Fall Protection for Construction

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Regional Safety and Compliance Instructor
Training objectives

- Worksite Fall Hazards
- Proper Fall Protection System Selection and Operation
- OSHA rules
Fall hazards in the work area

- Leading edge work (dynamic)
- Holes, openings, skylights
- Ramps, runways
- Ladders
- Mobile Equipment
- Overhand bricklaying
- Unprotected sides and edges
Standard applicability

- OSHA requires employers to:
  - identify, evaluate fall hazards
  - provide fall protection
  - train employees

- Fall protection in other OSHA rules
  - scaffolding
  - ladders and stairways
  - steel erection
Fall protection measures

- Surfaces must support employees

- Provide protection:
  - at 6 feet and above
  - any fall into dangerous equipment
  - any falling objects
Fall protection measures

- Guardrail systems
- Personal fall arrest systems (PFAS)
- Positioning device systems
- Safety net systems
Fall protection measures

- Warning line systems
- Controlled access zones
- Safety monitoring systems
- Covers
Terms

- Body belt
- Body harness
- Controlled access zone (CAZ)
- Guardrail system
- Personal fall arrest system (PFAS)
- Positioning device system
- Safety-monitoring system
- Warning line system (6ft from edge)
Guardrail systems

- Fall Prevention vs. Fall Protection
- Top rails 39 inches to 45 inches. Toeboard 3.5 inches minimum
- Meet design/strength requirements (200 lbs downward and outward force)
How to don / select a harness

Protecta Harness Sizing Chart

- Small (SM)
- Medium / Large (MED/LG)
- Extra Large (XL)
- Extra Extra Large (XXL)

Height - FT/IN (M):
- 4'10" (1.47)
- 5'0" (1.52)
- 5'2" (1.58)
- 5'4" (1.63)
- 5'6" (1.68)
- 5'8" (1.73)
- 6'0" (1.83)
- 6'2" (1.88)
- 6'4" (1.93)
- 6'6" (1.98)
- 6'8" (2.03)

Weight - LB. (KG):
- 100 (45)
- 120 (54)
- 140 (63)
- 160 (73)
- 180 (82)
- 200 (91)
- 220 (100)
- 240 (109)
- 260 (118)
- 280 (127)
- 300 (136)
- 320 (145)
- 340 (154)
- 360 (163)
- 380 (172)
- 400 (182)
Inspecting your harness
Personal fall arrest systems

- All components must meet design, strength requirements
- Anchor
- Body Harness
- Connection

- Body belts are not part of a PFAS
Personal fall arrest systems

- If using vertical lifelines, one employee per vertical lifeline

- PFAS anchorages for PFAS only
Personal fall arrest systems

- When stopping a fall:
  - limit force on employee to 1,800 pounds
  - no free fall over 6 feet
  - maximum deceleration distance of 3.5 feet
  - Anchor point can support 5000 lbs or has a safety factor of 2
## Impact Forces

<table>
<thead>
<tr>
<th>Elapsed Time</th>
<th>Distance Traveled</th>
<th>Velocity (fps)</th>
<th>Speed (mph)</th>
<th>Force at Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0.25</td>
<td>1 foot</td>
<td>8</td>
<td>5.5</td>
<td>400 lbs.</td>
</tr>
<tr>
<td>0.50</td>
<td>4 feet</td>
<td>16</td>
<td>11</td>
<td>1,600 lbs.</td>
</tr>
<tr>
<td>0.61</td>
<td>6 feet</td>
<td>20</td>
<td>14</td>
<td>2,400 lbs.</td>
</tr>
<tr>
<td>0.75</td>
<td>9 feet</td>
<td>24</td>
<td>16</td>
<td>3,600 lbs.</td>
</tr>
<tr>
<td>1.00</td>
<td>16 feet</td>
<td>32</td>
<td>22</td>
<td>6,400 lbs.</td>
</tr>
<tr>
<td>1.25</td>
<td>25 feet</td>
<td>40</td>
<td>27</td>
<td>10,000 lbs.</td>
</tr>
<tr>
<td>1.50</td>
<td>36 feet</td>
<td>48</td>
<td>33</td>
<td>14,000 lbs.</td>
</tr>
<tr>
<td>1.75</td>
<td>49 feet</td>
<td>56</td>
<td>38</td>
<td>19,600 lbs.</td>
</tr>
</tbody>
</table>
Total Fall Distances

CALCULATING TOTAL FALL DISTANCE

Anchor Point

6 ft. Length of Lanyard

3.5 ft. Deceleration Distance

16.5 ft. Total

6 ft. Height of Worker

1 ft Safety Factor

Before Fall

Free Fall

After Fall

Closest Object in Fall Path
Other hazards

- Swing Falls
- Rescue Consideration
- Suspension Trauma
Positioning device systems

- No free fall over 2 feet
- Components must meet design, strength requirements
Safety net systems

• Installed within 30 feet of working surface

• Inspect:
  • at least once a week
  • after any incident
Protection for holes

- Covers must:
  - support intended weight
  - be secured in place
  - be color coded or marked with a warning
Falls into dangerous equipment

- Protect workers from falling into/onto dangerous equipment at any height
Roofing on low-slope roofs - options

- A combination of warning line and:
  - guardrail systems
  - safety net systems
  - PFAS
  - safety monitoring systems
Falling Object Protection

- Falling object protection:
  - materials, equipment stored no less than 6 feet from roof edge unless there are guardrails
  - materials stored near a roof edge must be stable
Protection from falling objects

- Wear hard hats
- Employers must also do one of the following:
  - erect toeboards, screens, guardrails
  - erect a canopy; keep objects far from the edge
  - barricade the area; keep workers out
Leading edge work

- Leading edge work 6 feet and above:
  - guardrail systems
  - safety net systems
  - PFAS

- Must use a fall protection plan if these can't be used

- Controlled access zone
Leading edge work

- Control lines:
  - 6 to 25 feet from the edge
  - along the entire length of the edge
  - connected to a guardrail or wall
  - flagged, marked at least every 6 feet
  - meet design/strength requirements
Safety is your responsibility!

We Need You!!
How can Cintas help

Numerous Safety and OSHA Compliance Trainings (not limited to below)

• OSHA 10 / 30 Courses General Industry or Construction (instructor led / online / virtual)
• First Aid / CPR / AED training (instructor led / online / virtual)
• Powered Industrial Vehicles training (instructor led / online / virtual)
• Competent Person Fall Protection Training (instructor led / online)
• Fall Protection Training (instructor led / online)
• Fall Rescue / High Angle Rescue Training (instructor led)
• Harness / Fall Protection Equipment / Ladder Inspections
• Site Safety Assessments
• Fall Protection and Safety PPE
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