

Fall Protection – Personal Fall Arrest Systems 29 CFR 1910.140 ANSI/ASSE Z359

OTCO 2020

Jennifer Scott-Wasilk, CHMM, COHC



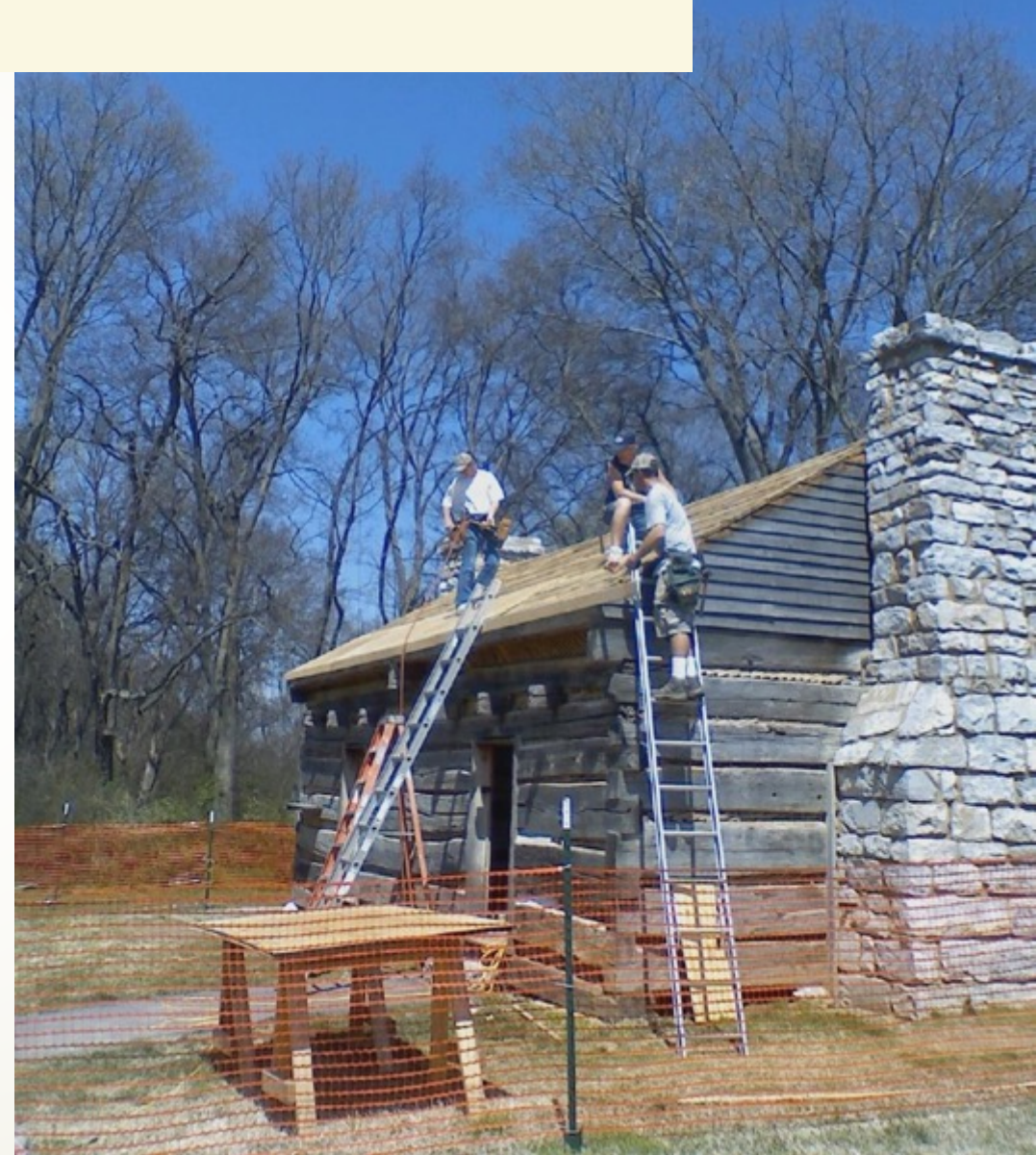


What will be talk about?

- Fall Prevention
- Fall Arrest
- ABCs
 - Anchorage
 - Body Wear
 - Connectors
- Some essential rules
- Suspension Trauma
- Rescue Plans
- This is only the tip of the iceberg
- 4 polling questions
- Kahoots! At the start and end

Where is fall protection required?

- Above 4ft when:
 - Without handrails




Where is fall protection required?



- Above 4ft when:
 - Without handrails
 - By wall openings, open sided floors, platforms or next to floor holes
 - In a lift, bucket or on a platform





There are two basic types of fall protection: fall prevention and fall arrest.



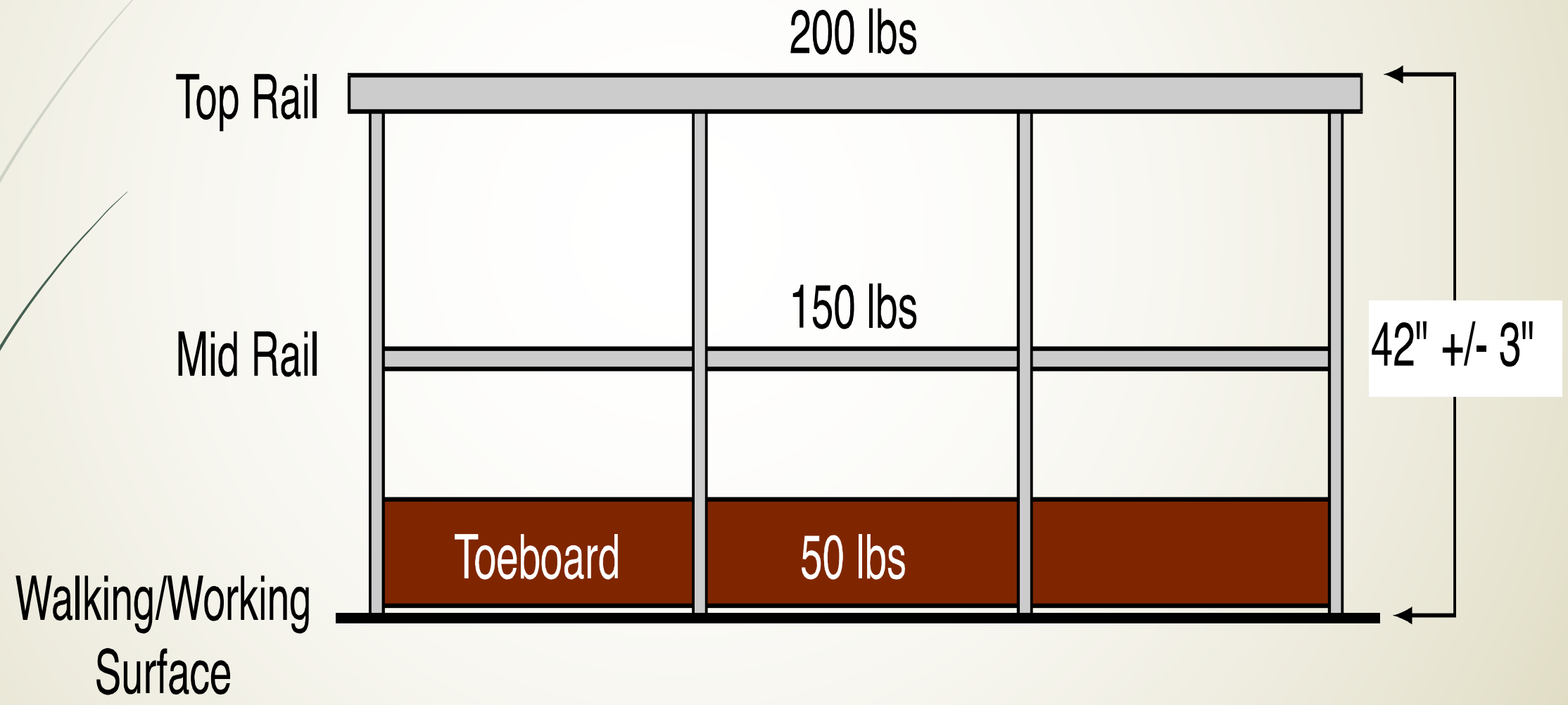
What is Fall Prevention?

➤ Guardrails





What are the requirements for Guardrails?





What is Fall Prevention?

- Guardrails
- Restrainers





What is Fall Prevention?

- Guardrails
- Restrainers
- Covers





Why can't I just grab on if I feel like I'm going to fall?

- Sad, but true...
- It takes half a second to react to a fall.
- In that time you will fall 4 feet.
- So... fall arrest (PFAS – Personal Fall Arrest System)



The ABCs of fall arrest

Anchorage

Body Wear

Connectors



What are the ABCs of a Fall Arrest System?

- Anchor or Anchorage Connector
- Body Wear
- Connecting Device
 - Lifeline
 - Lanyard
 - Shock Absorber
- All withstand a force of 5000 lb



What should I know about an anchor point?

- Must withstand a force of 5000 lb
- Must be inspected
- Must be properly positioned



What do we mean by properly positioned?

- It should be directly overhead to avoid a “swing fall.”



Always “Do the Math”.

- Don't hit the floor before you run out of rope.



What should I know about Body Wear?

- It stretches.
- Make sure it is adjusted properly.





What should I know about bodywear?

- The capacity is 310 pounds or less.
- More weight?
 - You need a special harness



Can I use a simpler body belt instead of a harness?

- No.
- Body belts can't be used for fall arrest.



Two minute tolerance



Body belts can only be used for positioning.





Connecting Devices

Lanyards

Lifelines

Shock Absorbers

Snap Hooks and Carabiners



What devices are “connectors”?

- Double-locking snap hook





What is a Shock Absorbing Lanyard?

- ▶ Activates during a fall
 - ▶ Absorbs part of the shock of a fall
 - ▶ 3.5 ft web-tearing system
- ▶ Maximum average arresting force
 - ▶ 900 lb with shock absorber
 - ▶ 1700 lb without



How are Self-Retracting Lifelines (Fall Limiters) different?

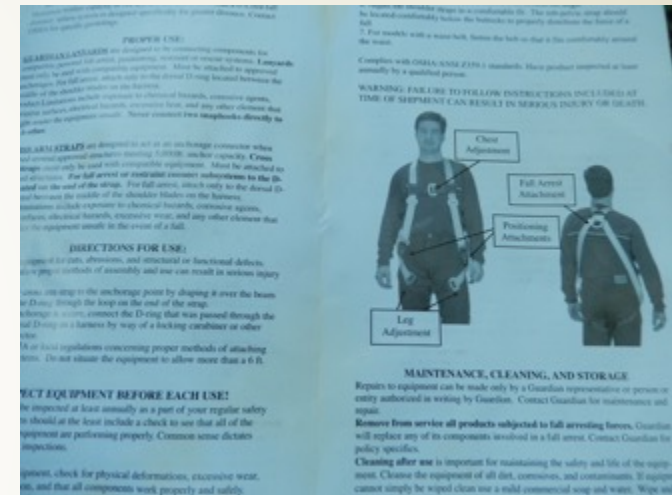
- Allow greater mobility
- 9' working length
- Centrifugal Brake
- Reduce the risk of hitting ground
- Need less clearance
- Stop falls within 2'



What must I know about my equipment?



- How to choose the right equipment
- Limitations of equipment
- Inspection and its importance
- How to use it
- Proper anchoring and tie-off
- Problems caused by careless or improper use
- Reduction in strength caused by certain tie-offs
 - knots
 - tying around sharp edges
- Storage of the system
- The manufacturer's recommendations





If you climb, have a rescue plan...

- OSHA requires one.
- Have one BEFORE you go up in a harness.
- Average fall rescue time is 15 minutes.



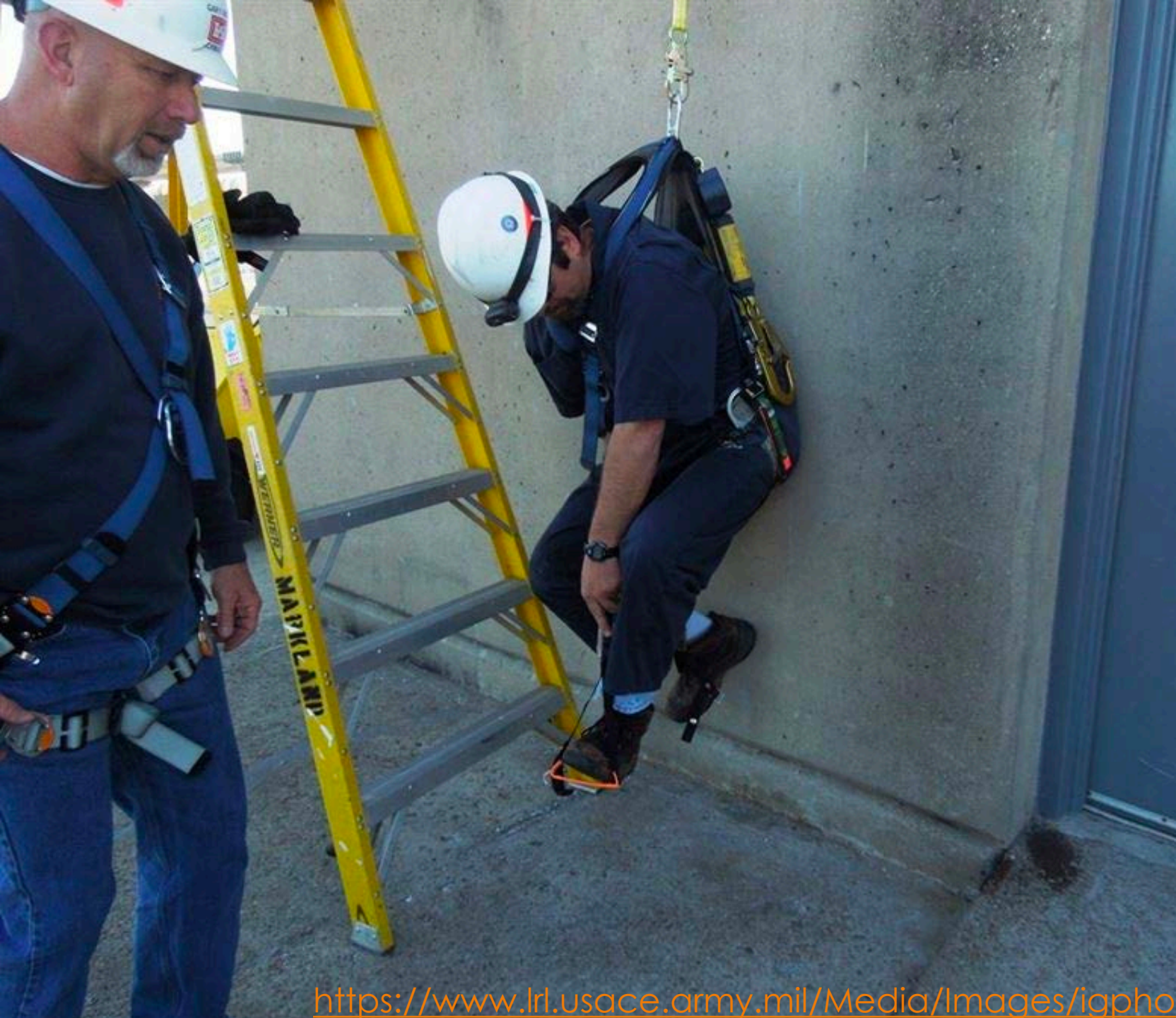
What happens if I don't get rescued right away?

- Suspension trauma.
- OSHA states: potentially-fatal suspension trauma (orthostatic intolerance) can occur within minutes while waiting for rescue after a fall



What happens in suspension trauma?

- The leg straps act as a tourniquet on the femoral artery.
- Leg muscles should be helping return blood back to the heart.
- They don't if they're dangling.
- Blood pools in the legs.



What can I do?

- Deploy a *Relief Step™* or similar device.



And if a fall occurs...

- All components of the fall arrest system should be removed from service.
- Anchor point should be inspected by qualified person.





If you are on an elevated work platform (aerial lift)...

- All occupants always
 - Wear fall arrest
 - Fix to attachment points on the lift
 - Regardless of height





Don't turn yourself into a human yoyo.

- ▶ A little jolt to the vehicle can cause the arm to flex widely enough to launch you out of the vehicle.



Remember the math...

- 3.5 feet
- 4 feet
- 6 feet
- 310 pounds
- 900 pounds
- 1800 pounds
- 5000 pounds
- Typical lanyard deployment
- Fall protection height
- Maximum free fall distance
- Minimum capacity
- Typical arresting force
- Arresting force limit
- Tested strength of components



Who is responsible for fall arrest equipment?

➤ Employers

- Make sure workers follow your procedure
- Provide Fall Arrest Systems
- Train the workers
- Assure annual inspection by competent and qualified person

➤ Employees

- Wear them correctly
- Inspect them before each use



Fall Arrest Systems Should...

- Be used only for worker protection.
- Have compatible parts.
- Keep free fall to a minimum.
- Match the work.
- Match the environment.





This is only the beginning...

- ▶ If you need to start using fall arrest equipment, you will need an employee or consultant who is qualified and competent.
- ▶ You can contact the fall arrest equipment manufacturers. Many have excellent training programs.



Jennifer Scott-Wasilk, CHMM, COHC

- wasilknj@imagine.net
- 440.935.2846
- 29 CFR 1910.140
- ANSI/ASSE Z359