



2020 Construction Conference
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Four Angles on Limiting Risk on Construction Projects

I. Limiting Injuries on the Construction Site

Project Management

Safety on the construction site must be paramount, in words and in practice, from the top down, and from the bottom up. Employers should install a safety culture that gives their employees, the boots on the ground, the power to change the industry. At Suffolk, our safety culture has three pillars: (1) safety management systems (2) visible thought leadership and (3) personal empowerment. At the heart of it all is the understanding that every single person on the jobsite wants to return home at the end of the day the exact way s/he stepped foot on the jobsite that morning. The best way to accomplish this is by implementing stringent procedures complemented by emerging technologies with proven value.

Procedures

Project teams are bombarded every minute of every day with emails, phone calls, requests, emergencies, and unforeseen circumstances. Procedures can be viewed one of two ways. A construction manager could put them in place because it is what everyone else does and they look good on paper but then, in practice, treat them as an administrative burden. Or the construction manager could educate their employees and hold them accountable, such that these procedures become second nature and treated as tools of efficiency.

With respect to safety, these procedures should include site-specific safety manuals, construction management plans, orientation, on-site safety meetings, and pre-task planning and job hazard analyses. Not only do these procedures prevent injuries and save lives, proper documentation can bolster a defense in a bodily injury lawsuit.

What about after an incident occurs? It should be investigated – not only for the sake of documentation, but more importantly for lessons learned. Every near miss or bodily injury incident should be reported to the project team. The project team should take the lessons learned, hold a job-wide safety stand down or trade-specific meeting, and educate others on what went wrong. Additionally, the project team should report all incidents into regional safety managers, risk management, and claims. Not only will those teams be able to pick up on trends

within the company, but they can also collect the data organization-wide. At monthly meetings between the project team and the risk management team, new incidents, trends at the project, regional and national level, and best practices can be reviewed and discussed.

All of that said, these traditional methods for injury prevention and documentation can be time-consuming and imperfect. New technologies are emerging to help prevent injuries on our jobsites.

Use of Technology

Although behind many other industries, the construction industry is finding ways to leverage artificial intelligence (AI) and predictive analytics. For example, in 2017, Suffolk designed and implemented a proprietary observation-based app system called RiskX to allow workers to manually photograph and document positive and negative safety observations on project sites. Those observations were, in turn, aggregated nationwide. This data helped reduce the recordable incident rate by 28% and lost time incident rate by 35%. Suffolk then partnered with Smartvid.io, which integrates with Procore. Smartvid.io (A.K.A. “Vinnie”), using safety monitoring output, observation data, and incident data, can produce risk scores and predictions for specific projects. Additionally, Vinnie can analyze project videos and photos, flag high-risk activity or environments, and produce a risk score for the project. For now, however, the technology does not identify risks in real time and push alerts to safety managers on site.

Another emerging trend in the construction industry is the use of wearables. A current end-to-end wearable system may provide site access control, worker and equipment location based on floor and zone, dangerous activity notifications, fall detection, a push-button emergency alert, and evacuation alarms. In current events, wearable technology can be adapted to sound an alarm when two workers come within 6 feet of each other.

One major limitation on wearables is that they require the acceptance of every single trade partner and employee on site. The location tracking, even if it is limited to floor and zone, especially raises red flags for employers and the unions. Further, they generally do not prevent incidents. Using digital spatial mapping technologies (laser scanning, photogrammetry), one major insurance carrier piloted a technology that was intended to alert workers of hazards around them, whether it be an open hole, or an energized electric panel. However, the as-built world of a construction site changes too frequently, and the pilot failed.

Advances in short-range digital mapping, photogrammetry, and spatial mapping technologies like SLAM LIDAR, Matterport, and FARO Laser Scanning offer potential for implementing efficient digitalization of changing work environments.

These technologies, while useful and promising, can be expensive. Construction managers live on narrow margins. Developers often do not see the value, especially where their insurances are not on the risk. The real answer to rolling out these technologies industry-wide may lie with a partnership between the construction manager and its carrier. The data that the industry can provide to carriers is invaluable. And the funding, whether it be through R&D, premium reductions, or pilot programs, benefits the construction manager.

II. Project Management Strategies for Limiting Construction Defect Claims

Documentation During the Construction

Any documentation is better than no documentation, and if “a picture is worth a thousand words,” then digital documentation (traditional or otherwise) is even better. While the use of photography in construction documentation is ubiquitous, context is often lacking. 3D Spatial documentation can facilitate efficient RFI resolution on traditional and Design-Build projects. Specifically, integrating high density 3D spatial documentation with accuracies within 1 mm for use on custom manufactured building components (architectural cladding, glass inlays, high-tolerance machinery) can expedite the construction process yielding cost savings. The same is true for renovation/rehabilitation projects where more liberal spatial mapping tolerances of 1 cm or greater can yield cost savings for the entire design cycle.

Furthermore, advancements in utilizing point-cloud data (produced by Faro Laser scanning and/or Matterport 3D capture) can integrate with on-site Building Information Models (BIM) Clash Detection software to ensure structural building components will not impede subsequent mechanical/electrical component installations (saving redesign and/or reconstruction costs).

The natural bi-product of robust digital documentation (traditional photography or spatial mapping) affords a significant step forward toward achieving contract compliance for providing accurate construction scheduling and As-Built Documentation. Forethought into how this compliance is achieved can yield a synergy between the construction documentation task and the final as-built documentation task, reducing the aggregate cost of both tasks.

Use of Technology

Any and most every type of data is helpful in not only preventing workplace injury, but also when performing workplace safety evaluations after an injury event occurs. Multi-employer workplace safety liability cases often require knowing the “who, what, when, where, and why” certain individuals were subjected to certain construction conditions. Wearables may provide data on the individual’s location and intricacies of their physical presence, but again, context may be lacking. Photography and/or spatial mapping of existing conditions at certain points of time can provide the critical context and timeline of an individual within the specific environment. Accordingly, photogrammetry can be combined with spatial mapping (even subsequent to an event) to extract out the necessary information to perform a forensic evaluation of a workplace injury.

When looking for the value of documentation technologies for the purpose of Construction/Design Defect and Delay evaluations (during the construction process, or post-completed operations), the value of contemporaneous documentation is significant. Destructive testing is expensive and provides ample room for conflicting opinions by experts relating occurrence rate, causation, apportionment of liability, statistical extrapolation, and appropriate means and methods for repair. This chasm of disagreement can be bridged with data and documentation during the construction process yielding higher confidence outcomes and providing for robust risk management, risk mitigation, and risk transfer opportunities. Fixed and time-lapse cameras, 360 Degree photospheres and video (instantaneous with

video/cameras), short-range spatial mapping (30 seconds per setup with Matterport cameras), long range, high accuracy laser scanning (6 minutes per setup with Faro machines), and upcoming portable/mobile SLAM LIDAR (instantaneous) technologies provide a myriad of documentation possibilities across a strata of cost profiles. It will be incumbent on the construction industry to find the value of these digital documentation tools across all portions of the design/construction/risk-management/insurance silos to yield a net savings.

Virtual Reality (VR) and Augmented Reality (AR) is starting to play a role in the design/construction management process but is still limited by hardware capabilities, software interfaces, and the safe deployment of VR and AR operatives into an active construction site. As noted above, the “virtualization”, or “digitization” of the construction site within a 24 hour time period through the use of spatial mapping technologies may be the key to unlocking the potential of VR/AR by “bringing the field into the office”, rather than vice-versa.

III. Claim Handling Perspective on Limiting Risk During and Post-Construction

Contracts with solid risk transfer language is the very best way to limit your exposure from injury or property issues at a project. Having photographs of your work along with clear specs, drawings and change orders are the next best way to limit exposure. If it’s not in writing, it didn’t happen! Investigating and defending a construction injury or a construction defect claim without this information is very difficult. If your insured does not have the above, Pictometry and google earth can sometimes have useful photographs. Of course, construction contracts can usually be obtained from the general contractor or your subcontractor. Project drawings can sometimes be located at the permit department. In general, there are other ways to obtain the information, but most likely it is not complete and takes time and money to track down. So the take away is: document, document, document and keep those documents!

From an insurers’ perspective, know what your insured does, not just generally, but specifically. Know what kind of work they subcontract out to others and make sure those subcontracts have proper risk transfer language and make sure that potential insureds have a program for verifying insurance coverage and Additional Insured status. Having underwriting confer with claims before writing coverage for a potential insured can be helpful in identifying unsuitable risk. If the customer is large, it may be beneficial to have a team consisting of claims, underwriting and legal attend a meeting with the potential insured to completely assess the potential risks before writing the coverage. It is always a good idea for an insurer writing manuscript endorsements to have a team including claims, to review new endorsements to fully understand the potential unintended coverage.

Lastly, most state have a statute which provides contractors with an opportunity to inspect and cure construction defect issues. When considering the cost of litigation, this is the carrier’s and insured’s best opportunity for reducing or eliminating expense. Take advantage of this opportunity whenever possible. What you learn during this process may save a lot of defense dollars. Also consider taking a “hands off” approach to defense (with your insured’s consent, of course). In large project litigation that has many defendants and your insured had a small scope which may or may not have been implicated, file a responsive pleading and just sit back. There will most likely be several mediations which present an opportunity to resolve the case for a nominal contribution and you will not have spent a lot of defense dollars to get there.

