There are five base North Zone supply hose lays:

- Forward Lay
- Spotting a Hydrant
- Stationary Lay
- Reverse Lay
- Split Lay

**Escondido Fire Department Core Hose Lays**

The Escondido Fire Department follows the base supply hose lays adopted by the North Zone. To add specificity to the base hose lays, Escondido teaches seven hose lay variants.

6.0 – 4” Forward Lay
6.1 – 4” to Aerial
6.2 – 4” Reverse to Monitor
6.3 – Dual 2 1/2” Reverse
6.4 – 4” Stationary Lay
6.5 – Type 3 Drafting
6.6 – Split Lay

*See Training Forms 6.0 – 6.6 for Escondido Hose Lay Performance Objectives and position breakdowns*

Supply hose lays are just that; hose lays intended to supply water to the apparatus. Supply hose can be found in lengths of 50 or 100 feet. Once the hose has been removed from the bed, the hose is disconnected at the nearest coupling and connected to the intake suction of the pump. In some situations, supply bed hose may be used as attack hose.

**4” Forward Lay**

*See Training Form 6.0 for Escondido 4” Forward Lay Performance Objectives and position breakdowns*

With the forward lay, the apparatus lays hose from a water source, such as a hydrant, to the fire location. This method consists of the apparatus stopping at a hydrant permitting a firefighter to step off the apparatus and safely anchor the supply hose. Getting the apparatus to the fire is the priority. The apparatus then proceeds to the fire location.
location with hose paying out of the hose bed. The firefighter connects the hose to the hydrant and opens the valve supplying water to the apparatus. The primary advantage of this hose lay is the placement of the apparatus at the fire location allowing for rapid deployment of attack lines and quick access to fire equipment. A disadvantage is the temporary unavailability of the firefighter at the hydrant delaying another tactical assignment.

Order of Operations – 4” Forward Lay

— Firefighter repeats order, dismounts, and proceeds to tailboard.

— Firefighter removes traffic cones Traffic cones will initially be tossed in an area that offers the most protection from traffic. After the hose connection is made, the firefighter will place the cones in a pattern to steer traffic away from the hose.


Note: When the firefighter’s breathing apparatus is located in a compartment, wearing it while taking the hydrant is not required. This expedites the engine travel to the fire and minimizes the exertion of the firefighter on the return trip from the hydrant.

— Wrap hydrant. Place one full wrap around hydrant with hose crossing self between hydrant and apparatus. Firefighter attempts to position self in view of side mirror. Pull snug holding hose with both hands.

— Anchor hose and order apparatus away. Give verbal command and hand signal simultaneously. (Example: Yell “1316 Lay Line” and motion hand towards apparatus) Make sure you have any needed adapters to make the hose connection. Some hydrants only have two 2 ½” outlets and an adapter is required to connect the 4” hose.
Supply Hose Lays

— **Unwrap hydrant.** Assure hose is anchored by its own weight or apparatus has stopped laying hose. Place coupling on ground next to feet.

— **Place hydrant wrench on valve stem.**

— **Remove appropriate cap.** Appropriate cap is first the correct size then the port facing the direction of the lay when possible.

— **Connect hose to hydrant.** Check for the gasket, that the swivel spins free and check the threads both in the coupling and on the hydrant.

— **Charge hydrant.** Return signal for water and slowly charge hydrant. Open stem fully and rotate back until hydrant wrench hangs down. (Pre-fill prior to signal only in hose visible and/or to within 50’ of apparatus).

— **Return to apparatus.** Leave hydrant wrench on stem. Follow hose removing any kinks and position hose for accessibility. Return unused wrench to apparatus.

— **Report to the Engineer for assignment.**

**Spotting a Hydrant**

Spotting the hydrant is not taught as a separate hose evolution since it is usually completed by the Engineer without assistance. The following provides guidance for the firefighter who may assist in this task.

If a hydrant is located close enough to a fire scene, the engine may spot the hydrant and attack lines pulled to the fire.

Other indications for spotting are when higher GPM flows will be required. Spotting the hydrant maximizes the amount of water the pump of an engine can capture and should be used when possible to supply large GPM flows such as when pumping to the aerial.

The hose utilized to connect to the hydrant is a short section of hose often referred to
as a *soft sleeve*, *front suction*, or *intake hose*. Most soft sleeves are 15-30' in length and can be found in a variety of diameters with 4” being the most common. They are found in a storage tray along the exterior of an apparatus.

The non-hydrant end of the soft sleeve is connected to a suction intake located on the apparatus. Typically, the apparatus operator performs this skill making the firefighter available for another assignment.

**Order of Operations – Spotting the Hydrant**

*Note: this evolution is normally performed by the Engineer. The firefighter may assist as directed.*

— Firefighter repeats order, dismounts and proceeds to the soft sleeve hose.

— **Extend soft sleeve from front tray.** Take hydrant wrench and hose to desired hydrant.

— **Connect hose to hydrant.** Loosen cap and place hydrant wrench on stem. Remove cap. Connect hose.

— **Charge hydrant.** Slowly charge hydrant. Open stem fully and rotate back until hydrant wrench hangs down.

— **Return to apparatus.** Leave hydrant wrench on stem. Remove any kinks.

— **Report to Engineer for assignment.**

**Stationary Lay**
See Training Form 6.4 for Stationary Lay Performance Objectives and position breakdowns

A stationary lay is when the hose is taken from the hose bed and extended to the water source, usually a hydrant, after the engine has parked at the fire scene. The firefighter can extend the supply hose using run backs, a modified pull, or straight pull. The hydrant must be within distance of the engine that one firefighter can extend the supply line to the hydrant. This distance will vary based on obstacles. The Captain may need to assign additional personnel to assist with a Stationary Lay. Usually the Engineer can assist with deploying the supply line.

Run backs are performed by grasping the female coupling located at the top of the hose bed and pulling it from the bed. The hose is pulled until the next coupling comes out of the bed or 50’ of hose has been pulled. The coupling is placed on the ground and the firefighter returns to the hose bed and grasps the next coupling near the hose bed. The firefighter pulls the hose from the bed and places the coupling next to the first one removed. This process continues until the desired amount of hose has been removed. When performing run backs with 100-foot lengths of supply hose, the firefighter will need to form 50-foot loops with every other run back ending with a coupling.

The modified pull is may be utilized when a hydrant is to the side or front of the apparatus and close enough for one firefighter to accomplish. Instead of run backs the firefighter pulls enough hose straight back behind the apparatus to get to the hydrant. The firefighter turns and advances the hose directly to the hydrant.

The straight pull is when the firefighter can pull the supply hose directly to the hydrant without the use of run backs. The straight pull is for hydrants to the rear of the apparatus.

**Order of Operations – Stationary Lay**

— Firefighter repeats order, dismounts and proceeds to tailboard.

— Identify location of hydrant. Determine method to be used for deploying hose. Identify if an adapter will be required to connect the 4” to the hydrant. Some hydrants only have 2½” outlets and an increaser is required.
— **Acquire hydrant wrench and pull hose.** Place end of supply hose over hydrant-side shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard. Deploy hose using run backs, modified pull, or straight pull.

— **Connect hose to hydrant.** Loosen cap and place hydrant wrench on stem. Remove cap and place next to hydrant. If required, return to apparatus and connect end of supply hose to suction intake. This step is normally completed by the Engineer.

— **Charge hydrant.** Return signal for water and slowly charge hydrant. Open stem fully and rotate back until hydrant wrench hangs down. (Pre-fill prior to signal only in hose visible and/or to within 50’ of apparatus).

— **Return to apparatus.** Leave hydrant wrench on stem. Follow hose removing any kinks and position hose for accessibility. Return unused hydrant wrench to apparatus.

— **Report to Engineer.**

**REVERSE LAY**

See Training Forms 6.1, 6.2 and 6.3 for Escondido Reverse Lay Performance Objectives and position breakdowns.

Another basic type of supply hose lay is the reverse lay. The reverse lay involves laying hose from the incident to the water source and pumping back from the hydrant through the attack line(s).
Supply Hose Lays

Escondido utilizes a 4” Reverse to:
- Supply the 4” portable monitor
- Complete a Split Lay
- Supply the Truck Company

Escondido utilizes a 2 ½” Reverse to:
- Connect to the FDC for Standpipe Operations
- Supply 2 ½” Attack or Exposure lines
- Supply 1 ¾” Attack lines

Reverse Lays can be used when operating in narrow areas that can be found in some commercial complexes, apartment driveways or residential alleys. It may be the supply lay of choice in cases of possible BLEVE, Hazardous Materials, or incidents involving explosives. It may also be used where potential building collapse or severe fire conditions exist near a building. A reverse lay configuration is the choice hose lay when supplying the truck company for master stream operations or the first engine in a relay pumping operation. Having the pumping unit front spotted on the hydrant maximizes the available water.

The main disadvantage of reverse lays is time. Reverse lays usually take longer to complete. Generally, the forward lay is more efficient.

Company Officers may choose a route of response specifically to allow a forward lay. The decision to use a reverse lay is the Company Officer’s and will be based on the needs and circumstances of the incident.

Communication is important in any fire department operation, but none more so than when calling for a Reverse Hose Lay.

The Company Officer must communicate:
- The type and purpose of lay (ex. 4” Reverse to the Monitor).
- The specific hose size and length (ex. 100 ft. of 2 ½” working line out of both beds).
- The method used to secure the lines. (ex. 2 ½” nozzle, bundles, FDC, monitor, or to the truck.
- Special request items outside of the normal strip (ex. circular saw or rope).
- The approximate location of the hydrant for the Engineer.
Examples of orders for Reverse Lays:

“Dual 2½” Reverse Lay to the FDC. I want 100 ft. of 2½” attack line”

“Dual 2½” Reverse Lay. 100 ft. of working line from both beds. Both 2½” nozzles”

“4” Reverse to supply the truck”

“4” Reverse to complete the Split Lay”

“4” Reverse to the portable monitor”

The hose bed chosen should have enough hose to complete the lay. This is an important consideration. The rear 2 ½” hose beds in Escondido are configured as attack beds with males out and only 400 ft. in each bed. This means that a Dual 2½” Reverse using 100 ft. of attack line would leave only 300 ft. for the travel to and connection at the hydrant.

Once the apparatus arrives at the fire scene, firefighters must pull the appropriate amount of hose and remove all the necessary equipment, fittings, appliances, and nozzles. With the exception of the 4” to aerial or the Split lay, when a reverse lay is performed, whether single or dual, a standard list of equipment should be removed from the apparatus. This list is either a standard strip for 2½” or monitor strip for 4” to the portable monitor.

A standard strip consists of:

— Hose, nozzles, appliances, & adapters
— Self-contained breathing apparatus for FF and Capt.
— Halligan bar and striking tool
— Special request items

If pulling the bundles always pull both.

If pulling 2 ½” Nozzles always pull both.

Captains and crews should consider adding to the forcible entry strip the circular saw. When a reverse hose lay is used to supply the 4” Portable Monitor we use a monitor strip in place of the standard strip.
A monitor strip consists of:

- 4” Portable Base
- 4” combination nozzle
- Monitor with stacked tips
- 4” Double Male
- Utility Rope
- Halligan bar and striking tool
- Breathing apparatus for FF and Capt.
- Special request items

The strip is placed on the ground near the tailboard on the non-fire side of the apparatus prior to the engine laying hose to the hydrant. The company officer may order additional items be removed from the apparatus and placed with the strip. It is important for firefighters to assure all the necessary equipment is with the strip prior to the engine driving away. Once the engine has laid the hose lines, firefighters may begin to assemble the attack lines as directed. During a reverse lay, no hose line should be left with an open end. That is, a nozzle, monitor, FDC or gated appliance must be placed on all hose ends prior to leaving them unattended. During this same time, the apparatus operator obtains a water supply and connects the attack lines to the apparatus. The apparatus operator will not charge a hose line without a signal for water. Firefighters need to communicate clearly which hose line should be charged during a dual reverse. With dual lines they are referred as fire side and non-fire side.

**Order of Operations – Single Reverse Lay**

- Firefighter repeats order, dismounts, and proceeds to tailboard.

- Pull appropriate strip. Standard or Monitor. Place equipment near tailboard on non-fire side in a safe location. Note: Standard Strip is not required on a 4” to Aerial lay or when reversing to complete a Split Lay. (See Split Lay Order of Operations for what the required strip is).
Supply Hose Lays

— Pull 2½” or 4” hose. Step onto tailboard and place end of attack hose over fire-side shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard angling towards objective. Proceed until first coupling leaves hose bed. The amount of 4” hose must include enough to reach the objective and provide the loop for the portable base if required.

— Complete run backs.


— Complete connections. Make connections. Close all valves and shut offs.

— Place hose line into service. Extend line. Call for water when ready.
Order of Operations – Dual Reverse Lay

Short Dual 2½" Reverse lays usually in narrow apartment driveways is still a viable option for the Captain, but carrying 400 ft. in each 2½" attack bed makes long distance 2½" reverse lays impractical.

— Firefighter repeats order, dismounts and proceeds to tailboard.

— Pull standard strip. Place near tailboard on non-fire side in a safe location. Note: When a 2½" Dual Reverse lay is used to supply an FDC, the firefighter needs to pull the needed 2½” attack line and disconnect it from the attack bed prior to pulling to the FDC. This hose is used to reach the fire objective usually from a standpipe. It is part of the Standard Strip under “Hose, Nozzles and Appliances and Adapters”.

— Dual 2½” Pull to FDC version. Pull directly to the FDC. This is the same method used in a forward lay to pull to an FDC.

— Pull 2½” hose.
2 ½” Dual Reverse (if not to FDC)
Pull appropriate amount of 2 ½” hose from attack bed. Step onto tailboard and place end of attack hose over fire-side shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard angling towards objective. Proceed until first coupling leaves hose bed.

- **Perform run backs.** Place coupling (nozzle) on ground and turn towards non-fire side. Yell “50” and return to tailboard. Repeat procedures until appropriate amount of hose has been pulled. Do not uncouple hose at tailboard

- **Pull second 2½” hose.** Pull appropriate amount of hose from hose bed. Step onto tailboard and place end of hose over fire-side shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard. Proceed until first coupling leaves hose bed.

- **Perform run backs for 2nd 2½”.** Place coupling (nozzle) on ground and turn towards non-fire side. Yell “50” and return to tailboard. Repeat procedures until appropriate amount of hose has been pulled. Do not uncouple hose at tailboard.

- **Anchor supply line and order apparatus away.** Step onto tailboard and place end of supply hose over fire-side shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard towards non-fire side of 2½” hose. Remove a minimum of 50’. Anchor 2½” hose. Give verbal command and hand signal simultaneously. (Example: Yell “1312 LAY LINE” and throw hand pointing towards apparatus).
— **Attach nozzles, fittings, and adapters.** Make connections working from apparatus towards nozzle. Close all gates and valves. Extend attack lines to the objective.

— **Place hose line(s) into service.** Call for water. Give hand signal and simultaneously yell “WATER ON THE 2½” or “WATER ON THE 4”. If dual 2½” use “WATER ON FIRE SIDE” or “WATER ON NON-FIRE SIDE” when calling for water.

**Split Lay**

See Training Form 6.6 for Escondido Split Lay Performance Objectives and position breakdowns.

The term Split Lay, is also known as “T Lay”, “L Lay”, or Alley Lay. We use the term split lay to refer to a supply line that requires two apparatus to complete the lay due to the distance between the hydrant and the fire. This can be accomplished by the first arriving apparatus making a forward lay from an intersection or driveway entrance towards the fire. A second apparatus can then complete the lay by laying a forward lay from the hydrant to the end of the hose, or by starting at the hose end and reversing to the hydrant. Care must be taken to avoid making the lay too long for the pump’s capacity, hose size, and required gallon per minute. The split lay is an efficient way to complete a long supply lay or one that requires a relay-pumping operation. Special attention must be given to the need for adapters when connecting the two supply hose lines together.

**Order of Operations – Split Lay**
Apparatus #1

— Firefighter repeats order, dismounts and proceeds to tailboard.

— **Pull hose.** Place end of supply hose over shoulder with coupling against chest. Yell “HOSE” and step forward off tailboard directly behind apparatus. Pull and place end of hose on ground.

— **Place traffic cone at end of supply hose.** Consider placing a flashlight under the cone at night.

— **Anchor hose and order apparatus away.** May use a suitable object to wrap the hose otherwise the firefighter must follow the procedure below to ensure the hose remains as the engine lays away. Give verbal command and hand signal simultaneously. (Example: Yell “1315 LAY LINE” and throw hand pointing towards apparatus.

— **Return to apparatus.** Assure hose is anchored by its own weight or wrapped around a suitable object.

— **Proceed to the fire scene.** Captain must communicate with the second arriving engine.

SECOND ENGINE REVERSE LAYING FROM DROP OFF POINT TO THE HYDRANT
Order of Operations – 2\textsuperscript{nd} Engine Reverse from Drop off Point

— Firefighter and Captain, dismount and proceed to tailboard.

— Firefighter pulls 4” hose and anchors line

— Captain takes 4” double male and both breathing apparatus

— Engineer drives to hydrant (see diagram)

SECOND ENGINE FORWARD LAYING FROM HYDRANT TO THE DROP OFF POINT
Order of Operations – 2nd Forward from Drop off Point

— Firefighter repeats order and proceeds to tailboard.

— Firefighter performs a 4” forward lay as outlined above.

— Captain and Engineer drive to the drop point of the first engine and complete the connection. (see diagram)

— Firefighter rejoins the crew at the fire after charging the line when called for.

Four Inch to Aerial

See Training Form 6.1 for Escondido 4” to Aerial Performance Objectives and position breakdowns.

The 4” to Aerial hose lay is utilized to provide water to the master stream appliances of our truck companies. It is structured so that the assigned engine will reverse out 4” hose from the truck and lay to the hydrant. Due to the potential for large GPM needs the supplying engine is best situated by spotting a nearby hydrant and pumping back to the aerial. At that time a second 4” line can be pulled back to the truck to maximize our flow capability. The Captains and or IC will determine what the use of the master streams will be and then make a determination as to whether the second line will be necessary.
ENGINE COMPANY

Order of Operations – Engine Company

Captain Responsibilities

— Receive assignment to supply Truck/Aerial.

— Stop at the Truck.

— Direct Firefighter to pull 4” to the truck, secure it and return to the engine.

— Direct Engineer to the hydrant.

— Direct and assist firefighter pulling a second 4” section back to the Truck after the initial line is disconnected.

— Ensure connection of both 4” lines at Truck.

— Coordinate communication between the Engine and Truck Engineers to align flow needs. Consider an additional tactical channel for their use.

Engineer Responsibilities

— Spot Apparatus as assigned at Truck.

— Proceed to hydrant as directed after Firefighter remounts the engine.

— Complete a front spot to the hydrant.

— Connect the first 4 inch to the 4” discharge.

— Charge first 4” to 150 PSI at the truck when called for.

— Connect second 4” line to 2½” discharge with appropriate fitting.

— Charge second 4” when called for.

— Continue to coordinate with the Truck Engineer for adjustments in the hydraulics.
Firefighter Responsibilities
— Receives and repeats order for 4" to the truck.
— Pulls required 4" hose to reach a 4" intake of truck. Ensures it is anchored.
— Remounts Engine.
— May assist with connecting 4" at hydrant.
— Pull 2nd 4" back to the truck in order to reach open intake of truck as directed.

TRUCK COMPANY

Order of Operations – Truck Company

Captain’s Responsibilities
— Receives direction for aerial operations.
— Coordinates with assigned Engine Company as needed.
— Enters basket and directs aerial operations with firefighter.

Engineer Responsibilities
— Positions Truck as directed.
— Sets up for aerial operations.
— Completes 4" connections to Truck.
— Calls for water when ready.
— Coordinates with Engine Engineer for proper pressure.

Firefighter Responsibilities
— Assist with setting up for aerial operations.
— Collects any tools need in the basket.
— Enters basket and operates aerial and nozzles as directed.

**Type 3 Drafting**

See Training Form 6.5 for Escondido Type 3 Drafting Performance Objectives and position breakdowns.

Type 3 drafting is a required skill of all Engineer’s. The understanding of pump and hydraulic theory is important in the performance of this skill. The ability to obtain water from a static source such as a lake, portable tank or pond is a necessary skill in the wildland environment. Currently Escondido can only draft from the brush units located at Fire Station 3 and Fire Station 6.

**Type 3 Drafting Order of Operations**

**Captain Responsibilities**
— Identify a drafting source and suitable site.
— Assist Engineer in setting up drafting operation.

**Engineer Responsibilities**
— Position apparatus within 24 ft. of water supply.
— Engine in neutral, set parking break, engage main pump.
— Switch pump to volume mode.
— Connect hard suction with strainer to intake and place in water supply (Ensure that all couplings are tight to avoid air.)
— Throttle up to approximately 1,000 rpm.
— Engage priming pump.
— Observe water being pulled into hard suction and observe a negative intake pressure.
— Slowly start opening discharge or tank fill depending on your task at hand.

Firefighter Responsibilities

— Assist Engineer as directed.