CONSTRUCTION SAFETY MANAGEMENT BEST PRACTICES

2025 CSEA

AGC THE CONSTRUCTION ASSOCIATION

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STARR

TABLE OF CONTENTS

INTRODUCTION

On April 10, 2025, almost 900 contractors attended the AGC, WTW | Willis and Starr Construction Safety Excellence Awards (CSEA) breakfast that was held at the AGC National Convention in Columbus, Ohio. Matt Curtis, Vice President – Profit Center Manager – Primary Construction, Starr, Rick Andritsch, Vice President, AGC of America, and Joseph Russo, Project Risk Resources Leader, WTW | Willis North American Construction, introduced the awards. Matt Curtis noted "The foundation for finding those strategies and solutions is a robust, aggressive, and pro-active safety program. Such a safety program sends a message to owners, lenders, and insurers that you are committed and responsible. The investment in safety multiplies itself in the form of lower insurance premiums, lower loan rates and increased reputation as a contractor of choice".

(L-R) **Matt Curtis**, Vice President – Profit Center Manager – Primary Construction, Starr, **Rick Andritsch**, Vice President, AGC of America, **Jerry N. Shupe**, CSP, Chief Health and Safety Officer, Hensel Phelps, **Mark Revesz**, CSP, CHST, Director of Safety & Health, Hensel Phelps, **Joseph Russo**, Project Risk Resources Leader - WTW North American Construction

Willis, a WTW business, and Starr continues over three decades of partnerships they could ever support for the CSEA program which helps facilitate the industry's commitment to safety. This year during the presentations, it was clear the industry recognizes the myriad of impacts our industry could see in the near term and they are taking actions to work through the hurdles while keeping safety and health of their teams at the forefront of every decision. WTW | Willis and Starr are convinced that the annual CSEA program with the AGC is one of the most impactful partnerships we could ever support.

The AGC, Willis-Starr 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 a 5-minute oral presentation to five judges and the judges 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.

The CSEA showcases companies that have achieved continuous improvements and maintenance of their safety and health management systems. In 2025, there were 127 total award applicants and 67 total finalists among 6 divisions and 23 categories.

In 2025, the Grand Award for Construction Safety Excellence was presented to Hensel Phelps. The first-place winner of each category was included in the evaluation that determined the "Best of the Best" of the 2025 Construction Safety Excellence Awards finalists.

PROFILE OF THE GRAND AWARD WINNER

HENSEL PHELPS
Plan. Build. Manage.

For 2025, there were 127 contractors across the US that applied for the Construction Safety Excellence Awards (CSEA) competition. There were 67 contractors that advanced to the final judging selection process in Columbus, OH. All 67 finalists are winners. For over 30 years, the finalist judges have selected one contractor as the Best of the Best Grand Award Champion. Over the years, the CSEA Grand Award winners have come from every division and represented companies of all sizes. For 2025, Hensel Phelps of Greeley, Colorado was recognized as the Best of the Best Grand Award Champion. Hensel Phelps competed in the Building Division in the over 2.5 million workhour category.

Over the years, the finalists' judges are asked "Why was the Grand Champion selected above all others"?

The judges got together and here are some of the reasons regarding the 2025 CSEA Grand Award Champion, Hensel Phelps:

- CEO Mike Choutka did the entire 5 min presentation and answered all the questions during the judges Q&A. It was clear that he knew every detail of their safety management process without skipping a beat.
- The finalists complete an application and one of the sections asks for "Senior Management Ownership and Participation. The judges felt that not only did Mike Choutka own and participate in the safety management system, but he absolutely drove the process strategically and operationally.
- The continuous improvement safety strategy that Mike is driving was well thought out, simple, and measurable. Leadership involvement, foreman development, and the Craft experience which includes everything the craft worker goes through daily from the moment they park their car, walk to the job site, place their personal belongings, and the conditions they experience for a productive and meaningful day.
- Mike was extraordinarily passionate about how he explained his program to the judges.
- In their application … "Mike Choutka President & CEO took over his new role on January 1, 2019. Mike Choutka's first order of business was safety. Mike immediately released a safety message called "Mike Choutka's Safety Expectations." Mike outlined his expectations and a call to action to make Hensel Phelps the safest company in our industry through five concepts:

1. Integrate safety into everything you do.
2. Have a plan and the proper controls in place.
3. Observe your surroundings and provide safe working conditions.
4. Stop work when there is an unsafe act or condition.
5. Recognize and reinforce safe acts

Hensel Phelps: Setting the Standard in Construction Safety Excellence

At Hensel Phelps, safety is far more than a policy—it's a deeply ingrained culture, championed at every level of the organization. Under the leadership of CEO Mike Choutka, safety has become an executive priority, with senior leadership taking an active, visible role in the field. This top-down engagement reinforces the message that safety is not optional—it's operationally essential.

Proactive Safety Leadership Through Leading Indicators

On every project, Hensel Phelps employs advanced leading indicator assessments to proactively measure and manage safety performance. These data-driven insights provide early warnings of potential hazards, enabling teams to take corrective action before incidents occur. Unlike traditional lagging metrics, this approach emphasizes foresight and prevention. Each assessment is reviewed by senior executives, reflecting a direct line of CEO involvement in the company's safety strategy.

Technology-Driven Risk Management

Hensel Phelps is transforming the safety landscape with cutting-edge digital technologies that anticipate and mitigate risk in real time. Key innovations include:

- **AI-Driven Risk Alerts**: Predictive analytics that identify high-risk trends, enabling teams to intervene before incidents occur.
- **Augmented Reality (AR) for Site Safety**: The Site Vision tool visualizes underground utilities, reducing exposure to excavation hazards.
- **SmartTag IT**: Enhances pre-task planning with AI-driven insights to help field teams assess conditions and mitigate risks.
- **Diverge Innovation Platform**: A strategic investment in emerging construction technologies, including robotics, drones, prefabrication, and AI solutions.
- **Edify Safety App**: Encourages personal ownership of safety by connecting workers to their motivations and analyzing field data for safety and productivity improvements.
- **Wearables and Sensors**: Smart PPE, including hearing protection and tracking devices, leverages AI to enhance situational awareness and decision-making.
- **Hard Hats to Helmets Initiative**: As of January 2024, all employees wear helmets to prevent traumatic head injuries, addressing a leading cause of jobsite fatalities.

Empowering Workers and Collaborating Industrywide

True safety leadership requires more than technology—it requires empowered people. Hensel Phelps engages its workforce through initiatives like:

- CARES (Craft Awareness, Recognition, and Engagement in Safety): A grassroots program that

gives workers a voice in shaping safety strategy and improvements.

- **SAFE (Safety Accountability for Everyone)**: A comprehensive observation program that reinforces a zero-incident culture through recognition, accountability, and continuous improvement.

These programs ensure that frontline workers are not just participants in safety—they are co-creators of safer, smarter job sites.

Advancing Safety Across the Industry

Hensel Phelps' safety model extends beyond internal practices, setting a new benchmark for the entire construction industry. Through structured assessments, digital innovation, and frontline empowerment, the company demonstrates that safety can be a strategic differentiator and a catalyst for operational excellence. By elevating the standard of care, Hensel Phelps protects its most valuable asset—its people—while delivering high quality projects nationwide.

Award-Winning Safety Leadership

As the Grand Award Winner of the AGC Construction Safety Excellence Award, Hensel Phelps stands as a national leader in safety innovation, workforce engagement, and executive accountability. The company's integrated approach redefines what's possible in construction safety, proving that world-class safety is not only achievable—it is essential.

Interested in earning national recognition for your company's safety performance? The application for the 2026 AGC Construction Safety Excellence Awards will open on **October 1, 2025**, at www.agc.org/csea. Winners will be announced at the **2026 AGC Annual Convention in Orlando next March.**

CSEA FINALS JUDGES

Jim Smoltz | Global Environment, Health and Safety, Google
Michael Carrancho | Deputy Director, Office of Planning, Design, and Construction, Smithsonian Institution
Kevin Cannon | Senior Director, Safety, Health & Risk Management, AGC of America
Mike Fredebeil | North American Director of Construction Safety, WTW | Willis
Brian Poliafico | Vice President, Profit Center Manager – Excess Construction, Starr






CSEA INITIAL JUDGES

Arthur Chang | IMA Corporation
Asma Bayunus | Jordan Foster Construction
Brad Gassman | AGC Colorado
Dan Milinazzo | Hensel Phelps
Damian Alvarez | Jordan Foster Construction
Edward Infante | Choate Construction
Erica Teichman | Choate Construction
Jerry Salgado | Beck Group
John Holt | Southern Illinois Builders Association
John Rosas | Walker Engineering
Jordan Geibig | M.C. Dean | Inc.
Josh Sheldon | TEXO Association
Joshua Campas | Sundt Construction
Kathy Freeman | Amphibious Medics
Kim Mason | AGC-Houston Chapter
Lee Gream | Faith Technologies | Inc.
Luis Perez | Walker Engineering
Michael Callison | Encore Electric
Nathan Taylor | AGC Oregon-Columbia Chapter
Rick Zellen | Holder Construction
Robert Sahagun | BNBuilders
Rocky Rowlett | Faith Technologies | Inc.
Scott Allen | Crowder Constructors Inc
Scott Sears | Walker Engineering
Scott Wheeler | Sundt Construction
Stephen Kinn | Kwest Group
Tommy Hanson | Panhandle of Texas Chapter AGC
Travis Massegee | Jaynes Corporation
Travis Stone | Perlo Construction
Troy Clark | MSC Safety Solutions
Woody Harwell | Jaynes Corporation

FINAL JUDGING SUPPORT TEAM

Arthur Chang | IMA Corporation
Brad Gassman | AGC Colorado
Damian Alvarez | Jordan Foster Construction
John Rosas | Walker Engineering
Kim Mason | AGC-Houston Chapter
Kirk Sanders | WTW | Willis
Lee Gream | Faith Technologies | Inc.
Luis Perez | Walker Engineering
Reese Fortin | Sundt Construction
Rocky Rowlett | Faith Technologies | Inc.
Scott Allen | Crowder Constructors Inc
Scott Sears | Walker Engineering
Tony Militello | WTW | Willis
Travis Massegee | Jaynes Structures | Inc
Travis Stone | Perlo Construction
Travis Weber | Haselden Construction

On January 20 and 21, 2025 preliminary judging for the CSEA final competition took place 2 days before the AGC Winter Construction Safety & Health Conference meeting in Jacksonville, Florida. 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 127 CSEA applications from across the country.

CSEA SAFETY MANAGEMENT BEST PRACTICES: OVER 1,200 PRACTICES

During the CSEA final competition, many noteworthy Safety Management process elements have been memorialized from the written applications, from the finalists' oral presentations, and questions by the finalist judges. The noted elements fall into the following eight categories:

- **Senior Management Ownership and Participation**
- **Risk Identification and Analysis**
- **Task Design - Engineering Controls & Design for Safety**
- **Safe Work Methods (planning and validation)**
- **Worker Engagement, Involvement and Participation**
- **Safety Training and Validation of Training**
- **Subcontractor Management**
- Emergency Response and Crisis Management

SENIOR MANAGEMENT OWNERSHIP AND PARTICIPATION

- Executive leadership leads or participates in executive leadership safety forums with industry peers.
- Senior Management publicizes changes made in response to employee feedback (i.e. "You Said, We Did").
- Executive/senior leadership personally outreach to employees impacted by workplace incidents.
- CEO/President visits projects at least at milestones – helps establish a "when" to visit.
- Senior operations management brings their own bagged lunch once per month to sit down and eat with a crew and discuss operations, quality, and safety
- The employee level team has the task of designing and delivering supervisory training for 1st and 2nd level management.
- The CEO sends a daily email to 500 employees outlining the previous day's safety results (incidents, observations, and near misses).
- Business Unit Leadership Incident Reviews. Group consists of a managing director, and the Executive GM's reviewing all Lost Time and near-miss incidents with the project leadership teams.
- President and CEO go through the same orientation and on-going safety training as all levels of management and employees.
- Owners conduct Safety training sessions for management and employees.
- Measuring leading indicators, using a new

software system at the executive level and can measure anyone's participation in the safety effort

- President gets a call of any reported incident.
- Superintendents are required to have 20 hours of continuing safety training each year.
- "Matrix of Responsibility"- Company developed a matrix with rows identifying various tasks that contribute to safety work (i.e. Annual plan, purchase PPE, training, tool-box talks, recognition, discipline, investigation, etc.) and columns that identify company members (management, employees, specific trades) and whether they have a lead role, contributory role, participatory role, or potentially no role.
- CEO Shane Giles always says, "If you're not growing, then you're shrinking. to me that means we are a revolving door, studying new concepts, learning from our mistakes, and making the correct changes to grow."
- To further develop leadership and communication skills, all supervisors were required to attend the LEAD program for leadership development skills conducted by the Houston Area Safety Council. The LEAD curriculum consists of three different parts including foundational leadership, insightful leadership and conquering public speaking.
- Project manager and superintendent bonuses impacted by 25% depending on safety performance.
- Company and subcontractor recordable incidents are investigated, then the project team makes presentation of findings, in-person to CEO and COO.
- 100% of field management has had the OSHA 30 within the last 3 years.
- Superintendents are required to have 20 hours of continuing safety training each year
- CEO "Stop Work" award letters to employees who take action to stop and correct an unsafe activity.
- Quarterly Presidents Safety Walk
- Supervisory employees are trained to be "Competent Persons" for all work activities on the project - Even for work they may not supervise directly.
- Supervisory employees receive annual Lift Director training by the ACRP Group and Rigging Inspector certification. https://acrpnet.org
- Supervisory "Safety Resource Desk" – a resource and research desk with a computer and a library of safety references is maintained at the job trailer to help supervisors learn about safety issues on their own. When supervisors find the answer on their own rather than being told what to do, they learn and retain more.
- Foreman and supervisory "soft skills" training on how to handle common people issues.
- In House trainers complete Dale Carnegie training to improve speaking and team building skills.
- Division Operations managers investigate all incidents/accidents rather than safety department.
- After project completion contractor provides free OSHA 10-hour training to employees who will lose their job for goodwill, new job marketability, and prevention of fraudulent end of project workers' compensation claims.
- "No Crew Left Unsupervised" - program to make sure all crews get the planning and safety management they deserve.
- Senior Management's commitment to shake at least 10 workers' hands 3 times a month and talk about a specific safety item.
- Senior Management on-site in the excavation asking field works what they taught about excavation safety.

- Monthly safety audits by Executive Safety Task Force with a weighted score, highest scoring jobs win a safety BBQ each quarter.
- After the first 250 hours of work, new employees are brought back through the process to see how they feel about safety and what the company should do differently in terms of bringing on new employees entering or pursuing entry into OSHA VPP Program
- All supervisors are required to attend the Behavior Based Safety Course
- STS (Safety Trained Supervisor) Training and certifications for All https://www.bcsp.org/sts
- Twice a year safety "Town Hall" meeting with CEO
- President and VP demonstrate ownership and participation by their commitment to the same level of safety training they require of the project management teams.
- Owners are retrained on OSHA 30 every two years and attend CPR training.
- Implemented a communications tool using mobile technology that compels our Foreman to be in daily contact with the Safety Department, ensuring that our supervisors are engaged and accountable for safety performance on every project, every day. The tool allows the Safety Director to "broadcast" critical messages, such as Heat Illness alerts, quickly and efficiently to the field.
- 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 stand down. They are also shared on social media so other contractors may benefit as well.
- 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 of over 17 new ideas or programs have been implemented through our employees.
- "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.
- Every new employee learns in orientation about a "three-second decision" from a senior executive. For him, 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.
- Executive leaders and senior managers attended a 2-day safety commitment workshop. Coaching sessions follow. 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 companywide webcast where teams from eight offices discuss topics that range from daily reminders to near misses with potentially deadly consequences.
- Safety and Health Management System conforms to OHSAS 18001. https://en.wikipedia.org/wiki/OHSAS_18001
- 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 issues are settled in an appropriate and sustainable way.
- Each division is charged their percentage of total company WC premium and are given 100% of what is not spent directly on injuries back to their bottom line thereby increasing their bonuses.
- 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.

- 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, Recognize and correct hazards, Conduct meaningful safety talks and planning meetings, Make projects safer by always doing what's right, Have 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 were held with more than 150 leaders participating.
- The President, Vice Presidents, Project Managers and Superintendents participate in Safety Challenge process while visiting jobsites. If the member of management observes a team member performing in full compliance, they ask the team member a question from the Field Safety Handbook. 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 8am.
- Six craft workers, without their foreman present, have lunch with the President to exchange ideas and issues.
- President attends every new hire orientation to demonstrate safety commitment.
- If there is a sensed lack of team engagement, a "Rapid Response" team mobilizes to the 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.
- New equipment and tools suggested for the work are personally evaluated by the owner who assembles a vetting team to make sure the proposal increases safety and improves productivity. The owner is trying to link the two so safety is not viewed by the project teams as a productivity limiter.
- The owner chairs the "Continuous Development Team" where ideas help management and craft workers be more productive and complete their work safely. The team is focused on weaknesses and work to move weaknesses to strengths.
- Management developed a competition between projects where project management teams who submit the most "Near Miss" and potential "Near Miss" reports by field personnel are rewarded and it weighed 20% of the annual performance review. Management realized that near-miss events occur even on the best projects and that a no-fear environment would help make the process effective.
- The contractor developed a monthly "Safety Share" that has to begin EVERY meeting no matter what the meeting is about by whoever calls the meeting. The process keeps the "safety culture" in front of everybody no matter who you are in the company. The "Safety Share" must also start every pre-task planning meeting.
- Daily and weekly project self-inspections are completed. The regional "Safety Task Force" also completes monthly self-inspections with items scored from minor to severe based on their potential exposure. Formal exit meeting is shared with the project team and an action plan developed. 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.

- Heavy Civil contractors use the leading safety indicators of; reaching required scheduled training goals, managers attending field safety meetings, managers participating in field safety coaching activities, and documentation by managers of catching and recognizing people for doing things correctly.
- The owner meets and spends time with a different crew each week to observe what they are doing and spend time with them to hear about their daily world and listen one-on-one to the challenges they face. Many time they sit and have lunch where the crafts have lunch to listen and discuss things.
- The CEO attended the National Safety Council Congress. Came back, called a meeting, and reviewed key points with managers and craft workers. Also, brought back some innovative ideas from the vendors in the exhibition hall.
- The CEO conducts weekly safety talks either in person or through PODCASTS. This system has allowed the CEO to consistently reach 85% of company employees at once every week.
- The safety committee comprised of craft, supervision, and senior leadership ranks all superintendents monthly 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 can move 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.
- Senior Management interviews all prospective employees.
- Weekly safety calls every Monday led by operations management.
- Safety Essentials Leadership Course for all supervisory personnel
- President of company personally shares the results of the pre-employment drug screen with new employee after orientation. Hands new employee a business card with cell number and welcomes to the company. Has a 30-minute discussion about the orientation program and the importance of safety to the company.
- Company president conducts regular project walks. If an unsafe item or method is noted, the president does not leave the area until it is corrected no matter how long it takes.
- When negotiating for the company vision plan, it is mandatory that prescription safety glasses are included as an additional benefit.
- Marketing department employees must have an OSHA 30 hour within 3 years so they understand project safety and can better explain in proposal the company safety culture.
- Project managers are required to physically walk the project weekly for 1 hour with the expectation to answer the question “How many accidents did I prevent based on what I did on my walk today”? The answers are shared with other members of the project management team.
- Bi-annual anonymous Culture Safety Opinion Surveys of every employee
- Active at college and university level for recruiting young construction professionals.
- $2,000 charged to a project for safety (5 key measures…. failure to wear fall protection, trench inspections, safety glasses, etc.).
- Expected losses are allocated to the division and “refunded” if not realized.
- Executive management developed a Monthly Safety Scorecard that goes beyond injury rates.

- Monthly Foreman safety dinner "Open Forum" discusses safety scorecard, Lessons learned, Incident review, and needed safety training improvements.
- President sends out monthly direct e-mails to all employees with a specific safety emphasis and asks for direct feedback from individual employees.
- We participate in CSEA to afford ourselves the opportunity to grow and expand our understanding of ourselves and our culture.
- Built a Peer system of cross contractor safety audits completed by invited similar peer contractors. Help each other improve their safety processes.
- The Executive safety committee makes monthly project visits and interview workers regarding their perceptions of the safety climate on their project. These interviews are shared with the project team and summarized at the monthly executive meeting.
- Foreman training curriculum enhanced with leadership skills such as computer, time management, problem resolution, listening, writing, and negotiation.
- All recordable injuries to GC employees and subcontractors are reported directly to COO and CEO
- The Safety Culture Committee works beyond the safety committee by focusing on more of the "people" aspects of the project vs the compliance focus of the safety committee.
- Promote General Labor foremen to safety manager positions, about 50% currently of the safety management population. Their building experience combined with their relationships has been a huge improvement in the quality and effectiveness of our safety professionals.
- 3rd party Professional Coach is used for helping employees manage stress, dealing with conflict, and working with all types of personalities.
- President utilizes "pop quizzes" either in person or by sending a text to the superintendent with a limited time frame for their response. They are totally random safety issues and situations. Example: "OSHA just showed up, what are the first 3 things you should do as a Superintendent.
- Management established "book of the month" club to share leadership books and information.
- Establishment of an employee advocacy program to serve as intermediary between jobsite craft workers and senior management. Non-supervisory or authority position but has cooperative relationships with employees and management.
- Every employee is given a drawstring bag for their cellular device - "Safety in a bag" is intended to be a safe place for cellular devices while operating motor vehicles.
- President says safe practices yield high rewards: healthy and productive workers, quality construction work, lower insurance costs, and future business from customers who demand a safe workplace.
- Safety performance is part of every employee's annual evaluation. Results of the 3rd party safety evaluation affect raises, bonuses, and continued employment.
- Senior management leads and is involved in all root cause analysis meetings to ensure consistency of the process and to efficiently manage any identified shortfalls relating to personnel, equipment, and employee direction.
- President and Senior Vice President have participated and completed ARTBA's SCTPP (Safety Certification For Transportation Project Professionals). This is a credentialed evaluation specific to road and bridge builders, the only current program of its kind. Executive management leads by example to emphasize the importance of safety credentialing amongst operations personnel
- We participate in AGC safety conferences and find they are a great tool for us to

learn new safety trends and implement new safety practices. For instance, we have started implementing employee guided safety meetings that promote participation and help the safety education process.

- Leadership developed an annual "Safety Shindig" that allows employees to spend an entire day just focused on the safety program and how they will work safely while on site.
- Core value of "Builder Businessman." This value means that all management employees will have a more thorough understanding of the business side of construction and how safe operations affect the business. Historically, field operations have a limited understanding of the business facet, and this training allows for a fully developed team who can apply both the field and business elements when making decisions.
- Our COO who is one of our owners enrolled in a Safety Management Course at a local University to better understand what drives good safety programs. All our owners have read books authored by Dan Peterson including "Safety by Objectives" and "Safety Supervision".
- If there is a perceived lack of team engagement or clear deficiencies in performance on a project, a rapid response team is mobilized to the site to address the concerns. Nothing is off the table in these instances. One-on-one coaching sessions to significant restructuring or changes to site leadership not meeting expectation are all possibilities.
- "Developed a Management Involvement and Commitment (MIC) procedure. The MIC procedure requires participation in various elements of our safety program from our management personnel. Elements that require participation from our management team include the following:
  - Participation in a Pre-Task Planning Meeting - 4 per week
  - Participation in safety inspection or safety committee meeting - 2 per month
  - Completion of a Behavior Based Observation - 1 per week.
  - Recognizing an employee for one of the following: Displaying HSE Leadership; Leading Stretch and Flex; Participation in Safety Committee; Recognizing/ Reporting/Correcting a Hazard; Reporting a Near Miss - 2 per month. The frequency requirements are outlined, and participation/documentation is tracked in our Safety Operating System (SOS)"
- During business planning meetings each year, our top management team requires Division Management personnel to address how safety will be improved for the upcoming year. Safety initiatives are identified, and plans are outlined as to how those initiatives will be met. Before submission of the business plans, meetings are conducted that include various levels of management personnel to discuss the safety initiatives. Best practices, possible hurdles and timelines are discussed in detail and agreed upon.
- Currently participates in Federal OSHA VPP program (Georgia DGA) and North Carolina OSHA Building Star program. Both rewarding partnerships require annual self-evaluations; basically, identifying safety improvement opportunities. Top management is part of this self-evaluation process and participates in the project visits during program renewals.
- Our leadership team has undergone a personalysis assessment to identify personality traits and characteristics to better communicate with each other and improve teamwork effectiveness. https://personalysis.wiredtothrive.com/assessment/
- Launched "Monthly Meetings with Mike," a monthly meeting with our chief executive officer (CEO), Mike where our 3,000+ employees can dial into a 1-hour webinar. The call always starts with safety, which includes a review of any recent

incidents or near misses, reminder of upcoming training, and the sharing of other announcements. It also offers time for questions and discussion and is a great way to catch the entire company that is spread out from coast-to-coast.

- The HiPo programs are designed to identify and develop top performing employees at all levels for future leadership roles and organizational growth. Two of our high potential programs are Next Generation Leaders, an elite development program for apprentices entering their final year, journeymen, and office employees who demonstrate high potential for becoming leaders; and Emerging Leaders, which is intended for individuals who show potential for becoming superintendents and project managers.

- Our COO and others are actively involved with Safebuild Alliance, a local non-profit that promotes the transformation of workplace cultures to achieve an incident free construction industry. We are engaged as a mentor in the Safebuild Alliance Mentoring Program. Over the last three years we have helped our mentee who have had a start-up construction business with developing safety and business practices, examples: onboarding process and training for personnel, audits, supplier network for PPE, and HR coaching. http://safebuildalliance.com/

- We demonstrate leadership peer transparency. Top and sub-standard performers are conspicuously shared and discussed to a great extent in each meeting. Top performers are recognized for their value, and sub-standard performances are addressed to ensure accountability after the meeting adjourns. This is not a blame culture approach, but recognition for areas of leadership improvement with solid action plans to ensure success.

- To strengthen the foundation of safety knowledge and awareness of our field supervisors, we implemented the NCCER Field Safety and Safety Technology curriculum. Twenty-five superintendents have successfully completed the Field Safety modules and have graduated into the Safety Technology curriculum. Due to the success of this program, in 2020 the NCCER Field Safety curriculum is slated to be offered to an additional 16 foreman and general foreman. After successful completion, our field staff will become safety credentialed field supervisors, further strengthening our core safety foundation.

- President holds quarterly Taco Tuesdays to meet with craft employees and leadership, discussing what is occurring on projects as well as receiving direct feedback on improving programs and processes. This is a great way for the field to interact directly with the leadership and freely discuss any concerns or potential improvements that could make the building process safer.

- President developed a video about his expectations from all employees on Safety. https://www.youtube.com/watch?v=pJYxczyFt8I

- The Safety Team is a group of field superintendents, project managers, project engineers, and VP's that meet monthly to discuss best practices, lessons learned, health and wellness for employees, and strategies to create a better safety culture.

- Established a Corporate Safety Leadership Group to help support and drive safety at the operations level across the company. The group is composed of influential, senior project leaders who were nominated by their regional vice presidents to represent each of our 10 offices. Through formal monthly meetings and a consistent communication channel, this group has established regional networking to share lessons learned, best practices and improvements. These individuals also serve as chairs of the Regional Safety Committee in their respective offices.

- We didn't rest on our 2019 CSEA win, instead, we dove deeper and worked harder. We relentlessly took our processes apart in search of better execution and more effective ways to enhance our

safety program across the board. Our committed senior management and engaged workforce are now addicted to improvement.

- Every employee is provided a hardhat sticker that lists company management cell phone numbers, and our Owner/President is the first one on that list, followed by VP of Human Resources, Safety Director, Maintenance Manager, and General Superintendent. No one in company management is ever too busy to discuss safety with a field supervisor or hourly worker.
- If an employee is injured, the president goes to their house and ensures that the employee has everything he/she needs to recover quickly. Whether it's childcare, a ramp for a wheelchair, or delivery of groceries. We take steps to take care of them.
- Projects are evaluated each month by firm ownership to gauge compliance with the safety initiatives of the jobsite. Monthly safety grading is built into our monthly financial reporting and evaluated with the same importance as the project's financial performance.
- Our COO has taken the new role of President for NECA and for his time in this position he has led the large contractor's safety group for electrical contractors, which meets twice a year to develop best-known safety practices for the electrical industry. He has seen the need to involve electrical contractors to build a safety foundation for future generations to come.
- Foreman Leadership Training program is a five-part leadership course designed to support and educate personnel on Safety leadership, planning and communication, the cost of doing business, estimating, lean construction, time management, the importance of mentorship, expectations for policy compliance, stress management, and public speaking.
- "Life Critical Rules" are a set of rules that if not followed has a high percentage of becoming a fatal accident. These rules apply to the following hazards: Fall-Protection, Lock-Out / Tag-Out, Confined Space, 15' rule around equipment, and Trench operations. Violation of these set of rules by any personnel will result in an immediate review for employee termination by the employee's manager. Banners are placed addressing these rules on specific jobs that have office trailers and/or posted on all project bulletin boards. This policy is not designed to terminate workers but an attempt to raise more awareness.
- For each project, we hold one monthly safety lunch where the PM or highest-ranking field leader will meet with three to five workers and have a candid, open discussion about safety.
- Top management knows that while industry RIRs are down, fatality rates are not. Therefore, we invented the STCKY messaging (Sh*t That Can Kill You) that we communicate in videos, meetings, and conversations. STCKY messaging is catchy and relays life and death information to prevent significant incidents by demonstrating that we can never let our guard down. We held our first STCKY video contest during National Safety Week and now have an established STCKY library available with many more lifesaving videos to come!
- Use a large public billboard safety message to ask traffic to drive safely ahead of their work zones.
- President of the company comes to jobsites towing a BBQ pit behind his truck, cook the food onsite and then serve it to the employees.
- Management offer group or individual education classes to all employees. Any construction safety or construction management topic is acceptable, and these tuitions are paid by the company. Management believes that knowledge helps to provide a safer workplace.
- Our owner is dedicated to safety. He

personally attends the required 5:00AM safety meeting every Monday morning for all field employees. All Project Managers and Field Supervisors must also attend the meeting.

- Company vision insurance plan covers prescription safety glasses 100%.
- President is a founding member and remains an active sponsor of the Construction Industry Safety Initiative (CISI).
- We have participated three times in the Construction Safety Excellence Awards - and three times we have taken the feedback we have gained to heart, learning from what we can do better. These comments, suggestions and criticisms have made our safety program stronger, and into what it is today.
- President every two weeks sends out a document called “Four Points” in which he communicates safety issues, gives accolades for safe working practices and mentions working safe.
- President “Burritos with Byron” is another example of president visiting job sites to meet with craft workers, sitting down to have breakfast with them and obtaining firsthand knowledge of how he can better support their needs.
- We are now getting more and more involved in industry associations to help other contractors see the value in safety and to improve their programs.
- President visited every project spanning over five weeks to present our State of the Company Kick-Off meeting. In the past it was a large group of all employee event at the corporate office. This year we wanted a more personal touch. By coming together in a smaller group setting, it created an environment of open communication where our employees were able to spend one-on-one time with our President and ask the questions that they may not have in a larger group.
- Developed an E-Catalog for Site Safety Professionals, Project Managers, and Superintendents to order PPE and safety equipment online. The E-Catalog is categorized with lists of approved equipment, including but not limited to PPE such as: embroidered high visibility vests, goggles, safety glasses, task specific safety gloves, fall protection harnesses, hydration supplements, safety signage, and barricades.
- A driver recommended changing the refueling station he used in our maintenance facility. He had been climbing the ladder on his tanker carrying the refueling hose, in all types of weather and in dim light. He recommended a stationery tower be constructed, believing it would mitigate slip and fall risk. Acting on his input, we designed and built a refueling tower, with wide steps and handrails, a platform and hose access at the top, a kill switch, lighting, and a moveable “gang plank” to access different trucks. These towers have since been built at all our refueling stations.
- Mixer drivers requested improvements to wash racks at our facility, and management responded by installing solar lighting and making other general rack improvements.
- Individual employees making suggestions which are adopted by the company are rewarded with a $100 bonus, and crews which submit suggestions that are adopted by the company are rewarded with a lunch in which senior management.
- Corporate management hosts an annual award ceremony for all employees. At this ceremony, top management recognizes and awards projects and teams on their dedication to safety and for outstanding safety performance.
- All employees have stop work authority.
- Working on achieving their ISO 45001
- Reworked the norm of having site safety people, foreman and superintendent trained in safety procedures to having the entire management team from estimating,

PM's and staff management.

- Hold a safety dinner at the owner's home once a year.
- Belief drives behavior. Lead from the Heart. We recognize good behavior in our employees.
- Students from the local community spend 12 weeks paid interning with the safety department to increase interest in safety as a profession. Management also offers free safety training to family members, high school and college students (OSHA 10/30), wellness and health screenings. Project related outreach to Boys & Girls Club, Youth Programs, Career Fairs, etc.
- 86 full-time safety reps, 16 interns EVERY YEAR, and encourage BCSP certifications for all employees.
- Principals rotate participation leading the weekly conference call, along with the safety manager. If an incident occurs a principal is involved in the onsite investigation.
- Company President calls the president of subcontractor employees who receive recognition at the site - notifies them of the accomplishment and thanks them for his dedication, when he can he personally presents awards, if they coincide with site visits.
- The company president sits with every new hire during orientation to personally share his commitment to their safety and their family's wellbeing. Execs also participate in onsite training and testing with the craft workers.
- Annual Safety improvement plan part of the corporate strategic planning process

RISK IDENTIFICATION AND ANALYSIS

- Incident investigations categories contributing factors (e.g. unsafe acts, preconditions to unsafe acts, ineffective leadership/supervision, organizational pressures) for refined incident analysis
- Incident, injury and illness precursor scorecard is used to identify project risks and required corrective actions to mitigate risks based on data-evidenced precursors
- Use of AutoLOTO technology to map the flow of power throughout the site to reduce human error and associated risks while controlling hazardous energy. https://autoloto.co/
- Leveraging insurance carrier expertise to identify project risks (e.g. casualty, auto, Builders Risk) and recommended controls based on industry best practices
- Addition of hand drawn pictures to Job Hazard Analysis to facilitate better understanding of work to be performed, especially in a multi-lingual work environment
- Cross functional teams meet to discuss all aspects of the business. Members are those who manage and perform the work, those who sell the work, and those that design the projects.
- Use of Enablon, a global on-line reporting system for key safety reportable events and incidents. Program helps identify major risk areas across all business units. https://www.wolterskluwer.com/en/solutions/enablon
- Executive leadership "SafeRing" program - Planning - Communicating - Observing - Improving. Subcontractors are also involved in the SafeRing process.
- SSE "Short Service Employee" employees with less than 30 days on the project. Special emphasis and observation process for these employees.
- Change job assignment during day to avoid repetitive injuries – but be sure employee is oriented properly for new job assignment to ensure employee is proper safety trained possesses adequate skills to accomplish task safely.
- Cross functional teams that go through a "Learn After Doing" post project learning process. Documented and used in pre-job planning meetings down the road.
- Use of the "Charrette" team analysis process to quickly come up with solutions for risks using a cross functional team including subcontractors. The structure of a charrette varies, depending on the problem and the individuals in the group, charrettes often take place in multiple sessions in which the group divides into sub-groups. Each sub-group then presents its work to the full group as material for further dialogue. Such charrettes serve as a way of quickly generating a solution while integrating the aptitudes and interests of a diverse group of people.
- Our Safety Professionals must obtain an ARM (associate in risk management) within 2 years of hire, so they understand and have a wider view of Risk Management
- Process to Identify Project risks then a further analysis to determine how risky it is on a scale from Less Risky to highly risky
- "Mining the Diamond" process to focus on target injury types vs incident rate
- "Extend the pyramid" – safety related data is investigated down to the audit level in effort to be as predictive as possible using data that is already being collected.
- Have found that having Foreman and Superintendents perform Safety Inspections on each other has drastically improved our Safety Culture, general knowledge, and overall morale.
- Utilize engineered and manufactured fall protection systems, we also design and test our own fall protection systems by performing drop tests with dynameters to

understand the forces to the anchorages and fall distances an employee may be subjected to during a fall. We test engineered components to understand how they react during a fall to ensure our employees are protected in the event of a fall. The drop tests are videoed and documented for sharing with our employees during our fall protection training.

- Using web based ConstructSecure, and PICS to learn more about what peers are doing to manage and improve safety https://www.constructsecure.com/
- Predictive Solutions "Safety Net" to help ID risks and track resolution of identified risks
- Root cause analysis is presented to Owner/ Client to show visible management commitment to safety and to demonstrate a client "no surprise" philosophy
- Members of a Peer Group where other contractors come into their company and do Safety performance audits with report back to senior management
- Use of ISNetworld to see what other contractors are doing in Safety
- Expanding Root Cause Analysis to focus more on the "choices" that management and employees made leading up to the incident
- Smith System of Defensive driving for all employees who drive company vehicles https://drivedifferent.com/
- Use of RFID chips to record crane and rigging inspections and inventory equipment http://www.cranestodaymagazine.com/features/track-and-trace/
- Use of "Earthcam video recording equipment to enhance jobsite security and for monitoring of safety awareness and work practices by project management - Real time http://www.earthcam.net/
- "What Do You Think I am Looking At?" audit process - Project management takes supervisors through their own work area and if a hazard is identified, they ask the question, take a picture, and the supervisor explains the hazard, and how to correct the situation. The supervisor later presents pictures and findings in a staff meeting.
- AutoDesk VELA Field Management: Safety audits with iPads http://usa.autodesk.com/architecture-engineering-construction/
- Measuring Cost Per Work Hour (total incurred insurance cost per work hour) as an additional performance indicator and subcontractor pre-qualification measure. Also track for jobsites, divisions, locations, superintendents, PMs, and foremen.
- Safety Pyramid Metric using own data to show when more significant things may happen
- Cell Phone Use Policy – You must be at least 50 feet from mobile equipment to help prevent Run Over Back Over accidents
- Meet with competitors 2x per year to share best safety practices and learn from each other
- Kaizen brainstorming
- Monthly specific safety plan for each project
- Use an online motoring service to track Motor Vehicle Records for those who drive on company business (Negligent Entrustment)
- 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 and Lessons Learned.
- Every week the jobsite Foreman writes a formal executive summary document in regard 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 6-hour defensive driving course (NSC). Driver MVR's are checked every 6 months.
- Safety Stratus safety software utilized to document safety observations. https://www.safetystratus.com/
- Every 30 days, a rolling 5-year loss history analysis is prepared for our projects and the whole company and is reviewed at Safety Meetings.
- A two-week look-ahead schedule is posted at jobsite trailers to forecast what is coming up to trigger plans for addressing safety issues.
- Supervisory behavior observation program where audits are a critical part of a manager's 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 physical, 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.
- Smartphone apps allow employees to report safety observations from their mobile devices. 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 by 33% and strains and strains overall by 40% this year through this process.
- Measure crew participation with perception surveys conducted weekly by the safety department. The survey questions include "when was the last time your boss spoke to you about safety" and "what was the last training class you went to", as examples. Crewmember perceptions are trended and shared with supervision and management on a quarterly basis.
- Employee engagement is measured in weekly affirmations. These include the acknowledgement that the 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 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.
- 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 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. Have become very vigilant with regards to follow up treatment. Overexertion 1st aids/Med only/Lost time injuries are monitored very closely throughout the healing process. This is extremely important with a soft tissue injury because very minor incidents can elevate the medical 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 inhouse 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 record able injury and above.
- "What's wrong with this picture" monthly safety quiz competition.
- "Craft Ride Along" a craft worker is randomly selected to conduct a safe ride along with one of the owners.
- An accident review committee is in place for the root cause analysis of all vehicle crashes.
- Have a dedicated QC manager and all sites must comply with ISO QC criteria.
- 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 3rd party safety compliance assessment is conducted at client sites to identify strengths and weaknesses of our 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/
- 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 which is 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.

- 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/
- Schedule is looked from a safety standpoint as a whole rather than parts. Management thinking is that just because a task can be completed it may not justify being completed out of sequence due to potential safety implications. Ex. 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 National safety Council Safety Management Navigator System. All issues are tracked until they closed. The company has set a leading indicator goal for an average closure rate of 30 days or less. Some items require administrative changes that take longer than putting the guardrail back up.
- The 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.
- Implemented a driver telematics system using EROAD Inc. The “Drive Buddy” function provides management with driver behavior and analysis. The system also 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 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 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.
- Trade Contractors Safety Alliance (TCSA) consists of 12 member companies that work collaboratively with all trade contractors to eliminate hazards and prevent incidents. The group meets quarterly hosted by guest speakers, sharing the best practices, and sharing lessons learned
- Utilize “IndustrySafe” software for recording safety observations. Reports generated from the software result in PI’s (process improvements) along with a before and after photo illustrating the change. https://www.industrysafe.com/
- Developed a policy for all workers to address fatigue. Employees can decline work assignments without reprimand.
- Project site delineation through Job Hazard Analysis 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).
- Compliance Wise software is used for safety self-inspection management. Tracks issues, allows for date stamped photos, and has a follow up system that ensures corrective action has been completed. https://www.compliancewise.net/
- Use of drones to view high-hazard activities
- 3rd party Industrial Hygienists monitor for both silica and noise levels 3-4 times every year.

- Company used a “Daily Foreman Check In” smartphone app. Foreman list what went well on their project and note what challenges they faced and how they dealt with them. Goes to President and Safety Manager. Has the ability to be rolled up for a month and year summary.
- Use of “Posers” to reenact and assist in the visual steps leading up to - Accident Investigation
- Safety Mojo - Electronic system to notify executive team of incident, track involvement, and FU - Report card graded weekly
- Electronic JSA Safety plan builder. Cannot load a task without a hard or a control example: https://www.jsabuilder.com/
- Weekly Safety audits completed with Site Audit Pro which incorporates photographs with positive and negative observations. The audit results with pictures are reviewed each week in the subcontractor meetings http://www.veamstudios.com/company.html
- Monthly job site audits are scored from 1-10. If the project receives a 10 P1 buys lunch for everyone. If the audit scores 6 or lower the project manager and foreman must meet with the president to explain why.
- Use and application of CII’s 8 Zero Injury fundamentals to determine safety leading indicators and formulate safety business plans
- Leading Indicators are tracked using Autodesk BIM/360 safety inspection program
- Loss history analysis showed employees with 3 months or less experience were having 40% of the injuries. Developed a strengthened new employee training program where a mentor is assigned and special training for a 3-month period is given until sign off by mentor.
- 2-week Look Ahead schedules are posted on a “LEAN Board”. This gives all a pictorial view of what’s coming up and fosters thinking and discussion around what safety issues will need to be addressed.
- Vehicle accidents are a huge source of risk for contractors. The company decided to go way above and beyond to help prevent vehicle accidents by incorporating the “Smith System” of driver training. http://www.smith-system.com/
- Changed procedures due to safety committee input and now embrace ALL field workers being certified riggers.
- Estimating Team “Hand Off” safety meeting comprised of VP Field Ops, PM, Superintendent, Foreman, Engineer, Purchasing Manager, and Safety Manager
- Use Integrated Process design techniques in the bid process to bring safety and risk considerations into the picture much earlier.
- Use of Smart Bid for project selection with additional questions for Owner and GC related to safety to make sure clients and customers have aligned safety cultures http://smartbidnet.com/
- Formal post-project “lessons learned” meeting with all levels of project management including employees. Safety is 1/3 of the discussion. Lessons are inventoried and used on the next project.
- Project management team has special focus on “unusual or non-routine work” during the project planning stage to identify potential risks and develop planning around those potential risks that are outside of the normal routine.
- Pre-hire Isokinetic physical evaluations to match the physical capabilities of the applicant to the demands of the task.
- Hazard ID team building game where employees take photos of project hazards and submit them to the Superintendent. Superintendent vote on the best hazard catch and the employee receives a prize.

- Use company Physicians to accompany site inspection team to review health hazards and to become familiar with the demands of the tasks for more efficient and effective return to work placements
- Planning for new projects include an occupational health assessment by a qualified healthcare professional
- IndustrySafe software is used to validate training and for making safe behavior observations https://www.industrysafe.com/
- Use iAuditor to perform and track in-house safety performance http://www.safetyculture.io/iauditor/
- Use of 3-D Lift Planning Software has helped ratchet up the safety planning for critical lifts http://www.3dliftplan.com/
- Highway contractor includes their attorney on their work zone crisis management team. Who mobilizes to the crash scene with company officials
- Monthly "Project Safety Executive Summary" is completed outlying positive trends in behavior and conditions along with specific issues that need executive focus and attention
- Use of LEAN to map and pinpoint where safety concerns are more frequent, so the right managers are involved and more detailed planned completed
- Require all employees who may be on sites with known or unknown Asbestos potential to maintain an annual 2-hour Asbestos Awareness certification card
- Safety Means and Methods strategy meetings are held as each new scope begins, these are also peer reviewed
- "At Risk" physical tagging procedure. When issues are found a tag is placed on the item, photographed, and sent to the Superintendent for correction
- Use "Workplace Aware: software for identification of hazards and communicating remediation and lessons learned.
- All JSA's are electronically uploaded to corporate website within 1 hour of completion so anyone in the company can review and comment on them.
- Company safety professionals log their time and what activities they are doing at the project level. A leading indicator of performance for the safety professionals is that they spend 80% of their time outdoors on the project managing safety by walking around and observing the people element of the project along with identifying hazards and assisting in solutions. Prior to this measurement we our safety team spent 80% of their time in the trailer doing paperwork
- "Crane Verification Process" where every crane, even those delivered by rental companies, is fully evaluated before use on project. This process also applies to all subcontractor cranes. Since putting process in place, a year ago 12+ cranes delivered by rental companies have been shut down and returned for safe equipment.
- "Fatigue Management Plan" has helped take a closer look at how fatigue negatively affects our employees and their decision-making process. We have learned that managing fatigue has helped improve productivity, safety, and rework.
- All heavy equipment operators must pass a TPE (Task Proficiency Evaluation) by a dedicated heavy equipment evaluator and trainer before being allowed to operate equipment on the project. This includes subcontractors.
- The "RED Book" process is for helping field workers ID and Control Risks. RED stands for Recognize, Eliminate, and Discuss. Each RED Book is carried by each craft worker and the master RED Book is kept by the crew leader for daily signoff for the Pre-Task meeting.
- Developed a monthly "Safety Dashboard"

that contains leading and lagging indicators and issues identified on projects for the month. The dashboard also contains prevention measures and next month's activities to address and control the identified issues.

- Workers are required to take a 20 second pause every 20 minutes to conduct a risk analysis and hazard mitigation validation
- Outfitted company vehicles with GPS devices to track employee location; reduced amount of non-work-related vehicle use
- Use of unmanned aerial vehicle (UAV) to conduct jobsite overview and hazard assessment to avoid congestion, impact zones, etc.
- Installation of "deer horn" on company vehicles reduced wildlife traffic mishaps 100%.
- Critical lift crane software
- Use of modern HR hiring analytic tools to understand personality traits of applicants
- Pre-Hire Cost Reduction Technology (CRT) tool which measures dynamic strength and the physical ability to do a job
- Annual 3rd party safety program review, evaluation and summary
- Executive and project-based leadership, participate in a thorough risk identification and reduction program. This includes weekly documentation of safety audits and provides the basis for the company safety trends, as developed from a field level.
- HCSS Inspection/observation results, as well as near miss reports and incident trend analytics and are shared at weekly project meetings. HCSS.com
- Safety starts at bid time. Risk reviews are conducted during the bidding process to understand all aspects of contractual and project risk along with their potential exposures. To identify risk and understand proper controls training is a must, we provide regular training in risk identification and exposure control for management teams well as field teams.
- During estimating, we build a risk register that highlights what we view as the most critical safety risks on the project. This document is reviewed regularly and updated accordingly until the project is completed.
- Hazard Alert Learning Opportunity Program (HALO) was transformed into a near miss and safety observation program. The remodeling of the program has yielded over a 1000% improvement in the number of near misses and observations submitted.
- Each Regional Manager is provided with a weekly "dashboard", that details incident and observation data from the previous week, month, and year as well as identifying trends in that data. This information is used to customize a plan to aggressively mitigate hazards and reverse any negative trends. Dashboards and analytical data are also used at the project level to compare statistical data across regions and job sites. Amazingly, the program can provide predictive data that will alert us where challenges are likely to arise which allows us to focus on additional resources in that area.
- Developed a "Property Damage Incident Rate" that utilizes an "old formula" in a new manner, that allows us to compare the safety performance of our job sites (different sizes and types), based on the number of property damage events. as compared to equipment operation hours.
- Our program is not minimum standard based but is extensive and addresses OSHA regulations, NFPA requirements, ANSI standards, local codes and standards, and industry best practices including the CSEA Best Management Practices.
- Estimators are looking at bid packages and contractor requirements for possible safety issues and addressing these concerns during the bid stage. Project Managers are looking at contracts and partnering with general contractors during the pre-

construction meetings to ensure everyone is on the same page and safety issues are identified in the early stages of the job.

- Online employee training tracking software helps us analyze data related to training to draw correlations between training frequency and accidents/incidents.
- To manage fleet and driving hazards we utilize a comprehensive GPS tracking system that sends alerts on all company vehicles that involve speeding, fast braking, idling, disconnection, and low battery. These alerts are received by management and concerns are promptly investigated and followed up with the appropriate corrective action. Depending on the situation employees may lose driving privileges and/or could result in termination.
- We learn from our near misses. Recently we had one of our delivery trucks back into one of our employee's personal vehicles in a loading zone causing minor damage to the employee's vehicle. We realized we had a risk gap in the way our delivery trucks operate. We took immediately action by adding back-up cameras to all our delivery vehicles and we implemented a process to have our drivers identify a spotter when they are onsite.
- We have continued to refine our business dashboards to report metrics related to fatigue, incidents and compliance. The four objectives of our strategic plan are to reduce new hire injuries by 50%, reduce safety related scheduling delays and unplanned costs, increase near miss reporting and achieve a positive to negative observation ratio of 4 to 1
- We have built a risk registry, which houses all our risk assessments for each cost type, for all construction and plant operations. These risk assessments are the starting point of our safety planning processes.
- We saw an increase in injuries and incidents that directly correlated to employees with less than 90-days experience. The leadership team shifted their priorities to include a heavier focus on safety education and skills training. This included a complete overhaul of the new hire safety orientation program, switching from dated OSHA 10 to a unique 3-day National Center for Construction Education and Research (NCCER) Safety Orientation curriculum taught in English and Spanish.
- We utilize ComplianceWISE, a safety management and inspection program to generate data to communicate assessments of potential risks to a specific project. Hazard findings and mitigation are tracked, to ensure risks are fully mitigated and never ignored.
  https://www.compliancewise.net
- Recently implemented Procore's Observation Tool which allows the superintendent to document and time stamp a recorded hazard. The supervisor can then assign it to the responsible subcontractor to remedy the hazard and is notified when the hazard is resolved. The inspection data is also used during annual reviews, bonus pay outs, individual performance promotions, and program or policy improvements.
  https://support.procore.com/products/online/user-guide/project-level/observations
- We implemented a program that has external evaluations of each project at least twice a year to a set of 25 leading indicators. A score and formal report are issued and sent to our President and the Regional / Project Leadership. Our Company President responds to every report. In addition, he sends personalized thank you notes and special recognition to people that stand out in safety.
- Utilize Safesite Inc. App technology, every visit is documented, and trend analysis is generated. We also use past incidents to observe both lagging and leading trends to demonstrate areas of success and improvement simultaneously. With the use of today's technology, statistical information is wonderfully illustrated in a clear and succinct matter.
  https://safesitehq.com

- Organize a network of regional safety professionals for a group sharing meeting. We saw the need to connect safety professionals in our local area more often. This commitment also extends to our involvement with the local community colleges and high school programs in outreach presentation promoting safe and rewarding career opportunities in the construction field.
- Even the smallest tasks are analyzed for hazards and controls are established. Our collaborative incident and close call log on Smartsheet are yielding even greater data since we improved our incident investigation processes this year. New workers are now trained in recognizing serious injury or fatality (SIF) incidents before they ever step on site based on our own real data.
- In addition to the standard KPI's like incident rates, we monitor loss cost per workhour and target a goal of less than ten cents/man-hour in loss cost
- Use claim tracking in Viewpoint (a construction management software) along with SafetyNet in our monthly Project Status Summary (PSS) meetings that has furthered the line of communication between the project management team and senior management. https://www.viewpoint.com/solutions/construction-management
- eCompliance is a cloud-based system that allows users to provide real time information to the project team as well as aggregating statistics to allow trends to be tracked. The trending allows our team to take preemptive measures to educate our teams about areas where we are seeing challenges. eCompliance allows a two-way conversation between front-line supervisors and management, including instantly reporting hazards and giving the management team systems that enable a prompt response. https://www.ecompliance.com/
- Require all subs to fill out the jobsite JHA poster (dry erase) each Monday morning. Company field staff take pictures for documentation and send with a Toolbox Talk report on Monday to VP via iScout. https://www.iscout.com/
- Back-Up Spotters training and policy were set in place to improve safety when backing up vehicles. "Circle of Safety" reinforces survey of surrounding area to look for obstructions and to guide the driver in.
- The company began implementing with great success a Key Activity Review on specific project activities companywide. A Key Activity Review is an informal, sit-down review with the crew to see if the execution of the work activity can be improved for Safety, Quality and Production; it has served as a method to validate that our planning procedures are effective. These reviews are performed at the 10 percent completion stage of the activity.
- Electronic third-party jobsite audits are performed weekly. The project manager and safety review them, any issues are abated.
- To raise more awareness of Overhead Power lines, we created awareness signs by utilizing traffic control Vertical Panels. The VPs are easy to transport and stored in foreman's tool trailers. All crews are now allowed to place a sign in the area that has an overhead power line hazard.
- The first approach is bringing employees together from different facets of the business to discuss current trends, issues, and safety survey results. The objective of this team, which is called the Safety Steering Team, is to find areas of concern, propose different approaches to solving them, and pass these intentions off to a second team, called a Continuous Improvement Team. This team is comprised of field-level employees that meet once a month until the subject at hand is mitigated.
- Our last layer of defense is our Last-Minute Risk Assessment (LMRA) process. We teach our Team Members to do a quick mental check before they begin any task - what

could go wrong with what I am going to do? When we identify a potential hazard, we can then figure out how to control that hazard.

- Every month the Branch General Manager and Job Site Project Manager conduct a Quick SHOT (Safety Habits Observed Together) on the job site utilizing I-auditor our inspection system. The findings of the Quick SHOT are discussed during the Job Site Weekly Safety Meeting with the job site employees.
- When a new project is awarded to us, the project manager sends out a PM Checklist to the safety department. The checklist includes the scope of work and if the project will require any equipment that we may need our guys to train on. Job-site risks are identified by the Superintendent when he walks the project for the first time before any work commences.
- Our safety process starts before we even bid on a job. Our estimators walk each job prior to bidding and look for possible pitfalls in the project. During this process a document we know as the risk log is generated. This document contains any item that may pose a risk to the company. Each risk is discussed amongst the management team (owner, operations director, safety director, estimator, project manager, etc.) in detail and plans/contingencies are developed to mitigate each item.
- Using 360 degree on site project cameras to document installation and quality. Used during the entire course of construction.
- Utilize SMARTDRIVE is a video-based program that uses cell phone technology to capture driver performance.
  https://www.smartdrive.net/
- Use Nex Traq vehicle telematics system to coach driver performance. When they started, they averaged 10,000 violations each month and now they are at 3,800 each month. They expect to see continued improvement as they embrace more coaching.
  https://www.nextraq.com/
- Used OSHA consultation service on all jobsites in the past year. It helped them understand what worked well in their systems and what needed to be changed.
- Implemented a 10-member safety/risk oversite council. Their purpose is to review safety policies for feasibility. It consists of all levels of employees.
- Using fleet telematics from Verizon - Telogis and check MVR's.
  https://www.verizonconnect.com/company/telogis/
- For JSA's they use a severity/probability matrix to identify hazards in need of control. This effort results in a pre-control and post-control Risk Matrix Score.
- Use Matterport software and a 3D camera. A software program to show a jobsite walkthrough. It is a product that started in the real estate broker industry. It offers a 3D tour of a worksite.
  https://matterport.com/
- Obtained a grant to design fall protection harnesses for women.
- Created a safety task force team made up of field managers and that completes a peer review audit. 35 peer audits were made last year. These are not simple audits, there are 327 questions. Many innovative safety ideas have come out of this process.
- Mobile app called SAFEPLAN that captures and allows data analytics. The has greatly improved near miss tracking.
  https://navigate360.com/safeplans/
- Collaborate with Steel Erectors of America – they share fall protection ideas, etc.
  https://www.seaa.net/
- Use "Slack "which is an interactive messaging medium that works well with cell phones and tablets. Employees find it to be consumer friendly and thus using it more, thus creating a more efficient and safer project.
  https://slack.com/
- Pre-Bid safety planning. Before a

Project Manager bids on the project there are meetings with the General Contractor & their Safety staff, engineers, when necessary, Operators that will be performing the work and the GC Management staff. Plans are developed specifically for each project. Copies of these plans and any special instructions are discussed and a hard copy given to the workers that will be doing the work

- Project safety evaluations around a leadership checklist that measures collaboration, housekeeping, material storage / handling, pre-planning efforts, data collection (iScout / SafetyNet) and subcontractor engagement.
- A national contractor with 6 regions requires each region to drill down into their own safety performance and unique jurisdictional issues and develop specific safety business plans to raise the level of their games. The regional plans are combined to form a written annual business safety plan for company safety improvement. Reviewed and measured quarterly.
- Identified 12 behaviors that are our "Critical Safe Behaviors". from a CCSI 5-year study of claims in the CCSI database. The study found that there are 12 behaviors associated with our most frequent and severe injuries.
- Use an online monitoring service to track Motor Vehicle Records for those who drive a company truck or their truck on company business (Negligent Entrustment Prevention) - Samba Safety is the vendor we use for this service. https://www.sambasafety.com/
- Root Cause Analysis (RCA) using Sologic Software is required for any OSHA recordable injury. https://www.sologic.com/en-us
- Use the DISC behavior assessment tool, a personality assessment tool that focuses on four different behavioral traits, dominance, influence, steadiness, and conscientiousness. This has allowed leadership to understand what type of approach needs to be taken when dealing with one another based on personality. https://www.discprofile.com/what-is-disc/overview/
- Have aligned lean / safe / sustainable programs that are reducing fall hazards, creating better ergonomics, reducing material handling touches, creating cleaner jobs, reducing slips, trips and falls, reducing soft tissue injuries, increasing productivity and quality, reducing labor costs, and last but certainly not least, we are having fewer serious injuries.
- Developed "Property Damage Incident Rate" utilizes an "old formula" in a new manner, that allows us to compare the safety performance of our job sites (different sizes and types), based on the number of property damage events as compared to equipment operation hours. We began with OSHA's RIR calculation and replaced injury with property damage data. The formula is as follows; Total Property Damage Incidents x 16,000 / Total Equipment Hours = Incident Rate. (16,000(16,038) represents equipment hours per site in 2017).
- Utilize an electronic Risk Management Information System (RMIS) to show live dashboards with divisional metrics. The dashboards contain both leading and lagging indicators and incorporate not only our employees, but all our subcontractors' data as well.
- Senior Management participates in incident investigations that had, or could have had, potential for Serious Injury or Fatality (SIFS). This has led to several key safety initiatives; one example is the training course "Leadership the OneLife Way" which is a 4.5 hour coursed designed to help first-line supervisors to become better safety leaders.
- Leadership is dedicated to seven areas revolving around safety in the workplace. These areas include awareness, training, communication, documentation, proper equipment, supervision, and innovation.

- Drones - have developed our UAV utilization for much deeper benefit than project photos. Our new primary application is bridge work critical lift planning. We combine the use of three different software platforms and drone imagery. This helps us achieve high levels of accuracy on crane set locations and reaching the exact calculated radius on every lift, minimizing risk. We use drones to perform inspections on bridge structures and even malfunctioning crane booms, removing the need to place employees in high-risk situations when not necessary, thus removing the hazard. Our drone program also performs traffic control inspections, from regular maintenance flights to traffic switch planning and quality control prior to opening.
- Use drones to assist with 3rd party auto accident documentation that occur within our work zones, documenting the road conditions and traffic control compliance during the time of the accident which helps with capturing the conditions of the road before we receive a lawsuit two years later after the job is complete.
- Built a risk registry, which houses all our risk assessments for each cost type, for all construction and plant operations. These risk assessments are the starting point of our safety planning processes.
- Provide Safety Leadership support by equipping them with the newest electronic technology to include applications such as OSHA Safety Heat tool, light and decibel meters, flashlights, cameras, QR reader, severe weather/lightning strike tools,
- ComplianceWise safety auditing process is an electronic, photo time-stamped process that is fully integrated into Company protocols. New hires are trained in the software, as are Executive team members who review audit data and must respond to identified issues or concerns. The cumulative data is reviewed daily, weekly, and monthly to ensure timeliness of corrective actions, and once an item is identified, mandatory corrective action must happen in a certain amount of time or an email to management is triggered if there is an issue of non-compliance. https://www.compliancewise.net/
- Project Execution Plan (PEP). We create a PEP for each project that establishes roles and responsibilities for all the deliverables including safety performance. Project teams break down the scope of work and identify the individual work events allowing us to identify the resources (personnel, equipment, and training) necessary to complete them.
- Developed new leading indicator protocol and processes to capture near-misses using Procore cloud software. Procore provides field teams with a way to report near-misses in real time online from their smart phone or iPad making the reporting process as easy as possible. Definition of a near-miss to encompass anything from unsafe behavior or conditions to machine failure or faulty processes.
- Each month the operations team sponsors a Skype teleconference that focuses exclusively on safety issues and performance; incident review with lessons learned and corrective actions; ESH training; program developments and updates; project safety audits and “celebrating our successes.” These meetings are hosted by our company president and attended by all District leaders and their key operations personnel.
- Use SmartDrive systems in every DOT over-the-road vehicle. Drivers and union buy-in are very strong. Any g-force event triggers the system’s video capture. Drivers can also activate the system. Since 2016, with SmartDrive, OSHA recordables were reduced from 12 to 6, restricted days from 120 to 42, and total lost days from 193 to 0. https://www.smartdrive.net/
- Smartsheet log - a web-based collaborative log broadcasts a message immediately to field leaders and senior managers when an incident or near miss has occurred so hazards can be shared between jobsites. Reported events are then disseminated to

workers during the next morning's huddle or immediately if they pertain to a serious injury or SIF hazard.

- Utilize Go-pro cameras for confined space evaluation
- Craft Safety Empowerment Program (CSEP). Members of the CSEP are working field employees identified by wearing a different color vest. Each member is a mentor, available to answer questions regarding safety, quality, production, quality of life on the project, etc. Every two weeks members of the CSEP meet with the project manager and discuss what they have seen and heard from our craft employees.
- Company Cross Site Safety Visits: Top Management, senior managers and supervisors are designated to conduct cross-site safety visits on each of our projects bi-annually. The visiting team then develop a written report based on their observations and give recommendations for improvement to the project team.
- HCSS Safety software is used on all our new projects in order to improve our efficiency and effectiveness for both the safety staff and our field supervisors. The safety management system includes a web application and mobile app on the iPad that enables the paperless documentation and monitoring of training, meetings, JHAs, observations, inspections, near misses, incidents while reducing paperwork with fillable forms and having the ability to run reports to spot trends. www.hcss.com
- Fatigue Management - overtime hours limited program for employees with the goal of preventing fatigue or stress through internally developed software to easily identify those with high amounts of overtime and provide coaching and schedule adjustments.
- Preconstruction MISOP meetings (Mentally Installed Systems on Paper) have a safety component which covers emergency-response procedures specific to the working location, chemical inventory for known chemicals to be onsite, work scope hazards and mitigation planning. These plans are reviewed and modified as needed during the project to maintain effectiveness.
- Implemented a 10% progress shutdown review for individual activities. When 10% of the activity has been conducted on the project, work activity will be suspended to allow a meeting to occur with crew members and management. The review meeting is comprised of personnel directly involved with the task. The purpose of the meeting is to review associated hazards, and the means and methods established to abate these identified hazards.
- Use seismographs on all blast jobs and use the square distance formula to design blasting jobs.
- Walked away from a CCIP project due to concerns about the GC handling any blasting claims.
- JHA's have added a severity matrix to gauge high loss potential. Prepared in the office by project team and modified in the field
- Engineered a lift attachment where the crane pick software detected and lift problem that was solved by the engineered solution.
- Use AIC safety software program for site safety inspections. This has resulted in immediate notification of jobsite safety issues. http://www.applicationsinternational.com/
- Rotate assigned safety people to projects to keep things fresh.
- Project was 12 weeks in duration, 7-days a week. Recognizing and preventing fatigue was a key risk factor. Developed a Fatigue Management System dashboard and transferred it to a manageable 1-page spreadsheet. Factors such as incident rate vs. hours worked were measured. If a supervisor is going to work over 70 hours, then changes in shift schedule are made. You can't be productive, safe, and manage

jobs if you are working too many hours a week

- All weekly staff and production and operations meetings lead off with a presentation of data from the risk management department with results of the previous week's observations, incidents etc., with an opportunity for Q&A and employee feedback at that time. Great transparency and communications with the entire workforce!
- The percentage of new employees per trade and job risk classification is tracked and logged as well as the number of new hazards found on the projects and new hazard corrections, along with people impacted by both.
- Conducting blood pressure testing for workers who routinely work at height and other high-risk activities, and worksite analysis beginning with a baseline of all potential hazards on site including an occupational health assessment by company physician
- Safety alerts for observations go out via text message to all foremen
- There's a technology committee where workers suggest new types of technologies to help eliminate/reduce risk
- 3-day Safety Boot camp for hands on training for non-construction personnel entering the industry
- Web based SmartSheet Log - broadcasts messages to field leaders and management when an incident occurs. Data from SIF's is constantly tracked, which has helped pinpoint RED ZONE - the days and times incidents are most likely to occur.
- Utilizing pre-hire risk tolerance stress response assessments
- Video communication between handheld mobile devices and home offices to obtain the most accurate site information, problem resolution, and technical expertise.
- Safety swaps of safety and occupational health staff between projects for rotational assignments allow for a fresh set of eyes on every project.
- Active participation in the AGC-OSHA partnership with the Construction Health and Safety Excellence (CHASE) program to reduce barriers and improve communication between field operations and federal regulators
- Observation program includes structured questions that force employees to look beyond basic level hazards. The program provided more risk ID balance from just the identification of basic items (i.e... missing PPE, improper use of tools).
- Safety observation card linked to timecard - the two must be submitted simultaneously.

TASK DESIGN - ENGINEERING CONTROLS & DESIGN FOR SAFETY

- Laser scanning equipment used to document existing conditions of a facility/ project space so that materials can be prefabricated with precision.
- Use Power BI to identify monthly corporate global trends, requiring every project to review their metrics and adjust task design to address data-evidenced issues.
- Use Hug Lights on boom lifts to effectively illuminate stripping operations.
- Use ring tracing, a process of attaching a ring over the pipe system and pushing it along the pipe to the cut location to avoid cutting the incorrect pipe.
- Transitioned all employees from conventional hard hats to safety helmets. After attending a safety seminar on Safety Helmets at the 2019 AGC National Convention in Denver, CO
- 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.
- Phasing out all A-frame ladders to podium and platform ladders. This allows our people to have safer working conditions and environments by being able to comfortably work more safely and to retain a secure footing. We feel the reduction in foot fatigue and the virtual elimination of all the associated problems is well worth it.
- Worked on a partnership with a preferred vendor and created a user-friendly all-inclusive PPE catalog that streamlines delivery processes via direct shipment. The catalog is sectored by task making it easier to navigate based on tasks from Arc-rated PPE to PFAS.
- Complex LOTO plans require qualified persons, other trades, owners, and general contractors to script a non-deviated sequential plan, with signatures, which correlates to electrical one-line diagram with intent to validate zero energy sources exist prior to work commencement.
- Use of “Sawstop” table saws which stop when skin makes contact with the blade - More information at https://www.sawstop.com/products/contractor-saw/
- 100% Glove policy has reduced hand injuries by 98% - A specialized hand JSA has to be completed if the work process would not require gloves.
- Use of Ground Penetrating Rader and Vacuum Pot Holing to verify mark-out accuracy as additional measures beyond standard Utility locates to make sure dig is safe.
- How to keep electrical cords out of walkways https://www.carniequickhooks.com/
- Moving to cordless tools to eliminate risk issues with cords
- Innovative Ideas (ones that eliminate hazards) receive a $1,000 reward.
- Upright Jack Hammer Stand – for doing overhead jack hammering on bridge jobs. Reduces overexertion and took workers away from falling debris.
- Use of BIM to lay out a 10-foot grid of fall protection anchorage inserts before placing concrete.
- “Ladder Last” policy which requires jobsite supervisors to review all activities where ladders would be typically used and replace them with stair towers, manlifts, or slope excavations to “engineer out” the use of ladders wherever possible.
- Ergonomic de-stake puller to reduce overexertion injuries https://stakepuller.com/

- Walk Through straight ladder extensions to allow workers to step through rather than around the ladder at the top landing.
- Use of BIM to engineer out difficult Fall Prevention anchorage points on complex building design projects
- Designated safety cell phone use areas on projects that limit cell phone use in work areas.
- No dry cutting/drilling of concrete…use of Hilti capture system
- Use of cones with striped paint for high visibility so pedestrians don't trip on fence base.
- Vehicle pre-trip and run over back over prevention "Circle for Safety" plan is used with a magnetic sticker that is moved to another position after check is done.
- Hand drill motors that are equipped with anti-kickback devices
- "Innovative Idea Challenge" process…a method to encourage solutions to difficult safety challenges…. most recent…a bar code attached to a tool whereby the employee/foreman scans to code and a short video clip comes up on their phone with how to safely use the equipment.
- Job Site carts with large diameter wheels to move tools and materials around project at waist height to reduce back strains/injuries.
- Use of high-tech knee pads to reduce discomfort when performing kneeling tasks
- Designated Oasis locations throughout the project, with shade, water, etc.
- 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 allowed carpenters to fasten to and move freely along the cable; retractable fall limiting devices, anchored incrementally, protected carpenters maneuvering on the sloped trusses.
- During construction of the six-story tilt-up Client project, 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 height stacked on top.
- 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. We 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 can be completed. The idea came from the 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 and 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.

- Mechanical site rotary 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 Lift computer software is used to create all critical lift plans, and they are 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. The overhang was designed for 55 psf. or 250lbs. concentrated load at any given area. It was an engineering control for debris containment, walkway and guardrail for employees, eliminating 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. 6-foot lanyards are not allowed below 18 feet.
- 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 involve the handling by pipe layers 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 would eliminate the need for our employees to manually lift anything. The committee worked with our rigging supplier and produced an excellent product that has eliminated our risk of strain 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 which is 12 feet 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 ergonomics, we use rolling stools to reduce kneeling, and 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.
- Incorporate anchor points for fall protection on the roof and handrail anchor points on the columns. Skylight designs with railings or grills to prevent falling through. Set windowsills or mullions at 40" for fall protection. Replace 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 has also created 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 all 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-need 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 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 & 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 vs standard plastic caution tape.
- Pre-load construction materials prior to building enclosure with equipment vs manpower providing safe work progress, reducing slips, trips, falls.
- 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 with 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.
- Head protection with integrated eye protection.
  https://www.kask-safety.com/
- Engineered vacuum head box to control silica dust when cleaning out ground level concrete seams.
- Electrician no knife policy … working with DeWalt to develop a porta saw with artificial intelligence to sense when 2 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.
- Employee designed rebar guard to eliminate fall potential and fall protection.
- Require all power hand tools to be battery operated to eliminate the trip hazard of cords on the project.
- Automated truck "soap dispenser - driver never gets out of truck.
- Provide 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
- Working on a task force with the state DOT to develop innovative solutions based on local weather and traffic patterns to provide early warning to work zone instructions on highway projects.
- Have devoted significant resources to identify leading indicators that are 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 added, closed cabs, 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-operators passing through the project, and kept local business owners happy.
- Use a handrail system next to trenches rather than personal fall arrest system.
- Use of 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 between ties to eliminate exposure to overexertion injuries from hand removal. Increased productivity reduced risk.
- New equipment and machines for road work heavy is ordered with the more expensive "quiet package" to help workers hear backup alarms and reduce the potential for runover-back over accidents.
- New hand tools are ordered with ergonomic features like the Bosse ergonomic shovel and other tools.
  https://bossetools.com/

- Changed the way of forming long-span parking structures that had been done the same for 27 years. Redesigned the collars, making them lighter and safer to set, and at the same time tripled productivity. Instead of using wooden Ellis shores (which were heavy and always posed a risk for pinching fingers), they went to aluminum pole shores which were much lighter and easier to handle. They changed the steel frames and beams and went to aluminum frames and aluminum stringers. This made the beams lighter and easier to lift and much safer than steel beams.
- Developed a wheel chock procedure which is audited for subcontracted dump trucks which helps prevent trucks from leaving the work zone with beds raised.
- Underground subcontractors are using a modular handrail system instead of cable or retractable lanyards on city street excavations. The system can be moved along a linear work zone by a single employee. The system can be as short as 5 feet or scaled as long as required. A proactive approach to a hard to control fall exposure in tight, deep, excavations on city streets.
- Underground contractor eliminated the risk of sending workers into large diameter piping to complete a visual inspection. The company developed a robotic vehicle with cameras to complete the inspection of future piping without exposing their workers to Confined Space hazards. Resulted in better quality inspections and inspection documentation for the owner.
- Researched and found prefabricated rated trench box guardrail systems that are designed to secure right on the trench box. Controlled falls into a trench and eliminated the hazard of using lanyards and retractable around moving excavation equipment. https://www.guardianfall.com/performance-safety-products/anchor-points/product/trench-box-guardrail-receiver.
- The contractor had to install 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.
- A rooftop anchor system is deployed to ensure fall protection restraints are available on any job. This 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 easy transport.
- Field leadership designed, engineered, and built a gantry turntable for bridge crane removal and installation. The turntable can be used with the 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. In the past this process required multiple material handling machines, which was extremely cumbersome, and posed potential risks with 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.

- 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 the same Level walking surface.
- 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 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 crafts 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 concrete mixers, and roofing kettles.
- Installed fence panels on each side of track out cleaning 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.
- 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 the load 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 changes also increased productivity by 30%.
- The grading contractor designed an A-frame structure with an overhead rail and 2 trolley mounted retractable lifelines for the 2 workers who have to get into the bed of every load. The previous system was scaffolding on both sides which did not give full fall protection when going inside bed of hauler.
- The task of 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 transfer to the vault.
- To minimize saw cuts in the field, adjustable floor hole covers are utilized where possible. https://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 fall same level injuries and continued facilitation of the work.
- Preload construction materials with use of equipment vs manpower prior to building enclosure to provide efficient and safe progress of the work and reducing slips,

trip, falls and strains.

- Developed 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 remain there for the duration of the project.
- Installed elevator shaft divider beams before forms are taken down so the 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 fall risks.
- Instead of exterior long ladder access to scaffolds, the company installs single level hatch plank ladders that do not require long climbs to access scaffold levels.
- 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 run-over back-over incidents.
- Use of reusable slab clamp on edge protection rather than PPE on bridge deck work
- Extreme Housekeeping program
- Opportunity for Improvement Form for workers. $$$ Rewards for applied ideas, part of Total Quality Management Program
- Project management evaluates the work in the planning stages to focus on Phasing the work to mitigate risks to workers. Example: phasing the work so workers can be protected greater distances behind barrier walls or away from traveling public than was shown in the project plans. Also phasing as much work during the day to reduce night work which has more risk.
- Purchasing motorized construction equipment with the quiet package to reduce and engineer out noise sources and levels around workers. The link to this document from The Laborers' Health and Safety Fund of North America further discusses reducing noise on construction projects
- Fabricated a tractor mounted bar to place geotextile fabric on the subgrade mechanically reducing significantly the manual handling risk to workers and made the placement of the fabric more efficient.
- Working with a local university's construction management school, going forward stair towers will be used to gain access from the ground to the 1st floor of the building. Motto …. "You should be able to walk, not climb to your work area."
- Working with a local university's construction management school. A new guardrail system that takes less time to set up and provides more consistent and reliable passive fall protection than wooden guardrails is being used on all projects. Rapid EPS. The cost is roughly $1.25 a linear foot and is reusable.
- Offsite fabrication of mechanical piping and plumbing along with patient bathrooms and headwalls reduced which made the tasks safer and increased productivity.
- 100% glove policy for all employees, level 5 cut resistant.
- Coordination and planning between the steel erector with the steel fabricator to pre-engineer thousands of engineered connection plates for; individual tie off points, HLL anchor locations, and a bolted outrigger system that supported a pre-engineered walkway system used to access work points for ironworkers, welders, surveyors, and QA/QC 3rd party inspectors on the project.
- Focus on "Ladders Last" program has moved work from ladders from 90% to less than 5%. All aerial work 95% is now performed from Ariel lifts, scaffolding, and Baker scaffolding significantly reducing the risk of ladder falls.

- Ergonomic “cut station” for sheet metal cut saws to keep the work task at waist level, reducing the stress on the back and the potential for back strains. Mobile storage carts and dump buggies for cut-off waste also reduce the overall risk of back strains and improve the ergonomics of the task.
- Local code inspectors caused the sequencing of MEP installation to be more hazardous because some trades had to jump ahead and install their utilities out of sequence. This caused the increased risk of more use of ladders, scaffolds, and lifts. A group of contractors met with local county/city code inspectors and asked that the inspection sequence be changed to accommodate safer work practices. The code officials agreed to change their inspection sequence to accommodate safer installation practices by the contractor(s). Quality and production also improved. This was historic, no one has asked them to change the sequence before.
- On jobs a dance floor scaffold is built over open ceiling areas as an alternative to using lifts, ladders and otherwise less safe alternatives.
- Designed prefab temporary electrical panels which eliminated the need for removing front covers to access the installation and removal of conductors from the circuit breakers.
- Developed a formal agreement with national fall protection vendor to immediately notify company of any technological advancement in Fall protection systems so workers will have the latest and best safety equipment.
- 100% retractable lanyard policy
- Utilization of “Twist Lock” cord connections for temporary lighting which reduced electrical risks.
- Pre-work infrared illumination images of electrical panels to help warn workers of high temperature potential electrical issues prior to work.
- Project engineers design anchorage points and review location and specs with all workers and subs who will be using the anchorage.
- Designed noise reduction enclosure panels to keep high noise level operations contained. Use sound level meters and dosimeters around to outside of enclosure to validate results.
- “Nothing Hits the Floor” program to reduce Falls on working surfaces. Debris containers are planned and placed in strategic locations with large casters and lifting eyes so full containers don’t become an overexertion problem.
- Construction materials are delivered on pre-loaded and stackable carts to reduce the risks of multiple unnecessary handing of material, which reduces overexertion exposure.
- Designed material carts and debris containers to fully integrate into ergonomic chop saw stations. The stations are convenient and mobile. The Chop Saw stations are pre-built at a standard height to receive material directly into debris containers to eliminate multiple handling. Built upon a narrow cart design, they easily pass through doorways without the need to be broken-down or modified. They have a self-contained HEPA filtration/dust & debris collection system, as well as an integrated backstop, task lighting, fire extinguisher, GFCI and emergency shutoff switch. The system blends safety, environmental health, productivity and lean principles.
- The “Ladders as a Last Resort” program has eliminated ladder use completely. Now all work is done from powered personnel lift equipment. Project engineer and Superintendent plan work sequence to facilitate the program.
- Use of BIM and Trimble technologies to reduce congestion and noise issues on project
- Use of BIM to pre-place pipe rack hangers above the floor which is ergonomically lower risk. Eliminated drilling from below

on scaffolding, lifts, and ladders. Also reduced exposure to Silica dust from drilling overhead.

- Developed a scaffolding system with overhead A-frame fall protection anchorage points on trollies for retractable lanyards. Used to access the beds of haul trailers safety when lining with plastic sheeting for contaminated soils.
- Transferred the risk of a 220' in the air demolition project fall risk to workers to a Brokk demolition Robot equipped with a Go-Pro move the worker from a 220' crane basket to inside a trailer doing the work remotely.
- Air operated Genie lift with specialized cradle to hold ceiling ductwork in place while worker in lift connects the duct.
- Deadman Block redesign based on employee suggested resulted in elimination of repeated drilled holes that could weaken the top of the block. Now use permanent metal attachment rails and fork pockets so the blocks could be moved with a manual or mechanical lift truck. Results: safer attachment point for blocks and improved production by freeing up the tower crane for block movement
- Use "Giken" silent pile driving machines to reduce noise levels to below 85dBA YouTube Video https://www.youtube.com/watch?v=dEkcujTI5qk https://www.youtube.com/watch?v=M5FqzeV_bC0
- A risk reduction device was created in-house that eliminated pile drivers from climbing the leads to align the pile.
- Designed vertical vertical jack hammer mounts which alleviated workers from manually holding the hammers. The result is lower risk for muscle strains and vibration.
- Use of remote-control compactors and GPS survey robots to reduce people congestion which reduced crushing and struck-by hazards.
- Workers are issued padded knee pads so they can get closer to low level work for better body mechanics and risk reduction for muscle strains.
- Designed shoring slide rail system to protect workers in boring pits.
- Devised a Fall protection system for working on existing narrow concrete beams with embedded stirrups.
- Tie back anchorage points are poured into each column for roof and interior leading-edge anchorage points.
- A paved and internally heated primary building workers access walkway that will keep the access ice free preventing falls on the same level.
- Placing porta-johns on the heated access way preventing falls on the same level
- Pre-planned layout for extension cord "mains" located above the floor and door headers.
- For buildings with parapets, spec the design to be high enough to serve as a permanent perimeter guardrail.
- Innovation: reusable concrete anchorage points required a certain size drill bit. Drill bit and anchor are now issued together in a protective tube.
- A guardrail boot is mandatory on projects to standardize the passive fall protection system and make sure guardrails are durable and meet standards.
- Engineered guardrail systems are mandatory for all projects. Smart Edge is used for leading edge elements.
- Provide employees with company logo wicking type-3 shirts to dissipate heat during hot weather work.
- Use engineered platforms over excavated or uneven surfaces to complete project construction above unsafe areas. Reduces falls on the same level, and uneven surfaces for personnel lifts.
- Put non-slip surfaces on all equipment decks and stepping surfaces companywide

to prevent falls from equipment.

- "PE Day in the Field" Project Engineers must spend a full day in the field one-on-one with Safety Managers on an annual basis to share experiences in both ways.
- Guardrails are placed next to open trenches rather than a Personal Fall Protection System. This is a consistent company policy for all open excavations 6' or greater in depth.
- Designed buckets for removing ballast from between cribs between rail ties to eliminate work by hand. Reduces the risk of overexertion injuries to workers.
- Created a policy requiring all equipment and equipment rented, especially equipment used to lift personnel, to have the most current state of the art redundant safety features available. Prior to the policy we found we were getting older non-updated rental equipment which exposed our employees to hazards that technology has engineered out.
- Purchased "Safe Approach Flange Clamps" to enhance the safety of fall protection system anchorage points Advanced American Constructors
- Evaluation of packing process and quantity of packaging materials reduced worksite clutter, amount of trash removal and contributed to a sustainable production goal by reducing wasted materials.
- Equipment, product, and material rule that required initial delivery to be within 30 feet or 30 seconds of the location where equipment/material to be used in effort to reduce waste and injury potential associated with manual material handling.
- Materials/assemblies/forms prefabricated off-site and delivered "just-in-time" for assembly/use.
- Manufactured pre-assemblies designed by BIM have made work much more efficient and reduce material handling exposures.
- Highway and Road projects use intrusion alarms on traffic cones. Use the Zello Walkie Talkie app for instant communication with cell phones that act like a walkie-talkie.
- Use the CCI program to design out material handling hazards such as a jack hammer stand. The recently designed a "claw" to work from the ground instead of a ladder or otherwise elevated.
- On school and higher education jobsites they use social media to communicate safe footpaths to students
- Purchased new rack trucks with hydraulic gate loaders to reduce muscle strains.
- During the erection of the prefabricated structural wall panels where not especially heavy could have been lifted onto place with a 50-ton telescopic crane. Decided to use a 150-ton crawler crane. The smaller crane would have been nimbler but would have required numerous crane pads and a much larger controlled access zone. The larger crane allowed for fewer fixed crane pads and smaller controlled access zones. The resulting site logistics and safety plans were simpler and static, which enhanced our ability to sequence the adjacent work, to convey the sequence to the workers and reduce worker exposure to risk.
- Risk issue with fall hazards along a trenching operation. Replaced standard PFP systems with physical devices designed for vertical building construction with handrail systems that not only eliminate the fall, but to eliminate the hazards created by PFP system.
- Prefabrication of MEP systems; Laser scanning decks prior to concrete placement to help prevent line strikes; Cover all temporary and permanent power duct banks in concrete regardless of requirements. Also use technology to limit exposure. BIM modeling is used to identify anchor points for fall protection, areas for leading edge handrail as well as inputting site utilities to avoid line strikes. Use BIM to inform sequencing of work scheduling to ensure trades are not

exposed to unnecessary stacking. We also use Matterport which is software that uses 360-degree photos to document in-wall conditions to prevent utility strikes. https://matterport.com/industries/architects-engineering-construction

- For construction of core used Aluma Gangwall form systems. Employees were having trouble utilizing fall protection as required while building the form system. The foreman implemented a static line for use on the forms to achieve easier and better protection during this operation. This was accomplished by extending the very outside 2 strong backs into the design, then installing 2 picking eyes and turning them around to install an engineered static line. Because the system allows the self-retracting lifeline to move with the employee, the workers were also protected from swing falls.
- Issued new style head protection with chin straps. A week after issuing the safety helmets, an employee was hit on the head from a glulam beam. The beam free-fell approximately 5' striking him directly on his head. The helmet's extra protection and chin strap did its job. Other than a sore neck, the employee did not sustain any head trauma or significant injury.
- Projects are planned to utilize equipment and machinery to reduce employees' exposure to injuries while carrying heavy materials by hand. This also allows our crews to use fewer ladders on the job.
- Require guardrails everywhere and anywhere possible on jobs even if the fall hazards are below 6' to reduce all fall hazards and time spent wearing fall arrest systems. Have designed mobile work platforms that take the place of scaffolding and allow employees to work free of falls on the job.
- Engineering - add additional jersey barriers to what were indicated in plans, install sheeting, when necessary, at our own cost, utilizing additional shoring and trench systems even when competitors do not.
- The underground leadership team led a committee that developed a new underground utility damage prevention program that has reduced our at-fault underground utility hits by 87%. The upgrades in the program included the purchase of a Hydrovac truck and creating a crew to operate it that services all of our projects' potholing needs. This also reduced the potential of injuries related to laborer hand shoveling operations. Once utilities are potholed the lines are GPS located and mapped for use throughout the project.
- Underground Manager in cooperation with our Structures Manager designed, certified, and had built a guardrail platform system that would fit on the top of manhole structures to provide safer access with a confined space tripod system.
- "Recently implemented SmartDrive's video-based safety program to enhance fleet safety efforts, reduce unsafe driving behaviors and minimize incidents on the road.

- All company vehicles have been equipped with SmartDrive technology, which monitors drivers while their vehicle is in motion and sends alerts based on triggering events such as abrupt braking. The SmartDrive System has allowed us to identify areas of concern and mentor our drivers on safe driving habits in hopes of preventing accidents.
- Within the first six months, we saw a 100% reduction in rear-end collisions and a 96% improvement in their SmartDrive safety score. https://www.smartdrive.net/
  The Business Development team has been assigned a dedicated Safety Specialist who is committed to assisting with all aspects of pre-planning and proposal development, such as project safety costs and implementation of engineering controls. This direct involvement from the safety team allows us to mitigate and/or plan for anticipated hazards before the job begins. An example of these engineering controls

is the introduction of our HEPA-Filtrated cabs to eliminate exposure to airborne dusts/silica which have effectively removed potential hazards.

- Partnered with PureGPS to provide instant feedback to management about all employees that operate fleet vehicles and equipment. With this information, we can provide training, track trends in driving habits and effectively reduce exposure and risk to our employees and the public. We have witnessed a significant improvement to driving behaviors since the implementation of this program.

- While performing work from a barge for dam repairs, the use of generators was a necessity for power supply. The noise levels were in the 80-85 dB range but were constant. To eliminate the need for hearing protection, an insulated three-sided shield was constructed. The generator was placed as far as practical from the crew work area and then the closed end of the wall was placed between the generator and the employees. This sound barrier wall deflected the noise away from the crew members. Crew members were excited by simply not having to wear earplugs.

- Sequence of Work - On a multi-bridge repair project in Charlotte, NC, our crews were having to perform a lot of jackhammering operations. Instead of assigning this scope to one individual, crew members were rotating every 10 minutes. This was a small crew of six employees, so the outcome was that each crew member was exposed to the vibration of the jackhammer for only 10 minutes per hour. This proved to be a success and helped to eliminate fatigue and possible strain injuries. In addition to this crew rotation, anti-vibratory gloves were purchased/ utilized; positive feedback received in regard to this PPE selection.

- The design team has implemented a note section on their drawings that outlined expectations that need to be followed through deliberation with safety on areas of the project that could create risk as identified through certain tasks. (Steel erection, excavation, silica exposure, etc.) this allows us to review and maintain safety in design through engineered controls such as isolation barriers to protective systems or even administrative controls if necessary.

- Utilized prefabrication shop to build a majority of the lighting fixture packages, the electrical home runs and support racks, and the electrical power distribution panels. This effort saved the company thousands of dollars in labor costs. Workers were required to spend less time working at heights.

- Design team designed a system to utilize the permanent piping for temporary power, eliminating the need for mobile temporary power stations and reducing the number of extension cords in use. This effort resulted in fewer trip hazards and exposure to energized electrical cords.

- Eliminated plastic danger and caution tape on projects reinforced or not. All areas that require delineation to note danger or caution zones or where authorized employees only are not allowed will be barricaded using a hard-barricading system. This keeps paths clear and keeps danger areas consistently designated. Subs now provide and use the cone and expandable bar system.

- The management team worked to get the temp power stations off the ground and hung on the walls or placed on stands. Having the temp power elevated allowed workers to plug in their corded tools and equipment without having to bend over which reduces back strains and extension cords were elevated to reduce the tripping hazards.

- Working with vendor partners to find alternatives to lighting systems that require less energy consumption, are brighter than the OSHA lighting minimums, allow for easier installation, easier to modify lighting as building becomes compartmentalized, and minimize the number of fixtures required to light an area.

- Prefab Teams continue to pursue safer installation. For example, projects that have high bend repetition can have several conduits bent in a controlled environment with optimum body positioning, great lighting and without trade stacking or congestion. Racks can be outfitted to be installed as a skid, thus minimizing time spent going up/down to take measurements and installing conduits one by one.
- Utilizing virtual reality goggles to see the future project in place. This new technology enables our employees to identify possible installation conflicts and to see the final project. Additional benefits include identification of areas where fall protection anchor points need to be installed or moved to provide final placement for employees to tie off to.
- Employ certified drone specialists. They can fly a drone over projects looking at high risk areas, thus removing employees from being exposed to hazards.
- Healthcare projects use prefabricated temporary wall systems to contain dust and maintain ICRA requirements. Also self-contained HEPA filtration units work to filter harmful contaminants and maintain negative air requirements.
- Project team included in their package one-man lifts to eliminate the need for ladders onsite.
- Through our Motion Matters program, we tested new tools such as duplex nail guns, cordless pipe cutters and even upper body exoskeletons to reduce wear and tear on the body. Videos of each study were uploaded into Stream and were shared company wide.
- An example of safety by design during construction is the installation of guardrails on steel stairs. The vertical members used to connect wire rope for guardrails are installed once the stairs are placed. The wire rope is then stretched and attached by the steel subcontractor and the installation of those as well as perimeter wire rope cable guardrails is always included in the contract. To go along with making the stairs compliant, and safe for use is that stair tread infills are prefabricated and ready to install once the wire rope guardrails are completed.
- Prefabricating the exterior skin (including metal stud framing, Thermax insulation, and miscellaneous steel for window openings) allows us to dry-in a building faster, creating a safer work environment. Prefabrication of building components allows for work to be conducted indoors, in a controlled environment where fall hazards are reduced, and exposure to sever weather is eliminated. Prefabricating interior items, such as overhead runs, offers the same safety benefit of building in a controlled, ground-level environment. Building information modeling (BIM) is another technology that assists in constructing faster, higher quality, and far safer projects by allowing us to conceptualize whether a building's design is compatible with site conditions as related to constructability. BIM also allows for clash detection, minimizing rework.
- Recently we were granted a waiver from the FAA to fly drones over active project sites (the first company in the US to receive this waiver), We have an initiative to integrate drone footage into their comprehensive safety management system. Have started employing drones to monitor large-scale activities that require large numbers of workers onsite, such as pouring concrete. Safety Managers can review the captured documentation, ensuring that everyone onsite is working in an appropriately safe manner. Our drone program can also view sloping of trenches and other safety conditions. Drones also allow the project team to see the project site from a 3D view so that they can pinpoint risks early on and therefore sequence the work in a manner that helps to clarify the schedule, understand the site constraints, and look ahead to potential safety issues. Sequence videos show which type of work will occur when, allowing the trades to understand their own work within the larger context

and thereby preventing both errors and accidents.

- Currently piloting a Prevention Through Design program that engages the client, various stakeholders, trade partners, design team, and maintenance on one of our projects. The program identifies potential risk for work at heights, access/egress clashes, logistical challenges, utility work risk and scope gaps. The team creates recommendations and implements corrective action ideas during the design phase of work. The recommendations are priced and captured in "Celebration of Wins Log". Our wins and efficiencies gained in the program have received national attention, they will be included in the third edition of the national book … "Advanced Safety Management: Focusing on Z10,45001 and Serious Injury Prevention".

- Piloting projects throughout the nation for technology wearable devices that warn employees of emergency action notification, determine if an employee was involved in a fall, fatigue management, health and wellness bracelets. Piloting drone technology on specific projects with 3D modeling to design and build safer projects and mitigate hazards such as excavation crushing hazards.

- The decking sequence was reviewed and modified so that horizontal lifelines were able to be used above a worker's head rather than workers anchoring at foot level to the deck as it was installed.

- A self-performed 14,000 piece cut stone masonry veneer project. There was little room to get mechanical equipment to help move materials to the scaffold, and a crane was not an option. This was going to result in a large amount of manual material handing for our mason and mason tenders compared to a job of similar size. We used proven ergonomic improvements from general industry and adapted them to our project. Rolling conveyor racks were used to move cut stones from one end of the approximately 125-foot-long scaffold to the other. This eliminated the need for workers to lift and carry stones or move stones with a dolly which would create an opportunity for poor lifting posture. The racks allowed the workers to lift and set stones on the racks and roll from one end of the scaffold to another.

- When working around underground electrical lines, electrical arcing is a serious concern. We observed the utility company utilizing a Quad pod set up with technora rope, which is a dielectric retrieval rope. We then removed 90% of our tripods and replaced them with the Quad Pod system with technora retrieval rope to create a universal non-entry rescue system for all our confined space entries. The Quad Pod can also be utilized to lower tools and equipment into confined spaces. https://www.3m.com/3M/en_US/company-us/all-3m-products/~/3M-DBI-SALA-Confined-Space-Rescue-Davit-System-with-Winch-8302500-Technora-Rope-50-ft/?N=5002385+3291827933&rt=rud

- We do work in proximity of energized lines sometimes within the minimum approach distance of 27 kV primary cables. To help protect our workers, we communicated with other electrical companies to find what are the best dielectric tools to help protect our workers from electrical hazards. From the information gathered and researched, we supplied dielectric shovels, prying bars, digging and prodding bars to go along with wearing dielectric gloves and overshoes to reduce electrical arcing immensely. Fire retardant clothing and arc-flash face shields are also utilized by any worker in proximity to energized lines to reduce risk exposure.

- To protect team members in the maintenance shops, a hydraulic lift system was developed and installed to replace the need for hand jacks when lifting trucks and equipment. This new lift system reduces potential injury from physical exertion as well as faulty, secondary support devices such as jack stands.

- Worked with a partner equipment manufacturer to redesign custom Reel

Trailers to help reduce the potential for human error by incorporating automatic controls and safeguards.

- All corporate departments and each of our ten regional operations offices participate in Gemba walks twice per week. The Gemba Walk is an opportunity for staff to stand back from their day-to-day tasks to walk the floor of their workplace to identify wasteful activities. The objective of Gemba Walk is to understand the value stream and its problems rather than review results or make superficial comments.
- "Used our 5S program to address slip/trip/fall incidents, and to support our lean construction practices.
- Sort – minimizing the quantity of materials stored onsite by limiting materials to those that will be installed within a one-week period.
- Straighten – establishing designated storage and lay down areas on projects and keeping materials off the ground and mobile through storage on racks, carts, pallets, bins, etc.
- Shine – requires immediate deposit of trash and debris into mobile trash carts (nothing hits the floor) and cords and hoses must be suspended off the ground to minimize trip hazards.
- Standardize – all contractors are assigned a color, and materials are marked as they arrive onsite.
- Sustain – with continuous daily cleanup enforced, weekly composite crews are focused on polishing the jobsite.
- Results: The 5S program generated several innovative ideas from our self-perform craft and subcontractors around material storage and continuous cleanup. Since the launch of the 5S program in April, we have seen a 65% reduction in slip/trip/fall injuries."
- For the last four years we have been practicing Single Piece Flow (SPF) scheduling. With this process, we break a project into similarly sized or dense areas (instead of an entire floor), determine the best sequence, and then set a rhythm or takt time to complete those areas. This allows for faster completion of the project, more efficient subcontractors, higher quality, earlier in place mock-ups, and a safer work environment for our trade partners. Our experience is that safety is improved because contractors are working in less congested areas.
- We have engineering staff working in the corporate office that assist in engineering out hazards, designing anchor points and pick points of objects.
- Maintain an extensive supply of portable chain-link fencing on each project site, to deploy as-need to prevent access to hazards ranging from temporary excavations to metal storage piles.
- A major point of emphasis was to eliminate ladder access to roofs by requiring stair towers for 100% of our projects. We continue to champion LEAN principals like rolling racks and cutting tables with waste drop containers, eliminating trip hazards and reducing back fatigue.
- Upgraded our head protection when shown the statistics and the specs on the advanced helmets available today. Rolled out mandatory use of 3M SecureFit X5000 safety helmets. Despite early misgivings, they have been embraced and even lauded for their comfort and the feeling of safety they provide. https://www.3m.com/3M/en_US/worker-health-safety-us/solutions/securefit-safety-helmet/
- Backing was one of the most frequent and serious hazards we faced. We have adopted a "Forward First" policy in which employees are trained to park so that they can drive forward rather than backing. New trucks and equipment are being purchased with backup camera systems already installed, and several older trucks and equipment have had backup camera systems and additional mirrors installed. All trucks lacking a backup camera system have had G.O.A.L. (Get Out and

Look) decals affixed to the mirrors (with associated training), and we require a spotter whenever backing in the blind.

- Rather than sending a worker down into a large permit required confined space, rigged up GoPro cameras with LED lights and lowering it into the tank to video internal conditions might provide the necessary outcomes. The results were amazing! All the internal hazards were eliminated. No personnel entered the vessel. The client was extremely impressed, and the video served its purpose so well that the client scheduled future repair work because of the video.
- Our sheet metal superintendent worked with our sheet metal fabricator to layout and prefabricate the duct risers so all field joints could be connected at chest level and all duct supports installed at ground level. This eliminated the need to assemble ductwork off of ladders or do any overhead drilling for anchors to hang the duct – both of which represent common opportunities for injury in our line of work.
- Open roof exposures such as skylight opening are not cut in through the roof until the skylight is on site ready to be installed. The area is barricaded off until the skylight is installed, and protection of the skylight is in place.
- Worked with the product development team of a bandsaw manufacturer and gave them the idea to make a bandsaw that only operates with two hands on the tool. The idea was to have a trigger-like device on both the top and bottom handle of the bandsaw causing the tool to disengage when neither hand is on the handle. This new development has encouraged other tool manufacturers to develop similar products for safety and making our company safer and other companies as well.
- Utilize test boxes and chicken switches for reducing exposure to employees when performing electrical work. The best way to prevent electrical exposures is to perform the work deenergized and create the safest work environment possible. Test boxes allow for our employees to check absence of voltage, check voltage readings, and rotation without having direct contact with the electrical system. The test box is designed to be connected to the system in a de-energized state, when the system is turned on the test box is located at a safe distance and out of the way where readings can be taken with voltage meters and measuring devices that allow for test prongs to be plugged into portals measuring each phase giving the necessary readings.
- Utilized a high-tech installation process which was the first of its kind in our 107-year history. This process eliminated all fall hazards for a major portion of activities, no work from ladders, no work from scissor lifts or platforms. We were able to accomplish this by taking 3D modeling to unprecedented levels, modeling the entire overhead conduit system. In turn, this allowed us to layout and install 90% of boxes and supports before any concrete was poured into the metal pan-decks between flooring. From this layout, we drilled holes into the metal pan-decking, dropped aircraft cable through to the floor below, where prefabricated assemblies were attached to the cable, pulled up and fastened by the crew above – all work performed without ladders or scissor-lifts, despite the 17-foot expanse between floors. This process eliminated literally thousands of trips up ladders and scissor lifts for our crews.
- Prior to starting construction activities, we will capture an underground survey using GPR (Ground Penetrating Radar) for boundaries that are not covered by public locate services. This survey is available for subcontractors to review at all our jobsite trailers.
- Faced with the unique challenge of removing 2000 timber piles, mostly all below water and full of debris, presented a hazard to our crews. Instead of sending divers to locate the piles or putting crews in the piles field we developed a patent

pending extractor system that allowed the crane operator to place the hammer over the pile, vibrate it in the mud, clamp the pile and extract it.

- Developed a system requiring workers to tie off while climbing scaffold ladders, gang ladders, ladders over 10', and have installed handles at the top of gang ladders to allow safe access while climbing on and off them. We developed a fall protection system consisting of a cabling barrier installed six feet back from the perimeter of the building and all open shafts. The posts and cabling are put in place prior to concrete being placed on a floor and remain for the duration of the project.
- When we have a cable system that is not for tying off, we use a different color mesh so workers can easily recognize it. Another example of engineering controls is putting in elevator divider beams before forms are taken down so the workers can install them on a deck instead of having to erect scaffolding floor to floor.
- We use cattle guards as barricades to maintain minimum approach distances for fall and electrical hazards on the jobsites.
- Company utilizes a hand-held wireless, remote control device which permits the user to control certain functions of the device in portable traffic signal trailers. The user can take control of a running signal operation and stop all traffic by a push of the "STOP" button. Normal operation of the signals is returned by pushing the "Resume" button.
- Our ownership has provided us with access to all dustless equipment that our workforce needs to be successful in reducing exposure. We use dustless grinders with the appropriate dust collection systems, water attachments for all handheld power saws, water attachments for jackhammers and rivet busters, and vacuum attachments for any core drilling. Along with all these engineering controls, we have our own personal sampling pumps to determine any exposure we may have to have a variety of hazards.
- Use the Corp of Engineers critical lift plan which is above and beyond OSHA. In addition to the critical lift plan, we also have a huddle prior to the lift to make sure all parties are on board with the specifics.
- Limiting string lighting to running wire and installing a temp lighting device in the location of a what will be a permanent structure, thereby solving the age-old problem of poor lighting on construction sites.
- Using suction cup mechanical lift tools to lift and place roof pavers on commercial jobsites.
- RFI system allows a way to advise the need for general lighting that the project owner isn't always aware of.
- Through prefabrication, it has dramatically reduced the need for jobsite ladders over previous methods.
- Develop a preconstruction traffic and access plan for all jobs.
- Silica was a big challenge, so they found CLEMCO which is a company that makes a spray wand that uses water and air to blow out concrete joints that results in no measurable respirable silica dust. This engineers out the exposure. https://clemcoindustries.com/
- Use beacons on concrete saws to identify where the machinery is during work. This is especially useful at night.
- Built an automatic straight edge device for finishing pavement. Big savings in labor but also a big reduction in ergonomic exposures.
- Fabricated a tool to keep workers away from pinch point hazards when placing precast or tilt up panels. This allows the work to be done while eliminating the pinch point hazard.
- Manage project OSHA lighting expectations to include adequate room by room lighting after compartmentalizing.
- Use drones to study worksite traffic patterns.

- Roofing hot kettles require 2-fire extinguishers.
- Have moved away from using ladders and use lifts instead when necessary. We have displaced over 50% of our ladders to date, which means we have better control over the work areas we use. This also takes hours off our bids and saves labor costs to the owner.
- Company recognized safety issues involved with manually handling materials and has purchased “Exoskeletons” outer sleeves for lifting objects that are lightweight and reduce arm injuries to employees.
- Require materials to be stored on carts – nothing on the floors. Rolling carts are to be used for moving materials whenever possible. All power cords are to be suspended. Company mitigates dropped object accidents by requiring tools to be tethered.
- Decibel readings of equipment are obtained frequently to assure personnel that the company “Hearing Loss Prevention Program” is working.
- The company invested heavily in Hydro-demolition equipment. This is a new way of performing demolition work. This process is quicker, uses less work hours and keeps the employees a safer distance from the demolition.
- Developed a patented Pile Cutting machine to cut concrete piles safely and efficiently. The machine takes one Operator to work in a climate-controlled cab away from the risk of cutting, to cut up to 200 piles a day. The previous method would take two operators manually sawing the piles at the rate of 30 a day, exposed to the risks of the chipped concrete and the struck-by/caught-between risks of swinging of the pile once it is cut. Productivity is increased and fatigue is reduced by reducing the hours it takes to perform a task.
- Company invested heavily in Brokk robotic demolition equipment which allows the Operator to work remotely at a safe distance from the demolition area. https://www.brokk.com/us/
- Installed safety cables in the window openings of all wall panels prior to erection.
- New initiative to develop emerging Project Engineers with regards to safety engineering and education. Entry level Project Engineers received more specific insight as to the importance of project safety. They also perform separate inspections and lead toolbox talks.
- Invested in hydro-vac technology to safely identify existing utility lines, as well as all new concrete cutting and drilling vac equipment to mitigate silica exposure.
- During a large congested downtown project, the public is channeled using site fencing and a scaffold bridge over construction areas for safe access.
- Utilized timber piles for vertical support of a “stage top” style system which allowed several different trades to have an adequate elevated work platform from framing through rough-in phases. This engineered control eliminated the need for any Personal Fall Arrest Systems.
- Have increasingly gone to prefabrication of structures on the ground to eliminate work at heights whenever possible. We have had great success framing the stair towers’ roofs of parking decks on the ground, leading to the elimination of framing, roofing and stucco work at heights and limiting it to only one crane lift. Similar to this type of planning, we have installed fall protection guardrails on tilt wall panels prior to erection to eliminate fall hazards. Casting fall protection anchor points into the panels for steel workers and roofers has also been integrated into the process.
- Add load tolerances into every design to account for dynamic loads during concrete construction. It takes a lot of planning with concrete formwork, sometimes up to thirty days of advanced planning - all for safety.”
- All pre-con decisions are based on

understanding every employee's needs, the company does not find the employee for the task, we find the task that is suitable for each employee.

- Designed a ramp and pulley system to bring in materials to the basement of the courthouse for a remodeling project which eliminated the need for workers to carry and maneuver large bags of grout and other materials. This idea significantly reduced the risk of strain injuries.
- Electrical contractor has continued to evolve with technology by providing special cut level 5 gloves. These gloves allow employees to use their touch screen devices in the field without removing their PPE.
- We had to install 200 light fixtures in a 35,000 square foot basement with a 24-foot-high exposed ceiling. To reduce production time installing over 200 light fixtures, installed (using total station) over 500 aircraft cables in the concrete deck above prior to the pour. These not only limited time roto-hammering in supports (silica) but also limited the time working on scissor lifts (caught between, falls from heights).
- Engineering procedures have been put in place by the means of required paperwork to be signed by an owner if it is deemed not feasible to deenergize an electrical circuit (i.e. – existing hospital or critical system). The amount of energized work has been minimized with this procedure. If it is deemed that work is required on an energized circuit a detailed Methods of Procedure (MOP) is required, reviewed and approved by the Vice President of Field Operations and Safety Manager prior to any work commencing.
- Continuous Improvement (CI) department implements value-added changes. Currently we have leveraged CI to take our Motion Matters - Sprain and Strain Prevention Program, and Cordless Power Tool Best Practices company-wide. These programs set the standard for improved organization, ergonomics and efficiency, while also reducing fatigue and repetitive motion.
- The equipment department is standardizing new technologies into our vehicle and heavy equipment fleet. Hands-free systems, backing sensors and cameras now come standard on all light vehicles. We are also currently ordering cameras and backing sonars on all heavy equipment with blind spots.
- Utilize Building Information Modeling (BIM) during the design phase to mitigate safety concerns such as potential fall protection hazards, site access/egress and logistics challenges.
- Deck installers have always used a lifeline anchored to the base of the deck to tie off from. The workers would be tied off, but the slack in the lifeline, and the fall arrest gear would not prevent them from contacting the 12' deck immediately below them, in the event of a fall. The company developed an engineered solution by fabricating a raised lifeline anchor post installed specifically for use by the leading-edge workers. With the extended height there is sufficient room to absorb the slack preventing contact with a floor even as minimal as 12 feet below.
- Invested in 100% floor scaffold systems aka "dance floor" in a sloped floor auditorium. The angled floor auditorium created risks for any employee that is working on overhead systems. Determined that by creating and managing a comprehensive temporary floor system, multiple trades could work freely on a level and solid platform, eliminating the challenges from working on ladders, aerial lifts and rolling scaffolds.
- Use 3D printing to build miniature models of proposed safety devices, railing systems, rescue stations, trenching conditions, or structural conditions (e.g., cantilever projections).
- Panel Dollies: Prefabrication allows the electrical panels to be made up including the installation of breakers but can result

in the panel being heavy and awkward due to the attachment of the "homerun" cables. To allow for the safe and efficient movement and installation of these panels we created a specialized dolly that allows the panel to be rolled into place and secured significantly reducing manual handling and fall on the same level risks.

- Use of rolling stools to reduce kneeling and use of overhead drill presses to reduce shoulder and back injuries related to overhead drilling.
- Use Trimble Point Layout Software. Productivity is improved with the capability to scan the site before installation and outline an execution plan. By having the scanned floorplan model, we could pre-fabricate conduit and cable tray systems in-house. This method allowed us to be extraordinarily efficient and minimized the time it takes to install new electrical systems, reducing fatigue and injury exposure on the job. https://mep.trimble.com/electrical/layout-solutions/
- "Developed an "Over OSHA" policy. After a detailed analysis of our safety data from previous years, we identified the most prevalent types of incidents and developed safety policies above OSHA standards to target those incident types. Examples of our higher than OSHA standards for Cranes include Load moment indicators, Anti-Two-Block Stop Devices, and Third-Party Crane Inspections.
- Engineering Controls for Safety - Examples include designing and building guardrails, picking attachments, working platforms and stairs, tie off/anchor points, bollards, design connections between beams limiting pinch points, ladder cages and grab bars, non-skid stair treads and grating, stamping weights to heavy objects, and pre-plan shipping to limit fall exposures.
- Work with engineers and architects to provide higher parapets, strategically located roof access points, and permanent roof anchors, making construction safer and facilities safer to maintain.
- Falls are the most frequent and severe injuries related to the steel erection industry. We go above and beyond the requirements for fall protection. While utilizing engineered and manufactured fall protection systems, we also design and test our own fall protection systems by performing drop tests with dynamometers to understand the forces to the anchorages and fall distances an employee may be subjected to during a fall. We test engineered components to understand how they react during a fall to ensure our employees are protected in the event of a fall. The drop tests are videoed and documented for sharing with our employees during our fall protection training.
- Co-developed a band saw with one tool manufacturer that stops working if you remove your hands. Will be out on our projects.
- Working with a ladder manufacturer to make ladders with the bottom step a different color to help employees that wear bi-focal glasses see the lower step more effectively.
- When there is going to be a delay in the stair fabrication, we spend the money on setting up a stair tower for access to all the floors instead of using ladders. This prevents fall exposures on ladders as well as we gain some production efficiencies as well as can provide better access in the event of an emergency requiring EMS response.
- Utilized a GoPro on a pole with a large light which was connected to an iPad. This allowed workers to inspect the ducts without having to physically enter the ceilings or ducts. This reduced time, injuries from lacerations, falls from ladders, and entering confined spaces.
- When our engineering team is designing a piping system our BIM program notifies them that a shut-off valve placement is in an area with potential fall hazards. If they designed the system like this, our owners would be put at risk during any future maintenance. But by bringing this spatial

awareness to our design team, we can make changes that mitigate those hazards, prior to any installation.

- Robo flaggers were purchased to eliminate worker exposure to traffic. It is a small traffic signal with a crossing arm that drops down to block traffic when the lane is closed. DOT says the units are more visible than human flaggers and motorists tend to see them from a greater distance away. They are controlled by workers located a safe distance away from moving traffic. https://www.utilityproducts.com/safety/article/16019089/robotic-work-zone-flaggers
- An employee asked to devise a fall protection system that would be conducive to working on an existing narrow concrete beam with embedded stirrups. Engineering drew up some plans, the shop fabricated specialized stanchions, and our survey and safety department tested the system. Field personnel had the opportunity to deliver a presentation to an audience of their peers to show everyone how it made the task safer.
- Utilized circular metal cage livestock round bale feeders to put around deep open holes instead of typical flagging/barricades.
- Purchased drill rigs that have operator cabs to reduce noise and eliminate dust exposure.
- Engineered a stabilizer for light stands to prevent tip over on slopes and during winds.
- Engineered pipe cutting table jig to stabilize pipe handling and has reduced ergonomic hazards as well as increased quality and production.
- Changed their trucking dispatching procedures to avoid unnecessary trips.
- Stopped using the piano wire method of paving as a grade control method and that has eliminated trip and fall hazards from the piano wire.
- Converting pneumatic tools to battery tools to eliminate the trip and fall hazards created by pneumatic hoses.
- Use tier IV equipment to reduce nitrous oxide exposure.
- Use mineral oil in equipment instead of hydraulic fluid to reduce environmental hazards.
- Use a 3M Uvicator sensor that changes color when exposed to too much UV light. Worker emergency ID in hard hat. https://multimedia.3m.com/mws/media/1224942O/uvicator-sign-of-safety-technology.pdf
- Use anti-fatigue ergo-inserts for boots….90% reduction in reports of leg and back pain.
- Use Halo Light hard hats for better night visibility. All PPE is chosen by safety committee meetings.
- Started using puncture resistant boot soles due to an employee suggestion.
- Developing an 85-acre employee training complex for site work excavation equipment operators that will include an indoor dirt arena, haul roads, etc.
- Concrete forming contractor uses signage with the phone number of whom to contact to get access to a form wrecking area.
- To prevent Trips and Falls with vigilant housekeeping at the jobsites, cleaning up after yourself, and maintaining solid level ground for walking.
- We focus on same level falls by identifying the contributing factors of each accident. Inspect. Use a focused checklist. Perform Access Evaluations using our “Access Champions” system. We verify pathways. When possible, team up when walking.
- Use of drones and 3 different types of software imagery for use in critical lift planning. Use of drones for inspecting crane booms, traffic control pre-lane switches, and bridge inspections. Look for opportunities to remove people from the high-risk work environment equation.

- Cameras and backing sonar are standard on all light vehicles and being added to all heavy equipment to prevent incidents associated with blind spots.
- Use sound curtains to minimize noise exposures.
- LEAN principals like rolling racks and cutting tables with waste drop containers, reducing possible injuries, back fatigue, and handling material multiple times.
- The company uses remote controlled skid steers for elevated demolition work.
- Company uses drones to construct topographical maps of the worksites.
- Annual review of all job hazard analyses to ensure reflect most current prevention measures and lessons learned from the past year.
- Safety Planning is used during the design phase and a database of Lessons Learned is maintained and used to prevent future errors from past errors in the design, planning, and execution of work.
- The “Shark Cage” is to protect workers and provide more effective fall protection while working inside beams on long span decks. Also, it has guard rails that roll with a tied off worker from column to column.
- GPS and Robotic systems on earthmoving equipment require less personnel on the ground around the equipment significantly reducing the potential for run over and back over incidents and fatalities. More efficient, better quality and safer.
- Blocked the texting feature on Company provided phones.
- Architect outreach program to train and discuss Design for Safety (DfS) with architects. Architects need CEU’s and GC put together an hour DfS presentation and over 90 architects went through the training.
- “Dead Man” anchorage block for Fall Protection.
- Permanent Tie-Off is installed and used during construction and then left in place for use by maintenance personnel.
- Badging system for site access control… called My Time Station
- Ladders with transport casters and ladders with assembly trough so a person moves the ladder with less exertion and can climb with their hands free
- We have changed wheels on dollies so that they roll better. We also have our guys working on toolboxes at waist height instead of working on the floor.

SAFE WORK METHODS (PLANNING AND VALIDATION)

- Use the Hilti Jaibot for overhead work to reduce need to work from ladders, silica exposure and repetitive overhead work. https://www.hilti.com/content/hilti/W1/US/en/business/business/trends/jaibot.html
- Completely shut down field operations several times a year to provide one of a kind Fall Protection and rescue Training, empowering our employees to understand their potential and value.
- "Take 30" – with a 5-question thinking checklist before beginning any task or coming back from a break or other duty - Take 30 seconds to identify any potential hazards.
- SWP – "Standard Work Practices" a step-by-step guide for each work activity which integrates the right methods for Production, Quality, and Safety into one document.
- Fall protection training for special/building inspectors so they can safely inspect work at heights.
- "Safety Store" for ordering PPE, Traffic Control devices, first aid supplies, confined space equipment, and more at no cost to the project - Safety Store costs come out of the Safety and Risk Management department budget.
- Flash Drives are loaded with all company safety information that project management can plug into their computer for up-to-date safety information, forms, and safety manual.
- Using course of construction design ideas in the Design/Build process to maximize safe construction
- Orange Safety Buckets with accident and emergency equipment strategically located throughout project.
- Safety programs and safety practices are measured and evaluated annually by independent consultants: judged for compliance and relevance.
- 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.
- Produced customized job hazard analysis safety 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 that allows for initial screening, retraining and skill improvement for select pieces of equipment. The simulator can 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)
- All General Foreman and Foreman go to competent person safety training every other year.
- 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."
- Hand signals are posted on all cranes.

Rigger and spotter trained employees carry bilingual handbooks which assist with signals.

- Developed a 50/100 rule. No single employee is allowed to lift over 50 pounds and all equipment found to be over 100 pounds must be 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 Job Hazard Analysis covering each scope of work that is regularly performed. The JHA's and safety resources are available electronically via Smartsheet for everyone. https://www.smartsheet.com/
- 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.
- Use symbol graphic safety signs.
- Cranes clearly display the universal hand signals, hazards warnings, and barricades around the swing radius of the equipment.
- Pre-task and activity hazard analysis utilize in-house developed RED (Recognize, Eliminate and Discuss) book. It is a task specific AHA is a pocket-sized 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 Job Hazard Analysis on a weekly basis.
- Top out interior walls before MEPs are in place to minimize obstructions to access these hard-to-reach areas by drywall craft workers.
- Iron workers are isolated within a designated work zone to eliminate overhead hazards and exposures.
- 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).
- 5x5 program that requires craft workers to take 5 seconds and step back 5 steps to assess all tasks for hazards and risks.
- 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 DataVaults to collaborate with subcontractors on project documentation, to streamline safety orientation process, streamline JSA documentation, and to aid in safety meeting coordination.
- Safe Driving company vehicles - DDC-4 level training provided. Regional Safety Managers attended Smith System style "train the trainer" class https://www.drivedifferent.com/about/our-history-mission/
- Utilizing an electronic JSA that has speech recognition and facial recognition so writing skills are taken out of the process to motivate better information.

- 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.
- 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.
- Developed 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 contractor developed task specific safe work zone procedures 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.
- Purchased and pre-loaded equipment on a tractor-trailer "safety gear trailers" which eliminate 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 job hazard analysis 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, 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 a temporary authorization to operate equipment under the supervision of a trained supervisor. The supervisor evaluates performance in field conditions, until they feel that the student can operate safely and unsupervised. This process has reduced mechanical material handling mishaps by 50%.
- The 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 detect 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 vs standard signage.
- Developed 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 climbing on and off them.
- "RED Book" - 'Recognize Eliminate Discus' - mini AHA book that includes a checklist for all hazards and steps to complete AHAs.

- Over the years the company has tried many, many safety-related programs, ideas, and technology. Determined that 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. They now require for every new safety related program/system/form, they must purge 2 others already in place.
- Foreman can choose their work method topic of observation and coaching from a menu tied back to company historical losses and risks.
- Completed productivity study - Passive fall protection was more efficient than Active PPE
- Equipment operators are required to perform a 30 second walk around their equipment each time before they move it. This is in addition to their daily pre inspection program.
- Daily ladder safety inspection tag for all types of ladders. Puts more responsibility and accountability into the ladder safety process.
- Housekeeping committee on the jobsites. Subs clean 30 minutes per day.
- Each Safety Manager carries a 4-gas monitor on the jobsites.
- Safety Committee includes the Fleet manager to review fleet safety issues and results.
- Safety Sequence Plan that is reviewed with the client and then finalized as the plan to reduce disruptions and surprises and showcases the safety planning process to client.
- Quarterly documented formal tool inspection program completed by a competent person ensures safety of company tools. Extra set of eyes. Lessons learned completed and communicated after each quarterly inspection.
- Pandemic plan that has procedures to recover from anything that would disable the firm's ability to do work.
- Safety Manager "Us vs. Them" anti "Safety Cop" collaboration program. All Safety managers are required to make some deliveries, help erect scaffolding, help with trash runs, and help with material stocking.
- Foreman documented assessments of worker attitude, demonstration, and engagement in safe work methods. Feedback given to evaluated employees.
- Mentorship meetings held monthly to discuss common "at risk" safety observations for the month and to have a team oriented focused approach and message for helping newer employees.
- Company vehicle policy: drivers must do a 30 second walk around vehicles to look for risks related to the vehicle and the ever-changing construction site surrounding the vehicle.
- Project Chart for all to see which shows who are competent persons and what their qualifications and cell phone number are.
- JSA's are completed but also "Work Plans" which outline safety, quality, and production goals along with the tools and materials needed and the specific means and methods that will be used to accomplish the task.
- The Safety Task Force inspects jobs using a weighted point system. The riskier observations like falls from heights and excavations have a higher rating. Total point scores are added up and there is a housekeeping bonus at the end which can add or take away points from the overall score.
- Fall Protection program is measured by "Lives Saved" after someone falls with fall protection. 18 lives saved in the past 5 years including subcontractors.
- When PFPS's are inspected in the field a color-coded zip tie is attached to the harness. The colors are based on a time

period and quickly tell others if the harness has been inspected and what time frame it was.

- All Craft workers are required to carry their own Job Hazard Analysis Workbook which includes a checklist and a step-by-step plan for completing an effective analysis.
- Use smart phone technology to with underground utilities to document precise location of utilities they install in case they must work near them in the future.
- Safety 360 process for equipment/ vehicle safety that requires a person to walk around and inspect each piece of equipment/vehicles prior to use.
- Workspace Management focuses on keeping workers on the ground safe by planning work to minimize heavy equipment backing with a focus on overlapping work zones.
- All project vehicles must wear seat belts and operate with lights on while on site.
- All workers are required to complete the OSHA 10-hour course prior to employment onsite.
- All site supervisors are required to complete the OSHA 30-hour course every 3 years.
- Experienced worker mentor program – All new hire employees, regardless of prior experience are assigned a veteran worker mentor to help acclimate new employee to the open communication of hazard controls. The program focuses on both hazard recognition and the actual "how to" openly discuss and correct identified safety hazards.
- Before the purchase of tools, equipment and even personal protective equipment (PPE), we gather employee feedback to ensure we are not only getting the best, but we are also getting the best fit for our employees. We also know PPE and equipment it is not one size fits all, so we also accommodate individuals to meet their specific needs.
- New Employee Safety Training (NEST) program for all new and returning employees. NEST was designed by employees for employees to cover real-life safety, job hazards, and health awareness. The course allows new employees to gain hands-on training using the tools and completing the tasks they will see on the job. This not only gives them knowledge of how to stay safe, but it also allows them to get some practice and demonstrate to instructors they are retaining the knowledge.
- Have evaluated for purchase multiple simulator training programs that can be utilized for initial screening, retraining and skill improvement for select pieces of equipment. Much like a cockpit simulator, the technology provides real life situations that allow our operators to experience unique challenges to enhance their confidence/skills and ultimately promotes peak performance. This will give us the ability to not only develop talent but effectively screen the skills of potential candidates in a safe environment, before they ever step foot into an actual piece of equipment.
- Sharing safety best practices is our philosophy because it is the right thing to do and should be shared with all who can benefit. We accomplish this through several avenues. Involvement at construction affiliation summits, at project executive leadership team meetings or through other means of networking. Our innovations are openly shared with all who are interested. At times this could include our customers, our subcontractors and often even our competitors.
- Apprentice Mentorship Program (AMP) provides all apprentices with a mentor that works with and evaluates them each month on how safely they worked, their attitude, their communication skills, their attendance, and whether they are asking questions to clarify their tasks. Mentors discuss apprentices' current goals. progress toward achieving them, and what support they need to improve. Each apprentice and

mentor share the responsibility to develop a safer, better and stronger electrician.

- OPERATIONAL RISK MANAGEMENT (ORM) DAILY WORK BRIEFING: The ORM briefing includes a five-step interactive process that involves all crew members in the discussion and developing work plan. The leader uses a whiteboard to illustrate five core functions - "Define the Scope of Work, Analyze the Hazards, Develop and Implement Hazard Controls, Perform Work Within Hazard Controls, Provide Feedback and Continuous Improvement" - to identify and document the process of hazard identification and controls... It is generally conducted by the superintendent.
- Our "Protect Your Hands" campaign has achieved a 28% reduction in hand injuries. This was achieved by identifying "caught-between" as the main cause of injury, adding focus inspection questions to our checklists, sourcing training and communicating that hand placement is more important than proper glove use.
- Our perspective is that humans simply perform better when they are directly involved with the risk assessment process and empowered with the ability to dynamically decide our work practices. Risk assessments become a real tool for planning, assessing hazards, and controlling the hazards associated with our work, and not just a document that gets submitted to the owner to check the box.
- We provide and ensure employees use Kevlar body protective gear when using chain saws and concrete cutting saws.
- An AHA (Activity Hazard Analysis) is required for a given DFOW (Distinguishing Feature of Work) and must be submitted and accepted prior to the commencement of work.
- Implemented a policy for Safe Dig Practices. Each operator is required to complete a dig permit each day prior to engaging in any type of excavation or dirt movement. Furthermore, each Supervisor is required to complete an excavation permit daily that includes site locate information, soil identification, and specific hazards within their scope of work being performed. To reduce the exposure and heighten awareness of the utilities in the areas, we have also implemented a color coordinated cone policy. Each crew has color coordinated cones to match the locate colors of buried lines. The cones have been a critical illustrative tool when working around overhead lines and buried lines. They have proven to be very effective in minimizing strikes.
- We recently combined our daily work plan and JSA's into one document to encourage more discussion and input from crew members rather than the JSA simply being "something you have to sign". Daily work plans are production focused and JSA's are safety focused. Initially these were two separate documents; the two documents were combined because safety and production go hand in hand. You must know what you are going to do today, what tools you need to get the job done, and you need to know what you're doing to properly protect yourself and your crew members from any hazards.
- Our safety practices are built around the 21 elements of control and seven key conformance areas identified by the ANSI Z10 standard to provide a world-class occupational health and safety management system.
- We use USACE EM 385 1-1 model for Accident Prevention Planning
- We took the key features of ANSI Z10 and EM 385 1-1 to establish the concepts of Operational Risk Management (ORM) to ensure continued safety and health of our employees. The ORM structure includes a safety policy, safety objective, and safety management plan for success.
- Unique hazards and controls: a unique risk was the total exposure from high voltage utility substation construction to the entire building/structure installation on a fast-track schedule. A "near energized" management system was developed to

control the unique risk of working near (not on...) energized equipment and developing a strategy to control human performance and error in high-risk operations.

- Maintain a bank of more than 100 Standard Work Practices for some of our most common tasks. These documents are created, reviewed and regularly validated by experienced company craft professionals to provide guidance on how to perform these activities in the safest, efficient and reliable manner.
- Another element of our safety program is a process called a “line break process”. We follow this protocol any time a member of our crew is tying into or breaking open a live plumbing or piping line. In the work we perform, this type of line break could be anything from a hazardous chemical to high-pressure steam and loss of containment has a high potential for physical damage to property or worse, personal injury. The form is a detailed review that walks the user through a series of checklists of items that require physical verification and sign off and a listing of all upstream or downstream systems that could be affected. It also identifies all work activities required before, during and after the line break as well as the timing and responsible party. Finally, this process requires numerous signatures from the facility representative, general contractor, and our team to ensure everyone is on the same page and back-up plans are in place before commencing work. In the case of anything dealing with high pressure (over 250 psi), Our COO or CEO must also sign off before work can proceed.
- We use a “Pocket JSA” that can be updated as tasks may change during the day. When the tasks do change, a “Take 5” briefing is held to update all crew members and to observe any hazards the new task might face.
- Improved Energized Work PPE to include Arc-Flash gloves and lighter, more comfortable apparel, along with lights and ventilation systems.
- After the morning huddle, employees utilize the “two-minute rule”, a checklist process for identifying and correcting issues for 2 minutes pre-task.
- We conduct a 10% Progress Shutdown Review with all our crew members who are directly involved with the task. When 10% of the work for a project is completed, the progress of the project is thoroughly reviewed before the next step of the project commences. This is a vital aspect of our program and one that has continued to keep our crew members engaged in safety management of our projects.
- Pre Construction Utility Identification/ Clearance Procedure identifies utility conflicts before construction begins. Project Manager, Safety Manager, General Superintendent, Survey, Project Superintendent and Craft manager walk the entire job looking for known and unknown utilities by looking for obvious signs such as reviewing the project Utility Plans, identifying utility boxes and pedestals, to identify potential conflicts that could delay our operation. Once all utilities have been identified, all potential conflicts are potholed and brought to the owner’s attention for resolution before construction begins.
- The dump truck spotter wears a different colored vest so the driver can easily identify the spotter and distinguish them from other workers.
- Company does not chargeback jobs for safety resources – all safety is tracked in a separate cost code and added to overall cost.
- Backing-up activities are monitored closely to be sure that back-up alarms are present and functional and adequately audible. If they are not, that piece of equipment or truck will be shut down and red tagged.
- Task protocols, hazards, controls, PPE, equipment, and housekeeping are written on a 4.5” x 8” “Pocket-Card” that is double-sided and laminated. Given to each employee or the team leader to have in a

pocket while performing the task.

- "SharePoint" website that was obtained to provide a way to have access to all company policies, forms, safety information, SDS, and plans, and job information. Everything imaginable that might be needed in the field is loaded on this website. Information is general and job specific. Access for all employees 24/7
- Safe work methods are constantly studied. Any time a new piece of equipment is purchased operator training is done by the manufacturer.
- Safety program and safety practices are measured and evaluated by independent 3rd party safety consultants annually.
- Pre-task planning that includes analyzing manpower, tools, and equipment needed for the task(s) to assure proper identification of hazards and safety precautions are employed.
- Developed a 2-3 day "onboarding" training program that trains all salaried employee-owners on company policies and procedures before they ever step foot on a project.
- Planning procedures are validated by a Key Activity Review which is a formal, sit-down review with the crew to see if the execution of the work activity can be improved for Safety, Quality and Production. It helps make sure our planning procedures are effective. These reviews are performed at the 10 percent completion stage of the activity. The craft and project teams attend and have a BBQ lunch after the review.
- Project team including PX drafts a site-specific safety plan. It is a team "internal contract", the entire group signs it with the responsibility of holding each other accountable for the implementation of the program.
- An 8ft tall reminder to protect yourself. This sign is a photo of an actual team member who is wearing all of the proper PPE and illustrates what "Always Doing What is Right" resembles.
- Evaluated and selected the CAT "virtual reality" simulator that will be utilized for initial screening, retraining and skill improvement for select pieces of equipment. This is a cost-effective means to allow operators to experience a multitude of challenging scenarios without the associated risk.
- After an increase in non-injury utility strikes was noticed by Senior management the team created a new program called the Utility Strike Avoidance Plan (USAP). The USAP has two critical components: the Talk Before You Dig Plan (TBDP) and the Talk Before You Dig Log. Prior to underground work commencing, the Subcontractor performing the work is to review the TBDP with the Project Superintendent to identify the existence of existing or newly installed utilities in area. The Subcontractor and the Project Superintendent complete the information on the TBDL and open a permit by initialing in the Open Permit columns. Upon completion of the task, the Subcontractor is to immediately update the TBDP, and both the Subcontractor and Project Superintendent are to close the Permit by initialing the Closed Permit columns. The permit is not closed until the Superintendent is satisfied and the TBDP is accurate and completely updated. Utility strikes were down 72% last year.
- Developed a specific "Best Practice" method that specifically identifies crucial aspects of the site's specific concrete forming system and work methods. This easily accessible document allows our superintendents and employees to understand all the hazards associated with the formwork they will be installing.
- Developed the "Dusty Trades" program that takes an in-depth look and covers all PPE and respirators used on site and includes silica sampling to identify hazard areas and levels of exposure.
- Placards have been added to Gang boxes and office trailers demonstrating the required Silica exposure engineering

controls for the most used tools.

- All leadership positions are required to take an 8-hour course on Energized Electrical Work and lock-out/tag-out.
- Pre-Activity Plans (PAP) are completed by the foreman to break down the overall JHA into a few days or weeks sub tasks which allows for the risk at hand to be addressed on an as-needed basis.
- "Enhanced Awareness," program of eliminating headphones, earbuds and/or radios, to abate distraction.
- Developed a "News App" which allows employees to report safety observations from their mobile devices. We then analyze this safety data coming in from across our business. This allows us to tailor specific inspections, communications and training to help focus our efforts and drive specific injuries down that are currently occurring in the field. In one example this year, we reduced strains and sprains overall by 75% through this process along with our Motion Matters initiative.
- Creating new personal risk assessment (PRA) booklets which hold a month's worth of PRAs and fit neatly in a safety vest.
- XMOP process ensures we do not hit underground utilities. Before mobilizing, projects must complete an Existing Utility Drawing (EUD). A EUD requires that a third-party locator, company staff, or other consultants place all known or discovered underground hazards on one drawing. New structures and proposed new utilities are placed on the EUD to enable conflict identification. We require daily excavation permits when penetrations are within 25 feet of known conflicts or hazards. Superintendents issue daily dig permits before ground penetration. Our XMOP program has reduced accidental utility strikes by 90 percent.
- Safety Procedure & Guidelines Fact Sheets - 98 documents developed on specific exposures.
- STA (Safe Task Analysis). This is a four-fold card that covers their activity for the day and contains all appropriate forms (Trench inspection, hot-work permit, PPE checklist, lifting guide, confined space checklist, and safety rules). The foreman is responsible to make sure the STA is completed, to acknowledge that all necessary forms have been completed and to authorize permits.
- RED (Recognize, Eliminate and Discuss) book. This mini, task specific AHA is a pocket-sized checklist and planning tool intended to challenge our 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 PPE is required.
- Replaced key safety checklists in our program with full color, easy to follow flow charts, which has led to more effective execution of safety processes in the field.
- Shift Prep! – and Joint Stabilization and Stretch Breaks! Program - Dynamic and static stretching program. – is designed to prevent and/or drastically reduce occupational musculoskeletal injury risk and severity, including strains/sprains and slip/trip injuries, among our employees.
- Silica Pocket Guide: OSHA's updated Respirable Crystalline Silica standards are dense, and this guide simplifies them. Printed on water-resistant paper, the booklet is produced in English and Spanish, fits into a pocket, and withstands field conditions.
- Hydration Analysis Chart: Company project geographies range from the humid climates of South Texas to the dry heat of the Arizona desert. To ensure that employees were aware of the symptoms of heat exhaustion and heat stroke, we created a hydration analysis chart. We also have wall charts for our job trailers and a similar design has been created for key chains and

badges.

- Require Level 3 cut-resistant sleeves for anyone working above ceiling grid and we require goggles and a hard hat above ceiling grid even in occupied buildings.
- Use a CATR corrective action tracking system to make sure identified hazards are tracked to completion.
- Fleet Safety - recognized that tight right turns are a big exposure…they promote that their drivers must own both lanes, not just their own.
- Use the Corps EM 385 standards on all their work, Federal or not.
- Have 360 walk-around program before starting a company vehicle.
- Developed a "blind spot" monitoring program for large heavy vehicles and equipment.
- Use voice recognition technology to conduct pre-task planning…they found that get much better participation this way.
- Lessons Learned from working with the Corp of Engineers; "Master your paperwork. You can't overkill in this area. Document everything".
- Projects are stopped twice daily to talk about safety hazards; employees perform 3 safety inspections per day, and twice daily safety hazard review.
- Pre task plans are used as a leading indicator - the hazards the crew forecasts each day are tracked and used as a guide to formulate safety training.
- The ratio of frequency of inspections to who performs them is Safety manager - weekly; Project manager - twice/month; Superintendent and foremen - 3 times each per day!
- Pictures of the project's competent people are posted so others recognize them as someone they can go to for assistance.
- Steps and handrails are installed on frequently used truck/equipment to allow safer access.
- Safety audits performed at job set-up and 75% completion to make sure nothing has changed - and if it has, that the mishap prevention plans are updated and adjusted accordingly.
- STA - Safety Task Analysis process. The tasks are planned each morning, and the Supervisor and Superintendent complete a daily post task analysis and coaching session at the end of the day.
- Daily time is built into the project schedule to clean up, remove construction waste, and organize the work areas on a shift-by-shift basis.
- Encourage employee participation through Safe, Time saving installation methods "Pick of the Month" with a monetary award. Approved methods are placed on the company intranet's Best Practices online manual.
- 2-sided pocket pre-task planning card to keep in the work area for changes throughout the day
- Safety Academy is made up of young engineers to educate these folks…. They study the topic for a month and then take an exam at the end of the month.
- Best Practices Catalog that is used to be the standard bearer of best safety procedures above and beyond OSHA
- To address age issues, we match younger employees with older employees, and stipulate limits to lifting materials, tools, etc. – no weight over 50 pounds lifted by one person.
- Single page safety procedure talking points for low frequency operations.
- Redesigned Hard Hat – Looked Sharp – No unnecessary stickers allowed.
- Brains over Brawn program for working smarter with ergonomics and more recently employee health and wellness efforts.

- “Minimum Global Requirements” – minimum standards based on known bet practices and risk mitigation strategies that are set by an international firm for their global workforce.

WORKER ENGAGEMENT, INVOLVEMENT, AND PARTICIPATION

- Created a video that simulates what would happen to the human body if a person were to fall from a height of 12, or 20 feet. Using ballistic dummies that are 95% direct recreations of the human body, the team was able to get real results in a controlled setting on camera. A doctor was also brought in to provide an onsite analysis of the injuries sustained immediately after each fall, what the possible cause(s) of death were, and to perform a mock autopsy in order to discover any internal damage to the body. The video includes statistical analysis of the force of a fall, how a fall effects the human body, and ways to ensure that our workers can keep themselves safe on a project site. The goal is to educate the industry on the importance of proper fall protection and how it can prevent severe injuries and/or death.
- PBI has a Line of Fire (LOF) program that allows all employees to record and submit any hazards requiring immediate attention and to recognize other fellow employees for working safely. Employees write and submit LOF cards daily for review by the Safety team onsite. Upon receiving three (3) positive interventions from an employee, the employee is given an incentive award which may include a company hat or shirt, thermos bottle, safety glasses or another similar item. The LOF program has been a great tool in engaging employees to recognize and speak up about safety.
- A communal whiteboard with markers is placed near the job trailers where anybody can write down a safety concern or issue anonymously - Issues are covered the next day during pre-work meetings and compiled for future analysis.
- Paying for employee families to receive CPR/First Aid Training and Discount AEDs are also provided for home use.
- All employees are assigned a week to complete a daily, written safety audit.
- “Field Workers Observation”. Each day field workers inspect their work are and make photos of each observation. They cover what they find in the next morning huddle. Observations and pictures are displayed for a week. Pictures also used in orientation to make orientation content a continuous improvement process.
- “Family Board” “Board of Life” pictures of contractor and subcontractor family members who are expecting them to come home every day.
- Tool Box Talks written and presented by field employees in their own words, captured and used later.
- “Take Five” program – anyone involved in a task who has a concern about a safety exposure may terminate the task until a management review.
- Employees carry “Stop Work” cards which empowers employees to stop work if anything in their mind is unsafe.
- Annual training required on healthy lifestyles and taking care of yourself.
- “Biggest Loser” wellness program where participants lost over 400 pounds collectively.
- The “Two Minute Time Out” to remind workers coming back to their work areas to STOP and take 2 minutes to evaluate what might have changed in their work area since they were there?
- Golden broom award is awarded monthly by the president to the jobsite with the best housekeeping.
- Safety Reward Point System that awards points for safe workdays, participation in daily, weekly, and monthly training, attitude, improvement suggestions, timely completion of training, leading Tool Box talks, etc.

- Incentive awards that consist of home only use safety items like special gloves, chainsaw chaps, Harley Davidson safety glasses, and smoke and CO detectors.
- Provide inexpensive digital cameras to work crews for them to make pictures of what they think are hazards throughout the workday, then share with their manager and safety department, education, and prevention.
- "20/20/20 Rule" – Take 20 seconds, every 20 minutes, in a 20-foot perimeter to see if anything has changed.
- Close Call Reenactment
- SOS (Safety Observation Signal) 30 item pre work safety checklist.
- ROBO calls to home for safety related issues.
- Safety look-ahead plan for week with coffee and donuts every Monday morning
- "Zero Injury Perception" surveys
- 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.
- 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.
- Informal leaders are identified to help communicate safety messages.
- Signage at the entrance of all project sites reminds everyone of the requirements to protect yourself, and it is not just words. The sign is of an actual team member who is wearing all the proper PPE and displays what "Always Doing What is Right" resembles.
- Jobsite briefs are held 3 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 family 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.
- Every employee at the completion of each project is sent an anonymous Survey Monkey to provide feedback in regard to safety practices and their effectiveness.
- Have a confidential safety hotline that is provided to every employee at their initial orientation.
- When planning a project budget, field personnel will be asked for their opinion to assure project management can properly budget what is needed for safety.
- 4-hour supervisory program: where managers learn about our 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.
- 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, “Key Master of 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 help choose what they will be using.
- 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.
- The 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.
- 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 lunchtime discussion on 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.
- The “Safety Catch” program allows employees 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 pocketknife. The “safety catch” that is selected is also featured in the next Toolbox talk.
- WorkFit is a daily job-site 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 summed up 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 a Q & A is ongoing throughout.
- Launched an Employer 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. We now 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 the 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 not be theirs because of their work that day. Promotes peer pressure between crafts to not make it hard on each other at the end of the day clean-up.
- Toolbox demonstration - A craft worker performs 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.
- Large project banner with the handprints of craft workers children.
- When at-risk behaviors are observed inquire/discuss about the employees' emotional response if they are injured
- 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.
- Continuous improvements team are established at the project level consisting of upper and middle management and craft level workers. Teams are measured on their performance and coached to succeed. Management realized that the "people" dynamics and personalities determined how the teams worked together was the key to success.
- Provides all offices and projects with a roving company nurse to help promote wellness and speak with employees with personal health concerns including blood pressure and blood sugar free of charge.
- Monthly jobsite safety exam where 3 craft workers volunteer to write an exam on a topic of their choosing. Exams are shared with subcontractors.
- Changed the safety manager led safety committee to a supervisor led committee called the "Supervisor Safety Forum."
- 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 who have not presented to do a topic presentation, a $50 gift certificate is given.
- 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."
- 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.
- The company has a “safety hotline”.
- Company program to promote financial wellness.
- Peers nominated for the safety champion award.
- Biometric screening to include a wellness program to promote healthy meals and company-sponsored physical events.
- The “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. A submission of this I Got Your 6 moment is placed into the electronic inspection software.
- Videotaped worker injury reenactments for review by all field employees. Categorized and kept in the Learning Library
- Workers who are injured are invited for a 3-month executive safety committee position.
- Weekly phone system for electronic affirmations that each employee feels like part of the safety process.
- Monthly recognition program for the employee who excels in safety performance. A $500 AMEX gift card is given as the reward. The employee is also in the monthly newsletter explaining why they were recognized.
- Aim Zero, a 3rd party reporting hotline for anonymous reporting of improvement ideas, safety concerns, or near-misses.
- Monthly APB’s (Accident Prevention Bulletin) are sent to each employee’s home. The APB’s outlines all incidents and near misses and includes the root causes and corrective action.
- Health and Wellness committee which addresses the root cause of life habits that can affect employee safety and work methods. There is also an annual health fair where all family members are encouraged to attend.
- Jobsite warning and hazard signs with photos of team members along with the “Danger” or “Cautionary” language to make the warnings more personal. Signs referencing PPE show an actual team member with the PPE properly worn.
- Worked with snack machine vendor to only offer healthy snacks at a reduced cost.
- Strategic plan and schedule to talk to employees one-on-one about their personal life situations. Shows additional concern for not only the wellbeing of employees while on the job, but more importantly what affects employees off the job. Issues are strategically coordinated with the Employee Assistance Program, rather than just deal with it.
- “Innovation Incentive Program” - a $50 cash award for any innovative idea that gets adopted in the safety or operations management process.
- “SOS Lifeguard” program where select craft workers receive the same safety and leadership training as project management. They act as a safety back-up closer to the work in case the project management team is not around.
- A construction safety quiz is sent out each day to all workers to help drip safety knowledge daily.
- Participation in the CDC’s National Healthy Worksite Program (NHWP)
- Monthly Jobsite Safety Exam. A volunteer worker develops a quiz based on current job conditions and hazards, and it is given to all employees. The answers reviewed as a group.

- Employees are digitally connected. Facebook & Twitter for employees and families
- Employee innovative ideas are posted on company hosted intranet site for all to benefit and spur more ideas.
- Company requires and pays for Fitness for Duty Exam for every field worker, also Prescription Safety Glasses
- Activity Hazard Analysis….one example resulted in having laborers sit in heavy equipment to understand blind spots to better understand the challenges of the operator.
- "Foreman of the Month" is selected by the safety committee and lists their specific proactive approach to safety.
- Sequence and Scope of Work Tool Box talks that are Craft designed.
- Workers complete their own individual pre-task plan with 35 task questions for each different scope of work on a weekly basis. Quality validated by Foreman and Safety Manager
- "What's Wrong With This Picture"? Employee hazard awareness program where a large poster size photo is posted on project, and employees get a prize for identifying the hazard(s) and extra for knowing the controls.
- Employees are assigned to do a safety talk each day and must Google the subject and present it in a creative way on their own. Researching a safety subject leads to learning.
- Lunch and learn training sessions to cover new Federal safety standards and risk issues that need to be addressed based on incidents and observations.
- Use of Audience Response Apps to enhance training, culture surveys, and anonymous group answers.
- $1,000 reward system for employees who submit innovative ideas for eliminating a risk or a better safer way of perfuming construction tasks.
- Electronic counter on company website that counts days real time since last incident. Reminder to all who sign in daily to the internet access point.
- Employee Only Group Facebook page which is closed to the public is used to communicate, discuss, and celebrate safety successes.
- Family oriented Tailgate parties at major local sporting events to celebrate safety and family.
- Sponsor family-oriented charity events to support and help the homeless.
- A large field whiteboard is used to complete daily pre-task plans. The board is completed by the craft group and encourages more participation in the process. The whiteboard remains in the work area so if things change the team can update the whiteboard.
- Company Investment partner provides ongoing one-on-one financial advice for employees on managing money, retirement planning, college savings, and debt control.
- Developed a company Safety Only email address (safety@callagc.com) so people could send issues or accomplishments to a central website. Increased employee participation in the safety management process.
- Use a voluntary Monthly Project Safety Exam to help identify future potential leaders. If someone volunteers for the exam that shows leadership qualities and that they are engaged in not only Production and Quality but also Safety. Participants who score high are asked to develop an exam question for next month's exam. We have expanded the exam process to include a separate exam for Quality control.
- Every company employee is required to take 16 hours of intense communication "People Skills" training each year.
- Worker seniority (apprentice, journeyman, master/mentor) identified by varying hard hat colors.

- Use of Mobile Tablets and Face Time technology to speed up communication and sharing
- Invite the surrounding community onsite to conduct safety surveys with a close eye on Public Liability exposures.
- 20% savings in health insurance premium for non-smokers.
- Safety Observation Reports allow employees to give details on what safe and unsafe acts they are seeing when on site. Employees are required to turn in four observations a week and are encouraged to submit safe and unsafe observations. This also provides us with a great opportunity to reward employees who complete the best and most observations. This also allows us to prevent future incidents and focus our on-site safety training.
- Employees from the field are given time to sit and discuss what they would like to see from our safety department. We have used this committee to rewrite policies, plan safety events, review incidents, and develop a game plan to continuously improve our safety culture. Employees enjoy seeing into the corporate side of safety and like to be involved with decision making and brainstorming at a higher level.
- Handwritten cards are mailed quarterly to employees who our executives have recognized for going above and beyond expectations. These are sent along with a gift card to the employee's home address. The intent is that the employee's family will see the recognition and ask questions about the circumstances. Our desire is that the family of the employee will embrace the concept of safety as a beneficial journey.
- Implemented a process that we refer to as Dynamic Learning Activities (DLA's). DLA's have one simple objective - employee involvement. Edgar Dale's cone of learning states that after two weeks, people will only remember 20% of what they hear. However, after that same timeframe, people tend to remember 90% of what they say and do. DLA's provide visual aids, interaction and communication by all. Granted, weekly safety meeting material is generated and distributed to all projects. However, DLA examples for the topic are provided as options. Creativity is encouraged.
- Employees participate in various safety initiatives throughout the year such as Safe + Sound Week, National Safety Month, National Suicide Prevention Month, American Heart Month, and National Electrical Safety Month.
- Rolled out Mobile Escape Room to students all over Colorado to teach them about what it takes to be an electrician, and more importantly, what it takes to be safe around electrical construction. After hearing from an electrician about the trade, students are taken into an "escape room" which is a trailer with a series of puzzles designed and built by our team. They wear PPE and solve those puzzles with an eye toward learning what it is like to be in the trade. The construction industry is in crisis, and it is difficult to find talented people. This is one way to reach out to the next generation and let them know a career in a safe trade is a great choice for their future.
- A key initiative of our Strategic Plan was to improve craft workforce engagement. Re-branded as Craft Safety Connection (CSC) we formalized guidance for our safety teams and reemphasized the importance of including our craft workforce in decision making related to their safety. We strategically select leaders in the field to be the voice of safety for their coworkers. CSC Members are future leaders, often considered for advancement opportunities into supervisor roles. Craft Safety Connection builds confidence, aids employee development and provides much more deserved opportunities for our craft workforce.
- Our supervisors are trained to elicit employee responses through asking "open ended" questions, which are questions asked of employees that require an explanation instead of a simple "yes" or "no" response. The helps to ensure

employees are authentically engaged in safe work processes and are not allowed to be disengaged.

- Each year, projects compete for the Excellence in Safety Award (EISA). Project teams assemble presentations, vying for this highly coveted award. Requirements/ judging criteria include 100% team involvement in the site safety inspection program, site safety committee program, safety training program, 100% safety documentation, zero lost time incidents, OSHA total incident rate 25% below national average, and demonstrating the team's commitment to safety.
- Every supervisor is required to take several "safety breaks" per day. During the safety break the crew's safety behavior is observed. Then the supervisor gathers the crew together to discuss the good and bad safety behaviors observed and the necessary corrective actions.
- Launched a monthly safety and health magazine that promotes physical fitness, dieting, estate planning, managing of money and home, pet tips, etc. These programs are creating cultures of caring and the importance of safety on-site as well as home life.
- Our microlearning videos are a unique way to highlight innovative tasks and provide quick, effective training across the company on topics such as dust control and proper table saw use. They feature our employees and are published and distributed to our management and craft employees.
- Safety Advisory Council (SAC) is working. They wear neon green Safety Mentor shirts so they can be easily identified and approached with questions and concerns. The members now recommend their peers for SAC based on observed safety mindsets and safe work choices. All new foremen were promoted from within the SAC system.
- Have instituted monthly, quarterly and annual safety awards. Monthly, an employee nominated and elected by his peers is chosen as Safe Employee of the Month and awarded $100, a hardhat sticker, and announced in a local newspaper advertisement.
- Bought a ballistic dummy for a project to showcase the damage that can occur to the human body from a fall. The ballistic dummy had realistic internal organs and skeletal structure that could simulate traumatic force on the body. The dummy was dropped from a second story loading dock to simulate a fall protection scenario. Afterwards, it was presented to the field and in conjunction with a doctor who was presenting on fall trauma, talked about the realistic broken bones and ruptured organs from the fall. Afterwards the dummy was left on display for our employees to use as a learning tool.
- Another strategy we use for orienting new hires is what we call "pairing." We pair less experienced workers with experienced, safety-minded workers. In doing so, safety, work ethics and culture are passed on to all newcomers.
- The company provides an annual Safety Expo with ALL employees and key vendor partners. This is a full day of employee training that consists of interactive, station-based content based on actual project conditions and situations while still in complete compliance with the content requirements. This creates an awesome atmosphere for everyone involved to experience the training as well as take in the technical aspects. Teams are built with a strategic mixture of executives, mid-level managers, supervisors, support staff, and Field Operations. These teams then rotate through the training experiences, each led by manufacturer representatives and safety professionals, and interact via hands-on instruction that includes actual situations that are encountered in the field.
- Using the principle of Mindfulness to prepare workers for all day focus. https://www.assp.org/news-and-articles/2018/03/08/what-is-mindfulness-and-how-can-it-improve-safety

- Embrace employee wellness - at their office, they have a gym with personal trainers.
- Have implemented a Veteran's Hiring Program and is addressing /recognizing common stressful mental health issues they may encounter.
- Company in process of adapting Toyota's Workers Health Platform to their own Corporate Wellness programs focusing on poor nutrition, fatigue, exercise, heart disease, aging workforce, high blood pressure, etc. This is being rolled out in each region across the company to over 600 craft workers. The analogy is to speak with them like athletes – we take baby steps and correlate it to increments on a ladder.
- Smoking and Vaping causes problems on many of the jobsites. The company decided to offer help to those workers that want to quit smoking/Vaping but say they cannot afford a treatment program. On a voluntary basis, any employee that wants to quit smoking/Vaping will have their initial doctor's visit paid for as well as four hours' time off from work to go to the appointment. If the Doctor prescribes a drug to help the employee quit Smoking/Vaping, the company will pay for up to a 90-day prescription.
- Have increased worker welfare by providing areas that have shelter, tables, and hand washing facilities.
- All lead employees received Dupont STOP training, which is tailored specifically for our work. Through STOP training, employees learn that all injuries are preventable; employee involvement is essential; management is responsible for preventing injuries; all operating exposures can be safeguarded; employee safety training is essential; working safely is nonnegotiable; safety observations are vital; all deficiencies must be corrected promptly; and every employee has the "stop work" authority.
- All employees who drive company vehicles are only to be operated by Defensive Driving trained personnel. Training is completed through the National Safety Council every three years.
- Each piece of equipment has its own specific inspection form that's specific to the type of equipment. No longer use one inspection form for all equipment.
- 60-second employee-produced videos discussing relevant safety topics like stress and weather-related challenges.
- A special emphasis program targeting the prevention of head injuries associated with children who ride a bike or skateboard was initiated. The program involved the distribution of a free child's bike helmet from a specially designed web site for any employee having a child or grandchild. In placing the helmet order, a suggestion to donate to the company's Employee Assistance Fund (a tax-deductible contribution) was placed on the website.
- Employee Assistance Fund was developed to financially help employees who have fallen into hard times.
- Crews participate in daily warm-up and stretching prior to commencing work, which has shown significant results in reducing injury and increasing performance.
- All new apprentices are given new tools as they embark on their journey as an electrician.
- Accident Dummy "hired" Darwin, a crash test dummy, to provide more hands-on rescue. On all projects with roof work Darwin participates in actual fall and roof rescue practice, helping to improve the planning of that specific job, as well as, on future projects. The kind of real world, hands-on risk assessment Darwin provides makes us extremely proud, and the workers in the field love it when he shows up.
- Provide preventative care consultations with EMT's to workers with aches and pains on site. We modify their work, so they can get back to 100% thereby avoiding injuries and time loss.

- Community outreach - knock on doors of residences near jobsites to make them aware of the job and unusual noise.
- Launched program to address suicide prevention and opioid abuse.
- Use pictograms for signage that solves the language barrier for multiple cultural challenges.
- Operational excellence involves …an idea is generated, a video is made, it is shared online and ultimately incorporated into company best practices.
- Offer free PPE to employees for their personal use off the job.
- Each day the foreman involves a different crew member in the creation of a JHA, aiding in crew bonding and reinforces buddy system.
- Different crew members are assigned as visitor escorts when A/E's or owners arrive.
- Safety mentorship program gives those interested in pursuing a career in safety with an opportunity to accompany corporate safety professionals to evaluate the career field.
- Tradesmen who no longer work with their tools are encouraged to accept positions in the safety department. Their dedication and knowledge are respected by tradesmen, and they can connect better than some non-trade background safety professionals.
- Safety Audit "Tag-a-Long" program - a list of all supervisors and subcontractor supervisors is maintained and on each safety audit completed by Risk Management/Safety an individual on the list is selected to tag a long on the audit for safety management training and development.
- 6 Hour New Hire Orientation
- Use Twitter and LinkedIn to stay connected with employees and their families and deliver periodic on the job and at home safety tips.
- Internet SharePoint interactive site that all company employees can access to ask questions and share best practice ideas. Highlights from the website are used in the monthly newsletter.
- On-site computers for employees and management to access safety related information and training.
- Teach the safety team how to train, how to teach, etc. before certifying them as competent.
- Non-English speaking safety committee with bi-lingual chair.
- Pre-Hire pre-promotion skills assessment. Problem solving, analytical, people, communication, etc. to find a better fit for job.
- 5+ year employees are designated and identified as "Senior Employees", and they receive a gold fiber hardhat. They are looked upon to help coach and guide less experienced employees.

SAFETY TRAINING AND VALIDATION OF TRAINING

- Pre- and post-training assessments are administered and documented to gauge knowledge retention.
- Verifying and delivering training within 24 hours of identification of a previously unidentified jobsite hazard (i.e. asbestos, lead, etc.)
- Specialized soft skill courses (i.e. leadership, communication, conflict resolution) are required for supervisors and craft workers and completion is a condition of promotion.
- The Acme Academy we are conducting all-day EH&S and NFPA 70e (2021) - Qualified Persons training. This workshop is an interactive program that navigates our leaders utilizing technology, best in class PPE, along with hands-on class participation.
- Loaner laptops are provided to employees so they can complete safety training at the convenience of their home with pay.
- PACE "Properly Approved Certified or Educated" program gives supervisors immediate verification of employee's certifications and training via a photo ID card with company emergency protocols on the back of the card.
- New Hire 8-hour Safety orientation and personal tour of several projects with safety director
- Orientation Safety training which is conducted 90% in the field and 10% in the classroom. People learn by seeing and doing.
- Use of Rosetta Stone foreign language training to remove language barriers to safety
- New hires are identified by an orange Class 2 vest with "Safety 1st" screen-printed on the back. All other employees wear a green Class 2 vest.
- Weekly "Safety Playbook" which documents all crew related safety activities for the week - Must be kept up to date and in possession of each foreman.
- "Rookie Play Book" a book which records the 60-day safety orientation requirements for each new employee. Over the 60-day period the foreman must work one-on-one with the new employee and sign off on the 19 safety requirements in the book certifying the new employee understands and accepts the concepts.
- "20 or 2 Program" to help prevent Run Over back Over accidents requires workers that are 20 feet or less from a piece of equipment, must have 2 eyes on the machine.
- Classroom audience participation App to have an interactive training environment that compels attendee retention and participation.
- Written test for non-English speaking workers to see if they are literate in their own language. If not, they are paired up with a mentor to help them understand the safety requirements needed for job safety.
- Run Over-Back Over Hazard awareness Tool Box demonstration – 10 workers have 10 large, numbered cards and get in several spots around a large piece of mobile equipment. The equipment operator calls off all the number cards that can be seen until the remaining cards he can't see are still standing.
- Equipment Rollover prevention program and demonstration
- Comprehension oral and written test after orientation.
- Draw a picture if they can't demonstrate they understand.
- All site supervisors are required to complete OSHA 30-hour courses, conduct safety orientations for craft workers, 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.
- 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.
- Right to Know - utilize scannable decals on hard hats that take you right to the SDS database.
- All forklift and equipment operators are certified using the IVES training and certification on-line system. https://www.ivestraining.com/
- The 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 8-hour day with training provided by 8 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 the 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.
- Orientation process (Safety orientation I & II) which is valid for 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.
- 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.
- Recruits, new to construction and/or our trade, enter the Workforce Development Program (WFD) trainee Program. Coaches are accredited WFD trainers.
- 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.
- Every new Craft 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 email 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.
- Worker Training Incentive - Employees who complete 16 hours of safety skill development/continuing education each year receive a $150 gift card.
- Use UPC Bar Code technology to provide information on individual worker training and certifications on the spot.
- 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. https://www.hcss.com/
- 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 Contractors safety and Orientation Program which is expanded to include hazard identification and mitigation practices. https://www.cstop.org/
- 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.
- Supervisor and manager development includes the Foundations for Safety Leadership program developed by the Laborers of North America. https://www.liuna.org/leadership-education-series-construction
- Identified vehicle accident exposures as a key risk for the company. Utilized a 3rd party training resource called SWERVE to provide training to all that drive company vehicles. https://goswerve.com/ System allows training for all new drivers and existing drivers who need additional coaching 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 re-training. The company found that bringing employees back after some on-the-job experience that they had a better understanding of the company. They also feel more comfortable asking questions and discussing concerns.
- General Superintendent has an OSHA 500 training certification.

- Mobile training facility which trains thousands of workers in multiple states.
- Measure the forces involved with falls regularly with dynamometers, then use the data and photos in company training.
- Worker task specific "pocket guide" for the specific tasks they will be performing. Laborers may get just one guide for the scope of their task, others like equipment operators may get several pocket guides. Guides must be kept on their person and produced upon request by supervisor. Workers are required to verbally explain the safe way to do their key assigned tasks. During morning meetings workers are called upon to lead the meeting using their pocket guide.
- The company You Tube series of safety videos that can be accessed through, desktop and smartphone https://www.youtube.com/watch?v=DBsqpXmstQk
- Aside from the morning stretch and flex program, 10-15 second "Micro Breaks" are used to keep stretched and comfortable.
- Training Badge - QR Code program provides instant access to training records for GC and all subcontractors. Smartphone scans the code for access.
- 2 separate training programs for Pre-Task Hazard Analysis; One for the crew, and one specifically designed for 1st line supervision which has leadership and group discussion best practices.
- Monthly ongoing safety training through "Lunch and Learn" program. Craft workers make 30min presentations on a pre-determined safety topic.
- The company credential system revised to fit into plastic pocket of safety vest. Employees wear color-coded badges that display their training and are visible to everyone. Temp laborers use the same system and view pocket vests.
- Cross training for electricians, mechanics and pipe fitters. Each will look at tasks from a different perspective. They become lead supervisors some day and will manage multiple trades.
- ROI for Training question …. "What if you train them and they leave…. Ask what if you don't and they stay"?
- Provided NFPA 70E training to Clients to help them understand their work and the GC's instructions to bidders. Promoted safety after turnover to Clients employees.
- Electrical hazard training facility which includes multiple streaming interactive touch screen monitors, mock-up switch gear room, newest power distribution equipment including dry type transformers, disconnects, panel boards, and actual working clearances and distances.
- Safety Training matrix for all employees which visually shows completed and needed safety training in colors.
- Learning and Development Department who work in conjunction with Safety department and focus on the specific learning challenges and solutions faced by all age groups of employees.
- Drivers of company vehicles are required to have a 30-day waiting period and pass a practical and on-line driving exam before being assigned a vehicle.
- OSHA 10 and OSHA 30 classes are required every 2 years instead of 3. Keeps issues fresh and on managements and employee minds.
- All company safety managers/coordinators are OSHA 500 authorized trainers. This significantly improved the quality of training done in the field. These guys do a lot of training and certification has improved the quality and effectiveness of what they do.
- During orientation all workers are issued a personalized business card that contains specific information about the worker, their qualifications/certifications, and contains other project specific information. It is laminated and must be produced while on site if requested by management.

- All field employees must have and maintain an STP "Safety Training Passport". STP is equivalent to the OSHA 10 + 6 additional hours. Ohio based training program.
- "Green Band" new employee hard-hat identification and paired with a mentor until they can demonstrate knowledge and execution of working safely.
- Safety managers must be OSHA 500 certified and must be certified to teach safety courses through the National Center for Construction Education and Research (NCCER) www.NCCER.org
- The fleet safety program has been updated with an extensive section on cargo securement. The accompanying training requires a hands-on demonstration of securement procedures and a written test to validate understanding of the training and on-road procedures.
- Contacted the Masonry Institute of Michigan to conduct masonry bracing and scaffold awareness training to help workers who had not worked around masonry "Fall Zones" to understand the risks and be proactive in the way they worked around the zones.
- Mid-term exams to test knowledge retention of safety program.
- Developed a solo warm up routine quite aside from a stretch n flex that a worker can use by him/herself after sitting for a few hours.
- Use of a rearview mirror sticker to heighten awareness of backing accidents.
- Utilize a mobile training center (bumper pull trailer) to take the training out of only lecture style training, and into the worker's actual work environment. This allows practical, hands-on training to supplement the material for better worker retention for each subject.
- One recent improvement that we have made is through a partnership that we have developed with SafetySkills, a company specializing in interactive, trackable and relevant courses in safety. Personnel are provided monthly on-line safety courses catering to the individual and designed for their job duties. https://safetyskills.com/
- Created a safety orientation video specifically for temporary labor and labor brokers and have partnered with a few of the local temp agencies to provide those workers with safety training and knowledge to understand the hazards they may face on the job.
- In-house training has changed to detailed/more specific training in class sizes not to exceed 15 people. This has proved effective offering a more comfortable environment for asking questions and increased opportunity for one-on-one instruction. This method has resulted in accelerated learning growth and retention.
- Employees are required to take monthly safety courses as part of their continuing education.
- Have invested heavily in Intelex (https://www.intelex.com/) and Vivid Learning Systems (https://vividlearningsystems.com/) to support our professional training staff to deliver quality safety training to all employees.
- Recently revised our subcontract requirements for a subcontractors designated on-site competent person to have obtained or possess a minimum of an OSHA 30-hour Construction course within the last 3 years, versus an OSHA 10-hour course within the last 3 years.
- Created a "2 eyes 20 feet" rule. If you do not have two eyes locked with the operator you should maintain 20 feet from the machine. We created hard hat stickers, as well as stickers for windows on each machine with pictures of 2 (eyes) and 20 (feet).
- We utilize engineered and manufactured fall protection systems; we also design and test our own fall protection systems by performing drop tests with dynamometers to understand the forces

to the anchorages and fall distances an employee may be subjected to during a fall. We test engineered components to understand how they react during a fall to ensure our employees are protected in the event of a fall. The drop tests are videoed and documented for sharing with our employees during our fall protection training.

- The IT Department has helped with safety innovation. We have a growing need for MEWP (Mobile Elevated Work Platform) training and our team sought out new ways to incorporate more virtual reality (VR) training. Employees receive classroom training, and they also go through a course on the VR system covering limits and functionality of the equipment, along with possible scenarios that operators may encounter on a construction site or warehouse setting. Once the employees have completed the course with a passing score, they are then re-evaluated on the equipment they are operating to verify that they understand the functionality and manufacturers' recommendations.
- Data Center University training program is a 3-tier course which educates electricians on the sensitive and high-risk environment of live data processing facilities. Topics include emergency backout planning, Method-of-Procedure, and working safely with complex systems.
- Airfield University program is comprised of four training videos and in-class discussion, which addresses the unique environment of airfield work and associated hazards which are significantly different than standard construction environments.
- Most training programs are centered around OSHA codes and violations. While meeting the standards of training, we developed our program around Employee Exposure to Hazards rather than OSHA violations.
- We have developed a learning management system — NextCode – that standardizes training, tracks trainees and confirms that training is consistent across the board. By educating our teams on our safety policies, procedures and our corporate safety values, as well as integrating best practices and lessons learned over the years,
- iScout's 20/20 training program is being incorporated into our training processes to assist the organization with real-time tracking of course completion and to provide an interactive training format.
- Recognize the need to use Human Organizational Performance as opposed to something in the worker needs to be fixed.
- Focus on education and not simply the training of people.
- Use CAM (Comprehensive Advance Metrics) a tool for knowing the skills and education of each worker.
- There is a difference between training and education. You "train dogs" but should focus on "educating employees."
- Safety "Flash Drives" were initiated last year. They are populated with all the information that is on the company safety "SharePoint" site. They provide access when the internet and data reception are not available.
- If someone, when asked, cannot explain the risks and the safe aspects of performing the task, they don't know it. We leverage the power of simply asking open-ended questions to engage in quick effective knowledge and coaching tests. For example, our Foremen are coached to ask employees "What are the tasks being performed today?", "What could go wrong? How could we get hurt?", "What controls do we need to keep those hazards or risk in check?"
- LMS (learning Management System) was developed to provide consistent/ customized training including onboarding, annual, refresher and specialized training. This ensures everyone receives the knowledge of safety/health requirements and familiarization of risks.

- Developed a “Heavy Equipment Operator Qualification” program by utilizing CATERPILLAR e-Learning CD software for classroom training. The key component of CATERPILLAR e-Learning software is the equipment walk-around segment. This portion of the training is very detailed from pre-start, mid-day and end-of-shift inspections.
- All new hires are required to take an online safety orientation course from the Health & Safety Institute, (HSI) Online training. A score of 80% is required to pass. https://www.hsi.com/
- Anyone who enters a trench, confined space, uses fall protection equipment, or operates motorized equipment must also present a certificate of training. In addition to a certificate, our trade partner must prove it has met or exceeded our company’s minimum training standards.
- Provide safety support to clients and contractors on projects, such as facilitating the OSHA 10 and 30-hour classes at no cost.
- Frequently Asked Safety Questions - top 10 safety questions asked and answered.
- Motor vehicle accidents are classified as “preventable” or “non-preventable”. Employees involved in a preventable or non-preventable motor vehicle accident are required to take a defensive safe driving class within 30 days of the accident.
- Saw deficits in providing ANSI-compliant lift training. Owners committed to take the lead with an industry best training program. While most IPAF training centers are rental companies, we now have that capability in-house and is Connecticut’s only IPAF-Certified Training Center. International Powered Access Federation (IPAF) https://www.ipaf.org/en
- Provide monthly safety training for all employees using a state-of-the-art, web-based training and validation system called Vivid Learning. With Vivid, we can now provide required training and validation in English and Spanish along with over 100 optional courses. This gives us the confidence to know that everyone who reports to our sites has the competence necessary to work safely regardless of what language they speak. https://vividlearningsystems.com/
- Have a licensed physical therapist provide one-on-one training with each new employee on proper lifting and body positioning so they can safely lift and perform the job.
- Speak Up! / Listen Up! for Construction program – this training course is attended by all employees within 30 days of hire. The program is designed to foster safe work environments by helping employees overcome the anxiety that can be associated with giving or receiving safety-related feedback. https://www.masoncontractors.org/education/speak-up-listen-up-for-construction/
- Designed in-house Diver and Tender training, focuses on diver fatigue/alertness/readiness and provides hands-on, real situation training.
- Have established an in-house NCCER Accredited Assessment Center (Crane Certifications)
- Use language conversion software to allow employees to complete online forms, etc. in their native language and then it gets converted to English for management review.
- Equipment Mechanics – developed a work order timecard system that asks a few hazard recognition questions before than can submit a timecard.
- Use a safety training software App development program called Kahoot. https://kahoot.com/
- 12-month driver training program using simulators and interactive modules
- Invested heavily in virtual reality technology and have created VR scissor lift and man basket training.

- Hands on safety training validation makes it impossible to cheat or "fake it."
- Fall protection training provided to employees via a mobile fall protection training tower.
- CEO and Operational managers make monthly job visits and interview all employees who have been on the job for less than 30 days to evaluate the quality of their orientation and to solicit suggestions for orientation improvement.
- All workers who will be exposed to Falls greater than 6 feet must attend a site-specific fall protection orientation where they are tested and certified before they begin work.
- "Safe Man" mannequin at the entrance to each project to demonstrate proper PPE needed on site.
- Company Safety professionals are routinely tested using written exams and field performance observations for evaluation of competence and knowledge of safe work practices.
- Foreman/Supervisor conducts weekly documented safety meetings with their crews. The subject must apply to the 3-week Look Ahead schedule. The quality of the meeting is scored on a scale of 1-5 and is used as a Leading Indicator Measurement.
- Monthly jobsite safety exams designed by a team of workers and given to all site personnel. The exams are graded and an interactive meeting to discuss the results is completed after scoring. Results are posted project wide.
- When we train and the EE doesn't get it, we don't look at him as being the problem, we look inward to see what we did wrong presenting the training.
- 140 supervisors attended a 5-day intensive training session led by former Navy seals to deal with teamwork, communication, and performance.
- "First Move Forward" training program to focus on run over and back over hazards around heavy equipment.
- Focus on a particular area for safety training, like hands and feet. Once that is well-engrained, pick another focused topic.
- Employees are encouraged/incentivized to achieve competency certification (CHST, OHST, STS, CSP, etc.)
- Designing and communicating with employees the company's professional and career development ladder – identify positions available in the company and minimum training/experience requirements needed to get there.

SUBCONTRACTOR MANAGEMENT

- All Sub-tier/specialty contractors complete an annual Sub-tier safety questionnaire measuring all facets of safety and training, plus COI, 3 year 300-A summary; EMR insurance broker validity, and any contractor over 1.0 EMR is required to submit formal responses by both the contractor and carrier. A vendor approved rating scorecard ranks risk factors. EH&S manual section addresses the Sub-tier Contractor program.
- "Safest Subcontractor" program - Each Subcontractor is scored each month based on certain criteria including the riskiness of their work and given an award and recognition lunch.
- Provide OSHA 10-hour class (English and Spanish) for subcontractors free of charge.
- Teach subs how to measure safety (e.g. workers comp costs per work hour, etc.)
- 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.
- Host an annual subcontractor safety summit that all subs must attend and send representatives from safety and management.
- Three strike policy. 1-written warning, 2-minimum 2 days off, 3-termination. Step three can be used at any time in the process.
- 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 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.
- Subcontractor OSHA 10- and 30-hour training. Offer a free instructor but pass along the charge for the cards.
- Written financial penalties and removal from a project are included in our subcontract.
- Require subcontractors to submit their safety activity electronically to better protect us from liability and the multi-employer act.
- 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 in safety improvements. In conjunction with the subcontractor's owner, actions are developed to improve the subcontractor's 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 Job Hazard Analysis' 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 training outlets to subcontractors.
- Subcontractors must initially sign a GMP requiring commitment to maintain GCs above 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.
- 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.
- 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 venders hired to work on projects. https://www.isnetworld.com/
- Use Highwire to qualify sub-contractors and venders hired to work on projects. https://www.highwire.com/prequalification
- GC's president calls subcontractor's president when an employee is injured. Expresses care and concern from the GC and allows coaching and role modeling of the sub.
- When utilizing MWBE partners. The company realizes MWBE's may lack funding for safety training. GC provides training and resources to help them better protect their employees.
- 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 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, but also, they must submit a method statement for each type of hazardous work as defined by the project team.
- Subcontracts during the pre-con are informed about the subcontractor "Safety Warning" program. This 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 criteria are 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 people identified as competent persons for high hazard tasks.
- 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. https://www.constructioncareercollaborative.org/

- A database was developed that can track all types of training for all workers, including subcontractors. This helps us to know whether workers are qualified for certain tasks on our jobs or if they need initial or refresher training.
- Subcontractor safety seminars for 1/2 day and are held throughout the year. Company president kicks off and has closing comments. OSHA participates with a presentation, and members of the local university construction school attend and do presentations.
- RFID badging system that tracks employee training, safety violations, certifications, actual hours worked on site, and emergency contact information. Operations can track headcount and manpower in real time to improve production.
- All subcontractors must submit a JSSP (Job Specific safety Plan) not their safety manual before they arrive on the project.
- 3 strike programs where on the 3rd safety issues the owner of the subcontractor must come and meet face to face with the owner of the GC.
- In-depth detail subcontractor safety training which exceeds the content in the OSHA 30 is provided by the GC free of charge to help subs improve their safety management process skills.
- Bi-annual 3-hour "Safety Summits" with all subcontractors. Various safety topics are discussed. Improves subcontractor safety knowledge, builds trust and improves GC-sub relationships. Over 300 attended.
- 4-hour Mock/OSHA inspections by the Safety Director and President. All typical OSHA related paperwork and site walk protocols are followed. A mock closing conference w/citation review is completed with all project management in attendance. Provides an interactive training experience and better prepares the project team for potential future visits by OSHA.
- Each subcontractor contractually required to provide a foreman that is fluent in English and Spanish. This requirement is validated by successful completion of an orientation meeting in both languages.
- Site safety inspection software captures pictures, and other positive or negative safety issues. The report is distributed automatically to the project team. If the issue involves a subcontractor an electronic copy of the report is automatically sent to the Subcontractors executive leadership team. The Subcontractors data and response is also tracked for the future subcontractor prequalification bid process.
- Use construction safety outreach services of the University of South Florida to help subcontractors evaluate and upgrade their safety program.
- Developed an "Over OSHA" policy based on loss trends of GC and Subs and amended subcontracts to reflect standards above OSHA.
- Developed 3 targeted safety videos. Each aimed at subcontractors, employees, and visitors. All visitors must go through a structured orientation.
- Crisis management plan has a severity rating system of 1, 2, or 3 with different response and management criteria.
- Subcontractor "Unlearning Bad Practices" identification, remediation, and rewards program.
- Subcontractors complete a 6-page Pre-Construction safety document and assign a Superintendent mentor for the first 90 days after they begin work. Each subcontractor also receives a weekly safety audit by the GC.
- Use anonymous Subcontractor perception surveys to measure the safety process effectiveness of the GC project leadership team.

- Specific safety requirements above and beyond OSHA are listed on all subcontractors' Bid Forms. The additional requirements are also reviewed at the pre-award conference with every responsive bidder.
- Asked a major subcontractor to take a deep dive into their current safety program by entering the national CSEA competition, which they did. The sub said they learned a lot about themselves and received 1st place in their division.
- Invested in employing a full-time dedicated Subcontractor Safety Manager who focuses solely on subcontractor work and building a database of subcontractor issues that can be used for future contracts and future work by the same subcontractors. Works very hard with the identified "Competent" persons identified by the subs and validates their ability to be in that role.
- Subcontractor "Video Exchange" program where periodically they video work under progress with active employees working. They review the video with project management and have a conversation about risks and controls.
- Conducting safety surveys to include subcontractor comments (safety committees)
- Focused temporary worker program and collaborated with temp agencies to provide a minimum level of training for this workgroup.
- GC hosts an annual subcontractor safety summit to promote alignment with core safety principles. The executive leadership of each subcontractor company is represented.
- Trade Partner management - added a robust section of our contract called Trade Partner Health, Safety & Environmental Performance Requirements that ties our Trade Partner safety performance to our contract.
- Worked with local software developers to upgrade our Safety Operating System to include our Subcontractor Prequalification process. Various approval elements are included, but their safety program/ performance is a stand-alone section. The basics from submitting programs to past/present performance is captured (standard rates are automatically generated). Any comments made by our safety staff are neatly organized/stamped, with the capabilities to attach files. This information is housed, and evaluations are averaged over multiple projects that a particular subcontractor has performed work. East accessible by estimators, PM's, Superintendents, etc.
- Use Bid Smart to grade clients and customers to ensuring they have the same high safety standards as we do
- Subcontractors are graded accordingly, which results in green, yellow, or red ratings. Green are those contractors who may proceed with work; Yellow contractors must submit a site-specific action plan to be approved by the Safety Manager. If they do not, we will find another subcontractor; Red means they are not considered for our work pending improvement in all areas.
- We developed a custom inspection checklist in HCSS to help manage and track the safety of our subcontractors.
- Hired a pre-qualification coordinator who works with EH&S, pre-construction and operations. Utilize pre-qualification software, iSQFT, where subcontractors supply their financial and safety qualifications. Subcontractors' programs are reviewed for quality. The EH&S team works with subcontractors to help them develop their programs if areas of weakness are identified pertaining to their scope of work. Drug and alcohol screening, new employee orientation, EMR, OSHA logs, citations, and safety statistics are all used as part of the subcontractor qualification process. iSQFT is also used to track subcontractor performance after a project is completed. Allowing us to track a subcontractor's performance over several projects and base future decisions on

historical performance data. https://www.isqft.com/start/general-contractor/

- We conduct Executive Safety Culture Charrettes where our executives engage trade partner executives to share the best practices and lessons learned. These meetings focus on safety for the upcoming areas of construction activities and are held at appropriate time points throughout the project with all involved trade partners to be proactive and partnering.
- Along with the contractually required daily reports, subcontractors submit a comprehensive monthly safety report which includes safety statistics; accident investigation reports; S.A.F.E. summary; new AHAs; safety meeting documentation; log of safety training for all employees and trade partners; and job site audits and inspection reports. These reports are then discussed at the weekly meetings.
- Project Safety Leadership Team is intended to discuss upcoming risk with critical path work, mitigation of risk, potential schedule impacts to safety, man-power updates, positive indicators, logistics and reinforce leadership commitment to safety. The Safety Leadership Team is comprised of senior leadership from the Client, GC, and Trade Partners.
- Worked with our attorney and completely changed our subcontract language regarding safety. We added much clearer safety work requirements and contractual stipulations around failure to perform work safely. This has led to a much clearer understanding by subs on site and a dramatic reduction in on-site arguments about what is required or in the contract.
- The Safe Start Program allows us and the sub to review their scope of work ‘s hazards. Utilizing the safe start-up program, we can plan beforehand to identify specific risks and coordinate corrections, during the project should the scope change or when new obstacles arise. The safe start program is designed to be a living document and is reviewed and maintained at the jobsite. The scope of every safe start meeting is to best protect our employees, subcontractor’s employees and the public.
- Housekeeping is managed by contractually back charging subs for housekeeping.
- Identified that falls were more caused by housekeeping than by working at heights. They responded with stronger contract language for housekeeping and just in time delivery of materials.
- Will invite an employee or subcontractor employee to take the day off after non-compliance.
- Developed a program called “SubCentral” that measures/scores subs in several categories, including safety, and it is transparent. Subs can see the metrics and what contributed to their score.
- We have an open-source policy on all our safety programs, testing, and documents. We are willing to share our resources with other businesses at no cost and will sit down and mentor them while they develop their safety program.
- Bid Books” provide project site-specific information: leadership names and contact information, plus subs and contact information, sub scopes of work, supplier information and addresses, phone numbers and pertinent company information for establishing vendor accounts.
- Subcontractor Prequalification was improved by developing a safety and risk potential scoring system. Lower scoring subs must have their president come in to discuss a corrective action plan before they perform work. Presidents discuss progress monthly. Used to help better the subcontractors who show a genuine interest in improving their safety programs. It is also an internal tool to help make sure there is adequate safety monitoring of the subcontractors.
- Encourage subcontractors to comment on our safety program and give us feedback on

ways we can improve.

- All subcontractors are required to have a valid “SafetyFirst” orientation badge prior to starting work.
- Peer-to-peer safety inspections have replaced safety talks with foremen and managers who, hopefully, disseminate the message through their ranks. All subcontractors attend monthly safety training meetings. Afterwards, taking turns each month, one trade will walk the entire site, not just their own work zones, to inspect and reward safe practices with gift cards.
- Conduct a post-job safety performance review on each subcontractor and assign each subcontractor a GO/NO-GO rating for future work.
- If there are safety observations, both positive and negative, observations are documented in the BIM360 field software system and opened as safety issues and they are emailed directly to the subcontractor to correct, document the corrective action, and then close the issue so we know it was corrected in a timely manner.
- Created safety requirements for new temp labor agreement.
- CEO Subcontractor Summit. The senior company leaders of all subcontractors attend and discuss communication, relationships, ideas, and how to work together effectively on safety, productivity, and quality. Allows better alignment of GC’s safety program to specific subcontractors, rather than a blanket safety program aimed at all subcontractors.
- Teamed with colleges or universities with a safety and construction curriculum to conduct research on safe decision making. 1,000 + internal and external surveys were completed on GC, subcontractors, and their employees. Totally redesigned how GC communicates with Subs on a daily, weekly, and monthly basis.
- Subcontractor Management Skills University to help subs understand their role in conducting safe work. Costs money, but develops a higher quality, more loyal subcontractor.
- When repeated subcontractor issues take place the GC calls for a supervisor replacement. This requirement is communicated up front in the safety section of the subcontract agreement.
- Subcontractor Safety Culture Evaluation Matrix - 10 item Subcontractor questionnaire is completed by all levels of project management including safety professional.
- The estimating department uses a predictability matrix of hazards by trade and specific necessary controls are listed in the subcontract.
- CFO, operations, and safety are required to sign off on pre-qualification before a sub can work. Subcontractor is issued a “Safety Passport” upon final sign-off to indicate their acceptance to work on site.
- Random drug testing 2x per year… including subs.

EMERGENCY RESPONSE AND CRISIS MANAGEMENT

- If you ask any contractor in our area about their Fall Rescue Plan, the answer would be similar. “Self-rescue, or call EMS. We found this to be troubling and downright wrong. We created our own Rescue plan, partnered with the states leading fire and emergency response coordinator and found equipment that works perfectly for our specific tasks. We train twice a year on self-rescues, assisted rescue, single rescue, and crane rescue. Our teams can perform safe rescues and have the injured employee safe and on the ground before EMS even arrives.
- Enlists an injury triage service, which gives workers instant access to medical professionals and triage protocols. Workers avoid going needlessly to the ER and aren’t 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.
- 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.
- Emergency/severe weather and crisis management plans are posted on every job trailer/office with important phone numbers.
- Contracted with a 24/7 Registered Nurse hotline in case of workplace injury. If a non-life or limb threatening injury occurs, you can speak with Registered Nurse immediately. Injured workers receive a designated registered nurse to communicate with daily. 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.
- First aid kits are installed by the tool department in each gang box. Each journeyman electrician, supervisor and superintendent attend 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 situation, we notify all employees using 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, the Opioid crisis, depression and death by suicide, using behavioral awareness techniques, CDC Fact sheets, and a caring culture.
- The Director of Safety makes personal visits to all medical facilities before choosing to use them, in an effort to reduce the unnecessary use of Opioids.
- Developed an After-Hours Emergency Contact information card for each employee’s family. This magnet lists 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.
- Pre-storm or crisis a communication protocol is issued to team members with multiple ways to let them know they were okay, including cell, email, 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 folders are 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.
- Maps of hospital and medical facilities 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 can 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, navigate to the nearest hospital or minor emergency clinic. The app has site-specific evacuation routes, assembly areas, fire extinguishers, and first aid kits.
- Use an 11x17 template for project specific crisis management plans. One side denotes the project location, where the nearest hospital and minor emergency clinic are located, the contact information for the entire project team, and details of 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 client's 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.
- Crisis management with chemicals - Company has an SDS app that all employees have on their phone to help guide them on exposures and controls in an emergency.
- The 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 monthly 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.
- The company completes an annual crisis management drill audited by a 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.
- 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. Completed annually.
- Developed a "first hour" crisis check list.
- Crisis Management 'Pocket Cards' to 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.
- Clinic Locator - Electronic application that finds closest approved clinic and Google map directions to location.
- Project specific Crisis Management checklist with details about who and how to respond. The checklist is reviewed and practiced with all project team members once per month and whenever there is a change.
- Crisis Management 3D project poster which shows key gathering points and specific Media gathering points, so media is controlled See attached example from Porsche Design Tower in Miami
- Work Zone "Crash Analysis Team" which is comprised of Safety, Operations, and the corporate attorney. When a work zone incident occurs, the team is dispatched to the scene to gather the appropriate information immediately while the facts are fresh.
- On an annual basis two 4-hour crisis management courses are conducted for all employees. All employees must always keep a crisis management step by step card on them.
- Crisis Management plan has a "Buy Time Statement" that politely holds the media at bay until the company crisis management team can arrive on the site.
- Crisis Management plan was expanded to include protocols for "Active Shooters" https://www.dhs.gov/xlibrary/assets/active_shooter_booklet.pdf
- Electronic phone based step-by-step crisis management system of notification and prompts.
- "Stop and Call" crisis management program where each employee has a red stop sign hardhat sticker on the inside with simple steps and phone numbers to call.
- Crisis management program also includes potential Occupational Health Issues
- Every worker has an "ICE" sticker on the inside of their hard hat which contains all their pertinent medical information.
- Used TV Investigative reporter to help with simulated project crisis management drills and role plays.
- All projects have automated external defibrillators.
- Pre-planned access way and signage for emergency vehicles.
- Lighted (Red Light Bulbs) and red painted designated fire extinguisher locations and exits.
- Laminated poster size pictograms of key things to do in a crisis. Covers Fire, utility, bomb threat, tornado, and active shooter. Also identify project safe zones for assembly based on certain crisis situations.
- All managers attend a 3rd party Crisis management training program to make sure we stay on top of an ever change Crisis world.

- Crisis management plan also includes procedures and drills for Tower Crane operator rescue.
- Crisis Management Plan is in the form of a Grab and Go which facilitates easy, structured, step-by-step, readily printable information for project teams to use.
- All site superintendents have a crisis/ emergency satellite phone.
- Each project has a specific safety Emergency Safety Program. The closest Hospital, EMS, and Helicopter service are identified and contact information is provided and posted.
- As part of the injury management plan, we have incorporated an on-site health care company. This allows employees to have minor injuries looked at on-site to determine if first-aid care is enough or if a higher level of care is needed.
- The Crisis Management approach includes having crisis management stations equipped with necessary components, hard hat stickers that are on the inside of hats with personal contact information and Crisis cards that have necessary contact information for those on site.
- Crisis Management tabletop drills with project leadership to ensure all team members understand their roles in the event of an emergency. In addition, physical drills are conducted simulating Crisis.
- To plan for emergency response at a remote location, local police, fire, and EMTs were given a tour of our construction site. In addition, a high ropes emergency rescue team provided training on how to deploy emergency rescue systems.
- For all incidents, regardless of severity, our IT Department has created and implemented a single click function within Outlook that notifies Management personnel of any type of incident; project and incident type are included in the distribution.
- Company focused on emergencies and crisis management by bringing a guest speaker to prepare us for when the “Big One” hits the northwest. Each region’s session was recorded and tailored to their area. The presentation revealed what kind of earthquake to expect, what to do during and after the earthquake, what supplies to gather now, and how to establish a meet-up plan for families after an event. Each Branch office has been outfitted with a three-day supply of water and food for each employee. Extended the preparation to employees’ personal households by providing a dried food discount.
- Have further developed our Emergency Response Team (ERT). ERT team training occurred with first aid/CPR/AED, fire drills, incident crisis management, active threat/ shooter, moving immobile employees with a stair chair, back-boarding injured employees, and Emergency Medical Response Certification. HAM radio certification is being sought after by team members.
- Each employee is given a wallet-sized crisis card to keep on their person at all times on the job. The card has a check list of actions to take if there is a crisis or emergency, as well as contact information for members of the leadership team. Each employee also receives a hard-hat sticker with direct contact information for the safety director, human resources and CMO.
- A critical component of our safety program is emergency and crisis management, of which communication and training is vital. To assist with the development and training of our procedures, we have established relationships with a variety of local First Responders from the Fire Department, Police Department, California Highway Patrol, and Special Weapons and Tactics Team. We conduct annual training for employees and family members to assist in the awareness of Fires, Emergency Situations, Defensive Driving, and Active Shooter Scenarios. During project mobilization, our teams invite First Responders to tour our jobsites, review

emergency protocols and ensure paths of travel provide easy access for emergency vehicles.

- A majority of our projects are executed on occupied school campuses, our project teams meet with school representatives to incorporate their procedures for fire, earthquake and lockdown drills into our emergency action plans. Once construction is underway our jobsite crews become active participants in campus drills. This commitment to understanding and participating in school drills has proven essential on several occasions when campus lockdowns went into effect in response to active shooters in close proximity to project sites.
- Our New York City projects are supplied with FDNY First Responder Boxes. These 2' x 4' gang boxes are conspicuously located on site and provide the first responder with valuable information in the event of an emergency or inspections. Contents include emergency contact list, FDNY permits, floor by floor egress plans, standpipe diagram, site safety plan and daily log/checklists.
- This year we had an employee on the job site talking about ending his life. He had a medical condition that was causing him a great deal of pain. The foreman stopped work to take him to breakfast and then brought him to HR to discuss and connect him to the various resources available to him. He took a leave of absence and later returned to work in a better place.
- All managers are trained in emergency and crisis management and a required to complete an interactive training course. The instructors of the course are industry attorneys and media professionals. This training includes a hands-on exercise in which teams respond to a hypothetical crisis situation. The teams are timed and must manage a quickly evolving crisis as new details emerge. A lead person is identified to speak to the media. Interviews are videotaped and are reviewed by the class, making this training very realistic. We also communicate and provide access to our crisis management plan and crisis quick reference card on all company issued mobile devices.
- Have a separate Field Crisis Management Plan (FCMP) that is utilized at the field level to coordinate site-specific emergency needs. The FCMP includes site-specific contacts, muster points, response team members and the distinct roles for each project team member. The FCMP is posted on the job and is reviewed weekly during the site-specific orientation with all subcontractors and updated as the project changes. Project drills are conducted to ensure competency with the FCMP.
- Partnered with Able Shepard Training and Crisis Management to develop a company specific Emergency Response Plan and Guide for training purposes. The Guide is an easy flip binder for employees to refer to. Each site receives specific training to their location in order to prepare for an event. Also developed the D.E.F.E.N.D. module for our employees. With change occurring and the increased risk of domestic violence and hostile work employees in society, we took a proactive approach to the issues. The module states that the situation will dictate the order of the approach but know the D.E.F.E.N.D. method when dealing with an emergency. Defend, Evacuate, Fortify, Emergency Medical Aid, Notify Others, dial 911 empowers our employees to be safe in all areas of their lives. https://ableshepherd.com
- Project managers and superintendents review and update their project's CMP quarterly, including conducting a drill involving applicable response team members such as local fire departments or representatives. A "First Hour Response Checklist" is made site-specific based on this plan. In the event of a crisis, laminated cards and/or PDF versions on a cell phone with this information can be easily brought into the field.
- Utilizes a third-party company for training designated management. Key

personnel receive training on how to properly address and manage media via all outlets. During a crisis, misinformation and rumors may increase when accurate, timely information is not available. CMP appoints a spokesperson in time of a crisis, with provided training they can be more prepared to mitigate panic and provide information.

- Focus on employee wellness for mental health and physical wellbeing by launching a Mental Health and Wellness Prevention Month, partnering with health and wellness consultant Dr. Sally Spencer Thomas and vendors across the country. The mental health and wellness program is available to all sub-contractors onsite.
- For emergency and crisis management our process derives from OSHA 7600 Disaster Site Worker.
- We are piloting the integration of safety and logistics plans into the 3D building information model. This allows an interactive view of—and more robust planning for—egress points, fire extinguisher locations, overhead protection, crane swing radius and other safety systems. These models can be used to virtually orient employees, visitors and first responders to the site.
- All hourly field-level employees are provided American Heart Association Heartsaver First Aid/CPR/AED training and American College of Surgeons Stop the Bleed training. All supervisory employees, and hourly employees who have volunteered for additional training, receive ASHI Advanced First Aid, AHA BLS Provider CPR/AED and American College of Surgeons Stop the Bleed training, which is 3 days of intensive classroom and hands-on training.
- Our plan is broken up into 4 sections: Mitigation and Prevention, Preparedness, Response and Recovery. This all begins by identifying the project rapid response team.
- Emergency Response Stations (ERS) are situated at key locations on our project sites. ERS each are stocked/equipped with eye wash, first aid kit, fire extinguisher, air horn, emergency contact numbers, jobsite map and map to the nearest urgent care facility. Promotional safety signage and a white board for motivational messages or additional information are posted at some of these stations and our staff tries to keep the postings “fresh”. We have clearly defined roles & responsibilities for our Crisis Management Team, which are reviewed monthly by staff. Our “red ready bag” emergency kits containing essential response items are staged at the office door ready to be deployed at all times.
- Use Vangent Risk Assessment to identify those applicants with high risk or violent tendencies.
- It is recognized that suicide for construction workers is 4-times higher than the industry average. It takes strength to ask for help and that is what we are focusing on – taking care of the whole employee including mental health issues. It’s all about work life balance and the total employee’s health which includes emotional, financial and taking care of yourself. We try to reduce the stigma of mental health issues.
- The company supports acupuncture treatments.
- “Evacuation” map, contract information with job production rates, also, the location of the project including GPS co-ordinates and a physical location.
- “Emergency Contact “section includes “First Responders”: Police, Fire, Hospitals, Environmental Remediation Contractors, Emergency Retrieval responders, addresses, and person of contact. All phone numbers and services are verified.
- “Emergency and Crisis Management” plan has recently been re-designed to produce quicker and more effective results in the event of a crisis. The key change is a written plan that is not burdened with verbiage rather than with activity that may save a life, limb, or property. Acme has divided the plan into four parts:

- "First Hour Response". This is the action plan with an outline of the hierarchy of the response team, their responsibilities and team members, and contact information for anyone needed to be involved. Each subordinate individual completes their "to-do" list and reports back to the Team leader.
- All employees are required to carry accident forms with them at all times. These forms list the Chain of Command within the company as well as 911 and local authorities.
- Potential crisis situations are formally reviewed each year. Some of the items covered are Active Shooter, possible heart attacks, suicide on the job, domestic problems brought to workplace, and drugs in the workplace.
- Conduct emergency safety drills twice a year which involve local emergency providers and personnel. Feedback from project stakeholders is that the local fire and rescue find this is crucial to their training as well as ours.

- Provided AEDs on every project, over 120 life saving devices and counting! Along with proper training, these have been put into service 4 times in the past year. Fortunately, after the AED analyzed the patient no one has required a shock from the AED but the comfort it provides our teams is worth every penny.
- Monitor the hourly weather forecast and communicate warnings to our crews. This gives them time to secure all loose materials prior to any significant weather developments, thus reducing employee and public exposure to flying debris.
- Crisis communication plan identifies who is responsible to make statements, provides guidance to employees about any media inquiry they might receive, and provides them guidance for directing members of the media or law enforcement to the correct person in charge of a jobsite or office.
- All managers are trained in emergency and crisis management and a required to complete an interactive training course. The instructors of the course are industry attorneys and media professionals. This training includes a hands-on exercise in which teams respond to a hypothetical crisis situation. The teams are timed and must manage a quickly evolving crisis as new details emerge. A lead person is identified to speak to the media. Interviews are videotaped and are reviewed by the class, making this training very realistic. We also communicate and provide access to our crisis management plan and crisis quick reference card on all company issued mobile devices through our "News App".
- Each Safety Manager carries a heart defibrillator in their company vehicle.
- Invited the city first responders in so they could conduct emergency crane safety training. There are two tower and seven mobile cranes on the site, surrounded by potential hazards: a rail line, an interstate highway and heavily travelled streets. Approximately three hundred tradesmen can be at work on any day. We donated specialized equipment for the first responders that they would need should our crane emergency plan be executed.
- Inside the hard Hat sticker with the names and phone numbers of 2 approved medical providers in case an injury occurs.
- Conduct various occupational health drills such as heat stress, heart attack, snake bites, bee stings and chemical burns. Our drills also cover adverse weather events and time is taken and recorded to determine how quickly workers can get to safe shelter.
- Every supervisor must attend a four-hour workshop covering our crisis management plan. the training based on the tabletop structure, developed by the U.S. Department of Homeland Security. The half-day sessions provided participants with a simulated crisis to discuss their role and response during an emergency situation. The content was developed in-house by Safety, Human Resources (HR),

and Marketing departments. The training consists of small group exercises with scenarios such as crane collapse, falls, fires, active shooter, bomb threat, gas leaks to name a few. Each group is role play tested by the media, EMS/Fire Response, and OSHA to ensure our project teams handle the response and investigation properly.

- Created a safety action plan video that showcases the safe steps to be taken during an emergency.
- Working with the city on developing e-scooter safety programs to deal with scooters and bikes that roll through their jobsites daily.
- Canvas neighborhoods, knocking on doors where they are working to alert people of what to expect out of the ordinary on their jobsites. Also communicate through other outreach programs when high-profile work occurs in a community.
- Fully certified rescue team, which consists of employees, who are fully trained and certified to carry out emergency rescue procedures on any project.
- Grab-and-Go Packet to include incident paperwork.
- Muster app for smart phones. Enables employees to pre-program phones or smart devices with contract information of those (i.e. supervisor, spouse, neighbor) who you would want to notify of your whereabouts or safety in the event of an emergency.

CSEA FINALS JUDGING TECHNOLOGY SOLUTIONS

- 24/7 Registered Nurse Hotline - Immediate access to nursing support for injuries. https://www.nurseline.com/
- 3D Lift Plan - Software for crane selection and lift planning. https://www.3dliftplan.com/
- 3M SecureFit Safety Helmets – Advanced protective headgear. https://www.3m.com/
- AutoDesk VELA Field Management - Tool for conducting safety audits. https://www.autodesk.com/
- AVETTA Inc. - Supply chain risk management platform. https://www.avetta.com/
- BIM & Trimble Point Layout Software – For construction safety and planning. https://www.trimble.com/
- BIM 360 - Computer-based auditing program for safety data collection. https://www.autodesk.com/bim-360
- Bossetools Ergonomic Shovel – Ergonomic hand tools. https://www.bossetools.com/
- Brokk Robotic Demolition Equipment – Remote-controlled demolition machinery. https://www.brokk.com/
- C3 The Construction Career Collaborative - Workforce development and safety training. http://www.constructioncareercollaborative.org/
- CAT Virtual Reality Simulator - Equipment operation training in a risk-free environment. https://www.cat.com/en_US/products/new/technology/simulators.html
- Clemco Industries Spray Wand – Dust control equipment for concrete joints. https://www.clemcoindustries.com/
- Clinic Locator App - Finds nearest approved medical clinics. https://www.zocdoc.com/
- ComplianceWise - Safety self-inspection management software. https://www.compliancewise.com/
- ConstructSecure - Web-based platform for managing and improving safety. https://www.constructsecure.com/
- D.E.F.E.N.D. Module - Emergency response training framework. https://www.ready.gov/training
- DISC Behavior Assessment Tool - Personality assessment tool for management. https://www.discprofile.com/
- EarthCam - Video equipment for jobsite security and monitoring safety practices. https://www.earthcam.net/
- eCompliance - Program for auditing and communicating safety reports. https://www.ecompliance.com/
- Enablon - Global online reporting system for safety events and incidents. https://www.enablon.com/
- Giken Silent Pile Driving Machine – Noise-reducing construction equipment. https://www.giken.com/
- GoPro Cameras – Used for inspection and safety monitoring. https://www.gopro.com/
- Guardian Fall Protection Products – Safety solutions for working at heights. https://www.guardianfall.com/

- Halo Light Hard Hats – Enhanced visibility safety helmets.
  https://www.ilumagear.com/
- Hazard Scout - Cloud-based safety management system.
  https://www.hazardscout.com/
- HCSS Construction Software - Tool for tracking safety data and documentation.
  https://www.hcss.com/
- https://www.safetycatalog.com/
- iAuditor - Auditing tool for job site safety inspections.
  https://safetyculture.com/iauditor/
- IndustrySafe - OSHA recordkeeping and safety observation software.
  https://www.industrysafe.com/
- iScout - Platform for logging safety observations and follow-ups.
  https://www.iscout.com/
- ISNetworld - Contractor safety data management system.
  https://www.isnetworld.com
- iSQFT Pre-Qualification Software - General contractor pre-qualification software.
  https://www.isqft.com/start/general-contractor/
- Kask Safety Helmets – Advanced head protection gear.
  https://www.kask.com/
- Knaack DataVaults - Used for project documentation and safety coordination.
  https://www.knaack.com/products/datavault
- Matterport – 360-degree project documentation software.
  https://www.matterport.com/
- Matterport - Software for 3D jobsite walkthroughs.
  https://www.matterport.com/
- Muster App - Smart device app for emergency contact notifications.
  https://www.musterapp.io/
- My Time Station – Site access control badging system.
  https://www.mytimestation.com/
- Navigate360 (SAFEPLAN) - Enhanced near miss tracking system.
  https://www.navigate360.com/
- News App - Access to crisis management plans on mobile devices.
  https://www.appygeek.com/
- NexTraq - Vehicle telematics system for coaching driver performance.
  https://www.nextraq.com/
- PICS - Safety management system for contractor evaluations.
  https://www.picsauditing.com/
- Predictive Solutions SafetyNet - Used for logging safety observations and follow-ups.
  https://www.predictivesolutions.com/
- Procore Observation Tool - For hazard documentation and tracking resolutions.
  https://www.procore.com/
- PureGPS – Vehicle and equipment tracking system.
  https://www.puregps.com/
- RFID Badging System - Identification and tracking system
  http://www.fcbackground-llc.com/
- RTW Modified Duty Program - Cross-training for restricted duty productivity.
  https://www.osha.gov/return-to-work
- SAFEPLAN - Mobile app for tracking near misses and safety analytics.
  https://www.safeplanapp.com/
- Safesite Inc. App - Technology for safety visit documentation and trend analysis.
  https://www.safesitehq.com/
- SafetyFirst Orientation Badge - Safety orientation and certification program
  https://www.texoassociation.org/
- SafetyStratus - Safety observation documentation software.
  https://www.safetystratus.com/

- Samba Safety - Service for tracking motor vehicle records.
  https://www.sambasafety.com/
- SawStop Table Saws – Safety saws that stop upon skin contact.
  https://www.sawstop.com/
- SDS App - Guides to chemical exposure responses.
  https://www.msdsonline.com/
- SharePoint Website - Centralized access to company policies and safety materials.
  https://www.microsoft.com/en-us/microsoft-365/sharepoint/collaboration
- Slack - Messaging platform used for project safety communications.
  https://slack.com/
- SmartDrive – Video-based driver safety program.
  https://www.smartdrive.net/
- Smartsheet - Collaborative log for incident reporting.
  https://www.smartsheet.com/
- Smith System - Defensive driving training program.
  https://www.smith-system.com/
- Sologic RCA Software - For conducting root cause analyses.
  https://www.sologic.com/
- Trimble Technologies – Spatial data solutions for construction sites.
  https://www.trimble.com/
- Viewpoint - Construction management software with safety tracking features.
  https://www.viewpoint.com/
- Workplace Aware - Software for hazard identification and communication.
  https://www.workplaceaware.com/
- Zonar Vehicle Tracking System – Fleet management and safety tracking.
  https://www.zonarsystems.com/

HIGHLIGHTS OF THE GRAND CHAMPION'S CSEA APPLICATION

SENIOR MANAGEMENT OWNERSHIP AND PARTICIPATION

Senior management drives safety in Hensel Phelps through our Executive Safety Culture Charrettes. Every project is required to hold charrettes with Trade Partner Executives and Hensel Phelps executives at project milestones where all stakeholders are brought into share what is working well and identify opportunities for improvement. A site walk which includes foreman is conducted and action items identified.

RISK IDENTIFICATION AND ANALYSIS

Risks are identified for craft professionals using our comprehensive planning approach. Every task is required to have an Activity Hazard Analysis prior to work beginning. Risks are evaluated at controls are developed and then communicated to the craft performing the operation. In addition, a Safety Task Assignment is conducted daily and prior to each task to ensure hazards are identified and controlled. Finally, we use a systematic tool called the Energy Wheel to help craft identify potential high energy hazards during the Safety Task Assignment. This tool walks them through hazards such as work at heights, working around pressure, or motion and ensures hazards are identified and controlled.

TASK DESIGN - ENGINEERING CONTROLS AND DESIGN FOR SAFETY

Safety Readiness Reviews are conducted for each project in coordination with the Regional Director of Safety and Health. These reviews are centered around making sure the project has a good plan in place to identify and control unusual hazards. In addition, opportunities to design safety into the project are considered such as raising parapet height.

SAFE WORK METHODS (PLANNING AND VALIDATION)

Work is planned using our 6-Step Process. We require that every definable feature of work uses this plan and start the process during buy-out to ensure safety is incorporated into the scope of work. Once the operation is bought out, planning begins to ensure an adequate plan is developed. The plan is communicated to all stakeholders and then follow up inspections occur to verify the controls and plan are in place. If needed, the plan is updated and recommunicated to all personnel.

WORKER ENGAGEMENT, INVOLVEMENT, AND PARTICIPATION

Our Craft Awareness, Recognition, and Engagement in Safety (CARES) is a program where Hensel Phelps and Trade Partner craft professionals participate in the project's safety program. Each trade is required to nominate at least one person to CARES and the team meets weekly to discuss concerns on the site and share issues with management. CARES is designed to ensure that craft feel they have a voice and can bring concerns to management.

SAFETY TRAINING AND VALIDATION OF TRAINING

All Hensel Phelps personnel have a position specific learning plan that is reviewed annually. This includes the site-specific safety orientation that is required on each project prior to starting work. Once someone is hired, additional training is provided based on position. Examples include fall protection, confined space, behavior-based safety (SAFE), excavation, etc. During annual performance evaluations, each person's training performance is evaluated to ensure they have attended required training.

SUBCONTRACTOR MANAGEMENT

Each Trade Partner is evaluated prior to starting work based on incident rates, OSHA citation history, fatalities, and injury trends. We also review past performance of each Trade Partner and designated foreman's previous performance on our project. Prior to any foreman starting work on one of our project's the Project Superintendent performs a Foreman Indoctrination with them to discuss expectations and responsibilities on the project and ensure expectations are understood.

EMERGENCY RESPONSE AND CRISIS MANAGEMENT

We have a comprehensive emergency response and crisis management plan. Each project is required to have a site-specific plan where key individuals are identified and trained in their role. Potential company representatives go through a full day training on crisis communications.

SAFETY CULTURE AND RECOGNITION

Our safety culture is driven by the top of our organization through the board of directors. Expectations are communicated through them during monthly leadership meetings. Each board member conducts safety specific job walks in their region or business unit. Each project's safety performance is measured twice per year through an external auditor using 20 leading indicators to ensure they are meeting minimum expectations. Each of these assessments is scored and the project can earn bonus points for effectively managing risk, implementing best practices or innovation. At the end of each assessment, the project is scored and the report sent to our President, CEO, and regional leadership. Based on the results, the CEO responds to the project teams to recognize them for their performance or hold them accountable. Individuals are recognized and rewarded in their safety performance a variety of ways: projects utilize project specific incentives where people are given CARES Coins for bringing up hazards or reporting near misses. They can use these coins

to purchase items. We publicly recognize our craft in our company newsletter in the Craft Corner section. Additionally, our formal recognition program provides additional monetary monthly incentives for active participation in our safety program.

INNOVATION

Hensel Phelps has a team dedicated to evaluating and implementing new technologies called Diverge. Some recent safety innovations we have implemented include:

- SmartTag It - a pre-task plan system that uses artificial intelligence to evaluate and track PTP's and provide insight to our leadership.
- Site Vision is a platform that uses project as-builts and augmented reality to visualize underground utilities live in the field.

Hensel Phelps has also developed a pre-incident indicator tool that utilizes artificial intelligence to predict where conditions are right to have an accident. We partnered with an organization to analyses our data and found that we are able to accurately predict when an accident can occur and provide actionable alerts to project leadership to course correct.

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

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The Associated General Contractors of America, the voice of the construction industry, is an organization of qualified construction contractors and industry related companies dedicated to skill, integrity and responsibility. Operating in partnership with its nationwide network of Chapters, the Association provides a full range of services satisfying the needs and concerns of its members, thereby improving the quality of construction and protecting the public interest.

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The production and technical content of this Best Practice summary was made possible by hard and diligent work from the following people:
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