CONSTRUCTION INDUSTRY INSTITUTE

Wireless Communication and Computing at the Construction Jobsite
Construction Industry Institute

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Prepared by
The Construction Industry Institute
Wireless Communication and Computing Research Team

Research Summary 136-1
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Executive Summary

The walkie-talkie, a World War II technology, is synonymous with the construction industry. Today’s wireless communications technologies, however, have the potential to enable the transmission of all project information instantaneously to the foreman’s work station. Database management systems can link the engineering office to the foreman’s desk and allow, for example, the latest drawing revisions to be viewed and discussed immediately with the field personnel who will execute the changes.

Wireless communication technologies, the transmission of voice, video, and data without the use of wire linkage, are capable of enabling on-demand access to all project information by all parties at any location. The technologies include the use of cellular phones, mobile phones, personal and portable computing devices, video communication, voice clips, faxes, and modems. Such capabilities were investigated by the CII Wireless Computing and Communications Research Team. The research team was formed to assess the applicability of wireless communication technology to the construction industry. The specific objectives were: to survey the information needs at the jobsite; to survey the emerging wireless communications technologies; and to assess the extent to which wireless data technology can fulfill the information needs of jobsites.

This publication is a summary of the efforts by the research team. It describes the available technologies and discusses the particular applications that can enable cost-effective decisions to be made for a particular job. Ultimately, wireless communication technology will improve the important issues of reliability and quality that are so vital to the engineering and construction facilities of today.
Introduction

For many years, the walkie-talkie has been synonymous with construction, and thus wireless voice communication at the jobsite is a well-established technology. Recent technological advances, however, have provided new and different wireless information services at the jobsite. Such advances allow "mobile" communicators to be located at various places within a construction site and communicate with each other as well as with a central, fixed location such as the jobsite trailer.

The quality, quantity, and timing of information exchange during project execution at the jobsite have a major impact on project success. Paper-based jobsite construction processes are becoming obsolete because they are unable to deliver just-in-time information. Shifting to electronic, or wireless, exchange of information can help improve the timely delivering and accessing of information.

Wired telephone and/or Internet links will still transfer data to desired off-site locations, but the wireless communications can serve primarily as the "last mile" from the trailer to a desired location on the jobsite. Because timely access keeps information relevant, wireless technology has the potential of providing productivity benefits far beyond those already achieved with the symbol of construction communications technology: the walkie-talkie.

The manufacturing, trucking, and package-delivering industries already have incorporated wireless communication systems into their respective work places. The construction industry faces many of the same challenges found within these industries in addition to some that are unique to construction. Some generic concepts, however, can be learned by following the lead of the other industries.