

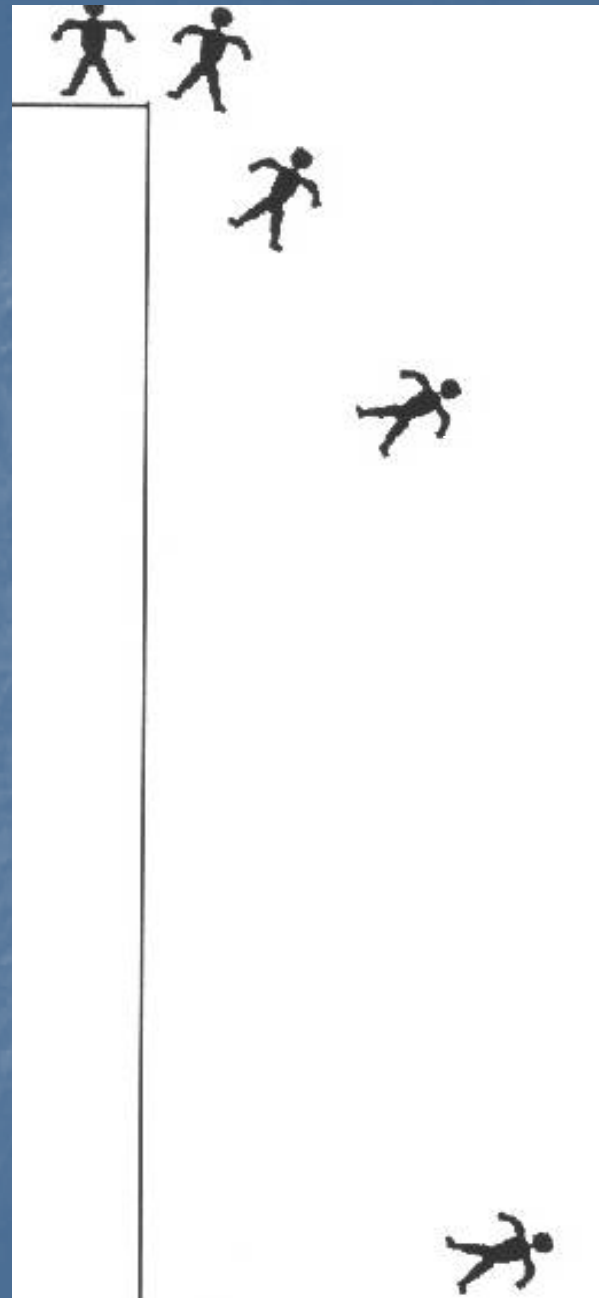
Introduction
Fall Protection

***In the Telecommunications
Industry***

Why Fall Protection?

Why Now?





.33sec./2 feet

.67 sec./7 feet

1 sec./16 feet

2 sec./64 feet

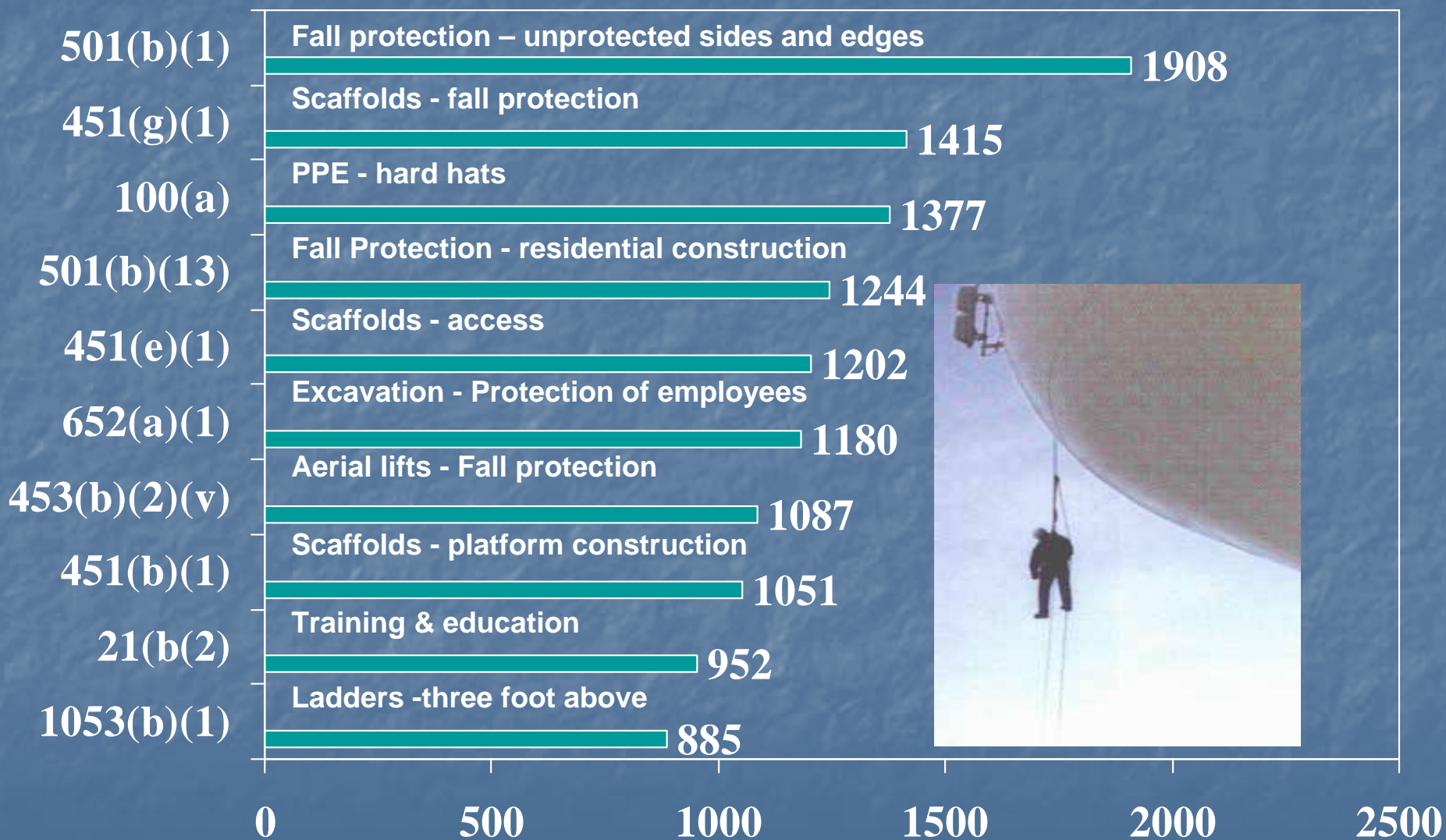
Anatomy of a Fall

- It takes most people about 1/3 of a second to become aware.
- It takes another 1/3 of a second for the body to react.
- A body can fall up to 7 feet in 2/3 of a second.

Acceleration = 32 ft/sec^2
Deceleration = 0 ft/sec^2



2003 Most Frequently Cited Construction Standards



Plus 1,192 General Duty Clause Citations

Philosophies of Fall Protection

Stop/Prevent The Fall

Restraint/Positioning

Guardrails

Warning Lines

Controlled Access Zones

Controlled Decking Zones

Safety Monitors

Catch The Fall

Fall Arrest

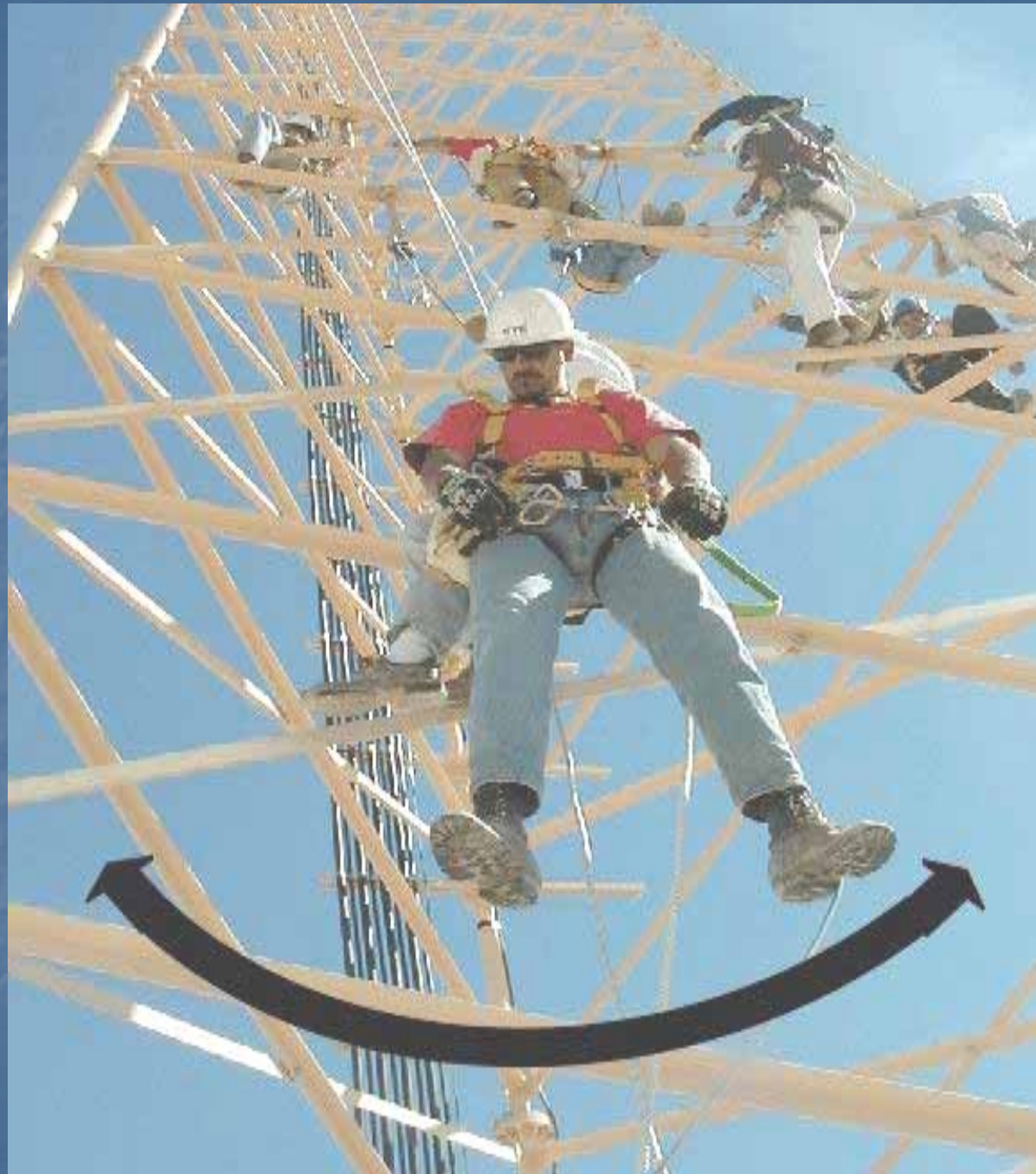
Safety Nets

Catch Platforms

Do these stop/prevent the fall?

Controlling Fall Exposures

- Select fall protection systems appropriate for given situations.
- Use proper construction and installation of safety systems.
- Supervise employees properly.
- Use safe work procedures.
- Train workers in the proper selection, use, and maintenance of fall protection systems.
- Evaluate the effectiveness of all steps



By the Numbers

Some of the Applicable Triggers

Falls onto dangerous equipment

- 0' Allowable Fall Distance
- (You Must Be Protected)

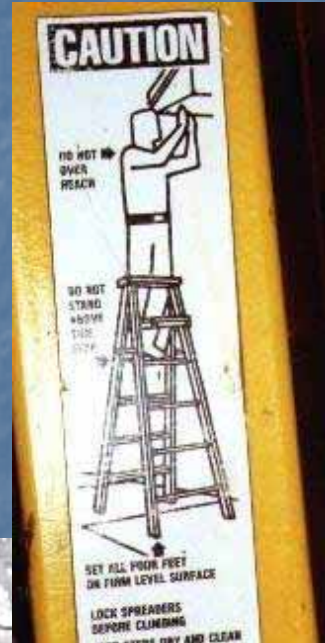


ENVIRONMENTAL CONDITIONS



Ladders

- Extension
- Step
- Vertical Fixed
- Job-built



Ladders

- Extension



Aerial Work Platforms

- Boomlifts
- Scissorlifts
- Boom Trucks (Cherry Pickers)
- Mast Climbers



Personal Fall Arrest Systems

Primary Concerns

- Impact Force to the Body Less Than 1800# (with a harness)
- Maximum 6' Free Fall Distance
- May Not Hit Structures Below
- Maximum Weight of Individual w/Tools of 310#

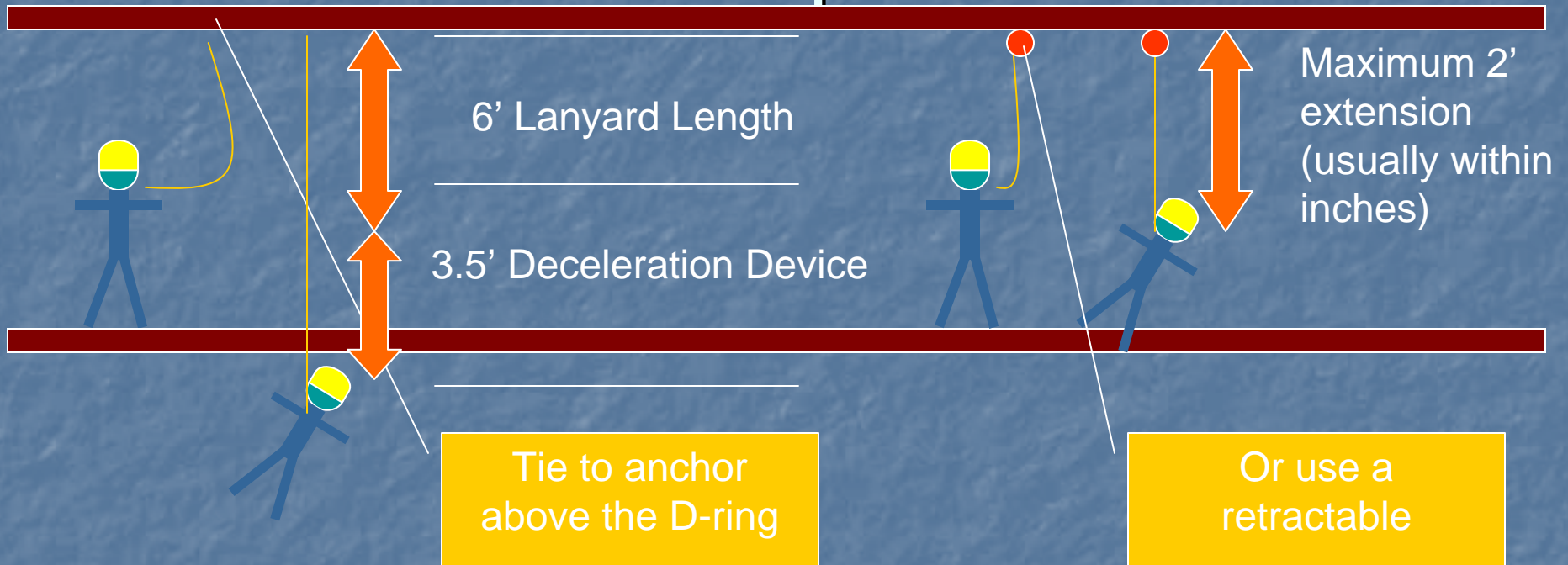
Impact Force

- Minimize Fall Distance
 - Tie off at or above D-ring height wherever possible
- Use Shock Absorbers
- Choose appropriate harnesses, and wear them properly

Impacting Structures Below (Total Fall Distance)

- Consider:
 - anchorage point location in relation to D-ring height
 - lanyard length,
 - harness elongation,
 - shock absorber opening length,
 - body below D-ring
 - body viscosity (soft tissue injuries!)

Minimizing Free Fall Distance or “Vertical Displacement”



Using an anchorage above the D-ring and a standard lanyard may still allow an employee to fall a distance that may be difficult to rescue from. Using a retractable minimizes forces on the body, and may make rescue easier (and therefore more timely)

All distances are approximate, and shown for illustration only. This is why it is critical to maintain the safety factor distance!

Personal Fall Arrest Systems

- Anchorage
- Body
- Connector



Lanyards



Harnesses



Beam Wraps



Caribiners



Rope Grabs



Positioning

Anchorage

- Must support 5000# per employee attached,
 - Or as part of a complete personal fall arrest system which maintains a safety factor of at least two
 - Or 3000# when using fall restraint or a Self-Retracting Lifeline (SRL, Retractable, or "yo-yo") which limits free fall distance to 2 feet
- Should always be at or above D-ring height

Horizontal Life Lines



- Provide maneuverability.
- Must be designed, installed and used under the guidance of a qualified person
 - This could be interpreted as requiring the use of manufactured systems, which is *recommended*



Safe Climb Devices



Body (Harnesses)

- Need to be inspected frequently (daily before use by the worker, at least monthly by a Competent Person)
- Should never be modified
- Should be taken out of service immediately if defective or exposed to an impact

Harness Fitting

Chest strap tightened
at mid chest

Proper snugness
shoulder to hips

Leg straps snug but
not binding



“D” ring between
shoulder blades

Butt strap
supports the load



- Harness must be sized for the worker

Connectors (Lanyards)

- Inspect before each use
- Not tied back to themselves (unless specifically designed for such use)
- Worn with the impact absorber/shock pack at the d-ring
- Have the appropriate clip for the intended anchorage points

Retractable Lifelines



- Very effective for vertical applications.
- Will normally lock up in 1 –2 feet, minimizing total fall distance and impact forces on the worker's body



Positioning Systems

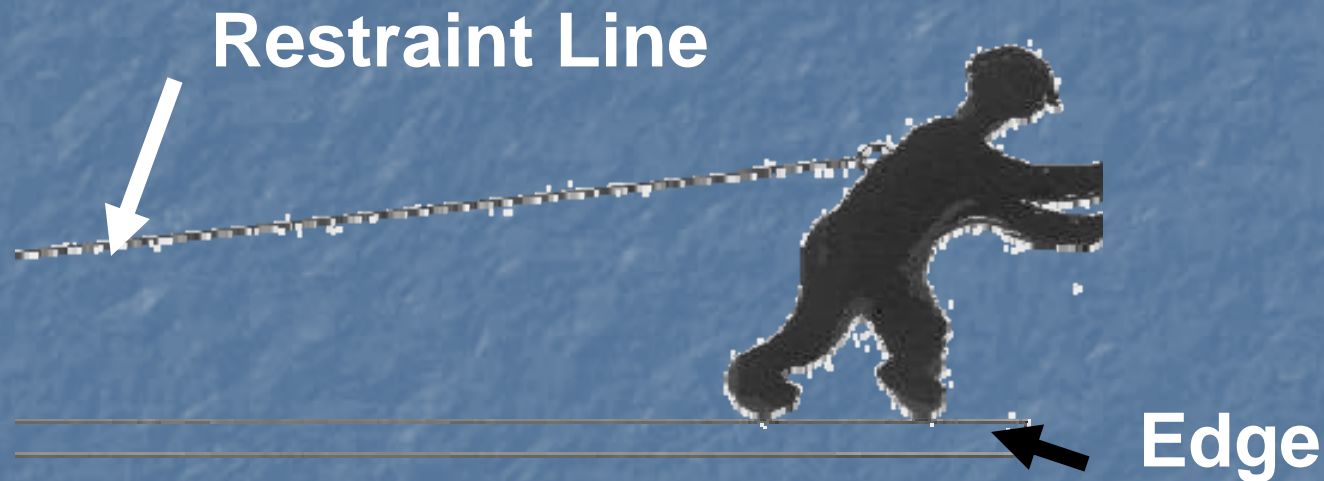
- Positioning Devices Provide Hands-free Work
 - Additional Fall Protection (tie-off) may be required to move or access



Restraint Devices

- Provide Access but Prevent the Fall
- Limit anchorage requirement to 3000#
- May be more suitable for loading areas, scaffold erection and dismantling
- Should be installed and used under the supervision of a Competent Person

Fall Restraint



- Fall restraint assumes the employee cannot reach the edge.
- He is basically on a short leash.
- If the employee could reach to the edge and fall over the edge, he must be in fall arrest.

Planning For Rescue

Worst-case
Scenario?



Training

- The nature of hazards
- Appropriate systems and use
- Limitations
- Evaluate the site
- Re-training
- Documentation/Certification?

Site Specific



Planning for Fall Protection

- Best practice dictates that fall protection becomes an integral part of the project planning process, from constructability, to systems installation, to use and maintenance
- A project cannot be truly safe unless fall protection is incorporated into every phase of the process
- Planning will keep workers safe and minimize liability for all parties involved

END