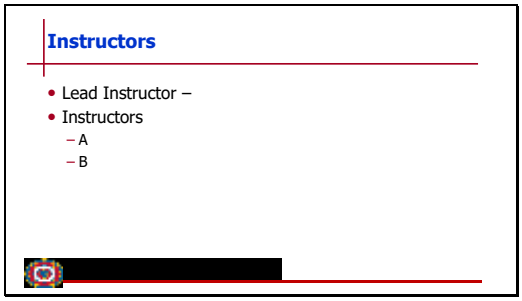
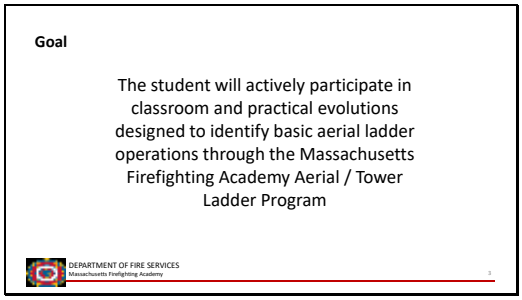
Slide 1

Slide 2



All instructors present should introduce themselves.

Slide 3



Slide 4

Objectives

- Develop an understanding of the components of aerial devices
- Identify the different construction types
- Recognize the specialized equipment needed for operation
- Analyze the positioning for operations
- Explain the need for the importance of stabilization
- Indicate the control devices necessary for deployment

Slide 5

Objectives (con't.)

- Describe the strategies and tactics
- Analyze the components through an inspection program
- Review the types of communication available for use during operations
- Demonstrate positioning for operations, inspection and equipment checks through a series of practical evolutions

Slide 6

Aerial Devices Definition

A self-supporting, turntable-mounted, power-operated ladder of two or more sections permanently attached to a self-propelled automotive fire apparatus and designed to provide a continuous egress route from an elevated position to the ground

NFPA 1901 Chapter 3 Section 3.3.6 – Aerial Ladder Definitions

Slide 7

BRIEF HISTORY
OF
AERIAL & TOWER LADDERS
IN
THE FIRE SERVICE

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The Aerial Ladder

- First successful aerial ladder was patented by Daniel Hayes in 1868
- Made of wood and required several firefighters to raise by a hand operated screw system
- The rights to this patent were eventually sold to American LaFrance

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Hayes Aerial Ladder

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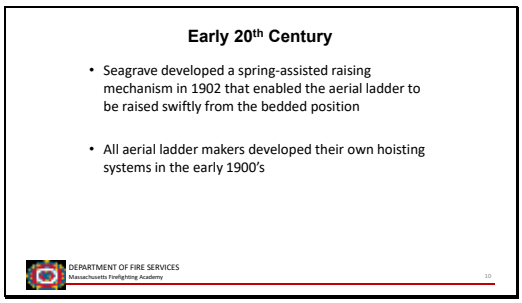

As the new Century developed early construction allowed for taller buildings to be built. The customary use of ground ladders made access to higher story buildings difficult. The early aerial ladders were being more commonly used in city environments to reach these new heights. As a result of ever-increasing technology combined with these taller buildings resulted in aerial ladder manufacturers using this new technology to build more efficient aerial ladders.

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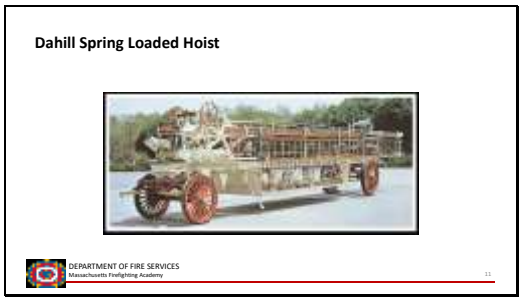

Slide 12

Note the huge wheels just behind the driver. These wheels were used as part of the hoisting system on the aerial.

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Spring loaded raising and manual extension required one firefighter on the hand wheel on each side. Rotation was accomplished by means of the hand wheel.

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Motorized Hook and Ladder

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Peter Pirsch Company - 1931

- Introduction of the hydraulic mechanical aerial ladder
- All three aerial ladder functions, raise, rotate and lower now performed by a single firefighter
- Use of Hydraulic Lifting Cylinders used to:
  - Raise the ladder from its bedded position.
  - Turntable rotation
  - Aerial extension
- The first three section 100' aerial ladder was produced by Pirsch in 1935

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Mack Trucks - 1929

- Aerial ladder raised and lowered through a power take-off mechanism from the motor
- This type of aerial ladder operation, with additions and modifications, would become standard

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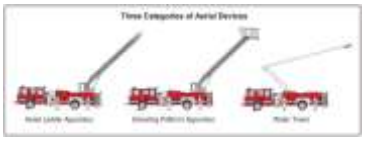
Standards Relative to Aerial Devices

- NFPA 1901 – Standard for Automotive Fire Apparatus, 2016 Edition
  - Chapter 19 deals with Aerial and Platform
- NFPA 1911 – Standard for Inspection, Maintenance & Testing, 2017 Edition
  - Chapter 11 Inspection & Maintenance of Aerial Devices
  - Chapter 22 Performance Testing of Aerial Devices

Slide 18

NFPA 1901 GROUPS AERIAL DEVICES INTO THREE BASIC CATEGORIES:



* Under **Elevating Platform Apparatus** you have; Aerial Ladder, Telescoping and Articulating

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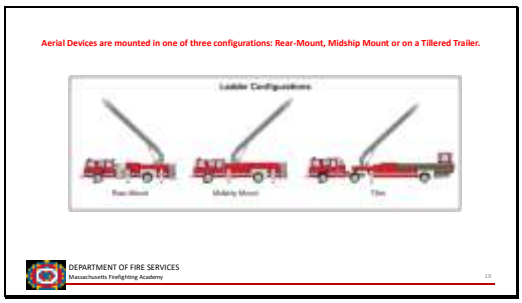

Slide 20

- An aerial ladder apparatus in the fire department jargon may be called the ladder, the truck, the aerial, or sometimes the stick.
- The aerial ladder apparatus in the most common type of aerial fire apparatus operated in North America.

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•More manpower required to operate the tiller
•Quints also are available in a tiller version
•Type of stabilization
    •Jacks
    •Cab placement jacking
•If tillered, are generally more maneuverable than single-chassis vehicles.
•Have superior maneuverability when negotiating narrow streets or heavy traffic and positioning at the emergency scene – if equipped with a tiller.
•If tillered, can be jackknifed to aid in stabilizing the apparatus when the aerial device is deployed.

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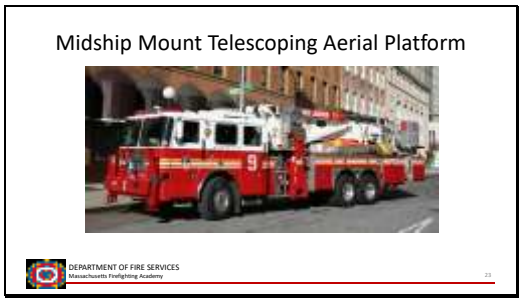

- An elevating platform equipped with a piping systems and nozzles for elevated master stream operations.
- Telescoping aerial devices are not meant to be climbed and are equipped with a small ladder that is to be used only for escape from the platform in emergency situations.

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- Aerial device that consists of two or more booms that are attached with hinges and operate in a folding manner.
- A passenger-carrying platform is attached to the working end of the device.
- ***Knuckle*** – Joint between two sections of boom in an articulating aerial device.

Slide 25

- These are telescoping or articulating aerial devices whose primary function is to deploy elevated master streams; not generally intended for climbing operation
- Common sizes for these devices range from 50 to 130 feet
- Capable of maximum flows ranging from 1,000 to 5,000 gpm

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- List the components/specifications that must be met for an apparatus to be called a quint.
  - Fire pump – Must have a capacity in excess of 1,000 gpm.
  - Water tank – Must hold at least 300 gallons of water.
  - Hose – Must carry 800 feet of 2-1/2-inch or larger supply hose and 400 feet of attack hose.
  - Ground ladders – Must carry 85 feet of ground ladders, to include at least one attic ladder, one straight ladder with folding roof hooks, and one extension ladder. All ground ladders must meet NFPA 1931
  - Waterway – May be equipped with a permanently piped waterway.
- Quints

- Selected because some departments feel that it is not effective to tie up a separate pumper when it is necessary to deploy an elevated master stream.
- Selected because some departments think that every major piece of apparatus should have the capability of extinguishing a fire should it be the first apparatus to arrive on the scene.
- May be used by some departments as replacements for traditional pumper and ladder companies.
- Come in various sizes, but most commonly departments use a pumper-sized apparatus with a 50- to 75-foot aerial device.
- May be full-sized aerial apparatus.

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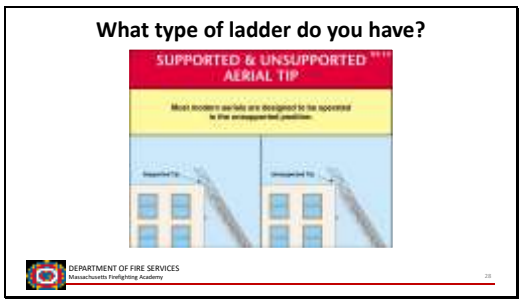
Slide 28



- Know whether the aerial device you are operating is designed to be operated in an unsupported (cantilever) or in a supported (resting on a wall) position.
- If the manufacturer recommends that the aerial device be operated in a supported position, be aware that loading or extension must be reduced for low angles of elevation during unsupported operations.
- *NOTE:* The maximum loading for any unsupported aerial device occurs when it is operated at angles between 70 to 80 degrees from horizontal.

- Know that as extension increases, aerial loading must decrease.
- Spot the apparatus as close to the intended target as possible to avoid operating at a low angle of elevation and long extension, the weakest operational position.
- Become familiar with the load limitations of the aerial device when flowing water and when not flowing water.
- Learn the acceptable range of motion for the aerial device when flowing water and when not flowing water.

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(Match the parts of a typical aerial ladder apparatus to their functions/specifications.)

- Truss – Framework of bars and rods that permits tension and compression stresses to be distributed over the length of the ladder for maximum strength and minimum weight.
- Fly – Top extendable section of an aerial ladder; must be at least 18 inches wide. (20.2.6)
- Base – Bottom section of an aerial ladder; must be at least 18 inches wide
- Tip – Topmost portion of the aerial ladder fly; must be capable of supporting a 250-pound load when the ladder is fully extended and at any elevation within its normal rage.

- Top rails – The handrails or top chords of an aerial ladder to which the opposite ends of the trussing are attached; must be at least 1 inch wide and 12 inches above base rail. (20.2.8)
- Base rails – The beams or lower chords of the aerial ladder to which the rungs, trussing, and other portions of the ladder are attached.
- Folding steps – Place for elevated master stream operator to stand for extended periods of time. (20.2.9 or 2.2.91 or 20.2.9.2)
- Rungs – Components attached between the two base rails and used as steps for aerial ladder personnel; spaced 14 inches on center and covered with nonskid material.
- Turntable – Provides continuous rotation of the aerial device on a horizontal plane.

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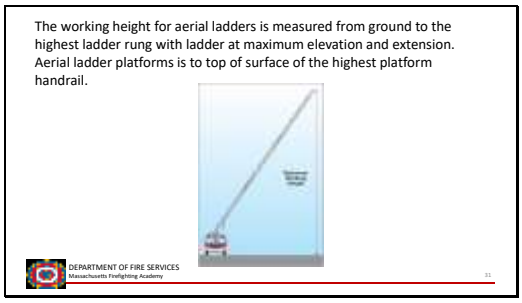

- In aerial ladders made in North America, the fully extended (working) length ranges from 50 to 137 feet.
- Overseas the extended length ranges in excess of 200 feet.

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Primary Features of Aerial Devices

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➢ Interlock Devices

A safety devices that prevents a component from functioning when another component is functioning. Certain interlocks are required by NFPA 1901, and other are added by the manufacturer. Aerial device interlocks may include:

- **Aerial/Stabilizer –** The aerial device function must not activate unless the stabilizers are fully deployed.
- **Rotation Interlock (Short-jack) –** The aerial device will not rotate over the side of the apparatus where the stabilizers are not fully extended.
- **Nozzle Stow –** The device will not drop into the cradle if the master stream nozzle is not properly positioned.
- **Body Collision –** The device will not move into regions where it would make contact with the body or cab.

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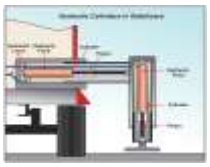
➢ Aerial Device Hydraulic Systems



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- Four Main Components: actuators, hydraulic fluid, hydraulic pump, reservoir
- Operating the Stabilizer (outriggers) and the Aerial Device
- Under pressures of 3,500 psi or more

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- Retract and Extend the Aerial Ladder/Platform

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The Turntable

- Rotational structural component of the aerial device. Its primary function is to provide continuous rotation on a horizontal plane.

The Control Pedestals

- Is designed for the operators of all heights and is positioned of the turntable side of the aerial apparatus.
- This position allows the operator a clear view of the tip of the device and of the workers on the device
- Apparatus equipped with a platform, NFPA 1901 also require s a control station in the platform.

The turntable control station must have the ability to override the platform control station.

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- Pre-Piped Waterways
  - Telescoping Waterways Systems
  - Bed Ladder Systems
- Elevating Platform Waterways Systems
- Detachable Ladder Pipe Systems

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- Breathing Air Systems

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- Apparatus-Mounted Special System

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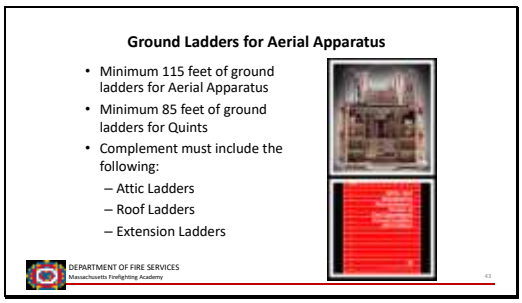
- Portable Equipment Commonly Carried on Aerial Devices

Slide 43



How long can the minimum be for each ground ladder?

(examples)
Attic Ladder…….10 feet
Extension…….1-35 feet
Extension…….1-40 feet
Roof …1-16 feet
Roof …1-14 feet
115 feet

- One attic ladder
- Two straight ladders with folding hooks
- Two extension ladders

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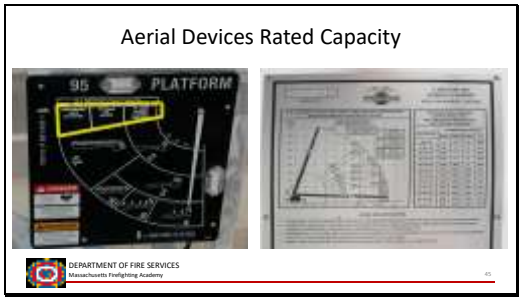
Load Chart – Graphical or tabular description of the load that can be distributed on an aerial device based on factors such as extension, elevation, stabilizer set-up, wind, water flow and ice-load.

The load chart is criteria should be so familiar to the operator that he or she can instantly recognize when the operation is nearing a critical condition, especially during the stress of rescue operations.

In addition to load charts, some aerial apparatus may have electronic load monitoring or envelop control systems, these systems can fail or provide in accurate information so they should not be relied upon as the only means to determine safe operation practices.

Slide 45



! WARNING !

Tip-Over or Structural Failure Hazard

- Do not exceed rated capacity or rated number of people
- Do not operate in high winds or with excessive ice coating.
- Apparatus must be on a surface that will support the load before raising device

FAILURE TO COMPLY WILL INJURE OR KILL

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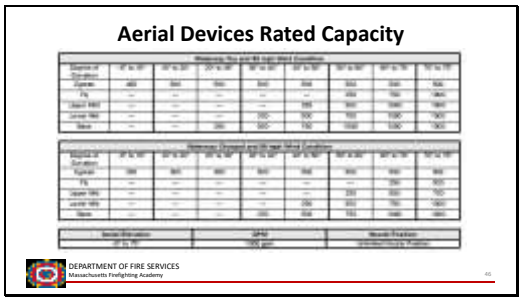
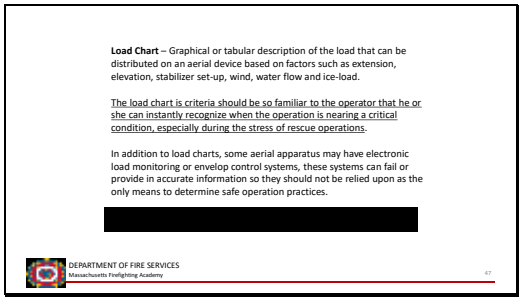


- 250 lb horizontal extended
- Permanently mounted horizontal transverse from each side 45° water flow
- Full range of monitor or nozzle movement as permitted by the manufacturer
- Instruction plate and signs

Slide 47



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Questions?

Slide 1

Slide 2

Slide 3

In this module we will introduce you to the concept of the rig being ready to respond. As a firefighter you're expected to be ready to respond as soon as you come on duty. Your personal gear is given a helmet to boots to gloves inspection each time you come on-duty, so you're prepared for whatever the days brings on. Your apparatus is no different. You would not come to work with holes in your gloves and likewise, you would not want to drive a rig with bald tires. Both situations set the scene for disaster when called upon.

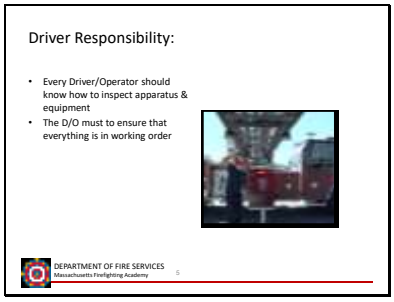
Slide 4

Do you have all the equipment the apparatus is assigned? Is everything cleaned, fueled and/or serviced as it should be? You wouldn't start a long trip in your vehicle with only a quarter tank of fuel, would you? Always remember, the public is our customer, and our customers expect no less than 100% from us and our equipment. Broken equipment needs to follow local protocols and removed from service. Fuel cans correctly filled with mix (if appropriate), batteries charged on battery-powered equipment.

- All apparatus should be fully equipped & ready to respond regardless of frequency of use

- Vehicles & equipment must be maintained in optimum operating condition
- This is essential to response readiness

Slide 5



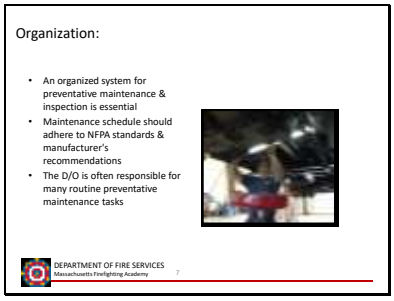
Everyone assigned to drive the device must know where to look and understand what they're looking at. Is the item broken, leaking, torn, etc vital to the mission it could be assigned to do? What is your department's SOP/SOG on performing this duty?

INSTRUCTOR – understand that each FD may have specific guidelines as to what can be touched or looked at. Example – departments having an assigned mechanic may not allow firefighters to "lift" a cab to check such things the oil, or even the batteries. Remind the class if you do raise a cab STOP and look. Does the cab clear the interior objects in the station? Secure doors, run books, lose gear, etc. before raising. Nothing is worse than launching an SCBA bottle through the windshield. Also be aware of

exterior objects on the apparatus such as sirens mounted on the extended front bumper, or front intake suctions, or tools mounted. Know how to secure the cab once it's up! DO NOT place yourself in a position where you could be crushed by a hydraulic failure. More on this subject later.

Slide 6

Slide 7



Organization – not a word we all love to hear but in order to budget and view operational needs of the fire department records must be maintained. Yes, it can seem like a tedious task, but this task helps the Fire Chief arrange the budget. We are entrusted with a piece of equipment worth around a million dollars or more. If we don't keep track of what we're spending to repair/maintain a rig how can a Chief justify replacement?

L:ikewise, the NFPA and the manufacturer have their recommendations on how a rig is

to be serviced. Sometimes certain items are under a warranty and if records for service and repair are kept current, we can made a strong case for a warranty replacement.

I know these tasks can seem mundane and boring but our lives and safety are dependent on the work being performed.

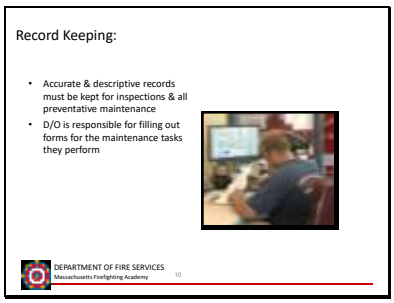
Slide 8

Service Functions – Change a lightbulb, change a battery, fuel it up, replaced the front tires, etc.

Slide 9

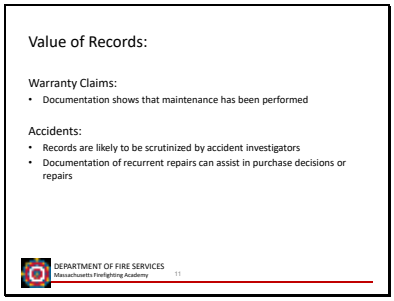
Annual testing is done by a certified testing agency. When completed a gig sheet will be provided to the FD outlining repairs – service – updates needed. Aerial Ladder testing isn't ground ladder testing, two separate tasks.

Slide 10



Accurate record keeping cannot be reinforced enough times. If the rig is involved in a mishap (MVC or a failure for example) a record will be sought by insurance companies, OSHA, attorneys, ISO, etc. Missing records, regardless of how often the task is performed indicates it was not performed.

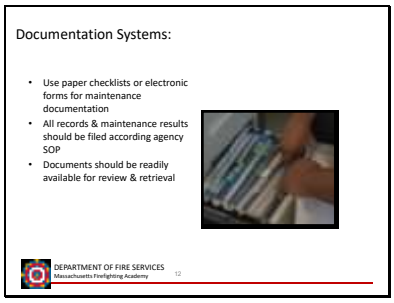
Slide 11



Apparatus and equipment often are accompanied with warranties and the lack of recording events and actions can often mean the difference in a successful claim filing or not.

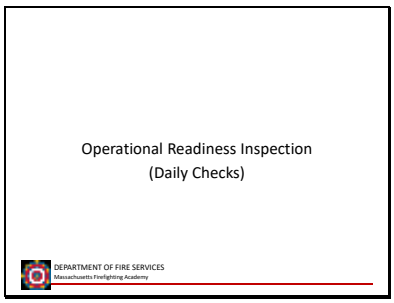
When a rig is involved in some sort of incident people come out of the woodwork to file claims, and charges against the city, town, fire department, even the individual operating the rig as well as those responsible for making sure the records are maintained.

Slide 12



Follow what your FD requires. Laziness is not an excuse. Records need to maintained and easily accessible.

Slide 13



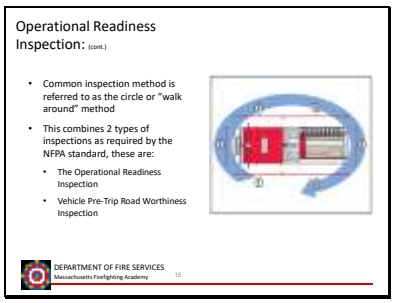
Slide 14

If you're a career department an operational readiness inspection should be performed at the start of the shift. If you're in-service for a response immediately at shift change, make sure it's completed as soon as you return.

Do you have a Quint in your station? When was the last time the water tank level was checked? Think about this, at 0200 the company went out on a small pile of mulch smoldering. Maybe a hundred gallons of was used and on return the crew agreed they'd top it off before shift change, they forgot….

If you're a call/vol department, it's just as important these readiness inspections are performed on some consistent level. What is your department policy?

Slide 15

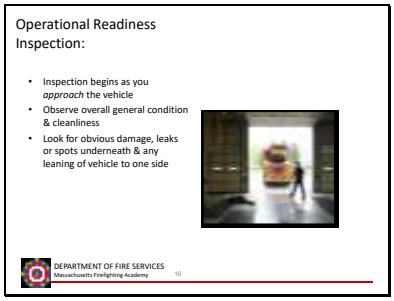


Up, down and all around. If it beeps, beep it. If it flashes, flash it. If it…, I think you get the picture. The time to learn the headlights are not working isn't when the call comes in…

- Common inspection method is referred to as the circle or "walk around" method
- This combines 2 types of inspections as required by the NFPA standard, these are:
  - The Operational Readiness Inspection
    - Inspecting an apparatus and equipment on the apparatus to ensure that all the equipment is in place, clean, and ready for service
  - Vehicle Pre-Trip Road Worthiness Inspection
    - A visual inspection of an apparatus to ensure the major components of the chassis are present

and in proper working condition.

Slide 16



Ever have this happen? A dent and chip of paint are found on a rear cabinet door. Who did it? These are among the most common things found, and not reported. How about this example, day shift did their "inspection" but the night shift came on and found a front tire has no tread on the inside. Who missed this rather important area? Are you comfortable driving on bald tires?

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How many PSI in the tires? Don't guess! For the most part a majority of the apparatus manufacturers have a plate affixed to the doorframe area on the driver's side indicating proper tire pressures. Apparatus manuals will also have the pressures listed.

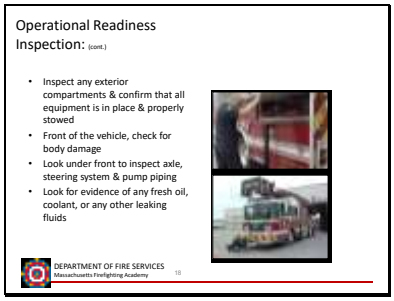
Rear duals, do you have a tire pressure extension hose attached? The inner tires are just as critical to the apparatus and must be properly inflated.

Tire Pressure Monitor devices (TPM). According to the

U.S. National Highway Traffic Safety Administration regulations [14] only apply to vehicles under 10,000 pounds. For heavy duty vehicles (Classes 7 and 8, gross vehicle weight [GVW] greater than 26,000 pounds),

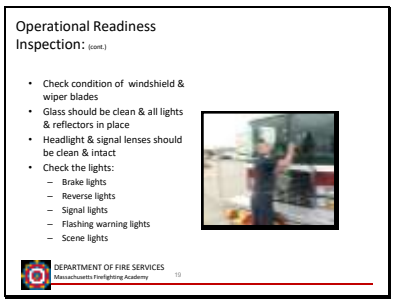
Some apparatus companies install a pressure cap that has a battery-powered LED. Green – OK, Red – low pressure indicator light. Replace the batteries as needed. However, do not depend on these devices to be the sole means of confirming tire pressure. Use a gauge.

Slide 18



At times, the most subtle failures in hoses, springs and more could be discovered at this time. Get on a creeper and look underneath. When inspecting the under-carriage of a vehicle be sure to wear safety glasses to protect your eyes from dirt or other contaminants from enter your eyes. It's also important to have an understanding as to what you're looking at and don't go yanking or pulling on items/wires/belts/hoses without understanding what they do in the grand scheme of the rig. If it doesn't look right notify someone in your chain-of-command.

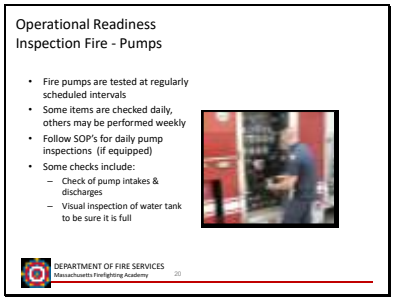
Slide 19



Smeared, dirty and water-spotted windshield glass can lead to a lack of visual clarity important for safe vehicle operation. After washing a rig make sure water spots are removed. Clean interior glass as well.

Cracked and worn wiper blades are of no value to anyone, replace them. Wiper blades is not the place to cheap-out. The same goes for all running lights and warning lights. A broken warning light has no safety value unless it is working and can be seen.

Slide 20



If you have a quint, running the pump is just as important as running the aerial or tower device.

Slide 21

Fluids Level Checks:

- Check:
  - Automatic Transmission Fluid
  - Power Steering Fluid
  - Windshield Washer Fluid
  - Brake Fluid
  - Radiator Coolant
  - Oil

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CAUTION: Some of these fluid checks require a warmed-up engine, be care of hot engine parts and fluids. Make sure you're wearing safety glasses and consider wearing hand protection such as ems (or work) gloves to protect your hands. Have a suitable work rag handy for wiping off cap tops, reservoirs, and dip sticks. This will avoid contaminants from enter the system.

Slide 22

Diesel Particulate Filters:

Diesel Particulate Filters (DPF)

- This system has automatic regeneration
  - Periodically burns off exhaust particulate matter accumulated in filters
- If the system fails, clogged filters will cause vehicle to experience a reduction in power & driving capacity

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Know and understand how this system works and follow manufacturer recommended procedures. An error here can cost your department thousands of dollars in repair bills.

Slide 23

Selective Catalyst Reductant:

Selective Catalyst Reductant (SCR):

- An exhaust "after-treatment system"
- Uses Diesel Exhaust Fluid, (DEF) to help further reduce emissions
- Fluid level should be inspected
- Tank is located downstream of the DPF

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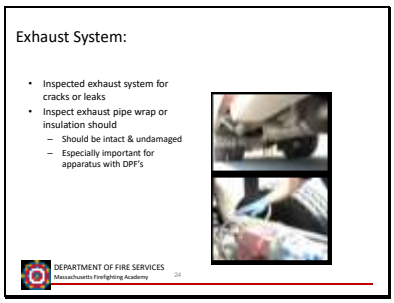
This is another area where you need to understand what fluid you add, and how much. Use the fluid recommended, don't mix fluids.

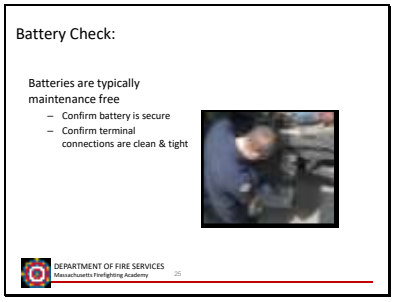
Slide 24



Again, reinforce the importance of wearing eye protection and hand protection. Caution because the exhaust could be hot. Check cold!

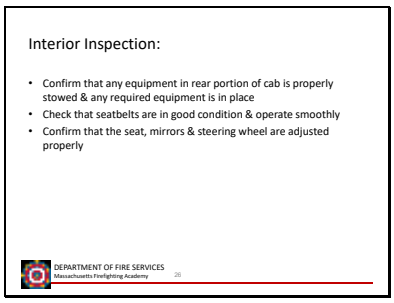
An exhaust system crack can effect the health of vehicle occupants. Report suspected leaks, cracks, or potential failures to your chain-of-command.

Slide 25



Look for build-up of corrosion, this is an indication of a potential battery failure. Clean debris build-up away from terminal posts.

Slide 26



Remember, every lose item inside a cab is a potential missile should the vehicle have to come to an aggressive stop.

Slide 27

Engine & Idling:

- Once engine has been started, listen for any unusual engine noises
- Follow the manufacturer's recommendations on idling
  - Allowing a diesel engine to idle unnecessarily can waste fuel
  - May lead of a buildup of carbon in injectors, valves & pistons

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Slide 28

Gauge Checks:

- Check that gauges
- Oil pressure gauge
- Ammeter and/or voltmeter

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Provide manufacturer's info about recommended oil pressure range.

Slide 29

Gauge Checks: (cont.)

- Air pressure gauge
- Make sure you have enough fuel
  - Most departments maintain the tank at least three-quarters full at all times

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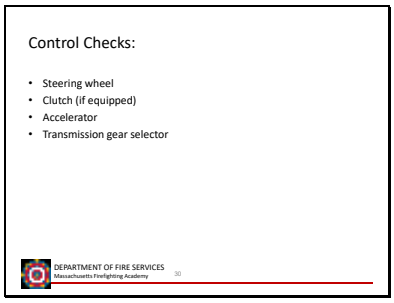
When you're performing your inspection part of the process is listening for air leaks. Exposed rubber boots and connections can allow for grit and dirt to enter and cause excessive wear resulting in air leaks.

- Air pressure gauge to ensure that adequate

pressure is built up to release parking brake & operate service brake

- Make sure you have enough fuel
  - Most departments maintain the tank at least three-quarters full at all times

Slide 30



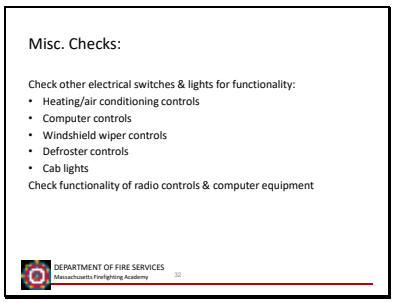
- Try all controls & check for stiffness, looseness, or improper alignment
  - Steering wheel

- Clutch (if equipped)
- Accelerator
- Transmission gear selector

Slide 31

- Personnel should be wearing hearing protection when checking sirens & air horns
- Check turn signals & high-beam headlights
  - A second person is useful in assisting with this procedure

Slide 32



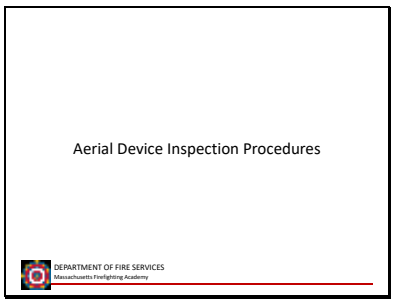
HVAC that doesn't adequately clear a windshield or windows creates a driving safety hazard.

Check other electrical switches & lights for functionality:

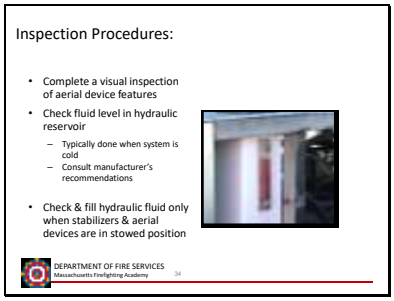
- Heating/air conditioning controls
- Computer controls
- Windshield wiper controls
- Defroster controls
- Cab lights

Check functionality of radio controls & computer equipment

Slide 33



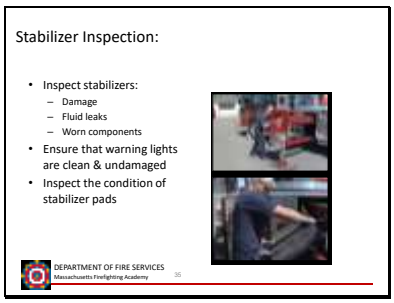
Slide 34



Understand the critical nature of the inspection process. Also understand what you're looking at and where these hydraulic levels should be. Often is the case where the manufacturer specifies level must be checked when warm. Hydraulic fluid expands as it warms, in a cold state the fluid level may appear as low while it's not. Also remember when handling hydraulic fluid exercise basic safety precautions by wearing eye protection and ems gloves to protect hands.

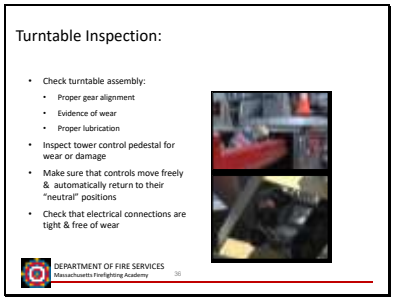
Consult local protocols BEFORE adding hydraulic fluid and make sure you have the fluid appropriate for the task.

Slide 35



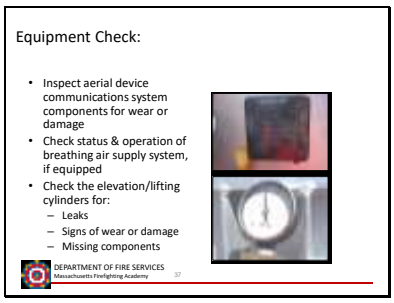
Use a clean rag while inspecting. If items such as pins are missing or bent, this is a problem and needs to be reported to your chain-of-command.

Slide 36



Often hydraulic leaks are found in the turntable area. If noticed spend some time tracking down the exact source of the leak. Due to the movement of so many parts and to so many different angles you may not find the source area right away.

Slide 37

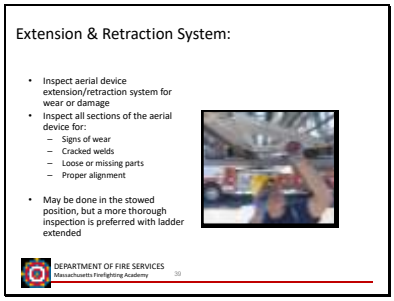


Because the speakers on the ladder are exposed to so much environmental, as well as physical abuse, do a test. Wiring can easily be corroded from the elements.

What is your department's SOP for refilling the air cylinder on the ladder? Can anyone perform this task?

Slide 38

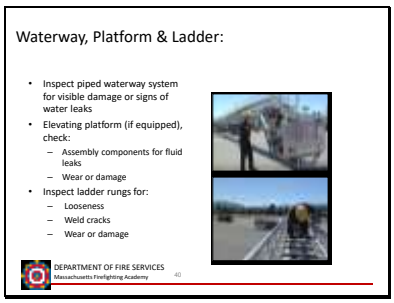
Slide 39



Extension of the ladder can be somewhat challenging if your fire station's parking area isn't big enough. However, due to the importance of this inspection it must be done. Find a parking lot where the ladder can be fully extended. Perform a visual inspection of every section looking for cracks or wear damage. There are heavy-duty plastic guides that do wear and need replacement every so often. Some manufacturers recommend a dry lube be sprayed along the tracks followed by a gentle wipe-down to keep the guides lubricated.

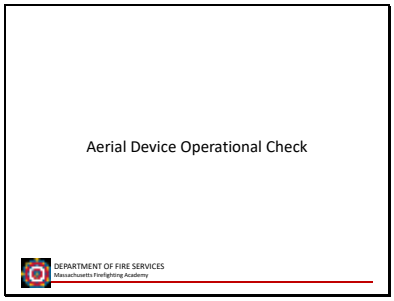
Don't forget to look at the cables and pullies. They wear out as well. Subtle splitting of the cable wires can eventually lead to a failure.

Slide 40

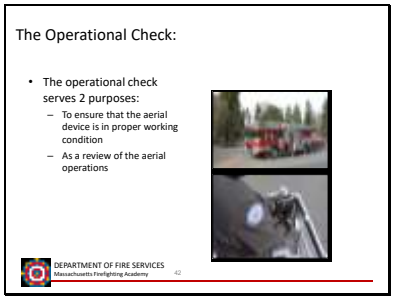


Check, check, and re-check. Cracks, worn treads, damage all could point to a failure if not addressed.

Slide 41



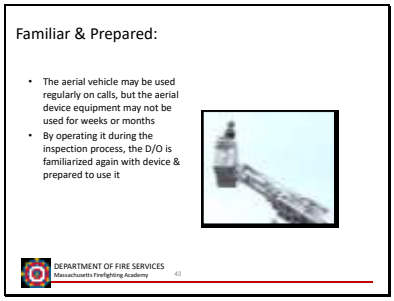
Slide 42



- The operational check serves 2 purposes:
  - To ensure that the aerial device is in proper working condition

– As a review of the aerial operations

Slide 43

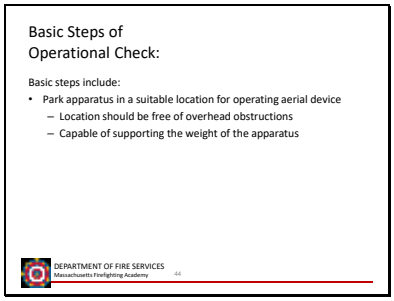


If you have a new person on shift, or newly assigned to the truck, let them practice using the controls. The time to understand limitations isn't at the fire scene.

- The aerial vehicle may be used regularly on calls, but the aerial device equipment may not be used for weeks or months
- By operating it during the inspection process, the D/O is familiarized again

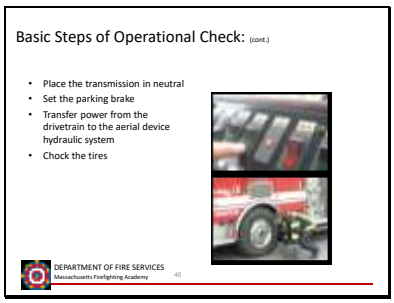
with device &
prepared to use it

Slide 44



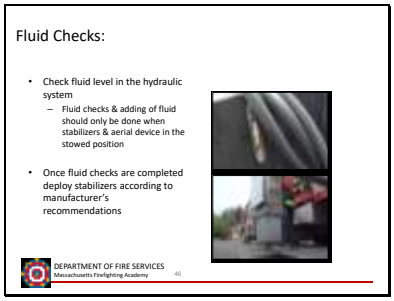
The stowed height of most aerial devices is usually the highest in a department's fleet, but during a response other common obstructions will be present. Know what areas have low-hanging trees. Is there a pedestrian bridge? What about low-hanging service drops or other wires? At a scene we have many of these same obstructions present and task at hand could be more challenging. Avoid potentially soft area such as a lawn. Local sidewalks, while appearing strong, are likely not built using rebar and thus will not support the weight of an +80,000-pound ladder truck.

Slide 45



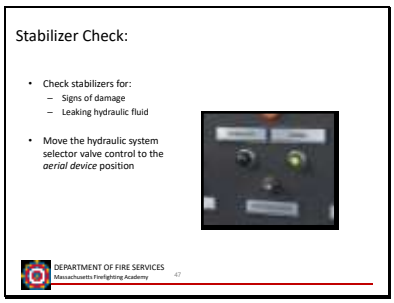
CAUTION: advise students there could be slight variances in their rig from this procedure.

Slide 46



- Check fluid level in the aerial device hydraulic system
  - Fluid checks & adding of fluid should only be done when stabilizers & aerial device in the stowed position
- Once fluid checks are completed deploy stabilizers according to manufacturer's recommendations

Slide 47



Slide 48

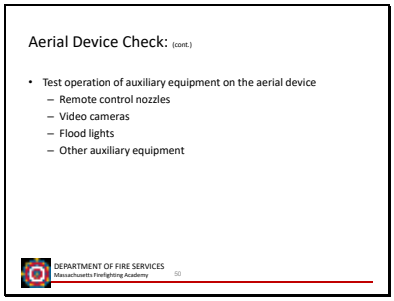
Slide 49

Especially for new operators, try to use two hands on the controls. While this might be a little challenging given how different manufacturers set up their controls, using two hands for the new operator can allow them to discover how the control the different functions.

Remember, the ladder is a massive amount of weight being held in place by two pistons. Jerky movements on the part of the operator can have devastating effect and a whipping action on the ladder. This is a lot of energy being

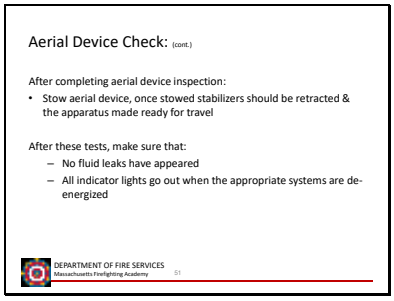
sent up the ladder and back when you “cowboy” the stick.

Slide 50



New aerials are being built with remote devices. Some of these devices are tethered, and some are not. Check the battery operation as well.

Slide 51



Make sure you do a complete 360-degree review and note any fluid leaks

Slide 52

Aerial Device Check: (cont.)

- Once the operational check is complete, fill out all required forms & route them according to departmental SOP

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Here's a thought, it's the same as writing an ems report, if you don't document it, you never did it. This isn't about just filling out another "useless" piece of paper. More over it's about protecting you, those you work with and our customers, the public. The public expects you and all equipment to be a peak readiness and performance.

Slide 53

Maintenance

All issues should be reported immediately to the proper person in your department.

ALWAYS BE SURE TO FOLLOW MANUFACTURERS RECOMMENDATIONS.

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Slide 54

Summary:

- Maintenance & Inspection Record Keeping
- Operational Readiness Inspection
- Engine Compartment & Cab Inspection
- Aerial Device Inspection Procedures
- Aerial Device Operational Check

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Slide 55

Summary:

- A strong inspection & preventative maintenance program ensures:
  - Apparatus reliability
  - Reduces the frequency & cost of repairs
  - Decreases out-of-service time
- By following department maintenance & inspection procedures you can help reduce unexpected & catastrophic equipment failures that could threaten life and/or property

Slide 56

Questions?

Slide 1

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Safety

Slide 2

Safety

- Only trained and authorized personnel should operate and maintain the apparatus

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Slide 3

Remember - Safety First





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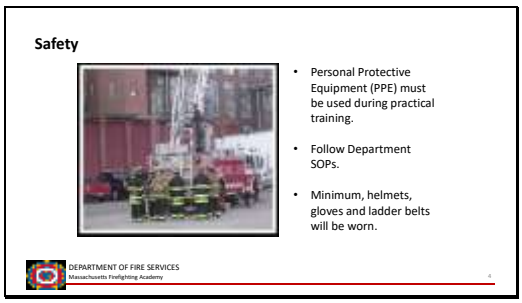
3

Slide 4



SAFETY FIRST – EVERY DAY

- Personal Protective Equipment (PPE) must be used during practical training.
- Follow Department SOPs.
- Minimum, helmets, gloves and ladder belts will be worn.

Slide 5

Slide 6

Don't think it can't happen to you.

Aerial/Tower Ladders carry an enormous amount of the overall weight up high.

Roadway design can lead to rollover situations.

Wet surfaces suitable for an automobile can be deadly for fire apparatus and especially hazardous for aerial/tower rigs.

Slide 7

This guy was lucky. Very lucky especially since he wasn't wearing a seatbelt.

Expect the unexpected. After all, you're driving a rig that weighs over 80,000 lbs. Braking, maneuvering, and acceleration react differently than an engine, or your car.

Slide 8

REMIND STUDENTS: NOT ONLY KNOW THE APPARATUS HEIGHT, WEIGHT, LENGTH AND WIDTH BUT LOW OVERHANGS IN YOUR RESPONSE AREA.

WHEN ON MUTUAL AID KEEP THESE NUMBERS IN MIND AS WELL.

Slide 9

Don't guess. Know your apparatus weight and height. It can be a very expensive and costly mistake.

Same goes for mutual aid responses. Don't guess the sign… You'll lose!

Slide 10

Know Your Travel Height

- The driver must confirm the vehicle can freely pass low underpasses

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Slide 11

Watch Your Turning

- Increased overhangs, especially at the rear, must be kept in mind. In narrow crossings, the driver must confirm that there is enough space for turning

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Slide 12

Remember High Center of Gravity

- Note: Speeding with the vehicle when turning a corner is dangerous! 60% of your weight is ABOVE you.

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Slide 13

ST LOUIS FD TWO QUINTS COLLIDE

Slide 14

Slide 15

Slide 16

Safety – Ladder Safety

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Slide 17

Safety – Collapse Zone

- If the building has been exposed to sever fire conditions or otherwise been weakened, it is not advisable to park within the building's collapse zone.
- There are many indicators that a building may become unstable including:
  - Bulging walls
  - Sagging roofs
  - Large cracks in the exterior
  - Falling bricks, blocks, or mortar
  - Interior collapse

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Slide 18

Safety – Collapse Zone

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Slide 19

Safety – Electricity Hazards

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Providence, RI

Slide 20

Safety – Electricity Hazards

Treat all wires as dangerous and energized at high voltage until tested and proven otherwise

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Slide 21

Safety – Electricity Hazards

- Establish a safety zone. The ground around the vehicle may be energized.
- Unless threatened by fire or some other danger, occupants should remain on/in the vehicle until it is confirmed that the power is off.

- If the ladder makes contact with any energized electrical lines, do not allow any person on the ground to touch the apparatus or any person on it

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Slide 22

Safety – Electricity Hazards

If you must abandon the apparatus while ladder is in contact with power lines –

YOU MUST JUMP COMPLETELY CLEAR OF THE APPARATUS

Slide 23

Think it can't it can happen to you…?

Slide 24

Safety – Electricity Hazards

Follow these guidelines when working in the vicinity of power lines;

- Make sure the work area is clear of overhead obstructions.
- New OSHA Standard requires 20 feet between the device and electric lines of less than 350 kilovolts
- 50 feet if unknown or over 350 kilovolts.
- Do not work within 50 feet of high-voltage transmission lines.
- ***Look up and Live***: Always check the operating vicinity for power lines before you drive into it. Tree branches can hide power lines or cables from view. If operating at night, use powerful lights to search for power lines or poles.

Slide 25

Electrocution Death

- Fire Captain killed while in the bucket of a ladder truck
- The bucket came in contact with a 12,400 volt overhead power line

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Slide 26

Electrocution Death

Three firefighters were also injured in the incident but their injuries are not life-threatening

"PPL did cut the power to the house, but didn't cut the high voltage wires. Maybe there was a communication break between the chief and PPL, but that's to be determined later on," indicated Fire Chief Tom Davis.

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- STRESS – IC/DESIGNATE MUST CONFIRM WITH POWER COMPANY REP THAT POWER IS IN FACT CUT.
- NO GUESSING
- DON'T TAKE THE WORD OF A BYSTANDER OR WELL-INTENTIONED FIREFIGHTER
- PPL – Pennsylvania Power & Light, Scranton, Pa home base.

Slide 27

NIOSH Investigative Report of the Death

- Proximity to energized powerlines
- Suboptimal incident command
- Absence of relevant SOPs
- Absence of specific periodic training
- Heightened sense of urgency given civilian occupants
- Lack of verification of the powerline energy state

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Slide 28

Safety – Electricity Hazards

- Articulating boom operators have two areas of the apparatus to monitor: the platform and the boom, particularly in the area of the boom joints or hinge.

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Slide 29

Safe Operations – Electricity Hazards

The entire vehicle may be energized, causing tires and fluids to burn, and other components to fail, especially pressured cylinders and hydraulic tools

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A new truck in Philadelphia Fire Department catch fire during a daily check when it hit the lines cross the street from the station.

Slide 30

It Can Happen Off the Fireground

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FF UNAWARE NEWLY HUNG POWER LINES WERE OPERATIONAL – SITUATIONAL AWARENESS

Slide 31

MAKE NOTE OF THE POSITION OF THE TOWER IN CONJUNCTION TO THE 69 KV POWER LINES.

Slide 32

MAKE NOTE OF POWER LINES ON BOTH SIDES OF THE STREET. THE TOWER IS DIRECTLY BENETH BOTH LINES. THE TOWER DID NOT COME IN DIRECT CONTACT WITH THE LINE CLOSEST TO THE BUCKET, WHEN IT WAS RAISED IT CAME CLOSE ENOUGH TO CAUSE AND ARC FROM THE 69KV LINE TO THE LADDER, THE FIREFIGHTERS HAD NO IDEA WHAT WAS HAPPENING, THE ARC WAS DIRECTLY BEHIND THEM.

Slide 33

WATER WAS FLOWING WHEN THE INCIDENT HAPPENED.

Slide 34

CAMPBELLSVILLE FIRE DEPARTMENT

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Slide 35

Safety - In a Lighting Storm

Do not operate the ladder in a lightening storm! If on the scene emergency conditions dictate the aerial to be used during a lightning storm, extreme caution should be used during the operation to avoid severe personal injury!

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Slide 36

Safety - High Wind Conditions

- Moderate to high winds impose a dynamic load on the aerial device and may reduce the overall stability by forcing movement for which the apparatus was not designed.
- The driver/operator should always adhere to the manufacture's recommendations for operations in windy conditions.

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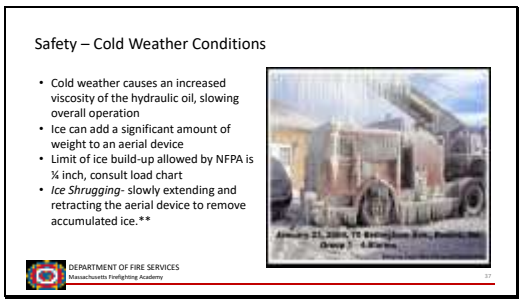
Slide 37



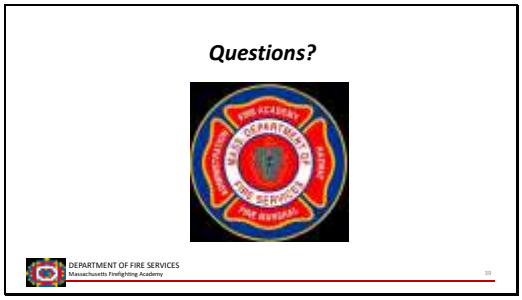
*** If the ice becomes so thick that it cannot be shrugged off, another method of deicing will have to used. The manufacturer should indicated which thawing agents and techniques are acceptable for the apparatus.

Slide 38

In this video you hear the statement, "…firefighters responded to a vacant apartment building, first responders didn't think much of it." Is there COMPLACENCY being demonstrated here? Is everyone on their "A-game"?

Other safety notes – 1) firefighters working with a rig beyond its safe operational limits. 2) firefighters not in proper PPE. 3) extension of aerial.

Slide 39



Slide 1

Slide 2

Each incident is unique and different positioning techniques for aerial operations may be required.

Examples of SOP's

- When two aerials respond to a given location, first –arriving aerial takes the front and the second the rear or side, depending on building access
- When two aerials respond to a given location, the first position is based on the present conditions. The second aerial apparatus stages one block away or in accordance with departmental SOPs and awaits instructions.
- Single aerial responds to a given location, the apparatus takes a strategically sound location in front of the building unless otherwise directed.

Slide 3

Positioning - Spotting

Spotting refers to positioning the apparatus in a location that provides the utmost efficiency for operating on the fireground. Often, this location is the final operating position for the aerial apparatus at the scene.

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Slide 4

Positioning - Spotting

The D/O must consider certain factors when determining this final operating position of the aerial apparatus:

- Surface conditions
- Grade
- Windy Conditions
- Ground or overhead obstructions
- Angle and location of aerial device operation
- Special situations

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Positioning – Collapse Zone

Aerial apparatus responds to a given location, the apparatus take a strategically sound location in front of the fire building unless otherwise directed by the IC. For example, the apparatus may be centered in front of the involved portion of the building for offensive operations or at a corner of the building (out of the collapse zone) for defensive operations.

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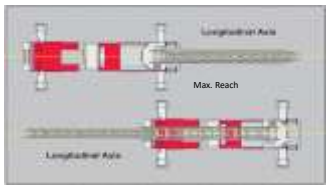
Slide 6

Positioning – Angle and Location of Aerial Device

- Apparatus stability is **greatest** when the aerial device can be operating in line with the longitudinal axis of the apparatus.



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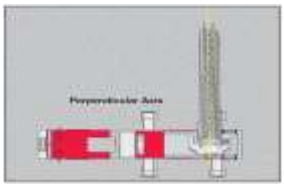
Slide 7

Positioning – Angle and Location of Aerial Device

- An aerial apparatus is **least** stable when the aerial device is operated perpendicular to the longitudinal axis of apparatus.



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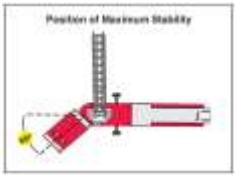
Slide 8

Positioning – Angle and Location of Aerial Device

- *Jackknifing* the tractor of a 60 degree angle from inline with the trailer provides **greatest** stability.
- Good stability occurs at angles up to 90 degree, **but decreases at angles beyond that.**



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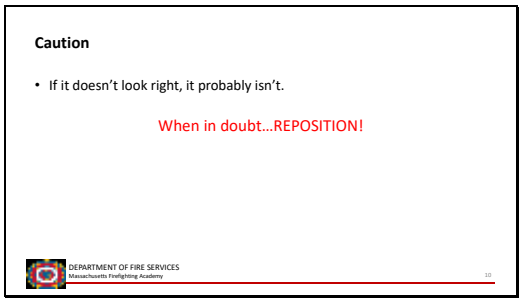
Slide 9

- Slopes – The center of gravity will shift to the lower side of apparatus parked on a lateral grade.
- 5-7 degree
- 8.4 percent of grade
- Lateral grades may adversely affect the stability of the truck
- Define lateral grades?
- Lower the stabilizers on the high side of truck until they <u>just</u> touch the ground
- Lower the stabilizers on the low side until truck is brought to level
- Most manufacturers recommend that on a lateral grade the stabilizers on the high side of the vehicle be lowered first.
- On a lateral grade, after the apparatus is stabilized, it is preferable that the aerial device be operated over the high side of the apparatus.
- Operate the aerial ladder on the high side of the apparatus.

Slide 10



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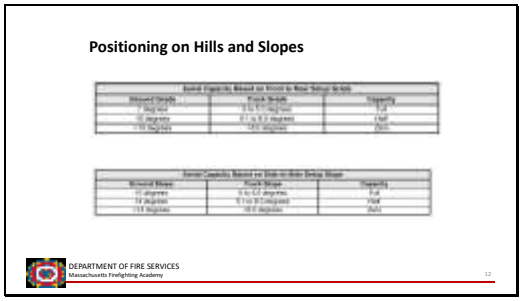
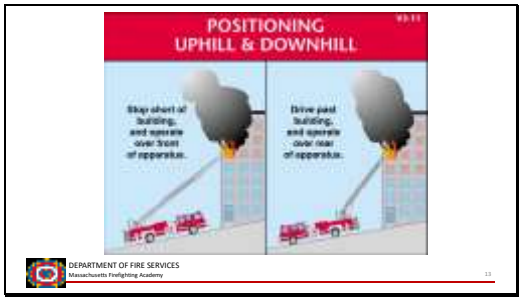


- When approaching from the uphill side, reduce torsional stress on the aerial device by spotting the turntable downhill from the point of operation
- When approaching from the downhill side, reduce stress on the aerial device by stopping short of the building and operating the aerial over the cab
- NFPA 1901 – Section 20.21.3 Sloping Surfaces
- Section 20.24.2.8.1

Slide 13



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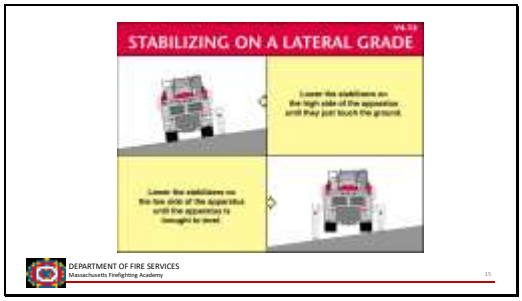

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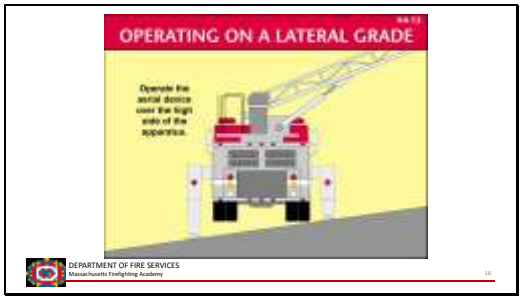


Slide 17

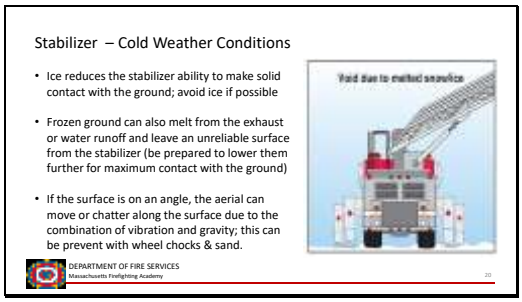
- Some newer apparatus has automatically front brake when you put into PTO.
- The wheels should have chocks placed both in front and rear of the tire on both sides of the apparatus, leaving approximately an inch of space between the tire and the chock.
- Reposition the chocks if needed after lifting the apparatus.
- If using the collapsible types of chocks, it is critical that they are locked and properly deployed.

Slide 18

Slide 19

- Avoid positioning near trees, overhangs, parked vehicles, trash containers, and similar obstructions that may affect the operation of the stabilizers and/or aerial device.
- When operating single-chassis apparatus on grades perpendicular to the long centerline of the vehicle, level the chassis by using the stabilizers to raise one side or to lift the chassis completely off the ground.
- Does the manufacturer recommend lifting off the ground?
- NFPA 1901, Section 20.23

Slide 20



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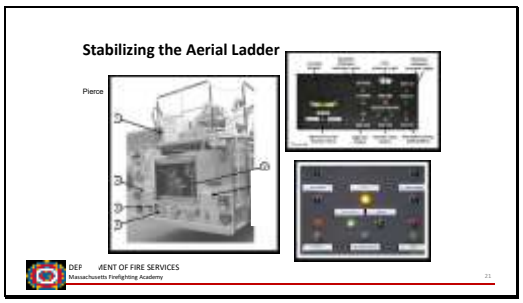


NFPA 1901, Section 20.21.4 through 20.21.4.4

- Park it in position
- Brake and chock (front wheels)
- Lower or place stabilizers and pads
- Balance and a firm unmoving position is essential

TURNTABLE CONSOLE CONTROLS - Contains most controls and indicators needed to operate the aerial.

STABILIZER CONTROL PANEL - Contains stabilizer, hydraulic filter, PTO, high idle, EPU, and diverter valve controls and indicators.

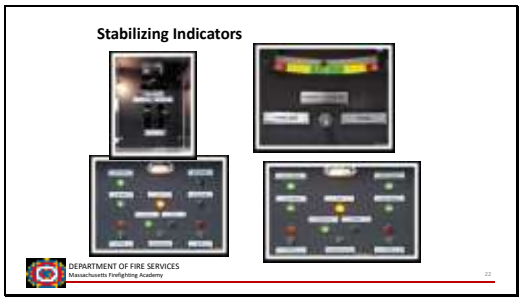
RIGHT STABILIZER CONTROLS - Contains right side stabilizer beam and jack controls.

LEFT STABILIZER CONTROLS - Contains left side stabilizer beam and jack controls.

ANGLE INDICATOR (SLOPE) - Indicates vehicle slope in degrees.

MANUAL OVERRIDE CONTROLS - Contains stabilizer and aerial override controls.

Slide 22



- Lighting of stabilizers points, watch the colors.

TURNTABLE CONSOLE CONTROLS - Contains most controls and indicators needed to operate the aerial.

STABILIZER CONTROL PANEL - Contains stabilizer, hydraulic filter, PTO, high idle, EPU, and diverter valve controls and indicators.

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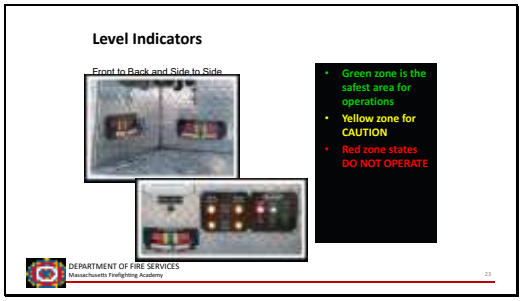
Slide 23



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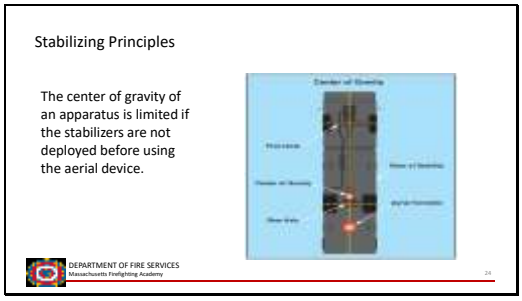
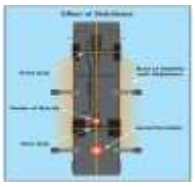


Slide 25

Stabilizing Principles

By deploying the apparatus stabilizers, the base of stability for the aerial apparatus is effectively increased.



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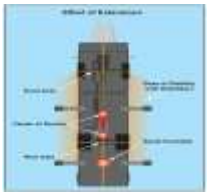
Slide 26

Stabilizing Principles

The center of gravity shifts forward if the aerial device is extended over the front of the apparatus.



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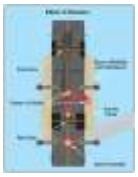
Slide 27

Stabilizing Principles

The center of gravity shifts as the aerial device is rotated

Gravity Circle – Theoretical safety zone that surrounds the center of gravity on an aerial apparatus.



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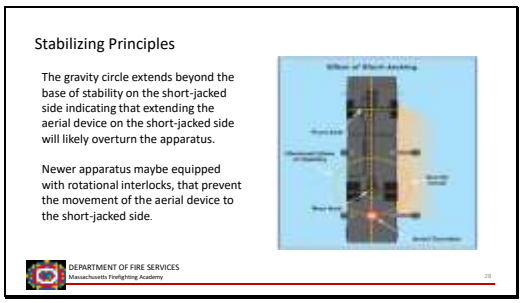
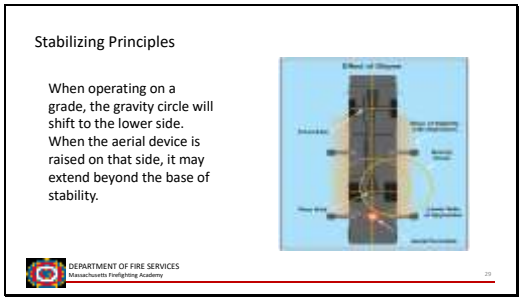
Rotating the device 360 degrees will trace a gravity circle. As long as this gravity circle does not extend outside the base of stability, the apparatus should remain stable.

Slide 28



However, the driver/operator should not rely on these automatic features to prevent a serous accident from occurring. ***Once again, only short-jack if you have to. MFA recommends fully deploying stabilizers and stabilizer pads during every stabilizer setup and every time the aerial device is raised from its bed.***

Slide 29



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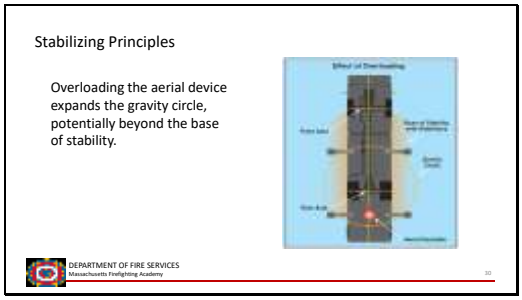
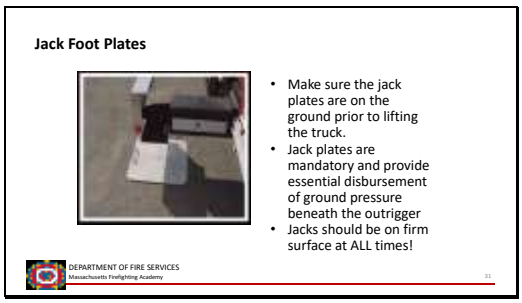


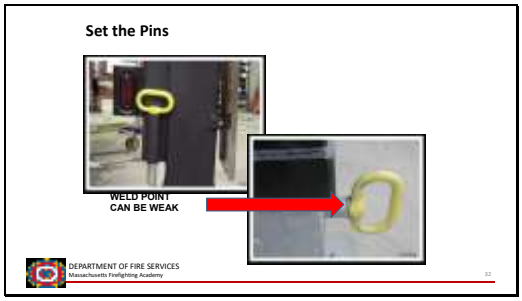
An example of this would be an overextended, older aerial device that is operating at low angles of elevation.

Slide 31



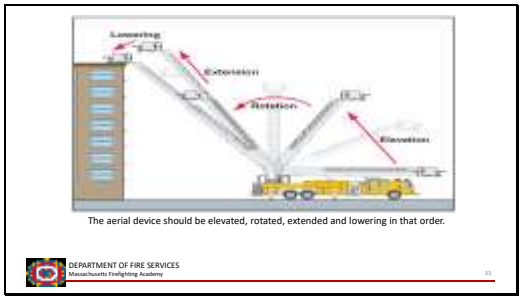
Some jack plates are build into the stabilizers

Slide 32



- When you set the pins leave 1 inch on the handle side to prevent shearing.
- Some outriggers do not have pins.

Slide 33

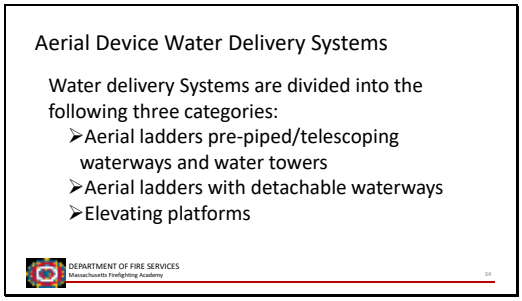


Using one motion at a time is recommended unless the situation is critical and the operator is qualified to operated the apparatus in that manner, or the apparatus is equipped with a system that is designed for multi-use operations. Because of the forces being generated, especially as length increases, all movements must be slow, smooth and controlled (also known as feathering). No rapid movements of the control are permitted. Regardless of the skill of the operator, full-speed operations should be minimized due to the large amount of dynamic stress placed upon

the aerial device when motion is halted.

Lowering the aerial device is typically the reverse of the process used to place it into position.

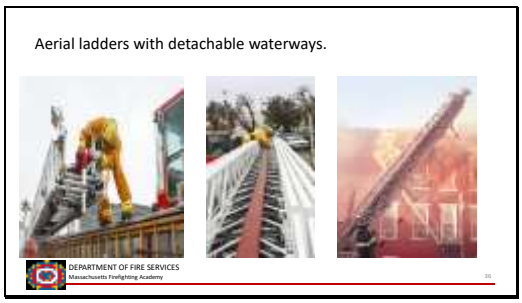
Slide 34



Slide 35

- True pinnable waterways are permanently attached nozzle systems that can be operated from either the tip of the aerial or one section (fly) lower,
  fire fighting mode is where the master stream nozzle is at the tip of the aerial, and in rescue mode the nozzle is one aerial section lower.
- Generally, the minimum internal diameter in these piping system is 4” inches. (NFPA 1901 requires it to flow 1000 gpm @ 100 psi)

Slide 36

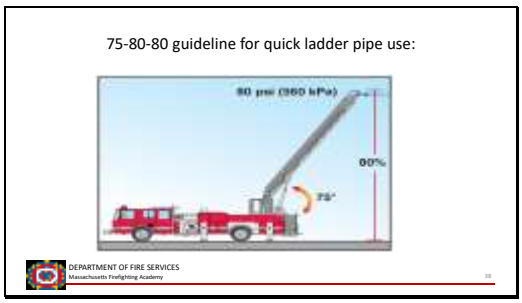


- Detachable ladder pipes should be operated from the turntable or ground level using ropes that are attached to the nozzle. These ropes allow the nozzle to be raised and lowered as needed.
- Always located the supply hose in the center of the ladder and secure it with a hose strap on each section of the ladder.
- Always follow specific operating guidelines that the aerial device manufacturer provides.

Slide 37

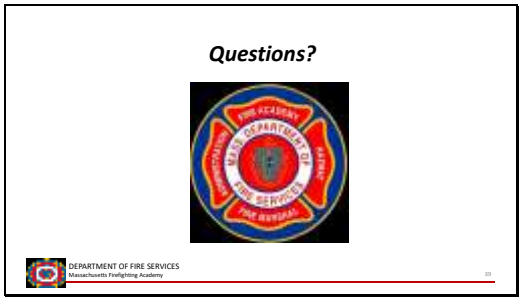
- Some elevating platforms are equipped with two nozzles at the platform. These nozzles may be operated individually or simultaneously to provide maximum stream placement efficiency.
- Most platforms are equipped with at least one 2.5” discharge, allows a handlines to be stretched from the platform if they are needed on upper levels of a structure, also it create an elevated standpipe connection
- NFPA required heat shield and a protective water curtain (or cooling spray) nozzle beneath the platform.

Slide 38



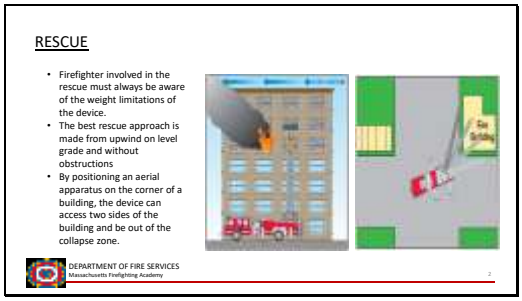
The aerial device should be elevated to 75 degrees, extended no more than 80 percent of its length, and the nozzle pressure for a solid stream nozzle should be no more than 80 psi.

Slide 39



Slide 1

Slide 2



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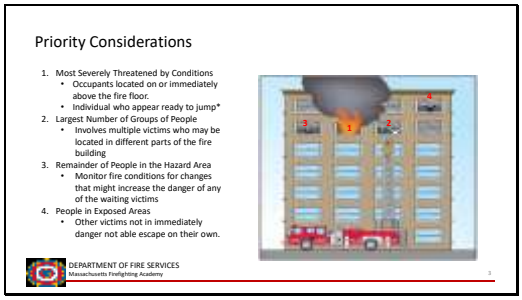


In situations that require using aerial apparatus for rescue, the main objective is to reach an many victims or points of egress as possible with a minimum number of aerial movements. The slide – victim rescue priority from highest to lowest.

* Firefighters should not pass up those in greatest danger just to rescue a panicked person who is in a safe area

Slide 4

Raising the Aerial Device to a Victim

- The best position is one in which the extended and rotated aerial device is perpendicular to the objective.
- Depending on the aerial platform's angle of approach, it may be possible to perform a rescue through the platform's gate.

Slide 5

The ladder should be raised to a point above a victim to prevent them from attempting to jump onto the ladder

The ladder should then be lowered into position to rescue the victim.

Slide 6

- If the aerial ladder is designed to be used in the unsupported position, the tip should be placed above the target sport (the sill) to keep if from contacting the building.
- The tip must be positioned, so it doesn't diminished the window opening.
- The first rung of the ladder tip should be placed even with the windowsill. This positioning also allows firefighters to place victims directly on the ladder with minimum lifting.

Slide 7

When approaching a window squarely with the platform, place the top rail of the platform even with the windowsill. With the platform railing even with the window, rescuers can help the victims board the platform feet first.

Slide 8

Rescue from a Roof

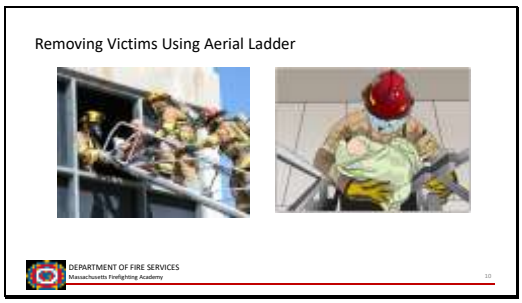
- The tip of an aerial ladder should extend at least 6 feet about the roof line.
- Position the floor of an aerial platform at the roof level.
- This position allows victims to have a handhold while climbing onto the ladder or into the platform.

Slide 9

Rescue from a Roof

- Placement of the aerial device for rescue from balconies with railings or roofs with parapet walls should follow the same guidelines
- It may be necessary to use roof ladders to get over the parapet to the aerial device
- Caution must be used when laddering a parapet walls because parapets can be weakened by time or fire
- Simply repositioning the truck to an area of the building that doesn't have a parapet may be the best option

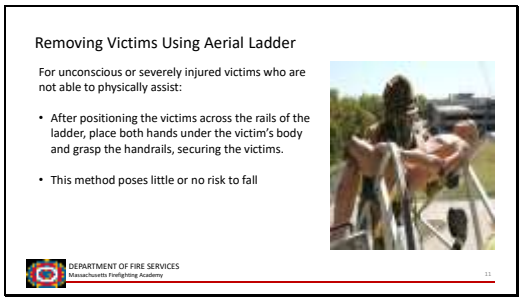
Slide 10



- Capable adults should be guided down the ladder under their own power. A firefighter should always lead the victim down the ladder.
- Caution should be taken to make sure that multiple victims are adequately spaced down the length of the ladder according to the manufacturer's recommendation to avoid overloading it.

- Infants or small children should be cradled in the firefighter's arms as the firefighter descends the ladder.

Slide 11



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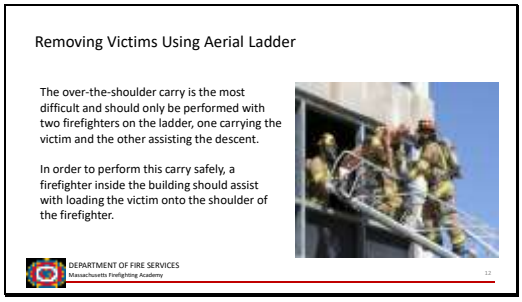


Slide 13

Using aerial platform to move victims is considerably easier than backing them down aerial ladders. However, it is slower and not suited to mass evacuations from a single point.

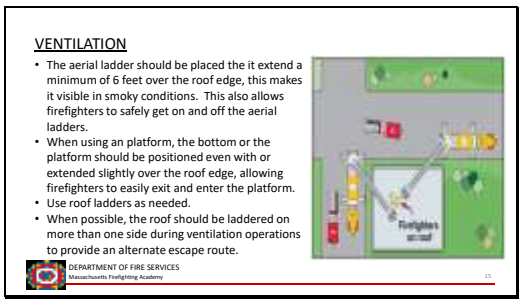
- Load capacity & space inside the platform will determine the number of passenger
- **A potentially severe and damaging dynamic load can be created when victims jump into the platform
- One rescuer should stay with the victims remaining in the structure until the aerial device can return for them
- Rescuers inside a structure should pass an unconscious victim to rescuers in the aerial platform

Slide 14

- Some aerial platforms are equipped with extendable arms designed to hold a stokes basket

- It may be possible to slide a strokes basket down the ladder between the handrails of wider ladders.

Slide 15



Proper aerial apparatus placement can make the ventilation process quicker.

Slide 16

Slide 17

Elevated master streams are most commonly used in defensive operations. In this type of operation, the elevated stream may be used to directly attack the fire, cool embers and gases within the thermal column, and protect exposures. When a defensive attack is employed, the risk of building collapse must be considered.

Slide 18

Solid and straight streams are more likely to reach the seat of the fire than a fog pattern. The water from a fog streams evaporates before reaching the seat of the fire.

Solid streams provide excellent penetration into the fire area.

Slide 19

An aerial device may be used as a master stream device at ground level.

If the aerial device is to be used in this manner, D/O should position the apparatus so the turntable is directly in line with the intended target if possible.

This position allows the fire stream to penetrate as far into the fire area as possible.

Slide 20

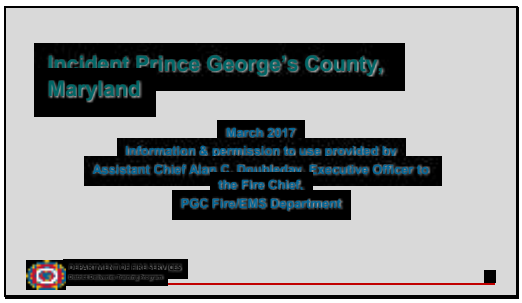
If only one master stream nozzle is available, the stream should be alternated between the exposure and the fire building

If two master stream nozzles are available, one can attack the fire while the other protects the exposure.

Slide 21

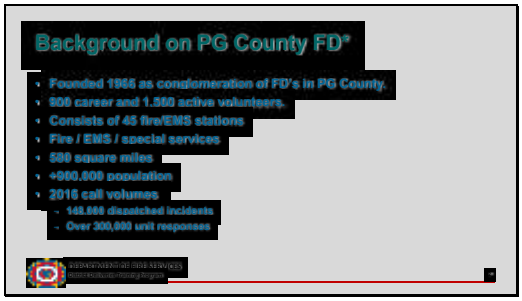
Questions?

Slide 1



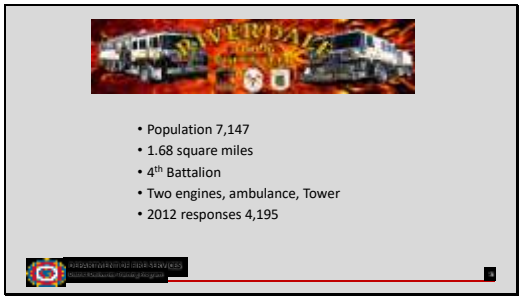
- Without the input from Assistant Doubleday this program would not be possible. Chief Doubleday was very open and forthcoming with his information and understands the needs and importance of sharing his experience with others. For this we express our deep-found respect and thanks for the time he has taken to share this information with us.

Slide 2



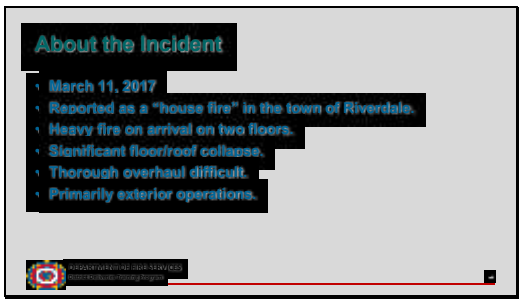
- source Wikipedia and Assistant Chief Doubleday

Slide 3



- source – Riverdale VFD website, and Princes George's County FD website

Slide 4

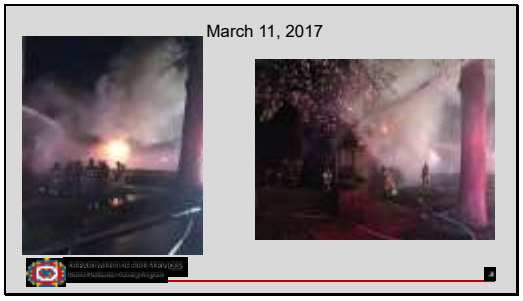


- Significant fire on arrival created a necessity for exterior (defensive) mode.

Slide 5

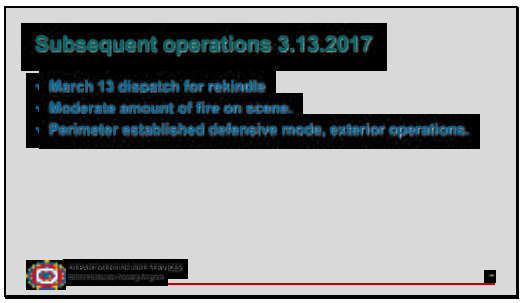
- Heavy fire and use of heavy caliber streams from both deck guns and ladder pipe.
- NOTE – right photo. Overhead power lines and trees.
- SAFETY REMINDER – nighttime operations are dangerous enough without the addition of overhead hazards. High voltage awareness.

Slide 6



- Night of March 11, heavy involvement.
- Exterior operations with large caliber streams.

Slide 7



- Hot spot rekindle dispatch on 3/13 brought fire units back to the scene.
- Moderate fire observed on arrival.
- Decision made to go into a defensive mode as entry into structure was not safe.

Slide 8

- Tower 807

Slide 9

- Note – this view shows a large quantity of water on the street further reinforcing the possibility of seriously saturated ground in the area.

Slide 10

- Undercarriage of Tower 807. Exhaust system has been seriously compromised by impact with the ground. What else could be impacted? How about the points where the exhaust manifold enters the engine??

Slide 11

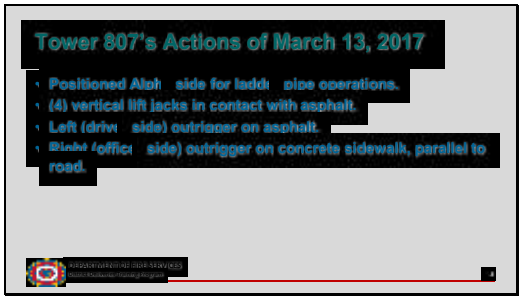
- Front-end view shows how high up the left side was extended.
- Keep in mind – any vehicle is designed with points at which it will "flex". This flexing is good and important to maintaining the overall stability of a rig as it travels, and in use at an operation. However, over-extension of the flex will create a ripple-effect throughout the vehicle. Usually the end result is a weaker point will give way creating damage to remote areas of the rig. This is why it's critically necessary for a engineer to completely evaluate the rig's integrity for service. An example, a weld far from the impact point could snap/twist/or otherwise become compromised. Make sure an inspection reviews all critical areas of the rig.

Slide 12

- Picture on left shows how far the stabilizer sunk into the earth.
- Picture on right shows angle shot from the right-rear side of Tower

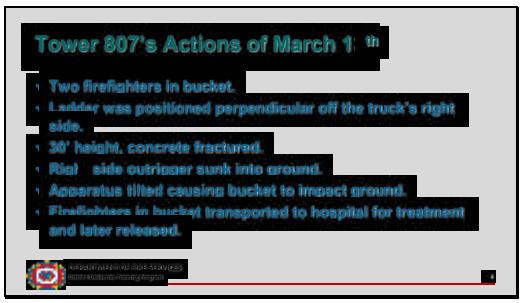
Slide 13

Slide 14



- Positioning of ladder or tower device is extremely important to the safety of the operation.
- REMEMBER – where are the hazards?

Slide 15

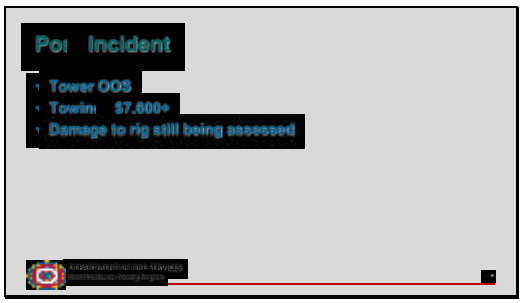


- Two FF's in the bucket. SAFETY ITEM – make sure personnel in bucket are ALWAYS secure.
- Bucket elevation was about 30'

Slide 16

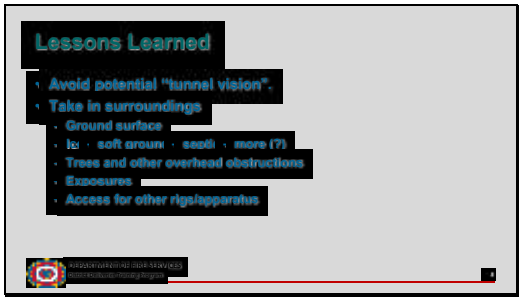
- Thousands of gallons of water will absorb into the earth like a sponge and become an unstable surface.
- Runoff water seeks easy spots to drain into and can undermine an otherwise firm surface. Use the example of a hydrant not properly opened/closed. The constant stream flowing will undermine the dirt and will create a cave-in.
- Operators, you need to understand LOAD LIMITS. Load limits take in angle of stick, loading in a bucket, flow of water. Outriggers are designed to hold boom/ladder extension to a certain weight. WATCH YOUR LIMITS. Don't allow the people in the basket to over-extend.
- In this case the FD was lucky and the basket hit the dirt. Next time it could the basket dropping the crew into a fire.

Slide 17



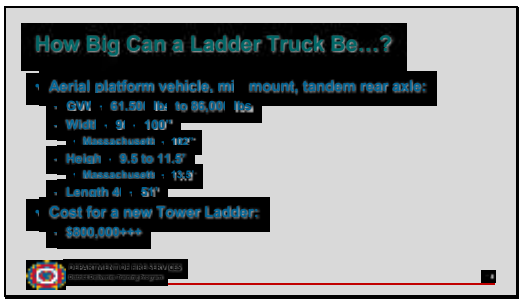
- A rig OOS creates a ripple-effect throughout a community.
- OOS means this vehicle isn't available to respond. Most communities don't have multiple aerial devices. Now a town must rely on mutual aid coming in. This mutual aid now advances the ripple-effect into surrounding communities. So when your rig goes down, it's not all about you.
- Important equipment may have to be moved to other rigs. On the same token, some important equipment may not be able to be moved, again, the ripple-effect extends.

Slide 18



- These are common "Situational Awareness" points to cover with students.
- Avoid becoming drawn into the action of the scene that you fail to observe what can most immediately effect YOU.
- Be alert for potentially soft ground when positioning outriggers off the road.
- Septic systems are sometimes difficult to access. Look for a breather pipe nearby.
- Trees and overhead electrical hazards often go unseen at night and during inclement weather conditions.
- Getting into, and out of, tight spots USE A SPOTTER, USE MULTIPLE SPOTTERS FRONT AND BACK.

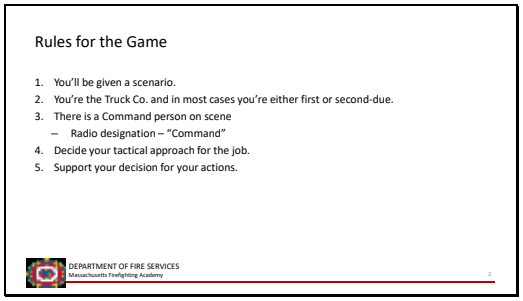
Slide 19



- Source – “Emergency Vehicle Size and Weight Regulation Guideline”, 11/22/2011
- These are standard representative numbers. Specialized equipment can make the rig heavier – longer.
- Just because a rig is a Massachusetts rig, it could very well have been bought “used” there by changing some of the dimensions. Interior of cab must have important stats visible for operator to reference.
- SAFETY – SAFETY – SAFETY! It’s all about situational awareness which includes awareness of the environment around you to operate safe so “we all go home” at the end of the day.

Slide 1

Slide 2



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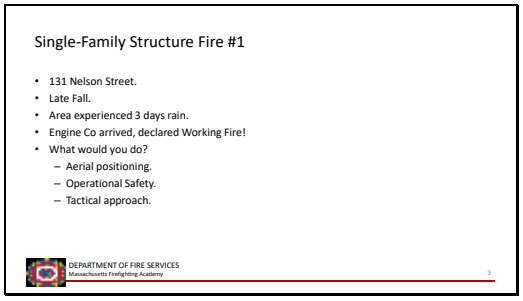

In this module we will introduce you to the concept of the rig being ready to respond. As a firefighter you're expected to be ready to respond as soon as you come on duty. Your personal gear is given a helmet to boots to gloves inspection each time you come on-duty, so you're prepared for whatever the days brings on. Your apparatus is no different. You would not come to work with holes in your gloves and likewise, you would not want to drive a rig with bald tires. Both situations set the scene for disaster when called upon.

Slide 4

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Slide 5

Single-Family Structure Fire #1

- 131 Nelson Street.
- Late Fall.
- Area experienced 3 days rain.
- Engine Co arrived, declared Working Fire!
- What would you do?
  - Aerial positioning.
  - Operational Safety.
  - Tactical approach.

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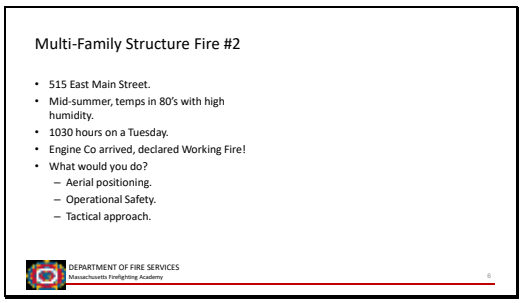
Slide 6



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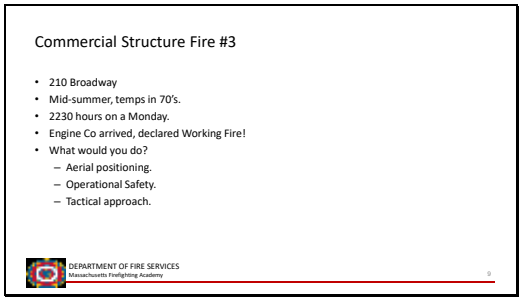
Slide 7

Slide 8

Slide 9



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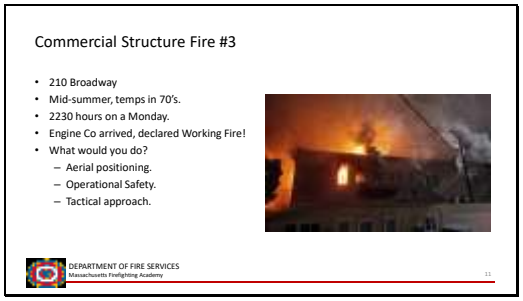
Slide 10

Slide 11



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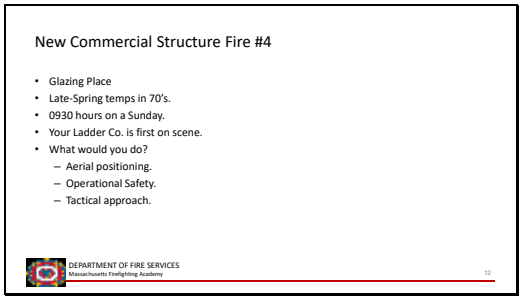

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Slide 13

Slide 14

New Commercial Structure Fire #4

- 2045 Glazing Place
- Late-Spring temps in 70's.
- 0930 hours on a Sunday.
- Your Ladder Co. is first on scene.
- What would you do?
  - Aerial positioning.
  - Operational Safety.
  - Tactical approach.

Slide 15

Old Commercial Structure Fire #5

- 12 Old Rutland Road
- Spring temps in 60's.
- 0930 hours on a Saturday.
- Your Ladder Co. is right behind the Engine.
- Built 1930's
- What would you do?
  - Aerial positioning.
  - Operational Safety.
  - Tactical approach.

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Slide 16

Old Commercial Structure Fire #5

- 12 Old Rutland Road
- Spring temps in 60's.
- 0930 hours on a Saturday.
- Your Ladder Co. is right behind the Engine.
- Built 1930's
- What would you do?
  - Aerial positioning.
  - Operational Safety.
  - Tactical approach.

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