ABCA NEWSPOINTS

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June is National Safety Month

June is National Safety Month, so what better time to provide a few construction site safety tips for workers and employers. For these safety tips, we focused on OSHA's Top 10 Most Frequently Cited Standards in Construction. For each standard cited we have a brief explanation of the standard or hazard along with some general tips for workers to keep in mind along with some of the requirements for employers to follow in order to provide a safe work environment for their employees.

1. Subpart M – Fall Protection 1926.501 Duty to Have Fall Protection. Number of Citations Issued FY 2015-16: 7,133

Duty to have fall protection is the most cited standard in the construction industry and is one of the leading causes of worker deaths in construction. Employers need to do a better job of assessing job sites and implementing fall protection systems to protect workers.

***Workers*:** Workers should familiarize themselves with all potential fall hazards on a job site. Never work in an area where fall protection systems have yet to be installed. Workers using personal fall arrest systems should inspect them before each use to ensure they are working properly and are free of damage. The lanyard or lifeline should be short enough to prevent the worker from making contact a lower level in the event of a fall. This means taking into account the length of the lanyard, length of dynamic elongation due to elastic stretch and the height of the worker.

***Employers*:** Employers are required to provide fall protection systems to protect their workers on walking or working surfaces with unprotected edges or sides that are six feet above a lower level. Fall protection can include guardrails, safety net systems and personal fall arrest systems. Guardrails are the only method approved that actually prevents falls from occurring. Safety nets and personal fall arrest systems prevent workers from falling a great distance. Fall protection includes protecting workers from falling into holes such as elevator shafts and skylights as well as excavations. Employers are also required to protect workers from falling objects by requiring hard hats be worn . by workers and by installing toeboards, screens or guardrails, erecting canopies or barricading the area to keep workers out.

2. Subpart L – Scaffolds – 1926.451 General Requirements. Number of Citations Issued 2015-16: 4,492

Approximately 65% of all construction workers perform work on scaffolds. Employees performing work on and around scaffolding are exposed to falls, electrocutions and falling object hazards.

***Workers*:** Hard hats should be worn when working on, under or around a scaffold. Workers should also wear sturdy, non-skid work boots and use tool lanyards when working on scaffolds to prevent slips and falls and to protect workers below. Workers should never work on scaffolding covered in ice, water or mud. Workers are prohibited from using boxes, ladders or other objects to increase their working height when on a scaffold.

Workers should never exceed the maximum load when working on scaffolds. Never leave tools, equipment or materials on the scaffold at the end of a shift. Workers should not climb scaffolding anywhere except for the access points designed for reaching the working platform. Tools and materials should be hoisted to the working platform once the worker has climbed the scaffold.

If personal fall arrest systems are required for the scaffold you will be working on, thoroughly inspect the equipment for damage and wear. Workers should anchor the system to a safe point that won't allow them to free fall more than six feet before stopping.

***Employers*:** All scaffolding should be designed, erected and disassembled by a competent person. A competent person should also inspect scaffolding before the start of work each day to ensure that it is safe for use. Scaffolding should be erected on solid footing, fully planked and at least 10 feet away from power lines. Scaffolding should be erected with guardrails, midrails and toe boards to protect employees working on, under and around scaffolding.

3. Subpart X – Stairways and Ladders – 1926.1053 Ladders. Number of Citations Issued FY 2015-16: 2,662

Improper ladder use is one of the leading causes of falls for constructions workers resulting in injury or death. Reasons for ladder falls include incorrect ladder choice, failure to properly secure the ladder and attempting to carry tools and materials by hand while climbing.

***Workers*:** Always maintain three points of contact while ascending and descending a ladder, that's both feet and at least one hand. Portable ladders should be long enough to be placed at a stable angle extend three feet above the work surface. Workers should tie ladders to a secure point at the top and bottom to avoid sliding or falling. Tools and materials should be carried up using a tool belt or a rope to pull things up once you've stopped climbing. Never load ladders beyond their rated capacity, including the weight of the worker, materials and tools.

***Employers*:** A competent person should inspect all ladders before use each day. Defective ladders should be marked or tagged out and taken out of service until they can be properly repaired. Workers should be trained on ladder safety and know how to select the proper ladder for the job. All ladders on the construction site should conform to OSHA standards. This includes job-made ladders, fixed ladders and portable ladders, both self-supporting and those that aren't. If workers are using energized electrical equipment, ladders should have nonconductive side railings.

4. Subpart M – Fall Protection – 1926.503 Training Requirements. Number of Citations Issued FY 2015-6: 1,584

It's not a surprise that the top four most frequently cited OSHA standards in construction have to do with protecting workers from falls. Falls are the leading cause of fatalities in construction, accounting for nearly 40% of all worker deaths. Providing proper and ongoing training to workers can go a long way in reducing the number of falls suffered at the construction site.

***Workers*:** Workers should be able to recognize the hazards of falling and know the procedures to follow to minimize hazards and prevent falls.

***Employers*:** A competent person is required to provide training to all employees that might be exposed to fall hazards. Again, this should cover all employees because at some point nearly everyone on the construction site is exposed to a fall hazard of some type. Topics of the training program should include the nature of fall hazards present on the construction site, proper erection, inspection and maintenance of fall protection systems, use of fall protection systems and personal fall arrest systems and the role of the employee in safety monitoring and the fall protection plan.

Employers are also required to maintain certification records of fall protection planning for all employees. Retraining is required for changes that render prior training obsolete and instances where it is apparent that a worker has not retained enough knowledge from the training program to ensure their safety

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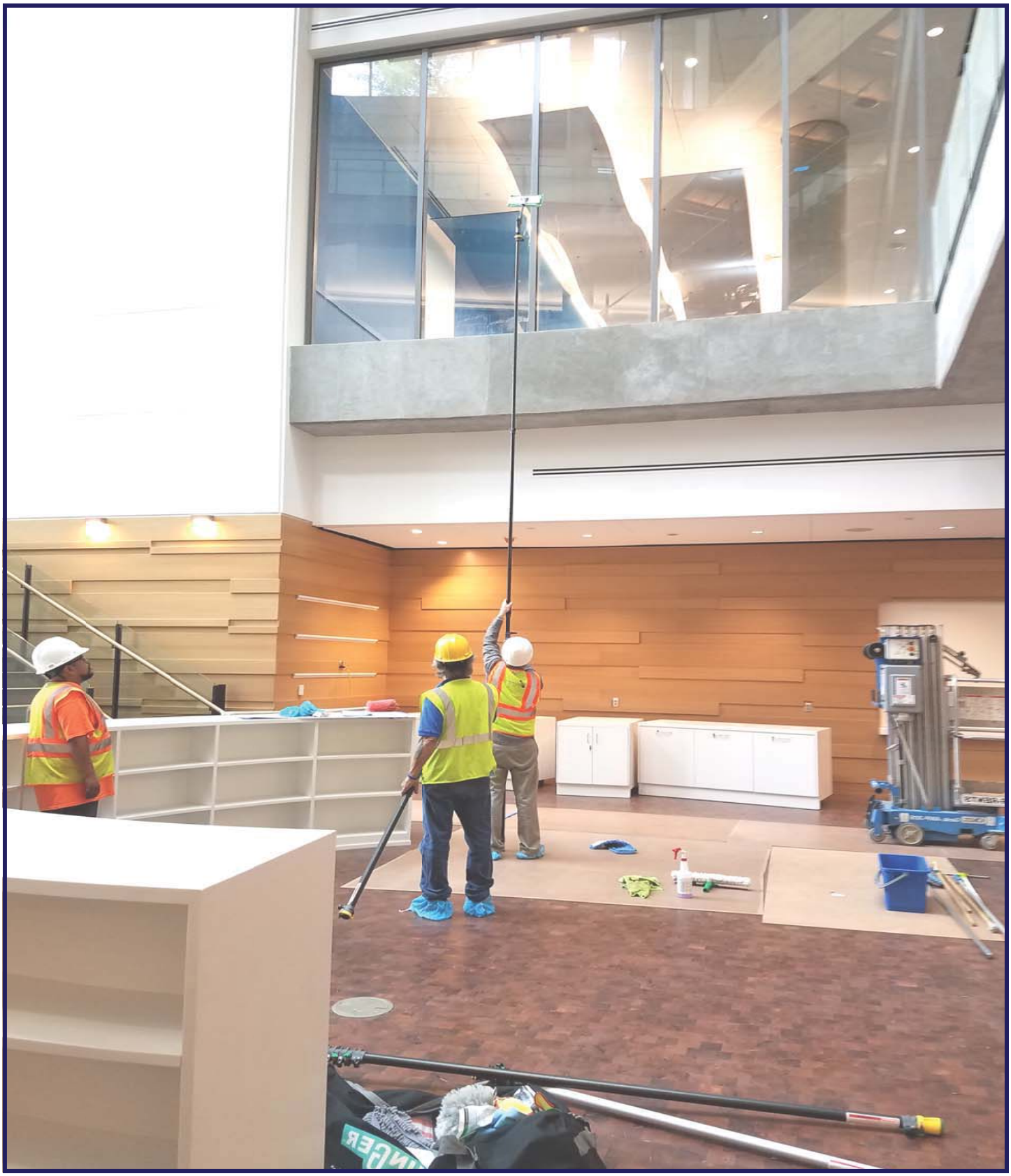

Training demonstration on how to use the **Carbon Master 60 foot Pole** to perform window cleaning at the **City of Austin New Central Library**. **Photo:** Mike Rios, left, and Carlos Ruedas, center. Both are technical crewmembers with **ZLynx Enterprise, Inc**., the final clean construction subcontractor. ZLynx is also a City Certified MBE firm. The demonstration was conducted by Paul Ballard of Unger Products.

5. Subpart E – Personal Protective and Life Saving Equipment – 1926.102 Eye and Face Protection.
Number of Citations Issued FY 2015-16:1,349
OSHA recently updated their standard covering eye and face protection in construction with the new rule going into effect in April 2016. OSHA requires that workers be provided with and wear face and eye protection when there are eye or face hazards present from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gasses or vapors, or potentially injurious light radiation. These hazards are present when doing a variety of task on the job site such as welding, chipping, grinding, masonry work, sanding, woodworking and drilling. When flying object hazards are present, eye protection must be equipped with side protection or be fitted with detachable side protectors.
***Workers*:** When wearing eye and face protection, workers should make sure that they don't interfere with their movements and fit snugly on their faces. Eye and face protection should be kept clean and in good repair. Workers should inspect face and eye protection before use to ensure it is free of cracks, chips and other damage. Eye and face protection that becomes damaged should be replaced immediately.
Employers: Employers are required to provide eye and face protection to workers free of charge. Eye and face protection must meet one of the following consensus standards: ANSI Z87.1-1989 (R01998), ANSI Z87.1-2003 or ANSI/ISEA Z87.1-2010 requirements. Employers should issue eye and face protection to workers based on an assessment of anticipated hazards. If workers have prescription lenses, employers are required to make sure that they have eye protection that incorporates the prescription or that can be worn over the corrective lenses without disturbing them.

6. Subpart E – Personal Protective and Life Saving Equipment – 1926.100 Head Protection.
Number of Citations Issued FT 2015-16: 1,143
Hard hats are commonplace at the construction site. They protect workers a number of hazards such as falling and flying objects, electrical shock and other impacts.

***Workers*:** Workers are required to wear head protection wherever there is the potential for being struck in the head, which is basically the entire time you are on the construction site. Possible scenarios include falling tools or debris, accidental nail gun discharge, contact with electrical hazards or swinging construction equipment. Workers should inspect their hard hat for any cracks, dents or any signs of deterioration. Hard hats should fit snugly on your head and not come loose during normal movements or work activities.
***Employers*:** Employers are responsible for providing all employees with head protection that meets consensus standards outlined by the American National Standards Institute (ANSI) or is constructed in accordance with one of those consensus standards. Employers are not allowed to charge employees for the cost of head protection or require them to provide their own hard hat unless they do so voluntarily. Hard hats should be kept in good condition and be replaced immediately if they suffer a heavy blow or electric shock.

7. Subpart Z – Toxic and Hazardous Substances – 1910.1200 Hazard Communication.
Number of Citations Issued 2015-16: 1,001
This is a general industry standard that focuses on requirements for employers that have hazardous chemicals in their workplace. Some examples of hazardous materials commonly found at construction sites include lead, silica, asbestos and treated wood or wood that will be cut and generate dust. Certain building materials also contain hazardous chemicals such as zinc, cadmium, beryllium and mercury.
***Workers*:** Workers should be able to read and use Material Safety Data Sheets (MSDS) for any hazardous chemical being used at the construction site. Employees should wear proper PPE when handling hazardous chemicals and should clean up any spill when they occur.
***Employers*:** Employers are required to implement a written hazard communication program that includes an inventory of all hazardous chemicals used at the site. All container of hazardous substances must have a hazard warning and be labeled. Employers should have an MSDS available for each hazardous substance. Employees should be trained regarding the risk of all hazardous chemicals along with proper handling instructions.

8. Subpart C – General Safety and Health Provisions – 1926.020 General Safety and Health Provisions.
Number of Citations Issued FY 2015-16: 932
The purpose of this standard is to protect construction workers from being required to "work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety" by contractors and subcontractors.
***Workers*:** The key takeaway from this standard for workers is that they should know that there are protections in place for their safety while working on the construction site. This includes receiving proper training for specific job duties and being provided with personal protective equipment (PPE). Workers should never operate any machinery or equipment if they have not been properly and adequately trained on its safe operation.
***Employers*:** Employers are required to implement safety programs in order to protect workers and prevent accidents. A competent person(s) is required to provide inspections of job sites, equipment and materials and includes ensuring that non-compliant tools and machinery are taken out of use by locking or tagging or removing them from the job site Construction standards take precedence over any similar or applicable general industry standard. In addition to providing necessary PPE to employees at no cost, employers are also required to provide training to all employees on hazards and all related matters for construction standards applicable to a worker's job duties.

9.Subpart L– Scaffolds—Aerial Lifts
Number of Citations Issued 2015-16: 857
Aerial lifts fall under scaffolding and are vehicle-mounted devices used to elevate workers such as articulating and extendable boom platforms, vertical towers and aerial ladders. Hazards associated with the use of aerial lifts include fall and ejections from the lift platform, tip-over's and structural failures of the lift, electric shock, contact with overhead objects or ceiling and being struck by objects falling from lifts.
***Workers*:** Workers must be trained and authorized in order to operate an aerial lift. Inspect all vehicle and lift components based on the manufacturer's recommendations before operating an aerial lift to ensure it is in safe working condition. Never operate a lift if any component is missing, damaged or appears defective.
Always stand on the floor of the lift platform or bucket when working, never use a ladder or other device to increase your working height. Make sure that your harness or restraining belt and lanyard are securely attached to the boom or bucket and that they are in good working condition. Never exceed the load capacity or the vertical and horizontal reach limits of the lift. Lower the lift platform when driving the lift and stay at least 10 feet away from overhead lines.
***Employers*:** Employers should ensure that all workers operating aerial lifts receive proper training before being authorized to use them and provide retraining in the event a worker has an accident while operating a lift, hazards are discovered, a different type of lift is being used or if the workers are observed improperly operating a lift. In addition to ensuring that all aerial lifts are in good operating condition, employers are also responsible for having work zones inspected for hazards including holes or unstable surfaces, overhead obstructions, inadequate ceiling heights and slopes or ditches. Employers should also have power lines de-energized when possible when workers are in the vicinity

10. Subpart M – Fall Protection – 1926.502 Fall Protection Systems Criteria and Practices.
Number of Citations Issued 2015-16: 759
This standard covers all of the requirements and provisions for the different types of fall protection required by OSHA. It covers items like guardrail height requirements and minimum tensile strength for components of personal fall arrest systems. This standard also covers requirements for covers over holes and openings and provisions for establishing controlled access zones.

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***Workers*:** Workers should be aware of potential fall hazards as well as what fall protection systems have been put in place to protect them. If workers are using personal fall arrest systems, they should inspect them for wear and ensure that all components are in good working order and that the harness properly fits.

***Employers*:** Employers are required to install all required fall protection systems before any employees begin work. Employers should remember that they are also responsible for protecting workers from falling objects with either toe boards, canopies or guardrails. If using a safety monitoring system, the safety monitor should be a competent person who remains on the same walking or working surface and in visual sight and hearing distance from the worker they are monitoring. They should be able to identify fall hazards and warn workers when they are working unsafely or may be unaware of a fall hazard. If conventional fall protection methods laid out by OSHA are infeasible or create a greater hazard and a worker is performing leading edge work, precast concrete erection or residential construction work, the employer must have a fall protection plan. The plan must be site specific and developed by a qualified person. In areas where conventional methods cannot be used must be classified as controlled access zones and only workers designated to perform work there are allowed to enter.

58% OF CONSTRUCTION WORKERS SAY SAFETY TAKES A BACKSEAT TO PRODUCTIVITY

A National Safety Council survey found 58 percent of Americans working in construction – the industry that sees the most workplace fatalities each year – feel that safety takes a backseat to productivity and completing job tasks. What's more, 51 percent say management does only the minimum required by law to keep employees safe, and 47 percent say employees are afraid to report safety issues.

By contrast, 36 percent of the 2,000 full-time and part-time employees in the 14 industries surveyed by NSC feel their employers prioritize productivity over safety.

"Sadly the results of our survey indicate that many workers still worry about whether they will make it home safely tonight," said Deborah A.P. Hersman, president and CEO of the National Safety Council. "We call on all employers to renew their commitment to keep everyone safe, on every job, each and every day."

A total of 4,836 people died in workplace incidents in 2015, and 937 of those killed were construction workers. Falls are the second leading cause of death in the workplace, and more than half of fall-related deaths each year occur in the construction industry.

Gauging Americans' perceptions toward their safety at work may help provide further insight into workplace deaths. Other key findings from workers across all industries include:

- **32** percent feel management ignores an employee's safety perform ance when determining promotions.
- **62** percent say everyone is involved in solving job safety issues.
- **63** percent of employees feel they work in areas or at stations that are ergonomically correct.
- **48** percent of employees believe safety meetings are held less often than they should be.
- **47** percent believe performance standards are higher for job tasks than for safety. This percentage is higher among construction industry workers, where 67 percent feel this way.
- **33** percent of employees working in transportation and warehousing do not agree that management has a written policy that ex presse their attitude about employee safety.

***The survey is based on the council's Employee Perception Surveys*.**

Source: EHS Today informs safety, health and industrial hygiene professionals in the manufacturing, construction, and service sectors about trends, management strategies, regulatory news and new products that help them provide safe and healthy work sites.

OSHA Construction Safety

When it comes to safety, the construction industry has a higher fatality rate than the national average. In an effort to reduce worker injuries and fatalities, OSHA has created a comprehensive set of safety standards, as well as a construction safety digest, safety training guides, and more. OSHA requires that employers maintain a safe work environment and follow all related OSHA safety and health standards. Most of the applicable standards can be found in **29 CFR 1926**, Safety and Health Regulations for Construction; when there is a workplace hazard not covered there, it may be covered by the **General Industry Standard 29 CFR 1910**.

OSHA Construction Safety Education

Proper training and education is the first line of protection when it comes to worker safety. OSHA requires all training to be done in a language and vocabulary that workers understand. This can mean providing training in several languages. In general, OSHA requires that training includes the following:

- How to recognize hazards that are or may be present in their workplace
- How to avoid hazards present in their workplace
- When Personal Protective Equipment (PPE) is needed and how to properly wear it

Training should cover all potential hazards, safe work practices, and emergency situations. Special attention should also be given to the "Fatal Four," which caused over 50% of all construction worker fatalities in 2014, according to OSHA.

The "Fatal Four" includes falls, electrical hazards, falling objects, and crush hazards (being caught between a moving object and a fixed object). To help improve workplace safety and reduce falls, Graphic Products created an **OSHA Fall Protection Guidelines and Standards Infographic** that can help you better understand OSHA's fall protection standards.

By identifying specific dangers at a given construction site, employers can develop a well-thought, effective training program that provides workers with the knowledge they need to stay safe. Remind workers about safety practices and communicate hazards throughout the worksite with **safety signs and labels that can be seen and understood.**

OSHA Construction Safety Methods

Improving construction safety is a complex task that requires a holistic safety approach. This requires employers to use the following methods:

- Engineering controls
- Safe work practices
- Personal Protective Equipment (PPE) assessment and training
- Daily inspections and preventive maintenance
- Employee injury and illness programs

Using each of these methods will ensure that workers remain safe by eliminating and reducing workplace hazards.

Engineering Controls: Eliminating or reducing hazards through engineering controls is the most effective means of preventing workplace injuries and deaths. Engineering controls focus on the following:

- Designing equipment, processes, and buildings in a manner that will completely remove hazards. When it is not possible to eliminate a given hazard, a lesser hazard may replace it. This is called substitution.
- When the hazard cannot be eliminated or substituted, other methods like guarding, barriers, or ventilation systems can be used to limit employee exposure to the hazard.

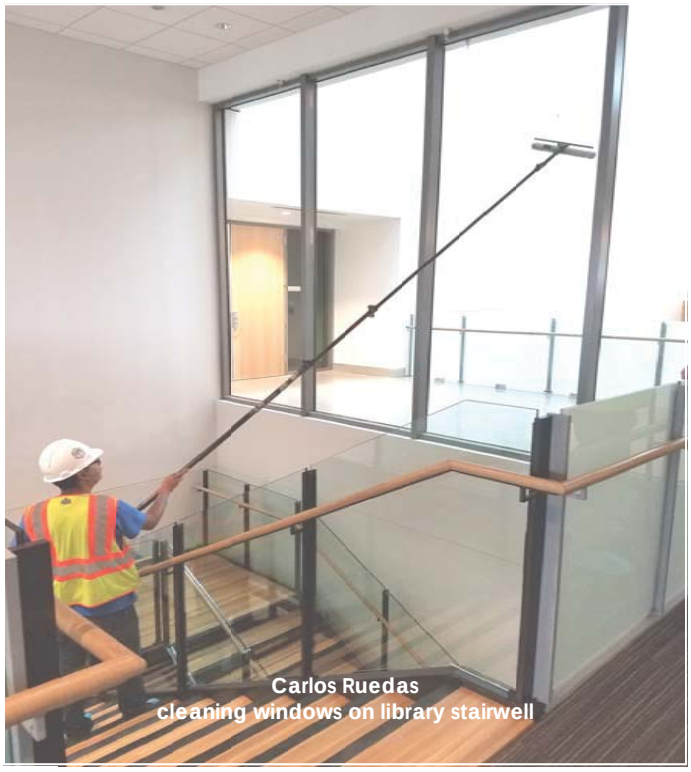
Safe Work Practices: Safe work practices include the rules and work procedures used at a construction site. This includes following Lockout/Tagout (LO/TO), requiring workers to use the correct PPE and providing safety oversight for dangerous work, like working in confined spaces.

PPE Assessment and Training: Every worksite has hazards that must be further reduced by using PPE. Hard hats can protect workers from falling and impact hazards while respiratory gear can reduce exposure to silica dust, lead, and other harmful chemicals. Before work can begin, hazards must be evaluated to determine which PPE is needed. Workers must then be trained, so they know when to wear PPE as well as how it must be worn. All PPE must be regularly inspected and properly maintained.

Preventive Maintenance and Daily Inspections: Good preventive maintenance plays a major role in ensuring that equipment does not create hazards when used. Meanwhile, daily walk-around inspections provide a useful means for employers to spot problems before they become hazardous. For example, an inspector might find that a trench's shoring has been damaged and close the trench to further work until it is fixed.

Injury and Illness Prevention Programs: Employers can further reduce workplace injuries with an injury and illness prevention program. Workers are trained to recognize and treat health problems like heat stroke, concussions, and more. Programs include providing first aid training and stocking worksites with basic medical supplies needed to treat many common workplace injuries. They should also include a means to quickly contact emergency services when needed.

Photo left: Carlos Ruedas, Mike Rios technical crewmembers with ZLynx Enterprise, Inc., Paul Ballard of Unger Products; and Ray Sepeda, ZLynx Services



Carlos Ruedas
cleaning windows on library stairwell

Left: Gene Gleen, Foreman, Hensel Phelps, Construction Manager at Risk for the New Central Library and Paul Ballard, Unger Products

Construction Safety Visual Communication

An important part of construction safety is effective communication. One way employers can improve safety is by using safety signs and labels to communicate hazards and remind workers to wear PPE **(personal protective clothing, helmets, goggles and garments).**

DuraLabel **printers and supplies** provide a robust safety communication solution for construction sites. Print custom labels and signs to ensure that your safety messages are seen and understood when they are needed the most. With more than 50 specialty supplies, you'll have the tools you need to create a safer worksite.

Support onsite safety training with large, easily understood posters, using **Echo large-format printer and enlarger** by Graphic Products. Quickly enlarge important safety documents for meetings or create custom safety diagrams for training

ZLynx Enterprise, Inc.
Final Clean Technical Crew Members
Ray Sepeda, JoAnn Sepeda, Project Manager and Frank Pesina

ZLynx Enterprise, Inc. Contract Team

Jerome Cypress, Project Manager; JoAnn Sepeda, Project Manager-*City of Austin New Central Library and ABIA Terminal Improvements Project*; Ronda Houston, Business Development Specialist; Gloria Macias, Marketing Contract Administrator; and Lorena Macias, Accounting and Payroll Administrator.

OSHA

Protect Yourself
Construction Personal Protective Equipment (PPE)

Eye and Face

- Safety glasses or face shields are worn any time work operations can cause foreign objects to get in the eye. For example, during welding, cutting, grinding, nailing (or when working with concrete and/or harmful chemicals or when exposed to flying particles). Wear when exposed to any electrical hazards, including working on energized electrical systems.
- Eye and face protectors – select based on anticipated hazards.

Foot Protection

- Construction workers should wear work shoes or boots with slip-resistant and puncture-resistant soles.
- Safety-toed footwear is worn to prevent crushed toes when working around heavy equipment or falling objects.

Hand Protection

- Gloves should fit snugly.
- Workers should wear the right gloves for the job (examples: heavy-duty rubber gloves for concrete work; welding gloves for welding; insulated gloves and sleeves when exposed to electrical hazards).

Head Protection

Wear hard hats where there is a potential for objects falling from above, bumps to the head from fixed objects, or of accidental head contact with electrical hazards.

- Hard hats – routinely inspect them for dents, cracks or deterioration; replace after a heavy blow or electrical shock; maintain in good condition.

Hearing Protection

- Use earplugs/earmuffs in high noise work areas where chainsaws or heavy equipment are used; clean or replace earplugs regularly.

U.S. Department of Labor
www.osha.gov (800) 321-OSHA

6 Areas Where Technology Revolutionizing the Construction Industry

Technological innovations are seeping into the industry so thoroughly that even the humble hard hat is changing, with high-tech smart hats coming to the market, along side new advances that benefit every area of the industry. Tech is making construction safer and more efficient. Here are six areas where technology is revolutionizing the construction industry.

1. THE OFFICE: KEEPING PAPERWORK IN ORDER

Contractor licensing and OHSA requirements are likely to get more complicated as technology changes. Fortunately, new tools are arriving to make this easier for you. New apps help you keep data in order and share information between the office and job sites — an app like **Safety Meeting** helps you keep track of your business's safety record. Surety agencies are beginning to offer electronic bonding; this is vital for you as contractor license bonds continue to be an important part of your business (here's a **comprehensive surety bond definition** if you need a refresher). This process is becoming quick and hassle-free.

2. AUTONOMOUS TRUCKS: DRIVERLESS SOLUTIONS

From bulldozers to freightliners, trucking is becoming smart. Rio Tinto mining in Australia is currently utilizing 69 **autonomous dump trucks with GPS** to transport ore. The trucks are controlled remotely by a single driver, which amounts to a more efficient use of resources and creates a safer work environment for employees. These trucks get loads to their destination with fewer delays and less fuel usage than trucks with human drivers. Mining isn't the only place driverless trucks are showing up. **Autonomous crash attenuator trucks** are coming to the highway construction zones of Florida — the first state to test this type of vehicle. Crash attenuator trucks save lives in construction zones but endanger their drivers, so this pilot program uses completely driverless trucks. The technology works by leader/follower programming or remote control, utilizing GPS Waypoint navigation.

3. MATERIALS: REVOLUTIONARY OR RECYCLED

Carbon fiber and 3D printing are changing the way items like turbine blades are constructed. The carbon fiber is printed in honeycomb-shaped structures, with reinforced cell walls making it durable. This technology has the ability to revolutionize the creation of wind turbine blades and other instruments currently created from balsa wood. The balsa tree is fast-growing, but its wood is expensive and natural fluctuations in grain patterns make it difficult to create precision instruments. Not all construction materials need to be new: sometimes they can be recycled instead. Concrete is a common construction material, but over time it breaks down. While **the idea of recycling concrete** and the process aren't new, what is new is the approach. Recycling concrete is generally very difficult and potentially dangerous to do because it produces questionable quality, strength and durability. Up-and-coming technology and research will mean that the concrete industry's impact, mainly in the form of obtaining aggregate, will be able to be reduced through recycling. It may not be in common practice just yet, but you should look out for this on the horizon.

4. AT THE JOBSITE: MONITORING PRODUCTIVITY

Drones are popping up everywhere, and the jobsite is no different. Look out for **drones checking on job progress** and keeping the site secure. Drones are mapping worksites and generally keeping tabs on productivity and safety. Footage shot by drones is even being used to analyze when jobs will be finished and show progress to clients. In essence, drones are becoming productivity monitors. **Live construction drawings** are creating a real-time progress monitor that can be viewed anywhere. **Field lens** is just one program that allows you to view your plans from anywhere, including on a mobile device. It allows users to communicate about drawings right on top of them, as well as what's really happening on site. Other features include project imaging and weather reports, making for better communication and less time spent on reports.

5. ON THE ROAD: STREET SMARTS

While some technologies are already being piloted, others are still in the works. For instance, smarter roads are being developed. Dutch firm Heijmans and designer Daan Rosegaarde are working on a technology called **Smart Highway** that incorporates glow-in-the-dark lining on road decks, electric priority lanes, interactive lighting and utilization of dynamic paint. Another Dutch company, SolaRoad, is working on roads that will generate solar power. These roads will absorb sunlight and convert it to electricity. So far, it has been tested outside of Amsterdam and generated about 3,000 kWh in the first six months.

6. EQUIPMENT: WEARING YOUR TECH

Hard hats have always been a symbol of construction workers. **Smart Helmet** takes a mandatory piece of equipment and makes it an amazing piece of wearable tech. It's equipped with a transparent visor, special lenses and 4D augmented reality to give the wearer a heads-up. Using sensors and cameras, it gives a variety of information about the surrounding environment and how to move through it. The helmet gives instructions on completing tasks and warns of potential hazards. These new additions put a twist on an old mainstay, making it a useful piece of personal equipment for years into the future. Now that you're feeling enthusiastic about the future of construction, keep in mind that some things will never change.

Smart Helmet takes a mandatory piece of equipment and equips it with a transparent visor, special lenses and 4D augmented reality to give the wearer a heads-up.

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