

# THE SHOW MUST GO ON: RENOVATION IN OCCUPIED SPACE

By: Richard F. Jensen, Division Manager  
- Erland Construction, Inc.



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*Structures*  
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When EMC<sup>2</sup> was bursting at the seams in their Hopkinton facility, they decided to expand rather than move. When MA/COM was faced with changing technology in the semiconductor industry, they chose to renovate and re-tool. When Hillside School needed a new library, they opted to adapt a space that had had another use. Three different entities in three different businesses with one common goal- MAKE THE REQUIRED IMPROVEMENTS, BUT DON'T GET IN THE WAY.

Often the best answer to changing needs is a major renovation, expansion, or addition. But most companies and institutions don't have the luxury of shutting down or relocating to temporary quarters while the work is being done. The challenges of construction while people are trying to work or study can be daunting, but they can also be overcome. An experienced Construction Manager (CM) can pull it off, one that anticipates the pitfalls and develops proactive solutions. If the CM does its job, you get to continue doing your job.

## Pre-planning is Key

Pre-planning is the key to maintaining sanity, and ongoing operations, when renovating in a functioning facility. And the earlier you get started, the better. Pre-planning is the time when the Construction Manager must gain a complete understanding of the client's business - the process flow, the sensitive areas, the traffic patterns - and the importance of managing specific construction related situations such as vibration, dust, noise, and access by subcontractors. Design intent must be fully understood to be certain the critical elements are never compromised. When the client clearly states what they must have to maintain their business productivity, the CM can plan the what, when, and how that will ensure they get it. Meetings and discussions allow potential issues to be flagged and dealt with before they become problems, even in the most sensitive of environments.

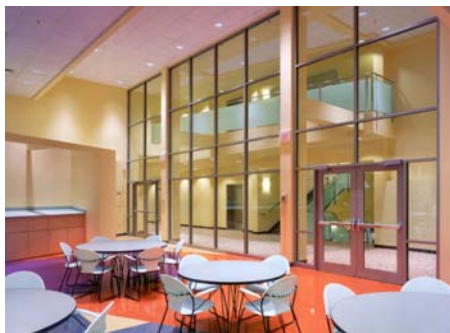
Erland Construction renovated three physics laboratories at MIT in which equipment for crucial ongoing atomic laser research could not be dismantled or relocated. We constructed temporary polyethylene and plywood barricades and provided temperature and humidity controls to the enclosed areas. Work continued unimpeded and the chief scientist, Dr. Wolfgang Ketterle, went on to win the Nobel Prize for Physics.

Minimizing disruptions and inconveniences must be constant priorities when working in an occupied facility. The project schedule identifies windows of time when noisy work can be done. Deliveries are scheduled around loading dock availability. Contractor parking and site access is planned to limit displacement of client employees. In an academic project, familiarity with the school's schedule will allow for special occurrences, such as final exams or Parent's Weekend, to be respected and special opportunities, such as winter break, to be exploited.

Behavior and dress expectation for subcontractors may be different in an operating environment, driven by policies the client has for its own employees.



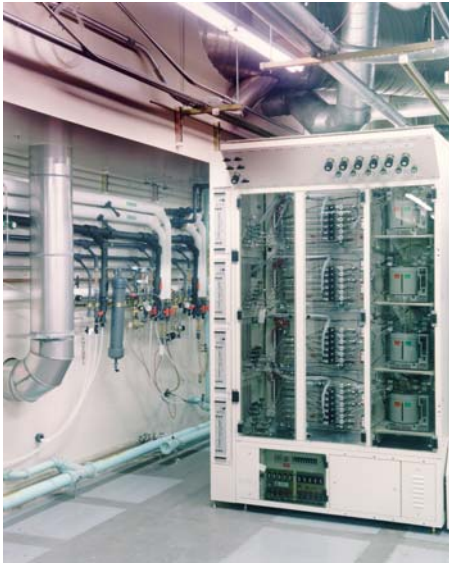
EMC<sup>2</sup> Lobby



EMC<sup>2</sup> Lobby



EMC<sup>2</sup> Datacenter



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The rules should be clearly communicated as each new sub comes onto the jobsite and they should be enforced. These may include guidelines for smoking, playing radios or walkmen, appropriate language, or t-shirt artwork. You should review your company's harassment policy with subcontractors to raise awareness of differing standards and interpretations that may be present in an office or school setting.

### **Safety is the Top Priority**

Safety is always a major concern on every project, but never more so than when construction is done in an active, functioning environment. A site-specific safety plan is crucial. It should provide safe pedestrian and vehicular access routes and a clear plan for emergency evacuation, including new routes and destinations. Advanced notices to the affected groups and clear signage will ease implementation. A small, wallet-size "Emergency Notification Card" with 24-hour contact information for the Project Executive, Project Manager, and Superintendent will enhance the comfort level that the Owner can reach critical people in case of a critical situation.

Erland constructed the Sakowich Campus Center at Merrimack College around the only existing dining hall and the school's administrative headquarters. A system of covered walkways through the construction site provided safe entry into the operating building for students and faculty throughout the project's duration.



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Thinking ahead, and knowing that employees and students will be curious about construction progress, a plan should be devised to allow them to view it without risk. A web-cam or closed circuit TV can provide a means to watch at a remote location. Small view holes at appropriate heights can be factored into the site fencing or barricade.

### **End-user Involvement Enhances the Outcome**

End-user participation in planning the construction approach is critically important when a renovation, expansion, or addition is to be done in an operating facility. No one understands what will be needed to avoid interruptions better than the people who are active in the space. The procedures for soliciting this participation will vary from client to client; some want the CM to work with employee representatives directly and others prefer to have communication filtered through one team of contact people.

Advanced notice is a two-way street. EMC2 used on-site tours as a marketing tool; they needed to be able to show the data center to potential customers while it was undergoing renovation. By displaying a "look-ahead" schedule of what was intended to happen when, we could be notified of potential conflicts with these visits and shift our plans to ensure that corridors were accessible and the room itself was a tidy as possible.

### **Tools for Success**

The most important tool when performing an extensive renovation in an operating facility is an experienced Project Superintendent, empowered to make decisions on necessary changes, who knows how to maintain a sense of team



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and avoid adversarial relationships. This Super will appreciate the importance of maintaining production or operations throughout the construction period and will find the best solutions to keeping the program on track.

Weekly Project Team Meetings that include the senior members of the project team from the owner, architect, and CM- similar to a Project Steering Committee- supports continuous communication. This group takes a big picture view, dealing with near-term issues with the authority to make decisions on the spot. A Construction Meeting should follow, with the top level people leaving and subcontractors' Project Managers joining the Project Manager from the architect and the CM. The Two-Week Look Ahead Schedule- along with other project control reports, logs, and meeting minutes- forms the agenda for this meeting.

We recommend an End User's Meeting with representatives of the working groups most affected by the ongoing construction as the wrap up to the weekly project meeting day. This is an opportunity to offer advanced notice of scheduled construction activities that will affect locations outside the defined construction area with enough lead time that changes can be made if conflicts are identified. We do a lot of work in R&D, manufacturing, healthcare, and medical device facilities and sometimes delaying a utility shutdown or a task with unusual noise or vibration just one day will prevent a major user group disruption.

### **Summary**

Renovations in occupied space can be done successfully without driving the client crazy. Thorough pre-planning coupled with open communication and proven management controls will support a process that ensures minimal disruption.



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### **Author's Biography**

Richard F Jensen, Advanced Technology Division Manager

As the Manager of Erland Construction's Advanced Technology Division, Rick takes an oversight role on most projects that require sophisticated MEP systems coordination. He has been with Erland since 1981 and has been involved with dozens of complex renovations performed in occupied facilities, many of them done on a fast-track basis. Rick has a BS in Building Construction from Wentworth Institute and an MBA from Lesley University.



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