

The Construction Occupational Health Program (COHP) at the University of Massachusetts Lowell was established in 1992 to conduct research to identify and prevent the health hazards experienced by construction workers. Lowell scientists and staff collaborate with building trades unions and the regional construction industry to study and prevent the health and safety risks faced by workers on the Central Artery/Third Harbor Tunnel project in Boston, which was the biggest public works construction project in the history of the country.

The COHP staff and researchers had known for a long time that the experts on job safety and health were the people who developed this expertise on the job: the building trade workers. Practical solutions do not necessarily require high technology and may get overlooked. Workers do have the knowledge to identify and reduce risk for injuries and illnesses, particularly if they are the ones that are exposed. They are the most motivated to improve their health, and, being in the construction environment, constantly face the demand to overcome physical and conceptual barriers just to get the job done.

The COHP's innovation is an opportunity for the solutions derived from trade workers to have a greater impact. Their solutions, printed in a newsletter aptly titled *Bright Ideas*, are both straightforward and creative. Since 1998 the *Bright Idea* has been mailed to over 3,000 trades people, contractors, research facilities, and government agencies worldwide. Our goal with *Bright Ideas* is to get the idea out to the people who need it the most and to give support to the idea of "working smarter, not harder; fix the job not the worker." Below is a complete list of the *Bright Idea* series.

Name of Bright Idea	Problem	Solution
#1 Spatula	Picking up tiles with gloves	Trowel turned spatula
#2 Post and Bracket railing system	How to keep safety railings up during construction.	Use scrap metal to build a post and brackets system
#3 Pipe wrench stand	Using two wrenches at once	A light wrench support
#4 The "Binford Crab" Clamp	Lifting, holding metal pieces	A clamp fitting for very heavy lifting
#5 CraneMirror	Staring up all day, in one position	A mirror on the dash
#6 Trailer Lift	Equipment too heavy to lift properly	A rotating pillar, a wheel and a pipe arm
#7 Ironworkers' Box	Working with your arms above your shoulders	A wooden box
#8 McGovern Lever	Forceful overhead drilling	Using an adjustable see-saw attached to scaffolding to serve as a lift

The University COHP is supported by research grants from the National Institute for Occupational Safety and Health through the Center to Protect Workers' Rights in Washington, D.C. COHP has published eight *Bright Ideas* to date, and we still have interest to do more. The *Bright Ideas* collection can be viewed on our website at: <http://www.uml.edu/Dept/WE/COHP/Documents/bridea.htm>.

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The Problem: forceful overhead drilling

Working overhead contributes to the development of neck and shoulder injuries, especially when using a heavy tool. Besides that, it's difficult to maintain a productive work pace while applying force with both arms raised up to the ceiling. Anyone who has had to sustain any kind of overhead work does not need to be told what the problem is. To be sure, the National Institute for Occupational Safety and Health has said that there is a demonstrated relationship between this kind of work and the development of shoulder tendinitis, or other kinds of non-specific pains in the shoulder. The more time spent in this posture, the more severe the pain or injury is likely to be.



Willie Pittman, IBEW Local 103, drills into a concrete ceiling.

The Process: planning better ergonomics

Safety professional Mike Joel, Pile Drivers Local 56, recognized during the project planning of a building refurbishing job that the demand on the workers could lead to trouble. Mike has seen his share of overhead work during his years as a safety manager on the Big Dig. When he learned that this latest job would require 19,000 holes to be drilled into a concrete ceiling, he raised the issue at a project planning meeting, challenging planners to reduce the shoulder strain to the workers who would have to do the drilling. The man who responded to the challenge is Jim Byrne, Bricklayers Local 3. On this job, he happened to be the general foreman. "I'd just rather do something easy than have some guy chasing us around for a week," Jim said about Mike's challenge. Mike was delighted, adding, "Jim's idea is one of the most creative ways of responding to this problem that I've ever seen." So, a simple process of a safety manager recognizing and communicating an ergonomic hazard during planning resulted in a Bright Idea from the general foreman on the floor. After the meeting, Jim went to work, and by the end of the day, Jim had built a prototype.

The solution:...is not over your head!

Jim has an understated response when you ask him about the solution. His responsibility as foreman demands a solution a minute, so it isn't unusual for him to be creative. The McGovern Lever uses an adjustable see-saw attached to scaffolding to serve as a lift for a drill fastened to a post. You press down with your foot, the see-saw lifts the post, thus applying upward pressure for the drill to do its job overhead. With access to a welder, the materials cost about \$35, but that's nothing compared to the rate of productivity that the workers could maintain and the amount of pain and wear on bodies that gets eliminated. The Levers are so well regarded, that it would cost a worker his job if one of them were to disappear.



The McGovern lever in use by Paul Zangla of Laborers Local 151 Photo: Derek Lines, John Moriarty Associates