Prevention Through Design Overview

By P. Douglas Folk / Nov 02, 2015

Understanding Prevention Through Design

A potential trend of significance to design professionals is the formalization of "Prevention through Design" policy in a design guideline. Proponents of Prevention through Design characterize it as a "tool for social sustainability." They encourage owners and developers to undertake a risk assessment and direct the design process to reduce the risk of injury or illness to workers building the project and its occupants.

The key elements of this new design process are found in ANSI/ASSE Z590.3-2011 Prevention through Design: Guidelines for Addressing Occupational Hazards and Risks in Design and Redesign Processes. According to this standard, "The goals of applying prevention through design concepts in an occupational setting are to:

- Achieve acceptable risk levels.
- Prevent or reduce occupationally related injuries, illnesses, and fatalities.
- Reduce the cost of retrofitting necessary to mitigate hazards and risks that were not sufficiently addressed in the design or redesign processes."[2]

This voluntary standard is structured as a quality management process undertaken by the project owner with the assistance of all participants in the design and project delivery process. In practice, however, responsibility for executing the guidelines' requirement will be assigned to the design team, which leads to our concern that practicing "prevention through design" could result in the imposition of liability for safety hazards existing during construction or after occupancy, or that this voluntary ANSI/ASSE standard could be invoked as a standard of care despite the fact it has no legal status as a building code.

As set forth in §4.1 of the ANSI/ASSE Z590.3 standard, a hazard assessment must be conducted early in the design phase, followed by an inventory of those risks of injury or illness than can be identified or predicted, and measures needed to mitigate those risks through the design solution:

4.1 Top management shall provide leadership to institute and maintain a policy and effective processes for the design and redesign processes through which:

1. Hazards are anticipated, identified, and evaluated for avoidance, elimination, or substitution.

2. Risks deriving from identified hazards are assessed and prioritized in accordance with accepted hazard analysis and risk assessment techniques (see Section 7).

3. Risks are reduced to an acceptable level through the application of the hierarchy of controls as described in Section 9.

4. The knowledge, skills, experience, insight, and creativity of employees close to the hazards and risks are utilized in the risk assessment process.

5. Design and/or redesign process effectiveness is monitored through feedback between employees and management to provide for continuous improvement.

6. Appropriate recordkeeping systems are developed and used to document design reviews and to track feedback and safety and health reports over the life cycle.

At the conclusion of this hazard assessment exercise, it is expected that the owner, with recommendations from the design team and other stakeholders, will employ appropriate measures based on the probability and severity of the potential harm to mitigate these identified risks. The standard speaks of a hierarchy of controls to be employed for risk mitigation, to include in order from most to least preferred method:

- **Risk avoidance**: Prevent entry of hazards into a workplace by selecting and incorporating appropriate technology and work methods criteria during the design processes.

- **Elimination**: Eliminate workplace and work methods risks that have been discovered.

- **Substitution**: Reduce risks by substituting less hazardous methods or materials.

- **Engineering Controls**: Incorporate engineering controls / safety devices.

- **Warning**: Provide warning systems.

- **Administrative Controls**: Apply administrative controls (the organization of work, training, scheduling, supervision, etc.).

- **Personal Protective Equipment**: Provide Personal Protective Equipment (PPE).[3]

While the authors of the Prevention through Design guidelines understood that risk cannot be altogether eliminated through good design, proper management, or operational controls, the standard intends that the planning and design effort will attain an "acceptable risk" on the project that could only be further lowered "by an expenditure of resources that is disproportionate in relation to the resulting decrease in risk."[4] This is a far less forgiving standard than the professional standard of care.
When design professionals accept responsibility for incorporating Prevention through Design methodology in their project, they risk not only exposure to OSHA citations as a “supervising or controlling employer” under OSHA’s Multi-Employer Citation Policy[5] but also liability under a tort standard of care for having assumed responsibility for site safety during construction and some measure of responsibility—even if shared with the owner, contractor, and users of the facility—for safety in operations. Most design professionals who are accustomed to design-only roles on their projects are not prepared for the additional processes and analysis required by Prevention through Design, nor can they fully guard against the risk that their recommendations will not be implemented by the owner, developer, contractors, or users of the project.

While the ANSI/ASSE Z590.3 standard presents a worthy goal and a logical process to seek that goal, this standard does not take into account the prevailing separation of responsibilities for design and management of construction across the United States and the creativity of the American legal system in recognizing novel legal bases for imposing a duty and standard of care. Design-build firms may do better in their implementation of the Prevention through Design process as they already have responsibility for construction means and methods, as well as site safety during construction, but additional study and effort is required before most design professionals should agree to follow these new voluntary guidelines.

Our recommendations for those considering the adoption of ANSI/ASSE Z509.3-2011 as a reference standard on their projects follow:

1. Undertake formal training in Quality Management according to ISO 9001 standards and training in the use of ANSI/ASSE Z509.3.
2. Employ staff or consultants with experience in construction and environmental safety and health management to participate in the hazard assessment and risk mitigation process.
3. Start small—a less complicated project or project type with which the firm has considerable experience—and allocate time and fees in the project budget to additional management and review processes needed to implement the Prevention through Design model.
4. Negotiate special terms in the Owner/Architect or Owner/Engineer contract, as well as the Owner's contract with the Contractor to define the design team's responsibilities and limits of liability for Prevention through Design.
5. Set the Owner's expectations appropriately by informing the Owner early, and often, that residual risk will exist regardless of the Prevention through Design effort. Ensure that the Owner also understands its responsibilities for risk management, mitigation, or avoidance.
6. Where risk reduction is to be achieved through engineering controls, warnings, administrative controls, or the use of PPE, confirm that those responsible for implementing these measures have been identified and appropriately trained in their responsibilities; or at least document that it is not the design professional's responsibility to do so.
7. Provide thorough documentation of the risk assessment matrix, recommended risk controls and design solutions, and the residual risks that have been identified. By communicating this information to all responsible persons (Owner, Contractor, Operator, Users/Employees) for their review and comment, the design professional can demonstrate that those responsible for implementing the design had notice and were charged with responsibility for their own actions in light of disclosed risks.
8. Consider the inclusion of additional terms in the design professional's contract scope and professional documents as to the limitations of the design professional's duties for prevention through design, and a disclaimer of any assumption of a duty of care to the contractor, subcontractors, future occupants or the public at large.

Readers having questions about ANSI/ASSE Standard Z590.3 or the law applicable to design and construction professionals may contact P. Douglas Folk at 480.684.1100 (dfolk@clarkhill.com), Thomas M. Keranen at 313.965.8670 (tkeranen@clarkhill.com), Mark F. Nowak at 412.394.2428 (mnowak@clarkhill.com) or any other member of Clark Hill's Construction Practice Group.

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