

**2017 Construction Safety Excellence
Awards (CSEA)**

Safety Management Showcase





Introduction

On March 8, 2017, the AGC-Willis Towers Watson Construction Safety Excellence Awards (CSEA) breakfast was held at the AGC National Convention in Las Vegas, Nevada. Almost 1,000 contractors attended.

William B. Noonan Head of Willis Towers Watson North America Construction – Client Engagement introduced the awards and noted, “When I think of Safety I always think of the families involved in the industry, the fathers, daughters, mothers, and sons who go to work every day and who their families expect home for dinner. Willis Towers Watson is proud once again to sponsor this award and raise the awareness of Safety in the industry. At the end of the day it’s not about statistics, but rather about people and families”.



The AGC’s Construction Safety Excellence Awards (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. CSEA recognizes companies that have developed and delivered premier safety and risk control strategies. CSEA showcases companies that have achieved continuous improvements and maintenance of their safety and health management systems. In 2017 there were 54 total finalists among 7 divisions and 21 categories.

AGC–Willis Towers Watson presented the Grand Award for Construction Safety Excellence to W.S. Bellows Construction Corporation. The first-place winner of each category was included in the evaluation that determined the “Best of the Best” of the 2017 Construction Safety Excellence Awards finalists.



The 2017 AGC-Willis Towers Watson finalist judges were:

Rixio Medina, Tony Militello, Kenneth Herrera, Bill Parsons, and Mike Fredebeil



On January 23-24, 2017 in Fort Lauderdale, Florida prior to the AGC National Safety Committee meeting, preliminary judging for the CSEA final competition took place. A total of 29 preliminary judges from the construction industry, AGC Chapters, construction brokers, and construction insurance evaluated and scored the initial 104 CSEA applications from across the country.



The following combine the many noteworthy Safety Management program elements highlighted by presenters and noted by the judges during the final competition:

Senior Management Ownership and Participation

- Owner receives copies of every incident and job site inspection. Reviews weekly with Project Managers.
- Safety director attends all project manager meetings. Company has seen project managers improve their knowledge of safe work management.
- Owner assembles vetting team to evaluate new equipment and tools ensuring the proposal increases safety and also improves productivity. Goal is to ensure safety is not viewed by the project teams as a productivity limiter.
- Develop the 15 expectations for leadership, ensuring Superintendents, Project Managers, craft foremen and owners are trained and demonstrate these expectations daily. This training validates the program and identifies training needs and leadership shortfalls.
- Owner leads the Continuous Development Team, which assists management and craft workers to be more productive and work safely. The team's task is to identify and eliminate weaknesses and transform those weaknesses into to strengths.
- Management develop a competition, where project management teams who submit the most Near Miss and potential Near Miss reports by field personnel are rewarded and weighted 20% of the annual performance review. Near miss events occur even on the best projects and a "no fear environment" would help make the process effective.
- At least one to three Regional VPs attend and participate in the monthly project All Hands meeting to support the safety managers and craft workers.
- The COO visits each project once per year to lead and conduct a safety performance review. Division managers complete and lead monthly safety performance reviews.
- Each division is charged their percentage of Workers Compensation premium, and receives 100% of what is not spent on incurred losses.
- Contractor developed a monthly "Safety Share" presentation system that is presented at the beginning of every internal and external company meeting, including pre-task meetings. The process keeps the "safety culture" in front of everybody no matter who you are in the company.
- Complete daily and weekly project self-inspections. The regional Safety Task Force completes monthly self-inspections, with items scored from minor to severe based on their potential exposure. Conduct formal exit meeting with the project team, and develop an action plan. There is a bonus score for housekeeping and organization that increases the overall score tracked by the task force. The project with the highest average score per quarter receives a jobsite BBQ.



“It is humbling that we’re here. This one means more to me than other awards. It’s a representation of the hard work that our people have put into it. We’re kind of overwhelmed”.

- Civil contractors use the following leading safety indicators:
- Reach required scheduled training goals
- Managers attend field safety meetings, participates in field safety coaching activities and document recognition of personnel for doing things correctly
- All management staff are tracked for their Monday morning sharing of safety information with all crews.

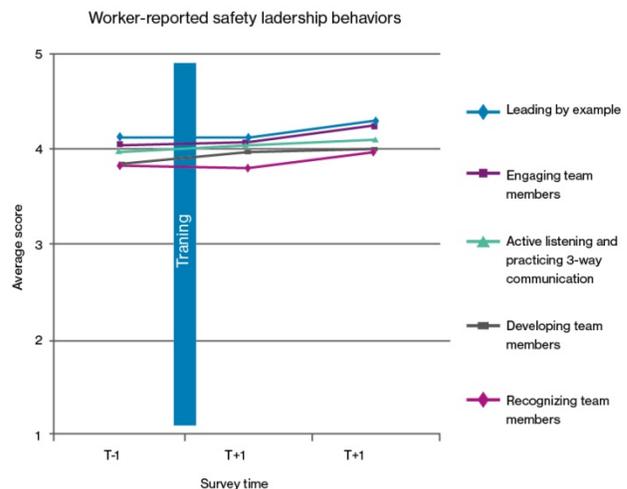
Manjor Division	EMR Average
Building	0.70
Construction Management	0.69
Heavy	0.73
Highway	0.73
Specialty	0.65
Utility Infrastructure	0.67

- Owner meets and spends time with a different crew each week; observe what crew is doing and spend time with them to hear about their daily world and listen one-on-one to the challenges they face. Spending lunch time with the crews is a great time to listen and discuss potential issues and needs.
- President makes joint visits for a full day with safety manager every month, unannounced to gain firsthand knowledge of project issues and challenges.
- CEO attends the National Safety Council (NSC) Congress. Schedule a meeting and review key points from NSC Congress with managers and craft workers, to include innovative products and ideas from the exhibit hall vendors.

- CEO conducts weekly safety talks, either in person or via podcasts. Allows CEO to consistently reach 85% of company employees at once every week.

- Safety Supervisor of the year competition: six (6) finalist supervisors selected based on feedback from senior management, the safety group and owners of projects where they have managed work. Best supervisor selected from the 6 finalists.

- Senior executives all have iPads, which contain streaming access to Job Safety Analysis, weekly safety meetings, safety inspections, written warnings and accident investigations. All forms are fillable and can be forwarded from the projects.



- Safety committee comprised of craftsmen, supervision and senior leadership ranks all superintendents on a monthly basis based on factors other than injury statistics: leadership, participation, taking care of safety requirements, etc. They use 3 colors for the ranking: Green = top performer, Yellow = average, and Red = opportunity for improvement. Superintendents have the opportunity to go up and down the ranking system each month.

- Utilize ISO 9000 and 14000 as the guiding basis for continuous improvement of environmental and safety policies and procedures.

- Worked with researchers from the Center for Construction Research and Training, a University of School of Business and the Center for Health, Work and Environment at the state School of Public Health to train all of our foremen and superintendents on “Foundations for Safety Leadership”. The five (5) key elements of this training included: Lead by Example, Engage Team Members, Actively Listen and Practice 3-Way Communication, Develop Team Members Through Teaching, Coaching and Feedback, and Recognize Team Members for a Job Well Done. The effectiveness of this training was validated with pre-training surveys of all team members and their supervisors and repeating these surveys twice after the training to measure its impact.

- Each month, each project submits its training matrix to the Home Office. Safety Director and President discuss the training matrix and develop direction for that project for the following month.
- Leadership participates in the same safety training programs as the team members.
- Company has recognized that injuries are a sign of leadership failure, not employee failure.
- Use a Spanish interpreter to help senior management deal with possible communication concerns.
- Executive to craft communication....Eggs with execs...Burritos with Byron....both of these are ways for intentional listening.
- Return on investment evaluations help make informed investment decisions on new initiatives
- Annual evaluation of company safety and health management system use to form strategic plans and goals
- Establish confidential phone line for complaints or notification of safety violations.
- Management conducts project-level climate surveys and takes action based on results.
- An enduring employee mentor program was developed for all employees, not just new hires.
- Bi-monthly open and collaborative superintendents' breakfast meeting with the management team to conduct step-by-step discussions of own or other companies' incident and implement preventive measures.
- Safety Co-ops to fulfill school credits as well as to help develop them as valuable experts in the field.
- Company leadership will push back on a client regarding any unsatisfactory work or unsafe work conditions on a jobsite, even if schedule has to be compromised.
- Management schedules impromptu Brown Bag meetings.
- Safety Directors reports directly to CEO.
- CEO is 100% directly involved in every accident investigation – main goal is accident prevention.
- Discuss safety issues, regardless of how awkward or uncomfortable at times – safe and healthy workplace environment is the priority.
- CEO Question to self: What can I you do to enhance safety? Join a crew for a very technical lift planning discussion and work alongside employee(s). Employees see the hazards, but outside eyes may be able to make viable recommendations. Leadership means getting your hands dirty, being a part of the team and demonstrating technical competence.
- 30-Seconds for Safety is how we start each meeting and conversation – this leads to better focus and puts safety in the forefront.
- There is a career path at the company for safety managers.
- Senior management on jobsites at least monthly. Always asking safety manager, employees and subs – open ended specific how do you do this? Knowledge-based questions that require real answers and not just Yes or No responses.



- Initiate Safety Superintendent of the year award – trophy buckle is the reward.
- Safety is not proprietary. Company owes it to the industry to share its safety knowledge with everyone who wants or needs it. Company expects it to be used and to improve upon it. Owner and Safety manager will lead this effort.

Risk Identification and Analysis

- Project management uses a three (3) step documented process to address identified risks: 1) eliminate the risk, 2) minimize the risk and 3) alter the work process if the risk is immovable.
- Schedule is looked from a safety standpoint as a whole rather than parts. Just because a task can be completed, it may not justify being completed out of sequence due to potential safety implications.
Example: *Installation of a high voltage line in an area where substantial underground work and grading operations have yet to be completed.*



- All identified hazards are tracked through the NSC Safety Management Navigator System. All issues are tracked until closed. The company has set a leading indicator goal average closure rate of 30 days or less. Some items require administrative changes that take longer than putting the guardrail back up. **NOTE:** Unfortunately, the Navigator system is no longer available from the NSC. However, there are other similar systems available.
- Safety department works with the Sales team to ensure a detailed site-specific safety walk and plan are developed for every project. This helps the Sales team better understand the unique safety requirements of the project so the instructions to bidders have fewer safety requirement surprises.
- Implement a driver telematics system using EROAD Inc. The Drive Buddy function provides management with driver behavior and analysis. The system provides information to coach drivers on their habits and identifies areas to improve performance. This system reduced violations and complaint calls by 25% in the first six months of implementation.
- Developed a safety peer group with seven (7) other companies across the US for continuous improvement of their company and to help improve the other peer group companies.
- Estimators, pre-construction, project management and superintendents must attend two (2) mandatory Operational Development Seminars per month. The seminars are designed to improve communication, share of information, provide continuous and frequent learning opportunities, how to recognize common and complex safety system hazards, and foster process improvements.
- Every 30 days a loss history analysis is prepared for all projects and reviewed by executive leadership team which develops an action plan based on the trends.
- Safety Excellence model is comprised of 4 KPIs (Key Performance Indicators): 1) leadership and engagement 2) safety management systems 3) risk reduction and 4) performance measurement.
- Trade Contractors Safety Alliance (TCSA) consists of 12 member companies that have taken a pledge to make safety a personal value to work collaboratively with all trade contractors to eliminate hazards and prevent incidents. The group meets quarterly hosted by guest speakers, sharing of best practices and sharing of lessons learned.
- Utilize Industry Safe software for recording safety observations. Reports generated from the software result in process improvements (PIs), along with a before and after photo illustrating the PI change.
(<https://www.industrysafe.com/>)

- Develop a policy for workers to address fatigue. Employees can decline work assignments without reprimand.

- Project site delineation through Job Hazard Analysis (JHA) by cordoning, with designated rope and signage, based on low (yellow) and high (red) level hazards vs. standard plastic caution tape method (proven to be inefficient).



- Use compliance-wise software is used for safety self-inspection management. Track issues, allow for date stamped photos and has a follow-up system that ensures corrective action has been completed. (<https://www.compliancewise.net/>)

- Project lessons learned review system based on case studies of past projects.

- Use of drones to view high-hazard activities.

- Third (3rd) party (Industrial Hygienists) monitor for both silica and noise levels 3–4 times every year.

- Pre-Task Plans, a structured system of random sampling of plans, measures the effectiveness and assist in validating plans. Use Pre-Task Plans as a leading indicator.

- Use a Daily Foreman Check In smartphone app. Foreman list what went well, challenges they faced and how they dealt with them. Summary sent to President and Safety Manager. App has the ability to be rolled up for a month and/or year summary.

- Trending and tracking of leading indicators has been an eye opener for them. They learned that older, experienced workers were the poorest safety performers.

- Safety manager has a background in kinesiology and they are making good progress on body mechanics as part of their injury prevention program.

- Develop a ban on energy drinks which do not provide proper hydration in hot environments.

- Educate on fatigue management via measuring hours worked and limits on maximum work hours. Also, use biometric screening for health management.

- A “Weekly Play Book” requires daily review of job hazard analyses and employee initials during morning huddle.

- Use Building Information Modeling (BIM) to decrease exposure hazards associated with work and rework. Allows for consideration of hazards and mitigation in design and pre-construction.

- Electronic audit forms allow for electronic information management as well as trending and tracking of results.

- A GPS unit is installed on all fleet vehicles to track driver performance.



- Work with tech research firm(s) and software products to build, track and trend. Goal is to predict injuries.
- Use the adage, “The questions that go through owners, minds at night that keeps them awake.” We continually ask ourselves, What are we doing right? What are we doing wrong? What could kill us today?, etc. This brings the hazards into focus every time we ask the question of the crews and project management.
- Specific requirements for Hot & Cold weather in our safety manual. Also part of pre-task plan.
- Fatigue management is being addressed and monitored with the ever compressed schedules of our employees. We have had to push back to our clients when too many work hours became a concern. Will work up to 6 days or 74 hours. No one can work past that schedule in one week. Also, took into consideration driving time to and from work when defining this policy. Education on fatigue management is a must! Helpful in these type situations.
- Company will focus on one or two initiatives for safety each year, and then develop processes and implement procedures so employees know company is trying to make them safer and better.
- Develop on JHA’s Company dashboard, a way to express how they hold themselves accountable: Green=Exceeds Expectations, Yellow=Meets Expectations and Red=Needs Improvement.
- Company has initiated a Golden Broom Award for the best kept housekeeping jobsite.
- Company identifies Risk Profiles on the job before the job starts. These items are then discussed in some way at all meetings until job is complete.
- Company focuses on Data Analysis, Trends, Accountability, Education & Recognition.
- Company prepares safety evaluations of jobsites before job starts or before doing the work.
- New employees and apprentices come up with great ideas. We encourage and direct Supervisors and Safety Managers to pay close attention and keep the lines of communication open with them. Listen to what they have to say, and respond formally to every suggestion or they will stop trying to engage with new ideas. New eyes are usually very good eyes.
- Field Supervisors are doing daily employee assessments. They look at each employee’s physical and mental behavior to determine if they are fit for duty today. If coming off of a weekend, they look especially harder: *Is the employee coming in late? Did they forget their PPE? Does an employee need to be reminded about their job assignments? Do they have the right attitude/state of mind? Etc.* **NOTE:** Eyeball-on-eyeball approach, to make each employee is fit for duty and will be safe today.
- Equipment operators carry and use daily their Operator Activity Journals. They make notes on what went right according to plan, and what did not so they can provide the Superintendent with specific issues and plans for the next day morning meeting.

“I like it. I think it’s educational. It makes us think about our program. We grow from that. We network and learn”.

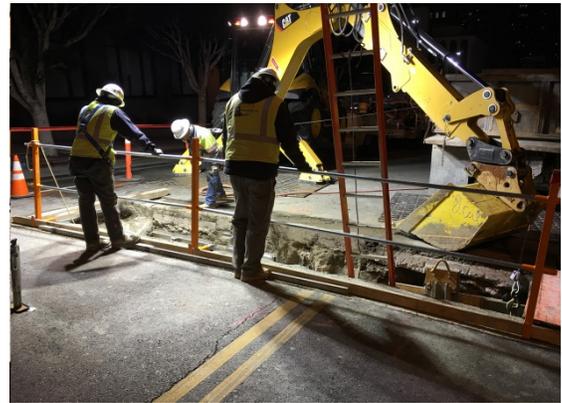
Task Design – Engineering Controls & Design for Safety

- Include and consult the Safety Director during the pre-bid phase of upcoming work for inputs on safe work engineering and administrative issues.

- Senior management provides performance expectations for each project team to submit a new safety innovation per project.
- Create a task force to work with the state DOT to develop innovative solutions based on local weather and traffic patterns, which will provide early warning to work zone instructions on highway projects.
- Devote significant resources to identify real leading indicators. Kaizen techniques and Total Quality Management are used to guide the process. The process has led to the “Practice makes Perfect” process of change and measurement for the contractor.
- To control Silica from power broom dust, closed cabs, provided better filtration filters for the operator, along with a water spray bar. Results: eliminated the use of respirators, created better visibility for subcontractors, public drivers and operators passing through the project, and kept local business owners happy.
- Use handrail system next to trenches rather than Personal Fall Arrest System.
- Necessary to use BIM to identify underground utility conflicts prior to excavation to reduce the risk of employees being exposed to an open excavation more than necessary.
- Light rail contractor designed excavator buckets for removing ballast from between cribs and between ties to eliminate exposure to overexertion injuries from hand removal. Increased productivity reduced risk.
- New roadwork heavy equipment is ordered with the more expensive “quiet package” to help workers hear backup alarms and reduce the potential for run-over/back-over accidents.
- New hand tools are ordered with ergonomic features, such as the Bosse ergonomic shovels.
<https://bossetools.com/>
- Changed the way of forming long span parking structures. Redesigned the collars, making them lighter and safer to set, and simultaneously tripled productivity. Instead of using wooden Ellis shores, which were heavy and always posed a risk for pinching fingers, used aluminum pole shores, which are lighter and easier to handle. Changed the steel frames and beams. Used aluminum frames and aluminum stringers, which made the beams lighter and easier to lift, and much safer.
- Developed a wheel chock procedure, audited for subcontracted trucks, which helps prevent trucks from leaving the work zone with beds raised.
- Underground subcontractor uses a modular handrail system, instead of cable or retractable lanyards on city street excavations. System can be moved along a linear work zone by a single employee, can be as short as five (5) feet or scaled as long as required, and is a proactive approach to a hard to control fall exposure in tight and deep excavations on city streets.
- Underground contractor eliminated the risk of sending workers into large diameter piping to complete a visual inspection. Company developed a robotic vehicle with cameras to complete the inspection of future piping without exposing their workers to Confined Space hazards. Results: better quality inspections and inspection documentation for the owner.

“I think it’s a great program, recognizing the leaders in all areas of the industry. I think it’s the most prestigious award in the country”.

- Researched and found prefabricated rated trench box guardrail system designed to secure right on a trench box. Controlled falls into trenches and eliminates the hazard of using lanyards and retractables around moving excavation equipment. (<http://www.guardianfall.com/performance-safety-products/anchor-points/product/trench-box-guardrail-receiver>)
- Contractor installed 1.2 million square feet of COIR matting with biodegradable stakes. Previous process was to bend over and drive the stakes, which required deep bends at ground-level, risking overexertion strain injuries. Found a commercially available stand, up stake driving tool that made the task ergonomically more acceptable and reduced the risk of muscle strains.



- During a bridge move, the project manager engineered out the hazards with a catwalk and handrails instead of a horizontal lifeline. This created a safer environment for the employees to perform their job and was a time cost savings since they could perform their tasks without using fall protection. The 379-ton bridge was moved in one piece, 24 hours ahead of schedule due to built-in safety efficiencies with zero injuries.



- Field leadership designed, engineered and built a gantry turntable for bridge crane removal and installation. Turntable can be used with 250-ton, 450-ton and 550-ton gantry systems. The overhead bridge crane is lifted off the rails and rotated with the turntable without the use of other equipment. Once the bridge crane is turned and clear of the rails, it can be safely lowered to floor level. This process eliminated the use of multiple material handling equipment and eliminated the potential risk of using multiple pieces of independently operated equipment moving in tandem. This tool has removed 50% of lift equipment needed.

- Use remote controlled skid steer loaders for elevated demolition applications to reduce the risk of operator injuries during high hazard work. Drones are used as the eyes of the operators when directing the remote controlled skid steers.



- Deployed a rooftop anchor system to ensure fall protection restraints are available on any job. System enables work on rooftops or flat surfaces that don't have anchor tie-off points. Now, employees can either use a fall restraint system or fall arrest. A fully contained case was designed and built to allow for easy transport.

- Utilize plastic "S" ceiling hooks for all electrical cords to keep cords off the floor, facilitate better debris removal and cleanup, and reduce the risks associated with the #2 most costly Workers Compensation injury. Falls on Same Level Walking Surfaces.

- During a large concrete pour rather than having workers manually handling and using vibrators, which increases their risk to overexertion injuries. Vibrators were mounted on mini-excavators to eliminate the exposure.

- On a structural steel project the sequence of work was changed to allow for structural steel to be connected on the ground, rigged and moved into position after bolt up. Changing the sequence reduced the risk for many hours of employees being exposed to falls from heights.

- Utilize a prefabrication operation which uses prevention through design techniques. Operation has eliminated several hazards, because work takes place in a controlled environment where craftsmen are not working on top of each other, and most fall and ergonomic hazards are eliminated.
- Installed guardrails around roof hatch openings to prevent falls.
- Machine guarding around moving parts of cement mixers and roofing kettles.
- Installed fence panels on each side of track out devices,
- Installed brackets on parapet walls to extend the height to prevent falls from roofs.
- Designed a ventilation system for indoor exhaust.
- Designed a dust collector (bag house) for cutting masonry block.
- Utilize a “Nothing Hits the Floor” program, which controls overexertion and falls on same level working surfaces.
- Contractors’ steel fabrication shop employees were exposed to falls while loading steel beams on a flatbed trailer, using an overhead gantry crane. An employee made the suggestion of pulling another empty flatbed alongside the one being loaded, creating a nice walking area beside the flatbed being loaded. Fall arrest is still used, but there is much more room to position steel beam members as they are loaded and tied down after loading.
- Masonry contractor invested in a “Spyder” crane for setting large stone panels mechanically rather than manual labor from a forklift. Reduced the risk of overexertion injuries from manual setting of stone. The work method change also increased productivity by 30%. (<http://www.spydercrane.com/>)
- Grading contractor designed an A-frame structure with an overhead rail and two (2) trolley mounted retractable lifelines for the 2 workers who have to get into the bed of every load. Previous system was scaffolding on both sides, which did not give full fall protection when going inside the bed of the hauler.
- Task was manually placing 20 tons of sand into an interior filtration vault with a skid steer loader, then transferring to the vault manually with wheelbarrows and shovels. Designed a pneumatic conveying system that eliminated wheel barrowing and shoveling, and the risk of overexertion injuries from manual sand transfer to the vault.
- To minimize saw cuts in the field, adjustable floor hole covers are utilized where possible. (<http://www.paragonproducts-ia.com/hole-cover-c-298-l-en.html>)
- Use of engineered platforms over excavated or uneven surfaces to complete project construction above unsafe areas, resulting in lower risk of falls, same level injuries and continued facilitation of the work.
- Preload construction materials with use of equipment versus manpower prior to building enclosure to provide efficient and safe progress of the work, thus reducing slips, trips, falls and strains.



- Develop a fall protection system that consists of cabling barrier installed six feet back from the perimeter of the building and on all open shafts. The posts and cabling are put in place prior to concrete being placed on a floor and remains for the duration of the project.



- Installed elevator shaft divider beams before forms are taken down, so workers can install them on a deck, instead of having to erect scaffolding floor to floor.
- Choose formwork, which allows for easy access, movement and setting to reduce overexertion and risks of falls.
- Instead of exterior long ladder access to scaffolds, company installs single level hatch plank ladders, eliminating long climbs to access scaffold levels.
- Use vacuum-equipped power tools and require use of silent core cutting blades to reduce dust inhalation and noise exposure.
- Incorporation of RFID technology into safety vests that communicate a worker's location to receiver units in heavy/mobile equipment, as a protective measure against runaway/backover incidents.
- Tool safety tracking inspection system with weekly tracking logs.
- Ergonomic design of truck tool cribs to reduce muscle strains and increase productivity not searching for tools in an unorganized truck tool crib.
- Instituted a program for all including subcontractors, which requires tethering all tools and materials.
- Developing a Left of Zero program that uses leading and lagging indicators to highlight which jobs should be pre-fabricated or solved by engineering solutions in design.

- Flagged Egress Ladders

- Developed Fatigue Management program to address employees that work 16-hr days who may be likely to encounter fatigue. Started an intense capital program to substitute more expensive mechanical equipment, instead of manpower, whenever possible. Have noticed increases in efficiency over traditional manual tasks.



- Stair towers instead of long ladders.
- Safety handrail policy over six feet on catwalks, eliminates need for safety harnesses.
- Company uses soil analysis and test composition for soil conditions at jobsites for collapse risks using heavy equipment and cranes.
- There were situations on jobsites where vehicles and people can't safely be used on the side of a mountain, or in rough terrain. Solution: implementation of drones for precise analysis and increased efficiency.
- Housekeeping and job organization is defined in the instructions for bidders and specifically, how they will be held accountable. Standard on all contracts.
- Policy - Nothing Goes On The Floor Unless it is On Wheels Rule.



Safe Work Methods (Planning and Validation of)

- Management must sign the posted pre-work plan before walking into the work area. The sign off are audited each day. This brings management accountability into the pre-work planning process.
- Develop a Forward First driving and parking policy to reduce backing accidents in pick-up trucks and runover/backover accidents around heavy equipment. Redi-mix trucks are a good example. Offloading is planned and routed to eliminate backing.
- Highway contractors develop task-specific safe work zone procedure and templates which are large and colorful to use with crews for daily task planning.
- Foremen perform a documented, annual inspection on all rigging equipment for which they are responsible. This includes inspection, removal of defective equipment and tagging with serial numbers. This process effectively removed/replaced 27 questionable tools before they became defective or caused a mishap.
- Purchase and pre-load equipment on a tractor-trailer *Safety Gear Trailers*, which eliminates the multiple movement of equipment. Specific equipment is assigned to and stays loaded on a gear trailer until it is used. It is then reloaded and remains on that trailer until its next use. The loaded tractor-trailers are stationed in the yard and ready for future jobs.

- There was a need to improve safety communication between operations and sales. The foremen created a feedback form for sales on the information they originally provided to execute the job. This has resulted in increased focus on getting in front of jobs to include JHA completion when the job is booked. Safety is in front of a job, rather than only being managed during the job.
- All foremen, superintendents and management attend a 20-hour supervisor safety training course. Attendees receive classroom and hands-on training that includes hazard analysis, employee interaction, mishap investigation and interpersonal communication.



- Equipment qualification is a gated, two stage process. After receiving classroom and hands-on training, each student is issued a learner's card. This is temporary authorization to operate equipment under the supervision of a trained supervisor. The supervisor evaluates performance in field conditions, until they feel the student can operate safely and unsupervised. This process has reduced mechanical material handling mishaps by 50%.
- Pull Planning Scheduling System helps the trade partners be engaged and work can be planned safely using Safety Hazard Alerts during the planning sessions.

- The company's LEAN initiative is called 6S - Safety, Sort, Set in Order, Shine, Standardize, and Sustain.
- Developed a trackable tagging system to denote project risks and violations. Tags are completed, attached to the risky item, then photographed and sent to superintendent and subcontractors, if applicable. Resolution is tracked through the tagging system.
- Develop standardized project specific signage and provide contact information for both management



and safety personnel to be reached 24/7, if needed, versus standard signage.

- Develop a system that requires workers to tie off while climbing scaffold ladders and gang ladders. Ladders over 10' have installed handles at the top of gang ladders to allow safe access while ascending and descending ladders.
- No Hero material handling policy – helps team members with lifts to prevent overexertion.
- Safety Pocket Guide given to all employees, providing information about hazard recognition and best safe practices.
- RED Book - Recognize Eliminate Discuss – Mini Activity Hazard Analysis (AHA) book that includes a checklist for all hazards and steps to complete AHAs.
- Over the years, company has tried many safety related programs, ideas and technologies. Determined they have too many programs, forms, etc., hitting the project leadership team. Developed a requirement that they were going to first purge things that don't work or are less effective. New requirement: for every new safety-related program/system/form, they must purge two (2) others already in place.
- Pre-job warm-ups not stretches designed in-house. They use this to activate their workers minds as well as their bodies.
- 600 vehicles...they have a hands-free only cell phone policy while driving.
- Use of photos in maintenance manuals improves clarity as to what equipment is being serviced or parts being used.
- Use of electrical maintenance manuals for iPad or mobile device resulted in increased usage of materials compared to binders of written material.
- A dedicated housekeeping laborer is shared by all trades keeping the site clean, safer and more productive.
- Implemented 7 Lessons Learned Safety Booklet – Booklet has to be with employee at all times.
- Supervisors initiate Safety Breaks whenever a new focus is needed. Observe what is happening – make changes or change direction, as needed.
- Back-up safety is an emphasis. Be vigilant and observant, constantly aware of the workplace surroundings and happenings. Company requires spotter to be behind truck directing driver. **NOTE:** Spotter must be in driver's view (rearview/side mirror) at all times.
- Jobsite boards are visual reminders of the Day's Safety Challenges.
- Safety pre-work planning software tools assist in defining the project's risks.
- Use of visual boards on jobsites so everyone sees the same communications – both English and Spanish.
- 12 Core Areas of Driver Safety like No Speeding, No Texting, No left turns, No backing up if you can drive forward, etc.
- We have a policy for heavy equipment operators to get in and out of equipment. Company's National Construction insurance carrier claim findings showed 60% of equipment operator Workmen's Compensation (WC) costs involve falling while getting in and out of equipment.

“It helps us benchmark our program. It gives us some validity in our program. We talk more about safety than we talk about operations. Let's you know who the leaders are”.

- Safety committee meetings are conducted via video teleconference, during monthly company calls. This helps to ensure all employees have an opportunity to participate. During the meetings, designated employees share their safety concerns celebrate the accomplishments of their workforce and welcome new employees.
- Craft workers receive a \$25 gift certificate when they volunteer to present a safety topic at the weekly All Hands meeting. It was slow at first, but now many try to present a topic. To encourage people to present that have never presented before, a \$50 gift certificate is given.
- Company has a system using Survey Monkey that requires daily input from each employee to give praise/recognition to crew members who have been observed performing work safely that day.
- When employees make a near miss report or make a correction to an unsafe condition without being told to by management, they are issued a card good for one paid time off hour.
- In addition to morning pre-work safety meetings, the company has a mandatory End-of-Shift meeting to debrief safety issues from the day and plan for the morning.
- A Top 10 Safety Items Banner was developed to focus on and remind all jobsite workers of required safety protocols.
- Hardhat stickers that state *I'm Bilingual* are given to applicable employees.
- Designed worker areas for lunch and meetings outdoors with a canopy and water misters for cooling during hot summer months. Multiple tables are provided for workers to rest and eat lunch and break in a clean shaded area.
- LinkedIn company showcase page that is solely dedicated to safety education and acknowledgements.
- Open forum for workers to voice their concerns and feedback with monthly *Breakfast with the President* sessions.
- On a monthly basis a randomly selected single worker on each project is invited to the district office to meet and discuss with senior leadership what challenges they face on their project.
- Monthly Craft Safety Workshop where 20 craft workers are randomly selected to have an open conversation about strengths of the safety program and what can be done to improve safety on their projects.
- Have biannual safety appreciation dinners where successes are celebrated, and trust and respect between craft workers and division managers is highly encouraged.
- Company has a *Safety Hotline*.
- Company program to promote health, wellness and financial wellness.
- Peer nominated safety champion award.
- Biometric screening to include a wellness program to promote healthy meals and company-sponsored physical events.
- The *Why I Work Safely* board is a motivating item for the workforce.



“Further enhances our safety culture; it reinforces that we are heading in the right direction. We’re not going to rest on our laurels”.

- Zero Injury Perception (ZIP) program provides a direct conduit to the entire employee base to provide suggestions and opportunities for improvement.
- Own Your Zone (personal empowerment).
- Reporting a jobsite “booby trap” like an unstable ramp or an unguarded hole are examples of how a crew member can earn safety performance tickets from a Supervisor or from a Customer.
- *I Got Your 6* program allows project team members and subcontractor employees to stop any condition or situation which may pose a direct or indirect hazard, and have a positive conversation with the individuals or group to effectively explain why they believe an unsafe condition or situation is present and how to correct it. All *I Got Your 6* submissions are placed into the electronic inspection software.
- Stand Tall program, designed to promote and reward team members for standing up, speaking out and taking personal responsibility for their safety and the safety of those around them.
- Get Awkward program encourages craft engagement for risk reduction and prevention.
- Company has designed their 12 commitments to safety. Developed a large Velcro board with Velcro text blocks that outline each commitment. Board is posted on each project and crews assemble at the end of each work shift and force rank the commitments every day.
- 3 T's of their safety program: Targeting, Training and Tracking.
- All employees have a company e-mail to improve communication.



- Program to take the safety message home by including safety procedures for homes and family.
- Have a fulltime staff wellness coordinator, who developed a *stretch and flex* for construction athletes as well as have step count challenges throughout the year.
- Community Involvement – offer 10 hour safety classes to vocational technical students.
- Provided all employees financial wellness training to help reduce financial stress and distraction during work.
- Made available free flu shots provided by local pharmacy for all employees.

- *See it, Say it, Solve it* safety campaign to encourage all employees to say something when hazards are identified and then solve the situation together throughout the life of each project.
- The audit program, ZIP, encourage employees to fill out form and turn it in anonymously.
- Company sends e-mail on Saturdays with a safety message.
- Wellness Programs for employees – weight, employee assistance, confidential phone line to health professionals.
- Uses company Safety Newsletter. Each issue has five (5) articles on safety.
- Receive Pride Award – Empowers workers.
- Implemented a Near Miss Program. Gave \$1,000 to employee who spotted a near miss cave-in near a gas line.
- Everyone has their name on the front and back of hard hat. Everyone is accountable to each other – even the subs know our names. President tries to speak to everyone on the jobsites and is highly visible.
- When people eat together – walls tend to come down. Training is always easier that way. Our vendors also present safety demonstrations regarding their equipment and products. There are lots of ways to educate employees regarding safety.
- It's about our people and about our passion - it's about the guy next to you too. If the person working next to you is working unsafely, he is not respecting you and jeopardizing your safety.
- Company's philosophy – *we are here to raise you up.*
- Implemented WYDM Campaign (What You Do Matters). We want employees up and down the company looking out for each other.
- Company encourages reporting on Near Misses and Good Catches – Employees offered incentives for doing this.
- Company has its own safety flag.
- Company provides treadmills for employees.
- Employees can make appointments with counselors about health issues (food, sleep, exercise, rest, etc.).
- Employees educated on importance of work hydration.
- We must connect at a core level emotionally in order to be safe. With this safety awareness, we can then approach the development, correction and recognition of each other.
- Poker Chip motto – Never gamble with Safety.

Safety Training and Validation of Training

- Toolbox talks are personally written by the management staff and safety director that relate to the specific work coming up in the next six (6) weeks. The safety director has craft workers and managers complete a quiz every 6 weeks to validate retention of key items mentioned in the talks.

- Safety orientations for all employees are two (2) full days. Part of the orientation is a customized OSHA 10-hour construction course, with heavy emphasis on specifics, not generic type of work employees will be doing.



- Developed a new hire orientation program that varies the way adult craft workers learn. Rather than 8 hours of verbal instruction with PowerPoint slides the training is mixed with completing a detailed online computer-driven safety orientation course, covering 36 different safety-related subjects requiring the worker to pass a quiz at the end of each section before moving on to the next. Questions where the worker struggled are cataloged and a personal follow-up plan is developed for each person to make sure they retain the items they missed.

- Partnership with HCSS software to provide tracking of skills and certifications, run real time reports on company customized leading indicators. (<http://www.hcss.com/>)

- Three (3) phase safety orientation process. Orientation 1 and 2 are good for 90 days. At the 90 day mark, Superintendent evaluates training key points and retention by asking a series of open ended questions to evaluate whether additional training or retaking Orientation 1 and 2 is required. Information from the Superintendent 90-day interviews is used to modify and enhance Orientation 1 and 2 programs, and the culture of the company the new employee experienced the first 90 days.



- Developed a new employee mentor program for the first 60 days. Company loss analysis showed most injuries and turnover occurred during the first 60 days. Mentors are paid for their work. They are also paid for daily notations and answering questions in their Mentor Book.

- Hard hat color change after 90-day orientation period signifies that the craft worker has completed orientation and now has the authority to correct any unsafe condition.

- Utilize a 2-day orientation system using C-Stop, a Contractor's Safety and Orientation Program, which is expanded to include hazard identification and mitigation practices. (<http://www.cstop.org/>)

- For the past 27 years, all Supervisors attend a 3-day Supervisors Training Retreat. In 2016, 225 supervisors attended the retreat.

- Short Service Employee program is for all newly hired people. They remain a short service employee for one year, until they complete the 12-month operations and safety program.

- Use of voice over PowerPoint safety training topics that are part of the on-line learning management system, can be accessed and reviewed 24/7. Makes good topics for safety meetings.

- Training records are maintained in an online storage system. It is accessible by any smart phone using a Quick Reference (QR) Code reader. Employees, customers and auditors have immediate access to qualifications.

- Electrical incidents and risks were trending up. Company president called for an Electrical Safety Stand-down for all projects. Electrical training tool created using the NFPA 70E standard.

“I love it. It’s a great thing. We’re trying to change the industry a few companies at a time”.

- Orientation includes, day one (1), all new hires are required to attend a 45-minute site-specific safety orientation meeting. **The safety orientation includes a Building Information Modeling (BIM)/visual presentation** that outlines the Company's partnership with OSHA and its Voluntary Protection Program (VPP), emergency action plan with contact names and numbers, hazard communication (GHS), serious injury and fatality (SIF) prevention, personal protective equipment (PPE) requirements, incident investigation and reporting structure, safety and health requirements (electrical, falls, scaffolding, trenching, mobile and heavy equipment, demolition and hot work standards). A Q&A session follows the presentation.
- Supervisor and manager development includes the Foundations for Safety Leadership program developed by the Laborers of North America. (<http://www.liuna.org/leadership-education-series-construction>)
- Identified vehicle accident exposures as a key risk for the company. Utilized a third (3rd) party training resource called SWERVE to provide training to all that drive company vehicles (<http://goswerve.com/>). System allows for training for all new drivers and existing drivers who need additional training based on reports from the in-vehicle GPS units.
- After initial on-boarding for safety. All new hires are brought back in 30-45 days to receive more intense retraining. Company found bringing employees back after some on-the-job experience that they had a better understanding of the company. They also feel more comfortable to ask questions and discuss concerns.
- Utilize an anonymous post-training evaluation form to allow employees to give feedback on the training they have attended. The intent is to receive feedback on what training techniques work and what they can do to improve training and safety topic content.
- New employee orientation is interactive and consists of two (2) parts: 1) three (3) hours of classroom training and 2) 3 hours of HOTT (Hands ON Tool Training). A written and demonstrated tool safety exam are administered after the orientation process to solicit feedback and continuous improvement of on-boarding process.
- General Superintendent has an OSHA 500 training certification.
- A four-step safety orientation and training program. In step one, the employee is given an overview of the programs and expectations are set forth that their performance review will include working safely at all times. Step two is a ladder safety program which includes rules and regulations regarding ladder use. Step three is a scaffolding safety program which thoroughly explains how to use scaffolding and avoid potential accidents. Step four is a fall protection program that covers rules regarding safety nets and handrails. Each year, every employee goes through the same complete refresher safety course.
- Does not use a one size fits all orientation training program. Company has developed a customized training program based on past field experience.
- Knowledge checks/reviews are conducted for training conducted.
- Mobile training facility which trains thousands of workers in multiple states.
- Measure the forces involved with falls regularly with a dynamometer, and then use the data and photos in company training.
- Foreman 40 training program – each foreman gets 30 hours of general safety training and 10 hours of project-specific training each year.
- To reduce the language barrier, all projects have a bilingual lead manager. Company has partnered with the community college for free English as a second language courses to employees. The CEO is setting the example by also taking Spanish classes.
- Have virtual classroom trailer that trains heavy equipment drivers in the use of very large equipment such as scrapers.

- A four (4) hour fall protection training – group thinking method to solve difficult fall protection challenges. Have thought way outside the box to meet this challenge, but showing much better risk reduction and innovative thinking by craft workers.
- Designed their safety training program using principles of neurolinguistics, i.e., how the brain is stimulated with words. Use the principles of brain learning styles to develop their safety training.
- Weekly toolbox talks are planned six (6) months in advance to allow for seasonal topics as well as adequate research into the issue being addressed.
- Using a corporate learning management system allows for tracking of employee training and qualifications.
- Employer hosted distractor driving classes for all employees required to operate fleet vehicles, equipment or machinery.
- OSHA 30 required for superintendents and project engineers every four (4) years. OSHA 10 required for project directors, managers and administrative staff every two (2) years. Plus, four (4) hours of continuing safety education every year for all employees.
- Company takes active role in national rail safety programs like Look, Listen & Live.
- Company evaluates training of employees by outside resources.
- Safety-related items are communicated in English as well as Spanish. Spanish cultures sometimes do not perceive safety hazards the same way, so a more direct approach is needed with one-on-one communication between the employees and the supervisors.
- Invest in our culture – OSHA 30 is our standard training.
- On 91st day, employees are brought in for re-orientation. This is put on the calendar as a reminder.
- Working with AGC Apprenticeship Program – getting focused - not glazing over the industry's leading issues.
- All documents are written at sixth (6th) grade level for easy understanding.
- We utilize retired employee part-time to help teach in our apprenticeship program. They are the same employees who started our apprenticeship programs. They pass on their safety knowledge to the next generation just by doing the right things – they are great teachers and have been doing things the right way and this is picked up by the new ones coming onboard. They are great mentors. Our knowledge base does not just retire.
- Biggest challenge company faces are finding skilled workers. Once a skilled worker is hired, they still must go through 10 hours of company training, not OSHA training before setting foot on the project.
- Company using pictograms on bilingual jobsites, easy to read maps and material layouts.



Subcontractor Management

- Visitors and parties not involved in day-to-day construction activities. Examples include contract haulers or truckers, vendors, suppliers,

architects, engineers and professional services firms. All are required to review the project site specific safety plan for their work and sign a document that they understand the requirements.

- All subcontractors are required to submit their safety manual and a method statement for each type of hazardous work, as defined by the project team.
- Subcontractors during the pre-con are informed about the subcontractor's Safety Warning program. Program requires any identified hazard to be corrected within 24 hours or the subcontractor will not be granted access to any work area until the problem is corrected and a plan for prevention of reoccurrence is approved by the project team.
- Project orientation not only includes safety requirements, but also gives workers an education on what they are building, who they are building it for and how it will benefit the community.
- All subcontractors are vetted through a third party system, AVETTA Inc. The basic criterion is set and the auditors provide a grade. The safety department then validates written programs submitted during field audits. (<https://www.avetta.com/>)
- All subcontractors must submit training documentation for all craft workers and persons identified as competent persons for high hazard task.
- Utilize C3, The Construction Career Collaborative, to validate proof of training for subcontractors. C3 is an alliance of Owners, Contractors and Specialty Contractors that help with issues facing the craft worker for the commercial construction industry. To be an accredited employer, one must pay workers by the hour and have an in-house program to develop a capable workforce. This is an attempt to stop the abuse of independent contractors to dodge safety responsibilities. (<http://www.constructioncareercollaborative.org/>)
- A database was developed that can track all types of training for all workers, including subcontractors. This helps to know whether workers are qualified for certain tasks on our jobs or if they need initial or refresher training.
- Subcontractor worked with the GCs to plan for fall protection early in the life of the job. This eliminates last minute, half-baked answers.
- Deeper dive into subcontractors site-specific planning uncovered that some fall protection systems used by subs were not engineered.
- Contractor must submit a risk management plan if their EMR, TCR or DART exceeds national average for their NAICS code.
- Company spends more time upfront with subs making sure they are up to speed on training as well as understanding the culture they are now working in, i.e., everyone had to go off-site for fall arrest training, including all subs.
- Sub's contracts spell out PPE is mandatory – Zero tolerance for lack of fall protection gear.

“We use CSEA for our company culture both inside and outside. Partnership; if our subs are partners as we say they are then we will share the award with them too”.



- Have shut down 18 subcontractor cranes brought on our projects from rental companies based on pre-inspections by our certified in-house crane operator in 12 months.
- Disciplinary process is handled in three (3) steps: will take action, retrain or remove employee from the company. Best to help struggling employees than to just let them go. We can be mentors, sponsors and educators for them if they can't do it correctly. If they won't do it correctly, we have to let them go.
- We make every prequalification final presentation about safety as well with specific role playing questions.
- Starting to track work hours for subs and having management involvement as well.
- 95% of work is done in hospitals. If a sub is not performing safely and has already been counseled, then they are asked to leave. Also, this is shared throughout the company. Some of our clients require us to use specific subs. In a few isolated instances, we have had to stand our ground and not let a sub back on a jobsite. Client now supports us on these decisions.
- Company asks contractors on jobsites who their most competent and safe trades are – strives to work with them. We train them on safety sometimes, we learn safer methods from them.
- Company recognizes that some subs have issues. They help train. Safety is their first training session and is required for everyone who works on a jobsite. Subs must take 1-day off before starting the job to be trained. Company has high expectations of their subs.
- Provide subcontractor trade partners with free OSHA 10 hour construction safety training. Over the last three (3) years, 300 trade partner workers have been certified.
- Operations Manager based on input from safety manager has a call with struggling sub's top management. Not to browbeat, but to come to a mutual understanding of the company's expectations when it comes to safety and a written improvement strategy.
- Safety Manager and Superintendent agree on a mutual ranking of all subs at the end of the year – best to least best.
- Subs required to go on inspections with Safety Managers. Incentive – each receives a company t-shirt.
- Subs required to submit site-specific safety plans for review, then company creates 3-D graphics for jobsite workers to use.
- Company formally meets with subs monthly after the job starts, and at project completion to convey expectations and provide written performance ratings.
- Some of our subs were invited to attend the gallery of the CSEA national judging competition, so they could see for themselves firsthand the importance of safety and keeping everyone safe.
- Weakest link are the new subs coming on the jobs. Company has come up with basic competency tests across the board before accepting a new subcontractor's safety pre-qualification.

911 - Emergency and Crisis Management

- Crisis management with chemicals. Company has a Safety Data Sheet (SDS) app that all employees have on their phone to help guide them on exposures and controls in an emergency.
- Crisis management program includes keeping updated maps about where Fire and Emergency rescue access points are located. These maps, with access points, are sent to local officials on a monthly basis or when access points change during the course of construction.



- Established a text and voicemail communication system for all employees for pertinent information such as company updates, wellness and severe weather warnings.
- Company completes an annual crisis management drill audited by a third (3rd) party company, which provides objective data on their performance along with continuous improvement recommendations.
- When working at heights, a drill is completed using the rescue device prior to the job ensuring competence.
- Confined space trained employees receive hands-on training retrieving victims/using monitoring equipment.
- Utilize an 11" x 17" crisis management plan. One side shows the location and address of emergency services near the project, and the phone numbers of the entire project team. The other side shows project specific emergency details such as evacuation routes, location of First (1st) Aid kits, fire extinguishers, and primary and secondary muster points.
- The crisis management plan includes a simulated real life emergency situation complete with a media blitz, where live cameras and microphones are stuck in key project personnel's faces. All is recorded and played back for developing improvements. Annual Requirement.
- Developed a "First Hour" crisis checklist.
- Crisis Management *Pocket Cards* - guide team members in the event of any response.
- Routine exercises in the use of Fall Event rescue equipment to build *muscle memory* as an aid for response effectiveness.
- A mock crisis event is performed to evaluate crisis communication and emergency response plan.
- Local emergency personnel participate in the planning and performance of emergency response drills.
- Emergency response planning includes locating and interviewing local doctors, fire departments and police departments, and including their information in the site safety plan.
- Sometimes we have mock simulations of accidents to make sure our employees are doing the right thing: Full scale simulations, hazardous spills, fire, ambulances, etc. Also conducted for office employees.
- Emergency safety skit/situations are acted out using real world EMS, Fire and Police responders, to include heart attack reenactment. After this event, employees are asked to write down 10 things that need to be done in an emergency – gets everyone involved and sharpens awareness. Brings safety to the forefront.
- Company developing classroom-style presentation on what to do in case of a fatality – going step-by-step through a mock process.



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