



# Loss Control TIPS

## Technical Information Paper Series

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

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## Managing School Construction Projects

Any construction project is a complex operation, requiring coordination of multiple people, tasks, and organizations. Construction or renovation of a school can be particularly challenging, both in terms of meeting the needs of the community and in minimizing disruptions, especially if construction is carried out while school is in session. Effective management of a school construction or renovation project must take into account adequate planning and communication; establishing a construction committee and appointing a construction manager; providing adequate insurance coverage; selecting the right architect and contractors; and ensuring effective safety and security for the duration of the project.

### **Early Planning Minimizes Risks**

Construction at schools, especially when the schools are occupied, requires careful planning and design. Time and attention spent up front on planning and coordinating the construction can minimize risks and can help the entire project proceed smoothly. It's essential to provide enough time and attention for planning and design, selecting the right architect and contractors, and coordinating all the tasks and people necessary for a project of this scale. Mistakes made in the planning and early stages will carry through the entire life of the project.

School administrators need to have a clear idea of what is ahead, in order to guide the school community through the disruptions that will occur during construction. Administrators should also talk with colleagues, architects, and planners in order to learn more about the construction process and about how to deal with any problems that may arise. Administrators' active involvement through the entire construction project will prevent many problems associated with the construction, and will help bring about a completed project that meets the needs of the school students, staff, and community.

The success of the project starts at inception with getting the right people for the job. Many people should be asked or encouraged to participate during the planning stage. For example, most schools have a highly skilled and competent maintenance staff. Their input can be valuable in the planning stage. Other school staff should participate in the planning, and their needs and suggestions should be considered. Each person has ideas to contribute; incorporating their suggestions early in the planning will ensure that the completed structure will meet the needs of the staff, students, and the community.

### **Establish a Construction Committee**

Establish a construction committee early in the construction design process, and keep it in place until the project has been completed. There is nothing worse than building a facility that does not meet the needs for which it was designed; unfortunately, this is a common occurrence in public education facilities. Appointing a construction committee, and ensuring its active involvement through the design and



construction process, is one way to avoid or guard against disappointment at turnover time. The committee should meet to share information on a regularly scheduled basis, starting at the beginning of the design phase and continuing until the project is delivered.

This committee, at a minimum, should consist of representatives from:

- the school administration
- the project architect
- the construction manager (see below)
- the local school board
- the government construction agency overseeing the project (if appropriate)

The committee should not be a quiet, behind the scenes group; on the contrary, one of its primary roles is to keep the entire school community informed about the progress of the project. Other roles include gathering ideas and suggestions in the design stage; reviewing architectural drawings; coordinating school functions with construction activities, and working with community services (such as fire and police departments) throughout the life of the project. (See Appendix A, *The School Construction Committee*.)

## **Be Sure That Insurance Coverage is Adequate**

Do not ignore insurance or simply assume that everyone has appropriate insurance and adequate coverage. Be sure that insurance limits for the project are adequate for the exposure presented by each participant, including the architect and all the contractors. Do not take this for granted. For example, the architect may hire the steel designer for structural design of the project. If the structural designer does not have adequate limits of coverage, and if a major structural collapse occurs, there may be insufficient coverage to cover the loss.

Be cautious of joint ventures. A joint venture is a legal operating entity and can be held liable for its actions. Each partner in the joint venture may be individually insured, but there may not be coverage if a suit arises from the actions of the joint venture. The joint venture should have its own insurance, or the joint venture should be a named insured on the policies of all of the joint venture participants.

## **Engage a Construction Manager**

Construction of a new school, or renovation or additions to an existing school, are complicated and costly endeavors, requiring the efforts of many people and organizations. A good move is to obtain the services of an experienced Construction Manager (CM) to provide insight, direction, and supervision through the entire construction process. An experienced and competent CM will have a comprehensive understanding of the full scope of the work, and will be able to oversee and coordinate many people and activities to ensure that the new facility meets the expectations of the school and community. The Construction Manager can coordinate activities to minimize impact to the school, such as:

- Coordinate purchase and delivery of materials that may have long lead times to obtain.
- Schedule work to mesh smoothly with school schedules and to minimize disruptions to school activities.
- Review contract and bid packages to minimize gaps and ambiguity in contract requirements.
- Work with suppliers to obtain better prices, while assuring sufficient quality.

An experienced CM will also know the track records of subcontractors and can recommend those who will respect the need of the schools regarding safety, scheduling, noise control, etc.. The CM can also provide insight into the qualifications of general contractors and recommend those who are best qualified to perform the job.

The Construction Manager can also help to schedule certain demolition and construction activities that have the greatest potential to disrupt school activities. This may include writing guidelines to protect the school community, such as specifying the distance from the school at which specific work can be carried out, or where and when heavy equipment can be used, or hours of construction operations. Working out these guidelines with the contractors often requires compromise between the various parties; the CM can negotiate with the contractors and the school to develop a workable plan for all parties involved.

Once construction has started, changes may be required in design, materials, scheduling, etc. The CM can assist the school administration in evaluating the impact any changes or enhancements will have on construction for cost and schedule, and can work with contractors to communicate the needs of the school. The CM can be a valuable resource, both for the school and for the contractors.

## **Ongoing Communication is Essential**

Everyone—students, faculty, staff, parents, neighbors, and the entire community—needs to be informed about, and prepared for, the construction and the effects it may have in the community. Lack of knowledge about what is going on is a primary cause of fear and complaints about the construction. People become annoyed, and even frightened, when they do not know what is going on. The project will then become a major inconvenience, and anger may follow.

Everyone affected by the project needs to know what is going on, when things will happen, and how long any inconveniences will last. To calm people's fears and anger, prepare them ahead of time, and keep them informed of progress. To accomplish this requires good communication with the members of the community in which the construction project is taking place. A regular newsletter or progress report may be a good way to keep everyone informed. The newsletter need not be detailed or complex; however, it must be regular and must continue publication throughout the project.

Failure to communicate regularly, or failure to communicate at all during the construction, may be misinterpreted in the community. People may think that an insurmountable problem has developed, or that there has been a failure in the project, or that some other problem has developed, and that perhaps project managers are keeping quiet deliberately. Communication must be regular and ongoing.

Contractors need to keep administrators informed of progress, but this is a two-way street. School administrators and staff can impart very helpful information to the construction committee (and ultimately to the contractors). The contractors need to know the ins and outs of the school and its workings.

Problems that arise need to be identified promptly and corrected. Knowledgeable members of the construction committee can anticipate these problems and work with the appropriate people alleviate them. There is nothing worse than having a problem and not knowing whom to call. The construction committee and school administrators should know the key construction personnel who will be working at the school. Establish a line of communication with telephone numbers so that the appropriate person(s) can be contacted when needed.

Communication cannot be one way; a good flow of information between school administrators, architects, and the construction management team is essential. Otherwise, issues and problems may develop and go undetected. While some problems are easily corrected in their early stages, if they are allowed to exist and fester they can result in serious problems (or create some serious enemies to the project later).

## Select the Right Architect

It is important to select the right architectural firm to do the job. Not just anyone can or should design a school. One of the architect's main responsibilities is to analyze the needs of the school and come up with a design that will meet those needs. The project will require an architectural firm that has a good reputation, that can handle the size of the job, and that has had extensive experience in the design of educational facilities.

There is no substitute for success in completed projects. Require the architectural firm to provide a profile of its organization and a list of completed projects, including names and phone numbers of customers of completed projects. Contact those people to discuss the professionalism of the architectural firm and the ease of doing business with the design team. The conversation will also be useful to solicit other general and helpful information about the firm. Request from the architectural firm the resumes for members of the team who have been assigned to work on the school; evaluate these carefully. Work closely with the architectural team to provide insight into the needs of those and to develop a design that will meet the school needs. The construction can be completed satisfactorily only when all parties communicate effectively and support each others' efforts from the beginning to the end of the project.

## Select the Right Contractors

Simply offering a low price does not make a contractor right for the job. The school should use objective and subjective analysis screening criteria to select the right contractors for the job. (The Construction Manager can provide assistance in this area.) Criteria include:

- Experience Modification Rating (EMR)
- OSHA Injury and Illness Statistics
- Qualifications Presentation
- Safety Organization Structure

### Experience Modification Rating (EMR)

The Experience Modification Rating (EMR) is a numerical designation assigned to the contractor by the NCCI (National Council on Compensation Insurance), a national board that develops workers' compensation modification rates for employers. NCCI develops an employer's rating by comparing the employers' past injury rates to that of other employers in the same trade. An EMR number of 1 is average. A contractor with an EMR of less than 1 has experienced fewer injuries and has an accident record that is better than average for its trade. The contractor can provide the EMR information.

### OSHA Injury and Illness Statistics

Employers are required to submit to OSHA annual reports of work-related injuries and illnesses and lost work time related to these injuries and illnesses. Require potential contractors to provide copies of these reports for the past several years. Analyze the reports to determine if the contractor is trending better or worse in its overall safety performance.

### Qualification Presentations

Require the contractor to present his or her experience in completed construction projects. In addition, request that the contractor include in this presentation the resumes for members of its management team that will be assigned to the project.

## Safety Organization Structure

Request that contractor to provide a copy of its organization's organizational structure. Choose a contractor whose safety function reports directly to organizational management lines and not to production related management lines. This ensures that production goals will not interfere with safety objectives; that is, that the contractor will make safe construction project decisions that are not influenced by production goals.

## Keep Students, Staff, and the Public Safe

Safety is everyone's business. Trading blame after an accident occurs is a poor substitute for preventing the accident in the first place. Schools are never completely dormant at any time through the year. Despite a slower pace during the summer, they are never completely empty. When planning for safety of the construction project, consider school events, summer school, students' ages, and the type of construction. Each phase of construction can have different impact on the school and the people inside. (Refer to Appendix B, School Construction and Renovation Safety Checklist.)

## Communication

Ensure an easy flow of communication between school administrators and the construction committee, to coordinate activities of the school and the activities of the construction project. Each can have an impact on the effectiveness and safety of the other. For example, consider trying to bring in and set steel on graduation night, or carrying out major demolition on the day of the big school game.

## Conduct a Safety Audit

To ensure that appropriate safety controls are in place, conduct a safety audit periodically. A *safety audit* is a proactive process by which the school continuously evaluates and monitors its safety and health programs. The school can use an audit to identify its strengths and weaknesses, to show where improvements are needed, and to establish and target dates for correcting problems. The primary objectives of a safety audit are to:

- *Confirm* that safety, health, fire, and/or environmental program activities and controls are in place and functioning.
- *Verify* that the facility is in compliance with internal benchmarks, consensus standards, and/or government regulations.
- *Assess* past and current practices to identify and correct safety impediments which, if left unresolved, may result in personal injuries, property damage, or business interruption.

A person who is knowledgeable in construction procedures, systems, and hazards, and in general safety and emergency preparedness, should conduct the safety audit. (This might be the project's Construction Manager.) A checklist for a safety audit is in Appendix C, *Safety Audit Checklist*.)

## Ensure Adequate Security

Construction sites are an "attractive nuisance" for children and an attraction for people of all ages. Secure all areas of the construction site to prevent unauthorized entry. Different situations require different controls. For example, where an interior work area adjoins a common school area, install temporary walls to keep the two areas separated. Maintaining this separation can be extremely difficult during renovation or when constructing additions, during which times the construction area is connected to the facility and

requires tying into the building services of the existing facility. Outside construction areas may require temporary fencing with controlled access gates. The type of construction, operations, and location, both on site and the community, are the determining factors for selecting and implementing the best controls.

Control who has access to the construction site and to the school. Require a photo-ID badge for those who are authorized to enter the construction site. The badge should legibly display the person's name and company and should be worn at all times. With concerns for school safety at an all-time high, monitoring access to the campus and building is very important.

## Emergency Preparedness Planning

Assess potential hazards and emergency situations, and plan a coordinated response. In the event of fire, smoke, release of hazardous materials, etc., requires a flawless implementation of an orderly escape plan. Establish a plan, communicate to all individuals on the project, and conduct drills regularly. Coordinate emergency planning activities with local fire and police officials.

Establish lines of communication and ensure that they are functional at all times. Maintain fire alarm pull boxes, fire detection equipment, and fire protection systems and ensure that they are functional at all times. Should any one of these systems be interrupted, notify the local fire department, other proper officials, and the school immediately. Develop a plan for how to respond to an emergency situation during the times when these systems are not functional.

Ensure that emergency exits are clear, well marked, lighted, and functional. Use appropriate signs to mark the routes of exit. Adequate lighting is necessary. Consider using "traffic cops" to augment the signs, especially during periods of heavy traffic movement, such as at the beginning and end of the school day and between classes. Assign faculty or staff to common areas in the building to control traffic, provide directions, and answer questions.

## Summary

Construction on a school campus is never easy, either for the school, the community, or the contractors, but there are ways to ease the pain and to encourage the spirit of cooperation on which the success of the project depends. It is important for school administrators, through their leadership, to prepare and obtain the support of the school community for the unavoidable inconvenience that lies ahead. When all the people involved in a school construction project work together and maintain good lines of communication, they will be best able to provide a facility that will meet the needs of the community it serves and make the school a better place to learn and work.

## References

1. McGovern, Gene. "Easing the pain." [managing school construction projects] *American School and University*, January 1999.
2. *The Hartford's Guide to Emergency Preparedness Planning*. Hartford, Conn: The Hartford, c1998.

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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# Appendix A

## The School Construction Committee

The construction committee is a valuable resource to facilitate the successful completion of the school project. There is nothing worse than building a school that does not meet the needs of the community. Construction projects often create temporary—but inconvenient—situations. Anticipation of these situations and communication with the parties affected can create an understanding atmosphere. Failure to communicate can lead to fear, anger, and problems. Keep the community informed of progress and solve the problems *before* they materialize. Strive to meet the needs of the contractors and the school.

*This committee, at a minimum, should consist of representatives from the school administration, the project architect, the construction manager, the local school board, and the government construction agency overseeing the project (if appropriate). Responsibilities of the committee include:*

- Work with school staff to identify and evaluate school needs.
- Work with maintenance personnel to identify needs and problem areas.
- Work with the architect to incorporate the needs of the school in the design plans.
- Review architectural drawings to ensure compliance with school needs.
- Review qualifications of the construction manager.
- Review qualifications of the subcontractors.
- Ensure that all contractors have adequate limits of insurance.
- Review construction operations and controls to ensure their adequacy.
- Review construction activities for conflict with school functions.
- Inform the school community of progress.
  - Disseminate construction progress reports at regular intervals. This can be accomplished by regularly publishing a construction progress newsletter or paper for students and staff.
  - Invite construction managers or personnel in for school career day to speak to the students and staff.
  - Coordinate field visits to the construction site to allow staff and students to view progress and operations.
  - Keep construction reports upbeat to minimize fear or apprehension from the noise and activity.
- Facilitate coordination between building services and construction.
- Request that contractors provide viewing ports in their barrier walls.
- Invite the fire department in for a walk-through on a periodic basis.
- Work to solve problems that develop on the site.
- Anticipate and communicate.

# Appendix B

## School Construction and Renovation

### Safety Checklist

<b>School Name</b>	
<b>Building Address</b>	
<b>Project</b>	

<b>Lighting and Electrical</b>		<b>Fire Safety</b>	
	Lighting System		Fire Alarm System
	Wiring		Sprinkler Systems Active
	Public Address System		Fire Extinguishers
	Emergency Lighting		Smoke Detectors
	Lighted Exit Signs		Pull Boxes Functional
	Supply Panels Controlled		Fire Truck Accessible
<b>Heating/Ventilation/Air Conditioning</b>		<b>Life Safety</b>	
	Boiler and Controls		Exit Routes and Landings Clear
	Air Conditioning Systems		Exit Routes Clearly Defined
	Outdoor Air Supply		Secondary Means of Egress
	Air Handling Systems		Exterior Exits Clear
	Mechanical Systems		Fire Doors Clear and Operable
	Gas Systems		Emergency Vehicle Accessible
<b>Plumbing Systems</b>		<b>Exterior Grounds</b>	
	Potable Water		Construction Areas Protected
	Hot Water		Walkways Clear and Graded
	Wash Facilities		Excavations Protected
	Shower Facilities		Material Placement
	Sump Drains Clear		Equipment Secure and Locked
	Sewer Pipes Vented		Graded to Prevent Flooding
	Toilets		Weather Tight to Rain
	Others		Attractive Nuisance
<b>Emergency Communications</b>		<b>Security</b>	
	Emergency Numbers Posted		Access Control
	Cellular Telephone		Burglar Alarm
	2-Way Radio		Fencing

\_\_\_\_\_  
 Architect/ Contractors Signature  
 Date: \_\_\_\_\_

\_\_\_\_\_  
 Superintendent/Assistant Signature  
 Date: \_\_\_\_\_



# Appendix C

## Safety Audit Checklist

This checklist can help you identify safety programs you may need for your operations or facilities; however, it may not list all programs or areas which you need to consider.

Risk Management Programs	OK	Not OK	Tested	Regulatory Compliance Needed?	N/A
<b><i>Safety Management and Regulatory Compliance</i></b>					
Accident Investigations					
Accident And Injury/Illness Records					
Americans With Disabilities Act (ADA) Compliance					
Drug Testing / Substance Abuse					
Hazard Identification And Analysis					
Job Training (Specialized)					
Occupational Safety And Health Administration (OSHA) Compliance					
Product Safety And Recall Programs					
Return-To-Work / Light Duty					
Safety Audits					
Safety Meetings					
Safety Program					
<b><i>Facilities and Equipment</i></b>					
Building Utilities (HVAC, Electrical)					
Compressed Air Equipment					
Elevators, Stairs, And Walking Surfaces					
Emergency Response Plan					
Equipment Safety (Policies, Maintenance, Repairs)					
Fire Prevention And Protection					
Grounds Maintenance (Sidewalks, Driveway, Parking, Fences, Lighting)					
Housekeeping (Trash, Walkways, Aisles, Floor Maintenance, Tripping Hazards)					
Indoor Air Quality					
Life Safety and Evacuation					
Loading Dock Safety					
Safety for Visitors, Contractors, etc.					
Security					
Slip And Fall Prevention (Rugs/ Mats, Floor Care, Unmarked Elevation Changes, Etc.)					
Stairs (Railings, Treads, Lighting)					
Vehicle Preventive Maintenance					

Risk Management Programs	OK	Not OK	Tested	Regulatory Compliance Needed?	N/A
<b><i>Specific Hazards Or Operations</i></b>					
Back Injury Prevention					
Bloodborne Pathogens					
Confined Space Entry					
Construction Safety					
Cranes (Chains, Hooks, Overhead Loads, Slings)					
Drivers (Selection, Training, Supervision)					
Electrical Safety					
Ergonomics Training					
Fall Prevention and Protection					
First Aid, CPR					
Forklift Safety and Operator Training					
Hazard Communication					
Hazardous Materials Inventory					
Hazardous Materials Training (Handling, Transportation, Storage, Disposal)					
Hearing Protection					
Industrial Hygiene Assessment and Monitoring					
Laboratory Safety					
Laser Safety					
LockOut / TagOut (LO/TO)					
Machine Guarding					
Material Handling					
Material Safety Data Sheets (MSDSs)					
Office Safety (Drawers , Electrical, File Cabinets Secured, Etc.)					
Painting Areas (Ventilation, Explosion-Proof Fixtures, PPE)					
Personal Protective Equipment					
Pre-Construction Evaluation					
Scaffold And Ladder Safety; Work Platforms					
Shiftwork / Work Schedules					
Thermal Conditions (heat, cold)					
Tool Safety					
Trenching					
Video Display Terminal Ergonomics					
Welding, Cutting, Hot Work					
Workplace Violence Protection Program					
<b><i>Other Operations Specific To Our Facility:</i></b>					

