



# Loss Control TIPS

## Technical Information Paper Series

*Innovative Safety and Health Solutions<sup>SM</sup>*

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## Owner's Responsibility To Construction

### Introduction

Safety on the construction project has always been a debatable subject. Most owners would probably leave it to the contractor. The reasoning behind this approach is an operational issue in which most owners do not feel comfortable becoming involved.

Such should not be the case. The owner should set the direction for the upcoming construction project. Past experience of highly successful construction projects has clearly demonstrated that early and active involvement of the owner has major impact on the safety and quality performance of all contractors on the job. When owners fail to provide direction, major problems can occur. OSHA's Process Safety Standard is a classic example of the government, in reaction to several high-profile incidents, forcing industrial construction project owners to take a more active role in construction safety.

Safety is too important to leave to the contractor. The owner should take an active part in providing the direction. The slight additional cost required at the beginning of the construction project to implement an effective safety program will provide a high rate of return at project completion.

### Safety in Construction

According to the Bureau of Labor Statistics, one in every six construction workers suffers an occupational injury or sickness, on the average, once a year. One in fourteen will have a lost time injury, and one in 3,300 will die as a result of work.

Some claim that the nature of construction work makes accidents inevitable; however, the facts do not support this statement. Some contractors know how to avoid accidents; their safety records prove it. They consistently perform well above the industry average. On the flip side, other contractors do little, or spend good money only on the *mechanics* of accident prevention, and the accidents continue. It is unfortunate that some contractors spend a lot of money on safety programs but so not see results. If a contractor thinks accidents cannot be avoided, and simply tells employees to be careful and take care of their own safety, everyone would know where this contractor stood.

It would be much easier to identify the contractor who has a real safety program that works. It is the contractor with the safety "front" but no substance who creates the cynical attitude towards safety in the construction industry.

Construction accidents tend to injure or kill one worker at a time. Typically, the local newspaper will carry an article on the loss, where the name of the construction company name will appear but is hidden



in the spread. More often, the project owner, especially if it is a well known company, will be the focus of attention, and will receive all the publicity, negative or otherwise. If the community is already sensitive to the project, the relations between the project and the community will deteriorate. This creates operational problems and community relations problem for many years. Projects have been shut down by the surrounding community or stalled in the legal system to the point that the project is no longer feasible.

## **Safety Regulation For Accident Prevention**

Rules and regulations are ineffective unless they are understood and enforced. Some of the best rules are simple and short. For example, the Golden Rule ("Do unto others as you would have them do unto you") is short and simple, but provides direction for millions.

OSHA's book on construction regulation contains about 600 pages, not counting other applicable regulations and standards. Because some people must be regulated and because the regulations require enforcement, some will conclude that safety regulations prevent accidents.

A major problem with regulation is that it can become too specific. Thus, what was intended to be a minimum requirement eventually becomes a maximum standard. All too often, contractors spend extensive amounts of time trying to interpret the standard and then trying to figure out a way of not having to comply to the standard. One can conclude that contractors don't care; however, the reverse is true. All too often, the contractor recognizes what must be done, but must cut corners because the bottom line cost is the single most important factor in selection of the contractor who will be awarded the job.

Enforcement is always the "stick" behind the "carrot" standard. OSHA has relatively few compliance officers, and other agencies are similarly limited in their ability to detect violations. Consequently, safety becomes a business risk, rather than an effective way to conduct business, or even an ethical business decision. Under this way of thinking, it becomes cheaper to risk an accident and the possibility of a fine than to comply with the regulation. Once safety becomes merely a business risk, laws and standards become mere suggestions to be followed, if the contractor chooses. Workers quickly sense whether supervisors expect them to take chances, and may even ignore the safety rules that were explained to them when they were hired. Generally, over-regulation leads to under-regulation and disregard of all the rules that an individual does not choose to follow.

It is extremely difficult to provide clear proof that excessive rules will actually decrease accidents, but excessive regulation does seem to lead to divided responsibility, and that weakens the supervisory process.

## **Safety and the Owner**

Safety on a construction project is too important to leave solely to the contractor. Safety issues on the construction site will ultimately cause major problems for the project owner. The owner must be involved in safety.

The classic example of owner involvement is most obvious in a major U.S. corporation. E.I. duPont has been a pioneer and leader in safety management since 1903. That company's construction division works with their contractors both in the United States and abroad. Projects may be as large as \$800 million and involve 19,000 workers. At a recent meeting of the American Society of Civil Engineers, duPont's Safety Manager outlined their safety program. He stressed their management's strong commitment to safety. He also summarized their policy that "Safety has to do with everything and everybody, all the time, and under every conceivable circumstance." Proof that their safety program works is clearly demonstrated by

the fact that from 1972 to 1980, their incident rate for lost work days was 30 to 40 times better than the construction industry average.

Three key issues affect the project owner from the construction process.

*Moral Obligation.* Owners have long recognized and honored the moral obligation to provide a safe work environment to minimize injuries. This obligation extends beyond the employee of the contractor and includes customers, visitors, and neighbors.

*Legal Obligation.* The owner is charged with the legal duty to use reasonable care to correct or warn against nonapparent site hazards which the construction contractor may face.

Owners can—and have—faced third party law suits brought by the contractor's employees for injuries caused by the owner's breach of duty, even if the independent contractor status of the construction contractor has been maintained. The owner's duty often extends to unsafe activities by contractors which create dangers for others on the site. Thus, the owner can be held liable for injuries to persons on the site caused by apparent unsafe practices of the construction contractor.

*Potential Savings.* The best approach to safety is operational control. Owners must recognize that the principles of operational control commonly applied to costs, schedules, quality, and productivity are equally applicable to safety and that, if used, will improve safety performance. By showing more concern for construction safety, owners can help reduce injuries and loss of life and the billions of dollars needlessly wasted by construction accidents.

Some owners feel that spending extra money produces little result. A common complaint is that "nothing ever happens," but this is exactly the results that the construction project is trying to achieve. The project goes smoothly, on time, on budget. No aggravating accidents to bog the project down.

Since safety is also an operational part of the project, it can be built on by the project management team. On a properly run project where safety is an integral part of the project, the construction workers start taking a special interest in the project. Pride in their work improves.

A recent construction project for an Ivy League university was plagued by a series of accidents. These incidents were not major, but they were time-consuming and costly, both in money and in decreased availability of workers. The general contractor instituted a safety drive to improve performance and image. A glass door bulletin board placed outside the contractor's field office contained, in addition to the required postings, a section called "The Rite Stuff". The project superintendent enjoyed photography as a hobby. He started carrying a small 35 mm camera with him on the daily survey of the project. When an employee was observed doing specific operations correctly (and *safely*), he took a picture and posted it on the board for one week, after which time it would be removed and given to the employee. It was amazing to see the amount of attention paid to the bulletin board by the workers. Rough and tough construction workers would walk by the board and sneak a peek to see if their picture was on the board. The project safety and performance record gradually improved. "The Rite Stuff" was a major part of the safety awareness on the job. As an added benefit, when worker pride increases, quality also increases. The university received more for their dollar than it would have if the project had continued as it had started.

## The Role of The Owner

The importance of the owner's role begins at the start of the project, as plans are formulated; this is when the owner has the most influence over the construction process. It is of critical importance for the owner to:

- Develop a process that provides structured methodology.
- Ensure that the process is comprehensive and consistent.

The construction process needs flexible performance built into the project. The construction program must be able to adapt to future changes. Construction is a dynamic industry. The construction process changes through the project. It is important for the owner to recognize that no two projects are exactly alike, and that there will be variations in the scope of the work and its dollar value. Often, the construction project must take a "greenfield" approach. It will require change, modifications and possibly rework to get all phases to mesh together.

The owner must take responsibility to establish the safety model for the project. This model should include the *Safety Philosophy* and *Safety Goals*.

A sound *Safety Philosophy* establishes a injury-free vision for the project. The owner should focus on what is desired from the construction project, not on how the contractor perceives his responsibilities. The owner must set the standard so that the project team sees safety as an imperative which cannot be sacrificed. It is important that all involved in the process understand that safety is not a separate issue; it cannot be handled in a vacuum or by components. It must be incorporated into the process and included in daily work habits. All accidents are a result of human error. Human error, intended or unintended, is deviation from an acceptable practice. It is a fact that accidents *can* be reduced by instituting appropriate controls.

*Safety Goals* are the guidelines that the owner provides to the construction management team as targets that must be attained. The owner must require these goals for the project:

- Zero fatalities
- Zero disabling injuries
- Zero lost work day injuries
- Zero fires and other property loss
- Zero environmental accidents
- One hundred percent fall protection on the job

An owner should reasonably expect attainment of these goals. They *should* be achievable, because it is simple fact that

- Workers don't want to be injured or killed
- Owners, contractors and unions don't want workers to be injured or killed
- The causes of 90% of all acute/traumatic injuries/fatalities are known

These facts support that the goals are achievable. A "zero" injury rate is the *only* acceptable and supportable goal. Any other established goal leaves the subtle message that accidents will occur and that injuries are acceptable.

## The Role of the Contractor

A contractor has two primary objectives:

- The contractor must complete, for the owner, a service that is satisfactory and on time.
- The contractor must make a profit.

Each of these factors is essential for the contractor to survive in a highly competitive industry. Failure to provide the service for the owner may involve bonding issues, financial loss, probable legal actions, and reputation, to mention a few. Failure to make a profit will certainly put the contractor out of business.

The prime (general) contractor transforms the plans and specifications prepared by the architect/engineer and owner into a physical structure. The prime contractor coordinates the work of the craftsmen subcontractors and material suppliers.

The prime contractor accepts the responsibility of completing the project for the agreed-upon terms. Normally, the prime contractor signs an agreement with the owner to provide labor, materials, equipment, and subcontracts required to complete the project in accordance with the plans and specifications, within a specified time period, and for an agreed-upon price.

The subcontractors also play an important role in the construction phase of the project. The prime contractor depends on the subcontractors to perform portions of the work at appropriate intervals in order to maintain the project schedule. The subcontractor signs an agreement with the general contractor to provide all labor, equipment, and materials necessary to perform a specific portion of a given project for a designated price. These are portions of the work the general contractor cannot or does not choose to perform with his own work force.

Another type of subcontractor is the material supplier. Both prime contractors and subcontractors deal with the various suppliers. The supplier carries the responsibility to furnish the materials and equipment to be incorporated into the project, usually for a predetermined price.

Each participant provides a vital service and plays a major role in the successful completion of the final product, the completed construction project.

## Accident Cost

The Stanford University Department of Civil Engineering has done extensive research and analysis of construction accident cost. Their study found that accidents cost the construction industry about 6.5% of the total dollars spent in construction. In 1993, the construction industry represented about \$400 billion of the Gross National Product in the United States. Assuming that 6.5% is a valid figure, therefore, construction accidents in the United States cost \$26 billion in 1993.

Considering that there are about 480,000 contractors doing business in the United States, each would realize \$54,160 in additional profits each year if accidents were eliminated from the construction industry.

Workers' compensation is probably the most easily recognized measure of the cost of accidents. In construction, premiums range from 5% to 50% of straight time payroll. Any contractor who pays the premiums recognizes that accidents cost big bucks.

Insurance companies are willing to give substantial discounts to contractors who have good safety records. Usually, the discount is more than enough to pay for a good safety program.

Increased workers' compensation insurance costs and medical payments to injured employees are paid by the contractor over an extended period of time. This becomes fixed cost but not the complete cost. Stanford University's study also demonstrated that total accident costs are 4 to 17 times the direct insured cost. Since this portion is uninsured, it also becomes fixed cost.

Contractors who allow accidents to increase costs put themselves at a competitive disadvantage. It is also a competitive disadvantage snowball. The contractor must bid more jobs to get the same amount of work. This increases the work load of the estimating department. Since they are strained, the margin for error increases. Costly mistakes are made. Jobs are lost because of error. Worse yet, jobs might be obtained because of error. If the error is great enough (i.e., underbid), the contractor will not make a profit. If the error is a gross underestimate, the contractor can lose money or go broke.

In the competitive arena for obtaining work, cost containment is a critical key to success for the contractor. Any factor that can affect fixed cost must be controlled. Many good contractors have failed because they did not recognize this, and considered accidents to be simply a cost of doing business.

Owners will also be impacted. The contractor who fails on the construction project will leave a portion of work unfinished. If the prime contractor fails, all direction and control of the project will be gone. Most contractors are very hesitant to pick up the pieces for a failed contractor, because so many unknowns exist. Some will, but at major price increases for the owner.

Safety plays a major part in the stability of a project. Failure to recognize this can be a costly lesson for the contractors and construction project owners.

## Selecting a Contractor

The success (or failure) of a construction project can depend on the selection of the best contractors who will perform the work. Many times, the best price is not the best deal. Contractors who lowball the price are usually looking for extras, or have not included critical services, or have made a serious error in the bid.

Three sources of information help owners evaluate probable safe performance of prospective contractors:

- Experience modification rates for workers' compensation insurance
- OSHA incident rates for recordable injuries and illnesses
- Contractor safety attitudes and practices

### Experience Modification Rates for Workers' Compensation Insurance

The insurance industry has developed experience rating systems as an equitable means of determining premiums for workers compensation insurance. These rating systems consider the average workers compensation losses for a given firm's type of work and amount of payroll and predict the dollar amount of expected losses to be paid by that employer over a designated pay period, usually three years. The rating is based on a comparison of firms doing similar work. The employer is rated against the average expected performance in each work classification. The accidents experienced by this employer for the rating period are then compared to the expected accidents; the result is the *experience rating*.

Workers' compensation insurance premiums are adjusted by this rate, which is called Experience Modification Rate (EMR). Lower rates (meaning that fewer or less severe accidents had occurred than were expected), result in lower insurance costs. A contractor's EMR is adjusted annually by using the rate for the first three of the last four years.

Three different types of experience rating are used in the United States and each is unique:

- Interstate modification rating (used in 40 states)
- Intrastate experience modification rating (used in California, Delaware, New Jersey and Pennsylvania)
- Monopolistic state fund (Nevada, North Dakota, Ohio, Washington, West Virginia, Wyoming)

Contractors' experience modification rates can range from 50% to 205%. This rating provides a good indicator of contractors with good accident experience and those with poor accident experience.

OSHA incident rates for recordable injuries and illnesses. The Occupational Safety and Health Act of 1970 requires employers to record only injuries that are work related. This information must be recorded on the occupational Injuries Annual Survey Form No. 200. This information must be retained on record by the contractor for five years.

The contractor's OSHA No. 200 record keeping form can be used to obtain information pertaining to the number of :

- Fatalities
- Injuries and illnesses involving lost work days
- Injuries and illnesses involving restricted work days.
- Days away from work
- Days of restricted work activity
- Injuries and illnesses without lost workdays.

A method of determine a contractor's safety performance with others is to determine the incident rate. A contractor, knowing the total number of employee hours (EH) worked throughout the year, can compute an incident rate using the following formula:

$$\frac{N \times 200,000}{EH}$$

Where:

N = Number of injuries

EH = Total employee hours worked during the calendar year.

200,000 = Base for 100 full time workers (40 hours/week x 50 weeks/year)

The Bureau of Labor Statistics compiles construction industry incident rate averages for 14 separate classifications of construction work and various employee size groupings (6). The incident rate calculated for a contractor can then be compared to other contractors with similar operations and of similar size.

### **Contractor Safety Attitudes and Practices**

The construction industry has been relatively slow to recognize that safety contributes significantly to profitability. Fortunately, the more proactive contractors have become more aware of this important

connection. It is management's responsibility to hold project managers accountable for accidents as well as for productivity, quality and schedules. Stanford University's research on the effects of top management on construction safety cites these factors in the effectiveness of a safety program:

1. The recipients of accident reports and frequency distribution of the reports (field management, vice president of construction, president of the firm).
2. The frequency of project safety inspections and the degree to which they include project supervisors and field superintendents.
3. The frequency of safety meetings for field supervisors.
4. The compilation method for accident records and their frequency of reporting. (Contractors who track their accidents by foreman and superintendents, rather than just company, have a more detailed accountability system).
5. The compilation method for accident costs and the frequency of reporting. (Greater accountability comes from detailed systems so foreman and superintendents are measured in terms of their accident cost on the job).

## Conclusions

The Business Round Table (a group of primary consumers of the construction industry), recognizing the impact of the construction industry on their costs, funded a study to find ways to improve the safety performance of construction. They concluded that construction job safety can be successfully influenced by owners. The degree to which owners should involve themselves in this process should be based on the costs, benefits, and risks involved. All owners have a legal and moral responsibility to use reasonable care to correct or warn contractors of any non-apparent hazards present on the site which could affect the safe performance of the construction and to use reasonable care to prevent contractors from injuring others on the site. Owners must make sure that contractors recognize their contractual responsibility to perform safely.

Beyond essentials such as these, the owner has considerable flexibility to adjust the degree of involvement and control to each situation. The incentives for increased involvement are lower costs, quality work, improved productivity, adherence to schedule, reduced risk of bad publicity, and minimal disruption of the owner's employees and facilities.

On the other hand, increased owner involvement, if not handled adroitly, can interfere with the contractor's productivity and may cause ill will between an owner and the contractor. Each situation should be considered separately by management, and a decision should be made regarding the appropriate degree of involvement. Obviously, owner involvement will be less for a totally new construction site than for a job close to the owner's operating facilities.

Once this decision is made, the success of the program will depend on good communications between owner and contractor. These communications should include the owner's safety expectations, understanding of the contractor's safety program, and effective dialogue at all levels throughout the life of a project.

Owners can be successful in their efforts to improve job safety on construction projects. Comments from contractors indicate positive support for such owner programs. Proper management by owners of this phase of their business can make a significant contribution to a reduction of injuries in construction and to a reduction of construction costs.

## Recommendations

Contractors have the primary responsibility for the execution of onsite safety, but owners should support the contractor in a role to improve construction safety.

Owners should:

1. Become familiar with the high cost of construction accident; this will reinforce their moral commitments to provide a safe work environment.
2. Be prepared to financially support contractors' efforts to ensure an effective safety program.
3. Realize that merely adopting a safety program will not yield the desired results without a serious and persistent management commitment.
4. Recognize that the principles of management control commonly applied to cost, schedule, quality, and productivity are equally applicable to safety, and that, when used, they will improve safety performance.
5. Make safety an important consideration in the selection of contractors for bidding on their construction projects, including evaluation of contractors' past safety performance, safety attitude, and present programs and practices.
6. Explain to the contractor prior to the bidding process what is expected regarding safety performance.
7. Evaluate, in the bid analysis, the ability of the contractor to achieve expected safety performance and from this, determine the degree of owner involvement required to meet safety objectives.
8. Become more directly involved in the safety activities of their construction projects and take proper measures to achieve better safety performance, such as:
  - Provide safety and health guidelines that the contractor must follow.
  - Require a formal site safety program.
  - Require the use of permit systems for potentially hazardous activities.
  - Require the contractor to designate the responsible supervisor to coordinate safety on the site.
  - Discuss safety at owner-contractor meetings.
  - Conduct safety audits during construction.
  - Require prompt reporting and full investigation of accidents.
9. Function with the contractor as a cohesive safety team during the planning and execution of a construction project.
10. Establish, with the contractor, lines of communication at all levels so that safe work practices are understood by both parties.

## References

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For more information, contact your local Hartford agent or your Hartford Loss Control Consultant. Visit The Hartford's Loss Control web site at <http://www.thehartford.com/corporate/losscontrol/>

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# Contractor Pre-Qualification and Qualification

The Business Round Table developed this form that can be included in a contractor's pre-qualification requirements. The contractor should complete the form and return it to the owner. The owner can then evaluate the contractor's past performance in safety as well as operational skills. Records of completed projects can be used as "previews of coming attractions." This form can be copied and used to select the best contractor for the job.

1. List your firm's Interstate Experience Modification Rate for the three most recent years.

YEAR			
Experience Modification Rate			

2. Enter information from your last year's OSHA No. 200 Log to supply the number of injuries and illnesses:

Number of lost workday cases	
Number of restricted workday cases	
Number of cases with medical attention only	
Number of fatalities	

3. Indicate number of employee hours worked last year (do not include any nonwork time, even if paid).

4. Indicate your type of work:

- Non-Residential Building
- Heavy (Non-Highway) Construction
- Plumbing, Heating and Air Conditioning
- Other \_\_\_\_\_

5. Are accident reports (OSHA 200) and report summaries sent to the Field Superintendent, the Vice President of Construction, and the President of the firm? If so, how often?

	No	Yes	Monthly	Quarterly	Annually
Field Superintendent					
Vice President of Construction					
President of Firm					



## Contractor Pre-Qualification and Qualification, continued

6. Do you hold site safety meetings for field supervisors?

If yes, How often?

- Weekly
- Bi-weekly
- Monthly
- Less often, as needed

7. Do you conduct project safety inspections?

If yes, who conducts these inspection? (name(s) and title(s))

How often are the inspections conducted?

8. How are accident records and accident summaries maintained? How often are they reported?

	No	Yes	Monthly	Annually
Accidents Totaled for the Entire Company				
Accidents Totaled by Project				
Subtotalled by Superintendent				
Subtotalled by Foreman				

9. How are the costs of individual accidents kept? How often are they reported?

	No	Yes	Monthly	Annually
Costs totaled for entire company				
Costs totaled by project				
Subtotalled by Superintendent				
Subtotalled by Foreman				

10. List key personnel planned for this project. List names, expected positions and safety performance on last three projects.

Name	Expected Positions	Previous Safety Performance

11. Do you have a written safety program?

## Contractor Pre-Qualification and Qualification, continued

12. Do you have an orientation program for new hires?

If yes, does it include instruction on the following?

	YES	NO
a. Head Protection		
b. Eye Protection		
c. Hearing Protection		
d. Respiratory Protection		
e. Safety Belts and Lifelines		
f. Scaffolding		
g. Perimeter Guarding		
h. Housekeeping		
i. Fire Protection		
j. First Aid Facilities		
k. Emergency Procedures		
l. Toxic Substances		
m. Trenching and Excavation		
n. Signs, Barricades, Flagging		
o. Electrical Safety		
p. Rigging and Crane Safety		

13. Do you have a program for newly hired or promoted foremen?

If yes, does it include instruction on the following?

	YES	NO
a. Safe Work Practices		
b. Safety Supervision		
c. Toolbox Meetings		
d. Emergency Procedures		
e. First Aid Procedures		
f. Accident Investigation		
g. Fire Protection and Prevention		
h. New Worker Orientation		

14. Do you hold craft "toolbox" safety meetings?

If yes, how often?

- Weekly
- Monthly
- Bi-Weekly
- Less often, as needed: \_\_\_\_\_