



Willis Towers Watson 

2018 Construction Safety Excellence Awards (CSEA)

Safety Management Best Practices





Introduction

On February 27, 2018, the AGC-Willis Towers Watson Construction Safety Excellence Awards (CSEA) breakfast was held at the AGC National Convention in New Orleans, Louisiana. Almost 1,000 contractors attended.

The AGC-Willis Towers Watson CSEA program is the industry's elite safety excellence awards program for companies of all sizes and occupational divisions. It is unique because finalist contractors make five-minute presentations to five judges. The judges then ask each finalist a series of unknown questions for 10 minutes. The CSEA program recognizes companies that have developed and delivered premier safety and risk control strategies. Additionally, CSEA showcases companies that have achieved continuous improvements and maintenance of their safety and health management systems. In 2018, there were 59 total finalists among 7 divisions and 21 categories.



AGC-Willis Towers Watson presented the Grand Award for Construction Safety Excellence to Rosendin Electric, Inc. The first-place winner of each category was included in the evaluation that determined the "Best of the Best" of the 2018 Construction Safety Excellence Awards finalists.

Profile of the Grand Award Winner

Company Background

Rosendin Electric, Inc., headquartered in San Jose, Calif., is an employee-owned electrical contractor. With revenues surpassing \$2 billion, Rosendin is one of the largest electrical contractors in the United States employing over 6,000 people. For nearly 100 years, Rosendin has created a reputation for building quality electrical and communications installations, building value for clients, and building people within the company.

Rosendin's quest to be the AGC-Willis Towers Watson CSEA Best of the Best:

Rosendin's implemented policies and training have helped diminish job site hazards and involve employees and subcontract employees in every aspect of safety. On their first day, each employee is given a **Stop Work Card**. This card empowers all Rosendin employees to judge any work situation and "Stop Work" at any time if they feel unsafe. A **"5Why" Accident Investigation Form** was created with a focus on discovering the root cause of an accident and the "Whys" behind each step that occurred. A **Pre-Task Plan (PTP) policy** was implemented to help employees stay focused, organized, and to recognize hazards before work commences and throughout their day. Digital Pre Task Plans were developed for iPads with links to allow for remote access of permits. To ensure proper tool use, **Tool Training Posters** were designed with QR codes, accessible on any smart device, that provide training and proper use videos for every utilized tool. During Energization and Testing programs, **Methods of Procedures (MOPS), Step-by-Step (SBS), and QA/QC** were put into place to allow for time validation and ensure the correct precautions are taken. **Real-Time Auditing** controls and keeps track of hazards to identify and maintain safe work environments that are reviewed by Rosendin's safety team and field supervisors.

Rosendin, together with other electrical contractors, is part of the NECA Large Contractor Group that is working towards ways to create safer working environments and improve safety throughout the industry. In addition, Rosendin is making an impact through collaborations with large tool manufacturers to create new and safer tool prototypes for future use industry wide.

What we have learned and changed in our organization over the years by entering the competition

Over the years, we have continued to take a deeper look at the quality of projects that we work on, not just the quantity. We ensure that regardless of where Rosendin employees work, the project team holds safety and security in the highest regards. In addition, Rosendin has introduced new and innovative technologies to the construction industry to reduce risk and injuries on the jobsite.

Why Rosendin approaches safety in the way that we do?

We have a passion for safety. A passion for ensuring that our people go home safe each day; for building projects that enhance the lives of people in our communities; and for building a greater tomorrow.

At Rosendin, we are striving to build a better America and evolve construction and the industries that we are in. Safety is a catalyst in making this happen. Safety at Rosendin begins with giving each of our employees a voice that we listen to and that provides each person ownership in our successes.

Message to companies who have not entered before

Safety is not proprietary; it is something that everyone in the industry holds in high regards. We want to motivate other companies to bring something new to the table; something that we have not seen before, and that can be implemented to create a safer tomorrow. By entering this competition, everyone has the opportunity to learn from each other on how to improve their safety program. The judges' feedback is very important because it provides information and suggestions on how a company can improve their safety program.

How we plan to use our recognition as a competitive advantage

Being the 2018 Construction Safety Excellence Award recipient gives Rosendin Electric a competitive advantage in our recruitment efforts. When looking for new talent, we emphasize the policies and procedures that Rosendin has in place to create one of the safest working environments in the nation. We advertise our award wherever and whenever we can. This includes placing the CSEA Grand Award Winner image on all outgoing employee email signatures, on the Rosendin website and intranet, and on t-shirts. Hard hat stickers with the CSEA award were handed out to all employees, project site/office banners and posters were created, and celebrations were held in offices company-wide to thank our employees for working safe. Being the 2018 CSEA Grand Award Winner would not have been possible without the commitment to safety from everyone within Rosendin.

2018 CSEA Judges

The AGC-Willis Towers Watson finalist judges were (L-R)



Mike Fredebeil

Jane Beaudry

Bill Parsons

Treasa Turnbeaugh

Tony Militello

On January 8-9, 2018 in Long Beach, California prior to the AGC National Safety Committee meeting, preliminary judging for the CSEA final competition took place. A total of 31 preliminary judges consisting of safety professionals from the construction industry, AGC Chapters, construction brokers, and construction insurance carriers evaluated and scored the initial 101 CSEA applications from across the country.

2018 CSEA Safety Management Best Practices

33% of CSEA Finalists have supervisors that completed OSHA 30-hour for Construction



60% of CSEA Finalists provide supervisors with an additional 10 hours of Safety Orientation Training



386



Safety Management Best Practices to share with the Construction Industry

66% of CSEA Finalists use employee safety perception surveys.



60% of the surveys were developed in-house. 40% were administered by a 3rd party.

CSEA Finalists provided an average of 3.5 hours of New Employee Safety Orientation



CSEA 2108

101 Applications
59 Finalists



The above Word Cloud represents the most used words in all the finalists' applications. The size of the word represents how often it was used.

2018 CSEA Safety Management Best Practices

The following combines many noteworthy Safety Management Program elements highlighted by presenters and noted by the judges during the final competition

Senior Management Ownership and Participation

- Safety is the first message received when a worker arrives on site. Safety is the first agenda item for every job meeting.
- Safety starts at the top: our COO is our Safety Officer and is involved in all aspects of operations.
- President and VP demonstrate ownership and participation by their commitment to the same level of safety training they require of the project management teams.
- Safety is not an incentive, it is a culture.
- Owners are retrained on OSHA 30 every two years and attend CPR/1st aid training.
- Annually, Project Managers and Superintendents have performance evaluations based on safety management participation and performance.
- Implemented a communications tool using mobile technology that requires Foreman to be in daily contact with the Safety Department, thus ensuring supervisors are engaged and accountable for safety performance on every project, every day. The tool also allows the Safety Director to “broadcast” critical messages (such as Heat Illness alerts) quickly and efficiently to the field.
- Hired three additional Safety Supervisors lowering employee to Safety Supervisor ratio.
- Owners send out personal video safety messages when concerns have arisen. They are shown on every job site, to all employees, as a personalized safety alert or safety stand down. They are also shared on social media so other contractors may benefit as well.
- Safety Crew Lunch where Owners, site management and the safety team lead a lunch meeting that encourages involvement from the employees. They review the project's safety procedures and the status of the project.
- The “Ownership Thinking” process teaches employees to think like an Owner, where ideas and thoughts can be expressed to make a better, safer and healthier company. Since the inception of “Ownership Thinking”, over 17 new ideas or programs have been initiated by our employees.
- Monthly joint project visits by President/Owner and the safety director to perform safety audits. Gives the President an opportunity to visit with the team to find out what they need to make them and their projects safer.
- The safety department budget is >\$1.9 MM dollars. This includes labor, materials, training and equipment, as well as subcontracted costs for specialty items related to industrial hygiene monitoring.
- "Readiness Review" is a process where the project team must review their safety plan with the Owner, who signs off on the plan after detailed questioning.
- Owners communicate weekly to all projects via Go-To Meeting. The Safety Manager shares information from the week posted in "Basecamp," a collaborative and innovative application that makes information sharing and team work easier than ever before. This technology allows all remote project locations to be able to see and hear the same information as our main office. Use of the Basecamp application (<https://basecamp.com>) provides all Superintendents and Project Managers up-to-date safety information directly to their phone or project iPad.



- Safety statistics may meet the criteria of a compliance based organization, but we operate as a learning organization, always striving to improve.
- "LIFE CRITICAL RULES" and our employee handbook document and support that violation of these rules are grounds for termination. Applies to following hazards: Falls, Electrical, Lockout-Tagout, Confined Space, and 15' safe zone around equipment.

- Every new employee learns in orientation about the "three-second decision" from senior executives. For the executive, it's personal, as he lost his own father when he was quite young, because his father did not make the three-second decision that could have saved his life. This conversation at orientation is the beginning of the leadership safety commitment to every employee.



- Turned our "compliance" based safety program into an innovative safety "performance" culture.
- Every Monday, Project Managers and Superintendents share safety information with all crews. They are tracked for participation.

- Executive leaders and senior managers attended a 2-day safety commitment workshop. Coaching sessions follow. Ten (10) operational leaders are picked to lead a 4-hour "incident and injury free" orientation for all 550 employees and temporary workers.

- Every Friday, Senior Management conducts a mandatory company-wide webcast, where teams from eight offices discuss topics that range from daily reminders to near misses with potentially deadly consequences.

- All safety professionals and managers are included in all management meetings. Have a national and area office safety committee comprised of both safety and operations personnel.

- Safety and Health Management System conforms to OHSAS 18001

https://en.wikipedia.org/wiki/OHSAS_18001

- Core Safety Participation Report measures our efforts. We record attendance for each safety meeting or inspection and track participation for field supervisors and management, against set criteria, consistently achieving over 85% participation across the company.



- Stopped talking about "lack of accidents" and have begun focusing on "what we do to keep them from happening."

- Anonymous complaint hotline. Information goes directly to our CEO and an outside board member. This allows the stewards of our brand to receive and handle issues that may arise with site or middle management, making sure that issues are settled in an appropriate and sustainable way.

- CEO mandated all field employees receive an OSHA 10-hour and all supervision receive an OSHA 30-hour course. Spent 14 weekends training approximately 600 workers. More than 7,500 work hours were spent in just OSHA training in 2017.

- Each division is charged their percentage of total company Workers Compensation premium and is given 100% of what is not spent directly on injuries back to their bottom line, thereby, increasing their bonuses.

- SAFETY is not a responsibility. It is an avenue to invent, invest, inspire, create and receive the attention that someone cares.

- Created a large electrical contractors network group that is focused on sharing the best known methods of safety across the world, shaping and enhancing each other's safety programs.

- All new hires are required to view a professionally produced safety commitment video from the President.

- Senior VP shares his personal experience with an arc flash accident earlier in his career, where he was severely burned.
- Executives, Regional Managers, and the safety staff come together quarterly to discuss corporate safety performance and share lessons learned and “Best Known Methods”.
- Leaders are required to share a "My Safety Feedback & Improvement Plan" with all employees each year.
- Every leader (from Executive to Foreman) participates in a “My Safety” Leadership Workshop, with goals focused on: effectively applying safety leadership qualities/processes, empowering employees to take responsibility for their safety, recognizing and correcting hazards, conducting meaningful safety talks and planning meetings, making projects safer by always doing what’s right, and having personal plan for action that integrates safety values into all they do.
- Key leadership topics include: Chronic Unease, Error Traps, Drift and Attitude Charting. Over 20 workshops have been conducted, with more than 150 leaders participating.
- The President, Vice Presidents, Project Managers and Superintendents participate in Safety Challenge process while visiting jobsites. If a member of Management observes a team member performing in full compliance, they ask the team member a question from the Field Safety Hand Book. The Challenge is designed to get management and team members talking about safety in a positive, non-intimidating way. If the question is answered correctly, the team member receives a \$5.00 gift card and their name appears as a winner in the newsletter.
- To facilitate good task planning and a safe work start, no meetings can be scheduled before 8 a.m.
- Six craft workers have lunch with the President, no foremen present each month. Exchange ideas and issues.
- Two-hour leadership training for all employees, craft to leadership. Theme is not about safety on the job, but rather safety in our lives.
- Good Safety is Good Business
- Separate performance evaluations. Foremen with no OSHA Focus 4 at-risk observations receive recognition, gift card, and salary bonus.
- President attends and participates in every new hire orientation to demonstrate safety commitment.
- If there is a sensed lack of team engagement, a "Rapid Response" team mobilizes to project site to address team concerns.
- Owners not only support a Drug Free Workplace, but require random testing – they also personally take part in the random testing.
- Company streamlined its safety newsletter and updated the contents. Communicate monthly safety matrix, goals and highlight projects. Ensure Project Managers write the safety articles, not safety coordinators.
- President attends safety meetings unannounced. He participates in jobsite safety walks and communicates with the subs too.
- Demonstrated management participation by being seen walking the jobsites and doing JHA audits

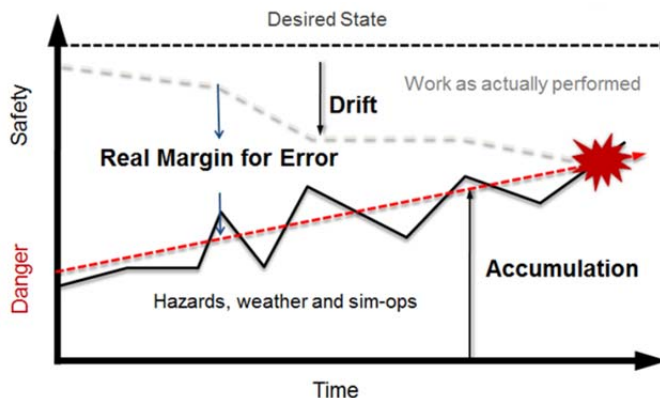
Risk Identification and Analysis

- Require all personnel to conduct a safety observation report on Predictive Solutions SafetyNet software. Predictive Solutions SafetyNet helps collect safety data on projects. The results include positive safety awareness as well as any safety issues and non-issues that can be present on a jobsite. The data is then analyzed and all observations are communicated with the subcontractors during their meetings.
- Monthly specific safety plan for each project.
- Monthly Superintendent conference to share safety lessons learned and safety initiatives.
- Use an online motoring service to track Motor Vehicle Records for those who drive a company truck or their truck on company business (Negligent Entrustment prevention).

- Predictive Solutions SafetyNet is used to document behaviors and conditions. These observations, in conjunction with historical event data, are used to predict where challenges and where the next event may arise in the future.

- Incidents including “Near Miss” events are thoroughly investigated with a root cause analysis and a formal report, followed by a presentation to the management team and a Lessons Learned document.

- Site specific fire prevention plan is covered during orientation and audited throughout project duration.
- Anyone who drives on company business is required to attend driver training, which includes Defensive Driving. All employees driving records are reviewed before they are allowed to drive.



- Every week the jobsite Foreman writes a formal document in regards to safety and health. The frequency is required due to ongoing changes in the work environment and equipment.

- All drivers who drive on company business receive a six hour defensive driving course (NSC). Driver MVRs are also checked every six months.

- Safety Stratus safety software utilized to document safety observations- <https://www.safetystatus.com>

- Every 30 days, a loss history analysis is prepared for our projects and is reviewed at Safety Meetings.

- Two-week look-ahead schedule is posted at jobsite trailers to forecast what is coming up to trigger plans for addressing safety issues.

- Supervisory safety behavior observation program and their participation is a critical part of the performance evaluation. These observations are reviewed during the employees review and are heavily considered for promotion.

- Each position has a job description and is reviewed closely with physicians during physicals, range of motion exams and fitness for duty exams.

- Prior to project beginning an intensive risk analysis is completed and is evaluated and adjusted through the life cycle of the project. Sequentially, pre-bid plan reviews are completed utilizing “Virtual Construction” technologies.

- Projects use a proprietary mobile app to document safety. The app documents both positive and unsafe behaviors in real time. Images and reinforcement are sent directly to subcontractor foremen and their teams. In 2017, more than 600,000 observations were made using this system.

- Project estimators meet with safety personnel/project team during the pre-bid and pre-construction planning phase to budget people, project controls and PPE.

- All company employees that operate a company-owned vehicle or personal use vehicle on company business is required to complete four-hour Defensive Driving and trailer towing (if applicable) training courses annually.



- Smartphone app allows employees to report safety observations from their mobile device. This safety data is trended across the business. With the trended data specific inspections, communications, and training are tailored to help focus efforts and drive specific injury numbers down that are currently occurring in the field. For example, shoulder strains and tears are down by 33%, and strains and strains overall are down by 40% this year through this process.

- Refined incident review process by categorizing contributing factors to get better and more consistent information. Also, built a tracking system that allows for the analyzation of common causes for incidents and losses.

- Our definition of safety effectiveness extends to participation, hazard recognition, and training interest.

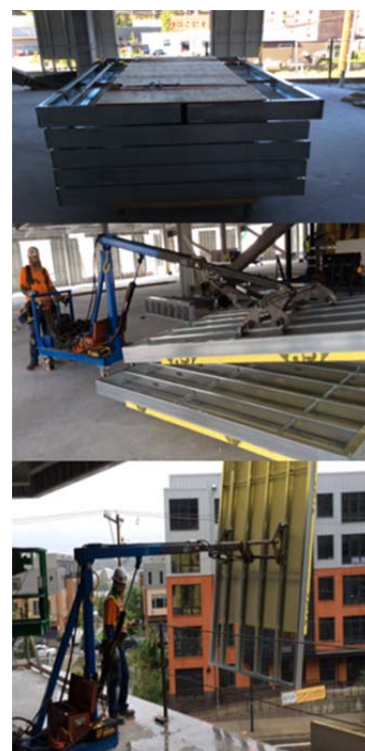
- Lagging metrics are a result of “What” we did, and what can easily be attributed to luck.
- Measure crew participation with perception surveys conducted weekly by the safety department. The survey questions include such questions as, “*when was the last time your boss spoke to you about safety* and *what was the last training class you went to*”? Crewmember perceptions are trended and shared with supervision and management on a quarterly basis.
- Employees’ engagement is measured in weekly affirmations. These include the acknowledgement that company maintains an anonymous hotline to report employee complaints, and also include whether safety meetings are being conducted properly, whether pay is being handled properly, and whether breaks are being given.
- Developed an in-house app, "Safety Mojo," to track all safety communications from the field to the office and from the office to the field. Incident reporting, hazard identification, inspections and meetings are all communicated electronically and trended.
- Projects awarded that are over \$250,000 require storyboards with all GC and subcontractor personnel, along with a safety representative tasked with identifying risk throughout project completion. High-risk tasks require a written Job Hazard Analysis (JHA) identifying all potential hazards and mitigation plans.
- BIM 360 computer-based auditing program collects safety data from all job sites. The safety hazards and corrective actions identified on projects are entered into the program for analysis. The data can then be trended in an attempt to proactively identify areas of concern before an injury or incident.
- Overexertion injuries are difficult to control and often end up being identified during the first aid process. We have become very vigilant with regards to follow up treatment. Overexertion injuries (1st aid/Med only/Lost time) are monitored very closely throughout the healing process. This is extremely important with a soft tissue injury, because very minor incidents can elevate in medical/treatment status very quickly, if not managed well.
- Use eCompliance program to audit, capture and communicate experiences containing elaboration and discussion of near misses and reports and investigations by the safety committee.
<https://www.ecompliance.com>
- Safety observation documentation uses an in-house developed app called “Improve It,” that helps with reporting and capturing data for analysis. The data is presented in a series of models that allow for the drawing of conclusions about future risk and take the necessary precautions to avert it.
- Root Cause Analysis (RCA) using Sologic Software is required for any OSHA recordable injury and above.
<http://www.sologic.com/root-cause-analysis-software>
- "What's wrong with this picture" monthly safety quiz competition.
- "Craft Ride Along" program randomly selects a craft worker to conduct a safe ride along with one of the safety managers.
- An accident review committee is in place for the root cause analysis of all vehicular incidents.
- We have a dedicated QC manager, and all sites must comply with our ISO QC criteria.
- IndustrySafe is used for OSHA recordkeeping. It allows for maintenance of accurate recordkeeping at all times, for all projects. Any incident must be entered into the system within 24 hours. <https://www.industrysafe.com>
- Use multi-tiered inspection process. Weekly by supervisors, safety personnel and engineers. Monthly for Project Managers and Superintendents. Periodic inspections are conducted by Superintendents from other sites (cross walks).
- “Safety 5 Blocks” (project safety performance flash reports) are shared with ownership and leaders on a quarterly basis during Executive Project Reviews. “Safety 5 Blocks” are an integral part of this review and provide a detailed look at leading & lagging indicators (safe & at-risk behaviors, safety training, safety audits, AHA schedules, injury rates and insurance savings).
- Annual Cross Business Safety Audit (CBA) – A detailed third party safety compliance assessment is conducted at client site to identify strengths and weaknesses of project safety efforts. CBA findings and corrective actions are shared with ownership and leaders.

- Safety Snapshot (BBS) is a tool used to engage employees/subcontractors by recognizing safe behavior while pointing out those needing improvement. Snapshots encourage discussion of safe and at-risk behaviors, and help identify trends and whether additional safety training may be needed. Weekly Snapshots assist supervisors in recognizing and managing safe and at-risk employee/ subcontractor behavior, while safety audits verify processes are in place and work conditions are safe.
- Vice Presidents and Project Managers conduct iAuditor audits each time they visit a job site. Superintendents and Foreman also conduct audits weekly. The audits enable leadership to gather data from observations that are used in a matrix to calculate risk and probability. When this data is calculated it is presented to management weekly. <https://safetyculture.com>
- In the past the company experienced safety issues that could have been prevented if data collected provided access to project performance. Nothing was available commercially to do this. So the company developed an in-house program called “Acme Construction Analytics” which quantitatively measures the effectiveness of current processes and allows the prediction of future outcomes based on the data collected from past performance.
- Use Hazard Scout a cloud-based mobile friendly safety management system designed to foresee and control hazards associated with safety and performance. <https://www.hazardscout.com>
- Use the DISC behavior assessment tool, a personality assessment tool that focuses on four different behavioral traits: dominance, inducement, submission, and compliance. This has allowed leadership to understand what type of approach needs to be taken when dealing with one another based on personality.
- Developed additional support metrics through the use of "cost per hour" for jobsites, divisions, locations, Superintendents, PMs and foremen.
- Fatigue monitoring and fatigue messaging to home and family.
- Complete full Root Cause Analysis on all Near Misses.
- Implemented SafetyReports to track jobsite safety inspections, using comprehensive analytics to predict potential safety hazards. <http://www.safety-reports.com>
- It all starts with preconstruction - checklists created before project starts – hazards identified before project starts - either figure out ways to make the job safer during the design process or find ways to engineer in safe practices after the project starts.

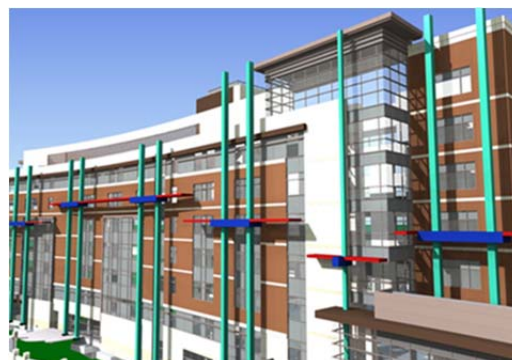


Task Design – Engineering Controls & Design for Safety

- Engineering controls to address safety concerns presented by the steep roof. Developed site-specific crane procedures to separate pedestrian and vehicular traffic, which governed crane placement, truss storage and operation hours. The design minimized boom rotation into sensitive areas and avoided peak facility hours for hoisting operations. Fall protection systems were adapted to accommodate body harness connections within the complex truss system. Two specific fall arrest systems were used: continuous engineered static cable that allowed carpenters to fasten to and move freely along the cable; and retractable fall limiting devices that are anchored incrementally and protect carpenters maneuvering on sloped trusses.
- During construction of the six story tilt-up Client project, installed safety cables in the window openings of all panels prior to erection. This building is one of only four, six-story tilt wall buildings in Texas. The building’s walls are composed of a lower four-story panel measuring sixty feet tall, with a two-story panel measuring 35 feet in height stacked on top.



- Daily Huddles on projects are conducted to identify hazards and we then apply “The Hierarchy of Controls” in order to mitigate the hazard down to the lowest possible risk level.
- Contract to furnish and install nearly 700 linear feet of Operable Partitions. The 170 panels were each 22 feet high by 4 feet wide, weighing over 1000 lbs. each. Crew designed and fabricated unique tooling to dramatically simplify the panel handling and raising operation. The safety tooling required half of the manpower previously required. The tooling also eliminated strenuous and potentially dangerous manual lifting.
- Designed fall protection system of stanchions and temporary horizontal lifelines continually advancing with multiple leading edges. The metal decking scope was complicated by the numerous sloped triangular sections forming the roof canopy.
- Had to drill large deep shafts under high voltage lines where the drill rig would be in close proximity to the lines. Devised a plan to have the lines taken out of service and an electrical contractor was contracted to hold the lines away from the drill rig, so as not to come in contact with the lines causing any damage when they were re-energized.
- Cattle gate system to protect the open holes until they could be completed. Idea came from employee safety team.
- Fall Protection - 100% retractable, no lanyards allowed.
- Eliminated step ladders and now only use either platform ladders or aerial lifts.
- Utilize daily job rotation to reduce the duration, frequency, severity and exposure to hazards related to manual material handling overexertion.
- Superintendent worked with the masonry and reinforcing steel subcontractors to coordinate the grout lift heights and rebar joint breaks, so when the masonry subcontractor completed each floor, the CMU walls would be 42" above the planned floor elevation to provide fall protection for all subsequent trade work.
- Use Silica Standard Table 1 compliant attachments for all work tools when working with materials containing crystalline silica. Also, arranged for the tool manufacturers to come out to jobsites and train all of our workers in the proper procedures to follow when using the tools and cleaning out the attachments.
- Mechanical brooms are red-tagged when water sprayers are not working.
- Enhanced horizontal lifelines splice connections by using thimbles designed for splicing connections. This provides a tighter clamp connection and was proven during a drop-test.
- 3-D crane lift computer software used to create all critical lift plans, and is reviewed by a team of qualified employees including the operators.
- On a bridge project engineers developed an overhanging debris containment system that attaches to the bottom side of the bridge. It was an engineering control for debris containment, walkway and guardrail for employees, eliminated the use of fall protection.
- On a highway project, reduced the amount of phasing from 8 phases to 3 phases by designing an asphalt road detour allowing traffic to shift away from the work zones and creating larger and safer work zones for employees and subcontractors to complete the work.
- Use BIM for penetration layout and installation of fall protection anchors for MEP, and equipment and finishes on the front end. On a University project, almost 1,000 anchors were installed with more than 95% prior to the concrete pour. This also eliminated the exposure to Crystalline Silica from drilling.
- Prefabricating high risk work, such as electrical conduit racks, mechanical piping racks, water manifold systems, medical head wall units and prefabricated rooms in a controlled environment at ground level to reduce the risk of worker fatigue and muscle strains, eliminate/reduce fall hazards, eliminate/reduce overhead hazards, improve quality control, and eliminate rework and the additional risk exposure associated with rework.



- Guardrails, warning lines and PPE are used for fall protection. Do not allow monitoring as a form of fall protection. Six (6) foot lanyards are not allowed below 18 feet.
- Materials delivered precut and loaded on movable carts to eliminate multiple stages of material handling. The material carts and debris containers are table height along with chop saw stations to receive material directly from material carts and drop cut-off material directly into debris containers helping to eliminating debris. Also added task lighting, fire extinguisher, emergency shutoff switch and a self-contained HEPA filtration/dust and debris collection.
- Use prefabricated, trench box guardrails that secure directly to the trench box to eliminate the fall hazard and eliminate the hazards associated with personal fall protection PPE.
- Addressed strain/sprain exposures involving the handling by pipeline workers of tools, such as jumping jack compactors and tool/material buckets, weighing anywhere from 20-100 pounds. A craft employee committee was developed to design rigging that significantly reduce the need for employees to manually lift. The committee worked with rigging supplier and produced an excellent product that has completely eliminated the risk of strains and sprains in the respective tool handling operations.
- Utilize Zonar vehicle tracking. <https://www.zonarsystems.com>

- Challenge: protecting structural metal deck installers when working over a lower floor. Previously deck installers always used a lifeline anchored to the base of the deck. In the event of a fall, the slack in the lifeline and the fall arrest gear would not prevent them from contacting the deck 12' immediately below them. Solution: developed an engineered solution by fabricating a raised lifeline anchor post installed specifically for use by leading edge workers. With the extended height there is sufficient room to absorb the slack preventing contact with the floor.



- To address ergonomic issues, use rolling stools to reduce kneeling and the use of overhead drill presses to reduce shoulder and back injuries related to overhead drilling.
- Reduce equipment noise exposures by choosing the quiet package option for any powered equipment.
- Partnered with a local architect to offer construction safety engineering ideas to the AIA. Ideas included designing stationary ladders for roof access and mechanical equipment placement away from electrical systems.
- Cord management program that requires all electrical cords to be run overhead.
- Developed "Prevention Through Design" program.
- Incorporated anchor points for fall protection on the roof and handrail anchor points on the columns. Skylight design with railings or grills to prevent fall through. Set window sills or mullions at 40" for fall protection. Replaced hazardous materials with more environmentally and health-friendly products.
- Silica exposure from power brooms. Watered the affected area with a spray system, installed enclosed cabs and air filtration system. Engineering changes helped to control the dust exposure to employees, therefore, eliminating the use of additional PPE. Controlling the dust also creates great visibility for other operators, workers and the public.
- Wheel chocks used on all project site vehicles.

- Underwater pile inspection method that utilizes an aluminum ring fabricated with several GoPro cameras attached and skateboard wheels using an electric winch to lower the ring down marked piles, while video recording/inspecting the piles for remote and repeated viewing. The engineered configuration eliminates the diver's exposure normally required in otherwise obscured areas typically utilizing manual inspections.



- Developed an engineered traffic control truck, which contains an enclosed basket allowing employees to place traffic control without being exposed to live traffic
- Use work zone intrusion alarms to warn workers of vehicles which enter a work zone.

- Maintain an extensive supply of portable chain link fencing on each project site, to deploy as needed to prevent access to hazardous areas ranging from temporary excavations to metal storage piles.
- Require stair towers to access elevated work levels rather than using job built or extension ladders.
- To warn of overhead power line hazards, painted construction barrels blue, added a blue light to the top and attached a sign to designate overhead hazards.

- Electrical contractor faced a challenge with an unsafe change in elevation when exiting a trench box. One of their employees designed and fabricated a metal step that hooks onto the side of the box and creates a safer egress for their workers.



- Study work sequencing opportunities to minimize risks. Examples include early installation of stairwells prior to vertical construction to ensure safe access, and building roof trusses on the ground, then lifting into place to reduce fall exposure.
- Site hazard delineation by cordoning off hazard level areas based on yellow and red level dangers using designated rope and signage versus standard plastic caution tape.
- Pre-load construction materials prior to building enclosure with equipment versus manpower providing safe work progress, reducing slips trips, falls, etc.
- When faced with working on a controlled decking area, attached the shear pins at the shop in a safe secure environment. This allowed for 100% weld of every pin on an 8 x 8 piece of angle iron, allowing the erectors to simply mount the angle iron in place and not have to put anyone at risk on a leading edge.
- Risk identified and engineered out from a work plan was to use a GoPro camera to monitor a confined space test, rather than expose an employee to the hazard.
- Pnuema-gophers do not come with visual/auditory warnings or automatic shutoff if it comes in contact with an unknown electrical circuit. Built their own "Zap Alert" system to provide continuous testing for potential energization, visual/auditory warnings and automatic shutoff of all attached equipment to prevent a potential shock hazard to employees.
- Old safety design required employees to traverse a ladder and work from a small platform with limited fall protection and a slow process for transferring of asphalt loads. The new design allowed for a "modern floating" platform to be built, providing employees 100% fall protection as well as a more economical easier platform from which to transfer material.
- Strains/sprains are the frequency and cost drivers for the company. Teaching the employees the value of intelligent layout processes, efficient installation procedures and other similar processes designed to reduce the risk as much as possible.
- Trained Operations personnel to find new ways for non-energized work situations. They educated clients about the situations. As a result, the number of energized work exposures has decreased 80%.

- Head protection with integrated eye protection.
<https://www.kask-safety.com>
- Shop built engineered vacuum head box to control silica dust when cleaning out ground level concrete seams.
- Electricians no-knife policy — working with DeWalt to develop a porta saw with AI (artificial intelligence) to sense when two hands are not on the cutting device.
- Contractor working with Purdue University to develop and utilize augmented reality 3-D modeling techniques to prevent underground utility strikes.



- Employees designed rebar guard to eliminate fall potential and fall protection.
- Pier Hole Protection
- The "Secret Sauce" to success is using Safety and LEAN together.
- Required that all power hand tools are battery operated to eliminate the trip hazard of cords on the project.



- Provided highway construction traffic control flaggers with Timberland anti-fatigue boot inserts to relieve foot fatigue and increase blood circulation.
<https://www.timberland.com/shop/timberland-pro-anti-fatigue-technology-insoles-91621000>
- Use adjustable ergonomic desks in the office and project trailers so employees don't feel fatigued at the end of the day.

- Slab end column Hole protection

- Work with clients to engineer anchor-points into new designs and higher perimeter barriers for fall protection.

- Lean Housekeeping areas incorporated into shop drawings. To avoid tripping and falls, waste coming into jobsites is limited and can only be placed in certain areas. Cardboard and packaging materials are not allowed on the floor only in staging areas. Daily cleanup and sweeping of floors are required.



- Committed to continually engineering out obstacles and objects that will cause same level slips, trips and falls. Require employees to do 360-degree trip and fall observations throughout the day. Extension cords are above the head. Documented housekeeping audits are done several times a day, especially in common areas.

- Motion is money – Finding ways to get things off the ground like cords, tools, etc. (going cordless for powered hand tools).
- Generators are being phased out on all projects.
- Trips and falls costs contractors on average approximately \$25K per claim. Focus to keep materials off the floors by using BIM design and engineering.

Safe Work Methods (Planning and Validation of)

- Safety program and safety practices are measured and evaluated annually by independent consultants. Judged for compliance and relevance.
- Company has grown significantly over the last 2-3 years, hired many new employees and working in new geographical locations across the US. The development and implementation of our Life Critical Rules has been a huge driver in developing a consistent safety culture across the nation.
- Foreman is the Competent Person and Safety Coordinator on all projects and they are explicitly evaluated on their safety performance and documentation of their daily safety activities.
- We go above OSHA standards, e.g., Cold Weather, Hot Weather, Crane Verification Process, Fatigue Management, Concrete Pump Inspections and First Move Forward.
- Do LOTO training each and every time it is utilized by a crew and it is a topic of that day's Job Safety Analysis (JSA) as well. Same procedure with overhead or underground power lines.
- Produced customized JHA training videos, where onsite interviews, script development and hands-on involvement were used to fully capture the unique and subtle elements of the particular craft.

- To improve operators and their safety awareness of equipment usage, a team of senior operators and subject matter experts are evaluating a simulator-based training tool. This will allow for initial screening, retraining and skill improvement for select pieces of equipment. The simulator is able to put operators in challenging positions without risk of damage or injury. Like an aircraft cockpit simulator, new and existing operators can be inserted into situations which allow the operator to be challenged so that in actual conditions, they will be able to recognize and avoid these same situations.
- Many designated safety professionals have attended classes provided by the Construction Council for Safety (formerly MICCS). <http://www.safetyresources.com/miccs>
- Muscle Strain risks were significantly reduced when the Superintendent designed and implemented a ramp and pulley system to bring in materials to the basement of a courthouse remodeling project which eliminated the need for workers to carry and maneuver large bags of grout and other material.
- All General Foreman and Foreman go to Competent Person safety training every other year.
- Members of the Safety Advisory Committee make unannounced, monthly jobsite visits and complete a Site Inspection Report Form.
- New hire supervisors are required to complete OSHA 30 in the first 90 days.
- All supervisors receive the following competent person training: Trenching/excavation, confined-space entry and fall-protection.
- Stretch and Flex Program is conducted during daily JHA meetings.
- Hand signals are posted on all cranes. Rigger and spotter trained employees carry bilingual handbooks, which assist with signals.
- Formal bona fide offers letters are sent to all employees that are unable to return to work full duty, but able to return to work in a restricted capacity.
- Health and Safety Program is reviewed by all levels of management and updated on an annual basis.
- Developed a 50/100 rule. No single employee is allowed to lift over 50 pounds. All equipment/material found to be over 100 pounds must be marked and lifted mechanically.
- New and existing employees are taught proper lifting procedures by a medical professional.
- Proper lifting techniques are taught at employee onboarding, project orientation, toolbox talks and company academy training. Have a 35 lb. maximum lift limit for employees.
- Created JHA covering each scope of work that is regularly performed. The JHAs and safety resources are available electronically via “Smartsheet” for everyone. <https://www.smartsheet.com>
- Use HCSS Construction Software. This software allows us to more efficiently track data and gives our employees access to all of our safety documents such as pre-task planning and daily jobsite inspection forms. <https://www.hcss.com/products/construction-safety-software>
- “Take 5” Daily Safety Work Plan requires employees to look around for risks for 5 minutes before the begin work.
- Developed a craft level Mini-Risk Evaluation. In conjunction with the Pre-Task Plan, the Mini-Risk process encompasses the entire task not just identification of hazards. Helped create a more complete task planning tool that integrates safety-quality-productivity into task planning.



- Pre-task and activity hazard analysis (AHA) utilize in-house developed RED (Recognize, Eliminate and Discuss) book. The AHA is a pocket-sized, task specific checklist and planning tool intended to challenge employees by thinking and planning out each task by breaking down the hazards and corrective actions and/or PPE required.
- Established both a Glove Use Matrix and a Respirator Matrix, which identifies and helps individuals understand which size and type of PPE is best for them.
- Craft workers compete and are recognized for producing the best JHA on a weekly basis.
- Iron workers are isolated within a designated work zone to eliminate overhead hazards and exposures.
- Safety program is called "My Safety" and is designed to educate, encourage and empower employees to protect themselves and each another. Our leaders integrate our safety values into everything they do, making our projects safer by always doing what is right. Six elements: Commit - Always to Safety Excellence, Educate - Employees so they make the right risk decisions, Plan - For evolving safety efforts, Empower - Employees' safe behavior so they stop at-risk behavior, Improve - By learning from mistakes, and Celebrate - Safety successes.
- Craft and subcontractor safety educational resources include: My Safety - On-boarding video and handbook highlights: My Life Saving Rules, My Stop Work Authority, Consequences for Rule Breaking, My Safe Work Practices FAQs, Workplace Substance Abuse and My Personal Safety Check.
- All new hire safety education includes the My Safety On-boarding video and handbook that covers: My Leaders' Responsibilities, My Personal Responsibilities, My Life Saving Rules, My Work Site Safety Rules, My Consequences for Rule Breaking, My Stop Work Authority, My Health, My Personal Protective Equipment, My Tool Inspection, My Safe Work Plan and Training, My Safe Work Practices FAQs, and My Personal Safety Check.
- Leaders receive 40–100 hours of Safety Skills/HPI Training: My Safety Leadership, BBS, Crane Management, Excavation-CP, Fall Protection-CP, Scaffold-CP, First-aid-CPR-AED-BBP, OSHA 10-Hour, Qualified Rigger/Signal Person and Supervisor Workplace Substance Abuse Awareness.
- When negative behaviors are identified, they are assigned to a Project Manager or Vice President, who then becomes the Single Point of Authority (SPA). Each SPA is trained as a competent person in several tasks such as confined space. The SPA is required to monitor the hazard until it is remediated by the safety



division or project Superintendent. Once the hazard is resolved, the SPA reports back to management actions taken to remediate the hazard. SPA process has assisted in bringing incident rate down from 3.02 in 2015 to 0 in 2017.

- 5 x 5 program that requires craft workers to take 5 seconds and step back 5 steps to assess all tasks for hazards and risks.
- Interior walls are topped out before MEPs are in place to minimize obstructions to access these hard-to-reach areas by a drywall craft workers.
- Cranes clearly display the Universal Hand Signals, hazards warnings and barricades around the swing radius of the equipment.
- Use symbol graphic safety signs.
- Management project audits identified step ladders as a high risk. Implemented belt buckle policy and pledge. Prohibit team members from moving beyond the third step on the step ladder or leaning outside the frame. Each team member signs a pledge to follow the belt buckle policy and correct other team members not in compliance.
- Fire watch and hot work training are conducted annually.

- Use Knaack Data Vaults to collaborate with subcontractors on project documentation, to streamline safety orientation process, streamline JSA documentation and to aid in safety meeting coordination. <https://www.knaack.com/products/featured-products/data-vault>
- “Forward First” driving and parking policy to prevent back-overs.
- Safe Driving company vehicles - DDC-4 level training provided. Regional Safety Managers attended Smith System style "train-the-trainer" class in December 2017. <https://www.drivedifferent.com/about/our-history-mission>
- Connecting LEAN principles with safety performance because reduction of re-work reduces worker exposures.
- Utilizing an electronic JSA that has speech recognition and facial recognition, so writing skills are taken out of the process to motivate better information.
- We really don't prepare for an OSHA visit—“It's business as usual.”
- Daily task safety plans are reviewed in the morning, lunch and at each break.
- Using a construction project risk simulator tool (Augmented Reality) for initial screening, retraining and skill improvement. The simulator inserts situations that mimic challenging tasks and measures reactions.
- Do not accept JHAs from subs until they go through GC’s JHA training program.
- Water Rest and Shade for Employees - Individual cold water bottles and frozen freezer pops in the summer time.
- Company decided to have their safety programs audited for continuous improvement by OSHA.
- STAR mobile workforce designation.
- Company recognizes they have an aging workforce and value and support them (stretch and flex, etc.). Determine if they can still touch their toes, still bend over? Maybe move them into a desk position or supervisor position requiring less walking or lifting.



Worker Engagement, Involvement, and Participation

- To ensure implementation of company policies and practices, safety performance is included in all annual employee evaluations. Results of the safety evaluation affect raises, bonuses and continued employment.
- Invited several manufacturers to present to our job site regarding proper use of fall protection gear and rigging components. This presentation was conducted in both English and Spanish.
- Use a jobsite employee-owner involvement process called Safety Performance Improvement Council to improve practices and reinforce the importance of safety.
- Safety goal setting and measurement to track progress of plan (published, communicated and celebrated, when appropriate).
- Foremen recognize their crew members with awards for exemplary safety performance above and beyond their normal duties. Exposing a job-site “booby trap” like an unstable ramp or an unguarded hole are examples of how a crewmember can earn a “Safety Performance Ticket” from a supervisor.
- Daily End-of-Shift Meetings validates the crews understanding of safe work practices and helps identify risks for the next day.



- Project-wide meeting at the 10 percent completion stage of all projects. Opportunity for the Team to pause and review work processes and safety. During this meeting, project management receives feedback from crews to understand how to better protect people.
- Implemented 6 Safety Improvement Groups which are employee-led safety task forces assigned to recognize areas needing improvement and to develop "boots on the ground" solutions.
- Safety Awards banquet annually. A multiple tier points system is used to represent the years of safe service the employees have had. Employees use their points to select from a variety of company merchandise. Employees with Safety Violations are not eligible, but injured employees are. Also, announce our safety Supervisors of the Year.
- Informal leaders are identified to help communicate safety messages.
- Core Values: Customer Service, Safety, Innovation, Teamwork and Integrity.
- Signage at the entrance of all project sites reminds every one of the requirements to protect you, and it is not just words. The sign is of an actual team member who is wearing all of the proper PPE and displays what "Always Doing What is Right" resembles.
- Jobsite briefs are held three times each day. Each morning, after the lunch break and at the end of each day. The final brief allows a recap of the day's events, as well as a message to take home to the workers' families and their community.
- Retains a licensed counselor, which allows for rapid response to personal worker issues. The licensed counselor helps alleviate those issues that construction workers don't always want to discuss.
- Company axiom is "Mission First, People Always," which is accomplished with "Be There For Life – Zero Accident Program."
- Every employee at the completion of each project is sent an anonymous Survey Monkey to provide feedback in regards to safety practices and their effectiveness.
- Have a confidential safety hotline that is provided to every employee at their initial orientation.
- Our Motto: "Home Safe. Every Person. Every Shift."
- When planning a project budget, ask field personnel their opinion to assure project management can properly budget what is needed for safety.
- Daily "safety slogan" is emailed in the morning to everyone that has an email address and is used as a daily JHA topic of discussion. Slogans such as, "Safety is a full-time job - Don't make it a part time practice," "Shortcuts cut life short" and "When It's Hot, You Must Hydrate," are disseminated regularly to all employees.
- Four-hour supervisory program, where managers learn about the company's relationship to risk; how the new worker and the experienced worker are prone to stepping off the safe path; and why it happens. How to plan and assign work – re-enforcing the importance and need for engagement and conversation between workers. Discuss how to talk to workers, engage them in discussion and the need to listen. How our culture and values drive an individual's actions.
- 4 LIFE. The "4" represents the 4 R's of incident and injury free work: Reach out, do it Right, Raise your voice and Recognize hazards. Live Incident Free Everyday represents "LIFE."
- Safety Systems Improvement (SSI) Task Force collects feedback regarding development of procedures, accessibility of information and near miss reporting from our employees in the field.
- Monthly Craft Safety Team Program - ideas and input from field employees.
- Weekly newsletter, the "Safety Communicator," is distributed to all employees and discusses the week's leading and lagging indicators.



- Senior leadership mentors the workforce by engaging them in project management/JHA team activities such as, "The Peanut Butter Sandwich" challenge that was presented at a Safety BBQ between two safety professionals making a peanut butter sandwich with their hands tied behind their back.
- Leadership incentivizes the workforce to demonstrate safety with special parking spaces, and have a private key "Key Master" to their own private Port-o-Potty, random gift cards with recognition at the "All Hands Safety Meeting."
- Employees have input on PPE and tools provided so they automatically have buy in, because they choose what they are using.
- Operation Zero promotes safety as a personal responsibility. Leaders and all project team members are challenged with making a human connection with every single worker on site and developing a stronger sense of empathy for the challenges that people face in working safely. This creates caring among all craft workers.
- Any craftsman can recognize and recommend a reward like a t-shirt, to acknowledge another teammate that is performing a task safely. Successes are posted on social media for their friends and family to witness.
- Safety recognition program is in place to reward hourly employees for contributing to the safety program. Employees earn CHIPS (Construction Hazard and Injury Prevention System) for filling out their RED Books, leading and engaging in stretch and flex, attending weekly crew led safety audits, inspecting tools prior to use, etc.
- Board of Life - employees bring in pictures of their family members to demonstrate why they work safe.
- At the conclusion of any OSHA 10 and 30 hour training class, all participants must present an idea to advance the safety culture to the group.
- Each project has an industrial hygiene board to show craft workers all sampling data including heat indexes, decibel levels, silica sampling, etc.
- Safety Discovery Lunches - trades provide a tradesperson to come for a lunch time discussion of project safety. The discussion centers around what's working well, what can be improved and what have they seen on other projects that could benefit this one. These representatives are then encouraged to go back to their teams and share the discussion.
- "Safety Catch" program allows employees to send in a job site hazard, along with a way to control or eliminate the hazard. One submission each week is selected for a safety lunch. All crew members of the employee who submitted the safety catch receive lunch from the safety department and a pocket knife. The "safety catch" that is selected is also featured in the next tool box talk.
- WorkFit is a daily jobsite fitness program designed to help employees enhance flexibility through a specifically-designed series of stretching exercises.
- Conduct Climate Surveys on all projects. All employees on site anonymously complete a brief survey with questions that allow the workers to share their perception of the safety climate on their job site. These results are tallied and shared with Senior Management and the project team for analysis, discussion and corrective action, as needed.
- All workers go through a Project Orientation. The orientation introduces them to the project by letting them know what they are building, who they are building it for, and the benefit to the community. The safety expectations are presented and reviewed and Q & A is ongoing throughout the orientation.
- Launched an Employee Assistance Program (EAP) this year to ensure that employees are not only kept safe physically, but also emotionally and mentally. The EAP provides support for personal goals as well as bouncing back from life's hardships.
- Provide safety welcome kits for new hires.



- Upgraded fall protection training. Now we have large tripods in each office where employees are taught how to properly wear their gear. They are lifted up with the tripod, so they can feel the pressure points and better understand why they need to wear their gear correctly. This makes a difference when talking about rescue provisions. This also has reduced the number of fall exposures. The tripods are extremely effective at jobsites, as well as immensely popular at the National Safety Stand-Downs.
- Housekeeping and fall same level controls - Each contractor labels each piece of their equipment, tools and materials. Each day GC divides project up into 4 quadrants and assigns a team of mixed craft workers to clean their assigned quad. They clean up things that may or may not be theirs as a result of their work that day. Promotes peer pressure between crafts to make it easier on each other for housekeeping at the end of the day.
- Toolbox demonstration - Ask a craft worker to perform several tasks in front of the group with one hand tied behind their back. Demonstrates how important it is to protect your arms, hands and fingers from crush and cut points.
- Changed project safety meeting terminology from Stand Down (Negative) to Stand Up (Positive).
- Large project banner with hand prints of craft workers' children.
- When at-risk behaviors are observed inquire/discuss about the employees emotional response if they are injured.
- During 1st week of employment, new hires formally meet with their Foreman, General Superintendent and Safety each day to recap concerns.
- Culture is not a rule.
- Relationship Based Safety (RBS), not Behavior Based Safety (BBS). Use the term "Leadership through Partnerships."
- Individual workers complete their own personal Pre-task plan.
- Use craft workers to present various safety topics to their peers.
- Teams are put together with thought and are not just randomly assigned.
- Supervision of supervisors can be a challenge on our projects. We verify that employees are giving feedback and that there are less one-way conversations and more two-way conversations.
- Constant communication creates a culture of collaboration.
- JHAs are improved by rotating employees who complete them. Everyone has a voice, get coaching for improvement and shares in the paperwork. They become Safety Managers for a day.
- Housekeeping program - Garbage in/Garbage out – A clean area is a safe area.
- Employees use smartphones for video chats in real time.
- Leading Indicator for 2017: Tracked and measured 34,000 safety conversations.



Safety Training and Validation of Training

- All site supervisors are required to complete OSHA 30-hour courses, conduct safety orientations for craft worker, and utilize Toolbox Talks to instruct and remind trade workers about safe practices.
- All craft workers are required to complete OSHA 10-hour courses before employment on-site.
- Weekly Toolbox Talks to remind workers of the importance of using safe lifting practices to avoid muscle strains.
- New employees go through a three-day on boarding process with a major focus on company safety culture.

- Skilled craft workers, regardless of their experience level, are assigned a red hardhat so they can be quickly recognized and mentored. Based on performance, the Superintendent will determine when the company white hardhat is justified.
- 18 in-house training courses dedicated to safety and incident prevention offered through company managed University system.
- Implemented cloud-based Safety Management and Safety Training systems for safety leadership and innovative training delivery.
- Web-based safety training system, which allows delivery of consistently high quality, verifiable, industry recognized curriculum to all our employees, including targeted trade specific topics.
- Supervisors' Safety Training Retreat, which consists of three full days of safety training every year.
- Right to Know - utilize decals that can be scanned on hardhats that take you right to the SDS database.
- Once the mentoring process is complete and documented, new employees graduate from the safety mentoring program, which can take up to six months. Anyone during the six month period who violates a safety policy is automatically kept in the program the full six months.
- Validate that knowledge transfer has been successfully achieved in the field by; undertaking safety situational pre-planning and conducting regular risk assessments.
- All forklift and equipment operators are certified using the IVES training and certification on-line system. <https://www.ivestraining.com>
- Our local AGC chapter has an excellent safety training program with classes that management and tradesman utilize to stay current with the latest issues.
- Superintendent and foreman review all SDS sheets with tradesman prior to starting a new task to ensure they understand the PPE requirements and any unique hazards applicable to the work.
- Barcode system allows scanning a barcode, which provides information regarding an employee's training and certifications.
- After the initial orientation, a safety professional conducts a 30-day review with each new employee to ensure that they understand their role in creating and maintaining safe work areas.
- "End-Of-Year" Annual training for all hourly employees consists of an eight hour day with training provided by eight vendors. Each vendor has a station setup that provides one hour of training at each station. This is probably the most productive training we have provided because the hands-on training allows the workers to visually understand the hazards they encounter daily and safe work practices that are required.
- All new hires are required to take an online safety orientation course from Health & Safety Institute (HSI) online training. A score of 80% is required to pass. This has allowed management to identify the level of safety experience a new hire brings to the company.
- New employees learn to identify ways to avoid accidents and injuries from receiving 16 hours of orientation in our University classroom and are trained to be prepared for any safety situation that may arise.
- 39,000 - "Safety Minute" updates published and read per year.
- Orientation process (Safety orientation I & II), which is valid up to 90 days. When employees hit the 90-day mark they will be evaluated by the Project Manager (Safety orientation III) and will be asked open-ended questions to have an open dialog. Information that is captured and used to improve or monitor the safety culture efforts to guide future safety training and program efforts.
- Use a "Safety Blast" (in-house toolbox) from the lessons learned and share company wide.
- Onboarding process each employee: 4-hour safety orientation and 8-hour Incident and Injury Free training for a total of 12 hours.



- Training Incentive Program that encourages each employee to complete 16 hours of skill advancement/continuing education courses each year. Made a commitment valued at over \$20,000 towards completing the goal, where each employee that successfully completes their training receives a \$150 gift card.
- Training records are available on mobile devices. This allows foremen to check if an employee has completed necessary training prior to assigning the specific task. Training is validated through observation while the employee performs the task and during incident reviews.
- Every project worksite is required to have a laminating machine. Use a "signs" program to quickly print regulatory hazard notifications for GC and Subcontractors.
- Superintendent provides close oversight for the first few days after a new worker comes on the project. A daily written evaluation of the workers compliance to Safety and Site Hazards is done by the Superintendent.
- Use project fence signs to reinforce the site Orientation, project hazards and GCs beyond OSHA requirements. Designed to enhance and reinforce GCs' commitment to elimination of work site hazards.
- Basic Safety Orientation (BSO) is a mandatory 8-hour class with general job site safety components, videos, hands on practice and trade specific hazards and risks. Focus on the war on falls, and proper use of tools and equipment while performing routine tasks customary to the trade. Delivered in English and Spanish and includes customized "Quick Reference Visual Guides" to clarify customary exposures.
- Recruits, new to construction and/or our trade, enter the Workforce Development Program (WFD) trainee Program. Coaches are accredited WFD trainers.
- Orientation: all workers go through training center which covers 17 demonstration/training stations including fall protection, ladders, hand/power tools, scaffolds, flagging, electrical hazards including power lines, equipment safety, and blind spots.
- New hires are evaluated during orientation by company trainers on their ability to use power hand tools, use of ladders, knowledge of proper PPE, etc. After completion of orientation each team member receives a score and their knowledge is passed on to the field Superintendent so that they can place the team member with the proper mentor. Once they are placed, they are evaluated every week on their retention of safety and vocational knowledge. After 90 days, a final evaluation is done and they are placed with a permanent Superintendent, according to their scores.
- "Center for Craft Excellence" where craft workers are motivated by the desire to learn, improve, and perform their work safely. They are provided access to all of the necessary tools and training.
- Every craft new hire goes through a Craft Task Training Orientation. The craft training program is nationally-certified and offered at the in-house Center for Craft Excellence and at all individual jobsites. The Journey-Level Skills Assessment Program is designed to verify and document a participant's craft knowledge and skills. The program adheres to the standards of the National Center for Construction Education and Research (NCCER). <https://www.nccer.org>
- Surprise employees with unannounced pop quizzes! These pop quizzes appear in the form of a text message or e-mail sent out to all employees by the company President, based on hypothetical situations. Each employee is given an exact time frame to formulate a response using information they learned from the meeting or by utilizing the safety data sheets (SDS) mobile application to search for product information.
- Have a hands-on practice board to validate the operational aspects of the energized work program.
- Use UPC Bar Code technology to provide information on individual worker training and certifications on the spot.
- Safety on-boarding can be from 2-10 days based on assignment. A member of executive management meets with new employee before 1st assignment.
- Hired a Training Coordinator who is dedicated solely to training crafts people in their respective disciplines both in safety and work methods.



- Measure company safety intranet access statistics to show who is regularly accessing company safety procedures and processes and coach those with low usage. Also, tracks what programs and forms are being requested and used.
- Company uses 5 Life Critical Rules found on YouTube – The Science of Safety – Gates Safety Video, i.e., Have you been trained to operate the equipment you are working on? Do you pay attention to warning labels? Do you work alone or with another close by?, etc.
- Company hosts annual Safety Dinner and uses a 10-question safety test given with silver half dollars as prizes if employees get 9 out of the 10 answers right.
- Company uses YouTube as well as other training medias like videos in the In-House Training Room

Subcontractor Management

- Require site-specific safety plans from each subcontractor, and hold planning meetings for hazardous activities. Subcontractors agree to our safety policy terms and sign a Safety Annex at project start. Superintendents enforce the Safety Annex: for contractor violations, written notification is provided and corrective action is followed up.
- Annual subcontractor safety summit that all subs must attend and send representatives from safety and management.
- Safety Alert notification practice recently prevented a possible accident. Concrete subcontractor was observed attempting to remove their scaffolding from the roof with a tower crane using a handmade wooden box. They were immediately stopped. The same subcontractor was on another company project, the project team was immediately informed of what was happening on the first project, and upon inspection, the same subcontractor was preparing to repeat the same activities on the second project – using a similar handmade wooden box. It may have delayed the job, but after the proper skip pan that was rated for the correct weight was brought on site, they proceeded to safely remove their scaffolding from the roof.
- Three strike policy. 1 - Written warning, 2 - minimum two days off, 3 - termination. Step three can be used at any time in the process based on the issue.
- All subcontractors must first prequalify, which includes the submission of their Injury and Illness Prevention Plan (IIPP). If it does not meet the standards of our IIPP, we work with them on an individual basis to develop and improve their safety practices and plans.
- Require that every company have a site-specific orientation as well as an integrated orientation for all subcontractors, vendors and support personnel for each project.
- Subcontractors are required to submit previous year OSHA 300A log. Pre-construction meetings are held where safety histories and issues are discussed.
- Each subcontractor is required to provide reports with their safety inspection checklists before performing work.
- Subcontractor must provide translator to accompany non-English speaking workers.
- Developed a scoring system based on subcontractors performance. When subcontractors are found to be not performing they are not hired for future projects.
- Each employee, regardless of tenure, is not permitted access beyond the project office without having first received safe work practice instructions, viewed the required the site specific orientation and passed a competency test.
- Each subcontractor is required to complete a questionnaire prior to buyout. Included are performance indicators such as EMR, incident rates, hours of safety training, OSHA forms, etc.
- Prior to any onsite work activities all personnel are required to complete a site specific orientation and pass the comprehension test.



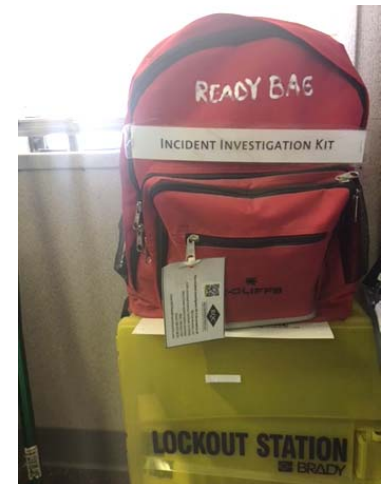
- Discipline starts with a verbal warning, then written warning and removal. Includes retraining or re-orientation before return to work. May also require leading toolbox talks on the subject.
- Subcontractor OSHA 10 and 30 hour training. Offer a free instructor, but pass along the charge for the completion wallet cards.
- Written financial penalties and removal from a project are included in subcontract.
- Coach-to-Correct program and 12 Lifesaving Commitment violations and procedures are reviewed with subcontractors.
- Require subcontractors to submit their safety activity electronically to better protect us from liability and the multi-employer act.
- Welcome letters are distributed to subcontractor team upon contract award as a proverbial "olive branch" to introduce safety culture, provide tools and resources, and inform them of our jobsite processes and procedures. This is when the interactive relationship between Safety Leadership and the subcontractor begins.
- Subcontractors must meet minimum performance requirements to be allowed to bid on the project, unless they are placed on a corrective action plan. The corrective action plan is designed to involve Senior Management, including the Senior Project Manager, General Superintendent and Safety Director for safety improvements. In conjunction with the subcontractors' Owner, actions are developed to improve the subcontractors' safety program and performance in the long run.
- Preconstruction Safety Go-No-Go with each trade partner prior to mobilization. This meeting includes Project Management from both GC and the trade partners to review the overall Site Specific Safety Plan, the trade partner's JHA for all tasks to be performed, and review any other safety-related questions associated with the project. The intent of the meeting is to instill in the trade partners the GC's philosophy that through proper planning and preparation, all injuries are preventable.
- Subcontractors are required to complete weekly safety scorecards that track work hours, leading and lagging Indicators, and tool box topics.
- The third and final notice of safety violation requires a meeting between the subcontractor's Owner and our President and CEO, to determine if the subcontract will be terminated.
- Provide recommendations for 3rd party training outlets to subcontractors.
- Subcontractors must initially sign a GMP document requiring commitment to maintain GC's standards that are above and beyond OSHA standards. When awarded a job, they must also sign the Site Specific contracts and detailed safety requirements.
- Roofing subcontractors have additional requirements, including a roof plan drawing with detailed protection identified.
- Total Project Safety Statistics (TPSS) - subcontractor work hours and recordable incidents are tracked and reported on a monthly basis and reviewed by senior management quarterly to identify any unsafe trends by subcontractors.
- Use a progressive disciplinary policy except for imminent danger situations and focus four issues which have a zero tolerance policy.
- Drug and alcohol testing policy includes reasonable suspicion, post-offer and random for both.
- Jobsite specific orientation for each project. All site visitors and personnel are required to undergo orientation along with completing the appropriate AHA or JSA.
- Developed "Project Injury Risk Scorecard" that gives a numerical assessment of the risk based on historical data both in safety and production the subcontractor will bring to our project.



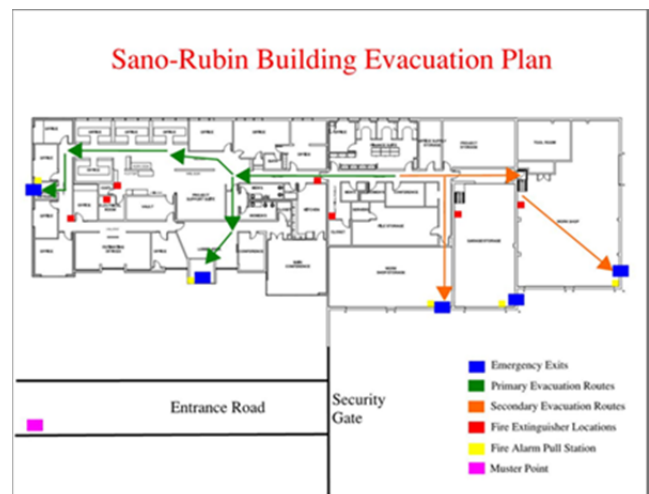
- Use ISNetworld to qualify sub-contractors and vendors hired to work on projects. <https://www.isnetworld.com>
- GC's President calls subcontractors President when an employee is injured. Expresses care and concern from the GC and also allows coaching and role modeling of the sub.
- When utilizing MWBE (Minority and Women-Owned Business Enterprise) partners. Company realizes MWBE's may lack funding for safety training. GC provides training and resources to help them better protect their employees.
- Each Subcontractor has a scorecard and it is tracked and trended through the project, includes any bonus programs in place.
- Subcontractors record their own safety statistics and GC reviews their trending and root causes monthly.
- Safety Meetings and Stretch and Flex Exercises are held daily and are built into the contract.

911 - Emergency and Crisis Management

- Enlists an injury triage service, which gives workers instant access to medical professionals and triage protocols. Workers avoid going needlessly to the ER, and are not left to guess the best treatment to seek. The goal is to reduce employee recovery time and time away from work, reduce employee medical costs and increase effective employee medical care.
- In case anyone needed assistance during an emergency, every current project has developed an Emergency Preparedness Plan that includes a contact list and methods to check-in.
- Site specific emergency plans. Local emergency service personnel are invited to these meetings and are encouraged to make frequent unannounced visits to the site. This helps them keep familiar with the ever changing conditions of the project.
- Contracted with a 24/7 Registered Nurse hotline in case of workplace injury. If a non-life threatening injury occurs, you can speak with Registered Nurse immediately. Injured workers receive a designated registered nurse to communicate with on a daily basis. By staying in constant communication, ensures workers have a speedy and healthy recovery and return to work as soon as possible.
- Crisis Management plan requires that each Foreman designates a rally point before the job begins and that every team member be aware of that point. All employees must meet at that point after an emergency. The Foreman then reports the emergency to the Director of Loss Control. A log-in time sheet is used to record each employee's arrival time. All employees must be accounted for before movement away from the site begins. Another unique feature is a Safety Hot Line, in the event of the need to stay away from the site for more than 24 hours the hotline will be used for recorded messages directing employees on post incident response issues.
- Employees are provided with a Pocket Crisis Management Card describing the sequence of reporting.
- Emergency/severe weather and crisis management plan is posted on every job trailer/office with important phone numbers.
- First aid kits are installed by the tool department in each gang box. Each journeyman electrician, supervisor and Superintendent attends a first aid, CPR with AED class with updates annually.
- Use a Crisis Management Flowchart which is reviewed quarterly. Each project has a site-specific crisis management plan—both are updated as necessary. Each person is pre-assigned tasks in an emergency along with alternates. Routinely conducts “crisis dress rehearsals.”



- If there is a serious finding, we notify all of our employees through our new “text alert program,” which is effective to reach everyone within a few seconds.
- Continuously improve Crisis Management Program by training on National epidemics such as Hepatitis A, Opioid crisis, depression and death by suicide, using behavioral awareness techniques, CDC Fact sheets and a caring culture.
- Director of Safety makes personal visits to all medical facilities before choosing to use them, in an effort to reduce unnecessary use of Opioids.
- Developed an After-Hours Emergency Contact information card for each employee’s family. This magnet requires record of each employee’s direct supervisor and an additional work ‘buddy’ for their family to contact in an emergency.
- First-aid kit and AED machines located on every project.
- During a pre-storm or crisis situation a communication protocol is issued to team members with multiple ways to let them know they were okay, including cell phone, e-mail, landline and Zello (a walkie-talkie app).
- Supervisors are required to have first aid/CPR/AED training every two years.
- Grab and Go Accident Investigation folder is hung on each jobsite wall and available instantly on the shared network drive.
- Task-specific emergency rescue plans are in place, discussed and reviewed prior to conducting any high hazard activity such as work at heights, trenching, etc. Drills are run to measure effectiveness.
- Hospital and medical facilities maps are posted at all job locations. The procedure is to call 911 and then immediately inform the competent person onsite.
- Utilize our 24/7 Nurse Triage Program to leverage the earliest, most critical point to influence employee satisfaction and medical outcome by having an experienced nurse immediately evaluate the injury and direct appropriate medical care.
- RTW Modified Duty - cross train team members to do several different tasks, so that they are able to continue to work and be productive if placed on restricted duty from an injury.
- Developed an app to help facilitate crisis management procedures. The app connects all project teams and provides crisis management, general safety and contact information. The app can summon medical support, first responders, issue a safety alert, and navigate to the nearest hospital or minor emergency clinic. The app has the site-specific evacuation routes, assembly areas, fire extinguishers and first aid kits.
- Use an 11 x 17 template for project specific crisis management plans. One side denotes the project location, where the nearest hospital and minor emergency clinic is located, the contact information for the entire project team, and details the emergency evacuation routes to the primary and secondary assembly areas. The other side is used to post a marked-up version of the projects floor plan. Shown on the floor plan is the location of first aid kits, fire extinguishers, evacuation routes, primary and secondary assembly areas. These plans are posted on the project area and at the construction trailer. They are discussed during safety orientation with every worker onsite.
- Each project integrates their Crisis Management Plan into the clients program and the surrounding community. Emergency response plans are audited and practice drills are held.



- Routinely run drills based on occupational health issues such as bee stings, heart attacks and heat related illness.
- Periodic "Active Shooter" training and drills.
- A licensed counselor is retained to help employees with personal issues.
- List of hot buttons to call on company phones for project team members in case of emergencies. Phone also programed with a single alarm button that can broadcast an alert immediately to the project team members if there is a problem.
- 6-days ahead of when Hurricane Irma made landfall, company had already created a pathway for its employees to navigate through with the needs of: water, gas, generators, building supplies, household supplies, food, bedding, water transportation, etc. Demonstrated care for employees in many different ways.



For additional information, please contact:

The Associated General Contractors of America and Willis Towers Watson believe that Risk Control and Safety are not proprietary. Please feel free to share this document with other contractors, subcontractors, design professionals, owners, and other industry partners that can influence our industry so every worker returns home safely to their family.

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WTW8022/06/2018

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