

METAL BUILDING DEVELOPER

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Stunning Stadiums

This summer's World Cup in South Africa will be played in some of the most complex metal buildings in the world, including Cape Town's Green Point Stadium.

- Fall Protection Saves Lives
- Government Projects come with Risks

Roofing Fall Protection

Planning, training and awareness saves lives

By Ken Lane



Safeguarding Employees with Comprehensive Roofing Fall Protection

Recent alarming statistics from the Occupational Safety and Health Administration underscore the urgent need for employers with personnel who work at heights, especially on or near roofs, to provide comprehensive fall protection.

More than 100,000 fall-related incidents are reported annually and rank number one in construction industry fatalities. In the roofing industry, falls are due to loss of balance, footing or grip, and occur at four high-risk locations including: from roof edges, through roof openings or skylights, through roof decks and from ladders. Many falls that result in death or serious injury are from distances less than 20 feet (6 m) and happen when fall protection is either not used at all or is not connected to an anchorage point. In the majority of the cases, the proper use of fall protection would have prevented the injury or fatality. Fall protection citations placed second on OSHA's 2009 list of the ten most cited violations. A survey of recent cases highlights the urgency of the problem. OSHA's 2010 fatality reports include a Mississippi worker who, while removing an antenna from a hangar roof, stepped off a beam and fell to his death, and a worker in Puerto Rico who died after falling through a deteriorated aluminum metal roof.

In one of many 2009 fall protection cases, OSHA proposed over \$113,000 in fines for a Connecticut roofing contractor after an employee fell 24 feet (7 m) from a roof, sustaining serious injuries. OSHA's inspection found that the employer not only failed to supply fall protection but allowed an aluminum ladder to be placed against the roof's edge in an unstable manner and only 14 inches (356 mm) from a power line. "This case is a graphic example of what can happen when basic common sense and legally required safeguards are ignored," said C. William Freeman III, OSHA's Hartford area director.

Adherence to OSHA Standards Reduces Construction Fall Hazards

The OSHA Standards for Construction requires fall protection at 6 feet (2 m) or above for residential construction and roofing work, but allows for alternatives to conventional fall protection in certain circumstances as outlined by the OSHA Standards for the Construction Industry, Subpart M Fall Protection, including warning lines, safety monitoring by a competent person, controlled access zones, guardrails, safety nets and personal arrest fall systems. Important guidelines to consider include:

- Warning lines (ropes, wires or chains, and stanchions) erected around all sides of a roof and identified with high-visibility flags not more than 6 feet apart define an area where roofing work can be done without conventional fall protection.
- A safety monitoring system, defined as a competent person warning employees working near edges, is permitted on low-slope roofs if the competent person is capable of watching and warning workers, operating on the same surface, close enough to communicate orally, and not distracted performing other work.
- A Controlled Access Zone, where work can be performed without fall protection, limits access to authorized workers, is defined by control lines/barriers/markers, must be flagged every 6 feet, and must extend the full length of the unprotected edge.
- Options for low-slope roofs (slope less than 4:12) include guardrails, safety nets and/or personal arrest fall systems.
- Steep roofs (slope greater than 4:12) generally require slide guards or guardrails for slope between 4:12 and 8:12 and conventional fall protection for slope greater than 8:12.

NIOSH Provides Guidelines to Prevent Falls Through Roof Openings

Recent investigations from the National Institute for Occupational Safety and Health suggest that many fatal falls involved work near skylights and other types of roof openings. NIOSH urges that all employers and workers strictly adhere to the applicable OSHA regulations, using the following guidelines:

- Railings or screens guarding all skylights and other openings in roofs must be installed before roofing work begins and remain in place until construction is completed.
- Where conventional protective devices such as guardrails or safety harnesses with lanyards may not be practical, employers must provide alternative forms of fall protection, such as fixed covers, catch platforms or safety nets. Safety nets provide passive protection, offering less dependence on workers to recognize the hazard and take appropriate protective action.
- Employers should ensure that employees working near roof openings or skylights are adequately trained to recognize the serious hazard of falls through roof openings and the danger of sitting or stepping on skylights.
- In order to eliminate or significantly reduce construction worksite falls as well as maintain compliance with OSHA requirements and guidelines, it's clear that employers need to implement strong fall protection programs.

Roofing Fall Protection Starts with Careful Planning

Effective roofing fall protection involves careful planning to ensure that all potential hazards are analyzed, eliminated or addressed through application of the appropriate systems. OSHA

mandates that fall protection planning be developed by a qualified person who has acquired fall protection knowledge through education or extensive training. An effective process for successful fall protection planning could include:

- Hazard analysis to determine areas of risk for falling.
- Elimination of hazards where possible.
- Roofing fall prevention systems such as safety nets, controlled access zones, warning lines, and appropriate fall arrest equipment and/or anchorages as needed.
- Inspection and maintenance of fall protection equipment.
- Training for all employees on identifying fall hazards, taking appropriate action to protect themselves, using safe work practices, use of fall protection equipment, understanding fall rescue plans and understanding the requirements of their company's fall protection plan.
- A complete fall protection plan should include delegation of ongoing responsibilities to a fall protection competent person to oversee inspection, record keeping, equipment maintenance and replacement, incident reporting, enforcement, accident investigation, training and changes to the plan.

A Competent Person is a Key Component of Roofing Fall Protection

The OSHA Standards outline the need for an onsite fall protection competent person who has the knowledge and experience needed to identify fall hazards, has the authority to eliminate fall hazards and has the authority to stop work if unsafe conditions exist. The fall protection competent person must be fully trained and qualified to:

- Identify and evaluate fall hazards in the work area.
- The correct procedures for erecting, maintaining, disassembling, inspecting and operating the required fall protection systems.
- Assess workers' use of the fall protection system.
- The correct procedures for handling and storage of equipment and material.
- The limitations on the use of mechanical equipment during work on low-sloped roofs.
- The role of employees in the safety monitoring system and the fall protection plan.
- Conducting safety inspections of the fall protection system.
- Take prompt corrective action when necessary.

A well qualified fall protection competent person plays a crucial role in substantially reducing work site hazards and eliminating the risks of falling from or through a roof.

Hands-on Training is Essential to Prevent Falls

Employers must provide hands-on training to every employee who might be exposed to fall hazards related to roofing. The training should enable employees to recognize the hazards and instruct them on the procedures for each type of fall protection. Employers must develop a fall protection rescue plan and train employees on how to effectively rescue an employee that has engaged the fall protection system. Re-training is required when an employee does not have a clear understanding of the requirements and procedures, or when there are changes at the construction site or in the types of roofing fall protection systems or equipment. The train-



ing must be certified in writing and must be kept on record.

Employers who focus on roofing fall protection planning, employee training and awareness, and ongoing worksite monitoring can not only ensure their compliance with OSHA standards, but, more importantly, greatly reduce the falling hazards associated with roofing, and ultimately, save lives. **MBD**

Ken Lane, instructor at Northern California's OSHA Training Center near San Francisco, has more than 30 years of safety training experience including responsibilities as a construction manager at Lawrence Livermore National Laboratory. For more information, visit www.OSHA4you.com or email OTC@clpccd.org.

Go to www.osha4you.com/fallprotection.html for fall protection checklists and additional resources.



by Justin Doak

Green Shopping

LEED Retail is set for official launch

After years in the development and pilot phases, LEED Retail has been approved and the USGBC is set for its official launch.

When it goes live, all retailers attempting LEED certification will be required to build according to this new system. Understanding USGBC's forthcoming retail system will be critical to any retailers, architects, general contractors and developers that are evaluating the appropriate green building benchmark for their portfolio-wide green building efforts. This article will answer some basic questions on how the program will work and help you decide if LEED Retail is the right program for your project.

LEED vs. LEED Retail

"LEED originally grew out of the need for a clear definition of what constitutes a 'green building' through a consensus-based standard," said Lisa Russell, Austin, Texas-based Ecoxera co-founder and LEED Retail core committee member that helped shape the LEED Retail system. "LEED Retail went one step farther to answer the need for a green building benchmark that recognizes the unique nature of retail environments and operations."

The USGBC collaborated with 80 retail pilot projects for several years to develop three new rating systems: LEED Retail New Construction (NC), Commercial Interiors (CI), and LEED Retail Existing Building Operations & Maintenance (EBO&M). In some instances, achieving certification under LEED Retail will be easier than under the traditional predecessor for retailers because of special considerations such as new energy and refrigerant requirements for restaurant projects.

LEED Retail—NC, CI, EBO&M

Wondering which LEED Retail standard is appropriate for your project? Generally, if the store is a stand-alone and you are responsible for curb-in planning and development, then LEED

Retail NC is the system to register under. If the project is a tenant space within a mall, shopping or lifestyle center with little to no control over the site, then LEED Retail CI is the appropriate system to register and certify under. Some retailers choose to certify under both to evaluate which is most appropriate for their retailing footprint. Developers who have major control of design and construction of the core and base building can still use LEED Core and Shell. For existing projects involving major renovation of HVAC systems, envelope systems or interior rehabilitation, LEED Retail NC should be used. If an existing project scope involves more operations and maintenance activities than D&C, then LEED Retail EBO&M, which will be launched after NC and CI, should be used.

LEED Retail Portfolio Program

Cost and scalability will be the main hurdles to market saturation of LEED Retail. Currently, there is no streamlined process for a retailer that wishes to build and LEED certify several stores with one prototype or set of specifications. Multi-site certification, when tackled one store at a time, becomes time-consuming and cost-prohibitive for short-staffed and over-budget store planning departments. LEED Retail's Portfolio Program—a new approach that streamlines the documentation process and reduces the overall cost—would solve this challenge, but has been in development for years and will likely not launch in tandem with LEED Retail.

LEED Retail Minus the Certification

We can learn some lessons from the actions of the few retailers that have and continue to use LEED, including: Best Buy, Starbucks, Bank of America, REI, Aveda, Chipotle, Whole Foods, Home Depot and many others. These retailers have successfully certified at least one store with the USGBC. Some continue to certify new locations across their portfolio, but many certify a single store, modify their prototype to meet the LEED standards, and continue to design and build according to the LEED standards without moving through documentation unless a city requires it for

entitlement or certification. This has been an affordable solution for many retailers who wish to build green, but can't spend the time or money to achieve LEED certification.

LEED Retail vs. Upcoming Code-Ready Standards

Even though LEED was designed to be a voluntary standard, it has and will continue to be adopted as mandatory code in cities across the U.S. that building design must adhere to for permitting and approval. Several new green building standards are coming onto the market—Standard 189.1, CalGreen and IGCC—that are code-ready for adoption by local municipalities. Members from the USGBC have collaborated with the previously named standard development committees and it is likely that some of the credits will be similar, or based upon the same systems, such as BREAM, ASHRAE, IESNA, etc.

Which standard municipalities settle on will dictate which platform retailers will choose as their preferred benchmark. If there are variances in municipal green building expectations, the challenge for retailers will be to build inherent flexibility into store planning and development. That being said, building to the LEED Retail standard now will help you prepare for upcoming legislation and find out which of its green building prescriptions works for your unique operations and provides the greatest performance and financial returns. **MBD**

Justin Doak is a recognized thought leader in bringing sustainability to the retail environment. Many know Doak from his work at the U.S. Green Building Council where he managed the technical development of LEED Retail New Construction and LEED Retail Commercial Interiors green building platforms due for market launch this year. Today, as the founder and CEO of Ecoxera, Austin, Texas, Doak works closely with retail industry leaders and major associations to grow brand and bottom-line through the implementation of strategic sustainability initiatives for developers, retailers, quick service restaurants, manufacturers and hoteliers.