Elevating Safety Through Standards

ASSE has added the A92 aerial lift standards from the Scaffolding Industry Association (SIA) to its catalogue of voluntary consensus standards. The following standards are now available for purchase through ASSE:

**ANSI/SIA A92.2-2009: Vehicle-Mounted Elevating and Rotating Aerial Devices**
This standard relates to the following types of vehicle-mounted aerial devices: extensible boom aerial devices, aerial ladders, articulating boom aerial devices, vertical towers and any combination of these devices. The vehicle may be a truck, a trailer or an all-terrain vehicle.

**ANSI/SIA A92.3-2006: Manually Propelled Elevating Aerial Platforms**
This standard applies to manually propelled, integral chassis aerial platforms that have a platform, which cannot be positioned completely beyond the base and are used to position personnel, along with their necessary tools and materials, at work locations. Platforms are adjustable by manual or powered means and shall not be occupied when moved horizontally.

**ANSI/SIA A92.5-2006: Boom-Supported Elevating Work Platforms**
This standard applies to self-propelled integral chassis aerial platforms that have a platform, which can be positioned completely beyond the base and are used to position personnel, along with their necessary tools and materials, at work locations. Aerial platforms are power operated with primary functions, including drive, controlled from the platform. Such aerial platforms are intended to be occupied when driven.

**ANSI/SIA A92.6-2006: Self-Propelled Elevating Work Platforms**
This standard applies to manually propelled, integral chassis aerial platforms having a platform that cannot be positioned completely beyond the base and are used to position personnel, along with their necessary tools and materials, at work locations. Platforms are adjustable by manual or powered means and shall not be occupied when moved horizontally.

**ANSI/SIA A92.8-2006: Vehicle-Mounted Bridge Inspection and Maintenance Devices**
This standard applies to vehicle-mounted bridge inspection and maintenance devices that are generally designed to be supported on bridge surfaces of varying degrees of grade and super-elevation and can provide quick and easy access to the underside of such structures. The standard also includes drawings showing typical examples of covered devices.

**ANSI/SIA A92.10-2009: Transport Platforms**
This standard applies to transport platforms that are primarily used to vertically transport authorized person, along with materials and necessary tools, to various access levels on a building or structure for construction, renovation, maintenance or other types of work.
A10 Standards Awaiting Reapproval & Reaffirmation
The standard, “Safety Requirements for Personnel and Debris Nets” (ANSI/ASSE A10.11-1989 (R1998)), which was withdrawn by ANSI and is available through ASSE for historical use only (https://www.asse.org/cartpage.php?link=3811), is now awaiting ANSI reapproval.


ASSE Urges Better Use of Consensus Standards in OSHA Slips & Falls/ PPE Rulemaking
In an August 19, 2010 comment to OSHA on its proposed walking-working surfaces and personal protective equipment rulemaking, ASSE urged the agency to use more thoroughly existing voluntary consensus standards as it develops the new rule.

ASSE said both the process and end users would be better served if standards, such as the ANSI/ASSE Z359 Fall Protection Code as well as the standard, “Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace Floor, Wall and Roof Openings; and Stairs and Guardrails Systems” (ANSI/ASSE A1264.1-2007), were used in developing the OSHA rule.

Z359 ASC to Meet in November
The Z359 Accredited Standards Committee for Fall Protection/Arrest will meet from November 16-18, 2010 at the University of Colorado-Boulder. For more information on the meeting, please contact Tim Fisher at tfisher@asse.org.

Join the SH&E Standards Info Center on LinkedIn
All ASSE members are invited to join the ANSI/ASSE SH&E Standards Information Center on LinkedIn. To join the group, visit http://www.linkedin.com/groups?about=&gid=2772916&trk=anet_ug_grppro.

Becoming a Standards Committee Member: What is Involved?
ANSI/ASSE standards committees typically meet once or twice a year at ASSE’s headquarters in Des Plaines, IL. Depending on the organizational level of participation, the time commitment for a standards committee is approximately 60-100 hours per year. Committee members communicate via telephone and e-mail throughout the year and are also expected to review standard drafts and other materials as necessary. However, the Z359 Accredited Standards Committee (ASC) for Fall Arrest/Protection meets for three days during the spring and fall. The A10 ASC for Construction and Demolition Operations meets in January and July of each year in Washington, DC.

Committees will not generally vote on a standards committee applicant until the applying organization has participated at the subgroup level (if applicable). In addition to having subgroup participation experience, the applying organization should attend at least two sequential meetings as an observer before the committee reviews the formal application. The impacted subgroup chair will give a report and recommendation addressing the applying organization’s active participation with the subgroups (if applicable).

Meeting observers can speak to issues if/when recognized by the ASC chair or subgroup chair. Observers do not have the same access to committee records and materials as full committee members. The secretariat is not required to provide observers with draft standards and/or other draft materials. Observers are encouraged to make comments about draft standards during the public review process. Observers also have the opportunity to pursue a course of due process if they believe their comments have not been addressed in accordance with accredited procedures.

The committee decides whether or not to accept an application—ASSE does not make that decision. The committee can vote to accept, reject or table. Membership applications are also reviewed per membership requirements to ensure compliance with accredited procedures. Submission of an application does not mean automatic acceptance. If accepted to the committee, organizations are expected to attend meetings, respond to correspondence and participate in subgroups. Organizations that do not participate and attend meetings can be removed from the committee.

Travel expenses are not reimbursed since committee members represent their own company/organization, and committee participation is not linked to ASSE membership (if you are an ASSE member). Before applying to participate on a standards committee, determine if your employer is willing to support your participation.

ASSE does not charge organizations to participate on a regular standards committee because the committee writes the standard and ASSE, as secretariat, then sells the standard to recoup the development cost. However, there is a fee to participate in an International ANSI Technical Advisory Group.

For more information, contact Tim Fisher at tfisher@asse.org.
Fall Protection Within the U.S. Navy

Basil Tominna, P.E., is a safety engineer for the U.S. Department of the Navy and vice chair of the Z359 Accredited Standards Committee (ASC) for Fall Protection/Arrest. In this interview, Tominna explains how the Navy incorporates the ANSI/ASSE Z359 Fall Protection Code into its SH&E practices and discusses how future revisions and additions to the Code will impact Navy fall protection program requirements.

Please provide a brief description of your professional background and of your position as a safety engineer for the U.S. Department of the Navy.

I hold B.S. and M.S. degrees in civil engineering. I am a registered civil engineer in the State of California and a professional engineer in the State of Michigan. I am also trained as a competent and qualified person for fall protection. I provide fall protection expertise Navy-wide and to other Department of Defense (DoD) agencies. I also chair the Chief of Naval Operations’ Fall Protection Task Action Team. The team serves as the fall protection technical and policy advisor for the prevention of falls within the Navy by providing tools, criteria and safe work practices to ensure Navy ashore and afloat commands establish and manage viable fall protection programs.

What are the most common fall hazards and exposures facing those in the Navy? How do these hazards and exposures differ among ships, submarines and shipyards?

The most common fall hazards in the Navy include falls from roofs, ladders, equipment, cranes and during aircraft maintenance and other typical general industry exposures. Fall hazards and exposures in ships, submarines and shipyards may include falls from ships and submarines in the water, when climbing masts or ladders and other falls to lower surfaces.

In what ways does the Navy incorporate the Z359 Fall Protection Code into its SH&E practices?

Most Navy health and safety instructions, technical manuals and guidance documents adopt and reference the Z359 Fall Protection Code, including best practices and applications of fall protection systems and equipment. Additionally, many Navy design criteria documents for designing buildings, facilities and structures already reference the fall protection code as a compliance document. Additionally, the fall protection training requirements for various personnel involved in the fall protection program are similar to the training requirements in the Z359 Fall Protection Code.

How does the Navy use the Z359 Fall Protection Code when working with contractors and subcontractors on fall protection/arrest-related issues?

Contractors and subcontractors performing construction and demolition work on DoD sites are required to comply with the fall protection requirements specified in the EM 385-1-1 Health and Safety Requirements Manual. The fall protection requirements in EM 385-1-1 (latest version) are based on and reference the Z359 Fall Protection Code by incorporating best practices and applications of fall protection systems and equipment.

Per EM 385-1-1, contractors as part of the contract are required to develop a fall protection program and to submit a site-specific fall protection and prevention plan to the government-designated authority. The fall protection and prevention plan requirements are similar to the written fall protection procedures specified as part of the ANSI/ASSE Z359.2-2007 standard. Additionally, The Unified Facilities Guide Specifications for Design Build/Design Bid Contracts were updated to reflect best practices and applications from the Z359 Fall Protection Code.

How does the Navy use the Z359 standards to conduct workplace surveys and to assess fall hazards?
As part of the Navy Health and Safety Instruction Manual, Navy ashore commands are required to identify potential fall hazards by conducting fall hazard surveys and preparing survey reports. After conducting the surveys, Navy commands are required to perform fall hazard analysis to determine the risk assessment, hazard severity and fall mishap probability to help prioritize the hazard ranking and to select the most viable fall protection solution. Requirements for the survey reports are similar to the Z359.2 standard.

The standard, “Minimum Requirements for a Comprehensive Managed Fall Protection Program” (ANSI/ASSE Z359.2-2007), defines the roles and responsibilities of the fall protection program administrator, competent person and qualified person.

What criteria does the Navy follow, in addition to the guidelines given in the standard, when selecting people for each of these positions?

The fall protection program manager/administrator and the competent person roles and responsibilities are similar to the requirements defined in the Z359.2 standard. With regard to a qualified person, the Navy requires the person selected to be an engineer. The qualified person’s responsibilities are also similar to the requirements defined in the Z359.2 standard.

How does the Navy use the Code to address a combined fall hazard and confined space? Where are combined fall hazards and confined spaces most often found in Navy operations?

When entering a confined space, and if there is a hazard of exposure to a vertical fall, the person entering such space is required to use fall protection and rescue/retrieval equipment. A co-worker should be able to retrieve the person using the retrieval mechanism addressed in the ANSI/ASSE Z359.1-2007 standard. Confined spaces with potential fall hazards found in Navy operations include manholes, vaults/pump stations, haul of ship, etc.

How is use of the Code helping the Navy reduce falls from masts, aerials, scaffolding, cranes, hoists and other elevated work surfaces?

Masts, aerial work platforms, scaffolding, cranes, hoists and other elevated work surface are considered walking/work surfaces and must comply with the Navy fall protection program requirements. Since the development of the Navy fall protection program requirements in December 2005, fall mishaps from heights are on the decline. The program’s requirements are based on Navy criteria/instruction and Z359 Fall Protection Code requirements.

How does the Navy manage fall protection in its construction operations?

The Navy-designated personnel to manage and administer construction projects receive 40 hours of construction safety training. Fall protection is included as part of this training. Training requirements include best practices and applications of fall protection systems and equipment and the latest requirements of EM 385-1-1 enforced on Navy construction projects. The fall protection section in EM 385-1-1 is based on Z359 Fall Protection Code requirements.

Do fall protection requirements for ashore and afloat facilities reference the Code?

Yes, the fall protection requirements for ashore and afloat refer the Navy are based on the Fall Protection Code. Additionally, all personal fall arrest equipment used when working at heights must comply with the Z359.1 standard.

Does the Navy use rigid lifelines or traditional horizontal flexible lifelines in its fall protection systems? Or does it use a combination of both?

Both systems are installed and used as part of the fall hazard abatement alternatives.

Is rope access ever used when working from height in Navy operations?

Not to my knowledge. However, the rope access system is introduced as part of fall protection awareness training provided to various safety professionals.

What methodology does the Navy follow when conducting job hazard analyses of tasks that must be performed from height?

Navy commands are required to assign each identified hazard by annual surveys or inspections. Navy commands are required to assign a risk assessment code (RAC) to each identified hazard that cannot be corrected immediately. RAC represents the degree of risk associated with the hazard combined with the elements of hazard severity and mishap probability. However, for existing fall hazards, Navy commands are required to develop, implement and use a fall protection solution.

How does the Navy perform qualification testing of test equipment and specimens for fall protection systems?
The Navy does not perform qualification testing of test equipment and specimens for fall protection systems. Equipment manufacturers perform qualification testing. However, for the last 4 years, the Navy ashore fall protection instruction manual requires all personal fall arrest equipment, from the anchorage connector to the full body harness, to be purchased from manufacturers that can substantiate through third-party certification that their equipment meets the Z359.1 standard.

How are education, training and fall protection practices maintained and enforced among the many civilians who work in the Department of the Navy?

The Navy developed fall protection training courses for various Navy personnel involved in fall protection programs. Some of the training courses are delivered via classroom and others are web-based. These classes are continually updated to reflect the best practices and applications of equipment, systems or standards development. Additional courses are also delivered from nationally accredited training programs. Instructions, criteria and guidance documents are continually updated and developed to assist Navy commands in applying and enforcing best practices and applications of fall protection systems and equipment.

Of the Z359 standards currently in development, which do you believe will have the most impact on Navy fall protection practices once approved?

The Navy is a governmental/employer organization, and definitely, the Z359.2 standard will have the most impact on Navy fall protection practices because this standard is presently being updated and is structured similar to the Navy instruction and guidance document. The ANSI/ASSE Z359.6-2009 standard will assist our professional engineers who have expertise in fall protection design of active fall protection systems. Also, the ANSI/ASSE Z359.7-201x standard will impact the Navy because for more than 4 years, Navy ashore instruction requires that all personal fall arrest equipment purchased from manufacturers meet the Z359 Fall Protection Code. The rest of the product standards are usually geared for the equipment manufacturer and yet they also will impact the Navy because of the technical knowledge they provide.

You are vice chair of the Z359 Accredited Standards Committee (ASC) for Fall Protection/Arrest. Why do you feel it is important for the Navy to be represented on this particular committee?

As the Navy representative, attending the Z359 ASC meetings on fall protection provides me with knowledge and understanding of the best practices and applications of fall protection systems and equipment and the requirements of various standards. I incorporate this knowledge and understanding in Navy fall protection program requirements. This knowledge is also shared with other DoD agencies that are not represented on Z359 ASC.

Z359 ASC met at ASSE headquarters in April 2010. What were the major outcomes of this meeting and what are Z359 ASC’s plans for the remainder of the year?

The major outcomes of the April 2010 meeting included addressing the status and progress of developing the rest of the Z359 product standards as part of the Fall Protection Code and including the possibility of revising other existing standards, such as Z359.2, .3 and .4. Some of the standards under development have finished balloting, other standards are ready for balloting and the rest are in the early stages of development. Z359 ASC will meet in November 2010. By the next meeting, a few more standards might be finalized and ready for publication.

Biography
Basil Tominna, P.E., is a safety engineer and fall protection subject matter expert for the U.S. Department of the Navy. He provides fall protection expertise and training Navy-wide and to other Department of Defense agencies. He is chair of the Fall Protection Task Action Team, which is part of the Navy strategic plan initiative to reduce fall mishaps within the Navy. He is also vice chair of the Z359 Accredited Standards Committee for Fall Protection/Arrest.

Tominna’s prior experience includes design, construction and environmental work. He previously worked for several consulting engineering firms, municipalities and the U.S. Army. He holds B.S. and M.S. degrees in civil engineering.

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One of the best fall protection practices an employer can do is to develop a formal managed fall protection program. Adhering to minimum OSHA requirements is beneficial, but consistency suffers and OSHA regulations simply cannot address specific fall protection issues that every employer has. Developing a fall protection program can be a daunting task since it is most often developed retroactively when personnel have been working at height for years without the benefit of a formal fall protection program.

Every employer that has fall hazards present at the workplace usually has a policy already in place. Most programs involve issuing personal fall protection equipment to each worker and providing some level of training so workers can solve fall hazards as they are encountered. Best practices dictate that employers do more than procure personal protective equipment (PPE) and provide training. Issuing fall protection PPE for either a fall arrest or fall restraint system may not be the best solution to address a fall hazard. The best solution may be elimination or substitution of the task where fall protection is required. The use of passive fall protection systems, such as guardrails, covers, etc., may also provide a more appropriate solution.

The following key elements are described in the standard, “Minimum Requirements for a Comprehensive Managed Fall Protection Program” (ANSI/ASSE Z359.2-2007) (https://www.asse.org/cartpage.php?link=Z359-2-2007). This standard, and the process it prescribes, can be applied to any fall hazard in any industry. It is a methodical and logical approach to identifying fall hazards, creating solutions and developing a program.

**Commitment from Management & Policy**
Resources are required to develop the fall protection program. Management must be aware of the fall hazards their employees encounter during the course of their workday so management can provide guidance and resources to address said hazards.

**Development & Education of Key Personnel**
Regardless of the employer’s size, key personnel must be identified to manage the fall protection program. Larger employers often develop a steering committee that is made up of a cross-section of workers. Smaller employers may only have one or two key people. Either way, this group is charged with the success of the program, including identifying and categorizing fall hazards, determining solutions, writing procedures and developing training programs.

**Fall Hazard Assessment**
An assessment of individual fall hazards provides an invaluable amount of information. All too often, the fall hazard assessment considers the height of a fall and/or a legislated duty to provide fall protection. Limiting the assessment to these two factors rarely provides enough information to develop adequate solutions. The frequency of the task, duration of task, similar work areas, area obstructions, environmental conditions and the reason for the exposure should also be investigated. The most feasible solution is easily recognized when good information is gathered.

**Hierarchy of Fall Protection**
After the assessment, fall protection solutions can be identified and developed based on the employer’s policies and budget. The program administrator or steering committee can use the Hierarchy of Fall Protection to address specific hazards (or groups of hazards).

The Hierarchy of Fall Protection is the preferred order of control to eliminate or reduce fall hazards. This methodology mirrors common safety practices for hazard abatement beginning with elimination and ending with administrative controls. Using the data collected from the fall hazard assessments, each solution in the hierarchy can be applied to each hazard.
The preferred solution to all fall hazards is elimination. The reason for exposure to the fall hazard is challenged and evaluated to determine if a change in the procedure, practice, location or equipment will eliminate exposure to the fall hazard. Specifying that HVAC equipment be located on the ground or in an equipment room rather than by the edge of the roof is an example of hazard elimination.

Using passive methods of fall protection is the next best solution. Physical barriers like guardrails around unprotected edges and covers over holes are examples of passive fall protection. There are many situations where an employer did not consider guardrails around the perimeter of a building because of initial higher capital costs. Yet, it is possible that the cost of the PPE is higher in the long run. PPE requires worker training, inspection and replacement, along with the identification of (or lack of) anchorages. Rescue planning must also be included. Passive protection may not be warranted if the frequency and duration of exposure to the fall hazard is limited. An exhaustive hazard assessment provides the information needed to make these kinds of decisions to maximize cost-effectiveness.

Fall restraint is the next method of fall protection in the hierarchy of controls. Fall restraint systems are erected in such a manner that a fall cannot occur. Fall restraint systems use PPE to restrict workers’ range of movement so they cannot physically travel to the fall hazard. Fall restraint systems are often underutilized because they are not specifically mentioned in many regulations, but they are preferred over fall arrest systems. Free fall distance is not an issue for fall restraint systems, therefore arresting forces, clearance requirements, secondary injuries and rescue issues are virtually eliminated.

If fall restraint is infeasible, fall arrest is the next preferred method of fall protection. Fall arrest systems are erected in such a manner that a fall can occur but the fall is arrested within acceptable force and clearance margins. Fall arrest systems have a higher risk associated with them since the falling worker must be stopped within an acceptable level of force to prevent him/her from contacting the surrounding structure (or the ground). Training for both fall restraint and fall arrest systems is key for workers to understand the difference and how to assemble the systems. Z359.2 includes a significant amount of information about fall protection training for authorized persons, competent persons, qualified persons, rescuers and trainers.

The last control method in the hierarchy is implementation of administrative controls. Administrative controls are work practices or procedures that increase a worker’s awareness of a fall hazard. Administrative controls are the least preferred method of protection because they do not provide a physical or positive means of protection. Administrative controls are preventive measures taken to reduce the likelihood of a fall. These methods include safety monitors, warning lines, warning horns, designated areas or control lines. It must also be noted that OSHA regulates the use of many administrative controls, and it is incumbent on the fall protection program administrator to understand the jurisdictions and regulations that apply.

**Program Implementation & Maintenance**

Many components of the fall protection program come together after solutions are determined. PPE can be sourced and purchased, and training programs can be developed. Z359.2 provides direction for authorized, competent, qualified and program administrator training (as well as others). In the same manner that an assessment of fall hazards is conducted, a training assessment is conducted to ensure that training includes written objectives and observations of performance.

Other requirements of the fall protection program are also identified after fall hazard solutions are determined. Engineering for permanent solutions may be needed or it may be necessary to design horizontal lifelines or certify anchorages. The number of unique fall hazards may reveal that written procedures are necessary for each area. Those procedures should be included in the training program or materials for the worker. After solutions are determined, PPE is in place, workers are trained and engineering controls are in place, the program only needs to be maintained to include investigations and training updates. As new work is encountered or the worksite conditions change, the whole process starts over with a fall hazard survey.
Workers navigate the top of a wind turbine on a wind farm in Central Washington State.

Best practices for fall protection dictate that each area where workers are exposed to fall hazards is addressed. It is also necessary to determine feasible solutions, implement and document the controls, train and maintain the program. This methodology provides the highest level of protection for both the employer and employee.

There is an unprecedented amount of fall protection information available to employers. The ANSI/ASSE Z359 Fall Protection Code, which includes the Z359.2 standard, has more than 400 pages of information that provides guidance for employers who wish to develop an “industry best” fall protection program.

**Biography**

Kevin Denis is the training manager for Gravitec Systems, Inc., a company specializing in fall protection engineering, consulting, training, testing and technical equipment. For the last 15 years, Denis has been involved in the establishment of successful fall protection programs and audits for dozens of companies throughout Canada and the U.S. He manages a training department that averages more than 50,000 student-training-hours per year and has authored nationally recognized training standards for many different industries.

**Z359 Fall Protection Code 2.0**

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Impact of A10.21-201x on SH&E Professionals in the Construction & Demolition Industry

By Richard F. King, CSP, A10 ASC Chair

The ANSI A10 Accredited Standards Committee (ASC) is one of the longest existing voluntary national consensus standards committee in the U.S. Founded in 1944, A10 ASC writes and interprets voluntary national consensus standards relating to the protection of employees and the public from hazards arising out of or associated with construction and demolition operations.

SH&E professionals working in the construction industry use these standards because they are recognized in both the public and private sectors. Specifically, the A10 standards are recognized in OSHA standards and by other national and state government agencies. At the private sector level, A10 standards are widely cited and required in different contracts and work agreements.

A10 ASC comprises 74 national organizations from the private and public sector. In addition, 49 accredited standards and projects are under the A10 banner. Subgroups, which are created and approved by the committee, put together draft documents for review by A10 ASC. Subgroups are not responsible for the definitive content of the standard; they assist the committee in putting the documents together and serve as a technical resource.

ANSI Background

The following history of ANSI is reprinted from the Laborers’ Union newsletter, Life Lines.

“Founded in 1918 and based in Washington, DC and New York City, ANSI is a private, non-profit organization that administers and coordinates the ongoing development of standards to guide all aspects of American production. In 2002, it had more than 10,000 standards, 40 of which address safety issues in the construction and demolition industry.

“ANSI standards seek to standardize both the process and the output of American production. Further, through its participation in the International Organization for Standardization, ANSI is able to ensure that imported products meet American standards and, often, that standards developed in the U.S. are adopted as national standards by other countries. Its mission is to enhance both the global competitiveness of U.S. business and the U.S. quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems and safeguarding their integrity.”

Value of ANSI Standards

The purpose of these voluntary national consensus standards is to provide guidance and technical information to different industries. In the case of A10 ASC, it is to provide guidance to the construction and demolition industry. The standard, “Fall Protection Systems for Construction and Demolition Operations” (A10.32-201x), which is pending approval, is a good example of how such standards can be used. A10.32 is intended to fill gaps in the regulatory structure. Of additional importance is that it can take decades to write federal or state regulations. In many cases, voluntary national consensus standards are ahead of the curve when it comes to addressing good science and technology. On occasion, ANSI standards can also find their way into legislation.

However, it is at the private-sector level that widespread recognition of the A10 standards is prevalent. An example is the standard, “Safety Requirements for Excavation” (ANSI/ASSE A10.12-1998 (R2005)). The standard is commonly referenced and cited as a guidance document in contracts and work agreements.

The standard, “Protection of the Public on or Adjacent to Construction Sites” (ANSI/ASSE A10.34-2001 (R2005)), is also an excellent example of a standard widely used in the private sector. The standard is also referenced in at least 24 contracts.

Perhaps the primary reason why ANSI standards are so broadly recognized and accepted is the process by which they are developed. The standards are required to be written via a consensus process. The “fair and open ANSI process ensures that all interested and affected parties have an opportunity to participate in a standard’s development. It also serves and protects the public interest since standards developers accredited by ANSI must meet the Institute’s requirements for openness, balance, consensus and other due process safeguards.” Of interest to SH&E professionals is that by ANSI procedures, accredited standards must be revised, reaffirmed or withdrawn every five years to ensure that they remain relevant and up-to-date.
How National Governmental Agencies Use Standards

Voluntary national consensus standards can be used in regulation at the federal, state and local levels. The national level generally draws the most comments due to the impact of OSHA on SH&E professionals. With the Morella Amendment to the Technology Transfer Act of 1995 (Section 12D of Public Law 104-113) and the Office of Management and Budget Circular A-119, greater attention is paid to voluntary national consensus standards (e.g., ANSI, ASTM, NFPA, ASME, etc.). These laws/guidelines do not require the use of a voluntary national consensus standard; however, they require that an agency review them during proposed rulemaking. In such a situation, the standard(s) could be entered into the record with a request to the agency that it review and cite the draft standard(s).

A10.21 Background & Direction

During the January 2009 A10 ASC meeting, the committee reviewed the following proposal:


Scope: This standard establishes the minimum requirements for protecting the safety and health of persons involved in construction and demolition operations addressing wind generation/turbine facilities.

The major construction tasks on a wind project would be:

- Wind turbine assembly and erection
- Civil construction (roads and pad clearing)
- Structural construction (foundations)
- Placement of electrical collection system (buried medium-voltage lines)
- Substation and transmission line construction

Activities would include:

- WTG component offloading
- Site staging
- Base tower section placement (could include anchor bolt tensioning, leveling/grouting)
- Tower assembly
- Nacelle placement
- Rotor assembly (typically on the ground)
- Rotor placement
- Mechanical completion and commissioning

This would include safety issues regarding working at heights, mechanical assembly of large components, medium-voltage electrical safety and working in exposed environments. There would be a need to cite/recognize other existing voluntary national consensus standards.

A motion was approved that the A10.21 standards project would be launched. The committee addressed the suggestion that more than just employees could work on a structure, such as independent contractors, engineers or surveyors. Technically, these are not employees, but they could still be exposed to hazards when working with the construction crew. The committee decided that the scope statement must be edited to include all persons and not just the employees of a company.

In addition, Ryan Jacobson was approved to chair the A10.21 subgroup and Walter Jones from Laborers’ International Union was approved to serve as liaison.

At the time of this writing, the A10.21 subgroup has held several subgroup meetings, but an official draft has not yet been released for ballot by the committee and public review by stakeholders.

In addition, Underwriters Laboratories have also launched a series of standards development activities impacting wind generation equipment. However, these standards will primarily impact the specific manufactured electrical components and not wind generation construction as viewed by A10 ASC. The intent is to also use the A10.21 subgroup as a technical review subgroup for the full committee when reviewing the UL proposed standards.

Timeline & Conclusion

The A10.21 subgroup plans to:

1. Finalize an official draft standard.
2. Ballot the standard to A10 ASC.
3. Announce the standard for public review.
4. Start the comment resolution process.

We cannot offer any additional time estimates at this point since the resolution process will be driven by the volume and complexity of the comments. The comments will be addressed per the A10 ASC accredited procedures and the ANSI Essential Requirements Document.

A: The answer is that both standards have different scopes and different missions. Neither one takes precedence over the other except that the ANSI standard is a voluntary consensus standard, and the MUTCD is considered a federal guideline for mandatory markings on highways and public roads.

Assuming you are asking from the point of view of a safety professional of an employer, the answer is neither takes precedence over the other. If your question is whether OSHA would more likely use one or the other to cite a “deficiency” or “recognized hazard,” that answer would be a big “depends.” And “depends” is mostly decided on a case-by-case basis. There are so many possibilities that a clear answer is not possible. A10.47 relies heavily on MUTCD and does not conflict. It recognizes MUTCD for issues outside the scope of A10.47.

A10.47 Scope: This standard covers workers engaged in construction, utility work, maintenance or repair activities on any area of a highway (public road). It establishes the minimum requirements for the safety of workers engaged in the construction and maintenance of public and private highways and roads, where the workers may be exposed to traffic hazards, presented by the traveling public.

MUTCD: Traffic control devices (TCDs) are very critical for the safe and efficient transportation of people and goods. MUTCD, sets minimum standards for road design, and road signs and markings, such as size, shape, structure, layout, marking patterns, colors, lettering, graphics, reflectivity, luminosity, height, directions for visibility, locations, priorities and other factors affecting safe travel by traffic on roadways. It provides this guidance to employers setting up signage to protect the public from the hazards of construction on active roadways (and the state of municipality that is running such work. It also serves to provide guidance for minimum protections that should be available (or relied upon) by employers that have employees exposed to the traffic hazards, when they work on or near construction of active roadways.

MUTCD ensures uniformity of traffic control devices across the nation. The use of uniform TCDs (messages, location, size, shapes and colors) helps reduce crashes and congestion and improves the efficiency of the surface transportation system. Uniformity also helps reduce the cost of TCDs through standardization. The information contained in MUTCD is the result of either years of practical experience, research and/or the MUTCD experimentation and testing processes. This effort ensures that TCDs are visible, recognizable, understandable and necessary, and as the name implies uniform throughout the country.

MUTCD is a dynamic document that changes with time to address contemporary safety and operational issues and to incorporate the introduction of newer and better technology, such as improved reflective materials, better lighting or new findings, such as readability, understanding or reduction of clutter in signs. MUTCD is geared primarily to help road designers, municipalities, states, police (to a small degree), etc. control traffic, move it efficiently through the use of common understandable, standardized, proper, useful and well placed signage, markings, road designs and safety devices, such as lights and barriers, warnings, etc.

MUTCD has an overriding goal to ensure that traffic is well managed, moves as well as possible and is uniformly dealt with across the nation. And, as a smaller part of MUTCD, it is aimed to ensure that traffic flow is not (inordinately) adversely affected by activity that is common but is not part of the finished roadway, like construction. The part of the roadway that is still in use is their concern. How the impact is communicated and which traffic controls should be used in various situations should be realistic and uniform. The concern that traffic not be impacted by construction has MUTCD showing the state/municipality, etc. how it should/must erect barriers, signs, lighting, markings, warnings, speed zones, flaggers, barricades, etc. to best serve the motoring public. In doing this, MUTCD sets minimum standards for visibility of certain parts of the process, which includes markings and visibility for workers to a small degree.

A10.47, in my professional opinion only, (ANSI members and A10 committee members are not allowed to publish or express interpretations or opinions that can be construed as the opinion or interpretation of the ANSI committee—only the ANSI committee can answer specific questions about the standard itself), is geared to the safety of the construction.
workers who are on or near a roadway and are affected by the construction and traffic. ANSI standards help SH&E professionals comply with best practices and hopefully also with other standards (OSHA, for example) to prevent injury to employees engaged in construction and/or demolition on or around highways/traffic, roads, bridges and other travel ways. It necessarily includes more information about the requirements and recommendations for the jobsite (behind the barricades) than MUTCD.

As for markings and requirements for protection through visibility and separation, the ANSI/OSHA and professional safety judgment used with these two should prevail, but MUTCD might have already-in-place or already-required items that support and/or satisfy OSHA and/or ANSI compliance.

It is not uncommon to have OSHA, ANSI and other government standards showing overlap and compliance cross-benefits. It is the SH&E professional’s job to get all of the various standards and recognizable hazards, and through analyses of the various items and rules, determine what is in compliance. Paradoxically, there may be a risk of noncompliance with one standard in order to comply with another, although relatively rare. Employee and public safety issues would take precedence in that case, in my opinion.

For example, if you blast near a roadway and waterway that is near the end of an airport runway in order to build a bridge on an existing road and have workers exposed to both water and vehicular traffic, as well as airport-related issues, you would need 1) OSHA standards, 2) various ANSI standards and all relevant parts of each, like most job sites would. However, you would also need (at least) 3) U.S. Coast Guard regulations (including for markings, any navigation impact, shore lights and waterborne craft lighting, on water barges, spills, fill or rip rap ramps or pads in the water, over water work, etc.), that could affect navigation. You would need 4) Federal Aviation Administration regulations for flashing and constant lights, flags, minimum and maximum heights, crane and tower markings, road markings, smoke or dust control, prohibited colored lights and allowable and nonallowable actions in a flight zone at certain hours and other impacts to aviation.

In addition, you would probably need 5) Department of Transportation regulations for trucking in and storage of explosives in vehicles or near highways; 6) the (previously mentioned) MUTCD traffic control devices (guidance and effect on traffic in the area); 7) Federal Highway Administration regulations for road design (such as if you want to use added temporary safety embeds to hold lifelines on the bridge that may affect final design; 8) American Association of State Highway Transportation Officials road design and actions required of state and federal highway transportation departments; and 9) Bureau of Alcohol, Tobacco, Firearms and Explosives for blaster qualifications, blasting plans and accountability reporting and authorized purchase of blasting agents, storage and movement of blasting agents on site, security, etc.

Do not forget 10) Environmental Protection Agency pollution regulations for waste water, silt, sediment, debris, oil, chemicals or other contamination in the water, air or soil or Coast Guard regulations for prevention of pollution of navigable waterways or shorelines.

If the construction involves changes to shore structure or water-based structure, the U.S. Army Corps of Engineers may be involved in design or site management of parts of the project.

Do not forget city/town (and state) law enforcement, fire and rescue, noise regulations, air quality regulations, building codes and zoning for any storage yards, curb cuts, offices/trailers offsite, permits and signs, access and information (and permits) that may be required by them. In addition, consider immigration rules for hiring and Department of Labor regulations for wage and hour/Davis-Bacon rules if applicable.

And, for good measure, do not forget the legal and practical requirements of working with merit and/or unionized workforces and the rules established by the National Labor Relations Board, especially in regards to signs, gates, soliciting on site, meetings on site, picketing on site, hiring practices and others that can affect site layout, access, parking, traffic and other factors that may affect employee or public safety.

The easy answer to your question is that both A10.47 and MUTCD serve a purpose, and often different, but related purposes. They are not always meant to work together, and it is you, your site, your project and your needs and actions that dictate which will come in to play and how.

Sometimes it is a challenge to get a clear go-ahead for building something with so many people and agencies with an interest in your site and maybe not even a clear jurisdiction. A10.47 and MUTCD usually do not “work together,” although there is some overlap. They are not written or depended on to do the same things. SH&E professionals must know the various rules of the road and integrate and apply them. That is the role of competent and qualified SH&E professionals and management on a particular site. It is impossible to write standards that incorporate or even reference all other potentially involved or affected areas of the environment in which you work.
ANSI / ASSE Standards

New Standards

ANSI A92.2-2009 Vehicle-Mounted Elevating & Rotating Aerial Devices

ANSI A92.3-2006 Manually Propelled Elevating Aerial Platforms

ANSI A92.5-2006 Boom-Supported Elevating Work Platforms

ANSI A92.6-2006 Self-Propelled Elevating Work Platforms

ANSI A92.8-2006 Vehicle-Mounted Bridge Inspection & Maintenance Devices

ANSI A92.10-2009 Transport Platforms

ANSI/ASSE A10.16-2009 with Comparison Document


ANSI/ASSE A10.47-2009 Work Zone Safety for Highway Construction

A10 Standards

ANSI/ASSE A10 Crane Safety Standards Package

ANSI/ASSE A10 Construction Safety Standards Package

ANSI/ASSE A10.3-2006 Powder-Actuated Fastening Systems

ANSI/ASSE A10.3-1995 Powder-Actuated Fastening Systems

ANSI/ASSE A10.4-2007 Personnel Hoists & Employee Elevators on Construction & Demolition Sites

ANSI/ASSE A10.4-2004 Safety Requirements for Personnel Hoists & Employee Elevators

ANSI/ASSE A10.5-2006 Safety Requirements for Material Hoists

ANSI/ASSE A10.6-2006 Safety & Health Program Requirements for Demolition Operations

ANSI/ASSE A10.6-1990 (R1998) Safety Requirements for Demolition Operations


ANSI/ASSE A10.8-2001 Safety Requirements for Scaffolding

ANSI/ASSE A10.9-1997 (R2004) Safety Requirements for Concrete & Masonry Work


ANSI/ASSE A10.11-1989 (R1998) Safety Requirements for Personnel & Debris Nets (withdrawn)


ANSI/ASSE A10.13-2001 Safety Requirements for Steel Erection

ANSI/ASSE A10.14 Fall Protection Systems for Construction & Demolitions (Withdrawn)


A10.16 Comparison Document Package

ANSI/ASSE A10.16-2009 Safety Requirements for Tunnels, Shafts & Caissons

ANSI/ASSE A10.16-1995 (R2001) Safety Requirements for Tunnels, Shafts & Caissons


ANSI/ASSE A10.18-2007 Safety Requirements for Temporary Floor Holes, Wall Openings, Stairways & Other Unprotected Edges

ANSI/ASSE A10.18-1996 Safety Requirements for Temporary Floor Holes, Wall Openings, Stairways & Other Unprotected Edges
ANSI/ASSE A10.19-2008 Safety Requirements for Pile Installation & Extraction Operations


ANSI/ASSE A10.22-2007 Safety Requirements for Rope-Guided & Non-Guided Workers’ Hoists


ANSI/ASSE A10.24-2006 Roofing Safety Requirements for Low-Sloped Roofs

ANSI/ASSE A10.25-2009 Sanitation in Construction


ANSI/ASSE A10.28-1998 (R2004) Safety Requirements for Work Platforms Suspended from Cranes or Derricks

ANSI/ASSE A10.31-2006 Safety Requirements, Definitions & Specifications for Digger Derricks

ANSI/ASSE A10.31-1995 Safety Requirements, Definitions & Specifications for Digger Derricks

ANSI/ASSE A10.32-2004 Fall Protection Systems for Construction & Demolition Operations


ANSI/ASSE A10.34-2001 (R2005) Protection of the Public on or Adjacent to Construction Sites


ANSI/ASSE A10.38-2000 (R2007) Basic Elements of an Employer’s Program to Provide a Safe & Healthful Work Environment


ANSI/ASSE A10.40-2007 Reduction of Musculoskeletal Problems in Construction


ANSI/ASSE A10.44-2006 Control of Energy Sources (Lockout/Tagout) for Construction & Demolition Operations

ANSI/ASSE A10.46-2007 Hearing Loss Prevention for Construction & Demolition Workers

A1264 Standards


A1264.1-2007 Safety Requirements for Workplace Walking/Working Surfaces & Their Access; Workplace Floor, Wall & Roof Openings, Stairs & Guardrails Systems

ANSI/ASSE A1264.1-1995 (R2002) Safety Requirements for Workplace Floor & Wall Openings, Stairs & Railing Systems

ANSI/ASSE A1264.2-2006 Standard for the Provision of Slip Resistance on Walking/Working Surfaces


OSHA Standards

OSHA Standards Digest, 2006 Edition


OSHA Standards for Construction Industry, 29 CFR Part 1926 (Book Version)

**Z359 Standards**

Z359 Fall Protection Code Version 2.0

ANSI/ASSE Z359.6-2009 Specifications & Design Requirements for Active Fall Protection Systems

ANSI/ASSE Z359.12-2009 Connecting Components for Personal Fall Arrest Systems


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ANSI/ASSE Z359.1-2007 Safety Requirements for Personal Fall Arrest Systems, Subsystems & Components

ANSI/ASSE Z359.2-2007 Minimum Requirements for a Comprehensive Managed Fall Protection Program

ANSI/ASSE Z359.3-2007 Safety Requirements for Positioning & Travel Restraint Systems

ANSI/ASSE Z359.4-2007 Safety Requirements for Assisted-Rescue & Self-Rescue Systems, Subsystems & Components


**Additional Standards**

Board of Environmental, Health & Safety Auditor Certifications (BEAC): Performance & Program Standards for the Professional Practice of Environmental, Health & Safety Auditing

Slips & Trips Compendium

ANSI/PMMI B155.1-2006 Safety Requirements for Packaging Machinery & Packaging-Related Converting Machinery

ANSI/AIHA Z10-2005 Occupational Health & Safety Management Systems


ANSI Z87.1-2003 Occupational & Educational Eye & Face Protection Devices (for historical purposes only)

ANSI Z87.1-1989 (R1998) Practice for Occupational & Educational Eye & Face Protection (for historical purposes only)

ANSI/ASSE Z117.1-2009 Safety Requirements for Confi ned Spaces

ANSI/ASSE Z117.1-2003 Safety Requirements for Confi ned Spaces

ANSI/ASSE Z117.1-1995 Safety Requirements for Confi ned Spaces (for historical purposes only)


ANSI/ASSE Z390.1-2006 Accepted Practices for Hydrogen Sulfide Safety Training Programs


ANSI/ASSE Z490.1-2009 Comparison Document Package


ANSI/ASSE Z490.1-2001 Criteria for Accepted Practices in Safety, Health & Environmental Training (for historical purposes only)

ANSI/ASSE Z590.2-2003 Criteria for Establishing the Scope & Functions of the Professional Safety Position

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