



Safe and

Green

WORKER SAFETY IS AN IMPORTANT CONSIDERATION ON GREEN PROJECTS

BY T.J. LENTZ, PAUL MOORE, HANK CIERPICH, ROBERT HARRISON, LAURA STYLES AND JAMES ROGGE

WITH INCREASING EMPHASIS on sustainable energy and the introduction of green designs and technologies, the demand for more workers in green jobs is expected to rise. In a sagging economy, these are exciting signals that tie the promise of recovery to innovation, green design and sustainable development.

Consistent with this trend, metal roofs and roofing components are being combined with solar photovoltaic panels to provide sustainable energy and create functional, high-performing, aesthetically pleasing buildings. These types of qualities are being utilized more commonly in facilities striving to achieve green goals and receive applicable recognition from programs such as the Washington, D.C.-based U.S. Green Building Council's LEED certification.

What may not be obvious from the aesthetically pleasing finished building are the efforts required to construct, install and maintain the roofing structure. Those efforts generally belong to construction workers and facility maintenance engineers who are

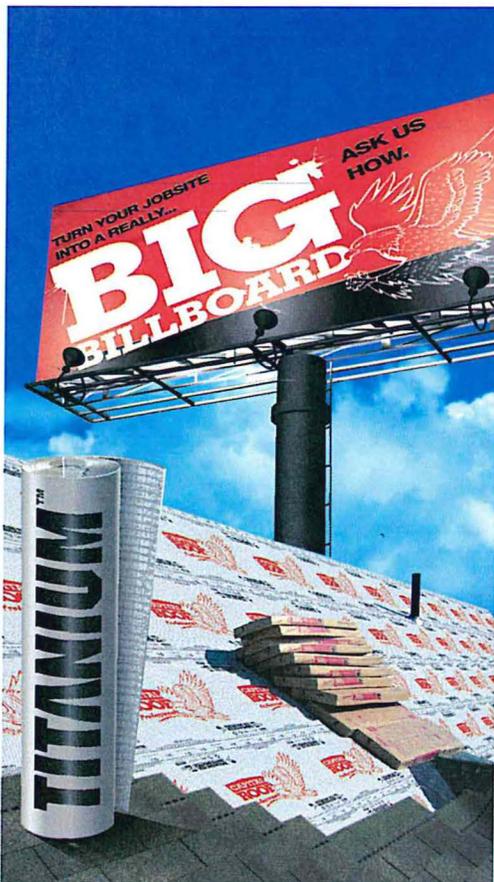
exposed to a variety of potential hazards. Most of those hazards potentially can be addressed with appropriate planning, awareness and attention. Considerations for any green design, including metal roofing and solar panel installation, always should include a plan for worker safety, health and hazard control.

POTENTIAL HAZARDS

Without question, the primary hazard for workers installing and maintaining roofs and solar panels is the threat of falls from heights. According to the Washington, D.C.-based Bureau of Labor Statistics, falls are the leading cause of fatal injuries and the second most common cause of non-fatal injuries in construction. Working at heights—whether on a roof or from a scaffold, aerial lift, crane or ladder—is hazardous. Fall hazards are exacerbated when crew members are in a rush to complete the job, lack adequate safety training, are not using the appropriate protective equipment or have limited workspace.



CONSIDERATIONS FOR ANY GREEN DESIGN, INCLUDING METAL ROOFING AND SOLAR PANEL INSTALLATION, ALWAYS SHOULD INCLUDE A PLAN FOR WORKER SAFETY, HEALTH AND HAZARD CONTROL.



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With the push for green designs and the use of more environmentally friendly materials and renewable energy systems, other potential hazards can include exposure to unsafe working conditions during the installation of solar panels. Working on or near skylights also has been recognized as an ac-

tivity with potential fall hazards, with structures or materials that are unable to support workers who have fallen onto them.

The National Institute for Occupational Safety and Health's Fatality Assessment and Control Evaluation (FACE) program describes the fatal consequences of such falls.

ONE OF THE BEST WAYS TO PREVENT AND CONTROL OCCUPATIONAL INJURIES, ILLNESSES AND FATALITIES IS TO MINIMIZE HAZARDS AND RISKS EARLY IN THE DESIGN PROCESS.

NIOSH has two related initiatives that are designed to address the safety and health challenges for these workers.

PREVENTION THROUGH DESIGN

Hazard prevention starts with planning. With any project, this is the stage at which safety and health issues can be addressed most efficiently. Consequently, NIOSH and its partners have created Prevention through Design, which is a national initiative to prevent or reduce



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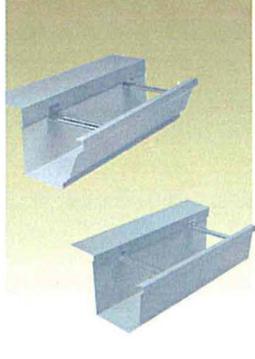
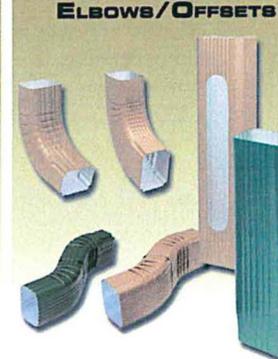
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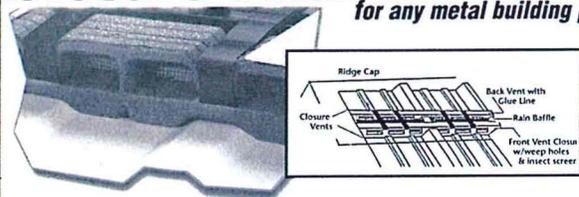
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occupational injuries, illnesses and fatalities by including prevention considerations into all designs that impact workers.

One of the best ways to prevent and control occupational injuries, illnesses and fatalities is to minimize hazards and risks early in the design process. Possible applications of this approach for metal roofing and solar panel installation could be achieved through better coordination between manufacturers, facility designers, building owners, roofers and construction engineers to:

- Determine the best designs for addressing fall hazards.
- Provide barriers or adequate anchor points for fall protection.
- Design skylights to provide greater strength and durability, or utilize metal coverings to prevent falls through them.
- Limit exposures to hazardous energy sources during installation and maintenance of solar panels.

Many examples of design solutions for challenges such as these exist and many more remain to be identified. PtD aims to promote this concept and encourage its application in all industries, highlighting its importance in all business decisions.

MAKING GREEN JOBS SAFE

The American Recovery and Reinvestment Act of 2009 makes new investments to create jobs in industries such as energy, utilities, construction and manufacturing. The metal roofing and solar industries are likely to be impacted by these investments; the aforementioned qualities make them well-suited for green designs and sustainable buildings.

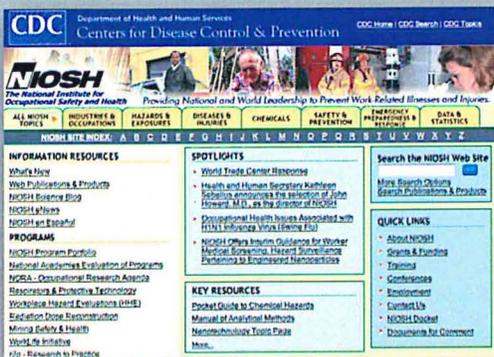
Many other examples of green technologies exist. Recognizing that, the NIOSH Making Green Jobs Safe initiative promotes the incorporation of occupational safety and health considerations into green and sustainability efforts. Making Green Jobs Safe will be explored at a NIOSH workshop, Dec. 14-16 in Washington, and will include invited participants and other interested groups. The focus will be on identifying potential hazards and training needs associated with green jobs, applying what we do know from other similar jobs and their hazards, and recognizing new areas that are not well studied and other research and solutions are required.



At the heart of the effort to make green jobs safe is the premise that for the product of work to be truly sustainable, the health and safety of workers must also be sustainable. Sustainability must include worker safety and ultimately, green jobs must be safe jobs. 

T.J. Lentz and Paul Moore are research scientists with NIOSH. Hank Cierpich is a research scientist with the Public Health Institute, Oakland, Calif. Robert Harrison is a research scientist with the California Department of Public Health, Sacramento, Calif. Laura Styles is a research scientist with the Public Health Institute and James Rogge is a public health consultant in Richmond, Calif.

NIOSH



The screenshot shows the NIOSH website interface. At the top, it features the CDC logo and the text 'Department of Health and Human Services Centers for Disease Control & Prevention'. Below this is the NIOSH logo and the tagline 'The National Institute for Occupational Safety and Health'. A navigation bar includes categories like 'ALL NIOSH TOPICS', 'INDUSTRIES & OCCUPATIONS', 'HAZARDS & EXPOSURES', 'DISEASES & INJURIES', 'CHEMICALS', 'SAFETY & PREVENTION', 'EMERGENCY PREPAREDNESS & RESPONSE', and 'DATA & STATISTICS'. A search bar is prominently displayed. Below the search bar are sections for 'INFORMATION RESOURCES', 'SPOTLIGHTS', 'KEY RESOURCES', and 'QUICK LINKS'. The 'SPOTLIGHTS' section highlights 'World Trade Center Rehabilitation' and 'Health and Human Regulatory Methods'. The 'KEY RESOURCES' section lists 'Pocket Guide to Chemical Hazards' and 'Manual of Analytical Methods'.

The National Institute for Occupational Safety and Health is the federal agency that conducts research and makes recommendations to prevent work-related injuries, illnesses and deaths. It was created under the Occupational Safety and Health Act of 1970 and is part of the Atlanta-based Centers for Disease Control and Prevention in the Department of Health and Human Services. The findings and conclusions in this article have not been formally reviewed by NIOSH and should not be construed to represent any agency determination or policy.

For more information about a variety of workplace safety and health issues, please refer to the NIOSH Web site, www.cdc.gov/niosh/index.htm. For information about Prevention through Design, visit www.cdc.gov/niosh/topics/PtD/ and to learn more about Making Green Jobs Save, visit www.cdc.gov/niosh/topics/greenjobs/.

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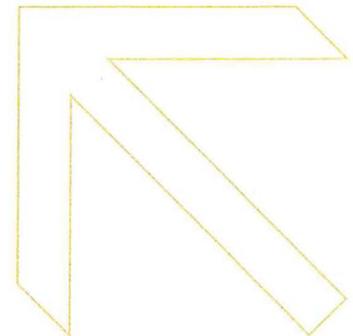
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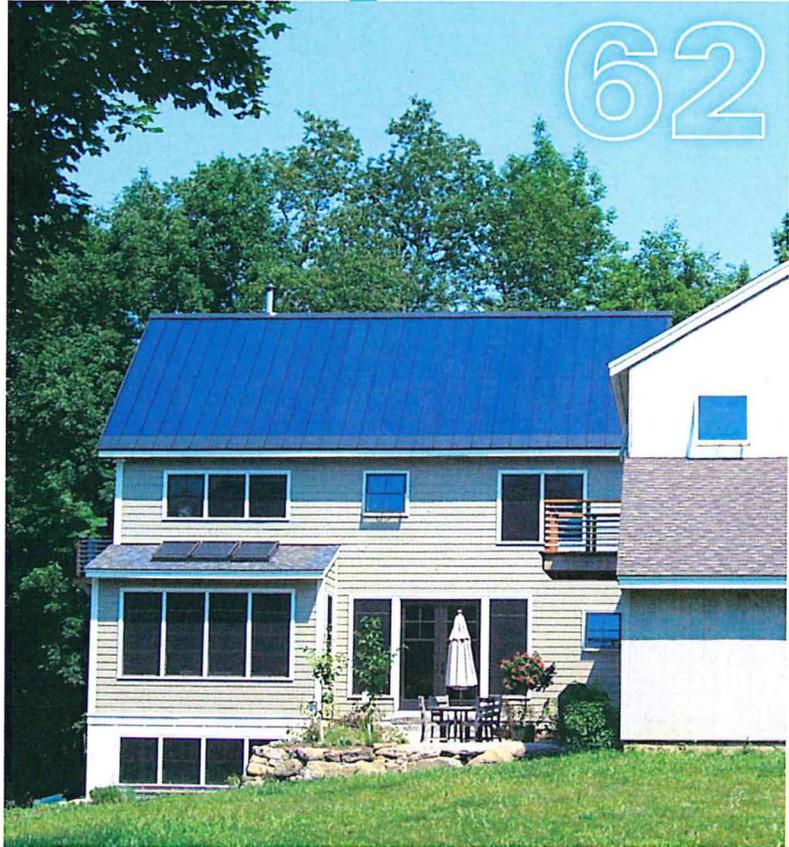
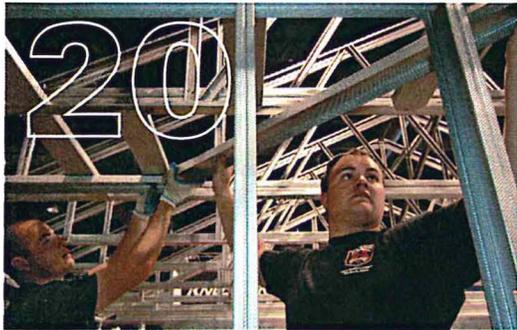
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