to take the nozzle from the circle of hose and prepare for the advance.

The support firefighter attaches the two lines together and waits for the call for water. They will charge the hose pack when the nozzle person calls for water, then secure the retaining strap to the supply line. The nozzle person will check the new nozzle and call for water anytime they want after the support firefighter tells them that it is their nozzle. If possible, move toward the fire a few feet with the nozzle before calling for water. This will allow a little room for the hose bundle to deploy properly. When the line is charged, the nozzle person can safely advance to the fire. The support firefighter will move forward and take up position just past the hose pack. They will pull hose from there, feeding hose line to the nozzle person until they are called forward. When pulling hose from the hose pack as a support firefighter, face the hose pack and pull line with two hands feeding the line toward your back.

If hose pack "A" was placed into operation for a progressive hose lay, a firefighter needs to secure the gated wye valves using the webbed harness (retaining strap). Secure the valve in use in the open position and the valve not being used in the closed position. These valves are easily moved during fire ground operations, especially in dark and smoky environments. They can be inadvertently shut off endangering firefighters on the attack line. The valve not being used can get kicked open resulting in a loss of pressure to the attack line and unnecessary water damage. There are three bands of webbing crossing the retaining strap. A female buckle is attached to the strap and a male buckle is attached to the end of each band. Take a couple of wraps around the hose and valve with the male end of the band. Fasten the male buckle to its female counter part on the strap and then pull the slack out of the band. Ensure that the gate valve handle is secured properly from movement.

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7.9--ADVANCING AN ATTACK LINE UP A LADDER

Sometimes stairwells are not available or accessible to the firefighters, and a ladder is the only way to gain access to upper floors. There are several methods used to get hose lines to upper floors using a ladder. A hose line can be advanced up the ladder dry or charged. The firefighter can gain access to the appropriate floor via the ladder and then drop a rope line down. Another firefighter can tie off the hose line from below. Then the firefighter on top can now pull the attack line back up to their position.

LADDER PLACEMENT

With all ladder advances, the ladder should be placed at least two rungs above the area of ladder contact with the structure. Ladders placed for roof operations should be extended even further for greater visibility and ease of access. Try to keep the placement of ladders onto balconies around the two-rung mark. Further extension creates a hazard caused by the ladder top extending into a common walking area for firefighters. At night or during smoky conditions the top of the ladder could cause an injury to a firefighter who walks into it. Ladder placement into a window should be two rungs, with the ladder being positioned to the right side of the window opening. This placement is for typical fire ground operations where firefighters will be using the ladder to secure equipment as they enter and/or exit the building. If the ladder is going to be used for rescue of a fire victim, the ladder should be placed in the middle of the window, and the top of the ladder should be positioned at or just below the window's sill height.

ADVANCING THE HOSE LINE - DRY

Advance the attack line as you would normally. If you know that the ladder is going to be off your left side as you approach, place the nozzle over your left shoulder before you begin your advance. If the ladder is going to end up right in front of your approach, it doesn't matter which shoulder the nozzle or one-hundred-foot coupling is on. In any case, as you approach the ladder look for a clear and safe area to lay the one hundred feet coupling down. Do not lay the coupling down within ten to twelve feet of the ladder. Leave that area clear for other personnel while you flake out the line. You do not always have to flake out the hose line prior to advancing up the ladder. If on your approach the hose line self-flakes; meaning that the hose is laid out basically good enough to allow you to get up the ladder, you do not need to stop and flake it out. You can simply lay the coupling down and move to the base of the ladder. If you do have to lay the nozzle down to flake out the hose, lay it down in a clear area about ten to twelve feet from the ladder. Flake out the hose line to make advancing up the ladder easier. Check to ensure that the hose will not get hung up on any objects lying on or affixed to the ground.

Pick up the nozzle and face the ladder. Bring the nozzle under either arm and across your chest to the opposite shoulder. Bring the nozzle up and over that shoulder so the nozzle comes to rest on your back.

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Example: Nozzle comes from under the right arm, across the chest to the left shoulder, up and over that shoulder with the nozzle coming to rest on the back

Ask for a firefighter to foot the ladder. Once properly footed, both hands are free to climb the ladder. Make one last check of the nozzle to ensure its placement on the back and that the breakaway is still in the closed position. You want the nozzle far enough down the back so the weight of the nozzle and hose will keep it from falling off your shoulder while you ascend. The breakaway's handle can get moved as you place the nozzle over your back.

Carefully ascend the ladder being mindful of the hose and nozzle. Check the condition of the locks on the ladder as you ascend. Call out "locks" if everything is OK. If a lock isn't set, come back down the ladder and fix the problem. At the top of ladder check the area for head room if necessary. Dismounting into a window is a little more difficult than dismounting onto a roof or balcony. Prior to dismounting the ladder, structural condition and support needs to be verified for safety reasons. When possible, use a tool to perform the preliminary test while maintaining a firm hand hold on the ladder. Once confident that the tested surface can be stepped on, do so while maintaining your grip of the ladder. Before letting go of the ladder, make sure the area can support your full weight. You most likely will not have a hand tool available if you are advancing a hose line up the ladder. If possible let a support person go up the ladder first, they will have a forcible entry tool as part of their required equipment. If you do not have a tool, use your foot while maintaining a firm hold on the ladder. Do not let go of the ladder until you are sure the area around the ladder will support your full weight and that of the equipment you brought.

Whether you are a support firefighter or the nozzle person, **EVERYONE** checks the area around the ladder prior to dismounting, and calls out the results of their test "**Roof safe, sill safe and/or floor safe!**"

Once the area has been checked and proven to be structurally sound, dismount from the ladder. The hose line and nozzle are still draped over your shoulder. When dismounting onto a roof, you are basically off the ladder while you are conducting the final structural test. Continue moving away from the edge of the roof onto a safe and stable area from which you will be able to pull up additional hose.

Dismounting onto a balcony is a little different. As you move to the top of the ladder, check for overhead obstructions (patio over hangs, roof edges etc.). At the top of the ladder use your foot to check the structural condition of the balcony hand rail. While maintaining a hold of the ladder, stomp on the rail with your foot and call out the condition i.e. "**rail safe.**" After the condition of the rail has been determined to be safe, move onto the rail straddling it with both legs. Place one leg over the rail leaving the other leg on the ladder side of the rail. While maintaining a firm hold of the ladder, stomp on the floor surface with your foot. Call out the condition of the floor "**floor safe.**" Once again, if you are a support firefighter, use your tool not your foot to conduct these tests. After the condition of the floor

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has been determined to be safe, climb off the rail and onto the floor area near the ladder. You are now ready to pull up the needed hose line.

Dismounting into a window is basically the same as onto a balcony. Check the window for obstructions that would hinder your entering the building. As with most ladder advances, a support firefighter should go up first to clear the way and make the preliminary structural checks. Assuming the window area is clear of glass, curtain rods, drapes etc. check the overhead clearance as you approach the window. Move to the top of the ladder as best you can be depending on overhead clearance, and test the condition of the sill area. With a firm hold of the ladder, stomp your foot on the sill and call out the results **"sill safe."** Duck your head and move into the window, straddling the sill with both legs; one on the inside and one on the outside of the building. While maintaining a firm hold on the ladder, check the condition of the floor area by stomping the floor with your foot. Call out the results **"floor safe."** After the structural checks have all proven to be safe, move into the room and prepare to pull hose.

With all of the previously detailed advances, the hose line and nozzle remained on your shoulder. After gaining access to the directed floor or roof area, it is now time to pull up the needed hose line.

1. Place the nozzle onto the floor or roof right next to the area where you will be pulling up the needed hose.
2. Depending on fire and smoke conditions, step or kneel on the hose line just behind the nozzle.
3. Using a hand over hand technique, pull up all the needed hose while maintaining control of the nozzle.
4. Be aware of what is happening to the hose line that you are pulling up. If you are the nozzle person and the only firefighter performing the task, stop pulling hose occasionally and check out what is happening with the line you are pulling up. Take the appropriate actions to position the hose line where it needs to be for the eventual advance. If you are a support firefighter pulling up hose for the nozzle person, keep pulling hose until all the needed hose has been brought up to your position, or until the nozzle person directs you to stop.
5. When all of the needed hose has been secured to your position, the hose line needs to be tied off.

If you are pulling up a 3" supply line for an eventual progressive lay (Condo lay) you may only need to secure ten or twelve feet to your position. If you are directed to advance an attack line from the ladder, you are going to pull up all the hose the officer asked for unless otherwise directed. You may or may not stop at the 100' coupling. In any case if there is a coupling nearby after pulling up all the needed slack, tie it off. Tie the Larks foot on the pumper side of the male coupling, and then a clove hitch and safety on a fixed object.

6. If after pulling up all the needed hose line there is no coupling nearby, simply tie off the hose line anywhere along the line near your position.

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As a support firefighter, if you pass a suspended coupling whether it is going up the side of a building or up through an open stairwell, the hose line needs to be tied off in such a way as to support that suspended coupling. The line should have already been tied off at its highest point by the original crew assigned to advance the hose line. Support or Back-up line personnel will probably be tasked to take care of any suspended couplings. Tie a Larks foot on the pumper side of the suspended coupling, and then a clove hitch and safety to any nearby fixed object whenever possible using Webbing. If necessary a running bowline can be passed down the line, and the coupling secured that way. You will need to use the utility rope to perform that task. You will not use the highrise escape pack rope, and you should not use the drop bag line. Both should be kept in reserve for rescue or survival options.

TYING OFF A CHARGED HOSE LINE

At times, charged attack or supply lines need to be advanced up a ladder. If fire conditions warrant that a hose line be charged and ready to go without delay prior to advancing up a ladder, the hose line will be tied off using a Webbing. A firefighter can also pass a charged hose line up to another firefighter on a single story roof, a second story landing, or even into a 2nd story window quite easily. If the area where the line is needed is too high or inaccessible, advancing a charged line up a ladder may be the only option. There are two methods acceptable for tying off a charged attack line:

METHOD ONE - LARKS FOOT AND TWO HALF HITCHES

Using webbing, tie a Larks foot around the hose near the male coupling and breakaway. Tie two half hitches on the nozzle, one before the breakaway handle and one after. Have the webbing between the two half hitches pass over the breakaway handle. As you place tension on the webbing coming away from the half hitches a closing force will be placed on the bale. This force will prevent the breakaway from being inadvertently opened. If the remaining section of webbing is too long, tie an overhand knot in it to take up some slack.

METHOD TWO - BREAKAWAY BALE HITCH

Once again using pre-tied webbing, tie a Larks foot around the hose near the male coupling and breakaway. Make sure the breakaway is in the closed position (bale forward). Make a loop in the webbing and pass it up through the breakaway's bale. Take the loop and pass it over the stream collar. Pull back on the end of the Webbing to set the loop into position around the nozzle. Now bring the rest of the webbing forward and tie one half hitch over the nozzle. Tie an over hand knot on the remaining Webbing to take up slack. As you place tension on the webbing coming away from the half hitch, a closing force will be placed directly on the bale.

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ADVANCING A CHARGED HOSE LINE UP A LADDER

If access is going to be made through a window, place your right arm through the shortened loop portion of the webbing. Place the webbing loop over your shoulder. The nozzle should come to rest along your side and about half way down your back. The right shoulder is used so the loop of the Webbing can be easily placed over the top of the right beam of the ladder. Ladders are normally positioned to the right side of window openings. On a balcony or roof it doesn't matter which shoulder the loop is placed. If the hose is coming from the left, placing the strap on the right shoulder will offer better stability going up the ladder. The weight of the hose will keep the loop on your shoulder better.

Ask a firefighter to foot the ladder and to help keep the hose on your back as you advance up the ladder. Safely climb the ladder checking the condition of any ladder locks as you pass them. As you near the top of the ladder, check for any overhead obstructions. You need to move to the top of the ladder so that you can slip the Webbing off your shoulder and onto the beam of the ladder. Place the loop of the strap over the top of the beam on the same side of the ladder as the shoulder carrying the hose. Strap on the right shoulder - loop over the right beam. At the top of the ladder place your arm over the beam so the portion of the beam that is extending over the top rung is in your arm pit area. Now you can use your left hand to slip the loop off your shoulder and over the beam. Pull your right arm out of the loop and dismount from the ladder after checking for structural stability.

Properly dismount from the ladder calling out all of the required structural checks. Lift the loop up, over and off the beam. Pull the nozzle and some extra hose to your position. Pull enough hose (eight to ten feet) into the area to safely secure the nozzle while removing the Webbing. The Webbing needs to be removed from the hose and nozzle so it can be used to tie off the hose line or 100' foot coupling later. Safely secure the nozzle from falling back to the ground by stepping or kneeling on the hose line near the nozzle. Place your foot or knee about two to three feet down the line from the knot securing the hose line. This distance will allow enough movement of the nozzle to make removing the Webbing easier. Keep your foot or knee on the hose line as you pull up the rest of the hose.

Either alone or with help from other firefighters, pull enough hose up to your position so that the nozzle or breakaway can reach the assignment. Use a hand over hand technique to pull the hose line up from the ground. Be aware of what is happening to the charged hose line that you are pulling up. If you are the nozzle person and the only firefighter performing the task, stop pulling hose occasionally and check out what is happening to the hose that you are pulling up. The charged line will wonder away from your position more readily than the dry line will. It is also more difficult to control the nozzle while pulling up charged line. In any case, you need to control the nozzle keeping it under your foot or knee at all times, and maintain some kind of control over the additional hose line that you are pulling up. Take the appropriate actions to position the hose line where it needs to be for the eventual advance.

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If you are a support firefighter pulling up hose for the nozzle person, keep pulling hose until all the secured hose has been brought up to your position, or until the nozzle person directs you to stop.

Using the Webbing, tie off the working line coupling or a section of the hose line at its highest point. Tie a Larks foot around the hose on the pumper side of the male coupling when available, and a clove hitch with safety around a fixed object. Because of the "Two In / Two Out policy" a firefighter will not be alone in a fire environment. Maintain a position near the ladder until another firefighter arrives and then safely advance to the fire.

A DRY ADVANCE UP A LADDER THAT INADVERTENTLY GETS CHARGED

Occasionally due to a lack of good communication and coordination at a fire, a dry hose line being advanced up a ladder accidentally gets charged while the firefighter is on the ladder. If the hose line should inadvertently get charged while ascending the ladder, stop your ascent and lay up against the ladder cradling the ladder beams with both arms (hug the ladder). Look away from where the nozzle will be coming up. If the hose line from the ground is coming up from the right side of your body, and the nozzle has been placed over your left shoulder, look to the right. The hose line will fill with water and move the nozzle up and off your back coming to rest against the ladder. The force of the water filling the hose line can knock you off the ladder, especially if the nozzle hits you in the head or face. It is very important that you look away from the direction the nozzle will be coming.

The best thing to do if the line gets charged while you are on the ladder is to lower the nozzle and hose line back down to the ground. Properly tie it off from there, and then begin a new advance up the ladder with the now charged line. Another method is to tie the line off from the ladder. "Leg lock" into the ladder and then properly tie off the hose line. To leg lock on a ladder, place a foot between two rungs and then back onto the beam. Step down to the next rung if necessary to get comfortable. Now your hands are free to secure the hose line while your legs keep you safely on the ladder. Tie off the charged hose line and nozzle using one of the two previously described methods. When set, unlock your legs from the ladder and then properly continue your advance up the ladder.

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7.10--HOISTING HOSE USING A ROPE

When the structure involved is multistory, it is standard operating procedure to bring along a drop bag. There are rope bags carried in the compartment on our apparatus. They each contain 75' of utility rope. This is the preferred rope to use when hoisting equipment and/or hose lines. It is stronger and easier to handle, especially with structure gloves on. The other rope bag carried and secured at all high-rise incidents is the high-rise escape pack. It is against department policy to use the escape pack rope for any purpose other than victim or self-rescue. The drop bag line is another piece of equipment that should be secured but held in reserve at fires. The rope from the drop bag can be used during search and rescue operations as a tag line. The drop bag line can also be used for self-rescue of a trapped firefighter. The diameter of the drop bag line is small which hinders the firefighter's ability to get a firm grip when hauling heavy equipment upward.

FROM ABOVE

From the elevated area, locate a fixed object to anchor the end of the rope. Use the carabineer on the end of the line to tie a tensionless anchor to a fixed object. If there is no carabiner available, tie a bowline or a clove hitch with safety onto the fixed object. Do not toss a drop bag down to the ground with a carabiner attached to the bag. Damage to the carabiner may result without knowledge.

Look below at the drop zone to check that it is all clear. This drop zone should not be adjacent to any of the building's entrances and/or exits. Call out **"clear, rope coming down"** then toss the bag down and away from any opening into the building. A good practice is to toss the rope bag out far enough from the building so that the firefighter below will not be in danger from falling debris or equipment from above as they retrieve the drop bag.

When using rope to secure a hose line for hoisting, a clove hitch is used around the hose instead of a Larks foot. In a safe area away from the building, form a clove hitch in the rope so the knot can be slipped over the nozzle and run down the hose line. When properly tied, the section of rope going up will cross over the section of rope going down in the knot (the knot will close itself as tension is placed on both ends). Position the clove hitch on the hose no further than one foot from the breakaway. Working off the "up line" tie a half hitch before the shutoff bale, and then another half hitch after the shutoff bale. The line between the two half hitches will run over the shutoff bale keeping it in the closed position. The final half hitch will secure the nozzle and in fact be the most responsible for the lift. For that reason it is important to ensure that the nozzle is firmly attached to the breakaway. Before sending the hose line aloft, check that the breakaway is being kept closed by the two half hitches, and that all fittings are firmly attached to one another.

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After properly tying the nozzle, the firefighter below will call out **“ready on the nozzle.”** From the top pull the rope up hand-over-hand, preventing the nozzle and breakaway from making contact with the building. From below keep tension on the tag line, also preventing the fittings from making any contact with the building. If along the advance you run out of tag line from below, switch over to the hose line using it as the new tag line. When the nozzle approaches the top of the lift call out **"nozzle."** The firefighter on top will then reach over the edge and lift the nozzle up and over. When the firefighter has the nozzle secured to their position, they will call out **"my nozzle."** This will release the firefighter below from further responsibility concerning the tag line.

The firefighter on top will need to remove the rope from the hose line before they go any further in the evolution. They will pull enough hose up to their position so they can safely untie the knots and remove the rope from the line.

1. In a safe area, step or kneel on a section of hose that will allow you to untie the knots and remove the rope from the hose line.
2. While controlling the hose line and nozzle, pass the slack in the rope back down to the ground. Look back over the edge and call out "clear, rope coming down."
3. With the tag line out of the way, pull up the needed hose line. Maintain control of the nozzle, keeping it close and secure with either a foot or knee.
4. When all of the required hose has been advanced to your position, stop pulling and tie off the hose line using webbing. To prevent the hose that you have just pulled up from going back over the edge, either step or kneel on it depending on fire conditions.
5. Properly tie off the hose line at its highest point to prevent it from falling back over the edge when it gets charged. If a coupling is going to be tied off, place the Larks foot on the pumper side of the male coupling.

With the hose line properly secured, you are now prepared to continue with the evolution. If you just secured an attack line, flake out the hose starting at the point where the hose is tied off to the building, and then work toward the nozzle. Try to eliminate the potential for kinks by limiting the amount of turns in the hose and places where hose is on top of other hose. With the hose properly flaked out, check your nozzle and/or breakaway and then call for water. If you are alone, wait for your partner before advancing into an I.D.L.H.

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TOSSING LINE

When equipment or hose needs to be hoisted to upper levels and there is no rope at those upper levels, one solution is to toss rope up. The height that rope can successively be tossed upward is based on several factors. Typically, three stories are the limit for tossing any rope upward.

Tie off hose lines and equipment in a safe area, away from directly below any working area or hazardous condition. If you can be hit from above by falling equipment, you are too close.

DROP BAG

Remove enough rope from the drop bag to tie off the hose line, and maintain a tag line from below.

1. Create coils of rope in your non-throwing hand as you pull out the needed line.
2. If the carabiner is still attached to the bag, remove and then secure it properly. We do not throw carabiners up with the drop bag. The firefighter above should have their own personal utility carabiner, or be prepared to tie off the rope using one of several other anchor knots.
3. Open the drop bag completely so the rope will come out easily as the bag is tossed upward.
4. Check with your partner above to make sure that they are ready to catch the bag.
5. Call out "**clear**" and then toss the bag upward. An under hand or side arm toss is more reliable than an over hand toss.
6. When you hear from the firefighter above that they have the drop bag, you can begin to tie off your hose line. When you have tied off the hose line properly, call out "**ready on the nozzle.**"

UTILITY ROPE BAG

The utility rope bag is too heavy to throw very high. You will probably need to secure rope from the bag and then toss up the loose end.

1. Open up the bag completely, and then lay it down with the opening facing the building.
2. Make a series of tossing coils by creating manageable loops of rope. These loops should be approximately eighteen inches long. If the loops are approximately eighteen inches long, then each loop contains about three feet of rope. Try to make enough loops to reach the height of the toss. If that is impractical due to the height, make as many loops as you can effectively throw, and then lay them down a few feet toward the building.
3. Go back to the bag and pull out more rope. Lay the rope out on the ground flaking it back and forth so the rope will pay out easily as the tossing coils are thrown upward.
4. When you have enough rope out of the bag to reach the upper level, pick up the tossing coils and prepare to throw the rope line.

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Walk over to the area from where you will be throwing the rope and call out "**clear, rope coming up.**" Stand off to the side a little and use a side arm toss to throw the rope upward. Another way to throw coils of rope upward is to stand directly in front of the target area. Face away from the building, and then from your side or between your legs toss the line back over yourself and upward.

From above, prepare to catch the line as your partner throws it up. Check your footing so you won't fall over the edge if you have to make a sudden move toward the rope. When you have caught the rope, bring it in and then pull up enough line to properly anchor your end to a fixed object. Tie a tensionless anchor, a bowline or a clove hitch and safety around a fixed object. Take up the slack in the line and then go to the edge and let your partner know that you are ready from above.

7.11--LOWERING HOSE

There will be times when hose must be lowered from buildings. The hose may have been used on a roof to protect exposures or extinguish a fire. There may have been charged lines on upper floors and no way to drain the hose without causing additional property damage. Whatever the reason, there must be a systematic method for lowering the hose line safely to the ground.

DROP METHOD

The "drop method" of lowering hose from an upper elevation is the most common. Equipment and couplings cannot be dropped, only hose. Therefore, the height limitation is approximately twenty feet, because the last coupling and nozzle must be on the ground before the hose can be dropped.

1. Make certain that the line has been shut down at the pump and bled. Firefighters on the ground should be breaking couplings along the hose line up to the building.
2. Bring the nozzle and hose line to the window, landing or roof edge and lay it near the area where you will be lowering the hose line. Secure the hose line from going over the edge by standing on a section of hose near the knot that is securing the hose line to the building.
3. Untie the Webbing that was securing the hose line and place it in your pocket.
4. Now step on a section of hose near the nozzle. Check the area that you are standing in. Make sure that you are not standing in any circles of hose that might cause your feet to get tangled in the hose as it goes over the edge.
5. Pick up the hose line going over the edge and then look over the edge. Make sure the area is clear below calling out "**clear, hose coming down.**"
6. Lift the last coupling over the edge and lower it to the ground using a hand over hand technique.
7. Stop lowering the hose when the coupling is on the ground.
8. Now stand on the section of hose going over the edge, and pick up the nozzle.

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9. With the hose line secured by your foot, call out "**nozzle coming down**" and then lower the nozzle to the ground carefully.
10. When the nozzle is on the ground, pick up the remaining hose and call out "**clear below - hose.**"
11. When it is clear, drop the remaining hose to the ground.

Note*Anytime you are leaning over any edge whether firefighters are working below or not, check that your helmet is on tight and that you have nothing in your upper coat pockets that can fall out and over the edge.

ROPE METHOD

If the "drop method" cannot be used, the "rope method" should be performed whenever possible. The reason for this is safety. It is far safer to lower equipment by rope, than carrying it down a ladder. Using utility rope or drop bag line, the nozzle and hose can safely be lowered from upper level.

Make certain that the hose line has been shut down at the pump and bled. Firefighters once again should be breaking couplings below in preparation for the hose being lowered.

1. Bring the nozzle and hose line to the window, landing or roof edge. Before we untie the Webbing that is securing the hose line in place, we need to tie off the hose line and nozzle with the rope that we will be using in the lowering operation. If a hoisting line is already in place, pull up enough rope to tie off the nozzle so that it can be lowered back down to the ground. It is better to bring up too much rope, than too little. The nozzle needs to be lowered all the way to the ground without being dropped.

If you need to use your drop bag or the utility rope bag, pull out the end of the rope from the bag and tie an anchor to a nearby fixed object. Use a tensionless anchor, bowline or clove hitch and safety as your anchor knot. Bring the bag over to the edge and look below. Call out "**rope bag coming down**" and toss the bag out away from the building. Make every attempt to toss the bag away from any of the building's entrances and/or exits. Now pull up all the needed rope to ensure that the nozzle can be lowered all the way to the ground once it is tied off.

2. Tie off the hose and nozzle with a clove hitch and two half hitches. This knot will be tied so the nozzle is facing upward as it is lowered to the ground. The clove hitch is tied on the hose, and with the up side rope line, tie two half hitches, one on either side of the breakaway, and in such a way as to control the breakaway bale. Even though the line is supposed to be bled and broken, you can never be too sure.
3. With the nozzle tied off, check the area that you are standing in and make sure that your feet will not get tangled up in the hose line as you lower it to the ground.

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4. Now secure the section of hose going over the edge with a foot as you untie the Webbing holding the hose line in place. Place the Webbing in your pocket and prepare to lower the hose line.

A firefighter needs to be in position below to help tether the rope and hose line as they are lowered. They need to be standing in a safe area, away from directly below the firefighter above. If the rope line being used wasn't long enough to reach the ground after tying off the nozzle, use the hose line as a tether. The firefighter's job below will be to help keep the nozzle from hitting the building as it is lowered. The firefighter below needs to standby for a minute while the firefighter from above lowers the excess hose line. The firefighter above will tell their partner below when they need to take up tension on the tether line.

5. With the Webbing untied, grab a hold of the hose going over the edge with your hands and place a foot on the section of hose near the nozzle. Once again check your feet to ensure that they cannot get tangled with any hose or rope going over the edge.
6. Check below and call out "**hose line coming down.**"

Lower all of the hose line down to the ground leading up to the hose that is being secured by your foot. When all the hose is over the edge, pick up the nozzle.

1. Check the knots on the nozzle one more time. Check that the nozzle and all fittings are tightly secured to one another.
2. Call out to your partner below to take up tension on the tether line, and then lower the nozzle to the ground using the rope and a hand over hand technique. Make every attempt to keep the nozzle from striking any part of the building as it is lowered.
3. When the firefighter below calls out that they have the nozzle, lower the remaining slack in the rope line to the ground.
4. Untie the rope anchoring knot. If a carabiner was used in the anchor, place it in your pocket. Bring the remaining rope to the edge and check below. When clear, call out "**clear, rope coming down**" and then toss the rope down to the ground.

* Do not pass couplings or nozzles over hard or sharp surfaces. This action could cause damage to the coupling and/or nozzle. Lift them up and over the edge, and then resume the lowering procedure. If you believe that you need edge protection, get it before you begin to pass rope or hose over an edge that could cause damage to the equipment.

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LADDER METHOD

All other means to lower the hose line and nozzle should have been exhausted before using this method. When equipment is carried up or down ladders, extreme caution should be practiced by everyone involved. The ladder must always be footed. The firefighter footing the ladder must watch for falling equipment. The firefighter climbing down the ladder must maintain good footing and a secure grasp on the ladder and equipment. If equipment is being carried up or down a ladder, both hands will maintain constant contact with the beams.

Make certain that the line has been shut down at the pump and bled. All available couplings along the line should be broken from the hose line being lowered.

1. Bring the hose line and nozzle to the window, landing or roof edge near the ladder.
2. Secure the hose line by standing on a section of it near the Webbing retaining knot.
3. Untie the Webbing retaining knot.
4. From that same position while maintaining control of the hose, tie the nozzle off with the Webbing. Use one of the two methods previously covered in this manual section 8.2 concerning tying off a nozzle with webbing.
5. Once tied off, lay the nozzle in a clear and safe area and then secure it by stepping on a section of hose near the nozzle.
6. Check below and then call out "**clear, hose coming down.**" Safely lower the hose line to the ground using a hand over hand technique. There will be a firefighter below getting ready to foot your ladder. In the meantime, they can be helping to guide the hose line away from the ladder as it is being lowered.
7. When all of the hose is lowered to the ground, except the nozzle and section that you are standing on, pick up the nozzle and recheck the Webbing knots.
8. Place the free loop of the Webbing over the top of the beam on the ladder, which is on the same side of the ladder as the pile of lowered hose. This will help keep the hose line off the ladder as you carry it down.
9. Call out to the firefighter below to "**foot the ladder.**" When the ladder is properly secured, mount the ladder safely placing a hand on each beam of the ladder. If a hand is going to be used to secure equipment or hose being advanced up or down a ladder, both gloved hands need to keep contact with both ladder beams. A gloved hand is then used to hold onto the equipment or hose line as it is slid up or down the ladder's beam. The other free hand is also slid up or down the ladder beam. This method allows for constant contact with the ladder with both hands even while one of them is holding onto a piece of equipment.

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10. Place a hand through the Webbing as if you were shaking hands with it. This is called the "monkey grip" and is used to secure the Webbing loop and the beam of the ladder at the same time.
11. Lift the loop of the Webbing over the top of the ladder beam, and then bring that hand back into contact with the same ladder beam.

Climb down the ladder safely sliding both hands along the beam.

7.12--ADVANCING OUTSIDE 1¾" ATTACK LINES WHILE FLOWING WATER

The safest way to advance a charged line is to shut it down at the nozzle before moving. However, there are times when the line needs to be flowing water while it is being advanced. The fire's proximity or intensity may warrant the protection offered from a fog pattern while advancing. Set the fog pattern so it protects the advancing personnel while maintaining ease of mobility. This technique is used while approaching vehicle or compressed gas container fires. On vegetation fires, having the nozzle set on a slight fog pattern works well. The fog pattern offers less nozzle reaction making it easier to advance the hose line. Using a narrow fog pattern along the burn helps to cool and wet down the area better as you advance the hose line.

If a straight stream is needed while advancing, lower the GPM setting and keep one hand on the breakaway handle. A low GPM setting will cause less nozzle reaction. By keeping a hand on the breakaway, the nozzle can be quickly shut down. The hose line should be advanced while holding the hose below your armpit using both hands to secure the nozzle and hose line. The webbing can be used if necessary to help pull the hose along as you direct the nozzle stream. A less secure, but at times more advantageous method for advancing a 1¾" attack line is to place the hose over your shoulder. If this method is used, lower the GPM setting and again, keep one hand on the breakaway. When opening from or moving the nozzle to your shoulder, have the stream pattern set on wide fog. Not only is this the proper way to open and/or close a nozzle, it is the safest way to move a nozzle. Once comfortable with the nozzle reaction, move the stream pattern to the desired setting and advance.

Although 1¾" can be advanced by one firefighter, help never hurts. When a team of firefighters are going to advance a 1¾" attack line, they must spread out. Do not congregate at the nozzle. Let the nozzle person handle the application of water. The support firefighters need to spread out, help pull hose and advance the line around obstacles. Let the nozzle person set the pace, do not push them toward the fire. Keeping back ten to twelve feet from the nozzle person allows them freedom of movement while they direct the hose stream. The support firefighters concentrate on pulling hose and positioning themselves accordingly as the hose line is advanced. While assisting the nozzle person, make every attempt to keep the hose line in-line with the water application. If you are the firefighter

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directly behind the nozzle person, keep moving so that the section of hose between your position and that of the nozzle person is in line with the flow of water. This technique will help the nozzle person control the nozzle better.



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8.0--2 ½" HANDLINES

The 2-1/2-inch handlines are generally the largest handlines used by the Department and, under ideal situations, require three firefighters to advance and operate efficiently. The 2-1/2-inch handlines are best suited for fires involving large, heavily loaded structures, such as warehouses, supermarkets, shopping centers, or any other location where a large amount of water is needed.

2 ½ hose is generally in the center of the engine, either above, or next to the other crosslays. The stowage is flat loaded with a nozzle pre-attached and should be the primary line used for 2-1/2-inch handline operations. When using 2-1/2-inch handlines, a continuous water supply must be established.

8.1 ADVANCING 2-1/2-INCH HANDLINE

The 2-1/2-inch hose may be removed from the hose compartment and advanced dry into position by one or more firefighters. The 2-1/2-inch hose line can be advanced as a handline or as a line to supply sprinkler systems, standpipes, special streams, or auxiliary appliances.

The hose is loaded flat in the same basic manner as other crosslay handlines. Two 12 to 18-inch loops are used to easily access and deploy the top 100 feet of the hose load.

1. Place the left arm through both loops.
2. Grasp the nozzle firmly with the right hand and remove from the hose bed.
3. Grasp the hose at the base of the male coupling with the left hand.
4. Pull the hose load out of the compartment, facing the desired direction of deployment and advance the hose line. Maintaining both loops in the hand will give the firefighter 100 feet of working line.
5. Drop the outside loop first when 50 feet is needed or both loops at the desired location if 100 feet is desired.

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8.2--OPERATING 2 ½" HANDLINE NOZZLES

SELECT-O-FLOW NOZZLES

Nozzles that are carried on the apparatus set on fog stream and 200 GPM these settings will produce maximum protection for the firefighter. The full fog setting not only offers a protection screen from the radiant heat produced by the fire, it moves in fresh air from behind the nozzle person. The full GPM setting although more difficult to control initially, will offer the maximum water flow available through the nozzle for maximum heat absorption and greater fire knock-down ability.

Usually 2½" attack line operations are conducted on the outside of a structure. For better hose control and protection, opening a nozzle set on full fog is appropriate. Once control of the nozzle is obtained and the fire conditions warrant, change the settings to the desired stream and flow. It is also acceptable to open 1¾" nozzles outside in this manner.

When attack lines are going to be operated using full GPM, a water source other than the pump's water tank must be secured. Our pumpers carry approx. 750 gallons of water. A 2½" nozzle flowing 200 gallons of water per minute will drain the tank in two minutes. A 1¾" nozzle is capable of flowing 200 GPM, offering 2½ minutes of water for firefighting use. With that said, 750 gallons properly applied to the fire can go a long way in mitigating most fire emergencies.

ADVANCING A CHARGED 2½" HOSE LINE

No attempt should be made to advance a flowing 2½" hose line by yourself. If you need to move a 2½" attack/exposure line to a new location and you are by yourself, shut down the nozzle properly. Place approximately three feet of hose over your shoulder with the nozzle hanging down in front of you. Grasping the hose line behind from the nozzle, lean forward and walk to the new location. If more than one firefighter is available, use the same action just spread out so that the drag is dispersed evenly among the firefighters involved. At the new location, reset your working line, check your nozzle settings and open the nozzle safely.

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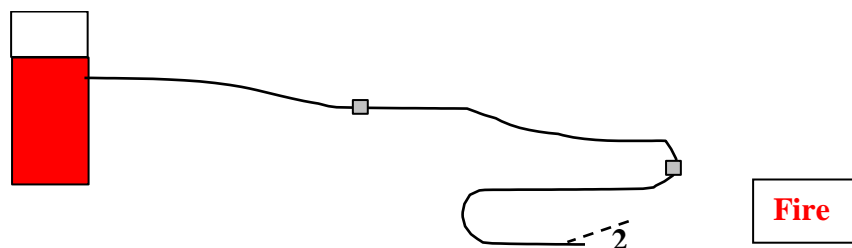
TWO OR MORE FIREFIGHTERS ADVANCING 2-1/2-INCH HANDLINE

1. First firefighter places arm through loops and secures nozzle. Deploy hose from the hose bed as previously described.
2. Depending on the length of the pull, the firefighter will prepare to advance the line by dropping the loops, flaking extra hose onto the left shoulder (Figure 20), or advancing hose while still holding the loops.
3. Second and consecutive firefighters grasp the hose at a coupling and place hose on the left shoulder or flake extra hose onto the left shoulder and advance to desired location.

WEBBING HOSE CONTROL

Other than proper stance and hose flaking situation, 1¾" hose lines rarely need further hose control considerations. 2½" hose lines are a different matter. When a 2½" hand-held hose line is placed into operation for any period of time, serious hose control measures need to be considered.

1. Tie a girth hitch on the hose line with the knotted end (overhand bend) of your Webbing approximately seven feet from the nozzle.
2. Move forward toward the nozzle with the free looped end of the strap placing the webbing loop over your outside shoulder (the inside shoulder is nearest to the hose as you face the nozzle).
3. When you have taken up the slack in the Webbing near the nozzle, pick up the hose line.
4. Take a slight turn inward toward the nozzle and take up tension in the Webbing. This should position the hose line coming across your body with the nozzle easy to reach.
5. Take a wide stance and adjust the position of the Webbing knot if necessary so you can reach and adjust the nozzle settings, and maintain tension on the Webbing.
6. You should be turned slightly sideways toward the hose line. You should be on a slight outside curve. Take the hand that is nearest to the knot and support the hose up against your legs and body.
7. Lean into the Webbing to absorb the nozzle reaction and then open the nozzle slowly.
8. When you get comfortable and have confidence that you can control the nozzle, adjust the flow settings to control and/or extinguish the fire.



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If a second firefighter (#2) comes over to help, they will set up behind the nozzle person (#1) and on the opposite side of the hose. From that position they (#2) will be able to absorb the lion's share of the nozzle reaction, allowing the nozzle person (#1) to concentrate on the fire. The second firefighter (#2) tells #1 that they will be tying off a second hose control. The nozzle person goes to wide fog for easier hose control during hose movements, or completely shuts down the line until #2 is completely set and ready to take over most of the hose control responsibilities.

1. Tie the second hose control knot (girth hitch) approximately eight feet back from #1's position and on the opposite side of the hose.
2. Take the loose end of the Webbing toward the nozzle person and place the loop over your outside shoulder as you move toward the nozzle.
3. When the nozzle person is ready, turn inward toward the hose line and pick it up. You should be positioned slightly behind, and on the opposite side of the hose line as the nozzle person.

Support the hose line as it passes along your body with your hands and take up tension on the Webbing by leaning forward. Both Webbings should have tension on them, but #2's more so.

ATTACK STREAMS

An attack stream is used to direct water onto the fire itself. Depending on conditions, a narrow fog pattern or straight stream from a variable stream nozzle can be directed on the fire. A fog pattern absorbs more radiant heat than a straight stream, thus protecting the attack team from heat. The fog pattern is good to use while advancing into position on the fire in an outside fire situation. Once a good position has been achieved, adjust the pattern to a straight stream and direct it onto the seat of the fire. Narrow fog patterns can be used to take the heat out of super-heated ceiling atmospheres with the knowledge that some of that heat will come down on the crew when the water turns to steam. That action will also disturb the thermal balance more than a straight stream so be very careful in its use.

To get more reach or penetration into the fire, use the straight stream setting on the nozzle. It will not absorb as much heat going in, but it will have a better chance of reaching the seat of the fire. Cooling the material that is actually burning will cause the fire to go out. Straight streams can be applied into that same super-heated ceiling atmosphere to take the heat out of the fire as the crew advances. This action will not absorb as much heat, but will affect the thermal balance much less allowing for better and easier advancement.

For better penetration into a large fire, a smooth bore nozzle is a good choice. The 2½" playpipe with its various tip sizes is a good hand-held nozzle for this purpose. The water stream does not get broken up going through the nozzle. There is relatively little surface area to absorb heat, so the solid stream passes through the heat and is directed far into the seat of the fire cooling the material that is burning. Our

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highrise hose packs have a smooth bore tip placed between the breakaway and the S.O.F nozzle. This tip is 15/16" and is a good tool to have in the proper fire ground setting.

INTERIOR WATER STREAMS

Interior operations are typically conducted using 1¾" attack lines. NFPA standards recommend minimum nozzle flows of 160 GPM while conducting interior attack operations. These recommendations are intended to be used as guidelines for your (the firefighter) safety. Our current nozzles do not have a 160 GPM setting. For this reason, prior to entry, ensure that your 1¾" nozzle is set on 200 GPM (full GPM for the nozzles kept on the 200' crosslay hose lines, and our highrise hose packs). Do not advance a hose line and nozzle into a structure for initial interior attack operations that does not have the ability to flow at least 160 GPM prior to entry perform a Pressure/Pattern test on your attack line. Ensure that the nozzle is set on 200 GPM and that there is sufficient pressure on the line to in fact deliver 200 GPM Adjust the stream pattern to straight stream and then close the breakaway.

Operating these hose lines set on full GPM can drastically affect conditions within the structure. When making an interior attack it is assumed that the building is not being "written off." An attempt is being made to stop the spread of fire to unaffected areas. For that reason, consideration must be given to the GPM flow and its affect on the rest of the structure. Water that is not absorbed by the heat from the fire may cause unnecessary damage to the structure. Our first priority is life preservation followed by property conservation. It is important to remember that the objective is to overcome the fire load (heat put out by the fire) and ultimately extinguish the fire. Adjust your GPM flows to quickly and safely extinguish the fire. At the same time, do so causing as little additional property and structural damage as possible from un-needed water.

One way to reduce unnecessary damage to the structure from water is to be patient. Wait until the seat of the fire can effectively be reached before opening the nozzle. Directing the water stream at the seat of the fire will cause rapid cooling and extinguishment. It will not take long. The right amount of water applied to the burning material will rapidly extinguish the fire. It is important to remember that once the fire is out, the heat once produced by it will no longer absorb the water being applied. Put the fire out, ensure that there is no extension of fire onto adjoining surfaces or contents, and then stop flowing water for a moment. Let the fire area settle down a little, and watch for hot spots. Adjust the GPM setting on your nozzle to extinguish any remaining hot spots, and then perform overhaul operations in the fire area.

There are several reasons why the fire service uses water to put fires out. It has an incredible heat absorbing quality which enables it to cool burning material quickly when applied correctly. Water expands 1700 times when it turns to steam after absorbing enough heat from the fire. These qualities provide an advantage while fighting a fire, but these same qualities can hinder firefighting operations

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Nozzles are stored in the wide position as previously stated for safety reasons. In a confined structure fire the heated atmosphere will assemble in layers within the structure or room (thermal balance). When a nozzle is opened on full fog in a superheated atmosphere the heat from the ceiling area will turn to steam and move downward. Thermal and steam burns can be expected on personnel caught in this situation. There is a time for fog stream application, but that time is not when firefighters are in a confined superheated room.

When working in the previously mentioned environment (a typical interior structure fire attack) adjust the water stream pattern to a straight stream setting ("right to fight"). The straighter the water stream, the less it will affect the thermal balance when applied to the fire. Direct the stream onto the burning material. At the correct GPM setting, the burning material will rapidly cool and the fire will go out. By not disturbing the thermal balance the interior conditions remain tolerable and visibility is less affected. This type of water application within a structure fire is called a "[DIRECT ATTACK](#)" and should be used whenever possible. This is also why we perform a "**PRESSURE PATTERN TEST**" prior to entry. Prior to making entry, open the breakaway to test nozzle pressure and adjust the stream collar to straight stream. Shut the line down leaving the nozzle set on straight stream and make entry. If the nozzle is left or laid down for any reason during the advance, check to ensure the nozzle is still set on straight stream. The simple act of crawling along the floor with the nozzle in your hand can change the stream setting, with the potential of actually shutting the nozzle off.

A condition known as "**FLASH OVER**" occurs when ceiling temperatures are superheated and the fire gases begin to burn. A straight stream of water directed up into the ceiling area will control the situation and drive the fire back. Water streams applied correctly during this condition will not dramatically affect the thermal balance. Visibility will remain as it was prior to the application of water. The area's temperature will be reduced, making advancement to the seat of the fire more tolerable.

Flash over is different than total room or area involvement. Flash over is a visible rolling of fire in the ceiling area moving toward new air. It can happen very rapidly, or you can actually see it start to roll toward you in a hallway as you approach the seat of the fire. If a room or area's contents are fully involved in fire, apply a straight stream of water to the base of the multiple fires at full GPM your goal is to rapidly cool all the room's remaining contents and extinguish the main body of fire.

An "[INDIRECT ATTACK](#)" is used when a fog pattern is applied into the upper atmospheres of a superheated room or area. Every situation is different, but fog pattern between 45 and 90 degrees is appropriate. The desired affect from the water stream is to have as many water particles as possible engulf the ceiling area all at once to absorb the heat, turn into steam and smother the fire. Ensure that no firefighters are inside the involved area. From outside the room, apply the water stream into the superheated ceiling area of the room involved. Swirl the nozzle in small clockwise circular patterns for a

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couple of seconds. This will ensure that most of the heat in the ceiling area will be absorbed and turned to steam. Move back away from the opening and close the door. The steam produced will smother and cool the fire.

Always ensure that everyone in the area including yourself, is positioned as low to the floor as possible prior to applying water to any interior fire using any of the above mentioned methods of control and extinguishment

* A safe, aggressive and quick attack on the seat of the fire is the best way to take the heat out of the fire, make the smoke go away and save lives including yours. If you can't make it to the fire because it's just too hot, fall back to a safe location, hold the fire in check and protect your crew. Wait for the Truck to do their job...ventilate, and then advance and put the fire out.

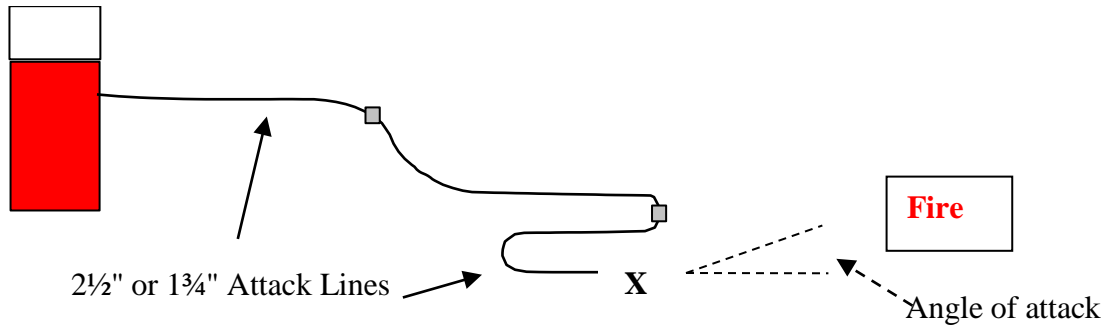
Anytime water is going to be flowing from a nozzle, proper hose control is essential. Hand lines with 2½" nozzles can flow up to 250 GPM but “For every action there is an equal and opposite reaction.” Nozzle reaction is the backward force created by water spraying from a nozzle. Nozzle reaction can be minimized with proper hose flaking and stance.

8.3--STANDING HOSE CONTROL - FIREFIGHTING STANCE

In an outside environment the proper firefighting stance is standing, with your feet at least shoulder width apart in a semi-crouched manner. This stance will enable the firefighter to better handle the effects of nozzle reaction. During interior operations, the firefighting stance will most likely be on your hands and knees or lying down depending on the heat. It is imperative that every firefighter be crouched down low. Visibility is better, and the thermal effects of the water being applied to the fire are not as drastic.

While performing a standing firefighting stance, the hose line is snaked upward from the ground. The hose passes between the rear foot and knee, and up against the shin. The knee is slightly bent forward to assist in maintaining the hose in this position. The hose moves inward into the groin area where it moves upward into the stomach and lower chest area. These subtle turns along the body will help absorb the effects of nozzle reaction. The hose line wants to move backwards due to the force of water coming out of the nozzle. The friction of the hose against the body through the turns, combined with the effect of properly flaked out hose behind the nozzle will eliminate most of this backward reaction. The working line that has been talked about throughout this guide really comes into play now. If you keep approximately twenty-five feet of hose laid out behind your position and in line with the flow of water, the weight of the hose on the ground will absorb a lot of the backward energy (nozzle reaction).

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The breakaway is held up to approximately eye level. With the line charged, pull the section of hose about one foot below the breakaway, in toward the chest with either hand. At the same time push the nozzle downward with the other hand so it is pointing toward the fire, and then open the breakaway handle **slowly**. This action bleeds the air from the hose and allows the firefighter to gain control of the nozzle. Once fully opened, adjust the GPM ring and stream pattern to the desired flow and pattern if necessary. Lower or raise the GPM flow in order to control the fire load. Adjust the stream pattern to suit your needs and fire conditions.

"**Angle of Attack**" is a fighter pilot term used to describe the positioning of the aircraft as it relates to the target or approach. Taking the proper angle of attack helps with hose control for a lot of people also. A good angle of attack coupled with a good stance and proper hose flaking will greatly ease the effects of nozzle reaction. When setting up on the fire visualize a straight-line outward from the working line hose through the nozzle and toward the fire. Have this line extend out and about ten degrees off from the fire. If the fire is off to the left of this imaginary line, stand on the right-hand side of the hose. This will put you on the outside curve of the hose line. Turn slightly into the fire as you open the nozzle. This subtle turn on the hose directs nozzle reaction into your body mass and downward where the hose line makes contact with the ground. Everyone has a different comfort level when it comes to hose control. Some firefighters like the line coming into their chest more. Others prefer the nozzle reaction being directed more to the ground and hose line. With practice you will develop your own comfort level and style. Always remember, if you begin to lose control of the hose line don't wait until it's too late, shut the line down and reset. Look back at your working line. Make sure that you are on the outside curve of the hose line and that there is approximately twenty-five feet of hose straight behind your position.

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SHUTTING DOWN NOZZLES

Shut down hose streams slowly to prevent damage to equipment and the apparatus. Shutting down lines slowly when multiple lines are coming off the same apparatus enables the pressure relief valve to do its job more efficiently. The pressure relief valve is designed to absorb excess pressure within the pump when one line is closed down while another is flowing water. If the pump pressure from the shut down line is transmitted to the flowing line, the firefighter holding onto the flowing line may lose control. To properly shut the nozzle down, reset the stream pattern collar to wide fog, then close the breakaway slowly.

If you encounter an emergency situation, or you feel you are about to lose control of the hose line, just close the breakaway first then reset your nozzle.

ADVANCING 2 ½' HANDLINES UP A LADDER

The advancement of 2-1/2-inch hose up a ladder should be accomplished with a dry line whenever possible. To prevent injury, avoid charging the line prematurely. When advancing handlines up ladders, one 50-foot length of hose will be needed for every three floors. In addition, consider that at least one length of hose will be needed for fire attack on the fire floor.

The following instructions apply to advancing 2-1/2-inch handlines up ladders.

1. Firefighter at the nozzle: Place the hose and the nozzle under the left armpit and over the right shoulder and advance up ladder.
2. Other firefighters: Place the hose on the left shoulder at each coupling and half the distance between couplings. The coupling should be over the back, at hip level.
3. All firefighters: Proceed up the ladder about 15 feet apart allowing the slack hose to form a loop off the left side of the ladder. Maintain proper spacing so the hose will remain balanced on the shoulder.

Note: When advancing handlines up aerial ladders, the loops remain on the ladder.

4. Firefighter at the nozzle: Stop at the top of the ladder and place the nozzle over the top rung.
 5. Firefighter at the nozzle: Dismount from the ladder and pull the slack hose over the top rung.
 6. Next firefighter: Dismount from the ladder and pull the slack hose over the top rung while the first firefighter returns to the nozzle and proceeds toward the desired location.
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7. Successive firefighters: Dismount from the ladder and pull up the slack hose. Help advance hose into position.
8. When the hose has been advanced to the desired location, the firefighter at the top of the ladder shall secure the hose to the ladder with a hose strap.

Note: The hose strap should be placed below a coupling on the pump side when possible, to relieve the strain on the coupling. Use a lark's foot around the hose and loop strap around top of left beam.

9. Prior to charging, place the hose onto the ladder to support the weight of the hose line when it is charged. Move the hose off the top rung to the left side of the ladder.

Note: On aerial ladders, the hose should remain on the ladder at the top.

REMOVING HANDLINES DOWN A LADDER

The following instructions apply to removing 2-1/2-inch handlines down ladders.

Firefighter at bottom:

1. Uncouple the hose and open the hose coupling to drain the hose
- Firefighter at top: 1. Place the hose over the top rung of the ladder.
2. Leg Lock-in at the top of the ladder and remove the hose strap, then exit the ladder at the top.
- Note:** Never use a leg lock to lock-in on an aerial ladder.
3. Slide the hose down the ladder until all the slack hose is removed from the structure. Both firefighters at the top of the ladder and at the bottom of the ladder shall provide assistance. Leave nozzle draped over top rung.
 4. Mount ladder and place the nozzle and hose under the left armpit and over the right shoulder.
 5. Climb down the ladder keeping the hose off to the left side of the ladder. Firefighter at the bottom of the ladder shall remove the slack hose away from the bottom of the ladder.

Note: When removing handlines on aerial ladders, the hose loop remains on the ladder.

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3" HOSE OPERATIONS

3" hose is used for many evolutions. Nozzles can be attached for exposure protection; Breakaways can be attached for supply lines to other apparatus, appliances, or fire protection systems. 3" supply lines can be hand laid back to the hydrant to supply sustained fire ground operations. With all the potential uses of 3" hose, the hose bed needs to be loaded in a manner which allows for easy deployment. The Flat load is used to fulfill this demand. The hose remains secure in the hose bed during apparatus movement. Hose deployment by hand is easy and neat.

9.1--3" HAND LAYING A SUPPLY LINE BACK TO THE HYDRANT

As previously stated, 3" hose can be used to supply the pump with water. This situation typically occurs at vegetation, rubbish, and/or vehicle fires.

1. From the rear of the apparatus, call out your intentions to the engineer.
2. A simple method to deploy all 3" hose from the hose bed is to take hold of the nozzle and 2-3 folds of hose. Pull the nozzle and folds of hose toward you and then cradle the pack as you turn away from the hose bed.
3. Call "clear" step off the tailboard and move toward the direction of the advance. Always check for vehicle traffic when moving beyond the protection of the apparatus.
4. In a clear and safe area and once the sections of hose have cleared the hose bed (typically ten to fifteen feet from the tailboard) lay the sections of hose and nozzle down on the ground. This action usually clears the first fifty foot coupling which will be important later on.
5. The male coupling is the first coupling coming off the 3" hose bed. This line is going to get advanced to a fire hydrant. Fire hydrants have male discharges so a double female needs to be added to the hose line. We do not need the breakaway, reducer or nozzle at the hydrant so we remove them from the hose line. Take the fittings to the nozzle and fitting compartment and secure the 2½" double female, notifying the engineer of your actions.
6. Check the double female for two gaskets and properly attach it to the male coupling lying in the street with the hose bundle.

This is an "Unspecified" advance to the hydrant because you do not know how far away it is and you are taking a female coupling with you. You need to ask yourself these three questions:

- Do I have enough hose on the street laid out properly to advance the double female to the hydrant?
- Am I strong enough to pull any additional hose that I may need to the hydrant?
- Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to all 3 questions is yes, you are ready to pick up the double female and advance to the hydrant (go to #9). If the answer to any 1 question is no, return to the tailboard and secure additional hose.

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The answer was "No" to any of these questions:

1. Securing two folds of hose at a time from the tailboard, place the folds over your shoulder as you turn away from the hose bed.
2. Call "clear" step off the tailboard and start flaking out the sections of hose, fanning the pulls away from the direction you will be advancing. If the advance is forward of the apparatus, exaggerate the first pull of hose from the hose bed and start working your way back as you did with the 4" supply line.
3. When you have enough hose on the ground and can advance the line to the hydrant, tell the engineer that they will need to break the supply line when advised.
4. Secure the hydrant wrench and go to the double female at the end of the hose line.
5. Place the double female over either shoulder with the hose paying off your back as you turn and face the direction of the advance. The double female should end up resting in your upper chest area. Support the double female by holding onto it with one of your hands. The hydrant wrench should be held in your other hand.
6. Check the area for vehicle traffic and personnel. Call "clear" and advance at a pace toward the hydrant that will allow you to make it without risking injury.
7. At the hydrant call back to the engineer that they need to break the supply line. It is very important that you call back right away. The engineer will not break the line until they are told to by you. They have a lot of work to do at their end so the earlier they can start the better it will be for the evolution.
8. Lay the double female down in a clear and safe area near the fire hydrant.
9. Check the 2½" discharge that is most nearly facing the apparatus with the hydrant wrench.
10. When you are sure that you can remove the cap, place the hydrant wrench on the appropriate discharge stem. The handle of the hydrant wrench needs to be left in the down position to prevent injury.
11. Completely remove the discharge cap. If the cap is not attached to the hydrant by a chain, lay it down up against the hydrant female side down and in an area that will not be in the way.
12. Pick up the double female and once again check for a gasket.
13. Properly attach the double female and supply line to the hydrant. Once you have the coupling snug by hand, take up a couple of small folds of hose towards the double female. Press your thigh into the folds of hose towards the hydrant as you give both swivels on the double female one more effort at tightening. Double female fittings are a little tricky when it comes to preventing leaks. This method of tightening almost always prevents leaks at the double female.
14. Flake out the hose around the hydrant if necessary and take up position at the hydrant wrench.

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15. When the call for water comes from the engineer, acknowledge it and begin to open the hydrant slowly. Open the hydrant at a pace to allow water to continuously fill the 3" supply line, but not so fast as to cause severe hose movement down the line that could cause injury to personnel. As you watch the water going down the line announce its arrival whenever it gets close to personnel if possible i.e. **"watch out, water in the line."** When the supply line gets full of water it will kick out from the hydrant and become stiff. That action lets you know that the water has reached the intake of the pump. When the hose stops moving you can open the hydrant the rest of the way at a more rapid pace.
16. With the hydrant completely open and the supply line charged, position the hydrant wrench on the discharge stem so the handle is pointing downward.
17. Check for any leaks or kinks around the hydrant that would affect the flow of water to the pump.
18. When the hydrant area is secure start moving down the supply line toward the pump.
19. Fix any leaks or kinks that would affect the flow of water to the pump. If you see water around a coupling, stop and pick it up to investigate. If the leak will not affect the flow of water to the pump, set it back down and continue. If water is spraying out from the coupling, prop the coupling up onto your boot and then using your pocket spanner make a good attempt to fix the leak.
20. At the pump intake contact the engineer. Inform them of the specifics of the supply line i.e. length and condition (150' - no leaks, kinks or hazards). Once you have described the supply line to the engineer ask them if they have any further instructions regarding the ongoing evolution. Ask the engineer what the pump intake pressure is and pass that onto the officer.

9.2--3" PRIMARY REAR HOSE BED DEPLOYMENT OPTIONS

If you keep this in mind when dealing with the 3" primary hose bed the following evolutions will come easier to you; secure the nozzle and three folds of hose every time you are told to secure a 3" hose line from the hose bed. Pull, turn towards your advance and then cradle the hose and nozzle as you step down off the tailboard. Check for traffic and personnel, call **"clear"** then move away from directly behind the tailboard in the direction of the assignment. When you feel the weight of the hose falling to the street from the hose bed, lay the bundle of hose down. If you do that every time, these evolutions will all seem fairly easy after a little practice.

There are three critical parts to the officer's directions that you will need to remember:

1. The officer will call for a specific amount of hose to be laid out, or they will not.
2. They will indicate the direction of the advance.
3. Lastly, they will direct you to pull a supply line.

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The officer is either going to call for a specific amount of hose they want secured, or they are simply going to order a 3" line be laid to a certain area. It is important that the 3" hose be laid out in an orderly and neat manner. If the amount of hose to be secured is known (the officer calls for 150 feet of 3" hose) use the "Specified" method. If the amount is unknown (the officer simply calls for a 3" line) use the "Unspecified" method to secure the 3" hose.

3" SPECIFIED PULL

A 3" specified pull is used when the officer has determined the exact amount of hose they want secured to the ground prior to advancing. They want the couplings broke and free from any hose in the hose bed. They expect the male coupling to go to the assigned fitting or fire.

In the case of an Exposure Line, the officer included the working line (fifty feet of extra hose) in their call. The term "Exposure Line" is used to describe a hose line that is being secured with a breakaway and nozzle. The intent is to use this hose line to put water to protect exposures. The extra fifty feet of hose (working line) is used for protection against nozzle reaction, and to have the ability to move the nozzle to a different nearby location after it has been charged.

A "Supply Line" is not going to be used to apply water directly to the fire. It does not have a nozzle or the fifty feet of working line (the exception would be a supply line to a portable monitor). The shutoff butt will stay on the line however for water control at the assigned fitting.

* The important thing to remember once again, is that no matter what the call is, you begin the lay pretty much the same way every time. Go to the tailboard and pull three folds of hose and the nozzle out. Face the direction of travel and you continue to pull hose out of the hose bed. Cradle the nozzle and hose in your arms as you step off the tailboard. Move out in the direction of the advance until the hose falls out of the hose bed, and then lay the bundle down. That action clears the fifty foot coupling for the working line and nozzle if the call is for an Exposure Line, or it clears a good start of hose and the breakaway if the call is for a supply line.

The male coupling is going to be advanced to the fire or assigned fitting. Depending on the order, any number of fittings can be attached to the hose line. If the call is for an "Exposure Line" the 2½" s.o.f. nozzle is most commonly used (that is why the nozzle is kept on the hose line in the hose bed). Another nozzle that can be placed on the hose line is the 2½" Playpipe. If the hose line is being secured as a supply line, the breakaway is left on and the reducer and nozzle are removed. Sometimes the officer may want a gated wye attached for the "Condo Lay" evolution. The order in which fittings are removed or attached is not that important with a "Specified" evolution. The reason for that is the line isn't going anywhere until all the hose is laid out and the couplings are broken then secured properly.

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*** LISTEN FOR: the following information from your Company Officer**

1. The amount of hose to be secured
2. The direction of the pull (especially during drills)
3. Whether a Supply or Exposure Line is being secured
4. What, if any additional fittings need to be secured

3" "SPECIFIED EXPOSURE LINE

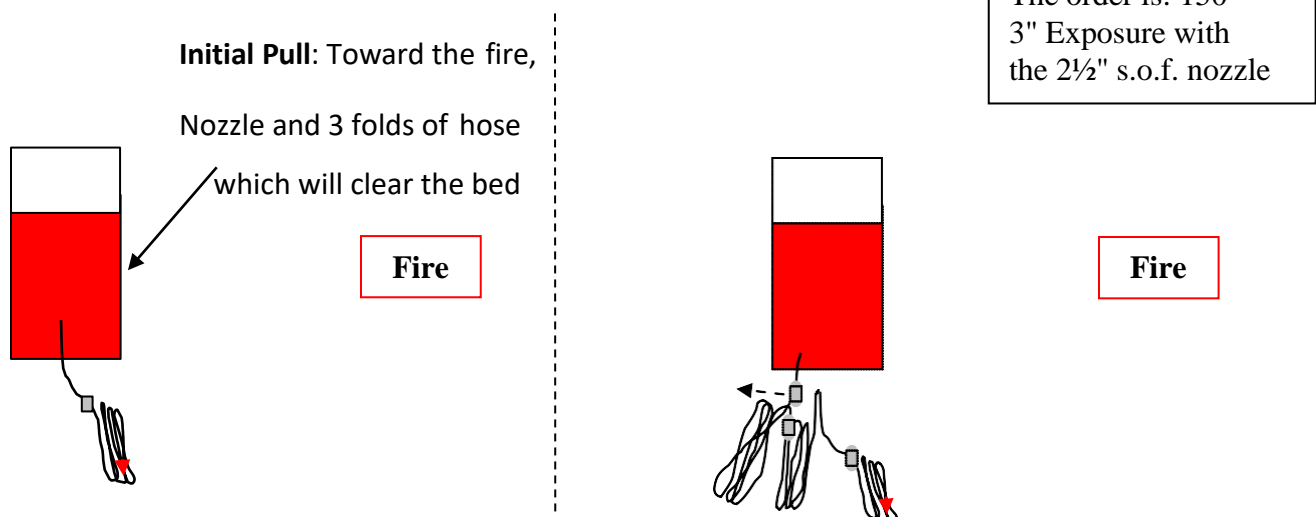
2½" S.O.F. NOZZLE / FROM THE HOSE BED:

1. From the tailboard inform the engineer of your intentions.
2. Pull out the nozzle and three folds of 3" hose.
3. As you turn toward the assigned fitting or fire, cradle the hose and nozzle in both arms. Call "clear" then step off the tailboard and toward the direction of travel.
4. Move away from the tailboard in the direction of the fire. Exaggerate this move to clear the "Working Line" coupling (fifty foot coupling). Always check for vehicle traffic.
5. When you feel the weight of the hose fall to the ground, stop your pull and lay the bundle of hose down. When the advancement is going to be made forward of the apparatus exaggerate all of the flares more toward that direction.
6. Look for the first coupling out of the hose bed and call out "**One**" (that's fifty feet). You can move that coupling closer to the first bundle of hose if you think it will help later.
7. At the tailboard secure two or three more folds of hose, this time over your shoulder. Call "**clear**" and continue flaking the hose out behind the tailboard working away from the direction of travel (fire).
8. Continue calling out coupling numbers or feet of hose cleared as you flake out hose. When you start getting close to the directed amount of hose, you may not need to pull out 2 or 3 folds. The less unneeded hose pulled out onto the street, the better. Pull what you need to get the last coupling on the ground.
9. When the directed amount of hose is on the ground, pick up the last cleared coupling and move it off to the side of the tailboard that is away from the fire. Always check for vehicle traffic and personnel prior to moving hose. Always push hose while walking forward never walk backwards.
10. In a clear and safe area, properly break the coupling.

Take both couplings back over to the tailboard placing them both neatly under the tailboard. Let the engineer know where the female coupling is. The returned female coupling is the one the engineer will be connecting to a discharge. Leave the male coupling under the tailboard but readily available for another evolution.

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1. Go to the initial bundle of hose that was cleared with the nozzle. Fifty feet of hose goes to the fire with the nozzle for hose control and maneuverability. Pick up the hose approximately fifteen inches up from the coupling toward the nozzle. Place a fold in the hose at that point and place the folded section of hose over either shoulder. The coupling should be on top of the fold as it rests on your shoulder with the rest of the hose for the evolution paying off the back.
2. Pick up the nozzle and place it on your chest with the hose going back over your shoulder. In one hand secure the fold of hose as if you were holding onto a sandwich. Use your other hand to secure the nozzle from swinging around as you advance.
3. Check for vehicle traffic and personnel, call "clear" then advance at a pace that will enable you to reach the directed area safely.



Three distinct 2 - 3 fold pulls, each clearing approximately 50' of hose. The last coupling is taken away from the fire and broken.

1. At the fire or designated area stop, look back at the apparatus and figure out how best to lay the coupling down so that less effort is involved in flaking out the working line. The working line needs to be flaked out with approximately twenty-five feet of hose paying out directly behind the nozzle as it points to the fire, or entry area when dealing with 1¾" interior attack lines.
2. Lay the coupling down; don't drop it to the ground.
3. Lay the nozzle down, and then go back to the turn in the hose. From the back side of the turn, face the nozzle. Make a double arm turn in the hose removing any crossed sections of hose in the line back up to the nozzle. Create "Big Loops" at the turns by spreading the hose with your arms one full wingspan apart wide.
4. Return to the nozzle and prepare to call for water.

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The previous evolution described securing an Exposure Line with the nozzle in the hose bed. If the male coupling was found without the nozzle, and under the tailboard, a different method is used to start off. Determine approximately how much hose is under the tailboard. Step up onto the tailboard and pick the folds of hose that when pulled out should clear the next coupling (your 50' coupling). Pull, turn, and step off of the tailboard with those folds of hose. Pick up the male coupling from under the tailboard and take the hose bundle out and toward the fire as before. If there was only a short section of hose under the tailboard, taking the male coupling up with you to the folds in the hose bed can work also. In any case, once that initial amount of hose is on the ground and placed properly, continue the evolution as previously described. At some point prior to advancing the called for nozzle would need to be secured and properly attached.

3" SPECIFIED SUPPLY LINE

3" hose lines are used to supply a number of fire ground applications. Other apparatus, appliances and fire protection systems in buildings are common instances. A means of controlling the flow of water is needed at the fitting being supplied. No working line is needed unless you are supplying a portable monitor. If the hose is being secured from the primary 3" hose bed, the male coupling will be going to the assigned fitting. All that is needed is a breakaway and the called for amount of hose.

SPECIFIED SUPPLY LINE - FROM THE HOSE BED:

1. From the tailboard inform the engineer of your intentions.
2. Secure the nozzle and two to three folds of 3" hose in both hands.
3. Carefully step off of the tailboard calling out "**clear.**"
4. Move in the direction of the assigned fitting until the weight of the hose is felt falling to the ground. Always check for traffic when moving beyond the protection of the apparatus. As before, if the advance is going to be made forward of the apparatus, exaggerate the initial pull in that direction.
5. Lay the bundle down calling out any cleared couplings.
6. Remove the reducer and nozzle from the hose line and return both fittings properly.
7. At the tailboard place two to three more folds of 3" hose onto your shoulder.
8. Move away from the tailboard calling "**clear**" and continue to flake the hose out working away from the direction of the assigned fitting.
9. Continue flaking out hose and clearing couplings until the directed amount of hose is on the ground.
10. Go to the last coupling to clear the hose bed and safely break it in a clear area.
11. Take both couplings back to the tailboard. Either hand the female coupling to the engineer or place it under the tailboard advising the engineer of its location.
12. Place the male coupling and any additional hose back under the tailboard leaving the male coupling readily available.

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13. No working line is needed unless you are supplying a portable monitor. Go to the breakaway and pick it up. Place it over your shoulder so the breakaway comes to rest in your upper chest area with the remainder of the hose paying off your back.
14. Check for traffic and personnel, call "clear" and advance to the assigned fitting. Secure the breakaway from flinging about as you advance by holding onto it with at least one hand.
15. At the assigned fitting check for a gasket in the female swivel, and then properly attach the breakaway.
16. If this supply line is for an appliance (portable monitor) or fire department connection (FDC) use a pocket spanner to tighten the fittings prior to calling for water. If the supply line is not for one of the above-mentioned purposes, hand tightening it with a leg or shoulder into a couple of folds of hose should be enough to prevent a leak.

Flake out the hose line near the fitting if necessary, ensure that the breakaway is in the closed position (pushed all the way forward toward the male threads) and then call for water.

SPECIFIED SUPPLY LINE - FROM UNDER THE TAILBOARD:

Hose lines are not always secured from the hose bed. There will be times when a previous evolution caused the male coupling from the primary hose bed to end up under the tailboard. The order is for a specific amount of 3" hose to be secured as a supply line. The male coupling will be advanced to the assigned fitting with a breakaway attached. The line will not be advanced until all of the hose ordered is flaked out behind or to the side of the apparatus with the couplings broken and secured properly.

1. Inform the engineer of the order and your intentions.
2. Make an attempt to determine how much hose is under the tailboard.
3. Go to the nozzle and fitting compartment and secure a 2½" breakaway notifying the engineer.
4. Go to the male coupling lying under the tailboard, pick it up and move away from rear of apparatus. Be sure to check for traffic.
5. Connect 2 ½" breakaway to the hose line and secure back under the tailboard, folding hose over on itself.
6. From the tailboard, secure two to three folds of hose as previously described and step down to the street using the hand rails.
7. Pick up the male coupling and properly flake out the section of hose toward the fire. This should clear the next coupling which is number "One" (50' of hose) and should be called out as such.
8. Return to the tailboard and secure another two to three folds of hose. This time flake out the sections of hose working away from the assigned fitting. Every time a coupling is cleared, call out its number or the amount of hose cleared. Continue this process until all of the directed hose is on the ground.

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9. Properly and safely move the last coupling away from the rear of the hose bed in the opposite direction of the fire and break in the proper manner.
10. Return both couplings to the tailboard and place them safely underneath, folding couplings onto the hose.

Secure the coupling with the breakaway and safely advance the supply line as previously described (because it is a supply line we DO NOT take the extra 50' of hose as a working line). Always check for personnel in the area and vehicle traffic when moving hose lines.

3" UNSPECIFIED PULL

Just like the 4" unspecified pull, the 3" unspecified pull is at times the simplest and quickest way to deploy a 3" Exposure or Supply line. If help is available for securing additional hose and/or the apparatus is positioned properly, the unspecified method is a good choice. If the assigned fitting is to the rear of the apparatus, the hose can be pulled straight from the hose bed to the fitting. If the fitting is off to the side or to the front of the apparatus, additional hose needs to be cleared before advancing. The firefighter assigned the task is responsible for pulling any additional hose until help is offered by another firefighter.

UNSPECIFIED EXPOSURE LINE - 2½" S.O.F. NOZZLE / FROM THE HOSE BED:

1. From the tailboard inform the engineer of your intentions.
2. Secure the nozzle and three folds of 3" hose in both hands. Pull, turn, and cradle the hose and nozzle as you carefully step from the tailboard, while holding the handrail.
3. Check for vehicle traffic and personnel calling out "**clear.**"
4. Move out and away from the tailboard in the direction of the fire until the weight of the hose is felt falling to the ground. If the fire is to the front of the apparatus, exaggerate this first pull in that direction.
5. Lay the hose bundle and nozzle down neatly. The only coupling you are concerned about is the first coupling. This is the coupling you will be taking to the fire to establish your working line.

From this point, the fifty feet of working line has been secured along with the nozzle. The line can now be advanced to the fire if the fire is located off the back of the apparatus. If the fire is toward the front of the apparatus, additional hose needs to be flaked out. Flake the folds of hose out working away from the direction of the advance. With each pull of hose away from the rig ask yourself those three questions as they apply to this evolution:

- Do I have enough hose on the street laid out properly to advance the fifty-foot coupling and nozzle to the fire?
- Am I strong enough to pull any additional hose that I may need to the fire?
- Is there a firefighter standing by ready to help flake out additional hose for me?

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If the answer to any of those questions is yes, you are ready to pick up the fifty-foot coupling and nozzle, and advance to the fire. If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose flaking it out as previously described. Whatever the case, when you are ready to advance secure the fifty foot coupling over one shoulder and the nozzle over the other as previously described. The hose line is still attached to the hose bed so the engineer needs to be told that they will have to break the line when you advise them to.

6. Check for vehicle traffic and personnel call "**clear**" and then safely advance the line.
7. At the directed area (near the fire) stop and look back at your pumper. Call back to the engineer to break the line.
8. Determine how best to flake out your working line as before. Make one move back to the turn to set up your working line.
9. Once the working line is flaked out properly, go back to the nozzle and prepare to call for water.

UNSPECIFIED SUPPLY LINE - FROM THE HOSE BED:

1. From the tailboard inform the engineer of your intentions.
2. Secure the nozzle and a couple of folds of 3" hose in both arms. Pull, turn, and cradle the hose and nozzle as you step down from the tailboard while holding the handrail.
3. Carefully step off of the tailboard calling out "**clear.**"
4. Move in the direction of the assigned fitting until the weight of the hose is felt falling to the ground. As always check for traffic before moving away from behind the apparatus.
5. Lay the hose bundle and nozzle down onto the ground.
6. Remove the reducer and nozzle from the breakaway and lay the breakaway back onto the bundle of hose.
7. Replace the fittings back into the nozzle and fitting compartment (if a 2½" gated wye was called for, it can be secured at this point and placed on the breakaway).
8. If the assigned fitting is located off the back of the apparatus, the supply line is ready to advance. If the assigned fitting is located off to the side, or toward the front of the apparatus additional hose needs to be flaked out behind the tailboard. Continue to flake out hose working away from assigned fitting until you can answer yes to one of the following questions:
 - Do I have enough hose on the street laid out properly to advance the breakaway to the assigned fitting?
 - Am I strong enough to pull any additional hose that I may need to the assigned fitting?
 - Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to any of those questions is yes, you are ready to pick up the breakaway and advance to the

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assigned fitting. If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose. Continue to flake out folds of hose as previously described until there is enough hose on the ground or help arrives. When you are ready to advance go to the breakaway and pick it up. You do not need to advance anything other than the breakaway if the path to the assigned fitting is clear and you are not supplying a portable monitor.

9. The hose is still attached to the hose bed so the engineer needs to be reminded to break the line when advised.
10. Place the breakaway over either shoulder so the hose pays off the back and the breakaway comes to rest in the upper chest area.
11. Check for vehicle traffic and personnel, call "**clear**" and advance to the fitting at a safe pace.
12. At the fitting look back to your pumper and call out to your engineer "**break my line.**"
13. Check for a gasket in the assigned fitting and properly attach the breakaway. If the assigned fitting is a fire department connection or a portable monitor, everything associated with the fitting needs to be made spanner tight.
14. Flake out the hose around the fitting if necessary and ensure that the breakaway is in the closed position.
15. When everything is ready, stand in a safe location and call for water.

UNSPECIFIED EXPOSURE LINE - HOSE SECURED FROM UNDER THE TAILBOARD

At times unspecified hose evolutions will begin with the male coupling lying under the tailboard with no fittings attached. Whether it is an exposure line or a supply line, you want to make the line ready to advance first, so the crew can take advantage of the "Unspecified" hose evolution. As always, inform the engineer of the order and your intentions.

1. Make an attempt to determine how much hose is under the tailboard.
2. From the tailboard, secure two to three folds of hose in order to clear the next coupling.
3. Pull turn and cradle this bundle of hose as you step down to the street while holding the handrail.
4. Pick up the male coupling from under the tailboard.
5. Check for traffic and personnel, calling out "clear."
6. Move the hose bundle out and away from behind the tailboard toward the fire.
7. Lay the bundle down in the street neatly then go to the nozzle and fitting compartment.
8. Secure the nozzle that was ordered and a breakaway. Let the engineer know about the equipment taken.
9. Check for gaskets and properly attach the fittings and nozzle to the male coupling in the street.

At this point you have the nozzle and fifty feet of working line secured and ready to go. If you can advance to the fire, it's time to go. If not, secure additional hose until you can. Remind the engineer that they will

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need to break the line when you call back to them. Secure the fifty foot coupling and nozzle, and then safely advance.

UNSPECIFIED SUPPLY LINE - HOSE SECURED FROM UNDER THE TAILBOARD

Being a supply line, it only needs a breakaway to be attached before it is ready to advance. You only need to pull additional hose out of the hose bed if you are going around the front of the apparatus or off to the side and there is no help available. The exception to that would be a supply line for a portable monitor, where fifty feet of additional hose would need to be secured for the hose control.

1. Go to the nozzle and fitting compartment and secure a 2½" breakaway, informing the engineer of your order, intentions, and equipment taken.
2. Go to the male coupling and move it from under the tailboard to a safe area in the direction of the assigned fitting. Check for personnel and traffic any time you move hose.
3. Check for a gasket in the breakaway and properly attach it to the male coupling.
4. Ask yourself those three questions:
 - Do I have enough hose on the street laid out properly to advance the breakaway to the assigned fitting?
 - Am I strong enough to pull any additional hose that I may need to the assigned fitting?
 - Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to any of those questions is yes, you are ready to pick up the breakaway and advance to the assigned fitting. If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose.

5. Any action that follows has previously been discussed and should be carried out properly.

"Unspecified" pulls:

1. Tell the engineer that they will need to break the line when you get to the assigned fitting or fire.
2. Call back to the engineer when you get to the assigned fitting or fire **"break my line."**

UNSPECIFIED EXPOSURE LINE - HOSE SECURED FROM UNDER THE TAILBOARD

At times unspecified hose evolutions will begin with the male coupling lying under the tailboard with no fittings attached. Whether it is an Exposure Line or a Supply line, you want to make the line ready to advance first, so the crew can take advantage of the "Unspecified" hose evolution. As always, inform the engineer of the order and your intentions.

1. Make an attempt to determine how much hose is under the tailboard.
2. From the tailboard, secure two to three folds of hose in order to clear the next coupling.
3. Pull, turn, and cradle this bundle of hose as you step down to the street while holding the handrail.
4. Pick up the male coupling from under the tailboard.

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5. Check for traffic and personnel, calling out "**clear.**"
6. Move the hose bundle out and away from behind the tailboard toward the fire.
7. Lay the bundle down in the street neatly then go to the nozzle and fitting compartment.
8. Secure the nozzle that was ordered and a breakaway. Let the engineer know about the equipment taken.
9. Check for gaskets and properly attach the fittings and nozzle to the male coupling in the street.

At this point you have the nozzle and one hundred feet of working line secured and ready to go. If you can advance to the fire, it's time to go. If not, secure additional hose until you can. Remind the engineer that they will need to break the line when you call back to them. Secure the fifty-foot coupling and nozzle, and then safely advance.

UNSPECIFIED SUPPLY LINE - HOSE SECURED FROM UNDER THE TAILBOARD

Being a supply line, it only needs a breakaway to be attached before it is ready to advance. You only need to pull additional hose out of the hose bed if you are going around the front of the apparatus or off to the side and there is no help available. The exception to that would be a supply line for a portable monitor, where one hundred feet of additional hose would need to be secured for the hose control.

1. Go to the nozzle and fitting compartment and secure a 2½" breakaway, informing the engineer of your order, intentions and equipment taken.
2. Go to the male coupling and move it from under the tailboard to a safe area in the direction of the assigned fitting. Check for personnel and traffic any time you move hose.
3. Check for a gasket in the breakaway and properly attach it to the male coupling.
4. Ask yourself those three questions:
 - Do I have enough hose on the street laid out properly to advance the breakaway to the assigned fitting?
 - Am I strong enough to pull any additional hose that I may need to the assigned fitting?
 - Is there a firefighter standing by ready to help flake out additional hose for me?

If the answer to any of those questions is yes, you are ready to pick up the breakaway and advance to the assigned fitting. If the answer to all of those questions is no, you will have to return to the tailboard and secure additional hose.

5. Any action that follows has previously been discussed and should be carried out properly.

"Unspecified" pulls:

1. Tell the engineer that they will need to break the line when you get to the assigned fitting or fire.
2. Call back to the engineer when you get to the assigned fitting or fire "**break my line.**"

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9.3--SHOULDER LOADING 3" HOSE

Occasionally, due to the location of the fire and obstacles along the path, 3" hose must be shoulder loaded from the hose bed to advance on the fire or assigned fitting.

1. From the tailboard, secure the nozzle, then move down to the street and face the hose bed.
2. Place the nozzle at chest level with the hose going up and over either shoulder and down the back.
 - The nozzle and reducer can be removed if fire conditions indicate that a nozzle will not be needed.
 - Remove any fittings not called for by the officer before loading hose onto your shoulder.
3. Let the hose go down the back to about the inner thigh area. Do not let any hose go below the knee causing a trip hazard.
4. Maintain control of the 3" hose coming out of the hose bed. Stop passing hose over your shoulder when the turn in the hose reaches the lower thigh area.
5. Pull more hose out of the bed until the front turn is at about the knee cap area. Maintain that length on the turn and pull the hose back up and over the same shoulder repeating the previous steps.
6. When you get to the fifty-foot coupling, have it end up on your back.
7. Another fifty feet of hose can be loaded on the other shoulder at this time if need be.

If a *solo shoulder load* is called for, proceed to the fire calling out **"clear, hose coming through."** In theory, this is an unspecified lay so remind the engineer that the hose line will need to be broken when advised. At the assigned task, call back to the engineer to break the line. If you are deploying an Exposure Line, stop advancing at the directed location and set down the one-hundred-foot coupling. Set the nozzle down and then flake out the working line properly. If the advance is for a supply line, there is no need to worry about the one-hundred-foot coupling. Simply stop your advance, call back to the engineer to break the line and remove any hose from the line not needed.

If the evolution calls for a *multi-firefighter shoulder load* effort, follow the steps below:

Step away, and toward the fire or assigned fitting about ten feet. Stop and wait for the second firefighter to shoulder load their hose. The second firefighter in line back from the nozzle sets up facing away from the apparatus (toward the nozzle person). A firefighter at the tailboard will pass hose over the shoulder of the firefighter being loaded. The firefighter being loaded secures the hose on their shoulder and sets the turns in the front while the firefighter at the tailboard takes care of the turns on the back side. Place the next coupling on the back of the second firefighter so it ends up in a safe area. Continue loading the other shoulder until it has approximately one hundred feet of hose on it. All couplings involved with the shoulder load advance will be positioned off the back of the firefighters. The reason for this is during the advance the hose pays off the back of the firefighters. We don't want the coupling to pass by the face of anyone as the hose is

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pulled from their shoulder.

When everyone is loaded and ready to go, begin the advance. Everyone secures the hose on their shoulder with a hand until they can't pull anymore hose. The last firefighter in line (nearest to the pumper) will be the first firefighter to start letting hose pay off their shoulder. During the advance as the hose comes off your shoulder, let the firefighter in front of you know when they will be getting the burden of the pull. Pull as much slack out of the line as you can before letting hose pay off your shoulder. When you clear all the hose off your shoulders ask the officer for further instructions. At the assignment, any unwanted hose is removed and the proper fittings replaced.

9.4--FIRE DEPARTMENT CONNECTIONS

The procedures used to secure the proper lengths of hose have already been covered. A "specified" and/or "unspecified" method will be used to pull the hose from the hose bed. This is a supply line operation so breakaways need to be secured and attached to the hose line prior to advancing to the fire department connections (FDC).

At the fire department connection, lay the breakaway down on the ground near the FDC. The breakaway should be placed up against the wall protecting it from damage and preventing it from becoming a trip hazard. Remove the standpipe inlet protection cap either by unscrewing it, or breaking it out with a pocket spanner. If the plug comes completely off, lay it down on the ground against the building with the male threads down. Next, a series of five checks must be performed on the inlet. If this is the first line into the system and there are two inlets, remove both caps and check both inlets. The FDC inlets need to be checked for:

- 1. Swivel** Manipulate the swivel to make sure that it will spin.
- 2. Threads** Check the condition of the threads and whether they will accept the breakaway.
- 3. Gasket** Look for and check the condition of the gasket just like any other female swivel.
- 4. Obstructions** Check for and clear any obstructions found in the inlet.
- 5. Clapper Valve** Push on the clapper valve to see if it is functional.

Connect the breakaway to the most difficult inlet to reach: the bottom inlet on a vertical stack, or the most difficult inlet to reach on a horizontal system.

Make **all connections** on the FDC **spanner tight**. Initially secure the breakaway by hand until the coupling is set and then use a pocket spanner - (clockwise from the swivel's perspective). Ensure that the breakaway is in the closed position, stand in a safe area and call for water. Notify personnel above that the system is getting charged. Slowly open the breakaway. Fix any leaks and/or kinks in the area.

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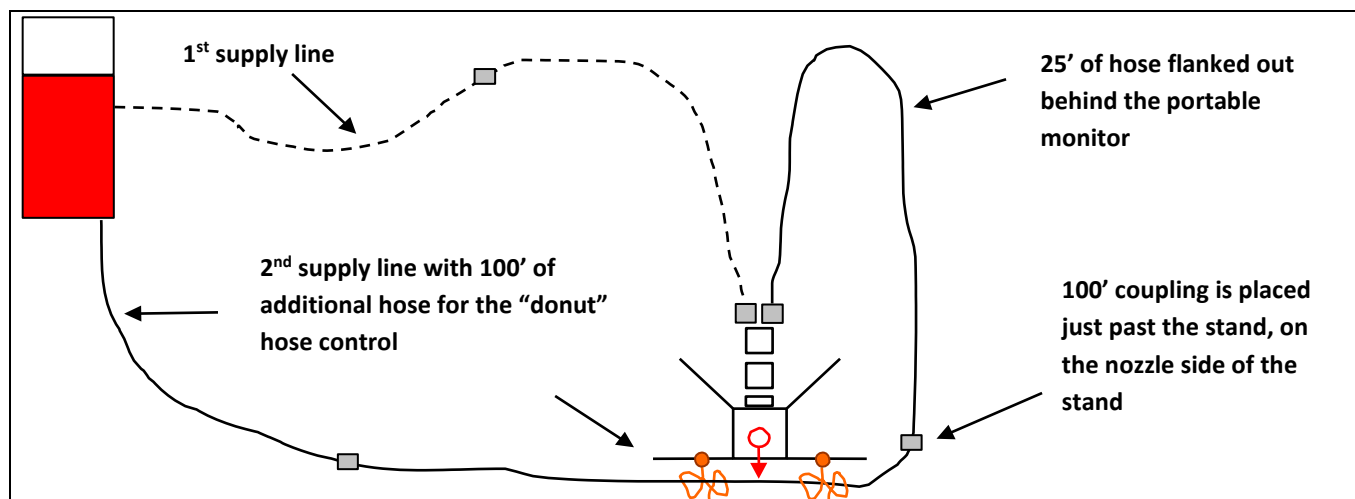
9.5--RESTORING THE FIRE PROTECTION SYSTEM

Fire Protection Systems must be restored after being used. A firefighter with a portable radio will go to the roof. When the roof person has been told that the system is shut down, they will take off the roof discharge cap and open the valve. A firefighter with a portable radio will go to the breakaways at the ground level FDC. They will close and then remove the breakaways. At the same time, the engineer will be shutting down and draining the supply lines at the pump. Other firefighters will be securing the highrise hose packs and bringing down equipment.

The clapper valves in the ground level FDC prevent the system from being drained. A firefighter will take a section of 2½" hose to the second floor FDC and attach the line to the discharge. They will locate an area to drain the system so the water will not cause further damage. The firefighter will then open the valve and let the system drain through the hose line. When the system has been drained to that discharge the firefighter on the second floor will let the firefighter at the ground level FDC know that they can now drain the rest of the system. The firefighter at the ground level FDC will slowly place a pocket spanner into one of the FDC inlets and allow the system to drain completely. When the system has been drained, restore all valves to the closed position and replace all caps and/or plugs.

SUPPLY A 3" PORTABLE MONITOR

3" Portable monitors can be supplied by two 3" supply lines. Secure the initial supply line with a breakaway and pull directly to the monitor. Secure the second supply line as if it were an attack line. Meaning that there needs to be fifty feet of additional hose secured and advanced to the portable monitor. You do not need the nozzle only the additional hose and breakaway. Use the specified or unspecified method to secure the supply line as directed by the officer. The fifty feet of hose will be used to form the "Donut" hose control around the monitor.



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1. The first supply line can be brought directly to the portable monitor without the additional hose. The first line should also be positioned so that the last twenty-five feet of hose is coming straight at the stand and in line with the water flow. This will help prevent twisting of the stand when both lines are charged and help to improve nozzle reaction control.
2. Secure a second 3" supply line with an additional fifty feet of hose in the same manner as you would secure a 3" exposure line, minus the nozzle.
3. Advance the breakaway and fifty feet of hose to the portable monitor as if you were advancing an exposure line.
4. At the portable monitor, form the "Donut" hose control using the additional fifty feet of hose. If you were using the "unspecified" method to advance the supply line, you need to call back to the engineer to break the line once you know that you can get the fifty foot coupling around the stand.
5. Look back at the additional hose that you brought and decide how best to lay the coupling and breakaway down so that you can wrap the monitor's stand and form a "Donut" hose control. The direction of the advance as it relates to the stand and water flow will dictate your next moves.

If you are coming straight at the stand and water is going to be applied straight out from there, the process is very simple. Lay the breakaway down next to the female swivel. Lay the coupling over the stand so it ends up on the *nozzle side* of the stand. Go back to the turn in the working line and make a double arm turn there

If the approach to the stand and water flow were from the side, lay the breakaway down near the stand's female swivel. Pull the coupling past the stand and then flip it and the hose over to the front side of the stand. The coupling should end up on the nozzle side of the stand with the hose line passing across the front of the stand. Flake out the fifty feet of working line properly and safely.

- * The fifty-foot coupling is placed on the *nozzle side* of the stand. The stand is between the coupling and the pumper. Hose and couplings move forward and twist to the right when charged. You do not want the coupling to move into your stand, straps or knots when the line gets charged.
 1. Use one or two Webblings if there are no manufacturer straps available to loosely tie a clove hitch and an overhand safety around the hose line, incorporating the portable monitor stand. Most portable monitor stands come with a short section of chain. It was not meant for this purpose, but the chain can also be used to secure the section of hose to the stand. Wrap the chain around the hose several times and then fasten the chain back onto itself or the monitor stand.
 2. The second supply line can be brought directly to the portable monitor without the additional hose. This second line should also be positioned so that the last twenty-five feet of hose is coming straight at the stand and in line with water flow. This will help prevent twisting of the stand when both lines are charged and help to improve nozzle reaction control.

Two 3" supply lines have been secured to the portable monitor's stand with breakaways already

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attached. The 2½" Siamese fitting is used when two 3" hose lines are coming together to form one. There are two methods used to attach two 3" supply lines to a 3" portable monitor. They both require breakaways on the supply lines and a 2½" Siamese.

INCREASER METHOD

When the 2½" to 4" increaser is available, it is the quickest and simplest method for securing two 3" supply lines to a 3" portable monitor. The following equipment will need to be secured from the nozzle and fitting compartment. Always notify the engineer of any equipment taken from their rig.

1. 2½" Siamese
2. 2½" to 4" increaser

When you are attaching multiple fittings together; make an attempt to keep the female swivels in play throughout the process. You don't want to come to a hose and fitting connection and have to twist the hose around in order to make the connection.

1. Attach the increaser to the portable stand's female swivel after checking for a gasket.
2. Check for a gasket in the 2½" swivel on the increaser then attach the siamese to the increaser.
3. Check for gaskets in the Siamese, and then attach both supply line breakaways to the Siamese.
4. Make all connections directly associated with the portable monitor stand spanner tight.
5. Ensure that both breakaways are in the closed position and then prepare to call for water.

REDUCER METHOD

If the increaser were not available because it was being used at the hydrant, the second choice would be to use the 4" to 2½" reducer if it is available. The following equipment will need to be secured from the nozzle and fitting compartment.

- 2½" Siamese
 - 2½" double female
 - 4" to 2½" reducer
 - 4" double male
1. Check for a gasket in the stand's female swivel and then attach the 4" double male to the swivel.
 2. Check for a gasket in the 4" to 2½" reducer and then attach it to the double male.
 3. Check for gaskets (two) in the 2½" double female fitting and attach it to the reducer.
 4. Attach the siamese to the 2½" double female.
 5. Attach both breakaways to the siamese and then ensure that every fitting associated with the portable monitor is made spanner tight.
 6. Ensure that both breakaways are in the closed position, stand several feet off to the side of the hose line in a safe area and then prepare to call for water.
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* If there are pins in the stand that can be driven into the ground, do so after the hose line is charged with water with a sledge hammer safely.

9.6--WATER STREAM APPLICATION

EXTERIOR WATER STREAMS – EXPOSURE LINE

The choice of water stream to be used is based on fire conditions and the task that has been ordered. If an exposure line is called for, a narrow fog pattern is usually the best. Adjusting the stream pattern collar on a variable stream nozzle will change the stream pattern from straight stream to wide fog. Left for life, right to fight. Turning the collar to the left as you hold the hose line will cause the stream to widen. Turning the collar to the right will cause the stream to narrow.

Water from the exposure line is directed onto the surface of the building that is to be protected. Keeping that structure's surface cool and wet is the best way to protect it. An exposure line is not to be directed on or into the structure that is already involved, as this action could adversely affect interior operations. Initial exposure lines can be re-assigned to become backup lines following the Incident Command's plan of action

On multistory structures involved, fire lapping could be a problem. Upper floors are considered exposures and must be protected. It is a delicate job to protect the upper floors from fire and not affect interior operations. A narrow fog pattern directed on the exposure surface will protect the exposure and limit the effect of the stream on interior operations. Directing the water stream from off to the side will also limit the possibility of hampering interior operations.

Never apply water through an open window or ventilation hole while interior operations are underway. This action forces heat and smoke back into the structure and may cause injury to other firefighters.

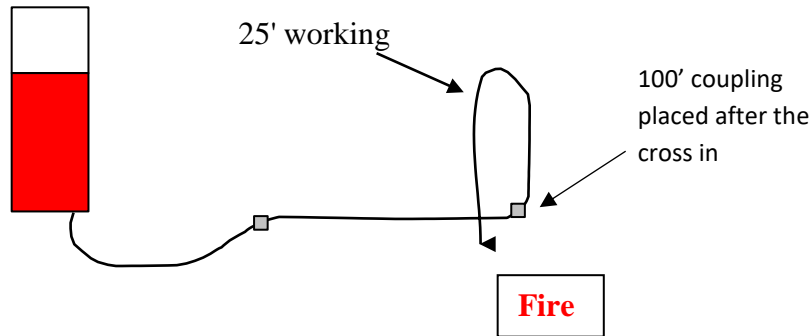
WATER CURTAIN

A water curtain is used to protect exposures from a well involved structure. Usually this application is accomplished using a 3" line or a master stream monitor. Ladder pipes and other elevated streams can also be used. Create a curtain of water between the involved structure and the building that is being protected. A fog pattern of varying degree is used to absorb the heat from the fire. The millions of small water droplets with all of their combined surface area will absorb large quantities of heat when properly applied.

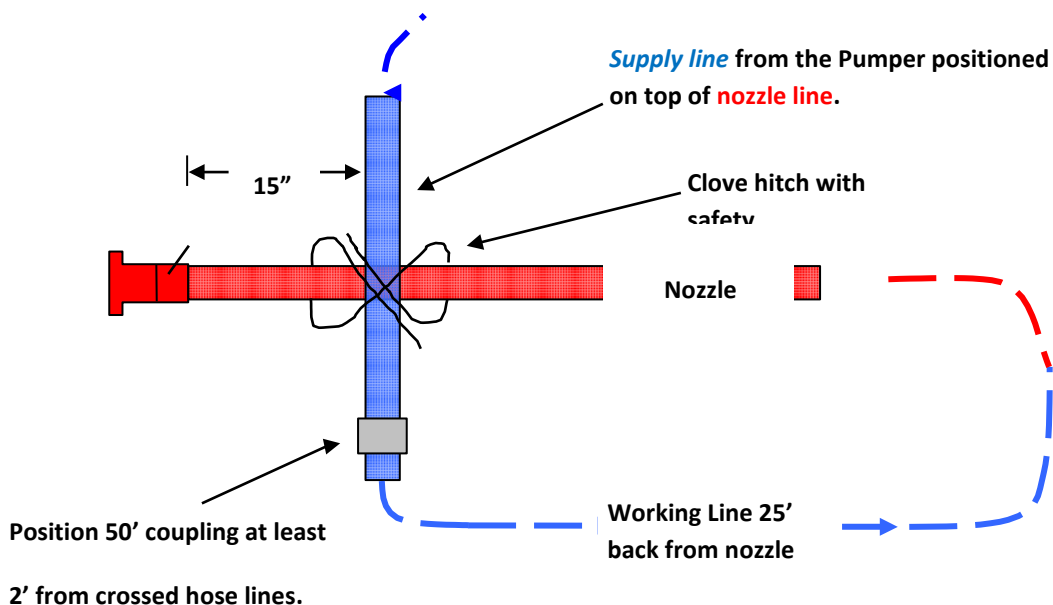
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“DONUT” HOSE CONTROL (Q-ING THE LINE)

When the 3" exposure line operation is going to be stationary for quite some time, setting up the “donut” hose control should be considered. Secure the nozzle and hose line from the apparatus as directed by the officer and then prepare to advance.



1. Advance to the directed location, stop turn and look back at the pumper. If you need to tell the engineer to break the line this action helps you remember to do that.
2. Determine how best to lay the coupling and nozzle down to make setting up the hose control easier.
3. Set the nozzle and coupling down and then start flaking out your hose line so approximately twenty-five feet of hose is laid out behind the nozzle and in line with the anticipated water flow.
4. Make a double arm span in the far turn of hose and then return to the nozzle and coupling.
5. Lift up the fifty foot coupling and slide the nozzle with approximately fifteen inches of hose under the **supply hose** and coupling. Adjust the placement of the cross in the hose so the coupling is at least a couple of feet toward the **nozzle** side of the cross.



6. Use Webbing to tie a clove hitch and overhand safety around the crossed sections of hose.

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7. Sit down on the crossed area of the hose with legs crossed. Run the hose through your crossed legs so the hose and nozzle are being supported by your calves and boots. Perform the nozzle checks and call for water.

If a 3" exposure line is already charged and flowing water when the decision was made to go to a "Donut or Q-ing" hose control, the line needs to be shut down temporarily at the nozzle. We very rarely move 2½" hose lines while they are flowing water, and we never move them during this operation.

1. Safely shut the line down at the nozzle, and then lay the nozzle down on the ground.
2. If the one hundred feet of working line is still in place and set up properly, the next moves are very simple. Go to the one-hundred-foot coupling, which should be lying nearby. Lift the coupling and hose up and then flip the working line over the nozzle hose line just behind the nozzle. The coupling should end up on the nozzle line side of the crossed hose sections.
3. Work your way back to the turn in the working line uncrossing the hose so as to create another properly flaked out line (twenty-five feet of hose straight back behind the nozzle).
4. Return to the nozzle and rearrange the hose lines so the nozzle is approximately fifteen inches forward of the crossed hose lines and ensure that the coupling is in a safe area.
5. Tie off the crossed hose lines as previously described.
6. Sit on the crossed sections of hose and then slowly and carefully open the nozzle.

If you have help to perform this operation, one firefighter goes back to the turn in the working line while the other firefighter lifts up and controls the one hundred foot coupling. Working together they flip the working line over the nozzle line. They work together to lay out the new working line so that it lines up with the anticipated flow of water. They can work together at the crossed sections of hose to ensure that the coupling is in the proper location. Tying off the hose control knot and ultimately controlling the hose line is a one person task. The second firefighter can now be assigned another task if need be.

2½" PLAYPIPE

That reassignment for the second firefighter may be to secure a different nozzle. When the decision has been made to go to a "Donut or Q-ing" hose control which is obviously a stationary hose line tactic, it probably means that we are going "Defensive." Going defensive in the fire service means; interior crews are going to be pulled back outside. Large flow lines are now going to be placed into operation in an attempt to hold the fire and confine it to the building involved. The 2½" s.o.f. nozzle kept on the 3" hose bed is a good all-around nozzle. When we go defensive however, there is a better one. If your assignment is to go defensive and put water on the fire, the 2½" playpipe nozzle is a good choice. It is not a good attack line, so make sure you understand your orders, This nozzle is kept in the nozzle and fitting compartment without a breakaway pre-attached. Anytime you are going to place this nozzle into operation, make sure that

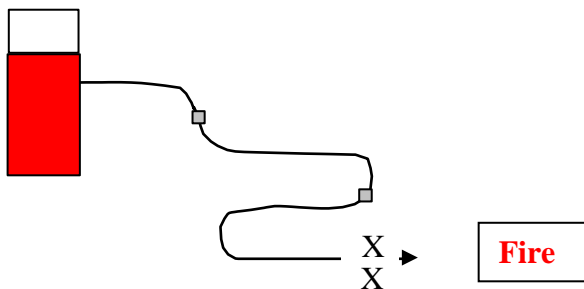
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you have a 2½" breakaway either secured with the nozzle, or have one available at the end of the line. There are different manufacturers of our playpipe nozzles, but for the most part the nozzle comes with three removable smooth bore tips: (1") (1 1/4") (1 1/2"). The nozzle comes off the apparatus with the 1" tip in play. If you are directed to flow more water, close the breakaway and start removing tips until you are at the directed flow and/or tip size. The playpipe is considered a hand held nozzle, but serious consideration should be given to using the "Donut,"(Q-ing) "Pike pole" or another form of hose control prior to conducting extended playpipe operations.

PIKE POLE HOSE CONTROL

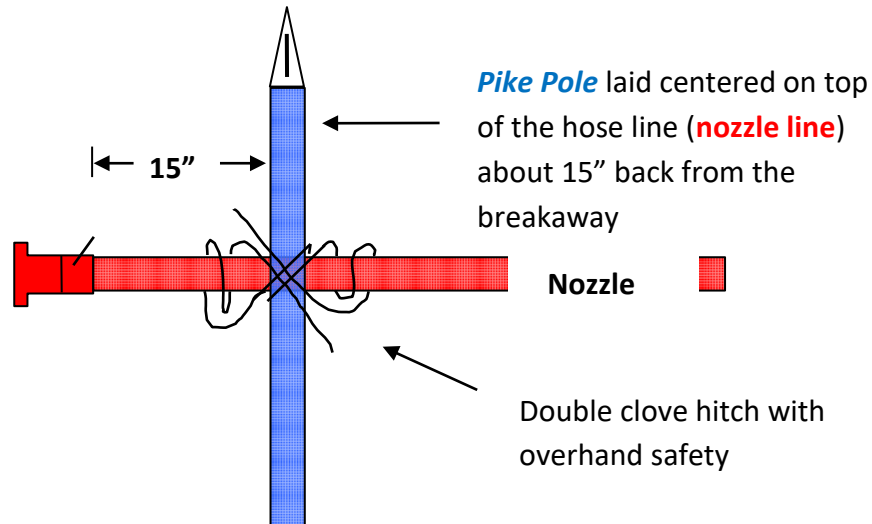
The "Pike Pole" hose control is a two-person hose control. This hose control offers mobility and relative comfort from the stresses of nozzle reaction. It can be used with 1¾" and 2½" hose lines. The additional equipment needs are, webbing and a 6' pike pole.

Shut down the charged exposure line properly. Lay the nozzle and hose line down on the ground pointing in the direction of the fire with approximately twenty-five feet of hose line laid out straight behind the nozzle. Secure the 6' pike pole laying it over (on top of) the hose line approximately fifteen inches back from the breakaway. Have the pike pole centered on the hose line with approximately three feet of pole on either side of the hose line.



1. Use a Webbing to tie a "double clove hitch" around the hose and pike pole. You want to secure the hose to prevent the nozzle from moving back toward the pike pole as a result of nozzle reaction.
2. To prevent this movement a "clove hitch" is tied beginning on the hose. The wraps of Webbing need to be made on the hose line to grab the hose and prevent it from moving.
3. What is meant by a "double clove hitch" is making every move with the Webbing twice. Make two wraps around the hose with the Webbing. Make two wraps around the pike pole with the Webbing as the line is crossed over the pike pole to the other section of hose.
4. Make the last two wraps around the hose line, bringing the running end of the strap tightly up to join with the other end. In so doing, more friction is caused between the Webbing and the hose line.
5. Make your knot (double clove hitch) clean and tight, finishing it off with a "over hand knot" for a safety. You want to constantly monitor the hose control knot to ensure its continued integrity.

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With the knot securing the hose line to the pike pole tightly, one firefighter will stand on either side of the hose line facing the fire.

1. They will crouch down and pick up the pike pole together supporting the hose and nozzle as they stand up.
2. They should both place their inside foot a little forward of their outside foot with a wide stance for balance. This will offer a better stance to absorb nozzle reaction and also offer a place to rest the pike pole.
3. Rest the pike pole on the upper thigh area of the leg up close to the body.
4. Check the knot and hose line to ensure stability.
5. Check the nozzle to ensure that it is set on wide fog.

When both firefighters are ready open the breakaway slowly. When the breakaway is opened all the way, check to ensure the hose control knot is secure and doing its job. Slowly adjust the nozzle to the desired settings, each time ensuring that the hose control knot is continuing to do its job. Throughout the course of water application, check to ensure that the hose control knot continues to remain secure and tight.

If the water stream needs to be directed in a different direction, the firefighter controlling the nozzle simply moves the nozzle in the desired direction using the fifteen inches of hose between the breakaway and pike pole. If more movement is needed from left to right, the firefighter on the opposite side of the hose from the turn moves forward slowly. Moving forward is safer than moving backward with a flowing line. If an exaggerated move is necessary, shut the line down at the nozzle before moving. Reset the "Working line" then set up the hose control once again. If you need to move the hose line to a new location, you should shut the line down and then work with other firefighters to pull the needed hose to the new location. From there you will reset the working line and check your knot.

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If you need to move this line to a different position while flowing water, at least three firefighters should be used. It is enough that the knot be asked to control nozzle reaction, it shouldn't be asked to pull hose also. The two firefighters will maintain their position at the pike pole. Any other firefighters available should take up position along the working line. Everyone should move in cadence so as not to cause any radical and unpredicted movements. The nozzle should be set to a lower GPM and wide fog pattern for safety, hose control and fire protection. When everyone is ready to move, the officer should call out the cadence so everyone moves together. At the new location, reset the working line, check your knot and adjust the water flow settings accordingly.

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HIGHRISE OPERATIONS

SECURING EQUIPMENT

Once you get to the fire floor and begin your advance, highrise operations are very similar to any other type of interior attack. The main difference is that you are very isolated from your apparatus and its equipment. The Engine Company needs to take everything that they believe they will need at the fire with them.

It doesn't matter who takes what up to the fire, as long as all the required equipment makes it up. In the early stages of a high-rise response, the elevators should not be used. Therefore the stairwells are the primary avenues of access to the fire floor. Getting the required equipment to the fire floor can be quite an ordeal. Personnel should share the load on the way up to the fire, so the firefighters will be able to work when they get there. In Operations for the most part, an Engine Company will respond to their assignment as a four member team. The engineer and obviously the officer will respond with the two firefighters to their assignment. They will all share the load in securing equipment to the fire floor. The following is an example of what equipment should be advanced to the fire floor unless otherwise directed by I.C. (Incident Command) Operations, or your officer:

- High-rise hose packs "A" & "B"
- Four spare air bottles
 - Two air bottles (tied off using webbing with two larks foot tied on either end of the strap and placed over the air valve.)
- Thermal Imaging Camera
- Forcible entry tools.

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DEPLOYING THE HOSE PACKS

Depending on the configuration of the stairwell being used, the floor below the fire is the standard landing from which the hose packs are to be supplied. The spare air bottles can be dropped off two floors below the fire, but the rest of the equipment needs to be advanced with the crew to the fire.

In between each floor, there is a midway landing. This is where the stairs take a turn and create a straight shot to the next floor. It is from this landing that hose pack "A" should be deployed.

1. Lay hose pack "A" down on the landing. Remove the retaining strap.
2. A firefighter will then take the gated wye and retaining straps down to the FDC. on the landing below.
3. Once there, the firefighter will call back to their crew above that they are at the FDC. It is important that the nozzle not be removed from the "Cleveland Roll" prior to the gated wye reaching the supply discharge. If the nozzle comes out of the pack first a twist is made in the hose line making deployment difficult.
4. Once the standpipe has been reached with the gated wye, the hose pack can be made into a circle if it hasn't already been done, and the nozzle removed.
5. When the hose pack gets charged, the line can easily be advanced straight up the stairs to the fire floor.

The firefighter at the FDC. Will remove the discharge cap and place it safely on the floor if it comes off. They will then check for a gasket and connect the gated wye to the discharge valve. All hose and fitting connections associated with fire department connections will be made spanner tight. Next the firefighter will use one snap buckle set to secure the unused gated wye valve in the closed position. Once advised, they will charge the attack line slowly but continuously. When the valve is fully opened, use another snap buckle set to secure it properly. They will then mask up and assist in advancing the attack line to the fire. The team will ensure that they have forcible entry tools and move up the line with the crew as well as hose pack "B."

Once the gated wye makes it to the FDC below, hose pack "A" can be deployed in preparation for advancement. As previously stated, it is important that the nozzle is not removed from the center of the hose roll prior to the gated wye reaching the supply discharge. Once the supply has been secured, make the roll into a circle and remove the nozzle.

The nozzle can be placed off to the side while the nozzle person "masks up." When all P.P.E. is donned the nozzle person will check the nozzle and call for water. Although it would be nice to know that we have good pressure on the attack line, it is not always possible to perform a "pressure pattern" test on the nozzle in a stairway. When and where you can however, a test should be performed.

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Note – High-rise equipment bag” typically comes with a 6’ section of 2 ½” hose attached to the gated wye. The purpose of this hose is to give you an additional option in the event that the positioning of the FDC outlet in the stairwell doesn’t allow enough room for you to make your gate wye connection directly to the outlet (example –outlet is too close to pipes or a wall etc.). In the event of this scenario, you are to connect the 2 ½” hose directly to the 2 ½” male FDC outlets in the stairwell and place the gated wye on the floor. The previous listed high-rise hose pack deployment procedures are then followed.

ADVANCING THE ATTACK LINE

When at least two firefighters are ready to advance to the fire, "click in" on the S.C.B.A. mask and advance to the fire floor. If you are on the nozzle, make entry into the fire area as you would any fire area. If the door to the fire area is closed, use the two firefighter method of entry. If the door is open, enter the area staying low where the visibility is better. Advance the nozzle to the fire staying alert to changing fire conditions and fire victims. If possible, use a flashlight to help locate obvious victims. Understand that getting to the fire and extinguishing it may be the best thing to do for potential fire victims. At the fire, check the stream collar ensuring that it is set on straight stream. Let other firefighters in the area know that you are about to open the nozzle.

If you are acting in support of the nozzle person, you should be pulling and/or pushing hose line to the fire. A firefighter should be at the top of the landing leading into the fire area. From that position, they will face the hose pack below and pull hose up into the fire area as needed. Forcible entry tools should also be advanced up the line. Support personnel can also be using a flash light to search the immediate area for fire victims. Like any other interior attack, there needs to be one firefighter on the nozzle, and all the other firefighters working in support of the nozzle person.

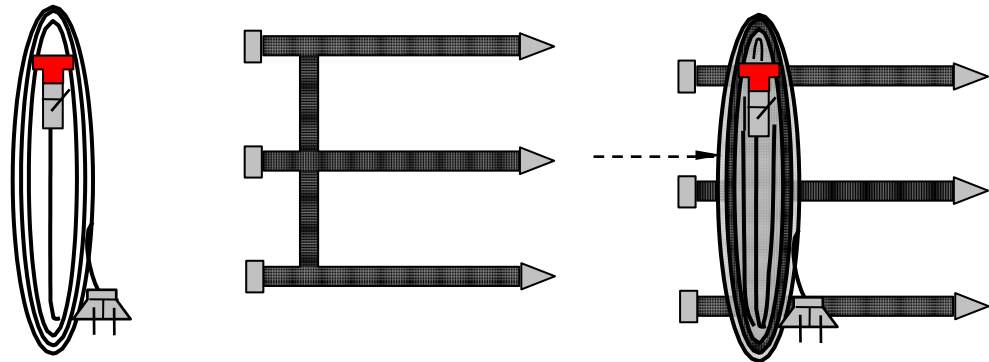
When the fire is knocked down, the crew needs to make certain that there is no fire extension. Use the forcible entry tool to check walls and ceilings for extension. The team should also conduct a "Primary Search" of the immediate fire area. Other Companies will have been given this task, but if conditions permit, your area should be searched. The officer will notify "IC" or Operations that the fire is out, and await additional assignments if any.

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SECURING THE "CLEVELAND ROLL"

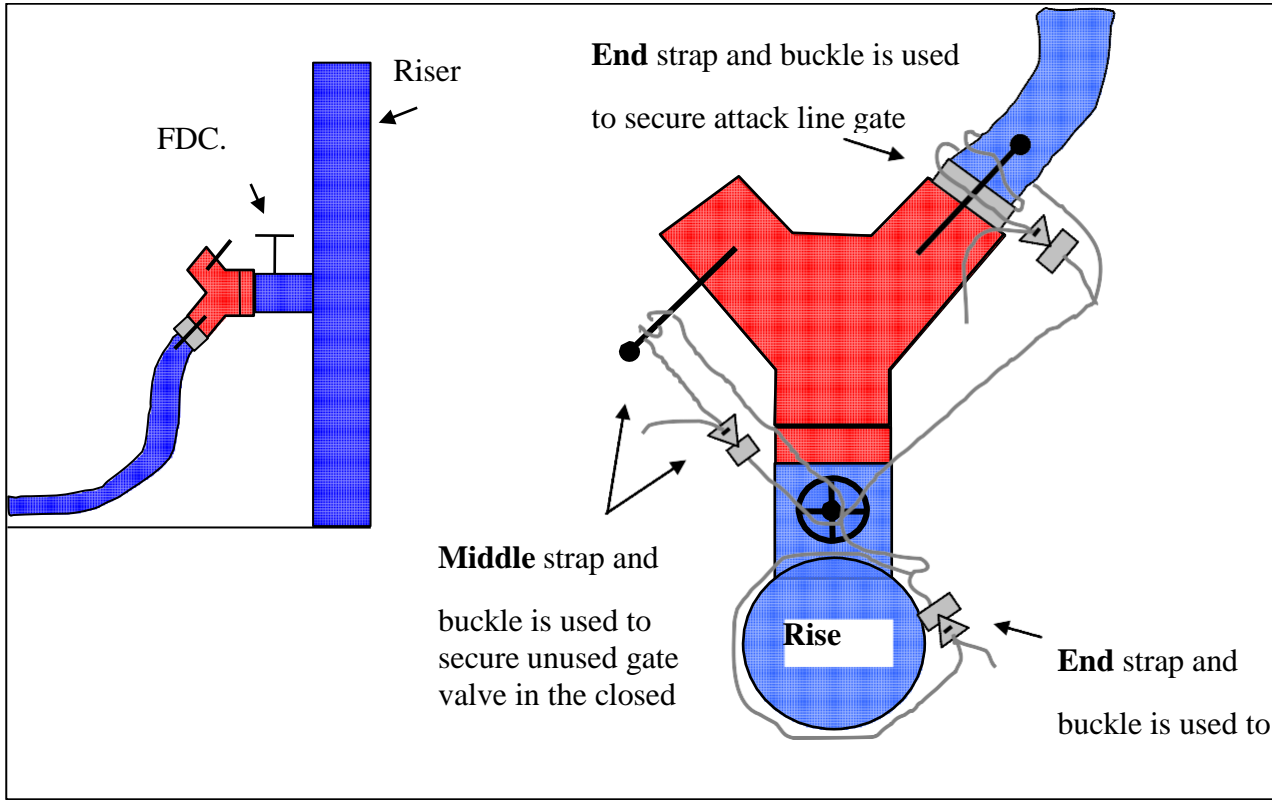
After draining the hose, lay each section out flat. Beginning with the female coupling, make a "Straight Roll." Begin with the female coupling so it ends up in the middle of the roll. Place the breakaway and nozzle on the free male coupling when the roll is complete. Begin the "Cleveland Roll" with the nozzle in what will become a three foot oval. Lay out approximately three feet of hose behind the nozzle then make a tight turn back to the nozzle. Continue making tight turns around the nozzle and the first turn (3') until 100' of hose has been wound in a tight oval. Place the appropriate fitting 2½" gated wye or 2½" to 1½" reducer (pack "A") on the last female coupling. Lay out the hose retaining strap. Lay the hose bundle down onto the strap. Squeeze the hose bundle together in an attempt to make it as tight as possible. Snap the buckles together while squeezing the hose pack. Pull tension on the loose end of the strap coming out of the male buckle to set the strap tightly against the hose bundle.

Hose Pack "A" 100' of 1 ¾ hose
 Break-away, 7/8"-15/16 SB Nozzle, 200 GPM
 select-o-flow nozzle 2 ½ Gated Wye 3' tight oval
 "Cleveland Roll"



Hose Pack Remaining Harness

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VEHICLE EMERGENCIES

Vehicle emergencies are a common occurrence in our department. From the simple fender bender to a fully involved tanker, we must be ready to perform our duties professionally and safely. When a vehicle is involved in an accident and the occupants are trapped, safety lines need to be secured. Safety lines can be charged with water or foam depending on emergency conditions. If there are indications that the vehicle's fuel system might have been involved in the collision or fire, foam lines must be considered.

The officer will spot the apparatus where it will not become part of the problem. The apparatus should also spot in such a way as to protect the crew during fire ground or rescue operations. It is still very important that the firefighters keep aware of the environment they are working in:

1. Stay visible to traffic and other crew members.
2. Stay within the protective screen of the apparatus on road ways.
3. Be aware of the potential for fuel vapor explosions, fuel burning on the street, battery powered vehicles and their inherent problems.
4. While conducting vehicle rescue operations, be mindful of the passenger restraint systems that may without warning go active and discharge.
5. Stay away from being directly in front of bumpers if they have been heavily involved in fire.

VEHICLE FIRES

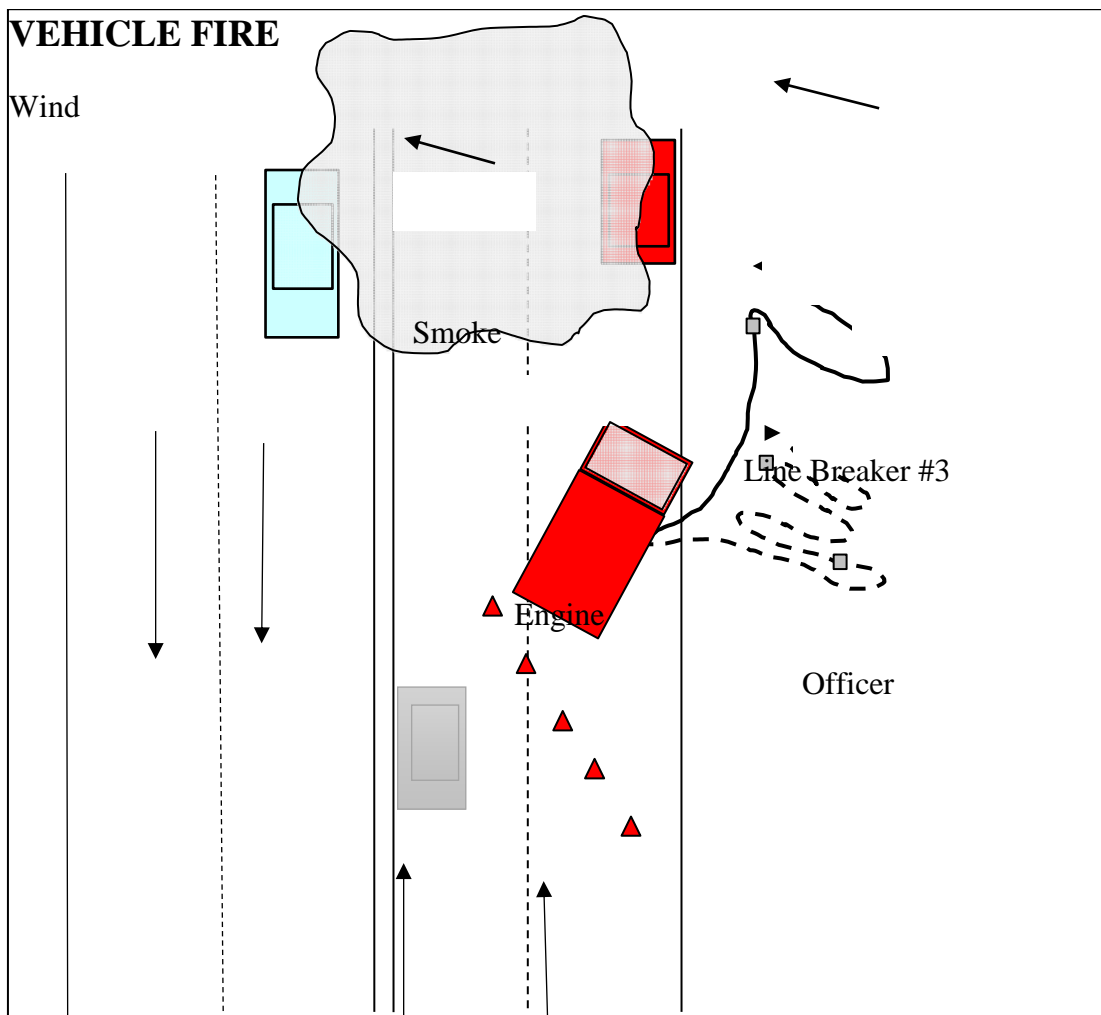
All firefighters associated with the extinguishment of the vehicle fire will be in full P.P.E. and have their S.C.B.A. donned.

The term "proper angle" is used to describe the approach of the attack line team to the vehicle fire. Proper angle refers to drawing an imaginary line off the bumpers of the vehicle. That line is drawn at an angle of approximately 45 degrees outward from the corners of the vehicle. Do not approach or conduct operations within the 45-degree arc off the front or rear of any vehicle. Be mindful of the hazards associated with the front and rear bumpers of fully involved vehicle fires. The piston assemblies on modern vehicle bumpers can heat up and become a lethal projectile. Come in from the side of the vehicle staying clear of the bumpers. Another concern is traffic; ensure that while conducting fire ground operations, all personnel remain out of traffic lanes. Make every attempt to stay out of the smoke so that you remain visible to your crew and traffic.

Work from the sides of the vehicle. Secure entry into the passenger compartment through an open door or by forcing a window. Gain entry into the engine compartment by means of a Halligan Bar. From the side of the vehicle, "tent" the hood creating an opening for the nozzle. The hood is tented by placing the claw or adz of the Halligan Bar in the space between the hood and fender. Make an opening by twisting and

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prying with the tool. Spray water into the opening until the fire is out and the front end of the vehicle has been completely cooled. Cooling the front end will lessen the chance of vehicle equipment failure while you overhaul the engine compartment. If the fire is in the passenger compartment, it is usually nothing more than a class "A" fire. Approach from the side of the vehicle, gain access to the compartment and extinguish the fire. Be mindful of very hot vehicle body parts and broken glass. A firefighter should be standing back from the vehicle watching for fire condition changes (fuel problems).



Depending on the type of apparatus, the officer will have the engineer spot the pump so it offers the most protection for the crew during fire ground operations. The engineer is in a vulnerable position during fire ground operations. Spotting the apparatus in such a manner offers the most protection for the engineer and firefighters during fire ground operations. It is never going to be totally safe for everyone involved, but we do our best to prevent problems. Place traffic cones and/or flares in a pattern that

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will direct oncoming traffic away from the crew and apparatus. Stay out of the smoke and remain visible to your crew and traffic. Stay within the protective cone of the apparatus or out of traffic lanes whenever possible. S.C.B.A. will be fully donned by the firefighters while they approach the fire, extinguish it and conduct overhaul operations. There are many hazards associated with vehicle fire emergencies. Extremely toxic smoke is one that may have a lingering effect on unprotected firefighters.

FUEL FIRE INDICATIONS

Due to the inherent hazards associated with fuel and the limited water supply, it is very important that the firefighters recognize early the potential of fuel involvement.

Two good indications that fuel is involved in the vehicle fire are:

1. The street is on fire. Streets do not generally burn unless there is burning fuel on them.
2. The normal tendency of a fire is to diminish in intensity when water is applied. If fuel is involved, the opposite appears to happen. When water is applied to the fire and the fire expands or intensifies, more than likely fuel is the problem. Some exotic engine components (magnesium) also exhibit this tendency when water is applied during a fire. In either case, the standard application of water is not the answer.

FOAM APPLICATION

Foam is a mixture of AFFF, water and air. To get the proper mixture, foam proportioner equipment needs to be added to the line and proper pump pressure calculated. Several apparatuses have built-in foam systems on the pumper. In order to get the best quality foam, the breakaway on the foam nozzle needs to be fully opened. Foam nozzles will add air to the water and AFFF mix. Let the foam float over the vehicle or spill. When foam is being applied, water streams will be shut down and placed in "standby" as protection lines for crew members approaching the vehicle. When applying foam, use one of the three approved methods, Roll on, Bank Down, Rain Down.

VEHICLE FIRE - SCENARIO

A well-trained fire company will automatically fall into their roles at most vehicle fires. All personnel involved with the extinguishment of the fire will have their S.C.B.A. on. Both firefighters should assume that the first thing they will do upon arrival at scene, is don their S.C.B.A.

The engineer will spot the apparatus in such a way as to protect the crew during fire ground activities. They will place the apparatus in pump and set the wheel chocks. Most vehicle fires can be handled with the water supply carried on the apparatus. The engineer will "Dump the tank" to supply the attack lines. With the water supply for a typical vehicle fire coming from the water tank, the nozzle person needs to consider GPM flows. Try to control the fire using lower GPM flows if possible.

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The officer may secure the attack line (usually the 100'bumper line). If not, one of the firefighters will secure the attack line (typically Line Breaker #3). Drop Off #4 typically secures a forcible entry tool and assists their partner with advancing the attack line. The firefighters will approach the vehicle together with a charged hose line and breathing air from their S.C.B.A.

A back up line should be deployed by the officer and/or engineer. This hose line will secure the scene should the original hose line need to be reconfigured for foam, or if there is a problem with the original attack line. If foam is needed and the apparatus is not automatically equipped, a foam proportioner will need to be added to the original line. The crew will work together to assure that the scene remains safe while the attack line is reconfigured for foam. When the foam line is ready, shut down the back up line and apply foam. Apply the foam from a distance so it covers the entire area. Bouncing foam off the street and/or parts of the vehicle is an effective method also. Leave the breakaway fully opened to ensure proper mixing of the foam. Do not apply water to the foam blanket.

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VEGETATION FIRE - SCENARIO

Like the vehicle fire, most vegetation fire evolutions are supplied by the water tank. It is important at most vegetation fires to keep the apparatus mobile. Unless your pumper is protecting several houses during a wildland fire, most officers will not tie their apparatus to a fire hydrant. That doesn't exclude the officer from calling for a supply line later in the fire. Usually it will be a 3" supply line hand laid to a nearby hydrant.

The firefighters will respond to the emergency wearing their brush gear. Brush gear consists of double layer protection using brush pants and coat. Consideration should be given to wearing a long sleeve shirt under the brush coat. A brush helmet can be worn with the nomex heat shield or nomex hood. Gloves will be worn and finally wildland web gear will be secured by all personnel on the fire line. Once at scene, the engineer will configure the apparatus for pumping operations. The officer will size up fire conditions and make their radio report. The firefighters need to be patient and let the officer determine what hose lines and nozzles need to be placed into operation. It can be anything from small diameter hose with a 3/8" nozzle, to a 3" supply line with 1¾" hose and nozzles added.

As with most evolutions, the Line Breaker #3 will be responsible for securing the called for attack line and nozzle. Drop Off #4 will assist by securing any additional equipment or hose called for by the officer. Every fire is different and vegetation fires are no exception. With that in mind, the firefighters may at times change roles depending on the evolution. Stay flexible, listen to orders, and then complete the evolution as directed.

With the attack line decided upon, the two firefighters will advance on the fire and control it. The nozzle person needs to keep in mind the limited water supply. Lower the GPM flow when possible to conserve water. When possible, work from the burn. The one problem with working from the burn is that the ground area is usually hot. Hot spots can burn through the attack line. Wet down the area the hose is going to be drug through. Continuously check the hose line behind your position, wetting it down frequently.

A tight fog pattern is a good choice to use while advancing a flowing attack line. This pattern wets down a larger area and is easier to advance. If you need to burrow down into a deep seated fire area, go to a straight stream. If you are using the small smooth bore nozzle, placing a finger over the tip will create a broken fog stream effect. Another way to get the same effect is to slightly close the breakaway. The small smooth bore nozzle is a great tool, and with the proper pressure and application can extinguish a lot of fire.

If you are the support firefighter along the attack line, take up position approximately ten to twelve feet behind the nozzle person. From this position you will be able to help out with hose control and pull the lion's share of the hose. This will allow the nozzle person to concentrate on the fire. Placing the hose on top of your shoulder and pulling it from there, will help keep your momentum going forward as the team advances

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PROGRESSIVE LAY / VEGETATION FIRE

Vegetation fires are not usually confined to one localized area. These fires are usually moving, and most typically away from the apparatus. Progressive hose lays are used to add hose to the original attack line. While the nozzle person controls and protects the area around the nozzle, the backup firefighter will secure the additional hose called for. In addition to more hose, there may be nozzle changes.

Typically the wildland hose pack is carried on all structure pumpers in our agency. As previously described, the pack contains 200' of 1½" hose which is secured using the Cleveland roll, and carried in a back pack harness. The hose pack consists of 2 independent sections of hose, each 100' long. There is one water thief attached to the hose lines. The second thief is attached to the last 100' section of hose. The idea is to have a water thief positioned every 200' along a progressive hose lay when possible. From these water thieves, 1" hose lines can be placed into operation to mop up areas that were passed by during the initial advance and attack. Included in the pack is a folding hose clamp to stop the flow of water anywhere in the line.

WILDLAND PACK DEPLOYMENT

The Company is at scene of a vegetation fire that is running away from the apparatus. The officer will anchor the fire at the apparatus and run an attack line up one of the flanks. The officer will call for one of the crosslays and the wildland pack. The crosslay will be called for to gain a quick foothold on the fire, or to act as a supply line to the area where the team plans to begin its attack. The nozzle person is typically responsible for advancing the initial attack line while Drop Off #4 acts in support. In this case Drop Off #4 secures the wildland pack while Line Breaker #3 secures the crosslay. Any hose lay that has a chance of going "progressive" should have a minimum of two firefighters assigned to it.

The crosslay attack line will get stretched out and charged by FF #3. The attack on the fire will begin using the crosslay equipment. The team will work together to advance the crosslay attack line as far into the fire as possible. A two-firefighter team will typically consist of both firefighters. How they position themselves along the line is up to the officer ultimately, but a good rule of thumb is the following. Line Breaker #3 (nozzle person) stays on the nozzle throughout the advance and attack. Drop Off #4 secures the wildland hose pack and takes up a position behind the nozzle person (approximately ten to twelve feet) and assists with pulling hose. Drop Off #4 also carries the hose clamp. The distance between Drop Off #4 and Line Breaker #3 varies with the terrain and fire conditions.

The team will advance and extinguish fire as directed by the officer. At some point Drop Off #4 will call out to add the wildland pack ("**hose!**"). It is a good idea to leave a little slack in each section of hose line stretched out (10'). If you lose a section of hose, a new one can be laid in its place more easily. The nozzle person will wet down the area around the team to protect them during the changeover. Line

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Breaker #3 should also wet down the hose line that they have just laid out to prevent damage to the hose from burns. On the call for the wildland pack, Drop Off #4 moves up the line to the nozzle person. When the nozzle person is confident that the area is protected from fire during the change-over they will shut down their line at the breakaway and remove the nozzle. With help from the nozzle person, Drop Off #4 will remove the first hose bundle from the pack and lay it out by the nozzle person. Our current packs limit the ability of the wearer to remove a hose bundle from the pack. It requires a firefighter from behind to release the hose bundle. The team will work together to complete the change-over to the wildland hose pack. Drop Off #4 will attach the loose female coupling from the first hose bundle to the original line's breakaway. The nozzle person will take the nozzle from the middle of the hose bundle when clear, and make the appropriate changes and/or nozzle checks before calling for water

On the call for water, Drop Off #4 opens the original breakaway slowly. The nozzle person needs to be aware that there are a lot of twists in the hose. The Cleveland roll consists of 100' of hose being wound into a tight oval. Every turn in the hose to make the oval, creates a twist in the line. Those twists will come out when the line gets charged. They will move up the line to the breakaway and nozzle. When the twists get to the breakaway they will knot up and make the nozzle jerk around quite a bit until the twists are removed. Let the hose slide through your hands as the hose line un-twists keeping the nozzle away from your face at the same time.

With the next 100' section of hose charged, it is now time for the team to advance again. The nozzle person takes the nozzle and advances on the fire. Drop Off #4 takes up position behind the nozzle person once again. Drop Off #4 will help pull hose as the nozzle person works the fire line. Drop Off #4 takes up position to pull hose out of the Cleveland roll. Eventually Drop Off #4 needs to move up the line to help pull hose for Line Breaker #3.

The first section (100') of hose from the wildland pack will get advanced along the fire line with the team pulling hose and directing water as required. Once again leave approximately 10' of slack in the advancing line. Drop Off #4 will call out "**hose**" when the line is almost stretched out and a new section needs to be added.

On the call "**hose**" the nozzle person will wet down the area around the team and the laid out hose line. Drop Off #4 (firefighter with the hose pack) will move up the line and take up position next to the nozzle person. They will then drop the next bundle of hose out of the hose pack. When the nozzle person is ready for the change-over they will call out "**clamp**." Drop Off #4 (in this case) will use the hose clamp to stop the flow of water in the line. It helps to flow a little water from the nozzle as the hose clamp is being applied to reduce pressure on the hose clamp and line. Drop Off #4 will be making the bundle of hose into a circle and securing the loose female coupling. The nozzle person will remove the breakaway and nozzle from the water thief. The water thief stays on the male coupling of the first section of wildland hose deployed. Drop Off #4 will attach the new female coupling to the water thief. The nozzle person will attach the original wildland

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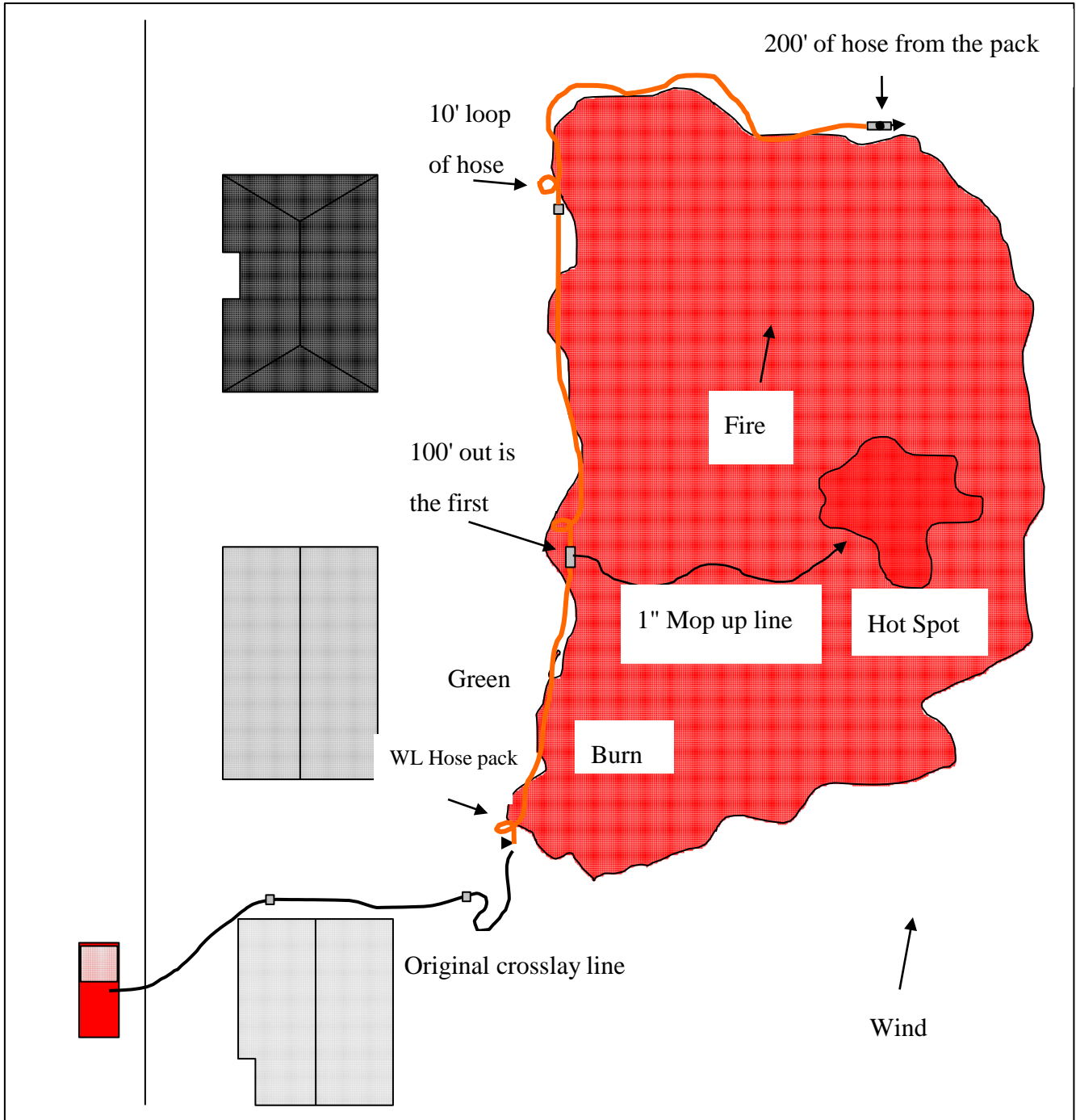
pack breakaway and nozzle to the male coupling from the center of the second hose bundle.

When the nozzle person is ready, they call out "**water 1!**" Drop Off #4 checks the area, and when clear calls "**water 2!**" while releasing the hose clamp. With 100' of new line, the team advances on the fire as before.

The team has now stretched out the original crosslay line and 200' from the Wildland pack. If more hose needs to be added, the same sequence as above repeats itself. Ensuring that there is approximately 10' of slack in the line, Drop Off #4 calls "**hose!**" The nozzle person wets down the area as Drop Off #4 moves up the line and deploys the last hose bundle. The nozzle person calls "**clamp!**" and then Drop Off #4 shuts down the line using the hose clamp. Line Breaker #3 removes the breakaway and nozzle from the male coupling of the second hose line. Drop Off #4 attaches the loose female coupling to the male coupling just freed by the nozzle person. The nozzle person attaches the breakaway and nozzle to the water thief from the center of the final hose bundle. When everyone is ready, Line Breaker #3 calls for "**water 1**" and Drop Off #4 releases the hose clamp calling out "**water 2!**" The team once again takes up position and advances on the fire.

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VEGETATION FIRE - PROGRESSIVE HOSE LAY / WILDLAND HOSE PACK DEPLOYMENT



As more hose is needed for the progressive hose lay, additional crews will be called on to add their hose packs to your line. If there are any hot spots passed by, additional crews will be tasked to advance 1" attack lines off the water thieves. Be prepared for occasional losses in water pressure.

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The Fire officer may also call for more crosslay hose to complete the progressive lay. Shoulder load the called for crosslay hose. Once the hose is cleared from the hose bed, the engineer will break the line where called for or at the whip. If the nozzle is not needed at the fire, leave the breakaway on, but take off the nozzle, handing it to the engineer or laying it under the running board. Take the hose bundle to the 25' from the nozzle and call out "hose." Control the breakaway and free female coupling then shrug the hose off your shoulder. Take the fittings to the nozzle person, handing them the new nozzle. The nozzle person will hand you the old nozzle from the original attack line. Perform the change-over and prepare to charge the new section of hose.

If you are the nozzle person, on the call "**hose!**" after ensuring that the area is safe, remove the nozzle from the attack line. When the new hose line arrives take the nozzle from your partner. If the new line comes with the called for nozzle replacement, place the old nozzle in your pocket and prepare to call for water. If the original nozzle is going to be used, place it on the new fitting properly and prepare to call for water.

If 1" hose was called for by the officer, additional fittings will need to be secured if you are adding to a 1¾" hose line. Along with securing the called for amount of 1" hose, secure the 1½" to 1" reducer. A different nozzle and breakaway will be needed if 1" hose was ordered to extend off the 1¾" line for the first time. Take the rolled hose and additional fittings to the nozzle person. At the coupling just before the nozzle (fifty-foot coupling) call out "**hose**" as you continue your advance to the nozzle person. Hand them the 1" breakaway and nozzle. Remove the band holding the rolled hose together and place it over the female coupling. Call "clear" and roll out the hose. Typically, the hose is rolled back toward the apparatus. Hand the nozzle person the 1" male coupling. Take the original nozzle from the nozzle person and attach the 1½" to 1" reducer that you brought from the apparatus. Next attach the 1" hose line's female coupling to the reducer and prepare to charge the line. Open the breakaway when called for then assist the nozzle person in advancing the attack line.

Another way to add the 1" rolled hose to a 1¾" attack line is to call out "**hose**" at the 100' coupling. Only this time stop shortly after the coupling and then remove the band holding the rolled hose together. Place the band over the female coupling and then secure the male and female coupling as you continue your advance to the nozzle person. While advancing, the hose roll will self-flake as you move to the nozzle person. At the nozzle person's position, complete the change-over as previously described.

Once again on an extended attack, think of water conservation. The officer will be in contact with the engineer. If the pump's water level is getting low, a supply line will need to be secured. Be prepared to assist the engineer with that task if called upon to do so.

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CONDO LAY/ PIER LAY

The "Condo Lay" or Pier lay is the name given to an evolution where a 3" supply line is laid out to a remote area with the intension of adding 1¾" attack or exposure lines. It doesn't mean that it can only be used at a condominium complex or Pier. This evolution is very useful anytime the fire is located in an area where none of the pre-connected crosslay lines can reach. Bringing a 3" supply line to the fire also gives the officer several options which are made easier once that supply line is set up. If the highrise hose pack "A" is brought up and added to the 3" supply line, the officer has the option to place two 1¾" hose lines into operation. This is important when you consider that every structure fire should have three initial needs addressed when it comes to hose lines: 1. Exposure line 2. Attack line 3. Back-up line. Once the attack line crew makes entry and the exposure problem has been controlled, the exposure line can then become the back-up line. If the apparatus is spotted in a location where the pre-connects cannot perform all of these functions, the "Condo Lay" may be an option worth considering.

The "Condo Lay" is commonly used at condominium and apartment complexes, piers, large industrial complexes, construction sites and on canyon rim responses. A single 1¾" line can be added to the 3" supply line by adding the 2 ½" to 1½" reducer. If the officer does not want to use the highrise hose packs, the extra 2 ½" to 1½" gated wye can be used. Add the gated wye to the supply line, and then secure the crosslay hose by shoulder loading it to the fire. If the latter option is to be used, shoulder load the directed amount of hose out of the crosslay bed then get help breaking the appropriate coupling.

A "Condo Lay" is an evolution that addresses a fire attack problem. If you break it down, it is just a few simple drills put together to complete an evolution. Initially, the pump water supply will need to be addressed. Once that is accomplished, the 3" supply line needs to be secured.

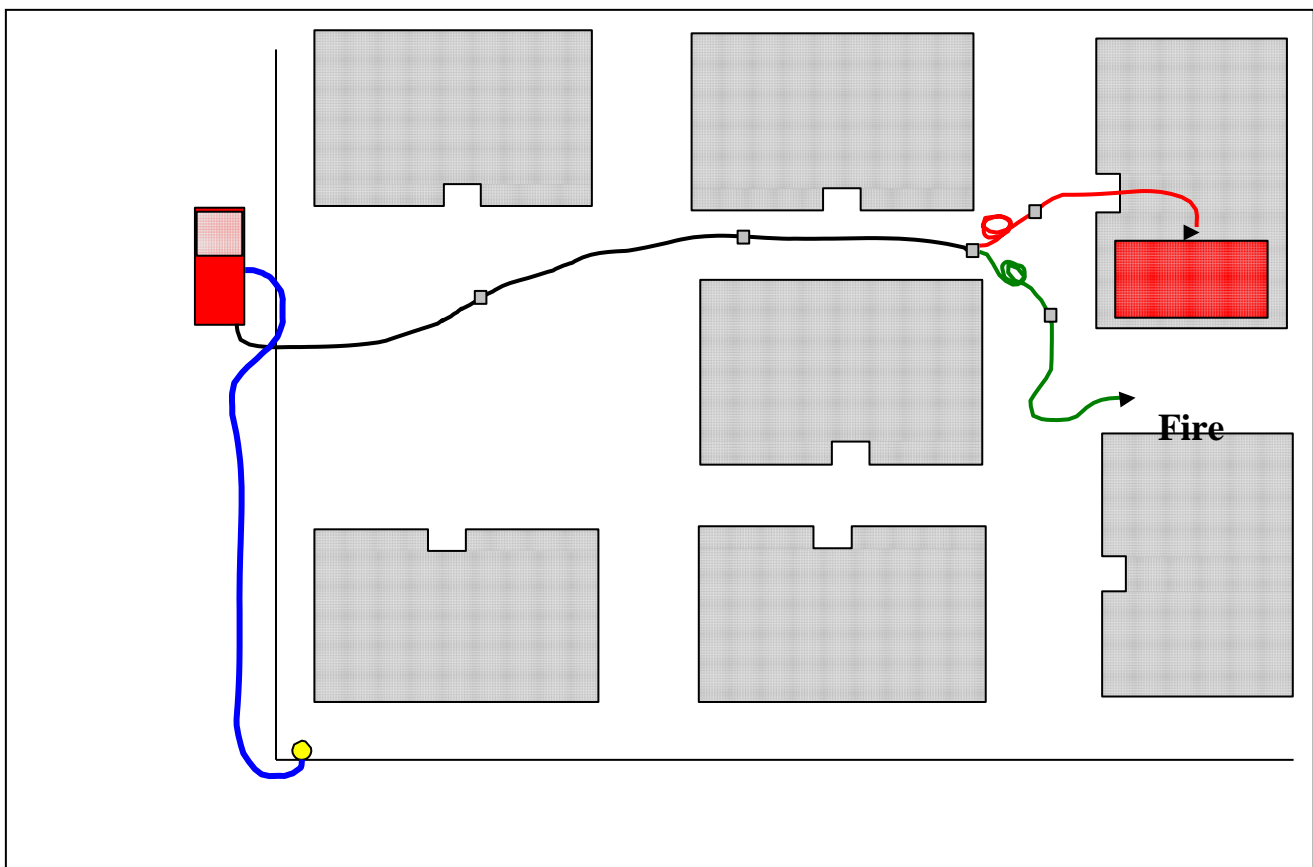
The 3" line is going to end up being a supply line for eventual 1¾" attack lines. That doesn't mean the original 3" line started out as a supply line. If fire conditions call for it, the officer may want a nozzle attached to the 3" hose line. The line now becomes an initial attack line, used to knock down and control the fire until 1¾" hose lines can be added. The firefighter tasked with the 3" hose line needs to listen to the instructions and act accordingly. If the officer calls for a nozzle, the firefighter will be securing either an "Unspecified" or "Specified" attack line. If no nozzle is called for, the 3" hose line will be used as a supply line. The firefighter will secure either an "Unspecified" or "Specified" supply line.

The firefighter tasked with securing the 1¾" hose lines will simply secure whatever hose the officer calls for. It will either be one of the crosslays, or hose pack "A." If it is hose pack "A" your job is pretty simple. If the call is for one of the crosslays, the gated wye needs to be secured in addition to securing the crosslay. The crosslay line should be shoulder loaded. The engineer will help break the line at the whip.

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The two firefighters will work together at the directed area to eventually change-over from a 3" supply/attack line to a 1¾" attack line. Typically, Line Breaker #3 will be responsible for handling the nozzles. Drop Off #4 will act in support of Line Breaker #3. The "Condo Lay" is a complete team effort from the beginning. The officer once again has the ultimate decision on how best to use their personnel at any fire.

CONDO LAY - APARTMENT COMPLEX



When the engine arrived at scene, fire conditions called for a forward lay. The company laid a 4" supply line up the street to the entrance of the apartment complex. While the officer went into the complex to size up conditions, the crew completed pump supply operations. The officer decided that a "Condo Lay" would be used to supply the highrise hose packs. Hose pack "A" and "B" would be deployed to control and extinguish the fire. Line Breaker #3 was called on to secure the 3" supply line up to the fire. Drop Off #4 secured highrise hose pack "A." The exposure line was placed into operation first to control and confine the fire from spreading to other apartments. Hose pack "B" needed to be brought up to the fire and placed into operation as the primary attack line. The engineer can secure the hose pack, one of the firefighters can go back while the exposure line is being deployed, or another engine company can be

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assigned to secure the hose pack. In any case, hose pack "B" is connected to the gated wye and advanced into the structure to extinguish the fire. As the interior attack team enters the building, the exposure line can be repositioned and deployed as the backup line if the risk to exposures has been mitigated. *If there were no exposure problems, the first hose pack could have been used to enter the structure and attack the fire. The second pack could be used as a backup line.*



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MANIPULATIVE SKILLS STUDY GUIDE

4" MODULE

SKILL 1 - 4" Reverse Lay to the Truck		Chapter 6.0 Subsection 6.8
POSITION: LINE BREAKER # 4		
1	Secures the portable radio	
2	Secures the 4" female coupling and increaser	
3	Ensures that the 4" female fitting can reach the assigned fitting	
4	Makes the proper anchor with the 4" hose	
5	Replaces the increaser and secures the 4" double male	
6	Takes up the proper anchor position	
7	Correctly advises when they would secure from anchor	
8	Attaches the double male to the hose line correctly	
9	Correctly attaches the supply line to the truck's intake valve. Spanner tight	
10	Advises the truck engineer, that their supply line is ready	

SKILL 2 - Spot the Hydrant		Chapter 6.0 Subsection 6.7
1	Calls out which 4" hose line they are going to secure (25')	
2	Secures the hydrant wrench	
3	Secures the 25' section of 4" hose	
4	Takes the rolled section of hose to the proper intake	
5	Secures the male coupling properly	
6	Takes the female coupling to the hydrant safely	
7	Properly connects the 4" supply line to the hydrant	
8	Checks the supply line to ensure no kinks or hazards	
9	Charges the supply line safely when called to do so	
10	Checks for and fixes any leaks and/or kinks in the supply line	

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SKILL 3 - Complete the 4" Supply Line to the ladder pipe orientation		Chapter 6.0 Subsection 6.8
P.P.E. – Helmet, Turnout Coat, & Structure Gloves		
1	Calls out their intentions to the engineer	
2	Properly secures the additional amount of 4" hose	
3	Safely breaks the coupling away from behind the apparatus	
4	Secures male coupling and returns female coupling to the tailboard	
5	Properly secures the female coupling and additional hose	
6	Secures the male coupling properly	
7	Secures the 4" double female	
8	Properly attaches the double female to the 4" discharge	
9	Properly attaches the male coupling to the 4" double female	
10	Advises their engineer, that the truck supply line is ready	

SKILL 4--3" Supply Line to the Portable Monitor		Chapter 6.0 Subsection 6.13
1	From the tailboard area, secure the 3"	
2	Secure the proper amount of 3" hose	
3	Tell the engineer to break the supply line when advised	
4	Advance the coupling and 50' of hose to the portable monitor	
5	Advise the engineer to break the supply line	
6	Form the supply line into a modified "Donut" hose control	
7	Check for a gasket in the monitor's female swivel	
8	Attach 3' hose hand tight / Nozzle spanner tight	
9	Secure the monitor and hose line with the manufacturer's hose straps	
10	Insure nozzle is in full fog, full GPM, fully upright	
11	Secure sledge and properly secure monitor to ground	

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1¾" MODULE	
SKILL 5 - 200' Crosslay - Interior Attack Line	
1	Safely and completely dons an S.C.B.A. and full P.P.E.
2	Turns over their accountability tag to the engineer
3	Properly secures the 200' crosslay. Drop and Go
4	Advances the line to the entry area properly
5	Flakes out the attack line and Masks Up
6	Performs the proper nozzle checks and calls for water
7	Performs a pressure pattern test
8	"Clicks in" and properly advances to the fire
9	At the fire, uses a straight stream to knock over the cone
10	Checks for fire extension
Chapter 7.0 Subsection 7.1	

SKILL 6 - 1 Minute Hose Control / Full GPM	
1	When asked, recite the GPM settings on the nozzle
2	Open the nozzle on wide fog
3	Adjust the nozzle to straight stream
4	Knock over the three near traffic cones
5	Maintain control of the nozzle for one minute
6	Adjust the stream pattern to a fog pattern
7	Lower the GPM flow to 95 GPM
8	Advance the flowing attack line 50'
9	Direct a straight stream onto the next traffic cone
10	Shut down and secures the nozzle correctly
Manipulative Drill	

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SKILL 7 - Advance a Charged 1¾" Line to the 3rd Floor Landing Using the Ladder		Chapter 7.0 Subsection 7.9
1	Properly tie off the hose line and nozzle using a Webbing	
2	Ask the proctor to foot the ladder	
3	Ascend the ladder safely with the hose line	
4	Place the Webbing loop over the right beam of the ladder	
5	Check for structural integrity from the ladder	
6	Properly secure the nozzle to the landing	
7	Pull up 50' of working line	
8	Do not lose control of the nozzle or hose line	
9	Properly tie off the working line coupling	
10	Properly lower the hose line using the "Drop" method	

SKILLS 8 - Advance 200' of 1¾" to the 3rd Floor		Chapter 7.0 Subsection 7.2
1	Uses the shoulder carry "Flip" method to secure the crosslay	
2	Ensures that no hose is left in the hose bed	
3	Maintains control of the hose bundle to the building	
4	Ensures that all of the hose has been advanced into the building	
5	Ascends the stairwell, ensuring that no slack is left behind	
6	Maintains control of the hose bundle up the stairs	
7	Calls out the floor levels	
8	Secures the hose bundle properly on the 3 rd floor	
9	Properly ties off the hose line	
10	Flakes out the working line	

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SKILLS 9 - Highrise Hose Pack Deployment		Chapter 7.0 Subsection 7.8
1	Secures high-rise hose pack "A" notifying the engineer	
2	Calls out the floor numbers on their way up the stairs. Clears leaks, kinks and hazards of 3" to FDC.	
3	Secures the hose pack to the correct landing	
4	Lines up the hose pack to ease in hose advancement	
5	Properly secures the gated wye to the 2 nd floor FDC	
6	Notifies crew members when they get to the FDC	
7	Properly connects the gated wye to the FDC(spanner tight)	
8	At the hose pack, opens the pack into a circle	
9	Properly advances to the third floor	

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3" SUPPLY AND EXPOSURE LINE MODULE

SKILL 10 - Hand Lay a 3" Supply Line Back to the Hydrant		Chapter 9.0 Subsection 9.1
1	Informs the engineer of their intentions	
2	Secures the 3" nozzle and breakaway from the hose bed and properly stows nozzle in compartment.	
3	Secures the 2 ½" double female and attach to male coupling	
4	Secures hydrant wrench	
5	Reminds the Engineer to break the supply line when advised	
6	Checks and calls "clear" then proceeds to the hydrant	
7	At the hydrant, calls back to have the supply line broken	
8	Checks for a gasket in the female swivel of the supply line	
9	Properly attaches the supply line to a 2½" discharge (Anything over 1 min is a delay)	
10	Charges the supply line slowly and completely where advised	
11	Checks for leaks, kinks and hazards along the supply line	
12	Informs the engineer of their intentions	

SKILLS 11 – 3" Supply FDC /Unspecified		Chapter 9.0 Subsection 9.3
1	Calls out to the engineer their intentions	
2	Secures a 2½" breakaway	
3	Properly attaches the breakaway to the hose line	
4	Secures any additional hose necessary	
5	Reminds the engineer to break the supply line when advised	
6	Safely advances the supply line to the FDC	
7	Advises the engineer to break the supply line	
8	Performs the five FDC checks on both of the inlets	
9	Attaches the supply line to the FDC spanner tight	
10	Calls back to the apparatus to have the supply line charged	

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SKILLS 12 – 3” Supply FDC /Specified		Chapter 9.0 Subsection 9.3
1	Calls out to the engineer their intentions	
2	Secures a 2 ½” breakaway	
3	Properly attaches the breakaway to the hose line	
4	Secure any additional hose necessary	
5	Break the last coupling to leave the hose bed properly	
6	Bring both couplings back to the apparatus and place properly	
7	Properly secure 2 ½ ” breakaway	
8	Check and call clear prior to moving away from pump	
9	Perform the five FDC checks on remaining inlet	
10	Attach 3” supply hose to FDC spanner tight	
11	Properly call back to have supply line charged	

2 ½” ATTACK LINE MODULE

SKILLS 13 - 200’ of 2 ½” Interior Attack Line		Chapter 8.0 Subsection 8.1
1	Secures S.C.B.A. and Accountability Tag	
2	Properly secures the 200’ crosslay. Drop and Go	
3	Advances the line to the entry area properly	
4	Flakes out the attack line and Masks Up	
5	Performs the proper nozzle checks and calls for water	
6	Performs a pressure pattern test	
7	"Clicks in" and properly advances to the fire	
8	At the fire, uses a straight stream to knock over the cone	
9	Checks for fire extension	

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SKILLS 14 - Two Minute "Standing" Hose Control		Manipulative Drill
1	Performs the required nozzle checks	
2	Calls and signals for water	
3	Checks for and fixes any kinks in the working line	
4	Opens the nozzle slowly in the wide fog stream position	
5	Goes to straight stream under control	
6	Knocks over the traffic cone per instructors directions	
7	Maintains control of the nozzle for 2 minutes	
8	Maintains control without the need to stop flowing water	
9	Shuts the nozzle down slowly and under control	
10	Properly resets the nozzle	

SKILLS 15 - "Webbing" 2 ½" Hose Control		Chapter 8.0 Subsection 8.2
1	Properly ties off the hose line using a Webbing	
2	Places the Webbing over the correct shoulder	
3	Makes the proper nozzle checks	
4	Opens the nozzle in the full fog setting	
5	Adjusts the nozzle to straight stream	
6	Knocks over the second traffic cone	
7	Controls the hose stream for 30 seconds	
8	Maintains control without the need to stop flowing water	
9	Shuts the nozzle down slowly and under control	
10	Resets the nozzle properly	

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Skills 16 - 3" "Q" Hose Control		Chapter 9.0 Subsection 9.6
1	Repositions the nozzle for a "Q" hose control	
2	Properly flakes out the working line behind the nozzle	
3	Asks for help to reset the hose line	
4	Places the nozzle approx. 15" forward of the crossed hose	
5	Properly ties off the crossed hose lines	
6	Secures the 3" playpipe advising the engineer	
7	At the hose control, removes the reducer and s.o.f. nozzle	
8	Properly attaches the playpipe	
9	Can recite the correct tip sizes of the playpipe nozzle	
10	Safely directs the water stream onto the last traffic cone	

SKILL17 - 2½" Attack Line to the Third Floor		Manipulative Drills
1	Dons an S.C.B.A. placing it in the standby position	
2	Turns over their accountability tag	
3	Secures 24' GEL and properly deploys to the 3 rd floor mid-landing	
4	Properly secures the 2½" s.o.f. nozzle and 50' of working line	
5	Properly advances the nozzle and working line to the ladder	
6	Asks for the ladder to be footed	
7	Places the nozzle over their shoulder properly and 'butt shut'	
8	Properly advances up the ladder	
9	Checks for structural stability from the ladder	
10	Pulls up fifty feet of working line and advises engineer to 'break my line'	
11	Ties off the 50' coupling and flakes hose to advance to third floor.	

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SKILL 18 - Progressive Hose Lay

Position: LINE BREAKER #3		Comments
1	Secure portable radio	Chapter 12 Subsection 12.2 1. The order given to Line Breaker #3 will be: Progressive Hose lay Wildland pack 2. The order given to Drop Off #4 will be: Progressive Hose lay Wildland pack
2	Secure Wildland pack	
3	Perform the proper nozzle checks (low GPM), calls for water	
4	Opens the nozzle on wide fog low GPM	
5	Adjust the nozzle to a tight fog pattern	
6	Advance the flowing attack line 50'	
7	When "hose" is called by your partner stop advancement of hose and wet down area (including hose behind) and work with partner for Wildland deployment	
8	Shut down line and remove nozzle	
9	Work with partner to add first bundle and ensure proper deployment of hose	
10	Take male end of hose with 1.5" nozzle	
11	Make proper nozzle checks and calls for water	
12	Properly advance hose line while flowing water (approx90')	
13	Place gloved finger over nozzle opening to get tight fog pattern	
14	When "hose" is called by your partner, stop advancement of hose and wet down the area in front and hose behind	
15	Call for "clamp" and remove nozzle with 1.5" nozzle	
16	Work with partner to remove the second hose bundle from the wildland pack and ensure properly deployment of hose. Add nozzle	
17	Make proper nozzle checks and calls for "water"	
18	Properly advance hose line while flowing water (approx90')	
19	When "hose" is called by your partner, stop advancement of hose and wet down the area in front and hose behind	
20	Call for "clamp" and remove original nozzle with 1.5" nozzle	
21	Work with partner to remove the last hose bundle from the pack and ensure proper deployment of hose. Add nozzle	
22	Make proper nozzle checks and calls for "water"	
23	Properly advance hose line while flowing water (approx90')	
24	When "hose" is called by your partner, stop advancement of hose and wet down the area in front and hose behind	

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SKILL 19 - Progressive Hose		
Position: DROP OFF #4		Comments
1	Secure portable radio	Chapter12 Subsection 12.2
2	Secure round nose shovel	
3	Position approx 10-12 feet behind nozzle person and pull hose	
4	Call " Hose " to stop hose advance and leave approx 10 feet of slack when a new section of hose needs to be added	
5	Move up the line to the nozzle and work with Line Breaker #3 to remove the first hose bundle and properly deploy hose pack	
6	Connect female coupling from hose bundle to the original line's nozzle	
7	On the call of " water " from Line Breaker #3 open the original shut off butt slowly and say " water coming "	
8	Position approx 10-12 feet behind nozzle person and pull hose	
9	Call " Hose " to stop hose advance and leave approx 10 feet of slack when a new section of hose needs to be added	
10	Move up the line to the nozzle and on the call " clamp " from Line Breaker #3 use the hose clamp to stop water flow	
11	Work with Line Breaker #3 to remove the second hose bundle and properly deploy hose	
12	Connect female coupling from hose bundle to the water thief	
13	On the call of "water" from Line Breaker #3, release the hose clamp and call out " water coming "	
14	Position approx 10-12 feet behind nozzle person and pull hose	
15	Call "Hose" to stop hose advance and leave approx 10 feet of slack when a new section of hose needs to be added	
16	Move up the line to the nozzle and on the call " clamp " from Line Breaker #3 use the hose clamp to stop water flow	
17	Connect female coupling to the male coupling just freed by the nozzle person	
18	On the call of " water " from Line Breaker #3, release the hose clamp and call out "water coming"	
19	Position approx 10-12 feet behind nozzle person and pull hose	

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SKILL 20 - Forward/ Condo Lay - Interior Attack

Position: LINE BREAKER #3		Comments
1	Offers assistance at the tailboard to Drop Off	<p>Chapter 13 Subsection 13.1</p> <p>1. The order given to Line Breaker #3 will be: Don an S.C.B.A. and secure a 2½" attack line with a 2½" s.o.f. nozzle into the courtyard</p> <p>2. The order given to Drop Off #4 will be: Don an S.C.B.A., secure hose pack "A" and assist your partner at the fire</p>
2	Returns to their seat fastening the safety belt	
3	Signals the engineer to "take it away"	
4	Waits until the air brake sets before leaving their seat	
5	Advises the Engineer that they will be securing additional hose	
6	Properly secures the next coupling	
7	Properly secures both female and male coupling	
8	Properly completes 4" supply line operation	
9	Dons an S.C.B.A. properly (standby)	
10	Turns over their accountability tag to the A/O	
11	Secures the 2½" attack line properly (Unspecified)	
12	Properly advances the attack line to a safe area near the fire	
13	Calls back to the engineer to "break the line"	
14	Flakes out the "working line"	
15	Makes the proper nozzle checks	
16	Calls and signals for water properly	
17	Directs the water stream at the traffic cones	
18	Properly changes over to the hose pack "A"	
19	Makes the proper nozzle checks to the hose pack nozzle	
20	Calls out to their partner to "charge the hose pack"	
21	Safely advances nozzle to 2 nd floor landing	
22	Pulls up 50' of working line to the 2 nd floor landing & ties off hose	
23	Performs the "Pressure / Pattern" test	
24	Masks up	
25	"clicks in" regulator prior to entry	

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26	Signals their partner to "go ahead and make entry"	
27	Provides cover for their partner while they secure the entry	
28	Safely advances into the fire area	
29	Properly advances the nozzle to the fire	
30	Properly secures the fire area	
31	Properly assists with the rescue	