

# PROJECT SITE MANAGEMENT—2000 AND BEYOND

A LOOK AT CONSTRUCTION MANAGEMENT OF THE FUTURE—AND TO WHAT EXTENT IT'S ALREADY HERE

In the years to come, information systems and communications technology will continue to have the greatest impact on the construction site and the management of the work there. Today's large project cannot be accomplished with paper, pencil, and a bar chart—no matter how recently those tools were left behind.

## **MANAGEMENT'S CHALLENGE WILL BE TO INTRODUCE TECHNOLOGY AT SUCH A RATE THAT PROJECT MANAGERS AND SUPERINTENDENTS CAN ABSORB IT**

Difficult as new tools and technology may feel at first, they will dramatically increase efficiency in the long run. With good training and plenty of encouragement, those new to the technology will find that this efficiency will lower costs and lead to shifts in competitive balance. These shifts will depend on the rate at which you, as well as your competitors, bring new technology on board.

Paper is heavy and expensive, and transcription too easily allows for errors. Future construction site staff will electronically input daily logs, automatically recording complete payroll information, equipment usage, and materials received for invoice verification and payment.

Paper backup data initially may be mailed to the office, but gradually it will be scanned in at the field trailer and modemed to the office for later spot-check verifications. Paper invoices eventually will disappear. Materials and supplies will be bar-coded and read by a



*Satellite guided positioning, reported by laser guided equipment, is already helping contractors locate sites and determine grade.*

hand-held scanner—a paperless transaction, after which a computer can verify invoices.

## **WHAT YOU'LL FIND ON THE ELECTRONIC JOBSITE**

On larger sites, all employees will be issued smart-card identification and payroll will simply be verified against employees checked onto and off the site. These bar-coded ID devices will in turn be replaced by thumbprint readers. Minutes after payroll is completed each week, labor cost reports will appear on

project managers' desks and at the field trailer—before payroll checks are even dispatched. Payroll checks themselves will disappear altogether as direct deposit becomes more popular, and eventually payroll will be flashed out at the same time as labor cost reports.

Because current accounting methods depend upon a monthly closing date, material cost reports will continue to be produced monthly for some years to come, but they will be modemed to project managers and field trailers.

Eventually invoices will be transmitted electronically the day materials are accepted on the job, making monthly statements from vendors unnecessary. Material cost reports will be produced weekly or even daily if required. In time, accounts receivable will be calculated daily as work is completed. Labor expended and

materials consumed will simply be deducted from a fully resource-loaded electronic schedule.

Depreciation, insurance costs, and other debits will automatically be prorated to days of the year, and financial statements will require little or no time-consuming adjustments. Even income statements and balance sheets can be accurately compiled daily.

## **E-MAIL COMMUNICATION WILL INCREASE, PROVIDING VERIFIABLE TRANSFER OF INFORMATION, WITH NO PAPER COPIES AT EITHER END**

By using broadcast e-mail, managers can provide meeting minutes to participants and other users, who can search for

*(continued on page 36)*

project information by key word or subject heading.

Electronic searches also will be possible in contracts, modifications, and change orders. Permanent project records, maintenance manuals, guarantees, and other documents ultimately will be transferred in electronic form only. Standards and codes will be accessed through the Internet and instantly updated as changes occur.

**THE INTERNET IS THE BEST THING TO HAPPEN TO GROUP COMMUNICATION SINCE THE TELEPHONE**

The World Wide Web will allow all relevant information about a project to be stored in a single location accessible by any authorized party any time of the day or night from anywhere in the world.

Continuing improvements in wireless communication will further simplify and speed accurate data collection and dissemination. By the beginning of the next century the IRIDIUM project, a multi-billion dollar consortium headed by Motorola, will make it possible to communicate—from any point on the globe to any other point on the globe—with a pocket-size cellular phone.

This kind of communication, including Internet access, will be as reliable, easy to use, and cost-effective as current wire-based phone service. For example, field staff will scan employees' bar-coded badges with a hand-held device on a remote site. Instantly the information will be uploaded to the payroll and job cost systems via the Internet.

**ON-SITE CAMERAS WILL BECOME COMMONPLACE**

Several exterior views of a jobsite will run 24 hours a day, viewable on any computer screen. Viewers will be able to change the direction of the camera at will and zoom in on areas they wish to scrutinize. Very small portable cameras may be used by superintendents to record the work as they walk through the project. More importantly, foremen and superintendents will be able to transmit live video pictures, including sound, to project managers and others for discussions, problem-solving, or later viewing.

Smart cards in trucks and equipment will automatically alert shop staff of breakdowns or maintenance requirements so they will know when to show



*Strides in communications technology continue to revolutionize construction methodology. The Internet will make up-to-the-minute information available to an unlimited number of users.*

up. Laser-guided equipment will hold line, grade, and location automatically with satellite-guided positioning.

The huge convenience of cell phones and site radios will increase their use on the jobsite, while their cost will decrease considerably.

**THE MOST DRAMATIC IMPROVEMENTS IN EFFICIENCY WILL COME FROM THE SWITCH FROM VOICE COMMUNICATION TO E-MAIL**

Much, much less recordkeeping time will be expended because data will be input only once. Accurate and timely project reporting and video images will substantially reduce the number of site visits by main office staff.

Project managers and superintendents will have more time for their primary duties, vastly improving their productivity.

Field staff may increase with the addition of data input persons, but that cost will be more than offset by the increased time available for superintendents and foremen to manage projects.

**THE TREND OF SUPERINTENDENTS AND PROJECT MANAGERS PUSHING MORE AND MORE PAPER WILL FINALLY REVERSE**

Safety and housekeeping, big challenges in the '80s and '90s, created a mountain of paperwork. However, well-managed construction companies finally

are organizing ways to uniformly handle these matters. Video and voice recording will soon eliminate 95 percent of the recordkeeping effort associated with them.

Easy-to-use technologies will free foremen and superintendents from recordkeeping. Clerical or staff technicians will electronically record safety meetings, incidents, and potential problem areas. Continuous housekeeping and hazard avoidance will be maintained through the regular filming of jobsite activity.

**COMPUTER AIDED DESIGN COMBINED WITH STREAMING VIDEO WILL ALLOW CONTRACTORS TO WALK THROUGH PROJECTS WITH THE OWNER BEFORE THE PROJECT IS BUILT**

**PROJECT IS BUILT**

The construction site of the future may look and sound like today's, but the administration, recordkeeping, and management of the site will be dramatically different. Refinement of voice-recognition technology will let us talk into hand-held data collection devices and computers, eliminating keystrokes and further speeding the processes described above.

**THE MOST CONSEQUENTIAL CHANGE WILL BE THAT PROJECT MANAGERS, SUPERINTENDENTS, AND FOREMEN WILL SPEND MORE OF THEIR TIME DIRECTLY SUPERVISING THE JOB AND THE WORKFORCE THAN THEY DO TODAY**

Will they welcome the change? Those currently using computers know the advantages. Managers who have avoided them can only be in for a pleasant surprise. Overall it is good news for our industry.

These technologies are ready today (and who knows what they thought of last night)! The question is: Are we?

—By Thomas C. Schleifer, Ph.D., a management consultant and turnaround expert who advises construction firms on performance improvement and profitability enhancement.

**FOR MORE INFORMATION**

Contact the author at 5625 N. 75th Place, Scottsdale, AZ 85250. Phone: (602) 945-7680. Fax: (602) 970-8021. For information about Schleifer's industry forecasts and training tapes, call (888) 324-1129.