BEHAVIORAL CHARACTERISTICS NECESSARY OF FOREMEN

IN THE CONSTRUCTION INDUSTRY

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Title of Study: BEHAVIORAL CHARACTERISTICS NECESSARY OF
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Scope and Method of Study: This study examines those behaviors characteristic of both good and bad foremen of the construction. A questionnaire was distributed to a large number of contractors. These contractors were asked to list important behavioral characteristics for a foreman to possess. Also, the recipients were asked to describe both a good and bad foreman whom he had supervised. A chi-square test was then performed in order to determine what characteristics, or behaviors, are necessary of good foremen.

Findings and Conslusions: The findings of the questionnaire revealed twelve behavioral factors which are important in differentiating good and bad foremen. These twelve factors were then utilized in the development of a summated evaluative rating device.

ADVISOR'S APPROVAL _Charles R. Area_____

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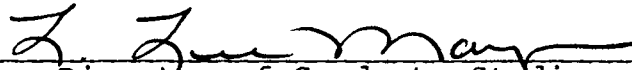
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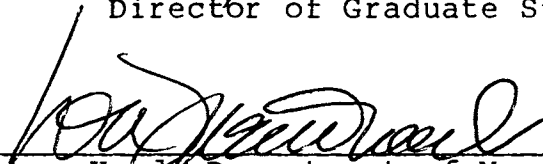
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ACKNOWLEDGMENTS

I am most thankful to my parents, Mr. and Mrs. Gerald H. Scott, Sr., for giving me the inspiration to grow; spiritually, mentally, and physically.

Also, I wish to express sincere gratitude to Dr. Charles Greer for having taught me so much and for giving me a thirst for even greater knowledge.

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CHAPTER 1

INTRODUCTION

Throughout history, employers have taken materials, transformed such materials, and have turned out a product. Whenever the task called for several people to work together, it was natural to select a leader so that the work could be carried on to better advantage. This group leader had to plan, direct, and sometimes instruct. The leader was, in all essentials, the foreman of the group. While not always known by this name, the job of a foreman is as old as the human race.

Even today, foremen play a crucial role in a large number of industries. Foremen are expected to perform their duties effectively and efficiently within the bounds of company policy. These individuals form a link between management and workers. Thus the foreman is in the unique position of being the man or woman in the middle.

The purpose of this study is to determine what behaviors or dimensions are characteristic of a good foreman in the construction industry and to utilize such behaviors in the development of a method for evaluation of foremen. Aside from the fact that the construction industry is an important segment of the economy, there are at least three very practical reasons justifying such a study. (1) The first

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reason is that because the foreman plays such an important role, the organization must know the job performance dimensions that are required for good performance as a foreman. This is the objective of job analysis. Job analysis is an important prerequisite to effective screening and selection of individuals. Thus, the first reason is to improve screening and selection of foremen. (2) The second reason is that management is concerned with the performance of foremen. Rather than making intuitive evaluations of the performance of foremen, some system of performance appraisal is necessary. The development of appropriate behavioral criteria provides the foundation for a formal performance appraisal system. Therefore, the second reason for this study is to develop criteria, in terms of specific behaviors, for performance appraisal purposes. (3) The third reason pertains to equal employment opportunity. Since the civil rights movement in the sixties, equal employment opportunity has become a political and social reality. Contractors are faced with the responsibility of complying with a number of legal guidelines concerning such a policy. Also, contractors may be subject to affirmative action programs as enforced by the Office of Federal Contract Compliance. Sound methods are needed to assess individuals for initial and continued employment which are not discriminatory and are in complaince with Federal

regulations. If the first two purposes for this study are met, the firm is in a good position with respect to compliance with equal employment selection and placement guidelines.

CHAPTER 2

LITERATURE REVIEW

This review of the literature will focus on the three
areas of personnel administration mentioned in the previous
chapter; job analysis, performance appraisal, and legal
guidelines.

Job Analysis

It has been said that job analysis serves to define jobs
in terms of the behaviors necessary to perform them (Cascio,
1978). While job analysis seems quite basic and fundamental
to personnel managers today, this has not always been the
case.

Frederick W. Taylor and Frank B. and Lillian M. Gilbreth
pioneered in the use of job descriptions in connection with
the simplification of manual operations (Watkins, et al,
1950). The first job descriptions were essays. These
essays were usually quite brief and lacked uniformity of
content and arrangement. Gradually, it was found desirable
to standardize them.

Over the years, personnel administrators have grown to
recognize that a job analysis should consist of two major
elements. It has become widespread to refer to these two
elements of job analysis as job descriptions and job

specifications. Job descriptions describe the work performed and the conditions under which the job is performed while job specifications describe the essential personal requirements necessary to do the work (Yoder, 1959). Both job descriptions and job specifications are necessary for a valid job analysis.

This dual distinction of job analysis has been described in terms of job-oriented elements and worker-oriented elements (McCormick, 1959 and Baehr and Openheim, 1976). The job analysis literature clearly indicates that job-oriented elements of a job and worker-oriented elements of a job are important. This study is concerned with the identification of a set of behavioral characteristics necessary in describing good foremen -- worker-oriented elements.

One reason why this study focuses on the behaviors of foremen in the construction industry and not the task requirements of the foremen is the wide diversity of task specialization in the construction industry. For instance, there are concrete crew foremen, asphalt crew foremen, excavation foremen, and material production foremen to name only a few of many different types of foremen. The development of behaviorally common demoninators enables the contruction of bridges between jobs of very different technologies as McCormick, et al, (1972) pointed out:

"One cannot possibly relate butchering, baking
and candle-stick making to each other strictly
in these 'technological' terms; their com-
monalities (if any) might well be revealed if
they were analyzed in terms of the more genera-
lized human behaviors involved, that is in terms
of worker-oriented elements." (McCormick, et
al, 1972; p.348)

This phenomenon of relating the behavioral charac-
teristics from one job to another has also been studied by
others. Because formal job analysis and related validation
studies may be too expensive for small organizations, a
logical approach is to conduct such studies across
organizations. Under these circumstances, a critical issue
is the "transportability" of selection devices from one
setting to another (Baehr, 1976). This type of generalized
utilization of selection devices is quite acceptable if it
can be demonstrated that jobs and employee populations are
similar in various settings.

However, using behaviorally based job specifications is
not without criticism. A study by Arvey and Begalla (1975)
sought to determine those behavioral characteristics which
accurately described homemakers. It seems as though the
homemaker was similar to many other jobs, based on such
characteristics. Among those jobs demanding similar beha-
viors were police patrolmen, home economists, and airport
maintenance chiefs. Since no specific work activities are

described, behavioral similarities in jobs may mask genuine task differences between them.

This is not a problem at all if one recognizes that job specifications must be coupled with job descriptions in order to perform a thorough job analysis. Job specifications are more general than job descriptions. As such, they provide for a good starting point in the screening and selection function.

Having provided partial evidence in support of the usefulness of behaviorally based job specifications to be developed in this study, attention will now be focused on the need for a behavioral basis for performance appraisal.

Performance Appraisal

Performance appraisal is an unavoidable part of organization activity. Organizations must assess the contributions being made by individual members. This process appears to be essential to the survival of any group. It is one of the fundamental processes noted by antropologists in all societies (Whistler and Harper, 1962).

Performance appraisal is the evaluation of individual job-relevant strengths and weaknesses. Some form of performance appraisal, either systematic or otherwise, is unavoidable. However, a systematic method of appraising employee performance is important because it provides

information in a more reliable manner than that of unsystematic methods.

A formal, systematic method of performance appraisal serves as the foundation of such specific purposes as management development, performance improvement, compensation, and feedback, to name but a few (Schuler, 1981).

Performance measures may be classified into two general types: objective and subjective (Cascio, 1978). In the past, performance appraisal systems in most companies focused on results, or objective measures. Such measures include production data (sales volume, units produced, scraps, etc.) and personnel data (accidents, absences, turnover, etc.). While these formal appraisal systems have focused on results, employees are judged as much on how they get things done.

It has been argued that in order for a company to properly appraise the performance of its employees, a system must account for "how things get done" as well as "what things get done" (Levinson, 1976 p. 30). In other words, both subjective and objective measures of performance are needed. While there will be some overlap of the two, they are qualitatively different measures.

In recent years, researchers and managers have shifted their focus to subjective measures of job performance. The reason for this shift involves some of the shortcomings of

objective measures. First of all, objective measures are affected by factors beyond the control of an individual. Secondly, objective measures do not focus on behavior, but only outcomes of behavior. Frequently, how the job is performed or the means of job performance are critical. Finally, for many jobs there may not be any good objective indices of performance (Landy and Trumbo, 1976).

On the other hand, subjective measures necessarily involve human judgment and thus, are prone to human error. To be useful, such measures must be based on a careful analysis of the behaviors viewed necessary and important for effective job performance (Cascio, 1978). This study is aimed at revealing those behaviors which are appropriate for foremen in the construction industry.

In addition, subjective performance appraisals sometimes suffer from behavioral barriers which might limit their effectiveness. Consider first interpersonal barriers. For instance, personal bias on the part of the rater can occur. Also, because of a lack of communication, employees may not know how they are rated. Supervisors may resist giving below average or substandard rating because they simply find such a task undesirable for them personally. This is because appraisal interviews sometimes emphasize the superior position of the supervisor by placing him in the role as judge, thus conflicting with his equally important role of

teacher (Oberg, 1972).

Political barriers may also stand in the way of effective subjective performance appraisal. As long as performance appraisal data are neither too good nor too bad, managers have less difficulty in competing for organizational resources (Patz, 1975). One can also imagine a case when personal values are substituted for organizational goals. Unfairly low ratings might be given to highly valued subordinates so they will not be promoted. Personal bias may lead to favored treatment for some employees who are of the same political court within the organizaiton as the supervisor. No matter what procedure or method is used to evaluate or rate employees, employers must be aware of certain errors likely to occur in the rating process.

Probably the most common systematic error is the halo effect (Whistler and Harper, 1962). If the employee is to be judged on more than one characteristic, raters often carry over a generalized impression of that person from one rating to the next. So-called leniency errors may also occur in ratings. When raters tend to assign ratings which are neither too good nor too bad, the error of central tendency is occurring (Cascio, 1978).

One way of reducing these constant errors is to train the raters thoroughly and make them aware of the possibility of such biases. Also, raters must be convinced of the

usefulness of the ratings (Selltiz, et al, 1976). To reduce leniency errors specifically, the ambiguity in the rating scale must be reduced. This can be done by improving the definition of dimensions as well as by providing anchors for the various scale points. Errors of central tendency can be lessened by giving less than extreme anchors to the points on the extreme positions of the evaluative tool. Halo errors are very resistant to elimination. Rater training of and commitment to the appraisal method are most effective in reducing halo errors (Selltiz, 1976).

Of course, employers using a performance appraisal procedure are interested in increasing the validity of the procedure by reducing the systematic errors such as those mentioned. But what about reliability? Selltiz (1976) has proposed four ways to increase the reliability of the procedure. These are: (1) careful training of raters; (2) clear definition of the characteristic being measured; (3) careful consideration to distinguish between adjacent responses; and (4) descriptive anchors.

Regardless of these shortcomings, managers from large and small organizations are not willing to abandon performance appraisal for it is considered an important assessment device. These managers feel such appraisal systems are essential for organizational health due to their contributions to more positive employee attitudes and performance

(Zawacki and Taylor, 1976).

Before leaving the subject of performance appraisal, one last point must be made. Any rating program must meet two basic requirements before it can be used successfully in an organization (Bass and Barrett, 1972). First, the rating program must be acceptable to both the raters and ratees. Second, in order to be accepted, a new rating plan must be relevant to the jobs being rated.

Attention will not be directed to the legislative environment as it pertains to the stated prupose of this study.

Legal Constraints

The 1964 Civil Rights Act, paragraph 703(h) of Title VII states:

> "...nor shall it be an unlawful employment prac-
> tice for an employer to give and to act upon the
> results of any professionally developed ability
> test, provided that such, its administration, or
> action upon the results is not designed,
> intended, or used to discriminate because of
> race, color, religion, sex, or national
> origin."

Thus, the foundation for testing employees in a fair manner has been established.

The case of Griggs vs. The Duke Power Company which reached the Supreme Court in 1971 became a landmark judicial

decision affecting personnel policies (see Cascio, 1978).
Among the important principles established were: (1) pro-
fessionally developed tests must be job related; (2) job-
related tests and other measuring procedures are legal and
useful; and (3) the law prohibits not only open and deli-
berate discrimination, but also practices that are fair in
form but discriminatory in operation.

One other principle was established in the Griggs case.
The principle was that the employer must bear the burden of
proof in establishing the tests it utilizes for employment
purposes are job-related. However, in 1978 the Unfirm
Guidelines on Employee Selection Procedures were adopted.
The new guidelines require employer proof of job-relatedness
only if "adverse impact" is shown to exist (Schuler, 1981).
A selection rate for any minority group of less than 80 per-
cent of the rate for the group with the highest rate is
generally regarded as evidence of adverse impact.

If job-relatedness becomes an issue, the organization
must show that its selection procedures are related to being
successful on the job. That is, the tests must be validated
by empirical criterion, content, or construct strategies
(Schuler, 1981). The 1978 Uniform Guidelines give equal
importance to each of the three types of validity. In order
to validate selection procedures by the criterion model,
measures of employees' performance are required. Careful

job analysis is a prerequisite to effective measurement of employee performance. Development of behaviorally based job specifications will provide the dimensions needed for performance evaluation.

As mentioned in the first chapter, federal contractors and subcontractors are subject to Executive Order 11246 which calls for affirmative action in the employment of minorities. Companies doing $10,000 worth of work under a federal contract are subject to Executive Order 1246, as enforced by the Office of Federal Contract Compliance programs. Further, each contractor with 50 or more employees and a prime contract or subcontract for more than $50,000 is required to maintain a written affirmative action program (Seligman, 1973). A formal performance appraisal system based on a thorough job analysis can help insure that the most qualified of the protected minorities will be employed because of increases selection system validity.

Figure 1 presents an overview of the employment process. As can be seen, both job analysis and performance appraisal play key roles in the process. Thus, the practical significance of the purpose of this study comes to light. Please refer to following page for Figure 1.

Figure 1

The Employment Process

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┌──── JOB ANALYSIS
│            |
│        SCREENING
│            |
│        SELECTION
│            |
│        PLACEMENT
│            |
│       DEVELOPMENT
│            |
└──── PERFORMANCE
       APPRAISAL
```
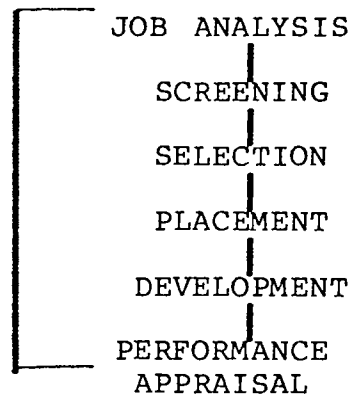
The next chapter will explain the methodology utilized in the analysis and the process employed in collecting the data.

CHAPTER 3

METHODOLOGY

This chapter will first describe the method employed in collecting the behavioral characteristic data. After the discussion of data collection, the method of analysis will be described.

Data Collection

A questionnaire technique was utilized to generate the data needed for this exploratory study because of the large number of firms whose response was being elicited. Also, the questionnaire technique was believed to be a quicker and less expensive method than either an interview or an observation method. While attention was directed to the behavioral characteristics of foremen, the questionnaire was basically open-ended in order that the respondents could answer in their own terms and in their own frames of reference. A copy of the questionnaire is provided in Appendix "B".

On the first page of the questionnaire the recipient was asked to list five behaviors of foremen which are most important for the appraisal of their performance. The recipient was encouraged to list any behaviors that he felt were important for evaluation, however, a list of sixty one-word behavioral characteristics was provided on the same page in

order to direct the respondents' thinking to types of behavior. These behavioral characteristics were taken from a list of two thousand scaled items which used these characteristics as behavioral modifiers (Uhrbrock, 1956). Examples of such behavioral characteristics are fair, orderly, reliable, and accurate.

The second page of the questionnaire was intended to elicit primarily the same information as the first page, but in a less structured manner. The recipient was asked to describe a particularly good foreman whom he had supervised. The response called for the recipient to describe in essay fashion such a foreman. The recipient was also asked to write a few sentences describing a particularly bad foreman whom he had supervised.

Two secondary purposes were served by the essay procedure. First, behaviors could be described in terms of critical incidents. The use of critical incidents in the development of rating devices to be used for evaluating performance is a well established procedure. First of all, a major advantage of the critical incidents approach is that it focuses on job behaviors, behaviors that are observable and measurable. Another advantage of the critical indicents approach is that the incidents themselves may serve as a basis for the development of checklists of effective and ineffective behavior.

Also, by describing both good and bad foremen, those
behaviors which were most important in separating effective
for ineffective performance could more clearly be
deetermined. That is, one could describe the behavioral
characteristics of a good foreman but it would not be known
(1) whether bad foremen would exhibit different behaviors or
(2) whether the good and bad foremen would simply differ
in the degree to which particular behaviors are
characteristic.

The questionnaire was sent to the 228 member firms of
the Associated General Contractors (AGC) in Oklahoma, north
Texas, and Arkansas. One reason why these firms were
selected is that they are in the same political subdivision
of the AGC political network, and thus are more likely to
hold the same political views (i.e. a conservative
viewpoint). Also, since the member firms are in the same
geographical section of the country, regional differences in
methods of operation (and thus differences in the behaviors
required of good foremen) may have been eliminated. The
firms have operations primarily in the heavy, heavy highway,
and heavy industrial segments of the contruction industry.
Further, firms were selected from this region in order to
attempt to obtain a better response rate. It was reasoned
that firms in the region would be more familiar with
Oklahoma State University and thus more likely to respond.

Member firms having operations primarily within the commercial building and municipal building segments were excluded, again to insure the greatest degree of transportability of those behaviors seen as necessary for good performance as foremen. Thus, operations of the firms that were included are somewhat different than those that were excluded. The membership roster containing the addresses of member firms, by segment type, was found in the July/August 1980 issue of Constructor magazine.

The questionnaire was directed to the field superintendent of each of the firms for two reasons: (1) The field superintendent is one supervisory level above the foremen. As such, he is in a better position to observe job related behavior than supervisors at a higher level. (2) The field superintendent is typically the individual who evaluates the performance of the foreman.

As explained earlier, the present study is concerned with determining those behaviors which are necessary for good performance on the part of foremen. These behaviors can be thought of as independent variables and the performance of the foremen may be viewed as the dependent variable.

Of obvious concern was the reliability of the behavioral criteria found to be important. Therefore, consistent results were important. By using two means (forms) of

inquiry to satisfy the same purpose (determination of the behavioral characteristics), reliability can be measured in terms of equivalence. Estimates of equivalence reveal the extent to which different instruments applied to the same individuals at the same time yield consistent results.

Other precautions were taken to insure the greatest degree of reliability as possible. As was mentioned, field superintendents were asked to complete the questionnaire. Reliability therefore should be enhanced for two reasons. Field superintendents are in the best position to observe a foreman's behavior. They have probably served as a foreman at one time or another and know what behaviors are necessary to perform effectively. Another precaution taken to insure reliability was the simplicity of instructions. Effort was made to focus the recipient's attention to the desired purpose in the simplist manner possible. This was done to obtain a greater degree of understanding.

In order to obtain a high response rate, the questionnaire was intentionally made brief and to the point. Further, anonymity was guaranteed, again in order to increase the response rate and thus the reliability (as well as validity) of the instrument. A reliability estimate which is based on a large number of cases will have a smaller sampling error than one which is based on just a few cases.

While every effort was made to insure the reliability of results, the validity of the results was even more crucial. Validity seeks to measure the relevance of the criteria while reliability measures the consistency of the criteria. Reliability is a necessary but not sufficient condition for validity.

In order to assess the validity of the results, a judgment about the adequacy of the available validational evidence in support of a particular instrument must be made. In the case at hand, face validity may be considered first. The importance of job related behaviors to successful job performance has been noted. Through conversations with knowledgeable members of the construction industry it was determined that the instrument did a good job in eliciting valid behavioral characteristics. Thus, it seems as though the instrument possessed face validity.

In this study, content validity was concerned with the extent to which the results are an unbiased representation of the domain of possible behaviors. Since the recipients were free to respond in an open-ended and relatively unstructured manner, it seemed reasonable to infer that the instrument did not have inherent limitations on content validity. It should be noted that content validity is sufficient evidence to satisfy the job-relatedness criterion within the legal guidelines previously discussed.

It should be made clear that the questionnaire responses were inferred to be valid based on the evidence just offered. Empirical validation of the results and applications of them was not considered, however, concurrent and predictive validity are discussed in the discussion chapter of this report.

Method of Analysis

The first step in analyzing the data was to determine the frequency that a particular behavior was listed as being important for a good foreman to possess. This same process determining frequencies of responses was also used on the second page of the questionnaire where the field superintendents were to characterize both good and bad foremen in terms of behaviors.[1]

In order to analyze the results of the questionnaire, a method of statistical analysis which could accommodate nominal data was needed. Therefore, the proven and reliable method of frequency analysis known as chi-square was used to evaluate the data.

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[1]It should be noted that there was a large number of behaviors cited as being important on all three parts of the questionnaire. Many of the behaviors were very similar to one another. In the final analysis, seventeen behavioral factors were used. It was felt that these factors were a fair and accurate categorization of the diversity of behaviors listed or characterized by the respondents.

Because the first part of the qeustionnaire was struc-
tured in an open-ended format in order to obtain a richness
of responses, there was essentially no predetermined limited
number of responses (behaviors) from which to choose. Thus
there was a problem which hindered statistical analysis.
Some assumptions were made in order to conduct a chi-square
analysis of the data. First of all, the questionnaire had
some properties of a closed response questionnaire. Each
subject was asked to provide exactly five behaviors.
Second, behaviors which were not listed but were included in
the responses were combined with the sixty behaviors that
were listed (see Table 2 in the next chapter). This
involves an after-the-fact procedure, however, a closed set
of items is obtained. The items were then coded with an "X"
if the respondent listed the behavior. Essentially the data
are being treated as if each subject was asked whether each
the behaviors are important and the answers are simply yes
(X) or no (blank).

The chi-square test has been used to characterize
children according to their most frequent modes of
playground behavior (Siegel, 1956). In Seigel's analysis of
the children's behavior, the following table was generated:

Behavior B_1 B_2 B_3 . . . B_n

Frequency	Actual	__	__	__	__	__	__
	Expected	__	__	__	__	__	__

These same tables were used for all of the three parts of the questionnaire. Because the number of response categories was so large, small expected cell frequencies were anticipated. Therefore, the behaviors were collapsed (as described in the next chapter) into collectively exhaustive and mutually exclusive categories of a more general nature.[2]

In collapsing these categories, whenever a subject's response to two or more of the original items ended up in a new combined item (or more general item) category, the subject's response was considered as only a single response to that category in the coding scheme to avoid weighting that item in a disproportionate manner.

Analysis of the critical incidents in the second and third parts of the questionnaire was conducted in the same manner except that the same general behavior categories which were developed from the first part of the questionnaire were used. Otherwise, the same method of coding was used and the statistical procedure employed was the chi-square. The null hypotheses to be tested with this application of the chi-square test are that there are no significant differences among the frequencies of items reported as important.

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[2]When the actual responses were collapsed into seventeen categories (as described in the next chapter) the propriety of treating the responses as closed-ended is demonstrated by the fact that all seventeen combined item titles are, with minor wording variation, contained in the list of sixty items on the questionnaire.

CHAPTER 4

DATA ANALYSIS AND RESULTS

Of the 228 questionnaires mailed to various contractors, 48 were returned which represents a response rate of approximately 21 percent. This response rate was quite pleasing considering a 20 to 30 percent rate is considered quite good when using a questionnaire technique.

As has been mentioned, a large number of behaviors were either listed as descriptive of good foremen or used in the critical incident characterizations of good or bad foremen. The means of transforming the responses to closed-end responses is demonstrated in Table 1. It should be noted that the total number of responses on Table 1 does not equal the total numbe on Table 3 because multiple responses by the same subject in a combined, or collapsed category are only counted once in the coding scheme.

Trait	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47	S48
Ability to get help																				X																												
Ability to work with others																																																
Accurate									X																																				X	X		
Adjusts to situations																												X																	X			
Admits mistakes			X																																													
Aggressive		X										X	X			X						X						X			X																	
Always on job																				X																												
Alert	X																																															
Ambitious								X																																						X		
Anticipates situations																										X						X				X				X			X					X
Attentive																														X																		
Authoritative																																																
Capable																X													X																			
Capacity			X			X										X	X				X																					X					X	X
Careful																X																																
Common sense													X																																			
Communicates																																					X											
Company's best interest			X			X		X													X					X																						
Concise																								X																								
Confident												X																																				
Congenial																X																			X													
Considerate																	X																															
Consistent																												X																				
Constructive											X																	X																				
Controlling																														X																		
Cooperative	X	X		X									X		X																																	
Decisive									X																																							

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47	S48
Delegates authority																			X																		X											
Delegates responsibility									X	X												X																										
Dependable		X		X		X				X			X		X				X								X									X		X		X		X			X	X		X
Desire																								X																								
Detailed																																			X													X
Determined						X																																										
Driven																																																
Dynamic																																																
Effective																																																
Efficient												X	X										X					X						X						X								X
Energetic																				X																												
Enjoys work																													X				X	X		X	X		X									
Enthusiastic									X																										X	X												
Experienced																							X																									
Fair																						X	X	X																			X				X	
Fast		X																																														
Forceful																												X																				
Goal oriented																														X													X					
Good attitude																					X	X			X																							X
Industrious							X																																				X					
Initiative																														X																		
Influential																																																
Informed									X																							X																
Innovative																																			X									X				
Inspired																																																
Instructs																							X									X																
Inventive																																																

27

TABLE 1
RESPONSE ITEM WORKSHEET
(Continued)

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47	S48
Judgemental							X																																				X					
Knowledgeable														X				X																				X										
Leadership	X						X				X				X	X	X								X	X				X				X							X	X					X	
Learner													X					X								X									X										X			
Listens to management					X															X																												
Logical																																										X						
Loyal																		X																														
Moral character																			X																													
Motivated			X	X																																					X							
Open minded																												X																X				
Optimistic																																										X						
Orderly						X																									X																	
Organized													X		X																																	
Originality																																																
Paperwork completed						X																																										
Personable																																																
Persuasive																																										X				X		
Plans work ahead					X	X																		X			X			X																		
Poised																																	X															
Pride																																									X							
Problem solver	X						X				X									X						X	X								X		X									X	X	
Professional																																																
Profit minded			X	X								X				X									X											X							X	X	X	X	X	X
Projects work schedule																			X																													
Prompt																																																
Reliable													X	X	X									X			X		X						X													
Respected				X				X											X						X																							

TABLE 1
RESPONSE ITEM WORKSHEET
(Continued)

	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47	S48
Resourceful			X																						X						X																	
Responsible		X																					X																									
Safe	X														X		X																															
Sober																																					X											
Slow to anger						X																																										
Stable															X							X																										
Supportive																																																
Systematic																																													X			
Tactful																																																
Thorough																										X																						
Trustworthy										X	X			X			X											X				X			X	X	X											
Understanding																																						X										
Versatile						X			X	X			X									X								X						X			X									X

As has been mentioned in the previous chapter, to render the data more manageable for analytical purposes, seventeen behavioral factors or characteristics were extrapolated from the many behaviors cited. While a formal factor analysis technique was not used, it is the opinion of this researcher that the following seventeen characteristics are a fair and accurate representation of the diversity of responses.

TABLE 2

COLLAPSED CATEGORIES OF BEHAVIORS

1) Safety	10) Dependable
2) Good attitude	11) Organized
3) Aggressive	12) Efficient
4) Detailed	13) Enthusiastic
5) Ambitious	14) Prompt
6) Leadership	15) Problem solver
7) Versatile	16) Knowledgeable
8) Respected	17) Profit minded
9) Cooperative	

Appendix "C" contains a match-up of the original and these seventeen collapsed categories.

The first section of the questionnaire analyzed was the part in which the field superintendents were to list behaviors of good foremen. Table 3 shows the frequency counts for each of the seventeen behaviorally descriptive characteristics of foremen, as listed above in Table 2.

Table 3

Frequency of Citation of Behaviorally
Descriptive Characteristics for Good Foremen

Characteristics	Frequency		Percentage of Total Responses
Safety	8		3.7%
Good Attitude	13	Important	6.0%
Aggressive	8		3.7%
Detailed	5		2.3%
Ambitious	15	Important	6.9%
Leadership	24	Important	11.0%
Versatile	17	Important	7.8%
Respected	8		3.7%
Cooperative	15	Important	6.9%
Dependable	30	Important	13.8%
Organized	11		5.1%
Efficient	8		3.7%
Enthusiastic	10		4.6%
Prompt	1		.5%
Problem solver	18	Important	8.3%
Knowledgeable	11		5.1%
Profit minded	15	Important	6.9%
	217		100.0%

Analysis of the data revealed an expected frequency of
12.765 with chi-square value of 61.685. Thus, there are
significant differences (at the p less than .001 level) in
the frequency with which the various characteristics were
mentioned. Some of the more frequently mentioned charac-
teristics were good attitude, ambitious, leadership,
versatile, cooperative, dependable, problem solver, and pro-
fit minded.

The second section of the questionnaire analyzed was the
part in which the field superintendents were to characterize

good foremen in a narrative fashion. Table 4 shows the fre-
quency of responses of such characterizations based on the
seventeen behavioral characteristics previously listed.

Table 4

Frequency   of   Citation   of   Behaviorally
Descriptive   Characteristics   for   Good   Foreman
(Critical Incidents)

Characteristics	Frequency		Percentage of Total Responses
Safety	7		4.4%
Good Attitude	5		3.2%
Aggressive	7		4.4%
Detailed	4		2.5%
Ambitious	8		5.0%
Leadership	10	Important	6.3%
Versatile	9		5.7%
Respected	12	Important	7.5%
Cooperative	12	Important	7.5%
Dependable	24	Importan	15.1%
Organized	9		5.7%
Efficient	8		5.0%
Enthusiastic	2		1.3%
Prompt	7		4.4%
Problem solver	12	tant	7.5%
Knowledgeable	7		4.4%
Profit minded	16	Important	10.1%
	159		100.0%

Analysis of the data revealed an expected cell frequency
of 9.353, with a chi-square value of 43.624. Thus it can be
concluded that there are significant differences (at the p
less than .001 level) in the behaviors elicited for good
foremen. Those behavioral characteristics mentioned more

than nine times were leadership, respected, cooperative, dependable, problem solver, and profit minded. Although we know there is a significant difference across behaviors in their frequency of mention, we cannot comment on the significance of specific behavior. Nonetheless, we have pointed out those behaviors which seemed to occur more frequently.

The third section of the questionnaire analyzed was the part in which the field superintendents were to characterize bad foremen. In this section of analysis, if a particular behavior was found to be significant, the lack of such behavior may be indicative of a bad foreman. For example, if safety was found to be a significant behavioral characteristic, then a bad foreman is more likely not alert or not careful. Table 5 shows the frequency of responses of behaviors of good foremen which may be lacking in bad foremen.

Table 5

Frequency of Citation of Behaviorally
Descriptive Characteristics for Bad Foremen
(Critical Incidents)

Characteristics	Frequency		Percentage of Total Responses
Safety	10	Important	8.2%
Good Attitude	12	Important	9.9%
Aggressive	2		1.7%
Detailed	2		1.7%
Ambitious	6		5.0%
Leadership	12	Important	9.9%
Versatile	3		2.4%
Respected	7		5.8%
Cooperative	15	Important	12.4%
Dependable	11	Important	9.1%
Organized	11	Important	9.1%
Efficient	12	Important	9.9%
Enthusiastic	2		1.7%
Prompt	2		1.7%
Problem solver	5		4.1%
Knowledgeable	4		3.3%
Profit minded	5		4.1%
	121		100.0%

Analysis of the data revealed on expected cell frequency of 7.118 with a chi-square value of 44.068. Thus there are significant differences (at the p less than .001 level) among the behavioral characteristics. The most frequently listed behaviors (in the negative) are safety, good attitude, leadership, cooperative, dependable, organized, and efficient.

The following table summarizes the three forms of analyses.

Table 6

Summary of Analyses

Characteristic	Analysis 1	Analysis 2	Analysis 3
Safety			Important
Good Attitude	Important		Important
Aggressive			
Detailed			
Ambitious	Important		
Leadership	Important	Important	Important
Versatile	Important		
Respected		Important	
Cooperative	Important	Important	Important
Dependable	Important	Important	Important
Organized			Important
Efficient			Important
Enthusiastic			
Prompt			
Problem solver	Important	Important	
Knowledgeable			
Profit minded	Important	Important	

Table 6 yields many intersting conclusions. First of
all, it can be seen that being cooperative, dependable, and
having the ability to display leadership are very important
because of their mention in each of the three analyses.
Good foremen will be cooperative and dependable while
displaying leadership characteristics, while, on the other
hand, bad foremen apparently lack in these characteristics.
The analysis shows other characteristics which are important
for good foremen to possess. These include being
amibitious, versatile, respected, a problem solver, and prof-
it minded.

On the other hand, bad foremen show a lack of concern
for safety and do not have a good attitude. Bad foremen are
not organized and are inefficient in addition to being
uncooperative and undependable. As previously mentioned,
bad foremen lack in leadership characteristics. With these
conclusions in mind, attention will not be turned to the
development of an evaluation device based on these findings.

CHAPTER 5

PRACTICAL APPLICATION OF RESULTS

Based upon the results described in Chapter 4, the following summated rating scales were developed as a collective evaluative tool by which the performance of foremen may be judged.

Exhibit 1

An Evaluation Device of Foremen
in the Construction Industry

1) Consciousness of safety considerations is displayed by the foreman.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

2) This foreman displays a good attitude on the job.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

3) Ambition is demonstrated by this foreman.

Slightly	Mildly	Moder- ately	On the whole	Very much
+	+	+	+	+
5	10	15	20	25

4) Leadership characteristics are displayed by this foreman.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

5) This foreman is versatile in relevant skills.

Slightly	Mildly	Moder- ately	On the whole	Very much
+	+	+	+	+
5	10	15	20	25

6) This foreman has earned the respect of those with whom he works.

Slightly	Mildly	Moder- ately	On the whole	Very much
+	+	+	+	+
5	10	15	20	25

7) This foreman cooperates with management.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

8) This foreman presents himself as a dependable worker.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

9) Work is taken care of in an organized manner by this foreman.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

10) This foreman makes efficient use of all resources.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

11) This foreman could be described as a problem solver.

Slightly	Mildly	Moder- atery	On the whole	Very much
+	+	+	+	+
5	10	15	20	25

12) Profit-mindedness is demonstrated by this foreman.

Rarely	Seldom	Now & then	Pretty often	Most of the time
+	+	+	+	+
5	10	15	20	25

These anchor descriptions are based upon equal intervals as reported by Spector (1976). Descriptively equal intervals are important in the construction of a summated rating scale because they help to eliminate indecision among responses given by raters.

Each scale point, moving from left to right, increases in increments of five, beginning with five. Therefore, the lowest score possible is 60 points, and the highest score is 300 points. Actually, a score of one point for each scale point could have been used. However, as a practical matter it becomes much more difficult to explain to a foreman who scored 34 who was passed up for promotion in favor of the one scoring 36 versus scores of 170 and 180 respectively. It should be noted that a firm employing many foremen may choose increments greater than five for the reason just cited. Characteristically equal intervals make such changes possible.

Will this evaluative tool work in quantifying the performance of foremen based on behavioral criteria? One way to answer this question is to concurrently validate the results. This can be done by administering the performance appraisal device in conjunction with a firm's current methods of appraising personnel. If the best foremen score highest, and the worst score lowest (with average in between), then it is a good bet the rating device is working.

Another way to concurrently validate the results is to rank each foreman in the company. At a later point in time, perhaps two weeks, administer the evaluation and compare the results.

Concluding Note

It has been the purpose of this study to determine what behaviors are necessary for good foremen in the construction industry, and to utilize such behaviors in the development of a method for evaluating foremen. This two-fold purpose has been met. It is hoped that this research, in some small way, will contribute to the body of knowledge pertaining to the construction industry. Also, if only one firm benefits from the results and application of such, then the time and effort will have been worthwhile.

APPENDIX A

Questionnaire Cover Letter
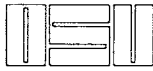
Dear Superintendent:

As you are well aware, foremen play a critical role in the
construction industry. As you will no doubt agree some fore-
men are much better than others, for a variety of reasons.
This study seeks to identify those characteristics which
are important in evaluating foremen. We would like to ask
you to take just a few minutes to answer the brief questions
enclosed.

We assure you the results will in no way identify sources.
The questions may be returned anonymously and separately from
this request. Mr. Scott is a graduate student working on
the masters degree in business administration and holds a
keen interest in construction management. This research is
part of his MBA research project. Your assistance would be
greatly appreciated.

This inquiry is being simultaneously directed to approximately
450 members of the Associated General Contractors in Texas,
Oklahoma, and Arkansas. At your request, we would be happy to
share with you the results of my findings.

Thank you for your cooperation.

Sincerely,   Sincerely,

Charles R. Greer   Gerald Scott
Associate Professor   Research Assistant
  of Management

CRG:GS/gm

Enclosure

APPENDIX B

Questionnaire

QUESTIONNAIRE

In appraising the performance of your foremen, what behaviors are most important? Please list five behaviors in the form of short phrases. Below is a partial list of behaviors which might aid in your response. Feel free to list any behavior that you think is important for evaluation purposes even if it is not on the list below.

1. _____

2. _____

3. _____

4. _____

5. _____

Examples:
1. Ability to delegate work to others.
2. Leads by example.

One-Word Behavioral Characteristics

Accurate	Effective	Orderly
Aggressive	Efficient	Originality
Alert	Energetic	Personable
Ambitious	Enjoys work	Persuasive
Attentive	Enthusiastic	Poised
Authoritative	Fair	Problem-solver
Capable	Fast	Profit minded
Careful	Forceful	Prompt
Concise	Industrious	Reliable
Confident	Influential	Respected
Congenial	Informed	Resourceful
Considerate	Inspired	Responsible
Consistent	Inventive	Safe
Constructive	Judgemental	Stable
Controlling	Leadership	Supportive
Cooperative	Learner	Systematic
Dependable	Logical	Tactful
Detailed	Motivated	Thorough
Driven	Open-minded	Trusting
Dynamic	Optimistic	Versatile

In a few sentences, please describe a particularly good foreman whom you have had the opportunity to supervise.

Now if you will, please describe a particularly bad foreman whom you have supervised. Again, a few sentences will suffice.

APPENDIX C

SUMMARY OF COLLAPSED BEHAVIORS

1) SAFETY: alert, careful, responsible, anticipates
                     situations

2) CONSIDERATE: congenial, tactful, good attitude, moral
                     character, professional attitude, slow to
                     anger, sober, understanding, stable

3) AGGRESSIVE: energetic, forceful

4) DETAILED: accurate

5) AMBITIOUS: Learner, motivated, desire, determined,
                     initiative

6) LEADERSHIP: Authoritative, controlling, persuasive,
                     delegates authority, communicates with
                     people, delegates responsibility

7) VERSATILE: capable, constructive, experienced,
                     adjusts to stiuations

8) RESPECTED: confident, poised, decisive, pride

9) COOPERATIVE: Fair, open minded, ability to work with
                     others, listens to management

10) DEPENDABLE: consistent, reliable, trustworthy, always
                     on job, admits mistakes, loyalty, honesty

11) ORGANIZED: systematic, orderly, projects work
                     schedule, plans work ahead, paperwork
                     completed

12) EFFICIENT: effective, thorough

13) ENTHUSIASTIC: enjoys work, optimistic

14) PROMPT: fast

15) PROBLEM SOLVER: industrious, resourceful, common sense
                     ability to get help, innovative

16) KNOWLEDGEABLE: informed, judgmental, logical, capacity
                     instructs

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APPENDIX C

(Continued)

17) PROFIT MINDED: company's best interest, goal oriented

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