

<u>Ground Ladders</u> – one of our most basic firefighting tools

## Ground Ladder uses:

- 1. Gain access to the fire building or an exposure
- 2. Provide a secondary means or egress for operating firefighters
- 3. Removing trapped occupants
- 3. Advancing hose lines when stairs are not accessible or limited
- 4. Take the place of damaged stairs
- 5. Second ladder to a fire escape
- 6. Gain access from one roof to another
- 7. Reinforce week building features
- 8. Ice rescues /distribute weigh over larger area
- 9. Allow footing to area not walk able (pitched roof)



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### Here in Westbury:

**Engine (Position 4) – Hydrant/Outside Vent (OV)** After hooking up the hydrant – this position's responsibility is to get a ladder up and provide **O**utside **V**entilation.

1<sup>st</sup> Due Truck Positions 3 & 4 – Roof Position(s)
If using an Aerial ladder to get to the roof, it's good practice to set a secondary egress ladder, first.

If the roof is not to be operated on, or if you're the Second Due Truck where the Roof team does not require assistance, This Roof Team will be an Exterior **V**ent **E**nter **S**earch (VES) Team, which requires Laddering.



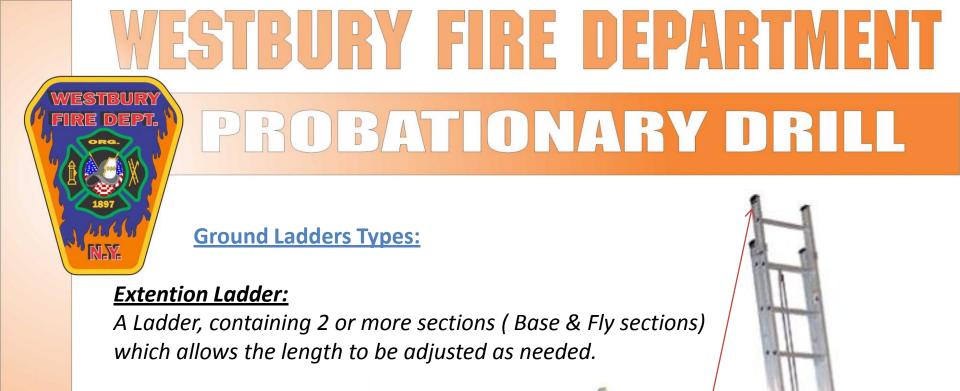


Straight Ladder:

A single stage Ladder, a ladder where the length is not adjustable.

Sizes normally seen: 10', 12', 14', 16', 18'





**FLY** 

BASE

*Sizes* : 24′, **28**′, **35**′ – 50′



### Roof Ladder:

A straight ladder with hooks the retract at a 90 degree angle. That allows the ladder to be secured to a roof ridge ( peak )

*Sizes* : *12'* , 14' & 18'

<u>Commonly seen stored with</u>: 24' extension – 14' Roof 28' extension – 16' Roof 36' extension – 18 or 20' Roof





**Folding Ladder: ( aka "Attic Ladder")** A narrow ladder who's rungs can be folded into the beam Making it compact and easily set up in tight quarters.

*Commonly used to access attic spaces located In a small closet openings.* 

*Sizes* : 8'- 14'





**Combination Ladder: ( aka "Little Giant" or "A - frame")** A ladder that can be set up as a straight ladder or Converted to an A frame, depending on users need

*Sizes* : 4' - 16'





## Ladder's Components:

### PULLEY

Small wheel at the top rung of base Ladder to which halyard run through

## **BEAMS or RAILS**

Outermost part of ladder, Main structural supports "sides of the ladder"

## (BASE SECTION)

Lower part of ladder, To which flies extend from

### LOCKS

Locking mechanism that Secures the fly to base Once ladder is place to desired height

### TIP

Upper most part of ladder, "Top of the ladder"

### HALYARD

The rope that is used To pull up the fly section

### (FLY SECTION)

The upper part of ladder, the section that is raised to desired height

### - RUNGS

Cross section between beams What you climb

> BUTT Bottom of ladder, Part that hits the ground

## Handling Ladders:

- When handling ladders, the methods used to carry & raise them should require the least amount of maneuvering and time.
- When the ladder is being moved, it should never be put to the ground, it should go from the carry to the raised position without delay.
- The firefighter at the butt of the ladder is the control person, in the ladder positioning and raising. ( if a multiple firefighter operation).

In some cases, laddering could be 1, 2, 3 or 4 person operation. The size of ladder will dictate amount of firefighters needed.

All firefighter *should* be able to raise straight ladder and 24' extension ladder as a 1 person operation without difficulty.

## Handling Ladders:

- The butt of the ladder should lead to the fire building
- Ladders and be raised, parallel or perpendicular to building, the space available will dictate how it is raised.
- Climbing angle of the ladder is generally ¼ the working length of the ladder. (75 degrees)

### <u>Example</u>:

Working length 20' - ladder should be 5' from the structure Working length 16' - ladder should be 4' from the structure Working length 32' - ladder should be 8' from the structure

## Handling Ladders:

- <u>Checking proper/safe climbing angle by</u>:
- 1. Placing toes at butt of the ladder
- 2. Extend arms, your finger should be able to touch beam or rung, (while keeping you back vertical)



## Ladder Carries:

## **One-Firefighter: Low-Shoulder Carry:**

Step 1: Kneel beside the ladder facing the tip.
Step 2: Grab the middle of the ladder with closest hand and find the balance point.
Step 3: Lift the ladder
Step 4: Pivot into the ladder as it is raised.
You will carry the ladder when facing the butt of the ladder.

Step 5: Place your free arm between two rungs so that the upper beam of the ladder rests on shoulder. Grab a forward beam to assist with carry





## Ladder Carries:

## **One-Firefighter: High-Shoulder Carry**

- Step 1: Kneel beside the ladder facing the tip.Step 2: Grab the middle of the ladder with closest hand and find the balance point.
- Step 3: Lift the ladder
- Step 4: Pivot into the ladder under the bottom beam as it is raised.You will carry the ladder when facing the butt of the ladder.
- Step 5: Grab the top beam or a forward rung. Place your other arm under bottom beam. Bottom beam of the ladder rests on shoulder.





## Ladder Carries:

**One-Firefighter: Suitcase Carry** 

Step 1: Kneel beside the ladder facing the Butt.Step 2: Grab the middle of the ladder with closest hand and find the balance point.Step 3: Lift the ladder.



## Ladder Carries:

## Two-Firefighter: Low-Shoulder Carry

- *Note*: Firefighter #1 is located near the butt end and Firefighter #2 is located near the tip end of the ladder.
- Step 1: Both firefighters: Kneel beside the ladder on the same side, facing the tip.
- Step 2: Both firefighters: Grab a rung and stand ladder on beam.
- Step 3: Firefighter #1: Gives the command to, "shoulder the ladder."
- Step 4: Both firefighters: Stand, lifting the ladder.
- Step 5: Both firefighters: Pivot and place the free arm Between two rungs. You will carry the ladder when facing the butt of the ladder.
- *Step 6*: Both firefighters: Place the upper beam on shoulders.





## WESTBURY PROBATIONARY DRILL

## Ladder Carries:

## Two-Firefighter: Hip/Underarm Carry

- *Note*: Firefighter #1 is located near the butt end and Firefighter #2 is located near the tip end of the ladder.
- *Step 1*: Both firefighters: Kneel beside the ladder on the same side, facing the tip.
- Step 2: Both firefighters: Grab a rung and stand ladder on beam.
- Step 3: Firefighter #1: Give the command to "shoulder the ladder."
- Step 4: Both firefighters: Stand, lifting the ladder.
- Step 5: Both firefighters: Pivot and place the free arm over the top beam. You will carry the ladder when facing the butt of the ladder.
- Step 6: Both firefighters: Place the upper beam under the arm and the hand on the lower beam.





### **Two-Firefighter: Suitcase Carry**

Step 1: Kneel beside the ladder facing the Butt.
Step 2: Grab the ladder with closest hand
Step 3: Lift the ladder



## WESTBURY PROBATIONARY DRILL

## Ladder Carries:

## Three-Firefighter: Flat- Shoulder Carry

- Note: The knee closer to the ladder is the one on the ground.
- Step 1:Firefighter #1 located at the butt of the ground ladder, Firefighter #2 is located center, Firefighter 3# located at the tip.
- Step 2: Firefighter #2: kneel on the opposite side of the ladder in the middle, facing the tip.

Step 3: All firefighters: Stand and lift the ladder.

- Step 4: All firefighters: Pivot toward the butt. You will carry the ladder when facing the butt of the ladder.
- Step 5: All firefighters: Place the beam onto shoulders.





## Ladder Carries:

## **Three-Firefighter: Flat Arms-Length Carry**

Step 1: Kneel beside the ladder facing the butt.

Step 2:Grab the ladder with closest hand.

Step 3: All firefighters: Stand and lift the ladder.



## Ladder Carries:

## **Three-Firefighter: Low-Shoulder Carry**

Note: Firefighter #1 is located near the butt End, Firefighter #2 located in the center, and Firefighter #3 located at the tip of the ladder. Step 1: All firefighters: Kneel beside the ladder on

- Step 1: All firefighters: Kneel beside the ladder on the same side, facing the tip.
- Step 2: All firefighters: Grab a rung and stand ladder on beam.
- Step 3: Firefighter #1: Give the command to, "shoulder the ladder".
- Step 4: All firefighters: Stand while lifting the ladder.



## Ladder Carries:

## Three-Firefighter: Low-Shoulder Carry (continued)

Step 5: All firefighters: Pivot and place the free arm between two rungs. You will carry the ladder when facing the butt of the ladder.
Step 6: All firefighters: Place the upper beam on shoulders.



## Ladder Carries:

**Three-Firefighter: Suitcase Carry** 

Step 1: Kneel beside the ladder, facing the Butt.
Step 2: Grab the ladder with closest hand.
Step 3: Lift the ladder
Note: All 3 Firefighters facing the Butt of the ladder





## Ladder Carries:

## Four-Firefighter: Flat-Shoulder Carry

- Note: The knee closer to the ladder is the one touching the ground.
- Step 1: Firefighters #1 and #2: kneel on one side of the ladder, one on either end, facing the tip.
- Step 2: Firefighters #3 and #4: kneel on the opposite side of the ladder, one on either end, facing the tip.
- Step 3: All firefighters: Stand and lift the ladder.
- Step 4: All firefighters: Pivot toward the butt.
- Step 5: All Firefighters: Place the beam onto the shoulders.



## Ladder Carries:

## Four-Firefighter: Low-Shoulder Carry

- Step 1: All firefighters: Kneel beside the ladder on the same side, facing the tip.
- Step 2: All firefighters: Grab a rung and stand ladder on beam.
- Step 3: Firefighter #1: Give the command to "shoulder the ladder"
- Step 4: All firefighters: Stand, lifting the ladder.
- Step 5: All firefighters: Pivot and place the free arm between two rungs.
- Step 6: All Firefighters: Place upper beam on shoulders.



# **WESTBURY FIRE DEPARTMENT**PROBATIONARY DRILL Ladder Carries:

### Four-Firefighter: Suitcase Carry

Step 1: Kneel beside the ladder, facing the butt.Step 2: Grab the ladder with closest hand.Step 3: Lift the ladder.



## Ladder Raises:

There are two ways we can raise a Ladder:

- 1. <u>Flat Raise</u> 1, 2, or 3 Firefighters
- 2. <u>Beam Raise</u> 2 Firefighters





**Flat Raise** 

**Beam Raise** 

## Ladder Raises:

## **One-Firefighter: Ladder Raise**

Step 1: Place the butt end of the ladder on the ground with the butt against the wall of t he building. The butt of the ladder can be carried or pushed into this position.
Step 2: Grab rung at tip end.

Note: Fly section should be toward the building.
Make a visual check for overhead obstructions.
Step 3: Lift ladder and advance hand-overhand down the rungs toward the butt end until the ladder is in a vertical position.
Step 4: Foot the butt end of the ladder.

( continue if an extension Ladder)





## Ladder Raises:

## **One-Firefighter: Ladder Raise (Continued)**

Step 5: Extend the ladder by pulling the halyard until the ladder has been raised to desired level. Engage the ladder locks. Keep an elbow in contact with one of the beams.

- Step 6: Position the ladder for climbing by grabbing rungs two and five.
- Step 7: Move the ladder butt out from the building to correct angle of inclination.Step 8: Secure halyard knot.
- Note: The ladder has 3-5 rungs showing over the roof line. If necessary, rotate the ladder to bring the fly section to the out position.



## Ladder Raises:

## **Two-Firefighter: Flat Raise**

- Note: Firefighter #1 is located near the butt end of the ladder. Firefighter #2 is located near the tip of the ladder.
- Step 1: Both Firefighters: Carry the ladder to the location for the raise.
- Step 2: Firefighter #1: Place the butt end of the ladder on the ground.
- Step 3: Firefighter #2: Rotate the ladder to a position with both beams on the ground.
- Step 4: Firefighter #1: Foot the ladder by standing on bottom rung. Kneel down and grab a rung with both hands.

Step 5: Firefighter #1: Lean back.

Note: A visual check is made for overhead obstructions





## Ladder Raises:

## **Two-Firefighter: Flat Raise (continued)**

- Step 6: Firefighter #2: Lift ladder and advance hand-over-hand down the rungs toward the butt end until the ladder is in a vertical position.
- Step 7: Both Firefighters: Face each other and foot the ladder by placing toes against same beam.
- Step 8: Firefighter #1: Extend the ladder by pulling the halyard until the ladder has been raised to desired level and the ladder locks are engaged.
- Step 9: Firefighter #2: While still footing the ladder, grasp beams and look at the ladder tip.







**Two-Firefighter: Flat Raise (continued)** 

Note: Firefighter #2: Verbally communicate the distance of the tip from roofline to Firefighter #1.Step 10: Both Firefighters: Gently lower the ladder onto the building Note: The ladder has 3-5 rungs showing over the roof line.



## Ladder Raises:

**Three-Firefighter: Flat Raise** 

Note: Firefighter #1 is located at the butt end of the ladder. Firefighter #2 and #3 are located at the tip end of the ladder.

- Step 1: All Firefighters carry the ladder to the desired location.
- Step 2: Firefighter #1: Place the ladder butt end on the ground. Firefighters #2 and #3: Secure the beams with hands and rest the ladder flat on the shoulders.
- Step 3: Firefighter #1: Foot the ladder by standing on bottom rung. Kneel down and grab a rung or beams with both hands.

Step 4: Firefighter #1: Lean back. Note: A visual check is made for overhead obstructions.



## Ladder Raises:

## Three-Firefighter: Flat Raise (continued)

Step 5: Firefighters #2 and #3: Advance in unison, with outside hands on beams and inside hands on the rungs, until the ladder is in a vertical position. Note: If necessary, pivot the ladder to position the fly section away from building. Step 6: All Firefighters: Face each other and foot/heel the ladder by placing toes against same beam. Step 7: Firefighter #1: Extend the ladder by pulling the halyard until the ladder has been raised to desired level and the ladder locks are engaged.





## Ladder Raises:

## **Two-Firefighter: Beam Raise**

- Note: Firefighter #1 is located near the butt end of the ladder. Firefighter #2 is located near the tip end of the ladder.
- Step 1: Both Firefighters: Carry the ladder to the desired location for the raise.
- Step 2: Firefighter #1: Place the beam of the butt end of the ladder on the ground.
- Step 3: Firefighter #1: Place the foot closest to the lower beam on the butt to foot the ladder. Grab beam with both hands.
- Step 5: Firefighter #1: Lean back.
- Note: A visual check is made for overhead obstructions.
- Step 6: Firefighter #2: Lift ladder and advance hand-over-hand down the beam.





## Ladder Raises:

## **Two-Firefighter: Beam Raise (continued)**

Step 7: Both Firefighters: Face each other and foot the ladder by placing toes against same beam. Step 8: Firefighter #1: Extend the ladder by pulling the halyard until the ladder has been raised to desired level and the ladder locks are engaged. Step 9: Firefighter #2: While still footing the ladder, grasp beams and look at the ladder tip. Note: Firefighter #2: Verbally communicate the distance of the tip to Firefighter #1. Step 10: Both Firefighters: Gently lower the ladder onto the building Note: The ladder has 3-5 rungs showing over the roof line. If necessary, turn the ladder to bring the fly section to the out position.





#### Ladder Positioning:

- Ladders should be placed where best suited for the overall operations, since once a ladder is set, it should remain in place.
  ( this is due to the fact a Firefighter operating in the structure may have noted that ladder as a means of egress if things go bad )
- At all structure fires, at minimum, 2 sides of the structure should be laddered.
- When possible, all 4 sides should be laddered and with multiple floors: each floor accessible by portable ladders should have a ladder to it.
- •When teams are operating on the roof, these teams should have a **second** means of getting off (portable or aerial ladder). Fire escape ladders should be considered a third means and not relied on as the second. (excluding high rises, where portables don't reach)
- Additional ladder to a fire escape, should be placed opposite the drop ladder

#### Ladder Positioning:

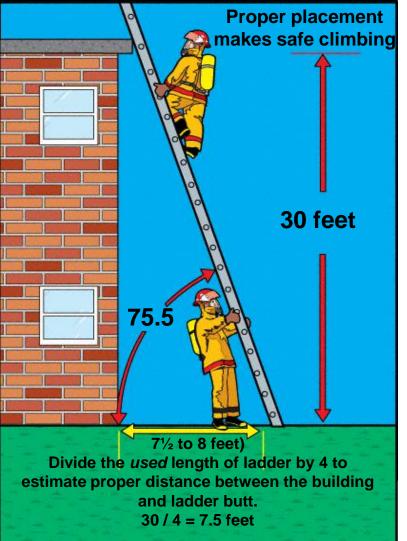
- Avoid placing ladders in front of entrance or exit doorways.
- When a ladder is going to be places and used by a FF to clear windows, the ladder should be place on the side where when the window is take, the smoke will blow away from the firefighter.
   (aka – "windward side" or "wind at your back")

The ladder tip should be at the height of the top of the window for proper and safe working angle.

When all the windows on that side/ floor are cleared, that ladder should be lowered and place at the sill of a wind near or where members are operating. (it's only just below a window sill when making a rescue)

 When a ladder is placed (roof or window) in should be visible to crews operating. (Ladder to support roof operations should be at least 2 rungs over the roof line/parapet).

### Ladder Placement Guidelines



#### DON'T:

- over openings such as windows and doors.
- where it may contact overhead obstructions.
- on uneven terrain or soft spots.
- on main paths of travel.
- where ladder may contact flames or burning surfaces.
- on top of sidewalk elevator trapdoors or "bilko" style doors
- against unstable walls or surfaces.

#### Using a Ladder to Vent Windows:

- When using a ladder to vent from below:
- Take the top pane first, then drop to the lower.



- Release you hands from the ladder as it strikes the window.
   This will prevent any glass that my ride down the ladder from cutting you.
   Wait a few seconds before coming back in contact with the ladder.
- Watch what you are doing, don't do this blind, this allowing you to protect yourself if needed from falling debris.
- Once the window is broken for that quick vent, it should then be cleared.
- Remember When we have a house with peaked roofs –
   Vent Enter Search 2<sup>nd</sup> floor comes before we spend time on the roof.

#### **Climbing Ladders:**

- When climbing a ladder, your eyes should be up, looking where you're going, not down to where you've been.
- You arms should be straight out and in constant contact with the beams of the ladder or the rungs.
- Ascend (up) ladder, creating least possible bounce and sway
  - Start claiming only after you've checked the angle and if it's securely footed.
  - When carrying equipment, use free hand to maintain constant contact with the ladder. In these cases, it's easier to main contact with beam instead or rungs.
- Whenever possible, use utility rope to hoist tools and equipment.
- In wet or ice conditions climb on heels and not toes

#### **Getting a Ladder to the Back Yard:**

Sometimes in is very difficult getting a ladder to the rear of a structure, looking beyond the obvious, "outside the box" for a solution:

- Through an adjoining building
- Around the building or block
- •Through an rear yard neighbors yard
- •Over the building ( to the roof then down)

May be some solutions?

#### Working from a Ladder:

Before working from a ladder, we want to use a <u>ladder lock</u> to secure ourselves. Ladder locks, the locking legs should be opposite the side you're planning to work.



Climb 1 rung over desired height



Place leg, opposite the side you're planning to operate between rungs



Bring that leg around and place heel back on starting rung. With opposite leg, drop down 1 rung



(Ladder Lock Continued)



Wrap the locked leg so top of foot is now Under the rung



This lock is adequate when you are performing tasks that don't require reaching past ladder.





When extending Beyond the Ladder: You should now wrap the top of your foot around the ladder's beam, locking it

This lock will further secure you to The ladder.

### WESTBURY FIRE DEPARTMENT PROBATIONARY DRILL

#### Working from a Ladder:

(Ladder Lock Continued)

**Operating Side** 

Taking window TOP DOWN



Wind direction

Ladder Lock side

#### Assisting victims down ladder:

<u>The conscious victim</u>, we will assist walking them down the ladder – (feet first, facing ladder)

- Make sure you arms are under there's, this way you can catch them if the slip
- Walk at their pace, not yours reassuring their safety all the way. Your voice will divert their attention off the height?

### WESTBURY FIRE DEPARTMENT PROBATIONARY DRILL

#### Assisting victims down ladder:

FF arms Under the Victims

> FF Knee Between victims Groin

<u>The Unconscious victim</u>, we will rest on our supporting knee, supporting a crotch and the chest we'll support under the victims arm, with ours.

• These victims should be facing you

#### Assisting victims down ladder:

The Heavier Unconscious victim, you may want to cradle in front of you, with :

Victims legs over your shoulders,

Victims arms draped over yours

Extremely heavy victims, require 2 firefighter,With ladders placed side by side.( consider a web harness and high point removal, since usually a safer removal, then by ladder)



### **WESTEURY** PROBADORARY DRUL Ladders – Safety Considerations:

- Be cognizant of overhead obstructions, especially wires. Ladders should be kept at least 10' from wires, just in case they do slide.
- Ladders should not be placed over window or doors
   Windows if fire vents out, may compromise ladder structural integrity
   Doors may be opened violently compromising ladders stability
- Cleared window, should be fully cleared for emergency egress. run a tool around window opening assuring there is no hazards
- Extra care needs to be used when using ladders in ice and wet weather.

#### Ladders – Safety Considerations:

When alone and footing is questionable:

Use a Halligan to secure the butt of the ladder.

Drive – pike into the ground and adze against the butt of the ladder



• Once a ladder is placed and members enter from that ladder, it should not be moved.

The only time it is acceptable for a ladder be moved, is to effect an emergency rescue utilizing that ladder. Even in these cases the firefighter(s) who set this ladder and used it, should be made aware it is being moved ( at least radio transmission).

- Proficiency with ladders is only obtained by routine use, handling through training.
- When Lifting, you should utilize you legs, not your back.



 Sizes of ladders should be clearly marked recognizable when secured on the apparatus.



### **WESTBURY FIRE DEPARTMENT** PROBATIONARY DRILL Ladders – Safety Considerations:

• Heat Sensor Labels.

•These sensors should be places through out the ladder. If any of them are black, it means ladder had heat impinged on it and may have structural damage.

This ladder needs to be tested to confirm it's safety before it is used.



#### Ladders – Safety Considerations:

• Ladders cleanliness needs to be maintained after use.

A mild soap and brush can be used, then once cleaned, it should be dried before place back on apparatus.

 Ladders should be visually inspected before put back into service. The next person is relying on you, that the ladder was put back in service and capable for a rapid deployment.





This end the power point portion of this drill.

We will no go to training facility and put all what we have Learned into practical application.

- Review Ladder Types and components
- Raises 1, 2, 3 and 4 Firefighter
- Working from Ladders
- Rescues from Ladders
- Ladder positioning
- Putting ladders back into service