

The Business Roundtable

**FIRST AND SECOND LEVEL
SUPERVISORY TRAINING**

**A CONSTRUCTION INDUSTRY COST
EFFECTIVENESS PROJECT REPORT**

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FIRST AND SECOND LEVEL SUPERVISORY TRAINING

TABLE OF CONTENTS

I. SUMMARY	1
II. INTRODUCTION.....	3
III. HOW THE STUDY WAS MADE	4
IV. FINDINGS	7
Analyzing Training Needs.....	7
Training Program Methods and Content	11
Training Program Evaluation	13
Potential For Savings.....	13
Areas of Training	13
Who Should Pay for Training Costs?	14
V. CONCLUSIONS.....	14
VI. RECOMMENDATIONS.....	15

I

SUMMARY

First and second level construction supervision is one of the most crucial elements in the construction process. Lack of proper training of these supervisors has contributed to the continued rise of construction costs. Their inability to plan work, communicate with workers, and direct work activities adequately is judged to be an important factor in the declining cost effectiveness of the construction industry. Research by this study team clearly demonstrates that formal training can improve the skills of first and second level supervisors and thus improve productivity on construction projects.

Training is most cost effective when it is designed to accomplish a specific need. Analysis can define the specific need and specify training to satisfy that need. A significant by-product of training needs analysis is that the benefits of training become more apparent. This results in improved acceptance of training at all levels of construction organizations. Study team research strongly indicates that more emphasis should be placed on training needs analysis for individual projects. Many contractors are dissatisfied with their training programs, but few recognize the necessity of proper needs analysis to improve them.

There are many training programs now available to the construction industry. They can be obtained from contractor associations, consultants and from universities. Many larger construction companies have devised their own. Still, evaluation of training is seldom formalized. A few companies have developed their own formal evaluation process. Such companies generally do not share their programs with others, a clear indication they believe their programs provide a competitive advantage.

The cost of training is generally paid in one of three ways. Contractors may finance the training within their company overhead budgets; they may jointly finance training with the construction user (owner) of the project; or the user may pay for training as a part of the project cost. However funded, the cost of training redounds to the benefit of the owner, either directly or indirectly. In other words, he is the ultimate beneficiary of training, both short term and long term.

In owner-contractor relations it is important that owners express a commitment to formal training of construction supervisors. Owners should make sure that the scope, timing and cost of training is considered during contract negotiations so as to obtain the full advantage of improved cost effectiveness. Based on analysis of some of the more progressive training efforts, the cost of a training program is far outweighed by the substantial savings accruing to the project.

II

INTRODUCTION

The aim of this study was to identify training philosophies and programs that improve cost effectiveness in the construction industry by increasing the skills of first and second level supervisors. By definition a first level supervisor oversees those individuals who do the work. Those whom he supervises generally do not have responsibility for the work of others. Second level supervisors in turn oversee first level supervisors.

The performance of field labor is critical to the success of any construction project. This performance in turn requires first and second level supervisors who are skilled in communicating with individual workers and in planning and directing the work. These abilities can be improved by formal training. Accordingly, knowledgeable representatives of construction users (owners), contractors, and contractor associations were picked for a study team to:

1. Examine the state of the art of supervisor training in today's construction industry.
2. Develop information for contractors to use in designing effective supervisor training programs.
3. Help construction users to understand why contractors need adequately trained supervisors on every project.

The development of new training programs was beyond the scope of this study. Many effective programs already exist. Supervisor selection is even more important than supervisor training, and is included in a separate study.¹

Three areas were identified as crucial to any continuing training program.

1. A method for analyzing training needs: what are the real needs of those being trained?
2. Choosing the right program to meet the defined need.
3. Evaluating the results: was the program cost effective and did it accomplish its goal?

¹ The problem of selection of first and second level supervision is discussed in detail in a separate Report C-3, "*Contractor Supervision in Unionized Construction*". The Business Roundtable, 1982.

III

HOW THE STUDY WAS MADE

To find out what contractors currently do about supervisory training, a questionnaire was sent to contractors representing a wide spectrum of the industry--both union and open shop--based on their size, activity and geographic location. Auburn University received and tabulated the 130 responses, maintaining the confidentiality of each respondent. Survey results were similar from all areas of the country, and, moreover, confirmed the experience of the study team members and the organizations they represented. In short, there were no real surprises. The survey respondents were primarily commercial and industrial contractors (71%). Only 17% considered themselves to be local contractors, while 80% operated statewide or nationally.²

IV

FINDINGS

Analyzing Training Needs

Like all other costs, training costs are rising and there is a move toward using formalized *training needs analysis* to improve the cost-effectiveness of training. The analysis aims at pinpointing training needs to make sure that the program selected attacks the exact areas where improved performance is most desired. For example, if construction decisions are made centrally, but improvement is needed in planning of scheduled work, the training program chosen should upgrade skills in planning rather than in the more vague "decision making". Typical answers to the survey question about available supervisor training programs illuminate this distinction:

- "Available programs need to be tailored to meet specific job site objectives."
- "Most of the programs are too general."
- "Many training techniques...do not target situations as they occur on the construction site."
- "Too many are too general in nature--or are strictly motivation oriented."
- "In-house programs are desperately needed; programs available through marketing do not provide adequate solutions to specific needs."

² For those desiring more detail, a copy of the survey questionnaire and the computer analysis of the survey results made by Auburn University can be obtained from The Business Roundtable, 200 Park Avenue, New York. N.Y. 10166.

A training program, if picked after a careful training needs analysis has pinpointed areas where improvement is sought, virtually assures improved performance. An important by-product of this procedure is increased acceptance throughout a company of the training effort. An analysis can be especially useful for those executives who are not convinced of the cost effectiveness of training. However, the survey showed that only 11% of the respondents use formal analytical methods to determine their training needs. For the most part, the training decisions were informal (see Table 1). Companies that use training needs analysis were generally the larger organizations operating on a national scale.

TABLE 1
TRAINING NEEDS DECISIONS

Method	Percent of Contractors Using
Documented formal study	11
Job related incident	36
Formal decision by chief executive officer	43
Informal decision by other than chief executive officer	51
Other	8
None	8

(Total exceeds 100% because several contractors used more than one method.)

Only 8% of those with formal training needs analysis programs would agree to share them with others. To help plug this gap, a simplified procedure to aid in deciding if a training course should be devised to satisfy a specific need is given in Table 2.

TABLE 2
EVALUATION STEPS- TO DETERMINE IF TRAINING
COURSE SHOULD BE DEVELOPED³

I. Needs Analysis

- Who needs training?
- Why do they need training?
- How do you know that training is the solution?
- What are the causes of the problem?
- When did the problem first surface?
- Where can additional information be obtained?
- What alternatives have been considered other than training?
- What costs are involved (budget personnel, etc.)?
 - if nothing is done
 - If study is conducted
 - If development is required

II. Problem Identification

- Job(s) involved
- Population involved
- Output of jobs
- Types of deficiencies
- Possible causes
 - Change in methods
 - New equipment
 - New technology
 - New work force

Other Factors

- Effects of working conditions
- Effects of task (punishing, unrewarding)
- Inappropriate or lack of feedback
- Poorly defined company policy, practice

³ Southern Bell Management Training

Identify Course of Action

- Do nothing else
- Provide performance aids
- Modify job
- Modify policy/practice (supervisory, employment)
- Create method/standards
- Create feedback process
- Continue analysis

III. Performance Analysis

- Determine job duties, tasks
- Identify inputs and outputs
- Frequency, importance
- Identify all deficiencies
- Determine entry skills and knowledge of person(s) to be trained

IV. Prepare Recommendation for Training

- Review all documentation from steps I-III
- Include entry skills and knowledge
- Techniques to be used in training
- Establish course objective

V. Training Design/Purchase, Modify Existing Course, Develop

- Consider most effective and efficient methods of training techniques
- Lecture
- Discussion
- Self-paced
- Case study

VI. Test Training Design

- Field test design
- Determine if training meets course objective
- Modify accordingly

VII. Implement Training

VIII. Follow-up Evaluation

Training Program Methods and Content

Even though many formal training programs are available, the survey indicated that most "training" continues to be on the job by example and practice as shown in Tables 3 and 4. Large contractors are more likely to have their own formal training programs. Still only 13% of contractors surveyed give any supervisory training to an individual before he assumes a job as a supervisor.

TABLE 3
TYPES OF SUPERVISOR TRAINING PROGRAMS NOW IN USE
(Based on Survey)

Training Procedures	Percent of Contractors Using
Self-instruction Program	9
Instruction by immediate supervisor	46
Instruction by professional trainer	6
Courses by contractor trade association	13
Courses by technical schools	4
Seminar courses	10
Packaged programs by consultants	1
Other	5
No training	6
	<hr/> 100

TABLE 4
METHOD & TIMING OF TRAINING PROGRAMS
(Based on Survey)

How and When Conducted	Percent of total training effort
Before assignment as supervisor	13
On job by practice and example	48
On job by special instruction	19
After hours by special instruction	14
Other	2
No training	4
	<hr/> 100

Moreover, the content of most training reported falls in the technical and administrative area with less attention paid to the training of supervisors in the skills of managing people as shown in Table 5.

TABLE 5
TRAINING SUBJECTS
(Based on Survey)

Subject Area	Percent of total training program
Company policies & procedures	17
Planning & scheduling	14
Safety	14
Motivation	10
Cost control	10
Leadership	8
Problem solving	7
Communication	6
Other	3
No training	7
No answer	4
	100

Although 82% of respondents felt that a catalog of training programs would be useful, per Table 6, only 14% indicated a willingness to share their proprietary programs with others. Most survey respondents recommended training programs available through the contractor associations such as Associated Builders and Contractors, and Associated General Contractors of America. The survey yielded insufficient data to compile a useful catalog.

TABLE 6
NEED FOR A TRAINING PROGRAM CATALOG
 (Based on Survey)

Area of Training	Percent indicating need
Training needs analysis	82
Training programs	82
Training programs effectiveness evaluation	73

Training Program Evaluation

Only 21% of survey respondents indicated that they conduct studies to evaluate the effectiveness of their supervisory training programs. An overwhelming 99% of survey respondents felt that more supervisory training would improve construction cost effectiveness. Large contractors do more evaluation than small ones. Some evaluation procedures were entirely subjective, others more sophisticated.

Potential For Savings

Any estimate of savings to U.S. industry accruing from construction supervisory training would be subjective. However, case histories of major contractors have consistently indicated substantial savings. In every case, the savings resulting from improved productivity were several times the cost of the training. Other probable benefits to the owner's project include better schedules, improved safety and quality, and reduced turnover and absenteeism. Experience shows that owners who support contractor's training programs can reasonably expect a return on their investment of at least 3 to 1.

Areas of Training

Training programs must be specific and tailored to the needs of both the project and the individuals involved in it, as determined by prior analysis.

Still, at least a dozen training subjects are common to most projects. Owners should be aware of these when discussing training with contractors.⁴

⁴ Copies of a typical supervisory training program currently in use can be obtained from The Business Roundtable.

These subjects include:

Planning	Organizing Work
Scheduling	Directing & Coordinating Work
Safety	Quality Control
Material Control	Human Relations
Leadership	Problem Solving & Method
Improvements	
Motivation	Effective Communications

Who Should Pay for Training Costs?

Survey responses provided no clear answer. Most respondents replied that the employers rather than individual employees should bear the costs. Respondents who addressed facets of the question offered a wide variety of suggestions including a national training fund, industry advancement funds, and the unstartling idea that construction users (owners) should pay.

Many large and more successful construction users regularly address the problem of supervisory training during negotiations with contractors. Most owners expect contractors to recognize the prospect that supervisor training will yield cost savings through improved productivity. Accordingly, a mutually agreed upon training clause is written into many contracts.

V

CONCLUSIONS

How efficiently field labor performs on a construction project to a large extent hinges on the skills of first and second level supervisors in communicating with individual workers, and in planning and laying out the work. Such skills can be improved by formal training. (Even though these skills can be improved for all supervisors by formal training, picking the right individual to be a supervisor remains the single most important element in supervisor performance.)

The philosophy and practice of supervisor training in construction is as diverse as is the industry itself. Most training is informal - the on-the-job variety. Formal training programs are available from contractor associations, trade schools, consultants and universities. Most large companies which have devised their own programs consider them as

proprietary information that yields a competitive advantage; accordingly they will not make the content of their programs available to others. Training can be made more cost effective if it is preceded by a formal analysis of precisely what kind and amount of training is needed by whom. It is then a matter of attacking the right targets with precision. However, only large companies, so far, have added needs analysis programs to their training expertise.

All companies appear to recognize the value aspects of appropriate supervisor training, but formal efforts to evaluate the cost effectiveness of the training are more likely to be used by large companies. Training done on a continuous basis is more effective than that done intermittently. Training is more effective if considered an integral part of project management and if supported by the construction user (owner). Effective training requires a commitment by the entire management hierarchy if it is to achieve an optimum in cost effectiveness.

VI

RECOMMENDATIONS

Formal training of first and second level construction supervisors will ultimately be achieved through the cooperative efforts of owners and contractors. The following recommendations establish the basic role that owners and contractors must play to obtain a cost-effective level of supervisory training in the construction industry.

For Owner Action:

- Owners should recognize that supervisory training is cost effective and thus support contractors' training efforts.
- Owners should establish with contractors a clear understanding of who is to pay the cost of training or how the costs will be shared. This agreement should be a part of the contract document for each project.

For Contractor Action:

- Contractors and contractor associations should do more to analyze specific training needs and to distribute the results widely.
- Contractors and contractor associations should develop the additional training programs needed to meet the diverse requirements of the many segments of the construction industry.
- Their aim should be to make training of first and second level supervisors standard practice. Toward this end, a catalog of successful training programs would be extremely helpful to the industry.
- Contractors, with assistance from owners, should develop typical training evaluation programs to permit both owners and contractors to judge the effectiveness of training given on each project.

CONSTRUCTION INDUSTRY COST EFFECTIVENESS PROJECT

This Project is a long-range, four-phase effort to develop a comprehensive definition of the fundamental problems in the construction industry and an accompanying program for resolution of those problems leading to an improvement of cost effectiveness in the industry. It is focused primarily on improvement in the industrial, utility, and commercial segments of the industry and has been developed from the point of view of owners or users of construction. Efforts by all segments of the industry, however, are vitally necessary if major improvement is to result.

This report is one of a series of reports from study teams researching individual problem areas. The report series includes:

Project Management -- Study Area A

- A-1 Measuring Productivity in Construction
- A-2 Construction Labor Motivation
- A-3 Improving Construction Safety Performance
- A-4 First and Second Level Supervisory Training
- A-5 Management Education and Academic Relations
- A-6 Modern Management Systems
- A-7 Contractual Arrangements

Construction Technology -- Study Area B

- B-1 Integrating Construction Resources and Technology into Engineering
- B-2 Technological Progress in the Construction Industry
- B-3 Construction Technology Needs and Priorities

Labor Effectiveness -- Study Area C

- C-1 Exclusive Jurisdiction in Construction
- C-2 Scheduled Overtime Effect on Construction Projects
- C-3 Contractor Supervision in Unionized Construction
- C-4 Constraints Imposed by Collective Bargaining Agreements
- C-5 Local Labor Practices
- C-6 Absenteeism and Turnover
- C-7 The Impact of Local Union Politics

Labor Supply and Training -- Study Area D

- D-1 Subjourneymen in Union Construction
- D-2 Government Limitations on Training Innovations
- D-3 Construction Training Through Vocational Education
- D-4 Training Problems in Open Shop Construction
- D-5 Labor Supply Information

Regulations and Codes -- Study Area E

- E-1 Administration and Enforcement of Building Codes and Regulations