



NAC Executive Insights

Safety Culture Series

Construction Site Safety Staffing Process

Key Points

- All injuries are preventable.
- Safety staff's role is to meet the line managers' and workers' needs in discharging their safety accountabilities.
- To operate injury free, **every** project team member needs safety support.
- Special hazards require special/specialist attention.
- Collaborative relationships greatly increase staff effectiveness and efficiency.

Introduction

This Executive Insight describes an experience-based process to establish an effective safety competency as part of the construction site organization. It is predicated on three understandings:

1. All injuries are preventable.
2. The line organization must be fully accountable for safety performance.
3. The safety staff's role is to support the line organization in discharging their safety accountabilities.

An assumption is the project will involve multiple business entities, each having reputational and/or financial risks.

Understanding Needs

Injuries and safety incidents negatively impact all aspects of a project. Ask anyone who has had an injury or safety incident on one of their projects. Injuries and safety incidents negatively impact all stakeholders and aspects of a project and significantly increase the potential for project quality, cost, and schedule issues. A partial list of negative impacts to stakeholders that occur as a result of injuries and safety incidents is shown in Figure 1. No stakeholder is immune to the negative impacts of an injury.

Supporting project leadership to deliver their safety accountabilities **requires** an optimum capability, capacity, and a collaborative project culture. Establishing both capability/capacity and culture requires an early sense of the probable safety and leadership culture and project risks.



Figure 1. Partial list of negative impacts to stakeholders as a result of injury or safety incident

Meeting Needs

Work on this process should start as early as practical, at the business planning or early facilities planning stage is optimum. Getting an understanding of the project size, scope, and schedule, unique workplace and/or process hazards, and the primary entities' safety cultures is the place to start. Website and/or regulatory data reviews on all directly involved organizations can help provide insights to guide sizing level decisions. Leadership interviews/surveys can be most helpful in fully assessing the cultures. In the author's experience, however, the most safety-effective way to ensure the needed data are available, before needed, is to have the person assigned to "set it up right" fully integrated into the core project team and its communications flows. Reporting levels can vary, but they must have openly sanctioned access to top leadership.

Every project team member **needs** safety support. It can be direct or indirect, but it **needs** to be thoughtfully present and readily accessible. Contractor and owner leadership, management, supervision, and the crafts all **need** the right level of support. Any portion of the project organization making day-to-day work decisions **needs** some level of direct support.

No algorithm exists that will allow one to calculate the safety staff size to provide the mix and level of support to deliver zero injuries and incidents. Some experience-based rules of thumb, however, can help guide determining safety staffing throughout the project life cycle. These include:

Rule 1: Safety staff size/composition must remain aligned with project specifics and stages plus the existing safety culture(s). Understanding these, while considering all involved entities, is the critical part of determining the capability/capacity needed. When considering stages, some key periods to carefully assess include site opening, going vertical, commissioning/startup, craft mix changes, and high-risk events.

As noted above, having the person assigned to “set it up right” fully integrated into the core project team and its communication flows early in the project cycle is the most effective way to guide staffing decisions. A must is to have someone on staff or directly accessible with experience-based knowledge of the specifically identifiable hazards associated with any aspect of the project.

Rule 2: Develop a summary perspective of the relative safety risks associated with the project. In the author’s experience, those areas frequently contributing to increased safety risk include size, complexity, schedule, location, safety competency, execution strategy, specific hazards, trust levels, prior safety performance, communications, and contractor safety. Viewed individually, they surface areas where additional safety effort will be needed. A specific project may have a different mix. The way to get the best list is to include the functional and business leads’ experiences when developing the summary.

Rule 3: Assess the risks’ potential impacts on project safety. Risk assessment processes are specific to the risk and usually require some project and/or local input. They provide key insights that enable a realistic assessment of staffing needs to complete the project with zero injuries. They can also point out areas where special experience and/or expertise is needed, such as process and contractor safety and handling of highly hazardous materials. Individuals with construction site experience are the best assessors. Selected assessment process examples are outlined below.

Rule 4: Blend the assessment summaries to form an overall perception. Viewed collectively, the summaries can provide a good sense of the probable risk environment. They can also be a nondimensional safety staffing factor to guide overall thinking. A safety staffing factor can best be expressed as “a functional relationship with core risk areas.” Those noted above from the author’s experience are incorporated into the relationship formula below. A specific project may have different ones, but the connections remain the same.

Staffing Factor = f (size + complexity + competence + schedule + location + strategy + hazards + trust + performance + communications + contractors)

Rule 5: Translate perception into direction. The perception derived from Rule 4 provides intuitive understanding and insight that enables an actionable sense of the overall risk environment and what is needed beyond the basic staffing resulting from following an earlier rule. If the sense of it leads to the conclusion that risks are high, a more conservative staff level should be considered. If the sense is lower, some staff economies might be considered.

Risk Assessment Examples

Schedule: Schedules are often considered a benign factor as they relate to safety, but a look at projects that have problems meeting authorization costs, schedules, and initial operability outcomes frequently reveals that the primary influence is aggressive schedules. Figure 2 is summary data from project performance and benchmark studies and they show that safety performance is negatively affected as well. If project schedule(s) are known to be aggressive, conservative staffing levels should be considered.

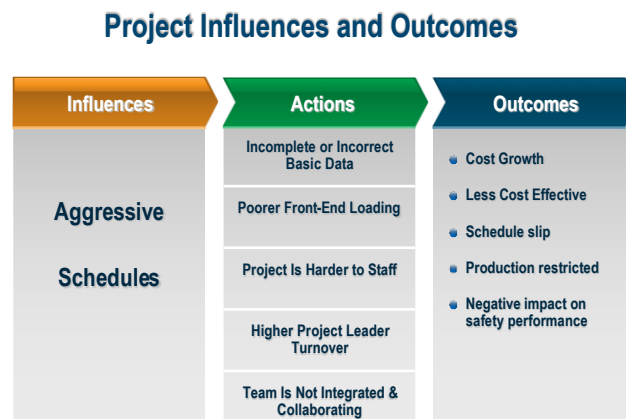


Figure 2. Summary data show safety performance is negatively affected

Trust level: Trust between and among all project members is important to productivity, but it is *critical* to safety (see Figure 3). Looking at the functional relationships in Figure 3, the expected state is best defined by assessing relationships through personal interactions, competency through past performance data, and risks based off the blended assessment perception. If trust is low, conservative staffing levels should be considered.

Many projects operate in a Compete (win/lose) or Compromise (lose/lose) mode, neither of which engender trust. As long as the opportunity exists to be a loser, issues that negatively impact projects and safety will occur. The most effective way to create and grow trust is to have ethical, collaborative (win/win) work processes and environments. Collaborative relationships reduce risks and promote increased trust between and among decision makers (owner and contractor/supplier) and surface misaligned intents.

Safety Performance / Trust Relationships

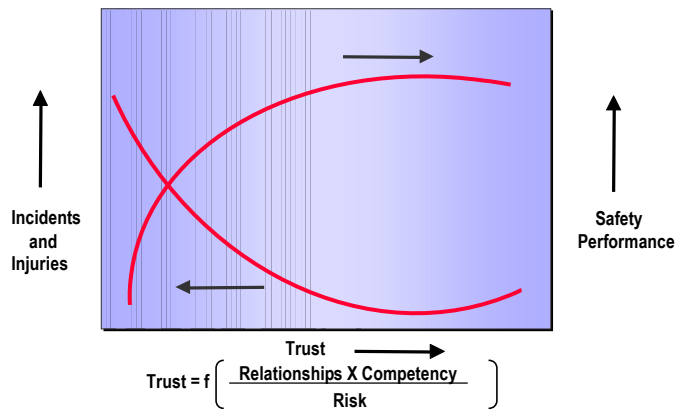


Figure 3. Trust is critical to safety

Contractor Safety: In general, those at the highest risk related to workplace hazards are the construction contractors' workforce. They also make up the largest percentage of the project team staff. They are also the ones with the highest potential to be involved in a safety incident. If a functioning contractor safety process that promotes/inspires collaboration (example: Figure 4) is not in place, allocate resources to develop and implement one. If one is in place, staff it to ensure the contract language is supportive and communicated to all project team members and that the better practices, listed below, are followed.

- Establish internal consensus/commitment on value for contractor safety.
- Provide visible, "felt leadership" to promote and sustain trust.
- Emphasize safety in contracts and project-wide communications.
- Ensure safety and skills training are routinely conducted and competencies verified.
- Hold regular leadership meetings.
- Develop and actively manage "Leading Metrics."

Contractor Safety Management Process



Figure 4

Conclusion

Construction site safety staffing is an inexact science. Experience-based approaches are available, however, that can provide an understanding of risk areas sufficient to enable sound, safety resource-focused decision making. Risk area assessments viewed individually can identify areas where safety effort will be needed. Viewed collectively, they can provide a good sense of the probable risk environment.

Based on experience, having the person assigned to “set it up right” fully integrated into the core project team and its communication flows is most critical to the overall safety effectiveness of the safety staff, regardless of size.

For Further Reading — Safety Culture Series (Executive Insights)

- [Introduction to the Safety Culture Series](#)
- [Safety Culture – Human Performance Principles](#)
- [Safety Culture – Worker Participation in the Safety Management System \(SMS\)](#)
- [Safety Culture – Demonstrating a Culture of Care and Support: The Leaders’ Role](#)
- [Safety Culture – Drug and Alcohol Testing](#)
- [Safety Culture – Incident/Accident/Near-Miss Reporting and Investigations](#)
- [Safety Culture – Safety Training](#)
- [Safety Culture – Safe Work Practices](#)
- [Safety Culture – Management Commitment: All Safety Incidents Are Preventable](#)
- [Safety Culture – Subcontractor Involvement in the Safety Culture](#)
- [Safety Culture – Recognition and Reward](#)
- [Safety Culture – Job Safety Analysis](#)
- [Safety Culture – Leadership Involvement in Office and Site Visits](#)
- [Safety Culture – Improving Construction Profitability](#)
- [Safety Culture – Developing and Using Effective Leading Indicators](#)

About the Author

Jim Porter was elected to the National Academy of Construction in 2003. His career spans more than 55 years, the first 42 being with the DuPont Company, where he retired in 2008 as chief engineer and vice president, engineering and operations. He is the founder and president of Sustainable Operations Solutions, LLC, which provides consulting services to help businesses make significant and sustainable improvements in safety, capital effectiveness, and operations productivity. He is a past chair of the Construction Industry Institute, serves on several boards, and is a past member of the Argonne National Laboratory Board of Governors.

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