WHITEHALL VOLUNTEER FIRE COMPANY

FIRE TRAINING MANUAL

Volume 2

LESSON PLAN

Roof Ventilation

Estimated Time: 60 Minutes

NYS Requirements: Tool & Equipment Safety 60 minutes

MFD category: Ventilation

MFD Policy/Best Practice to be reviewed: Required use of masks (PESH Policies)

Designed For: Interior FF's

Objective: Given 3/4" plywood on a frame, two firefighters will utilize a chain saw and tools to make 4x4 practice cuts.

1. Start the saw before going to roof and run for minute.
2. Don Full PPE and SCBA, per Department policy.
3. Extend ladder to get to roof.
4. There should be two ladders to roof for exit if possible.
5. Bring the tools to the roof:
   A. Chain or Rotary Saw
   B. Long pike pole
   C. Axe
   D. Ladder belt, if not integrated. Consider webbing also.
6. Bring the roof ladder to the roof.
7. Upon getting to roof, sound the roof with a tool.
8. Sound the roof as you walk. Stay on roof ladder whenever possible.
9. Attach ladder belt to roof ladder.
10. If possible, remove ridge vent and expose rafters.
    A. This would count as "cut 1" in the "7" cut.
11. Make 7-9-8 cuts. Inspect hole after 7-9 cut.
12. Use Pike Pole to remove ceiling below cut.
13. Exit roof immediately upon completing cut.

Lesson Plan

Motor Vehicle Accidents: Safety Review

Estimated Time: 15 Minutes

NYS Requirements: (a) Scene Safety: 15 minutes

MFD Category: Rescue

Designed For: Entire Department

Objective: At the end of this lesson, participants will be able to identify safety concerns at a motor vehicle accident and utilize safe practices while participating in the emergency response to motor vehicle accidents.

1. General Safety Concerns

   A. Sharp and jagged parts can cause injury, including sheet metal, glass, engine parts
      (1) Always wear full PPE, including gloves, goggles, turnout
   B. Shifting, unstable vehicles are dangerous
      (1) Always stabilize vehicle before cutting
   C. Airbags can deploy
      (1) Always disable battery and avoid cutting capacitors
   D. Vehicles can explode, catch fire
      (1) Always have one person with a water source ready.
         1. Person should NOT be standing within the explosion zone of the car.
         2. When approaching a car fire, approach from angles, never head-on
   E. Vehicle can shift, roll, move and crush
      (1) Always stabilize vehicle
   F. Batteries can start vehicle or enable functions, such as starting the car:
      (1) Always – cut ground
      (2) Always remove everything from lighter plugs to avoid a reverse charge
   G. Seat belt pre-tensioners can launch projectile
      (1) Always avoid cutting the pre-tensioners
   H. Lift gate can launch a projectile- remove it properly to prevent projectiles

2. Approaching the vehicle. Checklist:

   A. scene size-up/assessment-360

   B. establish command

C. scene & vehicle stabilization

D. airbag “scanning” (recognize the symbols)

E. battery access and electrical system shutdown

F. documentation of capacitor drain time

G. hazard control (fluid leak or spill)assessment

H. initial patient access opening (removal of window glass)

I. initial interior access

J. patient contact

K. patient protection/safety (cover front seat with blanket)

L. determine contents of trunk

LESSON PLAN

Motor Vehicle Accidents: Lift Gate entry

Estimated Time: 15 Minutes

NYS Requirements: (a) Scene Safety: 15 minutes

MFD Category: Rescue

Designed For: Interior FFs, Scene Support, Operators

SAFETY:

(1) The lift gate is raised by force of pistons
(2) Pistons under pressure (lift gate closed) have a tremendous "fire power"
(3) If glass is broken, pistons can fire off projectile, injuring or killing firefighters
(4) Prior to breaking glass or removing liftgate, pistons must be disabled.

STEPS:

(1) If you must break the glass to gain entry, cover glass with tarp
(2) Break glass (this limits the projectile from injury another, if piston fires off)

If you can avoid breaking the glass for entry, or after breaking the glass:

(3) Lift the lift gate (failing to do so will cause serious injury)
    a. This relieves pressure in piston, reducing chance of injury
(4) Cut struts from top with halligan (bending) or hydraulics/cutters
(5) Remove lift gate by cutting hinges with hydraulics/cutters
    a. Make sure gate remains in "up" position
    b. Have two people hold each end of lift gate and remove it to safe place



LESSON PLAN

Cribbing and Stabilization

Estimated Time: 120 Minutes

NYS Requirements:	(a)	Protective Clothing:	15 minutes
	(b)	Scene Safety:	15 minutes
	(c)	Tools & Equipment Safety:	15 minutes

MFD Category: Rescue (60)

Tools & Equipment (60)

Designed For: Entire Department

OBJECTIVE: Given an unstable vehicle, firefighters will be able to safely and efficiently stabilize a vehicle utilizing various methods.

At the end of this lesson, students will be able to:

(1) Demonstrate use of "quick chock" and "step chock"
(2) Explain difference between capture stack and lift stack
(3) Demonstrate how to build box crib and use with high pressure lift bags

1. OVERVIEW:

A. QUICK CHOCK

(1) Used for stabilizing vehicle on its wheels
(2) Could be better than step chock, because it does not stick out of vehicle as much
(3) Application:
    a. Use wide flat block and a 4 x 4
    b. Place under flat block in proper location behind front wheels or in front of rear wheels
    c. Then place 4 x 4 on top of it, so that neither piece sticks far out from vehicle
    d. Fit to just less than snug with car
    e. Tap with hammer to make snug under vehicle
    f. Deflate tires

B. STEP CHOCK

(1) Quick to use, for stabilizing vehicle on its wheels
(2) Problem: sticks out of vehicle in footpath
(3) Application:
    a. Place wood wedge on ground under tire
    b. Place step chock at angle, tipping towards vehicle
    c. Fit to less than snug with car
    d. Tap with hammer to make snug under vehicle
    e. Deflate tires

2. BOX CRIBBING AND LIFTING

A. INSTRUCTION:

(1) Cribbing usually consists of:
    a. 4x4 blocks, 24" in length
    b. 4x4 wedges, 18" long
    c. 2 x 4 blocks, 24" long
    d. 2 x 4 wedges or shims

(2) Usually made of douglas fir or southern pine
    a. Maximum load capacity of 500 psi
    b. The contact load rating of a 4 x 4 is 6000 pounds
    c. They crush slowly, and provide advance warning of failure

(3) STANDARD BOX CRIBBING:
    a. A standard 2 x 2 box cribbing (2, 4x4's stacked in pairs), has 4 points of contact, holding 24,000 pounds, provided each contact point is equally loaded
    b. Used to capture light to moderate loads
        i. not intended for lifting because of its open middle space
            1. The open middle would cause airbag to sag in middle, pushing out cribbing, and causing collapse

B. SKILL:

- Show 2 x 2 box cribbing
- If working on dirt, establish solid base of about 5 joined 4 x 4's
- Make sure each 4 x 4 overhangs edge by 4"
    - This causes wood to expand prior to collapse and will help avoid or delay total collapse
- Should never exceed 48" in height at maximum when using 24" 4 x 4's.

3. 3 x 3 CRIB STACKING WITH AIRBAGS

A. INSTRUCTION

SAFETY PRECAUTIONS

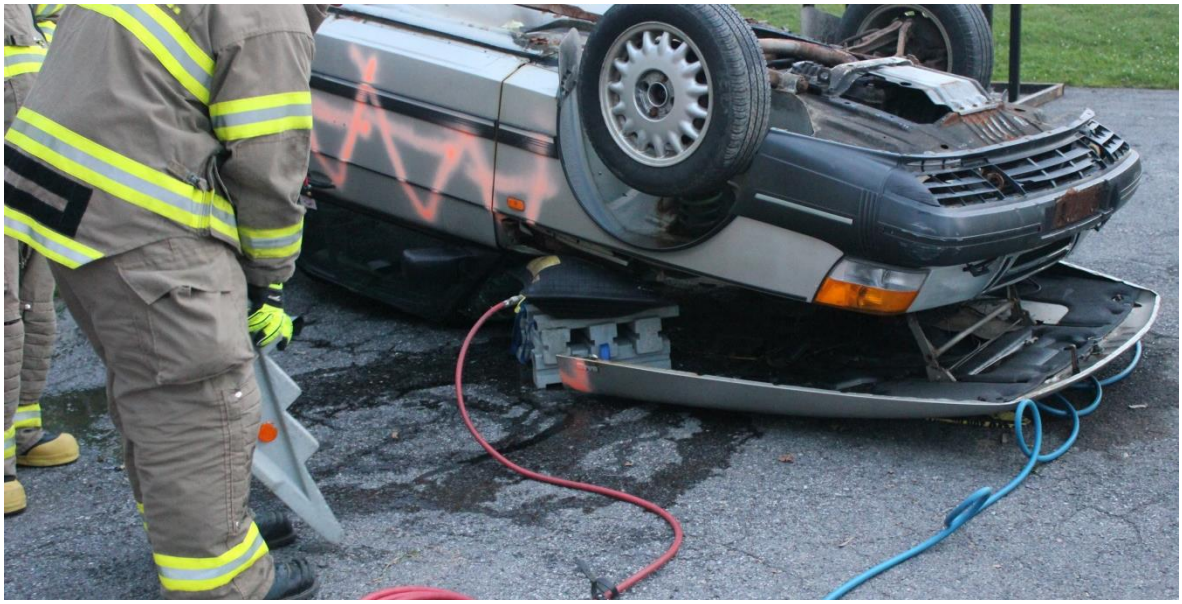
1. Members will utilize full personal protective equipment (PPE) with eye protection.
2. Air bag safety rules:
   A. Plan the operation before starting the work.
   B. Be thoroughly familiar with the equipment. It's operating principles, methods, and Limitations.
   C. Keep all components in good operating condition and all safety seals in place.
   D. Have an adequate air supply and sufficient cribbing and protection plates before beginning operation. Air bags are NOT cribbing. They are used only to permit the building of cribbing while the vehicle is lifted!
   E. Position the bag(s) on or against a solid surface. Make sure it is a structure of the vehicle that will support the pressure and not break or crack under pressure.
   F. Never inflate bag(s) against sharp objects.
   G. Inflate bag(s) slowly and monitor for any shifting.
   H. Never work under a load supported only by bags (crib as you inflate).
   I. Shore up the load with enough cribbing blocks to more than adequately support the load in case of bag failure or shifting.
   J. Stop the procedure often to increase shoring or cribbing – lift an inch, crib an inch
   K. Assure proper cribbing procedures as operation continues.
   L. Avoid exposing bags to materials hotter than 220□.
   M. Never stack more than two (2) bags; center the bags with the smaller bag on top.
   N. Inflate bottom bag first.

Before moving to the following instruction, make sure you review how to connect the regulator to the SCBA cylinders. Every individual should practice connecting and inflating the air bags.

(1) 9 points of contact, being 54,000 pound load capacity, loaded evenly
(2) Designed to capture moderate to heavy loads
(3) Designed better for lifting (but not yet perfect)
(4) Center span captures lift load evenly to avoid pushing out of side contact points
(5) Lifting:
    a. Assign positions:
        i. Individual to oversee lifting (announces raising and lowering)
        ii. Individual on air bag controller (could be same individual as above)
        iii. One individual on each air bag
        iv. Teams for assembling crib stacks and moving airbags
            1. (individual monitoring air bags are part of this team)
(6) Airbags are put in place. "X" is under load.
(7) One airbag is inflated at a time, in small increments, equal heights
    a. "up on red", "up on blue"
(8) Crib stacks are put in place as vehicles are lifted. Vehicle lowered onto crib stacks, alternating raising each crib stacks
(9) SAFETY NOTE: No hands or body parts ever under vehicle. Air bags are for lifting, not stabilization. No long term stabilization with airbags.

SKILL - LIFTING:

(1) Demonstrate 3 x 3 crib stack
(2) Establish solid foundation of about 5 joined 4 x 4's if on dirt or other movable surface
(3) Overhang by 4" on each edge
(4) Finish top stack with another solid stack across, and if possible, a suitable plywood base to keep lift bag evenly distributed.
(5) Add air bags. Lift vehicle, crib with another stack near airbag. Lower airbag, resting vehicle on higher crib stack. Repeat process.
    a. Raise at least two times about 6" in total height.
(6) Students should be ready with replacement crib stack as lifting occurs.



LESSON PLAN

Vehicle Stabilization on its Side

Estimated Time: 45 Minutes

NYS Requirements:	(a)	Protective Clothing:	15 minutes
	(b)	Scene Safety:	15 minutes
	(c)	Tools & Equipment Safety:	15 minutes

MFD Category: Tools & Equipment (45)

Designed For: Interior FFs, Scene Support, Operators

Objective: Given a vehicle on its side, firefighters will be able to stabilize a vehicle with the Rescue Jacks in accordance with the manufacturer's recommendations.

Steps:

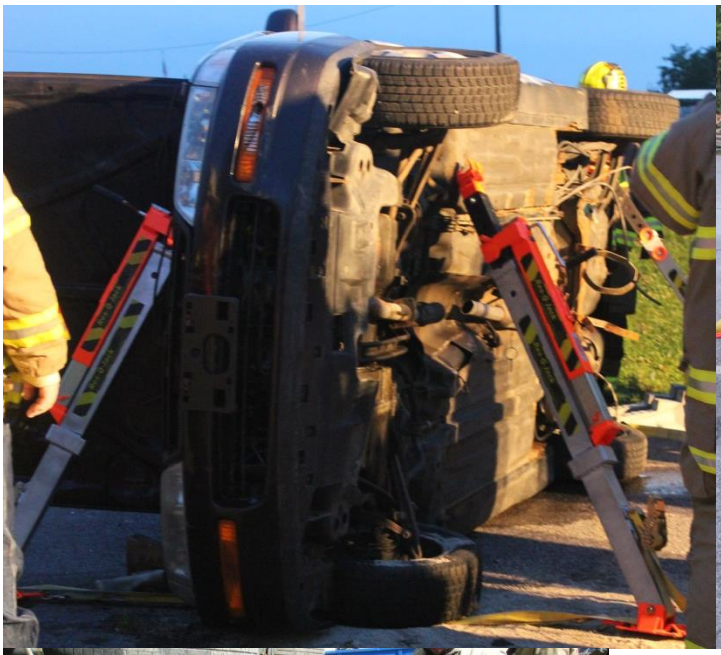
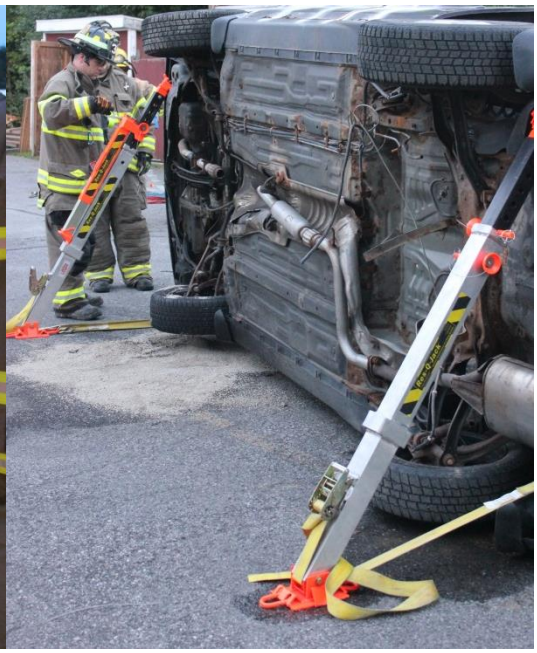
(1) Perform vehicle size up in accordance with prior lesson plan

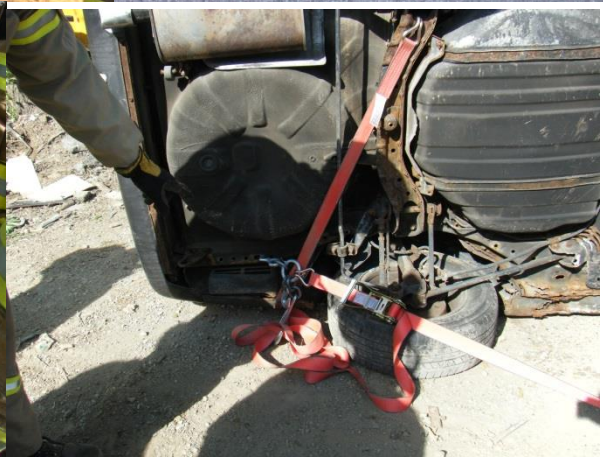
(2) Determine appropriate location to install Rescue Jacks (struts)

(3) Apply Rescue Jacks as appropriate, ensuring vehicle is secure

(4) Utilize variations: Struts on both sides of vehicle; Struts on one side of vehicle with cribbing on other side.

(5) With at least one jack on each side, lift vehicle 6".




RESCUE 42

LESSON PLAN

Door and Roof Removal Drills

Estimated Time: 120 Minutes

NYS Requirements: (a) Protective Clothing: 15 minutes

(b) Scene Safety: 15 minutes

(c) Tools & Equipment Safety: 45 minutes

MFD Category: Rescue (60)

Tools & Equipment (60)

Designed For: Interior FFs, Scene Support, Operators

To be performed in this order. Vehicles should be stabilized prior to use.

REVIEW CERTAIN SAFETY POINTS

(1) Always secure battery (even though there are no batteries in our practice cars, perform the steps)
(2) Always remove the plastic casing around the air bag capacitors to avoid cutting them.
(3) Ensure cribbing and stabilization.
(4) Always see what you are cutting before you cut. No blind cuts!
(5) Never place tools on ground, always on tarp.
(6) Always have fire protection in place.
(7) Have the next tool in hand that you will need, before you need it to speed up process!
(8) One person (usually company officer) should be overseeing the procedures and the safety of each crew. The company officer should not have his hand on the tools.
(9) No running on the extrication site, ever.

SIMPLE SPREADING

(1) Have each member take open one door with spreaders. Remember the basics:
    a. Halligan to create purchase point
        i. SAFETY: Avoid getting hand caught between door and in spreaders
    b. Open door with spreaders
    c. Do not get caught in between spreaders and car

COMPLETE SINGLE DOOR REMOVAL

(1) Cover patient before glass is broken
(2) Take glass before it shatters on patient

(3) Take door off of vehicle:

a. Three methods.

i. Method 1: Start removal from handle side. The advantage to this method is that it gets quick access to patient compartment.

ii. Method 2: Start removal from hinges, then handle side

iii. Method 3: Place spreaders vertically in window near side view mirror. Spreading will separate door from car. Spread towards front windshield, and not the patient!

SIDE BLITZ (ALL DOORS IN FEWER CUTS)

a. Make purchase points in between door and front wheel side panel with halligan at two pin locations (below A post)
b. Make purchase point in between back door and rear wheel panel with halligan at single pin location (below C post usually)
c. Cut top of B post with O-cutters
d. Expose bottom of B post and cut with O-cutters
e. With either O-cutters (by cutting pins) or spreaders, remove door from front of vehicle (under A post)
f. Remove door panel from C post with either O-cutter (by cutting pin) or spreaders)
g. Remove door panel safely away from area.

ROOF REMOVAL

a. Several methods for this procedure are used in fire service. Choose the most appropriate:

a. Cut all posts and remove entire roof

i. Make sure you cut high enough on the posts to use them to roll dash if needed later.

b. Peel back roof leaving (usually) rear posts

i. This requires “creasing” the roof. Make sure to warn patient before you place pike pole across roof and scare patient, causing them to jar neck or back.

b. Remove the roof from the vehicle once all doors have been removed (usually but not always if doors are crushed and it will delay time to entry).

NOTE: The fire service has been removing the A-posts from vehicles without concern to the patient. However, review with the crew that if a patient is pinned under the dash, removing the A-posts will take away the support of the dash, which is already resting on the patient. The dash will further sag onto the patient causing further pain and injury. Thus, consider stabilizing the dash with a ram near the patient. We will perform a dash roll in later drills without removing the roof.

LESSON PLAN

Reverse Dash Roll

Estimated Time: 120 Minutes

NYS Requirements:	(a)	Protective Clothing:	15 minutes
	(b)	Scene Safety:	15 minutes
	(c)	Tools & Equipment Safety:	45 minutes

MFD Category: Rescue (60)

Tools & Equipment (60)

Designed For: Entire Department

Objective: Given a vehicle on its roof with a crushed roof, and a simulated patient stuck under the dash, firefighters will be able to "lift" the dash and free the patient.

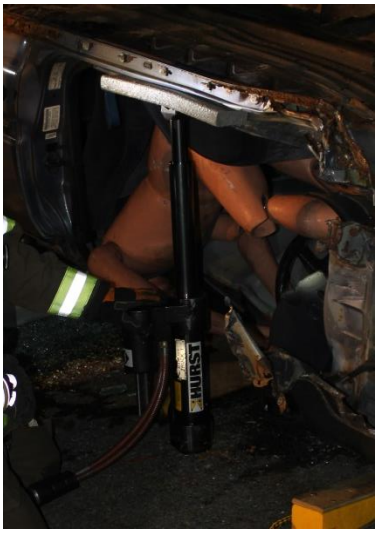
Steps:

(1) Perform size up and take safety precautions
(2) Obtain full access to patient compartment, preferably using a "side blitz
(3) Make 2 relief cuts:
    (a) Cut frame with O-cutters (see diagram)
    (b) Cut relief in frame under A-post area (see diagram)
(4) Prepare box cribbing at height for just below relief cut.
(5) Insert spreaders into relief cut, while resting on box cribbing.
(6) Insert, remove and insert spreaders while gaining a "bite", and lifting dash

Relief cut in frame (top)

and in A post frame (bottom)

Alternatively, the RAM with a 2x4 on top of the RAM can be used to “lift” the rocker panel and the dash.



Capture the lift. Hydraulic tools are not for stabilization or capturing spreads. You may use wood blocks, struts, etc.

LESSON PLAN

Dash Roll with Dash Stabilization

Estimated Time: 120 Minutes

NYS Requirements:

(a)	Protective Clothing:	15 minutes
(b)	Scene Safety:	15 minutes
(c)	Tools & Equipment Safety:	45 minutes

MFD Category: Rescue (60)

Tools & Equipment (60)

Designed For: Interior FFs, Scene Support, Operators

OBECTIVE: Given a severely damaged vehicle and a scenario with a trapped driver and/or passenger, students will safely roll the dash of a vehicle without causing injury to the patient.

NOTE: This is a great drill for EMS participants, as there is limited risk to an internal crew member.

This technique is useful when an entrapped patient needs to be extricated from a vehicle, except that the dash is collapsed on the patient.

ISSUE: Traditional dash rolls may begin with removing the roof of the vehicle. However, removing the roof by cutting the A posts permit the dashboard to sag back onto the patient. This drill stabilizes the Apost prior to cutting the roof.

TOOLS:

(1) Halligan and flathead
(2) Cribbing and shoring
(3) O-Cutters and Spreaders
(4) Ram and portable power source
(5) Glass cutter
(6) Tarp

SAFETY: Always appoint a safety officer for the drill, who is neither the instructor or student.
Cover victim with tarp.

STEPS:

(1) Cribbing.

a. Instructors Note: Cribbing is essential in this drill, not just for vehicle stabilization but also to create solid lifting points for the ram.
b. In addition to the regular cribbing points (prior lessons), place cribbing beneath A post and just ahead (towards front of vehicle) of B post. The RAM will push the vehicle down resting on this rear cribbing, and the force has to be transferred to the ground.

(2) Door removal.
a. The door(s) may be removed either in a single door or a "side blitz" removal. Side blitz removal has the advantage of getting the rescuer/EMT in faster.

(3) Ram Placement.
a. Insert mounting plate for the Ram if necessary.
b. The portable generator may be needed for quicker performance of this drill
c. Place the Ram to the outside of the driver's (or passenger's) seat. Make sure that the handle to the Ram lies flat, so that when a backboard is placed over the seat, the Ram handle does not obstruct the placement.
d. Spread and Place the Ram against the A post, high enough to gain a proper angle but low enough not to block extrication of the patient using a backboard on the seat.
e. Keep Ram in place until further needed

(4) Window cutting.
a. Make a "smiling" cut to the windshield. Do NOT cut out the windshield. Leaving the windshield intact is faster and make assist with accident reconstruction.
b. Start halfway up the A post and cut a "smile" into the windshield, moving down and then back up to the other A post side in a "smile" shape.

(5) Cutting
a. Utilizing cutters, make three separate cuts in this order.
i. Cut engine compartment <u>frame</u>. The frame must be severed by about 6" in depth. A "V" cut is best to create a wide gap.
1. Instructors Note: The hood will roll into this area. Thus, look under the area being cut. Make sure that there is not a suspension spring or wheel under the cut. Usually the cut should be about 1-2 feet from the windshield. Cut either ahead of or behind the spring over the wheel, if one exists.

ii. Cut floor board, under the A post, near driver's left foot (or passenger's right foot). The cut should be at least 6 inches in depth. Cut all the way through.
    1. If you cut too much, wedges cannot be used to capture the spread, but if you do cut too much out, you can use the spreaders both to roll the dash further and to make a quick but not permanent capture of the dash. Although spreaders should not be used to stabilize, in this case, you may have no choice and may have to leave a crew to tend the spreaders if the RAM creates issues using a backboard on the seat.
iii. Cut A post a few inches above Ram. Be ready to spread Ram.

(6) Spread Ram. Ram should now be spread, rolling the dash and the engine into the engine compartment.
    a. As the Ram is spread, place a wood block into the cut in the A Post relief cut, in case the dash rolls back.
    b. Instructors Note: The roll usually only needs to be 3-6 inches, but move the dash <u>almost</u> as far as the Ram will spread for practice.

CAUTION: Make sure the Ram will not pop out of place, injuring the individual spreading the Ram. This can occur on occasion if the Ram is spread too far.

LESSON PLAN

Manual Tools

Estimated Time: 120 Minutes

NYS Requirements:

(a)	Protective Clothing:	15 minutes
(b)	Scene Safety:	15 minutes
(c)	Tools & Equipment Safety:	45 minutes

MFD Category: Tools & Equipment

Designed For: Interior FFs, Scene Support, Operators

Objectives: Given only manual tools and a vehicle, firefighters will be able to:

(1) Utilize the "officers tool" or "Hooligan Head" to make a square cut into a trunk, and open the trunk;
(2) Utilize the air chisel to make cuts into the vehicle;
(3) Utilize a sawzall (reciprocating saw) to cut vehicle posts.

Skills: Practice above skills making various cuts.

A. Trunk opening technique:

(1) Use Halligan forks or other piercing tool to make access point into trunk, in area above lock
(2) Utilize "Biel" tool (hooligan fork or officer tool fork) to make cuts into trunk, creating a flap;
(3) Bend flap up, creating access point
(4) Utilize tool to locate trunk lock release cable, and depress, opening trunk

LESSON PLAN

Vehicle Fires

Estimated Time: 120 Minutes

NYS Requirements:

(a)	Protective Clothing:	30 minutes
(b)	Scene Safety:	15 minutes
(c)	Tools & Equipment Safety:	45 minutes

MFD Category: Fire Hose Practices (interiors)

Apparatus Driving, Operations, Maintenance (operators)

Designed For: Interior FFs, Scene Support, Operators

Objectives: Given a vehicle on fire, firefighters will be able to safely approach and extinguish vehicle, and search for victims.

Methods:

(1) Vehicle is properly and safely positioned for extinguishment;
(2) Firefighters exit vehicle, obtaining tools for their seat assignment;
(3) Officer sizes up vehicle including exposures and makes quick determination of occupancy;
(4) Firefighters don SCBA and proper PPE;
(5) Firefighters approach vehicle with hose and tools, from corners of vehicle;
    A. Firefighters do not stand in front of bumpers or in front of vehicle, approaching from corners and sides.
(6) Firefighters extinguish vehicle, utilizing foam if called for by officer;
    A. Water applied under vehicle, then into cab as appropriate.
(7) Firefighters search vehicle, including trunk.

LESSON PLAN

Rope Rescue: Basic Knots

Estimated Time: 120 Minutes

NYS Requirements:

MFD Category: Ropes & Knots

Designed For: Entire Department

Objective: Given two pieces of rope, firefighters will be able to tie the following knots:

1. Figure Eight
2. Figure Eight on a bite
3. Figure Eight Follow Through
4. Double loop figure 8
5. Triple wrap prusik
6. Water Knot

Additional Assistance: (animated video): http://www.animatedknots.com/indexrescue.php

TERMINOLOGY:

1. KNOT – fastening made by tying together pieces of rope or intertwining a rope.

2. BIGHT – U-shaped bend in a rope; the open loop in a rope formed when it is doubled back on itself.

3. LOOP – turn in a rope that crosses itself to create a closed loop.

4. ROUND TURN – full wrap of rope around an object so that both ends emerge from the same side.

5. SHORT LEG (OR WORKING END) – portion of rope used to make all of the bends to tie the knot. Also referred to as "running" or "loose" end.

6. LONG LEG (OR STANDING END) – portion of rope that is stationary when tying a knot. For example, the short leg (end used to make the bends) in a "loop" crosses over the long leg (stationary portion). The long leg encompasses the area from the origin of the rope to the knot; also called "standing end."

Figure 8 on a bite.

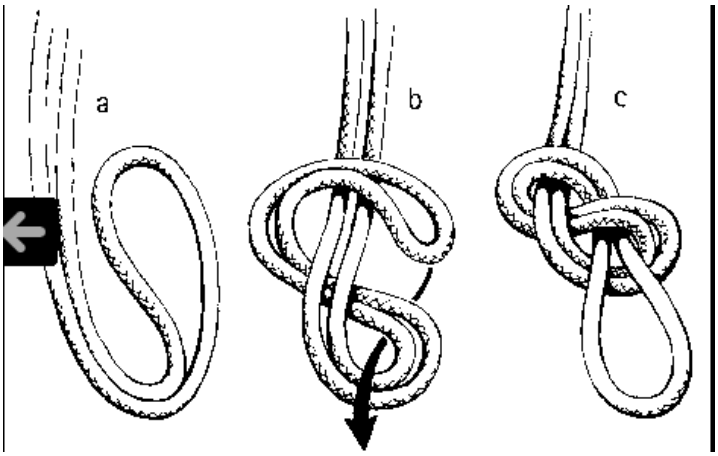
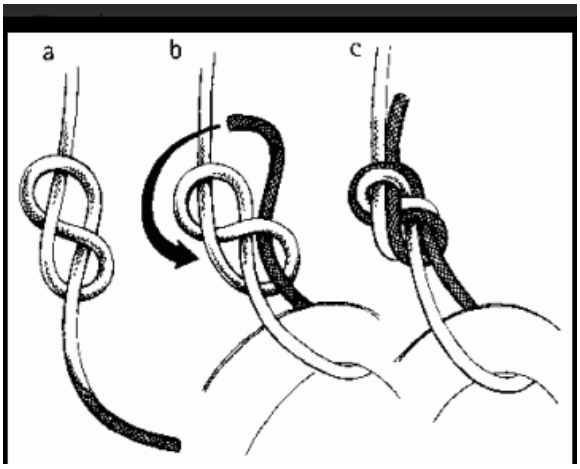
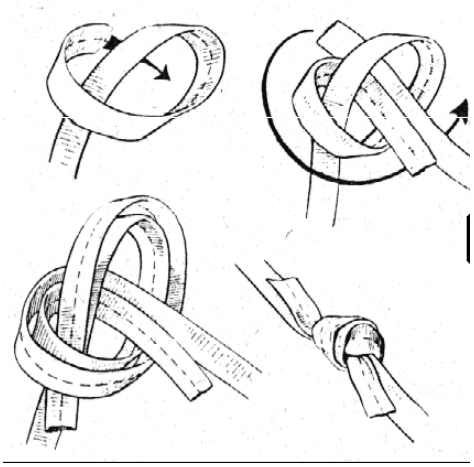


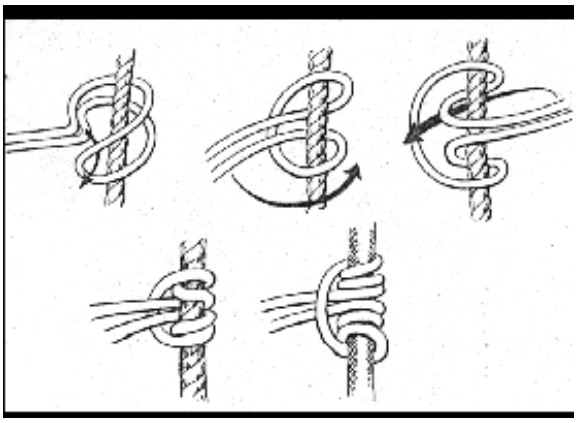
Figure 8 follow through



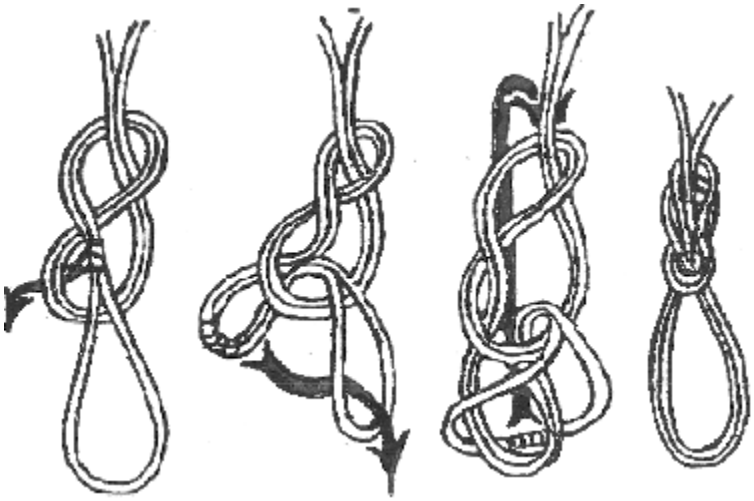
Water Knot



Triple wrap prussic

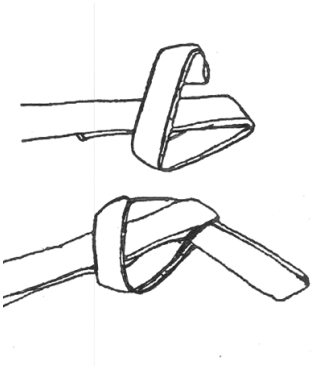


Double loop figure 8:



The double loop figure 8 is used in equalizing the load between multiple anchor points, it can be tied either on a bight of rope or as a follow thru knot used with the in-line figure of eight.

Overhand Loop



LESSON PLAN

Rope Rescue: Anchoring

Estimated Time: 120 Minutes

NYS Requirements:	(a)	Protective Clothing:	15 minutes
	(b)	Scene Safety:	15 minutes
	(c)	Tools & Equipment Safety:	15 minutes

MFD Category: Ropes & Knots

Designed For: Entire Department

This lesson continues from Part 1a, basic knots.

OBJECTIVE: Given a rope rescue scenario, Firefighters will efficiently and effectively identify the best location for an anchor, select the best anchor to utilize, and create the anchor with the proper angles.

I. Anchor classifications:

A. bomb-proof
B. Questionable
C. Manufactured.

Strive to achieve the bombproof rating.

II. Anchor Parts

A. Webbing is strong by design. One-inch flat webbing has a load rating of 6,000 pounds.
B. Rope is also a choice.

III. Critical Angles

A. One of the most important features of an anchor system is the angle you create building it. This will apply to all anchor systems and their components.
B. Angles should stay between 45 and 90 degrees.

C. Assume a load of 100 pounds. If we create an angle of 45 degrees each side of the anchor strap will see about 52 pounds. Let's increase the angle to 90 degrees, now each side of the anchor strap will see a load force of approximately 70 pounds. If we take that angle and bump it up to 123 degrees, the load force on each side of the anchor strap is now around 100 pounds.
D. Those loads are transferred back to the anchors and anchor system components. The less stress and unneeded load force we create in our system, the better!

IV. Basic Anchor Rules:

A. Single point anchor system.
    a. Created by attaching the rope itself or the rope via an anchor strap to a single anchor point such as an I-beam or cement column. The load is focused on a single point.
    b. If the load I was supporting or hauling was 500 pounds the anchor would see a load force of 500 pounds.
    c. If you choose to utilize a single point anchor system, one method that works well is referred to as a tensionless wrap. A tensionless wrap works by utilizing friction.
        i. The rope is wrapped around the object a minimum of four to six times. Smaller anchor objects will need more wraps to achieve the needed friction. As the load force is applied the torsional load placed on the wraps causes them to tighten and form a secure anchor system. The terminal end of the rope (the piece you used to wrap the anchor with) will have a Figure 8 Bight tied in it and will get connected back onto itself.

ii. One of the biggest positive characteristics of this anchor method is because the wraps take all the force and the rope itself retains 100 percent of its strength.

V. Load Sharing

A. Another basic anchoring method is called a load sharing anchor.
B. Created by using two separate anchor points which in essence will become one. This anchor system created by using two pieces of one-inch webbing.
C. The degree of angles really comes into play! Remember to keep the angles we create in the area of 45 to 90 degrees. (The below picture is 45 degrees)
    a. Eg. If the load was one thousand pounds, each side of the anchor system will see approximately 500 pounds. Load sharing anchor systems are great when your load force is directed downward in a straight line.

VI. Load Distributing

A. If there is the possibility of your load moving from side to side, use a load distributing anchor system.

B. This is a system comprised of two or more anchor points designed to move with the load. In other words, if your load moves to the right the anchor system would equalize the load amongst all the anchor points.
C. Utilize two anchors just like a load sharing anchor system, however by rigging or building it differently we can achieve a different type of anchor system that will equally distribute the load amongst itself as opposed to only sharing the load equally in a vertically plumb direction.
D. One simple method:
    a. Equipment needed:
        i. Three equal lengths of webbing
        ii. Three carabineers
    b. Utilize two fixed points and wrap webbing around each point.
    c. Keep the angles under 90 degrees, but try to keep at 45 degrees
    d. Using the third piece of webbing and two carabineers, cross the webbing over itself to make an X in the middle. Then secure each end of the third piece of webbing to the two other pieces of webbing.
        i. Make sure that the carabineers are closed!
    e. Connect the third carabineer to the "X" and connect your load to this carabineer.
    f. Note how the load will distribute itself evenly, but the angle is still important!
    g. If one of the webbings unsecures itself from the anchor point, the load does not come undone.
        i. Try unclipping one of the sides of the anchor points and see what happens.

VII. Wrap 3 Pull 2

A. The "wrap three, pull two" is a quick efficient way to create a strong single point anchor system. The water knot is located on the back of the anchor and not part of the two wraps we've pulled. That's because the knot is the weakest point in this system.

B. Make three wraps with the webbing around a large solid object (in this case a tree) and then tie the free ends in a water knot with at least 2 inches of tail on each side of the knot. Now, pull the two strands of the webbing that do not have the knot in them, leaving the actual knot against the tree.

C. The knot, normally the weakest part, is isolated by the friction against the tree and has minimal load on it. Four strands of webbing share the remaining load. This is super strong.

VIII. Backing up the anchors.

A. All anchors should be backed up from a different anchor (not just the “belay” anchor).
B. Several methods to do this.
    a. One easy way is to tie a prussic hitch to the rope, and secure the hitch to another bombproof anchor.

IX. Direction

A. There are circumstances where your anchor points won't line up with the ropes needed location. This is not a big deal.
B. Use what's called a directional pulley, or "directional." A directional pulley is rigged to a separate anchor point and if need be, extended to a desired length to direct the rope in its needed position.
C. Ideally the anchor point chosen for this should be considered bombproof. If it's not it must be backed up with an anchor point of equal or greater strength.

LESSON PLAN

Rope Rescue: Part II

Estimated Time: 45 Minutes

NYS Requirements:	(a)	Protective Clothing:	15 minutes
	(b)	Scene Safety:	15 minutes
	(c)	Tools & Equipment Safety:	15 minutes

MFD Category: Ropes & Knots

Designed For: Entire Department

OBJECTIVE 1: Given a training environment, students will correctly rig a 4 to 1 hoisting system for raising a load (patient in a basket), utilizing the z-rigging and then assembling a 3-1 system.

OBECTIVE 2: Given a training environment, students will correctly rig the RPMS system to a lowering system, and then convert to a hoisting system.

NOTE: This is part 2 of a 3 part lesson. Part 1 was anchoring. Part 2 is lowering and raising, and Part 3 is assembling the basket and then reviewing all of the steps to prepare for a live rescue drill.

SKILL SET ONE:

(1) The instructor will review prussic hitches with students and ensure students are proficient at attaching the hitch;

(2) The instructor will instruct students on MFD's use of 2 prussic hitches, one long and one short, of different colors (red & green), noting that the short rope is farthest from the load (or closest to the pulley), and the longer is closest to the load (or farthest from the pulley).

(3) The instructor will perform the following steps to review how to assemble a 3 to 1 or 4 to 1 pulley system.

a. Establish an anchor point. For the moment, simply tie off the "cliff side" (as opposed to load side) of the rope to the anchor. There is no need to use the full RPMS system at this point.

SKILL SET A: Attach the premade z-rigging (3 to 1)

SKILL SET B: Create a 3 to 1 or 4 to 1 system, as follows:

b. Place a load at the load end, approximately 40' from the simulated "cliff edge". Tie one end of the hosting rope to the load, forming a straight line (no mechanical advantage). Explain this uses 100% effort to raise the load.

1. Explain the use of edge cover to prevent rope damage.

c. Place a pulley at the load end, attaching the pulley to the load. Bring the hoist end of the rope back to the students. Explain that the pulley system is now a 2 to 1 system, with the pulley providing the mechanical advantage.

1. Note to students various uses of 2 to 1 systems on the fire ground, such as lowering a victim from an elevated floor and raising a victim from a collapsed floor to a higher floor. Note the phrase "pulley to the person", which helps students remember to place the pulley end at the victim to achieve mechanical advantage.

d. Convert the system to a 3 to 1 or 4 to 1 system.

1. Place a pulley at the hoist end. On the pulley's carabineer, place one prussic back to a pulley on the anchoring system (later students will attach this to the RMPS system). The shorter rope is on the pulley side. Explain that this pulley simply provides a "change of direction" and provides no mechanical advantage.

2. Place a pulley at the load end, and bring the rope back to the hoist end. Attach two prussic hitches to the rope, above the 2-1's pulley (the first pulley attached in the system), with the shorter rope attaching to the hoist side of the (2 to 1) rope and the longer rope to the load end of the (2 to 1) rope. Then connect both ropes to this 2nd pulley's carabineer. This side provides the mechanical advantage.

3. Attach a prussic hitch "break" to the hoist end of the system, by attaching the break back to the anchor (we will attach the break to the RPMS system in the next scenario).

4. Bring back the rope to the hoist end. Have students practice pulling the system, reloading the system, and pulling again.

(4) Explain the use of a 2 to 1 compound system in conjunction with the 3 to 1 or 4 to 1 system, which doubles the 4 to 1 system (to 8 to 1/ 6 to 1). To set up a compound system, attach another 2 to 1 pulley system to the 4 to 1 system using

prussic hitches. The prussic hitches bind from the 2 to 1 to the 4 to 1 where a rescuer's hands would otherwise connect, at the location of the individual hoisting. Practice using this system. The system will have to be reset a number of times depending on the length of the practice area.

SKILL SET TWO: Attach the RPMS system.

(1) Show students the RPMS system. Explain the components of the RPMS system.

(2) Attach the RMPS (eight plate) to the anchor using the carabineer.

(3) Show where the components attach to the load and pulley system already created:

a. Descender: Instructor will show students how to attach the descender and utilize as a lowering device. Students will each practice until they become proficient.

b. Mariner's Hitch. Instructor will explain purpose and use of Mariner's Hitch and demonstrate how to utilize hitch if necessary.

i. This is a rope/knot system that can be released under load. It is primarily used to connect the brake to the anchor. If you need to release the brake while it is still under load, such as when it is holding a system, the Mariners' hitch will free the brake. Thus, if the belay system is required and you have to switch over to the belay system, this would be released. To untie the hitch while under load, start by unclipping and removing the carabineer (the loose one) and push the loop back through the web, opposite of how the knot is tied. Start unwrapping the web carefully. As the web starts to slide, let the load transfer gently onto the lowering device or rope.

c. Convert to hoisting system. Instructor will demonstrate how to convert the lowering system over to the hoisting system, including utilizing the pulley on the RPMS and attaching a breaking system with the prussic hitches to the RPMS. Instructor will demonstrate use of the breaking system.

d. Students will practice pulling the 3 to 1/z-rigging utilizing the RPMS.

LESSON PLAN

Building Construction

Estimated Time: 120 Minutes

NYS Requirements: Scene Safety 120 minutes

MFD category: Optional Alternatives

MFD Policy/Best Practice to be reviewed: Required use of masks (PESH Policies)

Designed For: Interior FF's

Objective: Given a classroom setting, firefighters will be able to identify the five types of building construction and the dangers associated with each type.

Instructor: Utilize Building Construction Powerpoint Presentation.

LESSON PLAN

Chimney Fires

Estimated Time: 90 Minutes

NYS Requirements: Scene Safety 30 minutes

MFD category: Salvage & Overhaul (60)

Fire Protection Organization (30)

MFD Policy/Best Practice to be reviewed: Required use of masks (PESH Policies)

Designed For: Interior FF's

Objective: Given a classroom setting, participants shall know their roles on the scene of a chimney fire, know which equipment to bring to the scene, and will know how to extinguish a chimney fire without causing extensive damage to the chimney or home.

Objective: Given a classroom setting, students will identify the procedures and considerations for safely attacking an active chimney fire in a residential setting.

Objective: Given a classroom setting, students will identify the components of a chimney and identify the causes of chimney fires

BACKGROUND

- In the United States, an average of 25,100 chimney fires are responsible for 30 deaths and $126.1 million in property damage on average each year.
- Creosote responsible for heavy flames and fires

ESTIMATED RESIDENTIAL STRUCTURE FIRES

Equipment	2004	2005	2006	2004-2006 Average
Total Residential	386,100	375,100	390,900	384,100
Total Heating Equipment	**57,900**	**56,100**	**55,500**	56,500
Local Fixed Heater	4,200	5,000	4,400	4,500
Portable Heater	1,900	1,500	1,400	1,600
Fireplace, Chimney, Chimney Connector	**25,200**	**24,500**	**26,400**	25,400
Central Heating	2,000	1,200	1,000	14,000

Water Heater	2,800	2,600	2,500	2,600
Air Conditioning	1,100	1,100	1,200	1,100
Other	20,700	20,300	18,700	19,900

ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS

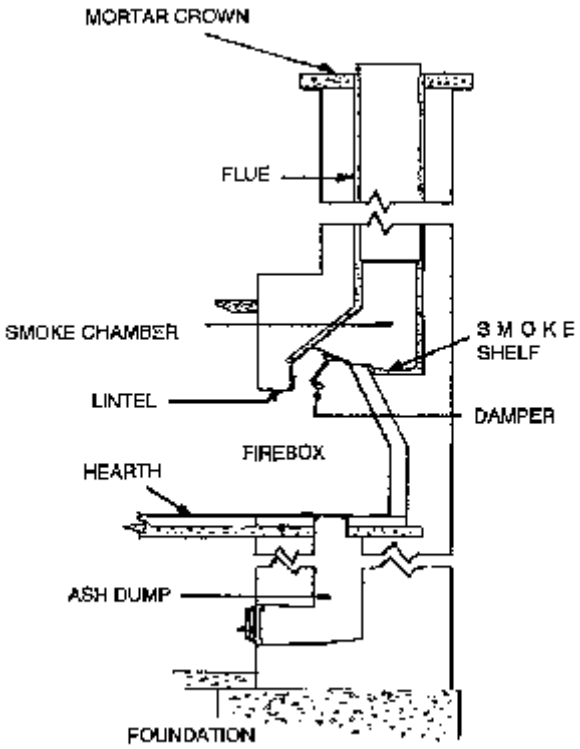
Equipment	2003	2004	2005	2006	2004-2006 Average
Total Residential[1]	2740	2850	2630	2280	2590
Total Heating Equipment	**250**	**290**	280	200	260
Local Fixed Heater	110	90	130	80	100
Portable Heater	40	130	30	50	70
Fireplace, Chimney, Chimney Connector	**50**	**20**	20	*	10
Central Heating	10	10	30	20	20
Water Heater	20	10	30	20	20
Air Conditioning	10	*	*	*	*
Other	20	30	50	30	40

Estimated Non-Fire Carbon Monoxide Poisoning Deaths

Consumer Product	1999	2000	2001	2002	2003	2004
Total Deaths	109	137	122	181	154	162
Heating Systems	**50**	**81**	**72**	**97**	**66**	**84**
Unspecified Gas Heating	5	1	5	2	4	14
LP Gas Heating	22	28	24	41	22	25
Natural Gas Heating	20	42	28	32	27	30
Coal/Wood Heating	0	2	6	4	2	4
Kerosene/Oil Heating	2	8	6	8	6	4
Diesel Fuel	*	*	*	1	*	*
Heating Systems, Not Specified	1	*	3	9	5	7

Source: US Consumer Product Safety Commission

ANATOMY OF FIREPLACES



Two types of fireplaces:

Fireplaces come in three general types:

(a) masonry fireplaces built entirely of bricks, blocks or stone and mortar

(b) factory built fireplaces consisting of a lightweight metal firebox and a metal chimney

(c) There are a few hybrids, the most common being a heavy metal firebox and smoke chamber coupled to a regular brick chimney

Masonry Fireplace Construction issues:

(a) The firebox takes the brunt of the fire's heat. The firebrick can take the heat pretty well, but the joints will fail in time from the constant expansion and contraction. In addition, refractory mortar is specified and seldom used.

(b) In a fireplace without a chimney cover, the rain water will also pool on the smoke shelf, mix with the soot behind the damper, and form an acidic slurry that seeps into the fireback destroying the mortar joints. These joints must be kept in good repair with a high temperature refractory mortar to ensure the fire is contained.

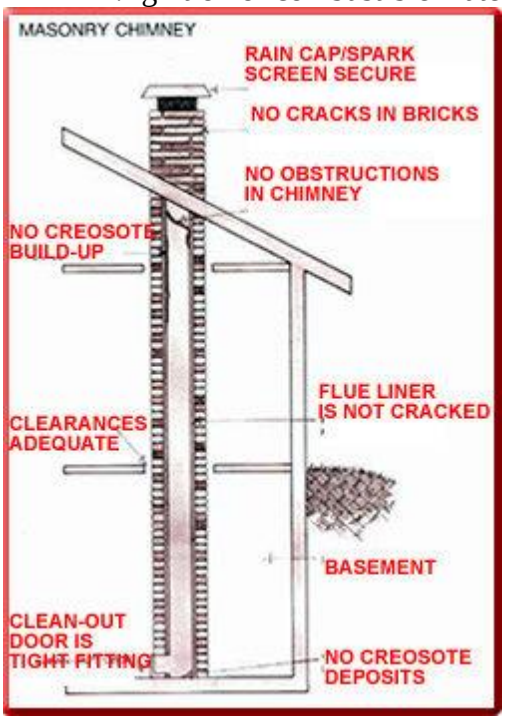
(c) The tile liners used in most masonry fireplaces are just fine as long as the fireplace is properly maintained and not exposed to chimney fires. One good chimney fire will usually crack these tiles, rendering them incapable of performing their intended function.

Prefabricated Chimney Issues:

(a) Older units with an imitation brick housing above the roof, seem to be a preferred nesting site for birds in many areas. It is not unusual for chimney sweeps to take literally buckets of nesting material from these chimneys. This nesting can catch fire directly, or it can block critical air passageways between layers of metal chimney pipe, allowing the chimney to overheat. Both scenarios routinely cause house fires. Most after-market chimney covers do not correctly address the problem, and can often make the situations worse. A careful screening of all potential nesting areas with the proper sized screening may be in order.

TWO COMMON CAUSES OF CHIMNEY FIRES:

1. Ignition of residue in the flue.
2. Ignition of combustible materials in proximity to the chimney or heating device.



SAFETY CONSIDERATIONS:

1. Icy Driveways
2. Icy Roof
3. Smoke Conditions, CO
    a. Smoke/Flash from chimney to firefighters on roof
    b. Smoke/Flash from fireplace to firefighters inside house

PRE-ARRIVAL ISSUES:

1. Truck placement for roof positioning
2. Ground ladder placement
3. Engine Placement
4. Equipment for crews:
    a. Engine Company
        i. Dry-Chem.
            1. Why not water can? Water breaks heated brick fireplaces!
        ii. Fireplace can (trash can)
        iii. Full SCBA, donned if necessary
        iv. Thermal Imaging Camera
        v. Ventilation fan (usually a truck task, but could be an engine task)
    b. Truck Company
        i. Ladder belts!
        ii. Roof Ladder Mandatory
        iii. Chain and powder bag
        iv. Mechanics bag, or at least Phillips head and flat head screw drivers
        v. Full SCBA, face-piece donned while removing cap to fireplace and dropping chain

ATTACK CONSIDERATIONS

1. Residents evacuated?
2. Did fire escape fireplace?
3. Smoke posing CO threat?
4. Sparks from chimney to other houses?

ATTACK PROCEDURES

1. Size-up on arrival
    a. Location of residents? Evacuated? Home?
    b. Interior smoke condition: Fire contained to fireplace?
2. Establish Command
3. Request additional resources if needed

4. Conduct interior size-up of the fireplace
5. Engine to interior, Truck to roof and for ventilation of crews available
6. Advance hoselines if needed
7. If interior environment is smoke filled, monitor the air for co levels 35ppm or higher, must don SCBA
8. Stop the flow of oxygen to the flue (this can be as simple as closing the units door(s), and closing any air intakes)
9. Spread a salvage cover in front of the stove or fireplace
10. Establish horizontal ventilation (consider using PPV fan if needed)
11. Extinguish the fire (consider the following methods)
    a. Dry Chem for in fireplace, water extinguisher or hose lines for outside fireplace
    b. Water will rapidly cool the flue and cause it to fracture
12. Remove contents of heating device outside if needed
13. Check for extension (using Thermal Imaging Camera, heat gun, also be looking for discolorations of surface materials, smoke coming from cracks, outlets, light fixtures, or roof coverings)
14. Overhaul if needed
15. Advise occupant to have chimney inspected by a certified chimney inspector before using it again

SKILL SHEETS

SKILLS TEST
Breaching Walls

Introduction: Given a flathead axe and halligan tool, the firefighter in full personal protective equipment and SCBA with face piece obscured will identify proper wall to breach, and breach a hole large enough to pass through.

Job Steps

1. Firefighter locates wall in which opening will be made.
2. Use axe and/or halligan to begin opening hole.
3. Using the tools in a push and pull action, clears an opening between studs.
4. Exits room through breach in wall.

Note: If firefighter must use low profile or full escape to complete step #4, then those evolutions are evaluated.

SKILLS TEST
Head First Ladder Exit

Introduction: The firefighter will exit a window onto a portable ladder, head first down the ladder to rapidly escape room.

Job Steps

1. Firefighter locates open window where ladder is positioned

   Note: It is not necessary for firefighter to clear window as this skill is evaluated elsewhere.

2. Firefighter, remaining as low as possible, exits window head first onto ladder.

3. Firefighter pulls himself/herself onto the ladder rapidly, one rung at a time.

4. Once feet hit top rung, firefighter stops descent.

5. Firefighter reaches up and grasps ladder beam, with right hand/arm, slides left hand to the right and using left arm as a pivot point, rotates body across the ladder beam to a standing position.

6. Firefighter continues decent in a normal fashion.

7. Firefighter shall satisfactorily perform steps #2-6 at least once with full PPE and at least once with full PPE and SCBA.

Ladder Rescue – Unconscious Victim

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 10 minutes. Timing starts when the candidate touches the ladder after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Ladder is placed with tip at or just below sill	1		
Climbing angle and tip position are checks and corrected as necessary prior to climbing	1		
Gets victim out of window and onto ladder	1		
Firefighter securely holds victim while descending	1		
Descends ladder maintaining contact with ladder at all times	1		
Total possible points	**5**		

Ladder Rescue – Conscious Victim

SKILLS TEST

_____	_____	☐ Pass ☐ NP
Company ID #	Date	
_____	_____	
Evaluator's Name	Evaluator's Signature	

Time Limit for this station is 10 minutes. Timing starts when the candidate touches the ladder after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Ladder is placed with tip at or just below sill	1		
Climbing angle and tip position are checks and corrected as necessary prior to climbing	1		
Guides victim onto ladder with victim facing ladder	1		
Firefighter places his arms under the victim's armpits	1		
Firefighter grasps rungs in front of victim	1		
One knee is placed between victim's legs while descending	1		
Descends ladder maintaining arms around victim and one knee between victim's legs at all times	1		
Total possible points	**7**		

Vent – Enter - Search

Skills Test

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 10 minutes. Timing starts when the candidate touches the ladder after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Appropriate tools selected for the task assigned	1		
Ladder is placed with tip at or just below sill	1		
Climbing angle and tip position are checks and corrected as necessary prior to climbing	1		
Verbalizes "trimming" window	1		
Enters room through window ensuring that floor is safe	1		
Maintains contact with window	1		
Attempts to close door	1		
Properly and safely uses tool to extend reach	1		
Locates, protects and removes victim [if found]	1		
Exits room through the same window and communicates results to IC	1		
Total possible points	**10**		

Search – Three Person

Skills Test

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate first touches the door or any hand tool after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter wears protective gear correctly	1		
Selects appropriate tool	1		
Establishes search pattern; tells partner and instructor	1		
Checks door for heat and controls opening	1		
Checks behind door and ensure that it stays open	1		
Searches safely: stays low; ascends and descends any stairs with feet spread to sides of treads	1		
One firefighter remains at door shining light and making noise to lead other firefighters out	1		
Maintains contact with walls [if hand is used it shall be the back of hand]	1		
Maintains contact with partner at all times [verbally or physically]	1		
Properly and safely uses tool to extend reach	1		
Searches all realistic areas for victims	1		
Follows established search pattern	1		
Locates, protects and removes victim [if found]	1		
Communicates results of search to IC	1		
Total possible points	**14**		

Search – Two Person

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate first touches the door or any hand tool after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter wears protective gear correctly	1		
Selects appropriate tool	1		
Establishes search pattern; tells partner and instructor	1		
Checks door for heat and controls opening	1		
Checks behind door and ensure that it stays open	1		
Searches safely: stays low; ascends and descends any stairs with feet spread to sides of treads	1		
Maintains contact with walls [if hand is used it shall be the back of hand]	1		
Maintains contact with partner at all times [verbally or physically]	1		
Properly and safely uses tool to extend reach	1		
Searches all realistic areas for victims	1		
Follows established search pattern	1		
Locates, protects and removes victim [if found]	1		
Communicates results of search to IC	1		
Total possible points	**13**		

Through-the-Lock Forcible Entry

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate first touches the door or any hand tool after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter wears protective gear correctly	1		
Feels door for heat	1		
Checks to see if door is locked	1		
Checks direction of swing	1		
Determines location of locking mechanism	1		
Selects appropriate tools for task	1		
Considers pulling hinges [evaluator states can't be done]	1		
Inserts adze of Halligan tool into K tool bracket and positions K tool above lock	1		
Has partner use flat head ax to drive Halligan down until K tool is forced behind the ring and face of cylinder	1		
Has partner drive tool in, against door stop	1		
Halligan tool is pried upward pulling cylinder out	1		
Inserts appropriate tool and turns locking mechanism	1		
Door is controlled as it is opened	1		
Firefighters positioned out of open doorway	1		
Total possible points	**14**		

Conventional Forcible Entry

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate first touches the door or any hand tool after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter wears protective gear correctly	1		
Feels door for heat	1		
Checks to see if door is locked	1		
Checks direction of swing	1		
Determines location of locking mechanism	1		
Selects appropriate tools for task	1		
Considers pulling hinges [evaluator states can't be done]	1		
Inserts blade of driven tool between door and jamb approximately six inches above or below locking mechanism	1		
Both firefighters stay low to avoid heat, flame as door opens	1		
Has partner drive tool in, against door stop	1		
Driven tool is pried away from door, separating door and jamb	1		
Continues prying, clearing lock from keeper & opening door	1		
Door is controlled as it is opened	1		
Firefighters positioned out of open doorway	1		
Total possible points	**14**		

Ventilation – Roof Ventilation

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 10 minutes. Timing starts when the candidate tells the evaluator he is ready to start and then touches the tools.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Brings necessary tools to roof	1		
Checks for signs of unsafe conditions	1		
Ascends roof ladder	1		
Finds appropriate location for opening	1		
Locates roof supports	1		
Opens inspection hole	1		
Verbalizes appropriate size of opening	1		
One firefighter cuts opening in roof while second firefighter ensures safety	1		
Tools used safely	1		
Roof supports are not cut	1		
Area completely cleared of all roofing material	1		
Opening cleared to fire area	1		
Correctly wears protective gear throughout evolution	1		
Total possible points	**13**		

Portable Ladders – Two Firefighter Roof Ladder Deployment

SKILLS TEST

_____	_____	☐ Pass ☐ NP
Company ID #	Date	
_____	_____	
Evaluator's Name	Evaluator's Signature	

Time Limit for this station is 5 minutes. Timing starts when the candidate tells the evaluator he is ready to start and then touches the ladder.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Safely removes ladder from apparatus or ground	1		
Hooks opened before raising	1		
Ascend climbing ladder with roof ladder maintaining contact with climbing ladder	1		
Hooks point away from climbing ladder	1		
Firefighter near tip locks into extension ladder	1		
Slides roof ladder on beam and then over peak	1		
Ensures that ladder is secure on peak	1		
Both firefighters climb both ladders and touch peak	1		
Firefighters correctly lower ladder to ground and return it to the apparatus	1		
Correctly wears protective gear throughout evolution	1		
Total possible points	**14**		

Portable Ladders – Single Firefighter Carry and Raise

SKILLS TEST

_____	_____	☐ Pass ☐ NP
Company ID #	Date	
_____	_____	
Evaluator's Name	Evaluator's Signature	

Time Limit for this station is 5 minutes. Timing starts when the candidate tells the evaluator he is ready to start and then touches the ladder.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Safely removes ladder from apparatus or ground	1		
Carries ladder a distance of 50' to the building butt first using one of the following: [circle one used] High shoulder Low shoulder Extended arm	1		
Checks for overhead obstructions before raising	1		
Butt of ladder is proper distance from building	1		
One firefighter butts ladder	1		
Ladder is brought to a vertical position against building using one of the following: [circle one used] Flat raise Beam raise	1		
Ladder is stable and under control	1		
Fly extended to correct distance and is on the outside	1		
Halyard correctly tied off	1		
Before climbing, firefighter checks climbing angle and tip placement, corrects if necessary	1		
One Firefighter safely climbs to the assigned point (maintains hand contact with ladder at all times while climbing)	1		
Firefighter safely descends ladder (maintains hand contact with ladder at all times)	1		
Firefighters correctly lower ladder to ground and return it to the apparatus	1		
Correctly wears protective gear throughout evolution	1		
Total possible points	**14**		

Portable Ladders – Single Firefighter Carry and Raise

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 3 minutes. Timing starts when the candidate tells the evaluator he is ready to start and then touches the ladder.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Carries ladder a distance of 50' to the building using one of following: [circle one used] High shoulder Low shoulder Extended arm	1		
Firefighter checks for overhead obstructions before raising	1		
Firefighter butts ladder against building	1		
Firefighter raises ladder using Flat Raise	1		
Ladder is brought to a vertical position against building	1		
Ladder is stable and under control	1		
Ladder butt is positioned appropriate distance from building	1		
Before climbing, firefighter checks climbing angle and tip placement, corrects if necessary	1		
Firefighter safely climbs to the assigned point (maintains hand contact with ladder at all times while climbing)	1		
Firefighter safely descends ladder (maintains hand contact with ladder at all times)	1		
Firefighter correctly lowers ladder to ground	1		
Correctly wears protective gear throughout evolution	1		
Total possible points	**12**		

SCBA Confidence: Exit Location

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this entire station is 5 minutes, but the candidate must spend no more than 60 seconds in locating and identifying an opening as a suitable emergency exit. Timing for the station starts when the candidate is released in the center of the room; timing for finding and identifying a suitable emergency exit starts as soon as firefighter locates an exterior wall.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter searches room to find exterior wall	1		
Begins rapid perimeter search to locate possible escape routes	1		
Evaluator states, "You have one minute to locate an emergency exit." EVALUATOR STARTS TIMING			
Uses high hand sweeps of walls to help locate exit	1		
Firefighter locates emergency exit (must be verbalized)	1		
If this exit is not suitable for emergency exit, firefighter continues search	1		
Firefighter stays low at all times and oriented once locating wall	1		
Correctly wears protective gear throughout evolution	1		
Once exterior wall is located, finds emergency exit in 60 seconds or less	1		
Total possible points	**8**		

SCBA Confidence: Low-Profile Maneuver

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate starts breathing air after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
All fasteners on PPE and SCBA are fastened; all flesh is covered, SCBA is secure on back, cylinder valve is opened completely, and positive pressure is applied.	1		
Sizes up obstruction to determine course of action	1		
Loosens all straps, but does not unbuckle any straps	1		
Removes one arm and shoulder from one shoulder strap	1		
Shifts SCBA unit to one side in line with arm	1		
Maintains hand grip on should strap still on shoulder	1		
Passes through obstruction in line with SCBA unit	1		
Once past obstruction, Firefighter re-dons SCBA unit completely and correctly	1		
All straps fastened and tightened	1		
Facepiece stays on and in use throughout	1		
Total possible points	**10**		

SCBA Confidence: Full Escape Maneuver

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate starts breathing air after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
All fasteners on PPE and SCBA are fastened; all flesh is covered, SCBA is secure on back, cylinder valve is opened completely, and positive pressure is applied.	1		
Sizes up obstruction to determine course of action	1		
Loosens and unbuckles all straps	1		
Completely removes SCBA unit without releasing grip on regulator side shoulder strap	1		
Holding SCBA unit at back plate, moves unit over or under obstruction	1		
Maintains constant hand grip on shoulder strap	1		
Firefighter negotiates obstruction successfully	1		
Once past obstruction Firefighter re-dons SCBA unit completely and correctly	1		
All straps fastened and tightened	1		
Facepiece stays on and in use throughout maneuver	1		
Total possible points	**10**		

SCBA Confidence: Hose Lines

SKILLS TEST

_____	_____	☐ Pass ☐ NP
Company ID #	Date	
_____	_____	
Evaluator's Name	Evaluator's Signature	

Time Limit for this entire station is 5 minutes, but the candidate must spend no more than 60 seconds in identifying couplings, determining route to follow and exiting the room. Timing for the station starts when the candidate is released in the center of the room; timing for their finding, identifying and exiting the room starts as soon as the firefighter locates the hose line.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Firefighter searches room to find hose line	1		
Firefighter follows hose line until a coupling is located	1		
Evaluator states "You have one minute to find your way out of the room." (Evaluator Starts Timing)			
Using his hands, firefighter examines coupling to detect female and male couplings and verbally identifies each	1		
Firefighter moves from female to male coupling following hose to exterior	1		
Time from locating coupling to exit from room does not exceed 60 seconds	1		
Firefighter wears protective equipment correctly throughout evolution	1		
Total points	**6**		

SCBA Confidence: Advanced Skills, Maze

SKILLS TEST

_____	_____	☐ Pass ☐ NP
Company ID #	Date	
_____	_____	
Evaluator's Name	Evaluator's Signature	

Time Limit for this station is 20 minutes. Timing starts when the candidate is told to enter the course by the evaluator.

Time Entering Maze		**Time Exiting Maze**	
Tank psig entering maze		**Tank psig exiting maze**	

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Turns on PASS device	1		
Stays low	1		
Uses hands or feet to guide them through maze	1		
Descends inclines, stairs or drop-offs feet first	2		
Sizes-up uncertain areas before entering	1		
Correctly demonstrates procedures for restrictive areas	1		
Demonstrates confidence throughout maze	1		
Spreads feet when ascending or descending stairs	1		
Demonstrates no reckless actions while in maze	1		
All PPE worn correctly throughout evolution	2		
Face piece remains covered and in place throughout	2		
Air consumption: 2216 (30 min.) 4500 (30 min.) 4500 (45 min.) 4500 (60 min.) <1100 psi <2250 psi <1500 psi <1125 psi 1100-1660 psi 2250-3375 psi 1500-2250 psi 1125-1700 psi Has air left Has air left 2250-3000 psi 1700-2250 psi	5 2 1		
Makes it completely through maze in 20 minutes or less	1		
Total points	**20**		

SCBA Confidence: SCBA Emergencies

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 5 minutes. Timing starts when the candidate is given the first situational emergency condition after telling the evaluator he is ready to start.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
Cracked facepiece lens			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Covers facepiece with gloved hand	1		
Uses purge valve or manual shut off to control air flow	1		
Uses breathing technique to conserve air	1		
Severed low pressure line			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Joins and holds ends of low pressure hose together or places the hose under the facepiece	1		
Regulator failure			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Uses emergency by-pass or Purge valve to control air supply	1		
Total regulator failure			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Closes air cylinder and performs full escape	1		
Holds breath while performing full escape	1		
Removes high pressure line from cylinder	1		
Breathes directly from tank by partially opening valve *(short and long facepiece should remain on)*	1		
Severed high pressure line			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Closes air cylinder and performs full escape	1		
Holds breath while performing full escape	1		
Breathes directly from high pressure hose by partially opening cylinder valve *(short and long facepiece should remain on)*	1		
Filter Breathing – Chinning method			
Stays low, calls MAYDAY, immediate exit from area, with partner *(verbalized)*	1		
Leaves facepiece on, ensures hood covers facepiece	1		
Grasp MMR, slightly lift MMR and facepiece	1		
Total points possible	**20**		

SCBA Confidence: MAYDAY

SKILLS TEST

_____	_____	☐ Pass	☐ NP
Company ID #	Date		
_____	_____		
Evaluator's Name	Evaluator's Signature		

Time Limit for this station is 7 minutes.

TASK	POSSIBLE POINTS	POINTS AWARDED	COMMENTS
The firefighter trainee, while Lost/Trapped shall:			
Depresses emergency identifier button (if applicable)	1		
Locates the transmit button (lapel radio, facepiece mounted)	1		
Properly depresses the transmit button	1		
Speaks into microphone CLEARLY	1		
Speaks into microphone SLOWLY	1		
Speaks into microphone CALMLY	1		
Speaks into microphone use **LUNAR** system	1		
Gives **LOCATION** information	1		
Gives **UNIT** (job assignment) information	1		
Gives **NAME**	1		
Gives job **ASSIGNMENT**	1		
Gives information on **RESOURCES** needed	1		
Verifies that the information received by command is correct and accurate	1		

The firefighter trainee, after a simulated Collapse shall:		
Depresses emergency identifier button (if applicable)	1	
Locates the transmit button (lapel radio, facepiece mounted)	1	
Properly depresses the transmit button	1	
Properly depresses the transmit button	1	
Speaks into microphone CLEARLY	1	
Speaks into microphone SLOWLY	1	
Speaks into microphone CALMLY	1	

Victim Carries and Drags

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time limit for this station is 15 minutes.

Criteria:	**Pass**	**NP**
EXTREMITY CARRY		
Rescuer 1 lays the victim on his back and kneels at the victim's feet		
Rescuer 1 grabs the victim's arms and pulls them into a seated position with knees bent		
Rescuer 2 kneels behind the victim and crosses the victim's arms across chest and reaches under arm pits and grabs the victim's wrists		
Rescuer 1 faces away from the victim and kneels at the victim's feet		
With back straight and using leg muscles, both rescuers lift together and carry victim to destination.		
SEAT CARRY		
Rescuers face each other and grasps own right forearm just above the wrist		
Rescuers then grasp each other's left forearm and kneel onto the ground on one knee		
Victim is instructed to sit on rescuers' joined arms and rescuers lift together		
BLANKET DRAG		
With victim laying face up, blanket or other similar item is laid along side the victim with half of the blanket gathered close to the victim's body		
Raise the victim's arm closest to the rescuer, roll the victim onto his side closest to rescuer, and tuck the gathered blanket material close to the victim's body		
Roll the victim onto his back on the blanket, pull blanket material toward rescuer and wrap it onto victim		
Rescuer steps to head of victim and grabs blanket and drags victim head first while slightly lifting blanket		
CLOTHING DRAG		
Place the victim on the back, arrange clothing to provide support to the head and neck		
Grasp top of the victim's clothing on each side of the victim's head, supporting the head with rescuer's forearms. Keep victim's head low to the floor and pull victim to safety.		

Interior Firefighter Drags

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time limit for this station is 15 minutes.

Criteria:	**Pass**	**NP**
WEBBING SLING DRAG		
With the patient lying face up, place webbing loop under each arm, coming up under the armpits		
With two loops above victims head, adjust loops so that the loop coming from under the armpits is snug against the patient's back. Feed longer loop between the body and the other webbing loop.		
Pull the longer loop so that the webbing snugs up under the armpits and provides some support to the victim's head. Pull the victim to safety.		
FIREFIGHTER'S DRAG		
With the victim facing up, tie the victim's wrists together with webbing or rope		
Straddle the victim and place the victim's bound wrists over rescuer's head and behind the neck		
Crawl on hands and knees while dragging the victim to safety		
RESCUE OF A FIREFIGHTERS WEARING AN SCBA		
Determine if SCBA is functioning, if SCBA is not functioning, remove regulator from the facepiece		
Roll the firefighter onto the side, ensuring that air supply is not compromised; verify that SCBA is securely fastened on the firefighter		
Grasp the shoulder straps of the firefighter's SCBA and drag the firefighters from the area		

Air Consumption Exercise

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Criteria:	Pass	NP
AIR CONSUMPTION Drill #1		
Firefighter properly wears PPE and SCBA		
Firefighter's BOTTLE SIZE (i.e 30 min, 45 min, 60 min)		
Firefighter's STARTING Air Cylinder PSI		
Firefighter's START TIME:		
Firefighter complete course as laid out by INSTRUCTOR		
Firefighter's Lap Number		
Low Alarm Activation TIME:		
Firefighter's Empty Bottle END TIME:		
Firefighter's Total Operational TIME:		
AIR CONSUMPTION Drill #2		
Firefighter properly wears PPE and SCBA		
Firefighter's BOTTLE SIZE (i.e 30 min, 45 min, 60 min)		
Firefighter's STARTING Air Cylinder PSI		
Firefighter's START TIME:		
Firefighter completes course as laid out by INSTRUCTOR		
Firefighter's Lap Number		
Low Alarm Activation TIME:		
Firefighter's Empty Bottle END TIME:		
Firefighter's Total Operation TIME:		

Air Consumption Exercise

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 7 minutes.

Criteria:	Pass	NP
Checks hydrostatic test date of cylinder; removes from service if out of date		
Inspects cylinder for physical damage		
Places cylinder in fragmentation containment device		
Connects fill hose to cylinder; closes bleed valve, if equipped		
Opens SCBA cylinder valve		
Opens cascade system manifold or fill hose valve		
Opens cascade system valve with lowest pressure		
Observes cylinder gauge to ensure fill rate of 300-600 psi per minute		
Controls rate to avoid heating/chattering		
Closes SCBA cylinder valve		
Opens cascade system filler hose bleeder valve and bleeds-off excess pressure		
Disconnects cascade system fill hose from cylinder		
Removes SCBA cylinder from fragmentation containment and returns to service		

Inspection of SCBA

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 7 minutes.

Criteria:	Pass	NP
Face piece (visibility, dry rot, or cracking)		
Exhalation valve (sticking)		
Breathing tube, if applicable (leaks)		
Spider/Hair net (dry rot and cracking)		
Harness (loose hardware)		
Shoulder straps (fraying and loose hardware)		
Waist strap (fraying and loose hardware)		
All hoses (fraying and loose hardware)		
Regulator (damaged threads and operable control knobs)		
"O" ring on high-pressure connection (damaged and missing)		
Exchanges cylinder (hydrostatic test date, full, and damaged threads)		
Compares cylinder and regulator gauges (not>1000 PSI difference)		
SCBA operable after re-assembly/donning (no leaks)		
PASS device (operated correctly in all modes – auto and manual)		
All straps completely extended (shoulder, waist, face piece/mask)		
Verbalizes cleaning procedures (disinfects face piece/mask, soap/water, and dry		

Donning Self-Contained Breathing Apparatus

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 2 minutes. Time starts when the candidate first touches any article of turnout gear after telling the evaluator they are ready to start.

Criteria:	Pass	NP
Boots		
Pants (includes all fasteners and suspenders)		
Protective hood		
Coat (includes all fasteners and collar up and must have at least a 2 inch overlap on bunker pants per NFPA 1971)		
SCBA (approved donning method and all straps cinched)		
SCBA facepiece (good seal and hood over spider/hair net)		
Helmet (chin strap cinched/under chin)		
PASS device (manually enabled if not integrated)		
Gloves (no skin at wrist exposed)		
Exposed skin (no exposed skin is permitted except for facial area)		
Completed in less than 2 minutes		

MODIFIED DENVER DRILL

SKILLS TEST

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 7 minutes.

Criteria:	**Pass**	**NP**
Victim is rolled on back		
Front rescuer bends victim's knees, and places rescuer's feet on outside of victim's feet to keep them in place.		
Front rescuer places knees against victim's knees		
At same time, Rear Rescuer pushes Victim up, permitting Front Rescuer to grab the TOP of Victim's SCBA straps.		
Front Rescuer roles back, getting Victim's rear end up in the air		
Front Rescuer does not lose control of Victom		
Rear Rescuer places knee under buttocks of Victim, plants foot flat, and bends knee to support Victim		
Victim is pushed/pulled onto Rear Rescuer's knee and held in place without falling off knee		
Front Rescuer places Victims arm over Front Rescuer's shoulder in a rescue lift.		
Rear Rescuer and Front Rescuer work together to stand victim up, and place Victim on shoulder of Front Rescuer or otherwise position Victim for a move.		

RIT PACK RESCUE

SKILLS TEST

Explain to student that rescuer is to (a) evaluate why air is not being supplied, (b) apply RIC connection to SCBA, and then (c) assume that RIC connection is not available, and to then apply regulator.

THIS IS PERFORMED IN ZERO VISIBILITY.

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 3 minutes.

Criteria:	**Pass**	**NP**
Rescuer checks victim's SCBA to determine quickly why air is not being supplied. Upon checking gauge, evaluator advises student that the air level is "0".		
Student identifies RIC connection in RIT pack, removes RIC connection rubber cover on victim's SCBA, and applies RIC connection, all in less than 45 seconds.		
Evaluator advises student that RIC connection failed. Student locates regulator in RIC Pack and removes from pack, ready to apply.		
Student removes regulator from victim, and covers hole on face mask to prevent hot air from entering mask.		
Rescuer applies regulator to victim's mask.		
Rescuer "pops" seal on regulator or opens purge valve.		
Total time for regulator application does not exceed 45 seconds.		

PRIMARY SEARCH: 3 person

SKILLS TEST

Students separated into group of 3. One student designated as the officer. Students identify proper tools for each role. Students are to perform a left search in accordance with the Best Practices.

THIS IS PERFORMED IN ZERO VISIBILITY.

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Time Limit for this station is 3 minutes.

Criteria:	Pass	NP
Officer and 2 firefighters meet at doorway		
Officer equipped with TIC. Firefighters each have at least 1 tool.		
Firefighters grip tool from "dangerous" end. Halligan has all points facing down.		
Officer anchors doorway.		
One firefighter moves left, one firefighter moves right, performing primary search.		
Firefighters call out doors and windows.		
Firefighter on left locates a door. Makes a quick examination of room.		
INSTRUCTOR: advises that it appears to be a LARGE room. Officer should tell him to hold in position.		
Firefighter on Right continues around rooms, examining each door quickly, then closing door, and then proceeding to firefighter on left.		
Officer moves up center of room, searching, meeting other firefighters at door, and continuing process.		
Also acceptable: Officer could announce to students to search separate rooms, if rooms appear to be searchable by one person each.		

WEBBING ATTACHMENT, DRAG RESCUE, and WEBBING CARRY

SKILLS TEST

Student applies 15-20' webbing (or sling link) to downed victim in under 45 seconds.

THIS IS PERFORMED IN LOW VISIBILITY.

_____	_____
Candidate's Name	Date
_____	_____
Evaluator's Name	Evaluator's Signature

Criteria:	Pass	NP
Rescuer locates victim and rolls victim on back		
Rescuer checks victim's air and announces that he has located victim.		
Rescuer deploys personal webbing of proper size		
Rescuer puts first loop around victim's waist		
Rescuer brings webbing up between legs, and UNDER waste strap		
Rescuer secures each of victim's arms in a loop		
Rescuer places webbing behind victim's head		
INSTRUCTOR: Advises student to drag victim using harness		
Rescuer attaches harness to webbing at shoulder and drags victim in a crawling position.		
Instructor: Advises Rescuer to assist him in lift victim		
Rescuer and Instructor lift victim from webbing at waste and shoulder, and move victim 10 feet		