A STUDY TO DETERMINE THE EFFECTIVENESS OF THE
APPRENTICESHIP TRAINING PROGRAMS
OPERATED BY THE CRAFT TRADES
IN DALLAS, TEXAS

THESIS

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By

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CHAPTER I

INTRODUCTION TO THE STUDY

The highly technical society in which we live has brought about an unparalleled interest in technical education. Industries, both large and small, have found it increasingly more difficult to employ skilled people sufficiently trained to fulfill their needs. This situation has inspired educators in school systems across the nation to progressively increase the amount of technical training to be offered in the school curriculums. New training programs have been developed in both full-time day classes for regular full-time students and evening programs for adults, to either improve their present skills or learn new ones. Most of these programs are subsidized by either state or federal funds which help to offset the expense of teachers' salaries, instructional materials, and educational equipment. Many large technical schools have been established throughout the nation, either partially or totally supported by the tax dollar.

The increased emphasis on industrial, technical, and vocational training has resulted in the development of many new and advanced methods of teaching these highly skilled
subjects. However, the apprenticeship training programs, which have been in operation in this country from early colonial days, incorporate a combination of on-the-job and classroom learning situations wherein actual experience is coordinated with direct related instruction. This technique is being used throughout the United States in many industries and most of the building trades. This system of training, not only is the oldest type of technical training in this country, but it also has operated continuously and has been responsible for the training of many thousands of the skilled journeymen in this nation.

This study deals with the apprenticeship system as it is operated by the Dallas Independent School District in cooperation with the craft trade unions.

Statement of the Problem

This is a study of the apprenticeship training program operated in cooperation with the Dallas Independent School District to determine its effectiveness.

Purpose of the Study

The purpose of this study is twofold:

First, to determine the effectiveness of the apprenticeship training program in selected building crafts in the Dallas
metropolitan area during the period September, 1959 to June, 1967. In order to arrive at a point of determination concerning the effectiveness of the apprenticeship training program, it will be necessary to delve into the organization, administration, and implementation of the apprenticeship training program as operated by the Dallas Independent School District, Dallas, Texas, in cooperation with the craft trades and their respective labor unions. This will include a study of apprenticeship standards, apprenticeship committees, curriculums, methods of selection of apprentices, and qualifications of instructors for apprenticeship training programs.

Second, to determine any weaknesses in the training programs which may exist and to make recommendations for improvement of the program.

Background and Significance of the Study

Although nearly everyone has some knowledge of apprenticeship in colonial days, comparatively few people know what apprentice training was like at that time, and how radically different it is today under modern methods of American industry. The exact date of the origin of the apprenticeship system is difficult to establish. It is thought, however, that it was in existence in some form in ancient times during the rise of
the Roman Empire. The apprenticeship system as we know it today grew rapidly during the middle ages. It was during this time that the skilled craftsmen organized themselves into guilds for protection. The English guilds must be given credit for the organization of apprenticeships as a method of training. The guilds established standards and set forth the exact methods and techniques of how the apprentice was to be trained.

Apprenticeship based upon a written agreement, called an indenture, was created and controlled by the guilds. The relationship between master and apprentice was much like that between father and son; the master's authority extended to every phase of the apprentice's life. The master was responsible for providing the apprentice with food, clothing, housing, and tools, and for teaching him the trade, as well as instructing him in ethics, morals, and religion usually for four years. In the fifth year, the apprentice received his first pay and provided his own support. In the sixth year, his pay was increased so that he could not only support himself but also could furnish his own tools. At the end of his training, the boy was given an examination; if he passed, he became a "journeyman," or day worker, as the name originally meant. When he was able to pay the necessary fees and to set
up his own establishment, he himself became a master. Since this whole process was closely supervised by the guild, apprenticeship became a thorough and effective means of training.

The earliest colonists brought the apprenticeship training system to America. However, the early days of the apprenticeship program in America were very unimpressive. This was due to a large extent to the great number of skilled workers who migrated from the old country to the shops and industries of the fast-growing new America. The apprenticeship training program made great strides during the latter part of the nineteenth century as many of the large industries established the first formal on-the-job training programs. These on-the-job training situations were established as apprenticeship programs. In 1904, the program received another boost when the National Association of Manufacturers recognized the importance and value of industrial training. The National Association of Manufacturers officially took the position that industrial training must consist of a well-defined program made up of units which would teach both a skill and related information. This idea is still in existence today and is the underlying philosophy of the apprenticeship training programs operated universally and in those used in making this study.
Probably the greatest advance for apprenticeship in America was the passing, by Congress, of the National Apprenticeship Act. This act went into effect on July 1, 1937 and established the Bureau of Apprenticeship and Training. It also placed the responsibility for the apprenticeship training programs in the Department of Labor and charged the Secretary of Labor with the task of establishing and promoting more apprenticeship programs in industry all over America. As the program continued to expand and grow, it was evident that tight controls were necessary to see that the apprenticeship program did not become a tool in the hands of employers for the procurement of cheap labor. It was here that the Department of Labor contributed much to the cause. The program has been solidified and improved through the years and is now very well defined and organized.

The Bureau of Apprenticeship and Training is now a permanent agency of the Department of Labor. It consists of a federal committee on apprenticeship and is made up of five representatives of employers, five representatives of labor, and a representative of the U. S. Office of Education. Its functions are

1. To promote a better understanding of apprenticeship standards and to develop minimum standards for various trades.

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2. To act in a technical-consulting and advisory capacity to all agencies concerned with labor standards or apprenticeship

3. To cooperate with state apprenticeship councils and with local trade apprenticeship committees

4. To act as a control agency for the collection and distribution of information on progress, methods, and procedures useful in promoting labor standards for apprenticeship

Most states have state apprenticeship committees or some designated department in the state education department structure to coordinate and supervise the apprenticeship program. In Texas, the apprenticeship program falls under the Trade Extension Division of the Texas Education Agency, which in turn is a division of the state department of education.

The real key to a successful apprenticeship program is found on the local level. It is here that the direct contact with the apprentice is made. This is handled through the joint management-labor apprenticeship committee. Usually the committee is composed of from two to five representatives from labor and a like number from management. In addition, a representative from the United States Department of Labor and a representative from the school or educational institution

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where the training program is being held are included. This committee meets regularly and actually supervises the entire apprenticeship program on a local level. The joint apprenticeship committee is responsible for selection of new apprentices, assistance in setting up the training program, supervising each apprentice's progress, disciplining the apprentice when necessary, and finally, graduation procedures. By 1952 there were already some seven thousand local joint apprenticeship committees established, and several thousand more committees have been established since. Apprentices are now in training in approximately three hundred skilled occupations under ninety trade classifications. As many as one hundred and fifty thousand employers are taking part in their training; and a large proportion of the members of the supervisory staffs of companies throughout American industry, including many top-level officials, have had the advantage of apprentice training.³

The apprenticeship program as it exists today is heavily represented by the building trades. All building trades apprenticeship programs require a minimum number of hours of related instruction for apprentices, usually 144 hours per year. The

responsibility is placed with the joint committee to make arrangements with schools for this instruction. It is also the responsibility of the committee to see that the apprentices attend classes on a regular basis and to review their progress often and regularly. The joint committee, along with the school officials, selects instructors and directs the preparation of course materials. Most local apprenticeship committees assume the responsibility of giving tests to apprentices to evaluate the progress they are making. Sometimes this is done by having some of the apprentices appear before the committee each meeting.

The success of an apprenticeship program depends not only upon the activity and interest of the local joint apprenticeship committee but upon the understanding of all who participate. This includes employers, labor, and apprentices. Obviously it is just as important to secure the support and cooperation of the members of the labor union as of employers and employer organizations. While the contractor furnishes the job and the pay, the apprentice is associated with and receives a great deal of his training from the members of the union while he is working on the job. A vital part of an apprentice training program is that part which deals with the performance of work of the same class and under the same working conditions as that of the experienced craftsman.
Definition of Terms

For the purpose of this study, the following terms are defined:

**Apprentice** is defined as a worker who is not less than sixteen years of age engaged under direct journeyman supervision, and according to a prescribed or traditional series of work processes graded to coincide with increasing trade maturity, in learning a skilled occupation that requires, during the learning process, several years of reasonably continuous employment prior to the time that the worker may be considered a qualified journeyman.  

**Apprenticeship** is defined as a certain period of time which a person must serve in order to learn a trade or business.

**Employer** is one who employs the worker and supplies the availability of employment.

**Journeyman** is defined as a mechanic who has learned a trade while serving in an organized apprenticeship program.

**Training program** may be defined as any learning environment wherein adequate experiences are provided which permit students to develop their abilities to their maximum potentialities.

**Craft trades** are those specialized areas of work involving specific skills in the construction industry.

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Limitations of the Study

Other than the historical background of the apprenticeship training system, this study was limited to data covering an eight-year period from September, 1959 through May, 1967. Data was taken from the attendance and progress records of the Dallas Vocational School, Apprenticeship Division. This study dealt specifically with the following craft trades: glaziers and glass workers, electricians, plumbers, ironworkers, and carpenters.

The study was limited to the records of 703 apprentices. This figure included the advanced apprentices who were already in the program at the beginning of the fall term, 1959, plus the new enrollees each year, but excluded the dropouts. A breakdown of the total number of apprentices involved in this study by trade may be found in Tables 1 through V in Chapter III.

The study was further limited to information collected from the full-time training directors of each of the craft trades studied. The data were obtained from the training director of each of the following trade unions: International Brotherhood of Electrical Workers, Local Union No. 59; International Brotherhood of Plumbers and Fitters, Local Union No. 100; International Brotherhood of Ironworkers, Local Union No. 481; International Brotherhood of Carpenters, Local Union No. 198; and International
Brotherhood of Glaziers and Glassworkers, Local Union No. 1837. In addition, two of the largest employers in each of the five craft trades under study, who have been in business and have trained apprentices during the period September, 1959 through May, 1967 supplied information pertaining to the apprenticeship training program.

Recent and Related Studies

Much has been written about the apprenticeship system. Since this system was a forerunner of our present apprenticeship training system and was used extensively in early colonial days, there is a vast supply of information on the growth and development of the apprenticeship system in the United States. However, since this study deals with the apprenticeship system in recent years, information written most recently is more applicable. In 1956 Harry Kursh wrote and had published a book entitled *Apprenticeship in America*, which is a very extensive coverage of the apprenticeship system of training in America. It deals with the history and growth of the apprenticeship system of training and covers all of the ramifications of the program. It also gives complete coverage to state and federal legislation which has affected the growth and development of the program.  

7Ibid.
Morgan Clay Moses conducted a study in 1950 designed to
determine the contribution of the American apprenticeship
training program to industrial arts. Moses made a study of
the American apprenticeship system during the twentieth century
and attempted to determine its influence on industrial arts.
He concluded that industrial arts, with general objectives
patterned after apprenticeship principles, is a vital stepping
stone in the present-day efforts to train better tradesmen
and more skilled craftsmen through apprenticeship.\textsuperscript{8}

An examination of \textit{Published Abstracts of Research in
Industrial Education}\textsuperscript{9} revealed that fifty-seven studies were
made between the years 1930 and 1961 on various campuses in
the United States, which dealt with or were related to the
apprenticeship system of training. A reading of the abstracts
of these studies revealed that many were of a historical nature
dealing with the apprenticeship system. A few dealt with organi-
ization and development of curriculum material for a specific
trade program. The largest source of information pertaining

\textsuperscript{8} Morgan Clay Moses, "American Apprenticeship and Its
Contribution to Industrial Arts," unpublished master's thesis,
Department of Industrial Arts, North Texas State University,
Denton, Texas, 1950.

\textsuperscript{9} U. S. Office of Education, Division of Vocational Education,
\textit{Published Abstracts of Research in Industrial Education}
to the apprenticeship training system is available in the many bulletins, pamphlets, and leaflets published by the Bureau of Apprenticeship and Training, U. S. Department of Labor. The content of the publications ranges from the history of the apprenticeship training system to instructions for organizing apprenticeship programs. Many special studies of the apprenticeship training programs have been made concerning specific phases of the program. Several of these were used in this study and are listed in the bibliography.

Sources of Data

Information for the study was obtained through research in various libraries, the United States Bureau of Apprenticeship and Training, Washington, D. C., state apprenticeship agencies, the Regional Office of Bureau of Apprenticeship Training, and specific craft's apprenticeship offices. Other information was obtained from the sources listed below:

1. Texas Employment Commission, Dallas, Texas
2. Records located in the Dallas Vocational School, Division of Apprenticeship Training, 1901 North Akard Street, Dallas, Texas, covering the period September, 1959 through June, 1967
3. Interviews with the training director of each craft trade studied
4. Interviews and questionnaire completed by two of the larger employers of each craft trade studied covering the period September, 1959 through May, 1967. Employers were selected on the basis of their size and the length of time they have been associated with the apprenticeship training program.

Procedure for Collecting Data

Since the purpose of this study was to determine the effectiveness of the apprenticeship training program in the several craft trades in Dallas, Texas, a thorough study of the attendance and progress records of the apprenticeship training program during the past eight years was necessary. This was done by making an extensive research of all records of attendance and progress of all the apprentices in the electricians, plumbers, carpenters, iron workers, and glaziers and glass workers programs from September, 1959 through June, 1967.

After completing this part of the study, questionnaires were developed to collect data which would be pertinent to the problem. A questionnaire was developed to collect data from the training directors of each of the craft trades being studied, and two of the largest employers in each of the trades.
The employers contacted were selected on the basis of the number of employees and length of time in the apprenticeship program.

The questionnaires were personally presented to the representatives of the employers. The purpose of the data was discussed, and later these completed questionnaires were collected and the data were compiled. A copy may be found in Appendix A.

Organization of the Study

Chapter I of this study includes the introduction to the study, statement of the problem, purpose of the study, background and significance of the study, definition of terms, limitations of the study, recent and related studies, sources of data, procedure for collecting data, and organization of the study.

Chapter II contains information concerning the growth and administration of apprenticeship training in the city of Dallas and the relationship of the Dallas Independent School District to the program.

Chapter III presents information obtained as the result of a study of the records of the apprenticeship training classes operated over a period of eight years, 1959 to 1967.
The information includes:

1. Number enrolled during each year
2. Number of new enrollees
3. Number of dropouts
4. Percentage of dropouts
5. Number graduating each year with journeyman status after four years of apprenticeship training.

Chapter IV is a study of data collected as a result of questionnaires completed by the training directors of each of the five trades under study and of questionnaires completed by employers of journeymen and apprentices in these trades.

Chapter V of the study presents a summary, findings, and recommendations made in view of the findings.
CHAPTER II

ORGANIZATION, GROWTH, AND ADMINISTRATION OF THE
APPRENTICESHIP TRAINING PROGRAM IN THE
DALLAS INDEPENDENT SCHOOL DISTRICT

Although practical training, then called manual arts, was introduced into the curriculum of the Dallas public school system as early as 1903, it was not until 1916 that vocational training as such was first begun. After the passage of the Smith-Hughes Act in 1917, with the help of federal aid, the vocational training program began to grow. Architectural blueprint reading and shop mathematics courses for the building trades were started in 1919. These classes were the forerunner of the related apprenticeship training classes offered for craft trades by the Dallas public school system in today's curriculum. During the years 1920 through 1938 many new classes in various trades were introduced. In 1937 and 1938, diversified occupations and distributive education programs were added to the vocational programs at N. R. Crozier Technical High School and have been extended to all of the high schools in the Dallas public school system. With the beginning of
World War II in 1939, the demand for skilled people to man the defense plants became so great that the Dallas board of education established the Dallas Vocational School. It was first opened in the poultry building at Fair Park and was later moved into a building at 2222 Ross Avenue which was purchased by the Dallas Independent School District. The Dallas Vocational School is currently in operation and is located at the same address. During the war years, the school operated twenty-four hours a day, seven days a week, supplying skilled labor to the war industries. After the war was over, the curriculum was changed to meet the needs of returning war veterans, and courses were offered in heating and air conditioning, tailoring, upholstery, welding, refrigeration repair, shoe repair, television repair, radio repair, sheet metal, cabinet making, machine shop, auto body repair, and auto engine repair.

In 1946, in cooperation with state and federal agencies, the apprenticeship training program was officially inaugurated in the Dallas public school system. The Dallas Independent School District established a program of related training designed to provide the necessary technical and supplementary information for each craft trade. At first the program was

1Walter J. E. Schiebol, Education in Dallas, Ninety-two Years of History 1874-1966 (Dallas, 1966), p. 92.
limited and served only a few of the building trades; but as it continued to grow and more of the craft trades became involved, it was moved to a building of its own located at 1901 North Akard Street in downtown Dallas, previously known as the Cumberland Hill Elementary School. The apprenticeship training classes now occupy the entire building with a total enrollment of approximately twelve hundred. These classes meet on evening schedules during the regular school term and are in session one hundred forty-four classroom hours each school year. The school is administered by a coordinator whose responsibilities include organizing and administering the many apprenticeship training programs in cooperation with the craft trades. He reports directly to a coordinator of all adult and vocational programs in the Dallas public schools. The coordinator of the adult program in turn reports directly to the director of all technical and vocational training in the Dallas Independent School District. The director in turn reports to the superintendent of schools. See Figure 1, page 21.

The problem of organizing an apprenticeship program divides itself into four natural divisions.

First: Administration—to establish responsibility for operation of the program

Second: Apprenticeship Standards—to establish the conditions of employment
Fig. 1—Showing organization of vocational and technical training in the Dallas Independent School District.
Third: **Job Site Training**—to establish a schedule of work experiences which will enable the apprentice to learn the skills of the craft.

Fourth: **Related Training**—to establish a program of related instruction that will provide the necessary technical and supplementary information.

These four phases of apprenticeship are necessary to coordinate the overall program of craft development and lend assurance to satisfactory results.²

The coordinator of the apprenticeship training school is responsible for the fourth item indicated above and works very closely with the joint apprenticeship committee of each building trade. The joint apprenticeship committee is made up of representatives of labor and management. Usually the committee is composed of three members from labor and three from management. In addition, the committee includes the business manager and the training director of the union representing that particular trade and a representative from the training agency, which in this case, is the coordinator of the apprenticeship training program. The organization and responsibilities of the joint apprenticeship committee of each trade are essentially the same.

Figure 2, page 24 is a typical example of how each craft's apprenticeship system is organized. Note that the national joint apprenticeship committee is composed of representatives from the national association of glass and glazing employers and the union which represents them, in this case, is the Brotherhood of Painters, Decorators, and Paperhangers of America. The organizational flow is through the national joint labor management apprenticeship committee which has direct authority and supervision over the apprentice. However, there are several cooperating agencies as shown in Figure 2 which help in the over-all program in an advisory capacity. It is here that the Dallas Independent School District assists in the program. The coordinator of the apprenticeship training program, who is also the principal of the apprenticeship school, helps organize the apprenticeship training program and obtains approval for its operation from the Texas State Approval Agency. The Dallas Independent School District pays the salaries of all teachers and administrative personnel of the school. These salaries are in turn reimbursed to the Dallas Independent School District through federal funds allocated to the state department of education. Figure 3 on page 25 is an organization chart which shows how federal funds flow through the U. S. Office of Education to the local schools
Fig. 2--Showing national and local organization of the glass and glazing apprenticeship training system.

Fig. 3—Organization chart showing how federal funds flow from federal through state agencies and to local schools.  

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through the state agencies. The apprenticeship training programs come under the trades and industries section, which in turn works with the local school systems. Federal funds are allocated to the states in accordance with the George Bearden Act of 1946 or, alternatively, the Vocational Education Act of 1946, and its subsequent amendments.

Registration, in the field of apprenticeship, is similar to accreditation in the field of general education. It is a means of recognizing the programs that contain the necessary elements of good apprenticeship.

All high schools, both public and private, seek recognition and accreditation with the Texas Education Agency. Colleges in the south seek membership and recognition in the Southern Association of Colleges. Recognition and accreditation by such agencies means that the accredited schools have satisfied the minimum standards of the agency. Similarly, the administrators of apprenticeship programs find it advantageous to seek recognition on the basis of criteria established by the Federal Committee on Apprenticeship as well as by criteria established by apprenticeship councils in the individual states. Registration has no relationship to administration or control. It merely means that the program in question has satisfied the minimum standards established by the federal committee.
Registration also provides a source of information on the volume and quality of skill training being provided for American youth, which is useful both for national defense, and for industries seeking locations for new plants. Graduates of registered programs are issued certificates by the registration agency.

All registered apprenticeship training programs operate according to a set of standards adopted by each building craft trade. The standards for all crafts are similar and differ only to the peculiar characteristics of that particular trade. Local standards are written in conformance with national standards adopted for trades on a national basis. These national standards represent the conservative judgment of leading glaziers and glass workers concerning the essential factors in the development of highly skilled glazier and glass worker craftsmen.

The length of an apprenticeship training program depends on the trade being learned. The craft trades normally require six to eight thousand hours of on-the-job training plus one hundred forty-four hours of related training per year. The length is established by the joint apprenticeship committee in

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5 Ibid., p. 8

conformance with national standards of that particular trade. Field representatives of the Bureau of Apprenticeship and Training of the U. S. Department of Labor or of some of the state apprenticeship agencies are ready and willing to give knowledgeable assistance in determining lengths of programs.

Related training deals with the things a craftsman needs to know to apply the skills of his craft. Each apprentice is required to complete one hundred forty-four hours of related classroom work per school year. These are the classes which are offered at the apprenticeship training school, 1901 North Akard Street in Dallas. Normally the subject matter includes mathematics, science, blueprint reading, materials, tools and equipment, processes, and safety.

There are certain basic factors which are essential to successful related training. These are

1. Qualified instructors
2. Suitable subject outlines
3. Well-prepared lesson assignments
4. Satisfactory facilities and study conditions
5. Progress records and tests
6. Constant supervision
7. Well-selected text and reference books

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7 Southern States Apprenticeship Conference, op. cit., p. 31.
8 Ibid., p. 34.
When all of these ingredients are present, the related program has the greatest success potential. The hub of the training program is the teacher. The qualifications for a teacher in the related training program at the Dallas apprenticeship training school are as follows:

1. He must be a high school graduate. Some college work is desirable.

2. He must have a minimum of six years experience as a journeyman in the trade to be taught.

3. He must be recommended by at least three employers in the trade who know his ability as a craftsman and his character.

4. He must be willing to attend ten hours of teacher training per year until he has acquired a maximum of sixty hours.
CHAPTER III

DATA CONCERNING ATTENDANCE AND PROGRESS RECORDS

For the purpose of this study, the attendance and progress records of all the apprentices enrolled during the years beginning September, 1959 through May, 1967 in five selected craft trades were tabulated. The five craft trades were electricians, plumbers, carpenters, iron workers, and glaziers and glass workers.

The responsibility for the success of the apprentice training program is in the hands of the local joint management labor apprenticeship committee. The key to a successful training program depends to a very large extent on how well this committee meets its responsibility. A very important aspect of the training and progress of the apprentice hinges on his attendance during the enrollment period. During this time, if his absences are excessive, he may be set back in the program; or in some cases, dropped out of the program entirely. This is entirely up to the committee. The apprentice may also be dropped for unsatisfactory progress or misconduct. In order to eliminate unsatisfactory attendance and progress records,
the joint committee is extremely careful about the selection of a beginning apprentice. The selection of the applicants for apprenticeship is one of the most important considerations in assuring the success of the training program. The joint apprenticeship committee, composed of representatives of employers and the union, checks the applicant's background to see if he has the aptitude and ability necessary to master the craft. It also attempts to determine if he is really interested in the trade for which he is applying, and whether or not he is ambitious and has sufficient perseverance to devote four years in mastering it. It is also important to know if he has sufficient background to master the related technical instruction required and profit from it. Joint committees may secure the assistance of local offices of state employment services to do testing and initial screening of applicants.

Careful selection of applicants has proved to be of significant importance to the employers, the committee, and to the apprentice himself. Careful selection reduces absenteeism and failures in the program, thus cutting down cost to the employer.

The data collected and presented in Table I are the results of a study of the attendance and progress records of all the apprentices enrolled in the glaziers and glass workers apprenticeship training program during the period of September, 1959.
through May, 1967. The total number enrolled shows the largest number enrolled at any one time during the school year. The number of beginners shows the total number of beginning apprentices enrolled even though they may have started some time after the beginning of the fall semester.

TABLE I

DATA PERTAINING TO ENROLLMENT AND GRADUATES IN THE GALZIERS AND GLASS WORKERS APPRENTICESHIP PROGRAM SEPTEMBER, 1959 THROUGH MAY, 1967

<table>
<thead>
<tr>
<th>School Yr.</th>
<th>Total No. Enrolled</th>
<th>No. Beginners</th>
<th>No. Dropouts</th>
<th>Per cent Dropouts</th>
<th>No. Graduates</th>
</tr>
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<tbody>
<tr>
<td>1959-1960</td>
<td>20</td>
<td>5</td>
<td>3</td>
<td>15</td>
<td>5</td>
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<tr>
<td>1960-1961</td>
<td>19</td>
<td>7</td>
<td>2</td>
<td>10.4</td>
<td>3</td>
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<tr>
<td>1961-1962</td>
<td>22</td>
<td>8</td>
<td>4</td>
<td>18.1</td>
<td>4</td>
</tr>
<tr>
<td>1962-1963</td>
<td>23</td>
<td>9</td>
<td>3</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>1963-1964</td>
<td>26</td>
<td>9</td>
<td>3</td>
<td>11.6</td>
<td>7</td>
</tr>
<tr>
<td>1964-1965</td>
<td>29</td>
<td>13</td>
<td>4</td>
<td>13.8</td>
<td>6</td>
</tr>
<tr>
<td>1965-1966</td>
<td>29</td>
<td>10</td>
<td>5</td>
<td>17.2</td>
<td>10</td>
</tr>
<tr>
<td>1966-1967</td>
<td>22</td>
<td>8</td>
<td>1</td>
<td>4.5</td>
<td>4</td>
</tr>
</tbody>
</table>

The pay schedule on which the glazier and glass worker apprentice is compensated during his indenture and his rate of pay at graduation as a journeyman are incorporated in the
union contract and are as follows as of March 1, 1968. The
journeyman's rate is $4.30 per hour. He receives compensation
at the rate of time and one-half for overtime. The apprentice
receives, by six months intervals, pay at the rate of 50, 55,
60, 65, 70, 75, 80, and 85 per cent of the journeyman's rate.
Foremen receive $2.00 per day above the journeyman's rate.
Other remuneration includes 25 cents per hour above the journey-
man's rate for swinging stage boatswain's chair or window jack
work.

Table II presents data concerning the plumbers apprentice-
ship training program. Note that the percentage of dropouts
is higher in this trade than in any other trade. This is due
to the undesirable working conditions which often confront the
beginning apprentice in this field. The work is frequently
dirty and many times the apprentice finds himself working in
all types of weather as the plumbing trade is not only a con-
struction trade but, of necessity, is involved in service and
repair. Even though the attrition rate is high in this trade
locally, it is much lower than the national rate in this field.
Data in Table II indicate that in 1960 the local dropout rate
was 11.4 per cent, while the national dropout rate in the national

1Dallas County Construction Employers Association, Inc.
Construction Wage Rates, Contractors' Classified Directory,
Buyers' Guide (Dallas, 1968), p. 27.
dropout rate in the plumbing trade was 58.4 per cent.² Note that the local dropout rate has decreased to 6.9 per cent according to the latest statistics.

TABLE II
DATA PERTAINING TO ENROLLMENT AND GRADUATES IN THE PLUMBERS APPRENTICESHIP TRAINING PROGRAM SEPTEMBER, 1959 THROUGH MAY, 1967

<table>
<thead>
<tr>
<th>School Yr.</th>
<th>Total No. Enrolled</th>
<th>No. Beginners</th>
<th>No. Dropouts</th>
<th>Per cent Dropouts</th>
<th>No. Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959-1960</td>
<td>75</td>
<td>13</td>
<td>6</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>1960-1961</td>
<td>70</td>
<td>12</td>
<td>8</td>
<td>11.4</td>
<td>15</td>
</tr>
<tr>
<td>1961-1962</td>
<td>62</td>
<td>15</td>
<td>7</td>
<td>11.3</td>
<td>14</td>
</tr>
<tr>
<td>1962-1963</td>
<td>69</td>
<td>26</td>
<td>5</td>
<td>7.1</td>
<td>20</td>
</tr>
<tr>
<td>1963-1964</td>
<td>69</td>
<td>25</td>
<td>4</td>
<td>5.8</td>
<td>16</td>
</tr>
<tr>
<td>1964-1965</td>
<td>73</td>
<td>24</td>
<td>4</td>
<td>5.4</td>
<td>13</td>
</tr>
<tr>
<td>1965-1966</td>
<td>107</td>
<td>41</td>
<td>9</td>
<td>8.4</td>
<td>17</td>
</tr>
<tr>
<td>1966-1967</td>
<td>115</td>
<td>34</td>
<td>8</td>
<td>6.9</td>
<td>21</td>
</tr>
</tbody>
</table>

The pay schedule on which the plumber apprentice is compensated during his indenture and his rate of pay at graduation

as a journeyman are incorporated in the union contract and are as follows as of July 1, 1967. The journeyman's rate is $4.80 per hour. Fringe benefits include 10 cents per hour for welfare, 3 cents per hour for apprentice training, and 17 cents per hour for pension. Time and one-half is paid for the first two hours of overtime per day during the week and double time is paid for any additional hours as well as on Saturdays, Sundays, and holidays. Triple time is paid for any work done on Labor Day. Apprentice pay is calculated in 1,000-hour intervals at the rate of 50, 55, 60, 65, 70, 75, 80, and 90 per cent of the journeyman's rate. A foreman receives 35 cents per hour above the journeyman's rate. 3

Table III presents data resulting from a study of the attendance and progress records of the ironworkers apprenticeship training program which reflects a high degree of stability. The rate of dropout is low; therefore, the turnover is not great. The primary reasons for this are: (1) high salaries and excellent fringe benefits, (2) careful selection of apprentices since there is a great amount of interest on the part of young men to become ironworkers, and (3) working conditions are usually very good.

TABLE III

DATA PERTAINING TO ENROLLMENT AND GRADUATES IN THE
IRONWORKERS APPRENTICESHIP TRAINING PROGRAM
SEPTEMBER, 1959 THROUGH MAY, 1967

<table>
<thead>
<tr>
<th>School Yr.</th>
<th>Total No. Enrolled</th>
<th>No. Beginners</th>
<th>No. Dropouts</th>
<th>Per cent Dropouts</th>
<th>No. Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959-1960</td>
<td>19</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>1960-1961</td>
<td>14</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>1961-1962</td>
<td>20</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1962-1963</td>
<td>23</td>
<td>10</td>
<td>1</td>
<td>4.3</td>
<td>8</td>
</tr>
<tr>
<td>1963-1964</td>
<td>32</td>
<td>16</td>
<td>1</td>
<td>3.1</td>
<td>5</td>
</tr>
<tr>
<td>1964-1965</td>
<td>32</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>1965-1966</td>
<td>30</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>1966-1967</td>
<td>25</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

The pay schedule on which the apprentice is compensated during his indenture and his rate of pay at graduation as a journeyman are incorporated in the union contract and are as follows as of April 1, 1967. The journeyman's rate is $4.67 \frac{1}{2} per hour. Fringe benefits are 7 \frac{1}{2} cents per hour for welfare, 1 \frac{1}{2} cents per hour for apprentice training and 10 cents per hour for pension. All overtime is paid at the rate of double time. The apprentice receives, on six-months intervals, 60,
70, 75, 80, 85, and 90 per cent of the journeyman's rate. The foreman receives 25 cents an hour above the journeyman's rate, and the general foreman receives 50 cents an hour above the journeyman's rate.

Table IV presents data resulting from a study of the attendance and progress records of the electricians apprenticeship training program which is the second largest apprenticeship training program of all the craft trades in Dallas, Texas. Here, too, the dropout rate is low for the same reasons given as the low dropout rate in the ironworkers trade. However, the demand for electricians is greater than in other crafts, and a journeyman electrician has many types of employment from which to choose and which directly relate to the knowledge which he acquires in the apprenticeship training program. The fact that a journeyman electrician must be licensed by means of a comprehensive examination administered by the city of Dallas helps to set the standards for the electricians apprenticeship training program and also dictates that the electrician apprentice must have a good background before he is accepted in the program.

The related training phase of the electricians apprenticeship training program includes subjects which require an

\[4\] Ibid., p. 28
above average mathematics background. If an apprentice is to complete a four-year program and become a licensed journeyman electrician, his mathematics background must be adequate.

TABLE IV

DATA PERTAINING TO ENROLLMENT AND GRADUATES IN THE ELECTRICIANS APPRENTICESHIP TRAINING PROGRAM SEPTEMBER, 1959 THROUGH MAY, 1967

<table>
<thead>
<tr>
<th>School Yr.</th>
<th>Total No. Enrolled</th>
<th>No. Beginners</th>
<th>No. Dropouts</th>
<th>Per cent Dropouts</th>
<th>No. Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959-1960</td>
<td>86</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>1960-1961</td>
<td>77</td>
<td>16</td>
<td>11</td>
<td>17.3</td>
<td>11</td>
</tr>
<tr>
<td>1961-1962</td>
<td>75</td>
<td>20</td>
<td>6</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>1962-1963</td>
<td>73</td>
<td>19</td>
<td>3</td>
<td>4.1</td>
<td>12</td>
</tr>
<tr>
<td>1963-1964</td>
<td>72</td>
<td>24</td>
<td>3</td>
<td>4.2</td>
<td>15</td>
</tr>
<tr>
<td>1964-1965</td>
<td>82</td>
<td>28</td>
<td>1</td>
<td>1.1</td>
<td>10</td>
</tr>
<tr>
<td>1965-1966</td>
<td>92</td>
<td>21</td>
<td>5</td>
<td>5.4</td>
<td>15</td>
</tr>
<tr>
<td>1966-1967</td>
<td>105</td>
<td>35</td>
<td>5</td>
<td>4.7</td>
<td>23</td>
</tr>
</tbody>
</table>

The pay schedule on which the apprentice is compensated during his indenture and his rate of pay at graduation as a journeyman are incorporated in the union contract and are as follows as of June 30, 1967. The journeyman's rate is $4.42 1/2 per hour. Fringe benefits include 12 1/2 cents per hour for
welfare, .15 of 1 per cent of gross labor payroll for apprentice training, and 1 per cent of the gross labor payroll for pension. Time and one-half is paid for all overtime during the work week with double time being paid for Saturday and Sunday. The apprentice pay schedule, by six-months intervals, is 45, 50, 55, 60, 67, 70, and 75 per cent of the journeyman's rate. The foreman receives 50 cents per hour above the journeyman's rate, and the general foreman receives 75 cents above the journeyman's rate. Travel pay is allowed on all jobs outside of Dallas County not more than 40 miles from Dallas City Hall at the rate of 25 cents per hour. If travel distance is more than 40 miles, the employee receives 50 cents per hour additional. 5

Table V presents data concerning the carpenters apprenticeship training program. A study of the attendance and progress records reveals that the dropout rate in this trade is rather high. This is probably due to a large measure to the fact that weather conditions do affect the regularity of work and cause the beginning apprentice, who is on a low salary schedule, many difficulties. Also, when a particular construction project, or a specific phase of a project is completed, a carpenter apprentice may be laid off and out of work until he is hired.

5 Ibid., p. 26
for a new project. It will be noted that the carpenter apprentice's fringe benefits are not as attractive as those in many of the other trades.

TABLE V

DATA PERTAINING TO ENROLLMENT AND GRADUATES IN THE CARPENTERS APPRENTICESHIP TRAINING PROGRAM SEPTEMBER, 1959 THROUGH MAY, 1967

<table>
<thead>
<tr>
<th>School Yr.</th>
<th>Total No. Enrolled</th>
<th>No. Beginners</th>
<th>No. Dropouts</th>
<th>Per cent Dropouts</th>
<th>No. Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959-1960</td>
<td>52</td>
<td>17</td>
<td>14</td>
<td>2.7</td>
<td>13</td>
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<tr>
<td>1960-1961</td>
<td>44</td>
<td>9</td>
<td>11</td>
<td>2.5</td>
<td>12</td>
</tr>
<tr>
<td>1961-1962</td>
<td>42</td>
<td>8</td>
<td>15</td>
<td>3.6</td>
<td>15</td>
</tr>
<tr>
<td>1962-1963</td>
<td>85</td>
<td>26</td>
<td>9</td>
<td>10.5</td>
<td>17</td>
</tr>
<tr>
<td>1963-1964</td>
<td>90</td>
<td>31</td>
<td>5</td>
<td>5.5</td>
<td>19</td>
</tr>
<tr>
<td>1964-1965</td>
<td>117</td>
<td>51</td>
<td>9</td>
<td>7.8</td>
<td>15</td>
</tr>
<tr>
<td>1965-1966</td>
<td>113</td>
<td>37</td>
<td>18</td>
<td>16</td>
<td>23</td>
</tr>
<tr>
<td>1966-1967</td>
<td>90</td>
<td>18</td>
<td>6</td>
<td>6.6</td>
<td>21</td>
</tr>
</tbody>
</table>

Some joint apprenticeship committees for the carpenters trade are setting up special classes and providing subsistence pay during the time that an apprentice might be unemployed due to adverse weather conditions or a lapse of time between jobs.
The pay schedule on which the carpenter apprentice is compensated during his indenture, and his rate of pay at graduation as a journeyman are incorporated in the union contract and are as follows as of February 1, 1968. The journeyman's rate is $4.60 per hour. Fringe benefits include 1 cent per hour for apprenticeship training. All overtime is paid at the rate of time and one-half except holidays which are paid at the rate of double time. Apprentices are paid, by 1,000-hour intervals, 55, 60, 65, 70, 75, 80, 85, and 95 per cent of the journeyman's rate. A foreman receives 37 1/2 cents per hour above the journeyman's rate.6

One of the rewarding factors of an apprenticeship training program is that a very high percentage of apprentices who finish their program and become journeyman craftsmen remain in the field for the remainder of their working years. The long tenure of journeymen craftsmen in Dallas is a stabilizing factor for the various craft trades and is a definite asset to the apprenticeship training program, as it is the journeyman who must do the training of the apprentice on the job. The highest percentage of dropouts in the apprenticeship training program comes in the early stages. Because of this factor, the first three to six months of all organized

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6Ibid., p. 26
apprenticeship training programs are considered to be the probationary period. During this time the apprentice will have an opportunity to determine whether or not he desires to stay in the field or drop out. Also the probationary period gives the employer a chance to observe the apprentice and make a decision as to whether or not he wants to retain him and invest his time and money to train him for four years.

In 1960 the Division of Research of the Federal Bureau of Apprenticeship made a nation-wide study concerning the careers of former apprentices. This study showed that six years after acquiring journeyman status, more than nine-tenths of the former apprentices in construction trades were still working in the trade in which they had been apprenticed. The tendency to remain in the trade was strongest among electricians, plumbers-pipefitters, plasterers-cement masons, sheet metal workers, and bricklayers. Only a negligible proportion of those who had mastered a building craft shifted occupations outside the skilled trades. Carpenters and painters shifted more frequently than did persons in other crafts. 7

Training gained through apprenticeship enabled many workers to qualify for positions with some supervisory responsibilities.

By 1956, almost twenty per cent of the building trades craftsmen who had completed their apprenticeships in 1950 were working as supervisors or foremen, and another ten per cent were contractors. These percentages were somewhat higher for carpenters than for other building trades. 8

8 Ibid., 4.
CHAPTER IV

DATA COLLECTED FROM UNION TRAINING DIRECTORS AND EMPLOYERS OF APPRENTICES AND JOURNEYMEN.

The rapid growth of the construction industry since World War II has brought about an unprecedented demand for skilled workers in the craft trades. Skilled workers, in adequate supply, were not available during the post war construction boom and contractors were unable to obtain sufficient help to man their construction projects. In order to increase the supply of trained workers the apprenticeship programs, with employers and craft unions cooperating, were enlarged in order to accommodate more apprentices. The training programs became so large that in most of the building craft apprenticeship training programs it was necessary to hire a full-time training director. The training director, who is selected by the craft union, and represents the union, is fully responsible for the training of the apprentice, both on the job and in the related work. He supervises and keeps records on the apprentice from the date of his indenture until he becomes a journeyman. The following is a study of data collected as
a result of personal interviews and questionnaires completed by the training directors of the five trades included in this study.

Electricians Apprenticeship Training Program

The training director of the electrical workers union in the city of Dallas, Texas is responsible for the supervision of all apprentice training, including the selection of the apprentice and all training during the period of indenture. He completed a questionnaire for this study, the form of which may be found in Appendix A. A summary of the data collected in the questionnaire may be found in Table VI, page 54. In addition to the information obtained in the questionnaire, the training director stated that over ninety per cent of all supervisory positions, including foremen, general foremen, and job superintendents, are held by graduates of the apprenticeship training program. Also, a very large percentage of estimators working for contractors are graduates of the program.\footnote{Statement by R. P. O'Reilly, training director for electrical workers union, Dallas, Texas, August 1, 1968.}

Many of the graduates are now superintendents on large construction jobs in the city of Dallas. Some of these jobs are Number One Main Place, Love Field, New Texas Optical Building, Bob Hope Theater at Southern Methodist University, Dallas
Independent Schools Administration Building, Bishop College, Fishback-Moore Office Building, and the Air Force Exchange Building. In addition to the many graduates who are working in supervisory positions, many apprentices who have graduated from the program as journeymen are now electrical contractors. Some of the companies owned by graduates are A and R Electric, Nortex Electric, Southwest Electric, Ling-Oliver-O'Dwyer Company, Able Electric, and McClure Electric.

The training director keeps a very close watch on each of the apprentices both in the on-the-job phase of the training and the related training portion of the program. Appendix C is a general information bulletin setting forth the qualifications of an apprentice applicant and the procedure he must follow to make application for entering the program. When he has been selected, he must complete and sign his indenture papers (contract of apprenticeship). See Appendix E. The new apprentice is then assigned to an electrical contractor who places him on the job under the supervision of a journeyman. The forms in Appendix F are used to keep a permanent work and school record on the apprentice. The permanent forms are posted from Appendix G. It is the responsibility of the apprentice to see that his work report is filed promptly at the end of each month. He so notifies the Dallas Joint Electrical Apprenticeship
Training Committee by mailing a postal card to them. A sample of this card is shown in Appendix H. As a result of this close supervision, attendance runs ninety-eight per cent present; and dropouts are at a low rate of seven per cent.

Plumbers and Steamfitters Apprenticeship Training Program

The training director for the plumbers and steamfitters apprenticeship program has the responsibility of supervising and directing the training of all the trainees in this very important construction trade. He helped supply data for this study by completing a questionnaire. (See Appendix A) In addition, he stated that a large portion of his responsibility deals with careful selection of new apprentices. In order to accomplish this, he works very closely with the Texas Employment Commission which tests applicants for admission to the program. Careful selection insures a lower percentage of dropouts and a more stable training program.

The plumbing training director pointed out that the plumbing trade has become such a technical field that the journeyman must be a very knowledgeable individual as well as have a superior command of required skills. Nearly all men in supervisory

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2Statement by Roy Brown, training director for the plumbers and steamfitters union, Dallas, Texas, August 2, 1968.
positions on large plumbing installations in Dallas are graduates of the apprenticeship training program during the last ten years.\(^3\)

When an applicant has been selected as an apprentice for the plumbing training program he is referred to a contractor who places him on the job under the supervision of a journeyman. Here, he receives his on-the-job training. In addition, he must attend school two evenings each week and successfully complete a minimum of one hundred forty-four hours of related work per year. His permanent record is kept on the form shown in Appendix I. Note that the number of hours for both phases of his training are kept on this form. The permanent record is posted from a weekly record card (Appendix J) which reflects the number of hours of on-the-job training. His related training hours are reported monthly on a form which is Appendix D.

One of the training director's responsibilities is to see that the apprentice is moved from one phase of the work to another as indicated on the master record form. This form shows the number of hours the apprentice is to spend in each area. (See Appendix I) This technique will help the apprentice to receive well-rounded training in all phases of the trade. Sometimes he must be moved to a new employer in order that he receive all the experiences listed on the work progress record sheet.

\(^3\)Ibid.
Carpenters Apprenticeship Training Program

The training director for the carpenters apprenticeship training program in Dallas, Texas represents the largest craft trade in number of journeymen and apprentices. He completed a questionnaire (Appendix A) to supply information for this study. A summary of the information may be found in Table VI, page 54.

Difficulties in recruiting sufficient numbers of apprentice applicants to supply the labor market with skilled journeymen have caused the carpenters Joint Apprenticeship Committee considerable anxiety. It has been necessary to relax entrance requirements to some extent. Salaries for beginning apprentices have been increased to sixty-five per cent of the journeyman's rate, or $3.15 per hour; yet the demand for carpenters in this labor market is far greater than the supply.

Apprentices for the carpenters trade make application to the training director who receives their application and interviews them. No test is given to the applicant. If the training director approves the applicant, he appears before the joint committee for acceptance. If he is accepted, he is placed with a contractor for employment and on-the-job training as an apprentice.
While the apprentice is pursuing his training program he must complete a monthly work card record (Appendix K). This card is sent to the Dallas carpenters joint apprenticeship committee. The training director posts and keeps a permanent record (Appendix L) on each apprentice. The permanent record also has space for related training class hours which are posted from the class roll form (Appendix D).

The training director pointed out the tremendous pressure under which the apprenticeship committee has worked in an attempt to supply adequate numbers of journeyman carpenters. Graduates of the apprenticeship program, because of their superior knowledge, are in demand as foremen and superintendents of construction jobs. He also pointed out that weather conditions affect the carpenters more than any other craft trade; and, therefore the dropout percentage is higher.⁴

Ironworkers Apprenticeship Training Program

The training director for the ironworkers apprenticeship training program in Dallas has the responsibility of recruiting and selecting apprentices as well as supervising their training during their entire apprenticeship period. Applicants are first

⁴Statement by Charlie King, training director for the carpenters union, Dallas, Texas, August 2, 1968.
approved by the director as possible apprentices. The applicant then appears before the joint apprenticeship committee for final acceptance. When approved, the new apprentice is placed with a contractor and starts his on-the-job training program. As with all apprentices, he must attend a minimum of one hundred forty-four hours per year in related training. He does this by attending evening school on two evenings per week during the regular nine-months school term. The ironworker apprentice keeps his own work record in a small record book issued to him at the beginning of the program. There is a page in the book for each week of the year. At the end of each year this record must be certified by the secretary of the apprenticeship committee. There is space on each page of this book for both on-the-job training and related training records and grades. The records from this book are transferred to a permanent record similar to the one in Appendix F.

Since the ironworkers trade is the second most dangerous craft trade in the world, next to mining, a special emphasis is placed on the careful selection of apprentices. The applicant is required to pass a rigid physical examination as well as a series of entrance tests. The ironworker is faced with hard physical work; and, according to the training director, a high per cent of the dropouts from the trade are caused by hard work.
He further stated that the present-day apprentice graduate is so much better trained than those of ten years ago that often a graduate in his first year as a journeyman is promoted to a supervisory position over older men.  

The training director completed a questionnaire concerning the iron workers apprenticeship training program in Dallas, and the data are included in Table VI on page 54.

Glaziers and Glass Workers Apprentice Training Program

The glaziers and glass workers trade is fast growing, being stimulated by new products in glass, metals, and plastics. New architectural concepts with greater application of glass, have increased the need for more glaziers and glass workers. The curtain-wall building is an example.

The training director for the glaziers and glass workers apprenticeship training program in Dallas supervises and controls the apprentice's training on the job and serves as a representative of labor on the joint apprenticeship committee for the glaziers and glass workers. He serves in an advisory capacity to the committee concerning all training problems and keeps a permanent record on each apprentice's progress.

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5Statement by Gordon Adams, training director for the ironworkers union, Dallas, Texas, August 3, 1968.
A record of on-the-job training hours for the apprentice is taken from the employer's work records and is recorded in the permanent file of the apprentice. Related training hours are taken from the class record form (Appendix D) and are kept in the apprentice's permanent file.

The training director completed a questionnaire, shown in Appendix A, to supply information concerning the glaziers and glass workers training program in Dallas during the years 1959 to 1967. A summary of the information may be found in Table VI, page 54.

The answers on the questionnaires completed by the five training directors reflect their consensus of opinion concerning the apprenticeship training program in Dallas, Texas for the period 1959 to 1967. At the present time they represent a total of 5,632 employees, including journeymen and apprentices. They have met the challenge of a continuous increase in construction, both residential and commercial. The total amount of construction in 1967 in Dallas was approximately $387,402,000 as compared with approximately $264,431,000. in 1959. This construction was accomplished as a result of skilled workers who were trained in the apprenticeship programs.  

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# TABLE VI

## COMPILATION OF DATA COLLECTED IN ANSWER TO QUESTIONNAIRES COMPLETED BY THE TRAINING DIRECTORS OF FIVE SELECTED TRADERS

1. Give the total number of both journeymen and apprentices employed in this trade in the city of Dallas in 1968:
   - Electrical: 1,000
   - Plumbing: 952
   - Carpenters: 2,700
   - Ironworkers: 780
   - Glaziers and Glass workers: 200

2. Give the total number of employees, both journeymen and apprentices, employed in Dallas in this trade in 1959:
   - Electrical: 600
   - Plumbing: 650
   - Carpenters: 1,800
   - Ironworkers: 338
   - Glaziers and Glass workers: 75

3. What was the drop-out rate of enrollees in the apprentice-ship training program in your trade during 1967?
   - Electrical: 7%
   - Plumbing: 5%
   - Carpenters: 8%
   - Ironworkers: 5%
   - Glaziers and Glass workers: 7%

4. List in order the three main causes of drop outs during the training period of the apprentice:
   - **Electrical**
     1. Military
     2. Dropped by committee for cause
     3. Return to school
   - **Plumbing**
     1. Military
     2. Return to college
     3. Health reasons
   - **Carpenters**
     1. Irregular employment--weather
     2. Dislike related work classes
     3. Employment in other fields
TABLE VI --Continued

4. Continued
   Ironworkers  1. Work too heavy
                2. Return to college
                3. Military
   Glaziers and Glass workers
                1. Military
                2. Financial
                3. Dislike for related classes

5. If your trade requires municipal or state certification
   as a condition of becoming a journeyman, what percentage
   of apprentices fail?
   Electrical. .................................. None
   Plumbing. .................................. 1%
   Carpenters. ................................ No test
   Ironworkers ................................ No test
   Glaziers and Glass workers .................. No test

6. Do you believe that during the last eight years accidents
   on the job have been reduced due to the apprenticeship
   training program?
   Electrical. ................................. Yes
   Plumbing. .................................. Yes
   Carpenters. ................................. Yes
   Ironworkers ................................. Yes
   Glaziers and Glass workers ................ Yes

7. In the promotion of journeymen to supervisory positions,
   is the apprenticeship training record considered a factor?
   Electrical. ................................. Yes
   Plumbing. .................................. Yes
   Carpenters. ................................. Yes
   Ironworkers ................................. Yes
   Glaziers and Glass workers ................ Yes

8. What percentage of employees in supervisory capacities in
   your trade have completed the apprenticeship training
   program?
TABLE VI --Continued

8. Continued
   Electrical. .................. 90%
   Plumbing. ................... 95%
   Carpenters. ................. 50%
   Ironworkers ................ 90%
   Glaziers and Glass workers. 100%

9. What percentage of the apprentices graduating from the apprenticeship training program continue employment in the trade?
   Electrical. .................. 98%
   Plumbing. ................... 99%
   Carpenters. ................ 98%
   Ironworkers ................ 99%
   Glaziers and Glass workers. 99%

10. Does the demand for journeymen in your trade exceed the number available?
    Electrical. .................. Yes
    Plumbing. ................... Yes
    Carpenters. ................ Yes
    Ironworkers ................ Yes
    Glaziers and Glass workers. Yes

11. Do you believe that the apprenticeship training program has been a good investment for the employers?
    Electrical. .................. Yes
    Plumbing. ................... Yes
    Carpenters. ................ Yes
    Ironworkers ................ Yes
    Glaziers and Glass workers. Yes

12. Do you believe that the apprenticeship training program for your trade has improved during the eight years in question?
    Electrical. .................. Yes
    Plumbing. ................... Yes
    Carpenters. ................ Yes
    Ironworkers ................ Yes
    Glaziers and Glass workers. Yes
TABLE VI --Continued

13. Do you believe that the apprenticeship training program has been a factor in the construction growth in the city of Dallas?

<table>
<thead>
<tr>
<th>Trade</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical</td>
<td>Yes</td>
</tr>
<tr>
<td>Plumbing</td>
<td>Yes</td>
</tr>
<tr>
<td>Carpenters</td>
<td>Yes</td>
</tr>
<tr>
<td>Ironworkers</td>
<td>Yes</td>
</tr>
<tr>
<td>Glaziers and Glass workers</td>
<td>Yes</td>
</tr>
</tbody>
</table>

14. Please list below any weaknesses that you believe exist in the apprenticeship training program in your area:

**Electrical:**
1. Poor school facilities
2. Uninformed high school counselors
3. Lack of funds to operate the program

**Plumbers:**
1. Lack of school facilities

**Carpenters:**
1. Poor school facilities
2. Lack of cooperation from contractors

**Ironworkers:**
1. Poor facilities
2. Lack of interest on the part of employers

**Glaziers and Glass workers:**
1. Poor school facilities
2. Lack of employer interest

15. Please list below any suggestions you might have to improve the apprenticeship training program.

All training directors listed these suggestions for improvement:

1. Better facilities
2. Better methods of selecting apprentices
3. Better qualified instructors
4. More cooperation from the employers
The training directors representing the five trades being studied must have the full cooperation of the employers if the training program is to be successful. They must work together throughout the entire period of indenture of each apprentice.

Additional information was secured from the employers of apprentices and journeymen in the five trades selected for this study. The employers who submitted data for this study in the form of answers to questions relative to the training program (Appendix B) were very cooperative and interested in the welfare of the apprenticeship program. The employers contacted represent the largest employers in their trade in number of employees, and all have been in business in excess of fifteen years. The employers have watched the program grow and have helped to solve problems which have resulted from the training program throughout the years. They have been called upon to contribute financial assistance in behalf of the apprenticeship training program. They have also contributed equipment and materials to be used in the training program. Many employers have voluntarily paid transportation costs for apprentices to attend related training classes. Table VII, page 59 is a compilation of data secured from employers.
### TABLE VII

**OPINIONS OF THE APPRENTICESHIP TRAINING PROGRAM BY EMPLOYERS**

<table>
<thead>
<tr>
<th>Question</th>
<th>Reply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have you found the apprenticeship training program adequate to develop the skills necessary to meet the requirements in your particular occupation?</td>
<td>10 Yes 0 No</td>
</tr>
<tr>
<td>2. Do you believe that upon completion of the apprenticeship training program the journeyman is adequately trained?</td>
<td>10 Yes 0 No</td>
</tr>
<tr>
<td>3. When an apprentice completes his training in your organization, are you confident in his ability to represent you on any size job?</td>
<td>8 Yes 2 No</td>
</tr>
<tr>
<td>4. Do you believe that the skills learned in the on-the-job training phase of the apprenticeship training program are adequate?</td>
<td>10 Yes 0 No</td>
</tr>
<tr>
<td>5. Do you believe that the related information received by the apprentice in his classroom instruction is adequate?</td>
<td>8 Yes 2 No</td>
</tr>
<tr>
<td>6. Do you believe that the average journeyman who has recently graduated from the apprenticeship training program needs close supervision?</td>
<td>0 Yes 10 No</td>
</tr>
<tr>
<td>7. Do you believe that the on-the-job training and related training in the apprenticeship training program are adequately coordinated?</td>
<td>6 Yes 4 No</td>
</tr>
</tbody>
</table>

Note that the employer believes that a more adequate job of coordinating the on-the-job training and related training
is needed. Employers also believe that a better job of related training should be done. The employers, as a group, seem to be pleased with the effectiveness of the training program.
CHAPTER V

SUMMARY, FINDINGS, AND RECOMMENDATIONS

Summary

The purpose of this study was (1) attempt to determine the effectiveness of the apprenticeship training programs as operated by the craft trades in the city of Dallas, Texas and (2) determine any weaknesses which might exist in the apprenticeship programs and make recommendations concerning such weaknesses.

Chapter II dealt with the historical background of the apprenticeship training program and traced its growth and progress in the craft trades in the Dallas area. Attention was directed to the role the Dallas Independent School District, as a cooperating agent, has played in this program. The organization, administration, and implementation of the program was shown.

Chapter III presented data resulting from the study of attendance and progress records of apprentices enrolled in five selected craft trades during the period from September, 1959 through May, 1967. The craft trades studied were
glaziers and glass workers, plumbers, ironworkers, electricians, and carpenters. Each trade was researched for total number enrolled each year, number and percentage of dropouts, and number of graduates. Attention was directed to the pay scales, selection methods, and working conditions as factors affecting percentage of dropouts and graduates.

The purpose of Chapter IV was to present data and opinions from the union training directors who are in close contact with the apprentices on a daily basis. Information was also obtained from employers of the apprentices who provide them employment and contribute heavily to the operation of the apprenticeship training program. Information in this chapter reflected that the union training directors and employers work together to implement the apprenticeship training program. Attention was directed to weaknesses in the program and recommendations from the union training directors and employers were noted.

Findings

The findings as a result of this study are

1. The organization for the purpose of administering the apprenticeship training program by both the Dallas Independent School District and the local unions appears to be logical and workable.
2. The administration of the program by the Dallas Independent School District is inadequate. Lack of real interest and attention to the apprenticeship school is evident.

3. Physical facilities are very poor.

4. The Dallas Independent School District has failed to supply the apprenticeship school with adequate equipment, teaching aids, and supplies.

5. Dropout rates in some trades are excessive.

6. Lack of close coordination between on-the-job training and related training is evident.

7. A better selection program for new apprentices is needed.

8. Some employers fail to give adequate support to the apprenticeship training program.

9. A very high percentage of the apprentices who graduate as journeymen remain in the trade.

10. Better record-keeping methods are needed in some trades.

11. There is need for a program to inform high school and junior college counselors about the apprenticeship programs.

12. There is no organized testing program for the selection of apprentices in some trades.

13. No final licensing or terminal test for graduation from apprentice to journeyman is provided in the carpentry, iron-workers, and glaziers and glass workers trades.
Recommendations

The following recommendations are made based on the findings of this study:

1. The superintendent of schools and the director of technical and vocational education should give more attention to the needs of the apprenticeship training school.

2. Adequate funds should be allocated to purchase equipment, teaching aids, and supplies for the related training program.

3. The school should be adequately housed.

4. An intensified public relations campaign should be inaugurated to advise high school and junior college counselors of apprenticeship programs.

5. The unions and the Dallas Independent School District should work with the Texas Employment Commission in the selection and testing of prospective apprentices.

6. The system for keeping permanent records of progress for apprentices and journeymen should be improved.

7. Joint apprenticeship committees should establish terminal examinations. These examinations should include both practical and related work, and successful passing of the examination should be an absolute requirement for graduation.

8. An additional study of the reasons for dropouts should be made. This should be a continuing study.
APPENDIX A

QUESTIONNAIRE TO COLLECT DATA CONCERNING THE OPERATION OF APPRENTICESHIP TRAINING IN DALLAS, TEXAS DURING THE YEARS 1959 - 1967

Name_________________________________________Title__________________________

Address______________________________________Trade_______________________

1. Give the total number of journeymen and apprentices employed in this trade in Dallas, Texas as of August 1, 1968._____

2. Give the total number of employees, both journeymen and apprentices, employed in this trade in Dallas in 1959._____

3. What was the dropout rate of enrollees in the apprenticeship program in your trade during the year 1967?_____

4. List in order, the three main causes of dropouts during the training period of the apprentice.
   (1) ____________________________________________
   (2) ____________________________________________
   (3) ____________________________________________

5. (a) If your trade requires municipal or state certification as a condition of becoming a journeyman, what percentage of apprentices fail?________________________
   (b) What percentage of employees who have not completed apprenticeship training fail the certification tests?_____

6. Do you believe that during the last eight years accidents on the job have been reduced due to the apprenticeship training program?____________________________

7. In the promotion of journeymen to supervisory positions, is the apprenticeship training record considered a factor?____

8. What percentage of employees in supervisory capacities in your trade have completed the apprenticeship training program?________________________
9. What percentage of the apprentices graduating from the apprenticeship training program continue employment in the trade?

10. (a) Does the demand for journeymen in your trade exceed the number available? Yes____ No____
(b) If yes, by what per cent does the demand exceed?

11. (a) Do you believe that the apprenticeship training program has been a good investment for the employers?_______
(b) Please elaborate on your answer.__________________________

12. (a) Do you believe that the apprenticeship training program for your trade has improved during the eight years in question? Yes____ No____
(b) Please elaborate on your answer.__________________________

13. (a) Do you believe that the apprenticeship training program has been a factor in the construction growth in the city of Dallas? Yes____ No____
(b) Please explain. _______________________________________

14. Please list below any weaknesses that you believe exist in the apprenticeship training program in your area.

15. Please list below any suggestions you might have to improve the apprenticeship training program.
APPENDIX B

QUESTIONNAIRE TO ASCERTAIN THE OPINION OF EMPLOYERS CONCERNING THE APPRENTICESHIP TRAINING PROGRAM

Name

Name of Business

Address of Business

Note: Please answer questions 1 through 7 by checking "yes" or "no."

1. Have you found the apprenticeship training program adequate to develop the skills necessary to meet the requirements in your particular occupation?

   ( ) yes ( ) no

2. Do you believe that upon completion of the apprenticeship training program the journeyman is adequately trained?

   ( ) yes ( ) no

3. When an apprentice completes his training in your organization, do you have confidence in his ability to represent you on any size job?

   ( ) yes ( ) no

4. Do you believe that the skills learned in the on-the-job training phase of the apprenticeship training program are adequate?

   ( ) yes ( ) no

5. Do you believe that the related information received by the apprentice in his classroom instruction is adequate?

   ( ) yes ( ) no

6. Do you believe that the average journeyman who has recently graduated from the apprenticeship training program needs close supervision?

   ( ) yes ( ) no
7. Do you believe that the on-the-job training and the related training in the apprenticeship training program are adequately coordinated? ( ) yes ( ) no

8. Please list below any suggestions that you might have for the improvement of the apprenticeship training program.

_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
APPENDIX C

DALLAS JOINT ELECTRICAL APPRENTICESHIP
AND TRAINING COMMITTEE
GENERAL INFORMATION RELATIVE TO PROCEDURE
AND QUALIFICATIONS FOR APPRENTICESHIP APPLICANTS

APPLICATIONS
Applications will be available to anyone who is interested.
Make application at 10:00 AM on Tuesday - Wednesday - Thursday
Starting Feb. 1, 1968
At - 1923 McKinney Ave. Dallas NECA office (also Apprenticeship Office)

QUALIFICATIONS
Age 18 to 25 (consideration for veterans)
High School Education
Physically fit
When application shows above qualifications, Math Test is given on the same day as application is filled out.
Math Test graded upon completion. Applicant will see grade and test.
Upon passing Math Test, a referral will be given to the Employment Office for an aptitude test.
Aptitude test can be taken on same day application is made.

INTERVIEW
Committee must have the following information before interview.
Application Filled out by applicant, kept by Committee
Math Test Given and kept by Committee
Aptitude Test Grade forwarded direct to Committee
Birth Certificate by APPLICANT BEFORE INTERVIEW
High School Transcript by APPLICANT BEFORE INTERVIEW
Interviews will be held the last of May and the last of August.
The number to be selected is determined before any interviews are held.
No applicants are accepted until all applicants are interviewed.
Committee will notify applicant the time and date of his interview.
Committee selects the men they feel are the top prospects for the electrical industry.
Points that can be taken into consideration at interview - Educational background, extent of math background, character, cooperativeness, judgment, attitude, interest, and personal appearance.
Applicant notified a few days after interview by mail as to being accepted or not accepted.
BEGIN WORK
About June 1 or shortly thereafter.
Upon selection by the Committee, the applicant must fill out and sign his Apprenticeship Indenture Papers (contract of apprenticeship) before starting work.
The indentured apprentice will then report to the Electrical Workers Local Union office and register for referral to an electrical contractor. As soon as an opening is available the new apprentice will start work.

SALARY
Starting salary first period Apprentice June 1, 1968, $2.17 per hour, or a weekly salary of $86.80 for a forty hour work week.

SCHOOL
The new Apprentice will start school in September. Each Apprentice will be notified as to the time and date school will start.
School is held two nights per week for 2 1/2 hours, for approximately nine months.
All indentured Apprentices are required to attend school.
APPENDIX D
MONTHLY ATTENDANCE AND GRADE SHEET

<table>
<thead>
<tr>
<th>Name of Student</th>
<th>Date</th>
<th>Attendance</th>
<th>Class-work</th>
<th>Attitude</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
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<td>16.</td>
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</table>

Denote Absent with A
Denote Present with P
Denote Tardy with T
Denote Entry with E
Denote Re-entry with R

Denote Outstanding Grade with O
Denote Satisfactory with S
Denote Unsatisfactory with U

No student can make satisfactory grades if he attends less than 70% of classes.
APPENDIX E

APPRENTICESHIP AGREEMENT

Between Apprentice and Joint Apprenticeship Committee

THIS AGREEMENT, entered into this _____________ day of ____________________, 19__

between the parties to ____________________________________________________________

(Name of local apprenticeship standards)

represented by the Joint Apprenticeship Committee, hereinafter referred to as the COMMITTEE, and

________________________________________, born ________________________________ ________________, hereinafter

(Name of apprentice) (Month) (Day) (Year)

referred to as the APPRENTICE, and (if a minor) ____________________________________________

(Name of parent or guardian) hereinafter referred to as his GUARDIAN.

WITNESSETH THAT:

The Committee agrees to be responsible for the placement and training of said apprentice in the

trade of __________________________________ as work is available, and in consideration said apprentice

agrees diligently and faithfully to perform the work incidental to the said trade during the period of

apprenticeship, in accordance with the regulations of the Committee. The Apprenticeship Standards

referred to herein are hereby incorporated in and made a part of this agreement.

Credit for previous experience at trade, if any

<table>
<thead>
<tr>
<th>Hours</th>
<th>Apprenticeship remaining</th>
<th>Hours</th>
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</table>

Other conditions

In witness whereof the parties hereunto set their hands and seals:

________________________________________________________________________

(Apprentice) [SEAL] (Representative of Joint Apprenticeship Committee) [SEAL]

(Address)

________________________________________________________________________

(Parent or guardian) [SEAL] (Representative of Joint Apprenticeship Committee) [SEAL]

Registered by the ____________________________________________________________

(Name of registration agency)

By __________________________ Title _____________________ Date __________, 19__

Available through Bureau of Apprenticeship and Training

U. S. Department of Labor, Washington, D. C.
The undersigned agrees to provide employment and training in accordance with standards named herein.

**TERM OF APPRENTICESHIP:** 8,000 hrs. ([four years]), the first 500 hrs. shall be considered as a probationary period.

**WORK PROCESSES:**

<table>
<thead>
<tr>
<th>Process Type</th>
<th>Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>1,000 hrs.</td>
<td>A. Residential Work 1,000 hrs.</td>
</tr>
<tr>
<td>Commercial</td>
<td>3,000 hrs.</td>
<td>B. Conduit 1,400 hrs.</td>
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<td>C. Metal Molding 100 hrs.</td>
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<td>D. Installation of wires, cables and panel boards 1,000 hrs.</td>
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<td>E. Wiring devices, lighting fixtures &amp; equipment 500 hrs.</td>
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<td>Industrial</td>
<td>2,300 hrs.</td>
<td>F. Sub-station 300 hrs.</td>
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<td>G. Switchboard 150 hrs.</td>
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<td>H. Bus duct, wire-ways 100 hrs.</td>
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<td></td>
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<td>I. Cable splicing and welding 100 hrs.</td>
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<td>J. AC Motors and controls 1,000 hrs.</td>
</tr>
<tr>
<td></td>
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<td>K. DC Motors and controls 100 hrs.</td>
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<td>L. Automatic Control Work 250 hrs.</td>
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<tr>
<td>Specialized Work</td>
<td>1,700 hrs.</td>
<td>M. Neon Sign Work 300 hrs.</td>
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<td>N. Specialised-lighting, Fluorescent and mercury 700 hrs.</td>
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<td>O. Stock room 300 hrs.</td>
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<td>P. Refrigeration - Domestic and Industrial 200 hrs.</td>
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<td></td>
<td>Q. Electronics 200 hrs.</td>
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<td><strong>TOTAL</strong> 8,000 hrs.</td>
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</tbody>
</table>

**WAGE RATES:**

1st 6 mos. 45% of Journeyman Rate 5th 6 mos. 63% of Journeyman Rate
2nd 6 mos. 50% of Journeyman Rate 6th 6 mos. 67% of Journeyman Rate
3rd 6 mos. 55% of Journeyman Rate 7th 6 mos. 70% of Journeyman Rate
4th 6 mos. 60% of Journeyman Rate 8th 6 mos. 75% of Journeyman Rate

Upon completion of his apprenticeship, the apprentice shall receive the wage rate paid skilled Journeyman Electricians. The rate paid Journeyman as of was $ per hour.

**NUMBER OF HOURS PER DAY AND TOTAL NUMBER OF HOURS PER WEEK TO BE WORKED:** BY APPRENTICE: 40 hours per week and overtime in accordance with Bargaining Agreement.

**NUMBER OF HOURS OF SCHOOL INSTRUCTION PER YEAR TO BE ATTENDED BY APPRENTICE AND NAME OF SCHOOL (100 hrs. per year is the minimum requirement):** Related class work should be available through the Dallas Vocational Education Department. Related Class work shall not be considered as hours worked and shall not be paid for.

**SPECIAL PROVISIONS:** Upon completion of his apprenticeship the apprentice shall be issued a Certificate of Completion. All the provisions of the Apprenticeship Standards shall become a part of this agreement as if expressly written herein.
# Ironworker Apprentice Permanent Record

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Birth Year</th>
<th>Month</th>
<th>Day</th>
<th>School Grade Completed</th>
<th>Other Schooling</th>
<th>Previous Credits</th>
<th>Apprenticed</th>
<th>Completed</th>
<th>Date</th>
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<tr>
<th>WAGE SCHEDULE</th>
<th>1st 6 Mo.</th>
<th>2nd 6 Mo.</th>
<th>3rd 6 Mo.</th>
<th>4th 6 Mo.</th>
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<tr>
<td>DATE</td>
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<td>5th 6 Mo.</td>
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APPENDIX G

ELECTRICAL APPRENTICE MONTHLY WORK REPORT

Month of ________ 196 __

NAME ___________________________ Wage Rate __________

ADDRESS __________________________ Classification __________

Number of hours WORKED during month on:
(Actual hours on job, not hours PAID)

1. Residential electrical construction ______
2. Commercial electrical construction ______
3. Industrial electrical construction ______
4. Show work, material delivery, and job material handling ______
5. Non-mechanical (i.e. estimating or other than electrical work) Identify if necessary. ______

TOTAL ______

Number of days NOT worked during month ______
(Include holidays, but exclude Sat. & Sun.)

Date ___________ Signed by Apprentice ___________

Date ___________ Verified by Employer ___________

(Name of Shop)

By ___________________________________________________________________

The apprentice is required to make this report monthly.

The apprentice is to forward this report to his employer within FIVE days after the end of the month and send a card to the Committee at this time. Employer is to mail this report to the Committee within ten days after the close of the month. An apprentice cannot be reclassified without proper work report information being in the hands of the Committee.
All reports must be verified by the employer. JOURNEYMAN OR FOREMAN IN the field is NOT your employer and should not verify this report.

If an apprentice is terminated, he should immediately submit a work report to his former employer.

Mail to: Dallas Joint Electrical Apprenticeship & Training Committee
1923 McKinney Avenue
Dallas, Texas 75201
APPENDIX H

ELECTRICIAN APPRENTICE MONTHLY REPORT

My work report for the month of _____________ 196__ was mailed to my employer ________________________________ (Shop)
on _____ day of ________________________________ 196__. Total hours worked as shown on the report was ________.

________________________________________
Signature of Apprentice
APPENDIX I

Plumbers and Steamfitters Apprentice Master Record

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WORK PROGRESS

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<td>B. The assembly and connection of fixtures and appliances used in plumbing and drainage systems</td>
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<tr>
<td>C. Installation and repair of steam and hot water heating systems, refrigeration, air conditioning units, high and low pressure boilers, stokers, gas fired equipment, power piping, industrial and process piping</td>
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<td>D. Installation and maintenance of instruments, controls, regulators</td>
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<tr>
<td>E. Testing and Inspections. Material Turning, Estimating, Drafting</td>
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<td>F. Handling and Setting of Equipment, Signaling</td>
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<td>G. Maintenance and Repairs</td>
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APPENDIX J

INSTRUCTIONS FOR USING THE WEEKLY WORK RECORD CARD:

This card is to be filled out each Thursday and returned to your instructor.

A. Installation and Layout of Piping for Waste, Soil, Vent, Leaders, hot and cold water supply, and including lead work.

B. The Assembly and Connection of fixtures and appliances used in plumbing and drainage systems.

C. Installations and repair of steam and hot water heating systems, refrigeration, air conditioning units, high and low pressure boilers, stokers, gas fired equipment, power piping, industrial and process piping.

D. Installation and maintenance of instruments, controls, and regulators.

E. Testing and Inspection, material takeoff, estimating, drafting.

F. Handling and Setting of Equipment, Signalling.

G. Maintenance and Repair.

H. Welding and Layout.

WEEKLY WORK RECORD CARD

See other side for classifications

NAME ___________________________ Week ending Wed

ADDRESS ________________________ Phone __________

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Employer or Representative ________________________________________

Job Site _________________________________________________________

Job Address ____________________________________________________
## APPENDIX K

Dallas Carpenters' Joint Apprenticeship Committee—Apprentice's Work Card Record

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### APPENDIX L

**DALLAS CARPENTERS' JOINT APPRENTICESHIP COMMITTEE**

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<th>B—Rough Framing</th>
<th>C—Outside Finish</th>
<th>D—Inside Finish</th>
<th>E—Hardware Fitting</th>
<th>F—Layout</th>
<th>G—Care and use of tools and Woodworking Machinery</th>
<th>H—Miscellaneous</th>
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### Notes
- A—Excellent
- B—Good
- C—Fair
- D—Poor
- F—Excellent
- G—Good
- H—Poor
BIBLIOGRAPHY

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