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Managing Construction Risk Through Preoperational Planning

By Peter G. Furst, Architect, MBA, CSP, ARM, REA, CSI

Has anyone in your organization really stopped to analyze why your projects are experiencing disruptions, accidents and losses? Why workers are getting hurt in spite of safety standards, programs, policies, procedures, training and possibly everyone's best efforts? What can be done to reduce losses, control the cost of risk and optimize the bottom line?

In construction, safety is typically treated as a discrete and separate function within the contractor's organization. Much of what we do in safety revolves around incidents, accidents and losses. We use programs and other strategies to help us control their adverse effects. We train our workers in accordance with safety standards. We measure our success in reduced incidents and by comparing our loss data to national statistics. Our accidents and losses impact our cost of risk and ultimately our very competitiveness in a highly competitive industry. This also may well diminish our ability to market construction services and/or secure work. Accidents usually do not happen due to fate or intent on the worker's part. They happen because of ineffective processes, inadequate procedures, poor planning or lack of foresight. Therefore, we must get away from the predominantly worker-focused interventions common in the industry and look into areas over which the worker has little or no control but are the underlying contributing causes of incidents and losses.

The industry's focus on the worker for resolution of its safety concerns is driven by historic precedent and the enactment of government safety standards. In the 1920s, Heinrich conducted a study of many accidents and determined that 88% of the causes of those accidents resulted from "unsafe acts" by the workers. This was followed by many other studies where an even greater percentage was attributed to the worker. I recently heard a speaker at one of the national safety conferences state that virtually 100% of the cause of accidents was the unsafe acts of workers. The underlying assumption of these statements is that the worker has control over his/her actions and therefore can stop taking risks that may lead to an injury. But what this assumption ignores is that the worker has very little power over operations, compared to management.

So it becomes clear that management not only controls just about every planned activity on a construction site but also has quite a bit of control over the worker. Management hires the worker, assigns the tasks and oversees his/her actions. The supervisor can assess the

workers' knowledge, capabilities, actions, motivation and other abilities to perform the assigned tasks. This same foreman can determine if this is acceptable or not and what should be done to eliminate any deficiencies. The foreman can also change the worker's assignment, coach, provide additional training and greater oversight or decide to remove the worker from the site. By this example, management can exercise control over the worker's actions as well. Therefore, the solution to the incident/accident/loss problem resides elsewhere in the operation.

One rather straightforward approach to making a significant inroad into addressing the incident/accident/loss picture is to look at a process that the contractor already has in place, is easy to modify and is highly effective in addressing this critical need.

Preoperational Planning

Planning is an integral part of contracting and the construction process. Virtually every aspect of contracting involves some form of planning. Successful contractors are generally effective planners. It is through planning that the appropriate materials are secured, delivered and installed. It is through the planning process that all trades work harmoniously on the site. Without effective planning, all the diverse elements, aspects and functions of construction would not come together to result in the final finished product—the building.

- Preoperational planning is the review of planned operations, before and during the construction process to identify and eliminate potential sources of loss.
- Preplanning's goal to reduce hazards, which will minimize disruption, increase efficiency and lower costs.

So if incidents on the construction site cause disruptions and losses, then it begs the question, can we apply the fundamentals of planning to safety and therefore minimize these undesirable outcomes? The answer is "yes," so let's look at the planning process and see how we may effectively integrate safety management into the contractor's operational planning.

Why Preplan?

- A Construction Industry Institute (CII) research study conducted in the 1980s identified the single most effective tool contractors have to prevent accidents on their worksites as preproject/pretask planning. A follow-up study in the 1990s confirmed this same conclusion.
- Construction jobs are dynamic and ever-changing. Planning is a necessary management tool with which to marshal, manage and control the resources, which are workers, material and equipment.
- Safety is a managed process, just like any other in the construction business. One would not dream of running the job without a plan, and safety management should be treated in the same manner.
- Preplanning is proactive. You manage people, resources, events and accident-causing situations based on a plan. By being proactive, you try to anticipate problems (loss sources) and plan to minimize their impact or all together eliminate them.

Preoperational Safety Planning Process

- The goal of preplanning is to reduce risks, which will minimize disruption, increase efficiency and lower costs.
- Preoperational safety planning is the integration of safety into the construction operational plans and procedures.
- Looks at potential risk in the operational plan, construction procedures or work processes and either eliminates them or provides for controls that will minimize their adverse effect.
- Anticipates exposures resulting from procedures and work methods.
- Reviews applicable safety program elements to ensure that operations are in compliance with the program's intent as well as to see if the program addresses them.
- Preplanning looks at the when, how, who, where and what of the preplanning process.

When to Preplan

The preoperational safety planning process can be performed at four distinct times in the life of a project. These are before the bid or the preconstruction effort, before any work is started in the field, at the beginning of each major phase of construction and before each individual task. The greatest value of this effort comes about if it is conducted at the earliest possible time in the life of a project.

At Bid Stage: This is the most effective time to address safety issues because they can be identified, eliminated and/or budgeted for. One may even decide not to bid on a project, thereby avoiding taking on unacceptable risks.

At Job Mobilization: This is where risks can be addressed, as they may apply to the whole project. This is the time to address the interfaces of the various subcontractors' operations. This is also the time and place to get the most "bang for your safety buck."

At Preoperations Stage/By Job Phase: This phase allows you to fine-tune your previous plan. By this time, you may be able to address more issues in greater detail.

Special Operations/Tasks: You may have unique situations that require special attention, such as helicopter lifts, etc. These must be addressed in great detail, and contingency plans must be drawn up to address the potential exposures.

The preoperational safety planning process is accomplished at three levels: globally for the complete project, specific operations with high risk and exposure potential and for each individual task. It is most beneficial to look at the whole project, as that is the time for arriving at the most effective and all-encompassing solutions.

Who Should be Involved in Preplanning?

Those involved in the different construction disciplines—estimating, planning, purchasing, cost control and field operations—must be involved in this process at certain given times.

Estimator: This is the person in your company who first sees the job. S/he must evaluate the job risks and budget for them.

Safety Director/Safety Coordinator: This person should be consulted at the bid stage to help evaluate risks that the estimator has not identified. Safety also provides input as to how to most effectively and cost-efficiently provide the necessary controls. The safety director brings to the table familiarity with the safety standards and other local regulations.

Project Manager/Job Superintendent: Provides scheduling, site layout input and may select equipment. They may also help select subcontractors. These inputs are under the purview of the contractor and should be evaluated for any unique risks that they may bring to operations in the field.

Other Management: The owner may impose special requirements on the project. Your company may have rules that are not common to the industry, and your organizational structure may have special requirements that should be reviewed and addressed at this time.

Insurance Carrier/Broker Loss Prevention Representative: This is a resource available to contractors in the preplan of their operations. The broker/carrier may have a great deal of in-house information and expertise from which the contractor can draw. The contractor should assess the capabilities of its broker or carrier in providing assistance in this area.

How to Preplan

Fact Finding: The sources to get information are from the project plans and specifications, the contract and the owner's requirements. Another source is the "means and methods" the company or the subcontractors are planning to use as well as the operational, logistic and tactical plans. Other areas to consider are the site and its adjacencies, including local ordinances, traffic patterns, public usage and other neighborhood realities.

Analysis and Evaluation: Things that must be evaluated and analyzed are the potential for worker injuries, both the contractor's and the subcontractor's. Other things that must be addressed are potential harm to the public as well as damage to property both in and around the jobsite.

The Preplan Meeting: The key to an effective and efficient meeting is preparation. Everyone must do their homework before attending the meeting. At the meeting's conclusion, there must be agreement as to what the risks are and what controls will be implemented. The result of this meeting will be an action plan for the control of risks, hazards and exposures.

Follow-Through: For any plan to work, there must be follow-through. Inspections must be conducted to ensure that controls are in place and that they are sufficient to address existing conditions. If there are changes, then modifications are made to meet the changing conditions.

What Do You Preplan For?

You plan for everything that has risks that are not acceptable to the organization. Through the planning process, you identify these risks then eliminate them or try to reduce their adverse effect to the lowest possible level.

To best address this issue, a general checklist should be created to assist participants in addressing all possible areas involving risk.

Continuous Improvement

The preplanning process, if properly done, is a “continuous improvement process.” It starts with the identification of areas of risk through data collection. The risks are then analyzed. Solutions are found that will address the risks. The solutions are then evaluated for effectiveness and if they meet project needs. The “best” solution is selected and then implemented. Audits are conducted to ensure that the implemented solution is effective and working. If it is, then the process is taken to the next risk element, and if not, then it is reevaluated and the process starts all over again.

Summary

Preplanning is the review of planned operations before and during construction to identify and eliminate potential loss sources.

The goal of preplanning is to reduce hazards, which will minimize disruption, increase efficiency and lower costs.

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He has over 20 years of construction experience with a multinational general contractor serving as estimator, superintendent and project manager on many projects varying in size up to \$500 million, involving hundreds of craftsmen and subcontractors. He has also worked as an architect and has over ten years of design experience with various architecture firms.

Furst holds a master degree in business administration with emphasis in management and bachelor of architecture and bachelor of science degrees in construction. He has taught business and management as well as construction management and safety courses for over 25 years at UCLA, USC, many state universities and at UC-Berkeley since 1996. In 2005, he was elected an Honored Instructor at UC Berkeley.