How to Apply the Latest Developments in Fall Protection to your Site

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Latest Developments

- OSHA status
- Z359 Standards Development
- New Snaphook requirements
- Hazard Surveys
- Matrix Hazard Analysis
- OSHA Alliance: Skylights, Aerial Lifts, Parapets, Roof Hatches, , Truck Loading, Fixed Ladder Swing Gates
- Case Histories
- Q&A

OSHA General Industry Fall Protection: 1910.23-27 rev.

- Revised Proposal published 5 24 10
- Update of 4 10 90 proposal
- Affects 112 million Americans
- Comment Period till 8 23 10
- Hearings in DC to follow

Z359 Fall Protection

The standard to go by:

Existing Stds: Fed OSHA		ANSI GI	ANSI Con.	Best Practice
Construction	1926.500/3 1926.760		A10.32-2004	***YOUR CHOICE***
General Ind.	1910.23 1910.66	Z359-2007		

A10.32 plans to adopt the Z359 product standards for construction

Z359-2007

- Equipment component standards* and
- Practice standards: Z359.2 Managed FP
- Currently: Z359.0; Z359.1; Z359.2; Z359.3*; Z359.4*; Z359.6; Z359.12*; Z359.13*

Z359.1 to become Z359.0 & Z359.2 – Z359.18; Z359.1 is to be retired in two years

Currently Z359-2007 (2009)

- Z359.0- Definitions
- Z359.2 Managed FP Program
- Z359.3 Positioning and Travel Restraint
- Z359.4 Assisted-Rescue and Self-Rescue
- Z359.6 Specs & Design Req. Active FPS
- Z359.12 Connecting Components
- Z359.13 Lanyards and Energy Absorbers

18 Z359 standards on FP coming

Z359 Fall Protection Management New Positions:

- Competent Person: Safety/Foreman/Supt
- Qualified Person: Mech or Structural Engr
- Authorized Person: Trained worker

- Competent Rescuer: In-house Rescue Ldr
- Authorized Rescuer: Trained Rescuer

- Program Adminstrator: Leads/Audits FP

Snaphook gate strength: What's New OSHA/Z359?

3600 lbs gate Z359.1-2007

OSHA: 10 13 09 5(a)(1) Interpretation: will apply Z359-2007 standard

Summary: No more pre-2007 snaphooks (220 lbs gate) allowed, must meet Z359.1-2007 Sec. 3.2.1.4

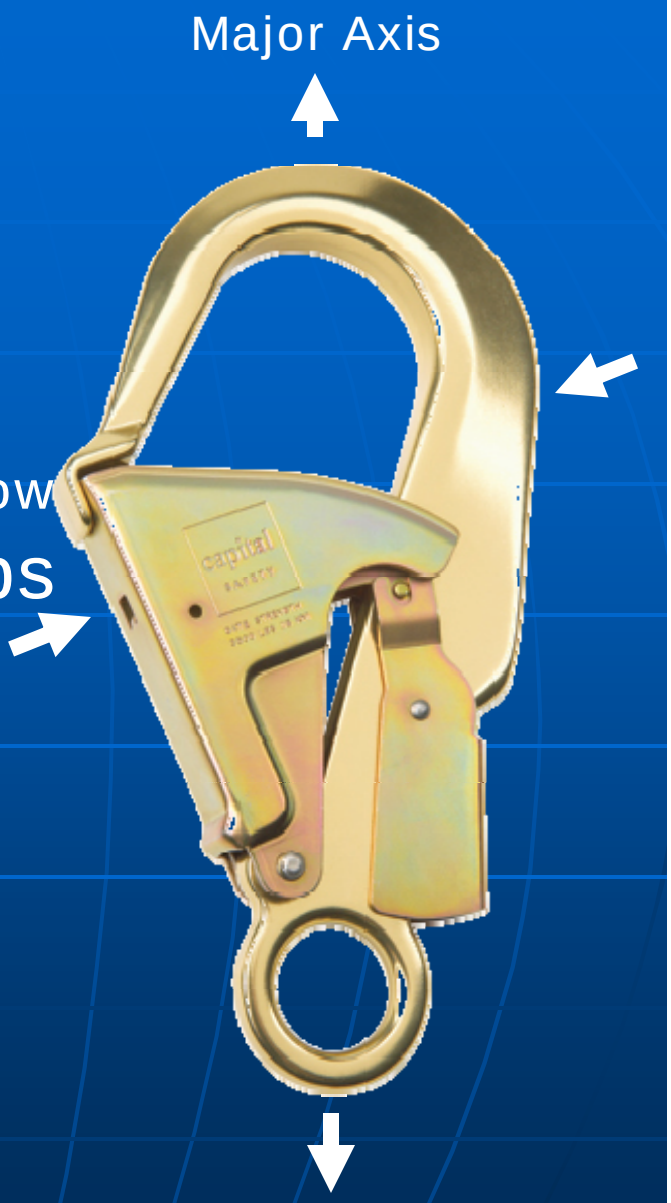
What's Important in rev. Z359.1-2007?

1. Snaphook gate strength

Inwards Now 3600 lbs

2. Y-lanyards 5000 lbs

3. Z359.2 is minimum requirements for a Comprehensive Managed Fall Protection Program and has the elements of:
   - Fall protection planning
   - Hazard surveys
   - Minimum training req.
   - Hierarchy of controls



Relentless Search for Hazards

- Apply Fall Prot'n Hierarchy of Controls*:
  - Elimination (Structural, Pre-plan, Sequence)
  - Guarding (Railings, PFAS, Restraint)
  - Safety Factor
  - Redundancy

- Use multiple solutions to avoid missing or excusing hazards eg electrical and falls

*Hierarchy now includes collapse

Training of Authorized Persons

- Teach to spot hazards in the work:huddle
- Be Aware of workplace methods even OSHA OK
- Test for proficiency
- Pre-Plan: All proper equipment in place

Contractors fall under Contract Safety (owners name your Trigger Height) and Premises Law but you must still inspect lower tier

Matrix: A Tool to recognize ALL Worksite Hazards

Recognized Hazard / Solutions	Eliminate		Guard		Safety Factor		Redundancy		Reliability
	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	Admin
Envirom'l									
Structural / Mechanical									
Electrical									
Chemical									
RadiantEnergy									
Biological									
Artificial Intelligence									

David MacCollum: Construction Safety Engineering Principles, 2007

Skylight and TV personality death called a freak accident

Closer view

MythBusters: **Erik Gates**, dec'd 12 20 09
USA: 22 in 2008; 36 in 2007
Check NIOSH Hazard Alerts (2)

1. Use Tool to recognize Skylight Fall Hazards

Recognized Hazard / Solutions	Eliminate		Guard		Safety Factor		Redundancy		Reliability
	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	Admin
Gravity	Fall	Remove sky light option	Fall	Screen or curb at 42"	Stand on and Fall Through	Strongr skylight	Fall	Guardrail & cover	Planning & surveys
Structural / Mechanical *	Collapse	Cover	Collapse	Burglar bars	collapse	Test for 97% male wt	Fall Through	Screen & bars	Inspect: Strength report
Radiant Energy	UV Degrad'n	Screen for 20 yrs life	Crazing and cracking	screen	leaks	Test for 20 yrs	Exposure to replace	Use change-out tool	Test Miami Dade 5 yrs
*Attractive nuisance	Sit on edge & lean 20's	Screen	Bounce* by teens	Guard rail	stand	screen	Two falls	both	Add warnings

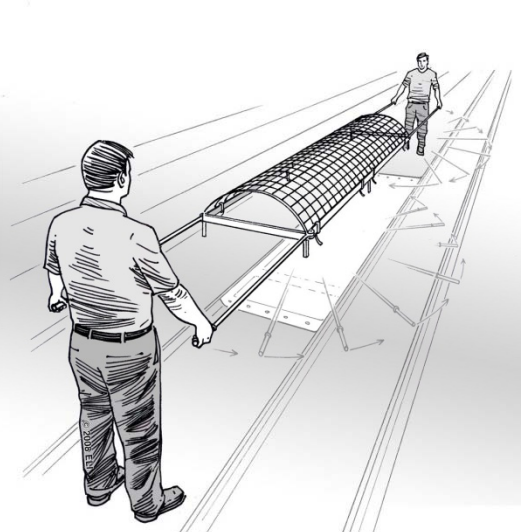
David MacCollum: Construction Safety Engineering Principles, 2007

Skylight Hazard Solutions

Light transmitting panels

Dome skylights

Proposed 267 lbs drop of wedge shape sandbag through 36”
(ASTM E06.51.25 science)



Reduce Exposure

Aerial Lift Dangers

Engineering Reports:
NIOSH, Chris Pan,
Fall Arrest tests using railings and anchors

A92 Aerial Work
Best Practices 2 10
SIA, Kansas City MO

Aerial Lifts: Matrix Hazard Analysis

- Fall hazards focus
- Consider failures by category
- List in each square the hazard/solution
- Add as many boxes to address hazards

2. Use Tool to recognize Aerial Lift Fall Hazards

Recognized Hazard / Solutions	Eliminate		Guard		Safety Factor		Redundancy		Reliability
	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	List Hazard	Safety Sol'n	Admin PrePlan
Gravity	Fall out while reaching	Restrain	Fall while step up on midrail	Screen up to 42"	Fall while transfer	Wishbone connect, follow procedure	Fall hazard and rescue	Guardrail & PFAS, training	Train to stay if rocking
Structural / Mechanical	Collapse due to bearing failure	Regular maintain check the certs	Ejection: Auto impact at base	PFAS and self-rescue	Collapse boom or tip over	Check outrigrs fully out & PFAS	Bucket inverts	Restraint and PFAS & rescue method	Inspect Strength report
,,	Lean on controls near ceiling	Lock-out & design of controls	Duck under rail: head injury	Use swing gate access	Lift does not respond to controls	Bleed hydraulics and/or descent device	Anchor Pt too low in bucket	Anchor Pt on bucket at 5 ft and or boom	Train: instrns for proper use
,,	Walk mast	Prevent access	Tip over	Outriggers	Stalls w/ load & angle	Higher capacity lift	Tip over	Guard and PFAS	Add alarm & warnings
Biological	Attack by bees	Remote distance tools	Attack by bees	PFAS Control Descent	Descent not fast enough	Increase descent speed	Attack by bees	Add suit and headgear	
Electrical	Touch power line	Keep 10' distance per OSHA & alarm	Touch while on ground	Training stay away or jump	Conduct'n	Use insulatd remote tools	Other hazards	Increase insulated equip't tools	

David MacCollum: Construction Safety Engineering Principles, 2007

BLS.gov 2010

- Falls 827 (2006) (700 in 2008)
- Fall, unspecified 19, 12
- Fall to lower level 738, 593
- Fall to lower level, unspecified 12, 10
- Fall down stairs or steps 21, 26
- Fall from floor, dock, or ground level 52, 43

BLS .....

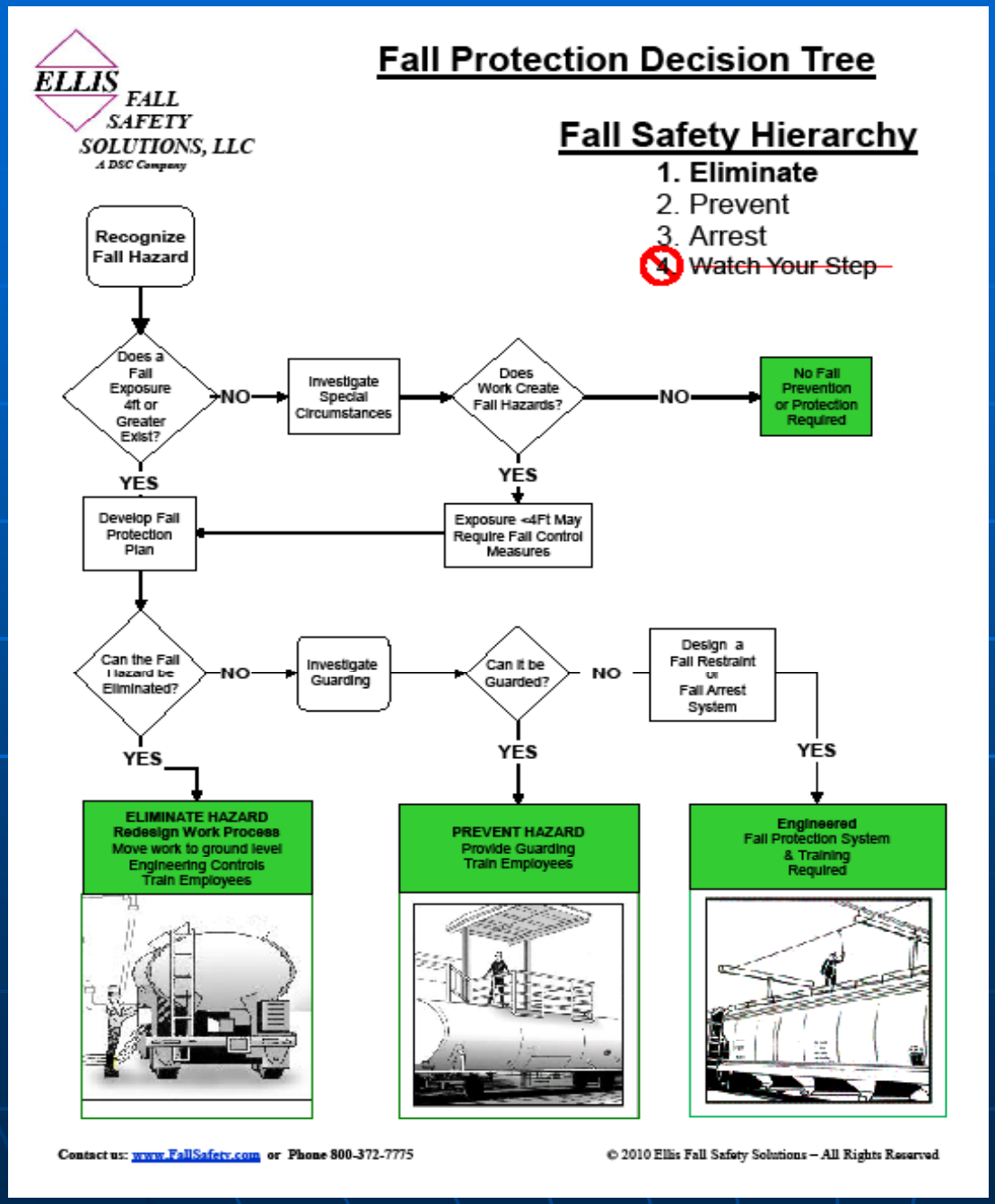
- Fall through existing floor open'g 27,19
- Fall through floor surface 7, 3
- Fall from loading dock 3, 4
- Fall ground level to lower level 8, 12
- Fall from floor, dock, or ground level, n.e.c. 7, 4
- Fall from ladder 132 (18%), 119
- Fall from piled or stacked material 3
- Fall from roof 185 (25%), 123

BLS .....

- Fall from roof, unspecified 30, 18
- Fall through existing roof opening 13, 8
- Fall through roof surface 15, 19
- Fall through skylight 37 (5%), 22
- Fall from roof edge 83, 50
- Fall from roof, n.e.c. 7, 6
- Fall from scaffold, staging 91 (12%),68
- Fall from building girders or other structural steel 33 (4%), 38

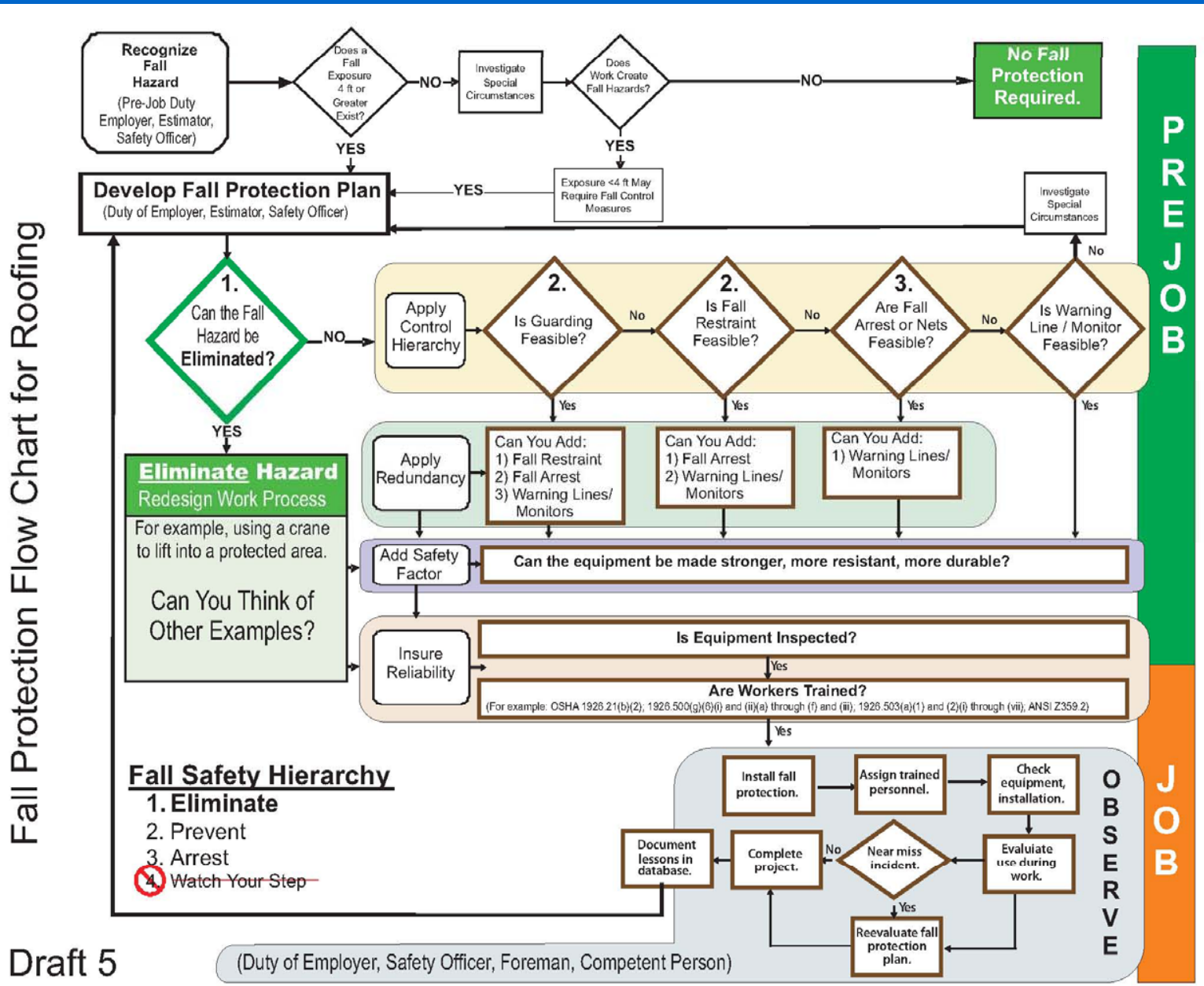
BLS .....

- Fall from non-moving vehicle 77 (10%), 89
- Fall to lower level, n.e.c. 132, 76
- Fall on same level 67, 92
- Fall on same level, unspecified 3, 3
- Jump to lower level n/a, 3
- Fall to floor/walkway, other surface 52, 73
- Fall onto or against objects 11, 14



Show top mgmt the choices and place $ cost and Hazard Range next to each method

Show your FP Committee how to develop FP Plan



Parapets

- OSHA Roundtable – Summary

  Check www.cdc.gov/niosh

"It is time for 42" Roof Edge Parapets to be included in the IBC Building Code" (JNE)

Roof Hatches

- OSHA Roundtable - Summary

CONSTRUCTION WORKPLACE DESIGN SOLUTION
Roof Hatch Access and Hole Protection
HAZARD: FALLS

www.cdc.gov/niosh

Danger! Access and Climb

Access with greater security

Case History 1

Screen all skylights now!

105 lbs female roofer journeyman in Minneapolis pulling a load, tripped and fell back through this skylight in 2006 collided with ductwork, landed on her feet, survived after 105 screws placed in her right foot and ankle, and four back fractures. No job yet after nearly five years.

Acceptance of New or Renovated Facility

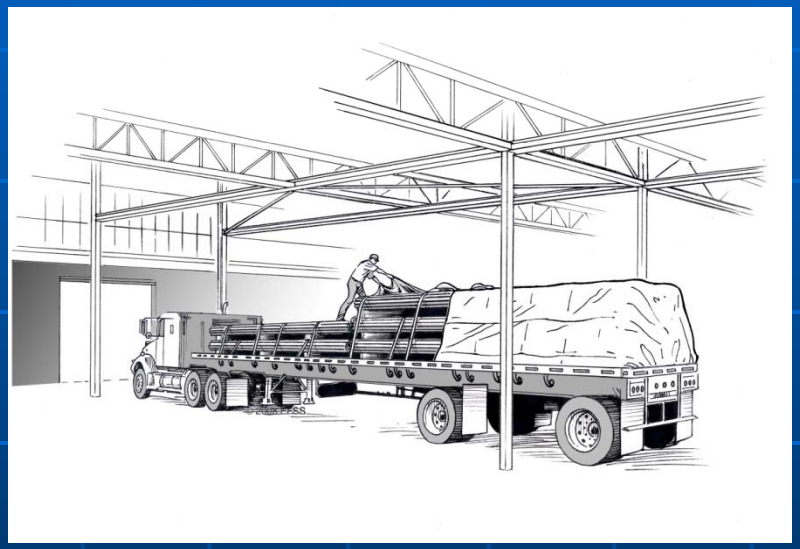
- Never accept exposed Skylight(s)
- Never accept exposed edges
- Never accept unprotected roof hatches
- Never accept any recognized hazards
- **Always** have contractor correct defects

Learn about the magic words:
"**Designer's Intent**"

Provide fall prot'n tarping stations now!

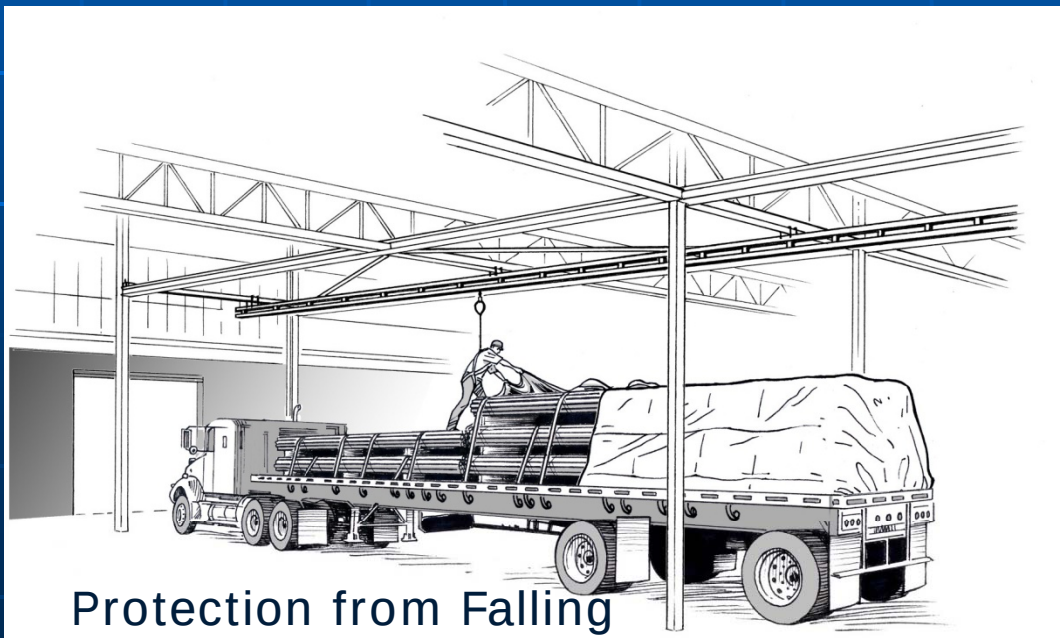
Case History 2

- Falling off truck while tarping IL



No Protection from Falling off pipe load

Independent truck driver visited 3x each week – got foot caught in top of octagonal pipe bundle – fell on head



Protection from Falling using engineered system

FP Engineering

- Structural engineering is required to determine the capacity of roofs and beams for adding fall protection
- New structures: Fall hazards for the life of the structure are generated on the drawing board (50% fatalities est)
- Design Team needs bold safety member
- Fall Protection needs as-built drawings
- Responsibilty for maintenance assigned

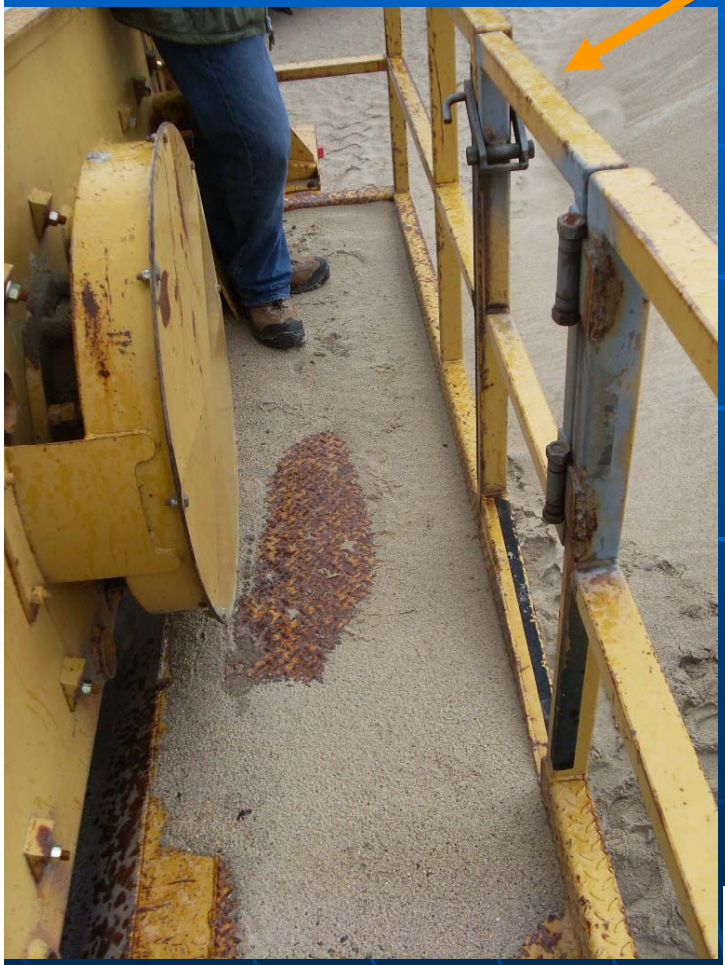
Swing Gate on all ladder platforms now

Case History 3

- Falling out of opening on equipment RI
- Changing filter 35 lbs 5’x6’
- Fell through ladder access opening

MSHA standards

Catwalk: Add swing gate guard



Recognize hazard of work near access opening

Install or specify safety gate

Inspection, Maintenance & Training in Fall Protection

- Survey what are the traditional methods
  - Outside eyes help you find what is missed
  - Fixed ladder devices need to pass 8 UK tests
- What are the more protective methods?
  - Are OSHA residential rules out of date?
- What is site-specific fall protection?
  - What is different at this site? Snaphook gate
- What permanent FP requires insp'n/maint
  - eg loading rack spring settings, cable tension

Summary

- When to apply Fall Protection? use 5(a)(1/2)
  - Comment on OSHA FP proposals by 8 23 10
- How to apply new tools: follow Z359 new stds
- Fall Program Administrator: people, time/resources $ to implement: new!
- PrePlan for design and operations: push!
- Switch to Z359-2007 compliant equipment without delay esp. snaphooks
- Use grid system to find hazards it's great!
- Look at BLS statistics for your industry

Q & A

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Check www.FallSafety.com for this presentation in the next two weeks