

Safety & Health

Public Construction Projects

TONY O'DEA IS VICE PRESIDENT AND DIRECTOR OF CORPORATE SAFETY FOR GILBANE BUILDING COMPANY

In this interview, O'Dea provides an overview of construction safety and health with respect to large-scale public projects and outlines the hazards such projects can present to both workers and the general public.



Tony O'Dea

CPS: Please provide a brief description of your professional background and of your position as vice president and director of corporate safety for Gilbane Building Co.

TO: As vice president and director of corporate safety for Gilbane Building Co., I direct the company's construction safety program.

I also represent Gilbane Building Co. as a member of the Associated General Contractors' (AGC) National Safety Committee, the ANSI A10 Accredited Standards Committee for Construction and Demolition Operations, the National Construction Safety Executives as well as AGC's Safety Committees of Massachusetts and Rhode Island.

CPS: What unique SH&E hazards can large-scale public construction projects pose to workers?

TO: On all new construction projects, the greatest sources of injury and loss of life are from falls, electrocutions, being struck by equipment and caught-in-between hazards. In addition, exposures to the general public are of concern, such as injury or property damage due to falling material or equipment, damage to surrounding existing facilities or residences due to settlement or ground vibration or fires.

When working on large-scale construction projects where construction operations are executed close to building occupants or adjacent

neighbors or businesses, I believe the greatest hazards are from indoor air quality, hazardous materials, particularly from exposure to existing building materials or previously contaminated sites, fire, security breaches, and potential interruptions to existing activities or operations.

CPS: Which large-scale public construction projects typically present the most hazards and why?

TO: With respect to large public projects, I believe K-12 schools require the most attention. Schools should be a safe environment at all times for faculty, staff, students and the community, even while construction is taking place.

Typically, the greatest challenge on a large, active K-12 construction site is the development and implementation of a strategy to separate construction from public and educational activities.

Schools present a unique challenge in that users are primarily children or young adults who do not immediately recognize and comprehend danger, are curious of construction sites and equipment, highly distracted by surroundings and can be disrupted by changing activities, noises and smells.

It should be recognized that the entire site is a point of interaction with the school community. Additionally, many schools function as community centers and host a variety of community events after school hours and on weekends. As a result, many schools typically operate on an almost full-time basis.

The location, emergency accessi-

bility, type and service duration of each barrier system must be reviewed by the school administration and any applicable authority that has jurisdiction (i.e., fire marshals) both before the commencement of construction activities or prior to any modifications after initial installation. Barrier systems and pathways around the construction site must be maintained in all weather to ensure no inadvertent access to the project site occurs by a curious visitor.

Unauthorized or unsupervised access of visitors to the jobsite can have serious safety and progress implications. When site separation is not effective or maintained, opportunities for disruption, worker injury, vandalism or harm are created.

Deliveries of food and supplies and removal of dumpsters are a daily occurrence at all school facilities. Access to loading docks, kitchens and storage areas cannot be inhibited by construction.

Operations that will create noise must be planned and coordinated with administration prior to the start of work. Hammer drilling or jack hammering, the use of low-velocity, powder-actuated tools, installation of mechanical anchors for roofing, power saws and tools, vibration or compaction equipment, general demolition, heavy equipment engines, drywall installation and even workers' lunch and break times can create noise.

Unobstructed and safe access for vehicles, including buses and the vehicles of students, parents, visitors

and faculty, as well as building entrances and pedestrian paths around the school and construction site, present challenges, requiring coordination and communication with school officials, maintenance of roads and clear, well placed signage.

In addition, controlling the danger of fire emergencies in a large public building with children, as well as maintaining safe and efficient evacuation, make working in K-12 schools more of a safety challenge.

An effective school construction safety program supports the mutual goals of all members of the school community.

To address the unique safety challenges of K-12 projects, Gilbane has pulled together an interdisciplinary team of project management and safety professionals from across the country with extensive K-12 experience to develop a safety whitepaper providing detailed analysis of the unique safety challenges of executing K-12 construction and outlining best execution practices for executing these projects incident- and injury-free.

CPS: *What are your recommendations for balancing public safety and worker safety during a large-scale project?*

TO: Safety at the school construction site is not just about protecting students and the general public, but also about protecting the health and safety of construction workers and Gilbane staff. Schools have a unique relationship with those who build them. The work environment is one where workers often are from the community; they are fathers, mothers, uncles or brothers of the students and faculty of the school. All project stakeholders must be aware that an injury to any worker on a school site affects the community deeply.

A rigorous and job-specific project safety plan for construction workers is a must on all projects. A plan that simply says “shall comply with OSHA” is inadequate. A comprehensive Safety plan on K-12 proj-

ects must ensure that the unique safety hazards of working around the schools, as outlined, are mitigated, along with detailed job hazards analysis implemented for each construction bid package to ensure the safety of workers on site. Accidents do not just happen; there are causes, which can be prevented through training, planning and monitoring of activities.

CPS: *Based on your recent experience, have you seen a rise in any particular types of occupational injuries with respect to large-scale projects?*

TO: I am concerned about the increase in soft-tissue injuries among construction workers as we, along with our craft workers, are aging. Construction is physically challenging. Our craft workers work hard to build the facilities that we rely on to educate our children, treat our illnesses, supply our lights, and power and support our commerce. And, as they have worked hard for most of their working career, while gaining their valued experience and skill, that hard work can take its toll in increased soft tissue injuries.

In construction, work tasks, equipment and medical management, as well as our health and wellness programs, must recognize and adapt to support our aging workforce. Gilbane conducts daily stretching exercises with craft workers on its projects and works closely with occupational clinics and its contractors to ensure that workers receive the best medical care and, consistent with physician and therapist recommendations, are shepherded back to safe and productive work.

Also, and not surprising among craft persons who work with their hands, we have also noticed a high frequency of hand injuries. While these injuries are generally not as serious as a fall or electrocution, the impact on workers’ livelihood or the quality of life of their families may be equally as significant if the craft workers lose their ability to use their hands to perform their task. Gilbane

has developed, with feedback from craft workers, our contractor and vendor partners, a progressive hand protection program, including training and glove selection.

CPS: *What new measures are SH&E professionals taking to protect workers during large-scale projects?*

TO: The greatest positive impact we can have on large-scale construction projects is in the design and planning phase. Historically, SH&E professionals have not been engaged to contribute and to influence safety until a design is completed and the owner’s phasing plan has been developed.

SH&E professionals can be of significant value in support of improving safety of not just construction workers, but adjacent operations and facilities operations by working with designers and owners, using tools, such as building information modeling (BIM), and by reviewing designs and conducting hazards analysis of planned building activities, construction phasing, proximity to adjacent operations, locations of equipment needing frequent maintenance and service and selection of construction materials.

Also, there has been much discussion about green and sustainable buildings, but a truly sustainable building is one where its construction and regular maintenance contributes positively to the community in reduced injuries and risks during construction execution and facility operation and maintenance.

Currently, not much has been developed to specifically address the specific hazards and training in executing green projects. For example, LEED has no provision currently to address safety and health in its requirements, while OSHA is tasking a work group to explore this, and safety professionals involved in “green” jobs are in the process of developing standards.

CPS: *Which A10 standards for construction and demolition opera-*

tions do you believe should always be incorporated into SH&E practices for a large-scale project?

TO: Every A10 standard undergoes extensive development, periodic review and comment from the A10 membership. Since I have been a member, I have been impressed with the knowledge, effort and commitment each A10 member devotes to crafting the best standards possible. To pick a specific standard, I would say that every standard is important and is critical if you are the contractor using that standard to ensure the safety of your workers and others on the construction and demolition project.

CPS: *What aspects of a large-scale public construction project do you feel require more attention to both worker safety and public safety?*

TO: Specifically, with respect to K-12 school construction, I believe the primary and unique safety challenges in a K-12 environment are indoor air quality, hazardous material management, fire, security and preventing disruptions to school activities (as outlined here).

•**Indoor air quality:** Construction activities generate dust and fumes that can affect the health of students, staff and visitors to the site. Proactive control measures must be put into place to limit and control the spread of dust, fumes and poor air quality to occupied spaces or across a neighborhood.

•**Hazardous materials management:** The vast majority of school buildings that have been in service for 30 years or more may have some quantity of asbestos or other hazardous materials. Perfectly safe methods to abate any building are available; however, implementing the appropriate measures requires proper identification of the materials, development of abatement plans and application of all safety requirements.

Proper removal of hazardous waste requires diligent planning, investigations and implementation of the program created for the project by a specialty hazardous waste consultant. Even when proper abatement procedures are used, often there is a greater

issue regarding the perceptions the public and staff have about the abatement process. Effective sharing of safety information is critical to bring understanding to the community.

•**Fire:** All construction projects have hazards, which can easily spark fires. Construction safety plans must include control of welding and cutting (hot work), regular housekeeping, flammable liquids controls and egress routes, fire alarm systems, notification systems and fire response procedures. Additionally, the plan must include provisions for the regular maintenance and management of fire control equipment, policies and egress routes.

•**Security breaches:** Site security must be considered from multiple points of view. Policies suitable and unique to the individual school combined with appropriate barriers to prohibit unauthorized access or egress to the construction zone from the school and to the school from the construction site are required. The barriers must provide for the physical safety of the individuals on each side. The barriers may also assist in the prevention of theft and vandalism of equipment, tools and materials from areas in the facility both occupied and currently under construction.

•**Disruptions to school operations and activities:** Construction projects may require specialized portions of the facility to be cut off from education use for access as construction zones or be included in phased renovations. Careful planning and discussion is required to ensure that unique educational opportunities and extracurricular activities are maintained to the administration's satisfaction. School projects must be planned through open, prompt and honest communication facilitated through administrators, teachers, coaches and parents to establish expectations and minimize frustrations.

CPS: *How do you predict approaches to safety during large-scale public construction projects will change during the next five years?*

Currently, most large-scale public construction projects are bid in

accordance with public bidding approaches, which specify filed sub bids, with program manager oversight of general contractors. I envision more trust and collaboration between contractors, designers, subcontractors and public entities in the future, which should promote more "construction management at-risk" projects, where all entities are stakeholders in the project's success.

In the current economy, I envision "public-private-partnerships" to increase as well. In this climate, I believe we have our greatest opportunity to improve the safety and well being of our workers and the general public, while at the same time improving efficiency and productivity, as all project stakeholders begin communicating, coordinating and planning earlier in the process and sharing best practices.

I am also excited about the possibilities of BIM in improving construction site safety by using the model of the construction site to develop detailed logistics and site utilization plans and to use these to better inform all stakeholders, owners, local regulatory agencies, property abutters and contractors of the potential impacts of the construction project, such as cranes, concrete trucks, excavations, steel erection, etc. I believe we have the greatest positive impact on overall construction site safety in the planning phase. BIM also has great potential to reduce significant hazards of working at heights, fires and ergonomic injuries through promotion of prefabrication and better coordination of installed equipment.

BIM allows everyone involved to be better informed and to make key decisions early in the project planning to ensure safe and efficient workflow.

Gilbane has a virtual construction team that develops models of projects from project conception throughout the execution of the project, working with our architect, contractor partners, owners and others to ensure that activities are planned and executed safely and efficiently.

As importantly, we have a vision that construction projects can and will be executed with no injuries or incidents by applying our incident- and injury-free approach called Gilbane Cares. By applying safety as a personal value and conviction to the planning and execution of our projects, and in the relationships we build with our contractor partners, clients and craft workers, last year more than 70% of our projects were executed with no injuries, while 89% had no injuries requiring time lost from work.

Currently, Gilbane is collaborating with many like-minded compa-

nies, clients and labor to extend this approach throughout our industry, for the ultimate benefit of improving the safety and quality of life of the families of the men and women with whom we work. ☺

Tony O'Dea, CSP, is vice president and director of corporate safety for Gilbane Building Co., where he directs the company's construction safety program. He has worked in the construction industry for more than 25 years in various positions, including project engineer, surveyor, superintendent and project manager. He is also a construction health and safety technician and holds engineer-in-training certification.

O'Dea represents Gilbane Building Co. as a member of the Associated General

Contractors' (AGC) National Safety Committee, the ANSI A10 Accredited Standards Committee for Construction and Demolition Operations, National Construction Safety Executives as well as AGC's Safety Committees of Massachusetts and Rhode Island.

He holds a B.S. in Civil Engineering from Northeastern University, where he developed and instructed the fundamentals of construction safety and health course for 10 years. He has been a guest lecturer in construction safety at the University of Florida, Roger Williams University and Harvard University, as well as for ASSE, AGC of Rhode Island, and the Associated Builders and Contractors of Rhode Island.

A10.28-2011 Overview

Approved on Jan. 28, 2011, the newly revised standard, *Safety Requirements for Work Platforms Suspended from Cranes or Derricks*, applies to platforms suspended from the load lines of cranes or derricks to 1) perform work at elevations that cannot normally be reached by other types of scaffolds or aerial work platforms or 2) transport personnel to elevations where other means of access are unsafe or impractical because of design or worksite conditions.

Past versions of the A10.28 standard include A10.28-1998 and A10.28-1992. The standard was also reaffirmed in 2004.

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