Continuing Education for the Fire Fighter

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Ground Ladders

Module 1

Chapter 12

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LEARNING OBJECTIVES

Describe different construction types of ground ladders.

Identify the parts of a ladder including markings and labels.

Recognize the types of ladders used in the fire service.

Explain the considerations addressed by ladder inspection, cleaning, and maintenance.

Describe safety guidelines used when handling ladders.

GROUND LADDER CONSTRUCTION IS REGULATED BY TWO NFPA® STANDARDS.

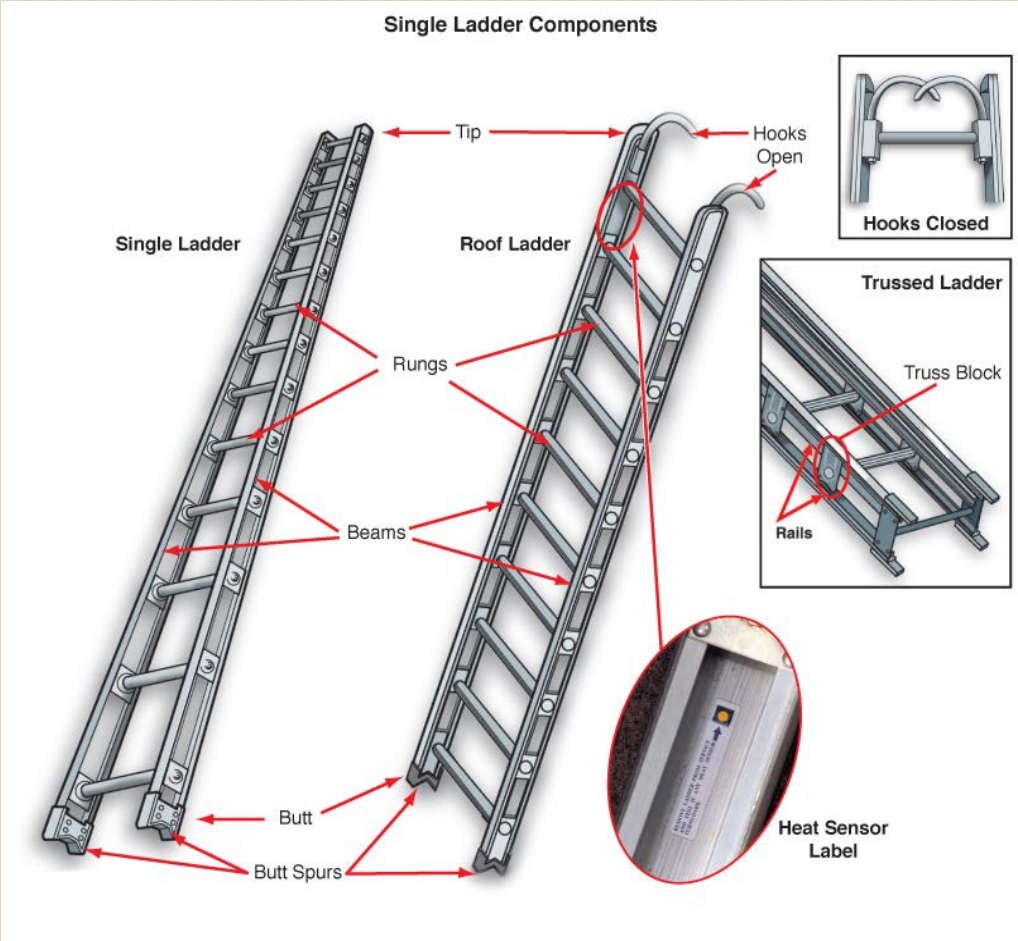
1931

- Design
- Construction
- Testing specifications

1932

- Use
- Care
- Maintenance
- Service testing

FIREFIGHTERS SHOULD KNOW THE BASIC PARTS OF A LADDER.



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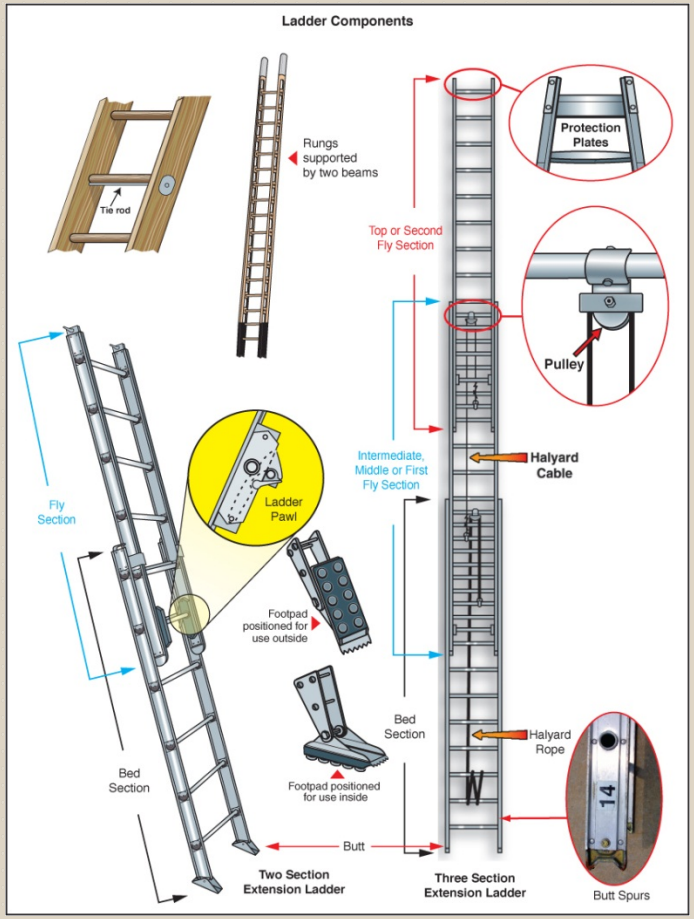

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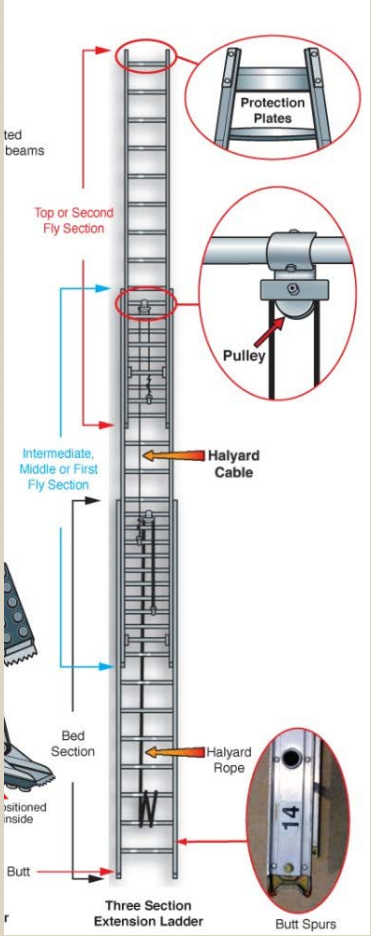
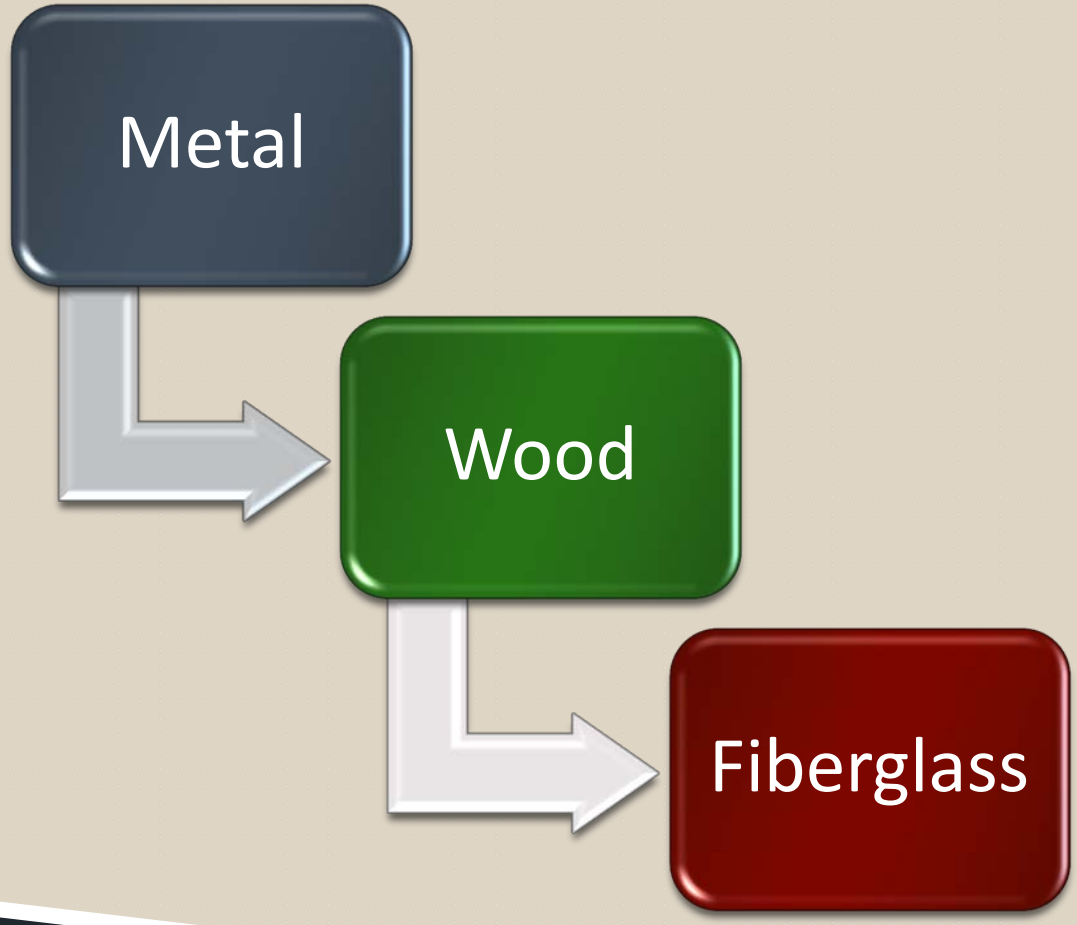


MATERIALS USED FOR LADDERS MUST MEET NFPA® 1931 SPECIFICATIONS.

Each material has advantages, disadvantages

Weight depends on material, length

LADDER MATERIALS HAVE VARIOUS ADVANTAGES AND DISADVANTAGES.

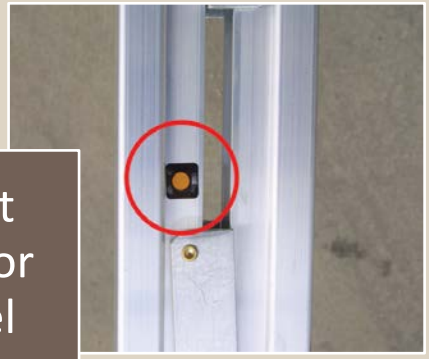


FIRE SERVICE LADDERS MUST HAVE REQUIRED MARKINGS AND LABELS.

- Factory or local application
- NFPA® 1931 requires
- AHJ may require
- Paint can indicate tip or butt

LADDERS MUST HAVE A CERTIFICATION LABEL AND OTHER WARNING LABELS.

Electrical hazard warning



Heat sensor label

Ladder position ing label

SINGLE LADDERS ARE ALSO CALLED WALL OR STRAIGHT LADDERS.

ROOF LADDERS ARE EQUIPPED WITH FOLDING HOOKS TO ANCHOR THE LADDER.

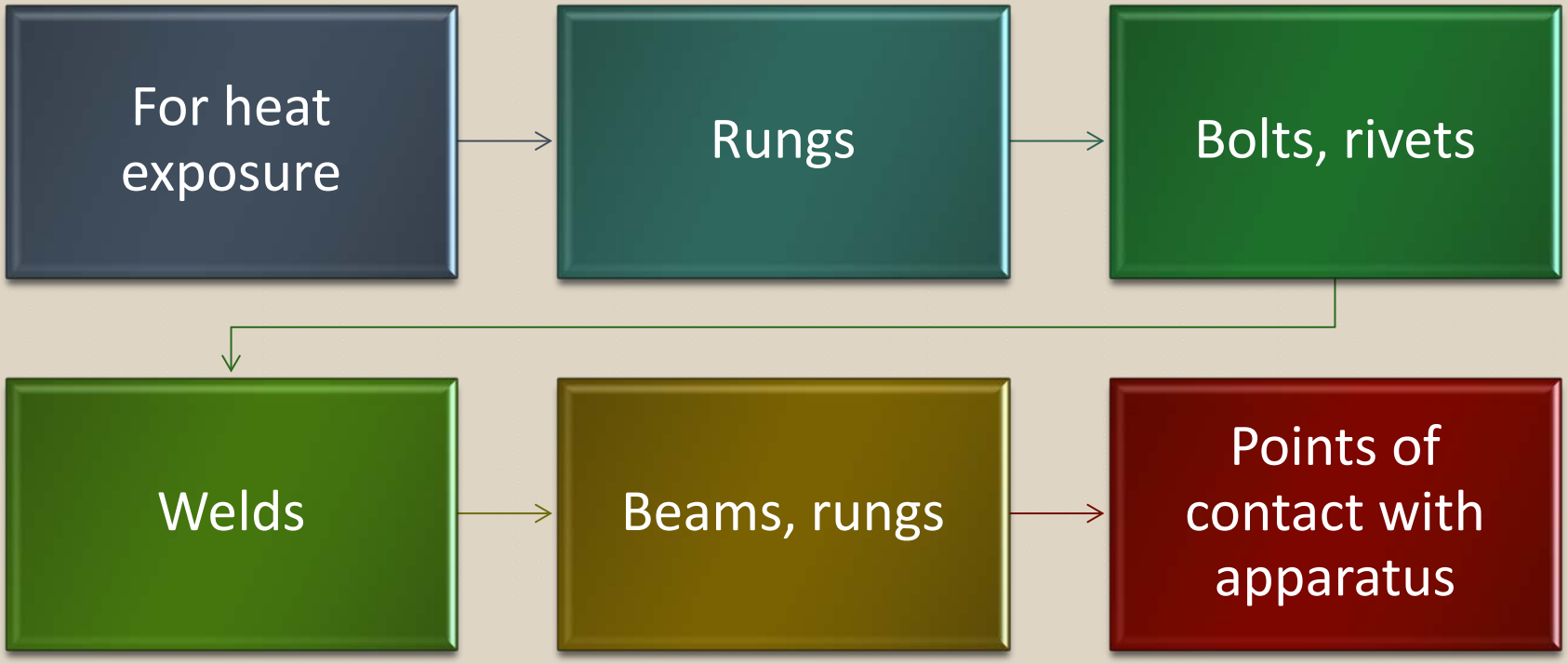
FOLDING LADDERS ARE OFTEN SINGLE LADDERS USED FOR INTERIOR ATTIC ACCESS.

EXTENSION LADDERS ARE MADE UP OF A BASE SECTION AND FLY SECTIONS.

COMBINATION LADDERS ARE DESIGNED TO BE SELF-SUPPORTING.

NFPA® 1901 CONTAINS INFORMATION ON APPARATUS-MOUNTED GROUND LADDERS.

SOME ELEMENTS MUST BE INSPECTED ON ALL TYPES OF LADDERS.



WARNING

Any ladder that has been subjected to direct flame contact, has been exposed to high heat, or has a heat sensor label that has changed color is unsafe for use and should be removed from service for testing.

THERE ARE INSPECTION ELEMENTS SPECIFIC TO EACH TYPE OF LADDER.

Wooden/with wooden components

Roof

Extension

CAUTION

Any indication of deterioration of the wood is reason for the ladder to be removed from service until it can be service tested.

ONCE INSPECTION IS COMPLETE, SELECT THE CORRECT PROCEDURE TO FOLLOW.

Discrepancy found – Remove until

↓

Repaired

↓

Tested

Cannot be repaired

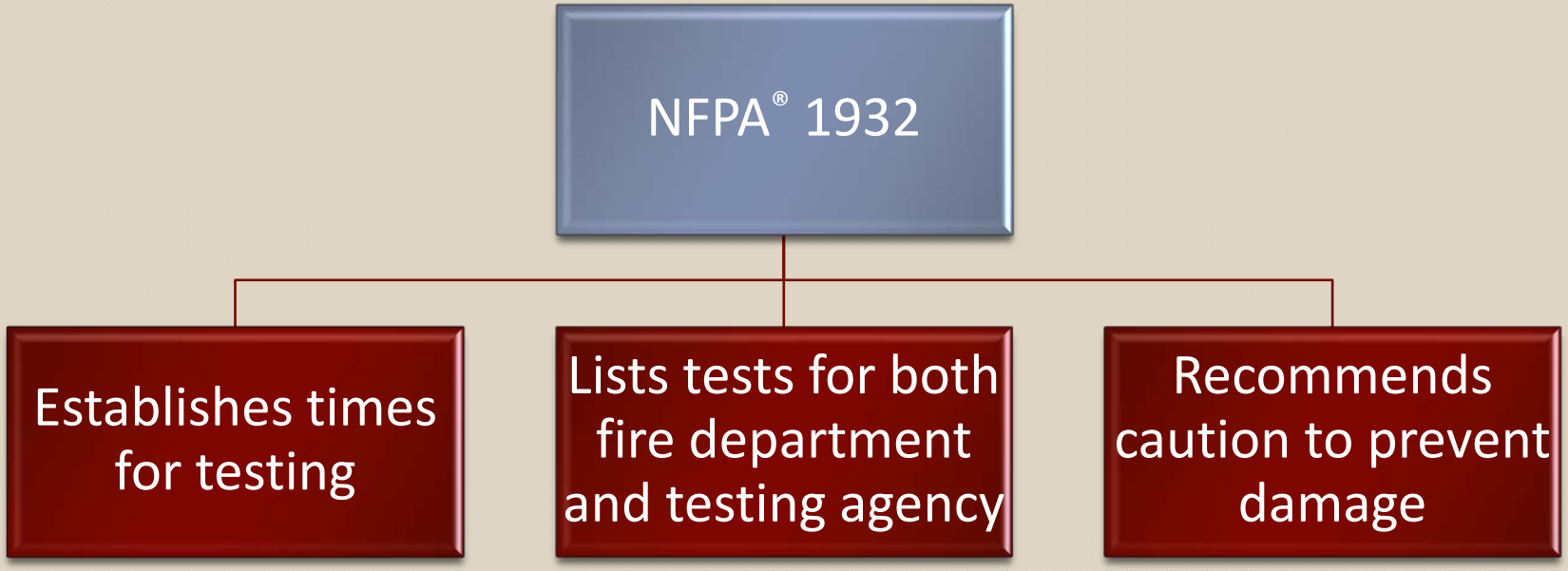
↓

Destroy

↓

Scrap for parts

SERVICE TESTING MUST BE PERFORMED TO ENSURE A LADDER IS FIT FOR USE.



CLEANING IS MORE THAN JUST A MATTER OF APPEARANCE, IT CAN ALSO IMPACT FUNCTION.

Clean after each use

- Soft brush, running water
- Remove residue
- Wipe ladder dry
- Look for damage, wear – Report
- Lubricate where recommended

MAINTENANCE AND REPAIR ARE TWO DIFFERENT PROCESSES FIREFIGHTERS SHOULD UNDERSTAND.

Maintenance – State of readiness

- Firefighters perform per SOPs
- General requirements

Repair – Restore, replace damage

- Trained technician

THERE ARE SEVERAL LADDER SAFETY GUIDELINES FIREFIGHTERS SHOULD KNOW.

- Develop upper body strength
- Wear full body harness, safety line
- Operate according to SOPs
- Wear full PPE
- Choose correct ladder
- Use leg muscles when lifting
- Use adequate number of personnel
- Do not raise within 10 feet (3 m) of electrical wires

WARNING

Ladders coming in contact with power sources may result in electrocution of anyone in contact with the ladder.

THERE ARE SEVERAL LADDER SAFETY GUIDELINES FIREFIGHTERS SHOULD KNOW.

- Secure tip, anchor foot
- Grasp extension beams
- Check for proper angle
- Ensure hooks of pawls seated over rungs
- Ensure stable before climbing
- Use caution when moving sideways
- Climb smoothly, rhythmically
- Never overload

THERE ARE SEVERAL LADDER SAFETY GUIDELINES FIREFIGHTERS SHOULD KNOW.

- Use leg lock or ladder belt when working form
- Relocate only when ordered
- Use for intended purpose only
- Inspect for damage, wear after use
- Secure foot of unattended ladder to stationary object
- Raise safely, smoothly
- Speed may be required
- Teamwork is also important
- Proficiency developed through training

WARNING

Sliding down a ladder either feet first or head first – even in an emergency – is unsafe and may result in serious injury or death.

THE IC CONSIDERS SEVERAL FACTORS WHEN DECIDING WHERE TO PLACE THE LADDER.

- Needs of situation
- Ladders available
- Assigned task
- Location of overhead obstructions
- Structural features
- Wind direction, velocity
- Topography of area

LADDER SELECTION ALSO REQUIRES OTHER IMPORTANT INFORMATION.

Working on roof, upper story

- Must have two means of escape

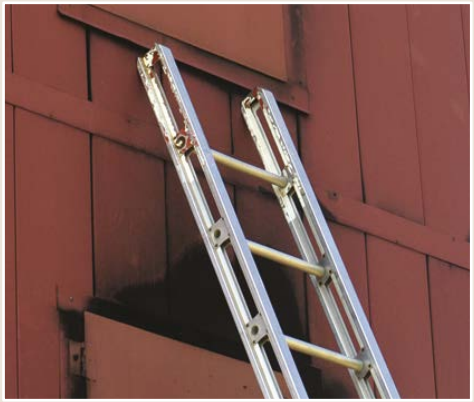
Selecting ladder requires ability to judge distances

- Know averages for residential and commercial story

THERE ARE SEVERAL GUIDELINES TO USE FOR LADDER LENGTH SELECTION.

Extend ladder beyond roof edge

Tip placement for access or ventilation



Tip placement for rescue from window opening

A LADDER'S REACH IS NOT THE SAME AS THE DESIGNATED LENGTH.

Less when set at 75 degrees for climbing

NFPA® 1931 requirements for single, roof, folding

Extension – May be as much as 6 inches (150 mm) less

Lengths of 35 feet (11 m) or less – One foot (300 mm) less

Lengths over 35 feet (11 m) – Two feet (600 mm) less

USE PROPER LIFTING AND LOWERING TECHNIQUES TO PREVENT PERSONAL INJURIES.

Correct number of personnel for length, type

Bend knees, keep back straight, lift with legs NOT with backs and arms

Lift on command of firefighter who can see all team members

Make known if not ready to lift

Reverse lifting if necessary to lower

SUMMARY

Ground ladders are an essential tool used to access levels above and below ground level.

You must know the types of ground ladders your department uses, the parts and construction materials, and how to care for and maintain them.